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THE ROLE OF SOCIAL CAPITAL IN FINANCIAL
DEVELOPMENT

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ABSTRACT

To identify the effect of social capital on financial development, we exploit the well-known differences in social capital and trust (Banfield (1958), Putnam (1993)) across different parts of Italy, using microeconomic data on households and firms. In areas of the country with high levels of social trust, households invest less in cash and more in stock, use more checks, have higher access to institutional credit, and make less use of informal credit. In these areas, firms also have more access to credit and are more likely to have multiple shareholders. The effect of trust is stronger where legal enforcement is weaker and among less-educated people. The behavior of movers is mainly affected by the level of trust of the environment where they live, but a significant fraction of the effect is also due to the level of trust prevailing in the province where they grew up.

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In 1958 when Banfield wrote “The Moral Basis of a Backward Society”, few economists noticed. His thesis that the underdevelopment of Southern Italy was due to the lack of social trust outside the strict family circle (which he labeled “amoral familism”) was hard to reconcile with the economic models prevailing at that time. Forty years later, however, developments in economic theory allow us to appreciate the intrinsic limitations agents face in contracting and the potential role social capital can play in reducing the deadweight loss generated by these limitations.

For this reason, the work of Putnam (1993) and Fukuyama (1995) has captured the attention of several economists. La Porta et al. (1997a), for example, document a remarkable correlation between the trust prevailing in a country and the presence of large organizations. Similarly, Knack and Keefer (1996) find a correlation between a country’s level of trust and its rate of growth. Finally, Knack and Zak (1999) show that this correlation exists even after controlling for quality of law enforcement.

The skeptics, however, could still object (e.g., Solow (1995)), since the theoretical link between social capital and growth is very indirect. Even Putnam (1993) admits that the mechanisms through which “the norms and network of the civic community contribute to economic prosperity” should be investigated further.

In this paper we take Putnam’s suggestion seriously and investigate the link between the level of social capital and one important factor underlying economic prosperity: financial development. Financing is nothing but an exchange of a sum of money today for a promise to return more money in the future. Whether such an exchange will take place depends upon not only the enforceability of contracts, but also the extent the financier trusts the financee. In fact, financial contracts are trust intensive contracts *par excellence*. Thus, if trust matters, it should matter most for the development of financial markets. Documenting this link can not only shed some light on the mechanism through which social capital contributes to economic prosperity, but also provide a new explanation for the widely different levels of financial development across countries.

Unfortunately, the use and availability of financial contracts across countries is affected by many other factors, difficult to control for in a regression (Mankiw (1995)). Thus, one

would like to investigate the relation between social capital and financial development within an otherwise homogenous society. The problem with this approach is that, in general, the level of social capital is a national characteristic.

A noticeable exception is Italy. In spite of having been a unified country for the last 140 years, with common legal, administrative, judiciary, regulatory, and tax systems, Italy is characterized by wide differences in the level of social capital between its Northern and Southern regions. In fact, Italy is the country where sociologists first turned to study the effects of trust and social capital (Banfield (1958), Putnam (1993)).

In this paper we exploit this within-country variation to identify the effects of trust on the use and availability of financial contracts. We implement our test using data from two different surveys on households and firms. The Survey on Households Income and Wealth (SHIW) contains information on portfolio decisions, use of various financial contracts, as well as detailed geographical and individual characteristics for a sample of 32,700 households. The Survey of Manufacturing Firms (SMF) contains information on access to credit and ownership structure as well as firms' demographics for a representative sample of 4,400. As a proxy for trust, we follow Putnam (1993) in using a measure of civic engagement. This is justified by the close correlation between trust, social capital and measures of civiness (Putnam (1993), Brehm and Rahn (1997), Knack and Keefer (1996)).

Using a variety of specifications and samples, and controlling for various individual and geographical characteristics, we study the effect of trust on households' portfolio allocation and use of checks, availability of loans to households and firms, reliance on informal lending, and ownership structure of firms.

Consistent with trust being important, we find that in areas characterized by high levels of trust, households invest a smaller proportion of their financial wealth in cash and a bigger proportion in stock. This result is true even after controlling for a large set of households' characteristics and some other environmental variables, such as quality of legal enforcement and per capita Gross Domestic Product (GDP). In high trust areas, households are also more likely to use personal checks, and to obtain credit when they demand it. We also find similar results for firms. In high trust areas firms are less likely to be turned down for credit and more

likely to have multiple shareholders. These results are not driven by omitted environmental variables, since we show that the behavior of movers is still affected by the level of trust of their province of origin.

Consistent with Banfield's and Fukuyama's claim that low trust areas are often characterized by more intense reliance on transactions within narrow subgroups, such as families and friends, we find that the likelihood of receiving a loan from a relative or a close friend is decreasing in the level of trust prevailing in the area. We also document that trust is not simply the equilibrium outcome of a society where legal enforcement leads people to maintain their legal promises. In fact, we find that trust matters, even after controlling for the quality of the court system. Nevertheless, the effect of trust on the use and availability of financial contracts is stronger when legal enforcement is weaker, suggesting that trust matters more where the legal system is less efficient. Similarly, the effect of trust is stronger among less-educated people, who need to rely more on trust because of their limited understanding of contracting mechanisms.

These results, if confirmed in other environments, have very strong implications for developing countries. In fact, trust or social capital seems to matter the most when education levels are low and law enforcement is weak: this is precisely the status of many developing countries.

We also try to shed some light on the origin of trust. If trust is an equilibrium outcome of a society where non-legal mechanisms force people to behave cooperatively (e.g. Coleman (1990) and Spagnolo (1999)), each individual should have a level of trust that depends on the opportunity he has to retaliate. Since the opportunity to retaliate is driven by the level of social interactions, an individual should reflect the level of trust of the area in which he lives, regardless of the one in which he was born. On the other hand, if trust is a moral attitude imprinted with education (e.g. Banfield, 1958, and Fukuyama, 1995) an individual should retain the level of trust typical of the place where he grew up, which we capture with the province of birth. We try to distinguish between these two interpretations by focusing on the households that moved. For those, it is possible to separately identify the effect of the environment they grew up in and the environment where they live. In general, most of

the effect is due to the level of trust prevailing in the area where they live. But a significant fraction (roughly a third) of the effect is due to the the level of trust prevailing in the area where they were born.

Besides the above-mentioned literature on trust and social capital, our work is most closely related to a growing number of studies of the effects of local interaction on criminal behavior (Case and Katz (1991), Glaeser, Sacerdote, and Scheinkman (1996)) and on shirking (Ichino and Maggi (1999)). Interestingly, the Italian regions where Ichino and Maggi (1999) find the highest level of shirking are those with the lowest levels of social capital. In this context our study can be considered as an attempt to estimate the positive (rather than the negative) spillover of social interaction and investigate how they depend on the institutional characteristics (legal environment) and personal characteristics (education).

The rest of the paper proceeds as follows. Section I discusses the notion of social capital and its measures. Section II describes the data. Section III discusses the hypotheses we will test. Section IV presents the results for the sample of households, while Section V the results for the sample of firms. Section VI explores when trust is more important, while Section VII tries to uncover the origin of trust by separating the effect of the trust of the province of residence from the trust of the province of birth. Conclusions follow.

I The Concept of Social Capital

A What Is Social Capital?

There is a growing literature in sociology and political science on the concept of social capital and its ubiquitous effects. Several important contributions (e.g.: Putnam, 1993; Fukuyama, 1995) have established that the extent people participate in social activities and trust each other differ strikingly across regions/countries with important institutional and economic consequences: better functioning institutions, bigger firms, higher economic growth.

Different authors disagree on the precise nature of social capital and its relation with trust. Jacobs (1961) defines social capital as “neighborhood networks”, while Putnam (1995) as “feature of social life - networks, norms, and trust - that enable participants to act together

more effectively to pursue shared objectives.” Coleman (1990) sees trust as a product of social capital, while Fukuyama (1995, 1997) equates trust with social capital.¹

What is the ‘right’ definition does not matter much from an empirical point of view. All of them are extremely highly correlated, both in principle and in practice. For example, in his study of sub-national governments in Italy, Putnam (1993) showed that social trust in Italian regions is closely correlated with several measures of civic engagement. Close correlation between social trust and measures of civiness is documented not only across time and across individuals, but also across countries. Knack and Keefer (1996) find that trust in people is correlated with civic norms. Using the General Social Survey data from 1972 to 1994, Brehm and Rahn (1997) also find that civic engagement (as measured by membership in civic and political organizations) and interpersonal trust are correlated.

While it is beyond the scope of this paper to separate out the contribution of social capital and trust to the development of finance, according to various definitions, the distinction that we make in Section VII makes some progress in distinguishing the origin of social capital. By looking at the behavior of movers we are able to separate the importance of legal rules, non- legal enforcement mechanism, and moral attitudes on the degree in which people trust each other.

B How Do We Measure Social Capital?

In his critique to Fukuyama Solow writes “if ‘social capital’ is to be more than a buzzword, something more than mere relevance or even importance is required. Those cultural and social formations should be closely analogous to a stock or inventory, capable of being characterized as larger or smaller than another such stock. ... The stock of social capital should somehow be measurable, even inexactly.”

¹Achieving a more precise distinction between trust and social capital requires narrowing down their definition. Coleman (1990) defines social capital as the extent and completeness of horizontal relations within a community and its role is to enhance the power and efficient allocation of social sanctions. Social capital is thus identified with a society enforcement power. Trust can then be seen as the equilibrium expectations that are sustained by the level of social capital available in a community in games that involve its members (see also Spagnolo, 1999). In this context, while the two concepts are distinct, they are highly correlated: areas with more social capital are areas where people have more trust.

Measuring social capital is indeed a daunting task, substantially more complicated than measuring physical or human capital (themselves not trivial tasks). Similar to human capital, social capital has several aspects and each measure is bound to capture only some. Nevertheless, two approaches have prevailed in the literature.

First, a survey-based measure of how much people trust each other. The most famous example is the World Values Survey, which interviewed samples of people of varying size across 40 countries asking them “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?”. While surveys speak directly to one important dimension of social capital (i.e., trust), they face two problems. First, as shown by Glaeser et al. (1999), responses tend to be more highly correlated with the degree of trustworthiness of the respondent rather than with his level of trust. Second, how can one trust the response to a survey of a person who is not trustworthy?

The second approach tries to measure other dimensions of social capital, like civic engagements, relying on observable behavior. For example, in his study of sub-national governments in Italy, Putnam (1993) measures social capital through several measures of civic engagement: voter turnout at referenda, newspaper readership, membership in non-profit “horizontal” associations, and the diffusion of preference vote in the political elections. The advantage of this approach is that the measures themselves are much more reliable than subjective survey responses. The disadvantage is that it is unclear whether this measure captures trust, sense of duty, or instilled moral values. In our case this does not represent a serious shortcoming, since we are only interested in establishing whether social capital is important and not which aspects of social capital are more important.

We follow this second approach and construct two measures of social capital. First, we use a measure of civic engagement at the provincial level borrowed from Putnam (1993): voter turnout at the provincial level.² Besides being readily available, this measure has several nice features that make it very appealing for our study. First, unlike newspaper readership or participation in organizations, voter turnout is unlikely to be driven by other local economic

²Italian territory is divided into 95 provinces, which by and large correspond to U.S. counties.

factors (presence of local newspapers, subsidy to certain associations). In fact, voter turnout is one of the phenomena economists are least able to explain on the basis of standard economic models. Thus, it is a good candidate to capture non economic (social) characteristics, such as trust in institutions, sense of duty, and civicness, all important components of social capital. Second, electoral turnout is accurately measured at the provincial level. Data refer to the whole population (not just a sample) and are essentially free of measurement errors. Finally, this measure is highly correlated with all the other measures of social capital (Putnam (1993)). Furthermore, it is correlated with social trust, as measured by the World Values Survey, across the U.S. states (Putnam 1995).

Following Putnam (1993) we don't measure electoral turnout in general elections.³ Instead, we measure electoral turnout for all the European elections (1979, 1984, 1989, 1994 and 1999) and on six referenda (see appendix for details). As documented by Putnam, the ranking across provinces in voter turnout is remarkably stable over time.

A second, rougher, measure of social capital we use is the part of the country where a household or firm is located. Geographically, one can distinguish Italy in three areas: North (north of the Appennine Mountains), Center (between the Appennine and Rome), and South (south of Rome). In the work of Banfield (1958) and Putnam (1993), the South of Italy is the prototypical area deficient in social capital and trust, while the North is richer in both. Ichino and Maggi (1999) support this view by showing that the degree of shirking of the employees of the same bank is significantly higher in the South even controlling for several characteristics of the employees as well as those of the individual branches. Accordingly we will use an indicator variable for the North as a proxy for high trust areas and an indicator variable for the South as a proxy for low trust areas.

³Although electoral turnout is a standard measure of political participation, Putnam pointed out that turnout at general elections in Italy may not be a good measure of civic engagement. First, electoral turnout in general elections is likely to be affected by the existence of an Italian law that required all the citizens to vote in general elections. Second, electoral turnout may be different in areas where the practice of political patronage is more widespread or political parties are more organized.

II The Data

We use data from two microeconomic surveys on households and firms that contain information on various measures of the use and availability of financial contracts. Thus, we start by presenting the characteristics of these datasets. In the next section we will illustrate what theory predicts regarding the possible effects of trust on these measures.

Information about households is drawn from the Survey of Households Income and Wealth (SHIW). This survey, which is conducted by the Bank of Italy on a representative sample of about 8,000 households, collects detailed information on Italian household income, consumption, and wealth as well as their portfolio allocation across financial instruments and their access to formal and informal credit. For each household, the data also contain information on characteristics of the households' head, such as education, age, place of birth, and residence.

One of the unique features of this survey is its ability to distinguish between households that did not want a loan from households that did not succeed in obtaining a loan because they were either turned down or did not apply because expected to be turned down. The survey also reveals the existence of informal credit (i.e., credit extended by friends and family). A more detailed description of the dataset, with the actual questions asked to the people interviewed, is contained in the Appendix.

This survey is conducted every two years. Since the last four (1989-1995) have maintained the same structure, we pool them together, obtaining a sample of 32,686 observations. The survey has a rotating panel component, thus 9,287 of these observations come from the same household re-interviewed in a different year. In the analysis we will check the robustness of our results to eliminating these repeated observations. Excluding a few households reporting negative consumption and/or income (17 observations), 4 observations with all missing values and 48 observations reporting age above 90 or other inconsistent data, the sample contains 32,617 households if repeated observations are included, or 23,330 households if repeated observations are excluded.

As for firms, we use the 1994 Survey of Manufacturing Firms (SMF) conducted by Medio-

credito Centrale (an investment bank) on a random sample of over 4,400 small and medium-sized (mostly privately held) manufacturing firms with at least 10 employees. The SMF - whose main purpose is to gather information on firms' innovation activities and internationalization - collects a variety of data including employment, access to credit, and ownership structure. It also contains a detailed description of the firms' demographics (geographical location, year of foundation, sector, form of incorporation, whether it belongs to a group etc.).

For a subset of firms in the SMF, balance sheets and income statements are also available – allowing us to construct measures of profitability and indebtedness which we use as controls in our regressions. Excluding firms for which balance sheet data is not available results in a reference sample of 3,539 firms whose characteristics, in terms of the distribution of firms by size, location, and sector are very similar to those of the whole sample. The Appendix reports a description of the content and sampling properties of the SMF together with a description of the variables used in the estimates.

We further augment our household-level and firm-level data with two other variables. The first is a measure of economic development, measured by GDP per capita in the province. This measure is released by the National Institute of Statistics (ISTAT). The second is a novel measure of the efficiency of law enforcement: the average number of years it takes to complete a first-degree trial in the courts located in the province. This measure is computed using data on the length of trials released by the Ministry of Justice.

Finally, for both households and firms we know the province where the household currently resides or the firm is located. Accordingly, we merge the households and the firms datasets with our measure of social capital and attach to each household (firm) the measure of social capital in the province where it is located. In addition, we also know the province where the household head was born. We use this as a proxy for the area in which an individual was raised, and for the level of social capital prevailing there (which we label trust of origin).

A Measures of Use and Availability of Financial Instruments

Table 1 reports summary statistics of all the variables used in our regressions. It is important to review the measures of use and availability of financial instruments that will appear as dependent variables in our regressions. The first one is the proportion of financial wealth a household retains in cash. All the observations are equally weighted, thus the mean (24%) is distorted by the fact that poorer people detain 100% of their financial wealth in cash. A value weighted average gives a more reasonable 2.4%. This feature highlights the importance of controlling for the level of wealth (and its square to capture possible nonlinearities) in any regression.

The second measure is the proportion of financial wealth a household detains in deposits, both bank and postal (which in Italy are very important). Deposits represent the main savings instrument for the households in the sample.

The third measure is the fraction of financial wealth detained in stock. The low mean (3%) is consistent with the limited role played by the stock market in Italy (e.g., Pagano, Panetta, and Zingales (1998)). The fourth measure is an indicator variable of whether a household uses checks. Interestingly, half of the households interviewed do not use any check.

The next two variables pertain to a household ability to access the credit market. “Discouraged or turned down” is an indicator variable equal to one if a household responds positively to at least one of the following questions: “During the year did you or a member of the household think of applying for a loan or a mortgage to a bank or other financial intermediary, but then changed your mind on the expectation that the application would have been turned down?”, “During the year did you or a member of the household apply for a loan or a mortgage from a bank or other financial intermediary and your application was turned down?”. 2% of the sample households were discouraged from borrowing (i.e. answered yes to the first question), while 1% of the sample households were turned down (i.e. answered yes to the second question). Finally, “family loan” is an indicator variable equal to one if a household responds positively to the question: “As of the end of the year did you have debts outstanding towards friends or relatives not living with you?”. 3% the sample households

received such loans.

On the firms' side, we focus on two measures. One, "turned down", is analogous to the household variable. It is an indicator variable taking value one if a firm answers positively to the question: "In 1994 did you apply to a bank or a financial intermediary to have your loans increased and were turned down by all of those to whom you applied?". 5% of the sample firms were turned down. Finally, as a measure of a firm's ability to raise equity capital externally, we use an indicator variable taking a value of one if a firm's largest shareholder holds 100 percent of the firm's shares and zero otherwise. 16% of the sample firms have only one shareholder.

In all the regressions, we control for the efficiency of law enforcement (linear and squared) as measured by the number of years it takes to complete a first-degree trial in the courts located in the province. As Table 1 indicates, there is wide variation in this measure, ranging from 1.5 to 8.3 years, with a mean of 3.6 and a standard deviation of 1.25.

Finally, to ensure that the level of trust is not simply a proxy for economic development, we control for the latter by using the GDP per capita in the province. In this case too, there are wide variations, with values ranging from 10 million liras to 70 million liras (between \$6,000 and \$39,000 per capita.⁴ Note that inserting this control will underestimate the effect of trust. In fact, as Putnam shows, trust, far from being a consequence of economic modernization, is a precondition of it. Thus, some of the effect of trust will be reflected in the level of income per capita.⁵

III Theoretical Predictions

In order to identify the theoretical link between social capital and financial development we focus on one aspect of social capital: trust. Similar predictions can be derived if we interpret social capital as set of moral or civic norms.

Financial contracts are an exchange of a sum of money today for a promise to return

⁴We use an exchange rate of \$ 1 = Lit 1,800.

⁵Consistent with this interpretation, the impact of trust becomes larger and more statistically significant when we omit GDP per capita from the regressions.

more money in the future. For this exchange to take place the financier must believe that the promise is sufficiently credible. The major factor supporting this credibility is clearly the possibility of enforcing the letter of the contract in a court of law. But this is not the only source of credibility. Enforcement is expensive and sometimes ineffective. If a financier fears that the financee might disappear with the money, the protection provided by the contract is very limited. Similarly, restrictions on the possibility to inflict punishment reduce the effectiveness of contracts in preventing inefficient moral hazard. Finally, contracts are intrinsically incomplete, making it impossible to provide a bullet proof guarantee to the financier.

Thus, even in countries (or areas) where contracts are promptly and justly enforced, the degree of trust a financier has in the financee plays a crucial role in fostering transactions: the first order implication is that trust fosters financial transactions, even after controlling for the quality of law enforcement.

A Trust and Portfolio Allocation

In allocating their financial wealth all the households face the same variety of financial instruments. Each of these instruments, however, requires a different degree of trust by the investor.

At one extreme of the distribution of financial instruments, is cash. By retaining its savings in cash, a household avoids the need to trust others. Cash, then, is the ultimate refuge for an investor who does not trust anybody. Not surprisingly, the traditional way of storing savings was cash under the mattress. Thus, we should expect that households living in low-trust areas retain more of their wealth in cash.

At the other extreme of the distribution, is stock. An equity investor receives very few contractual protections (especially in Italy, see Zingales (1994)). Thus, he is willing to invest in stock only if he trusts the company he is investing in. We should expect, then, that households living in low-trust areas invest less of their wealth in stock.

In the middle of the distribution, are bank deposits. Since depositors lose control of their money, deposits require more trust than cash. On the other hand, there are several reasons

why they require less trust than stock. First, bank deposits are callable on demand, giving a huge power to the investor, which helps reduce his fear of being expropriated. Second, deposits are insured, which protects deposits from bank insolvency (though not from fraud). Finally, the banking sector is heavily regulated and closely supervised by the Bank of Italy. While the objective of both the regulation and the supervision is different, it does provide a lot of monitoring to reassure fearful investors. Thus, here we do not have a clear-cut prediction. Nevertheless, it is still interesting to perform such a test, to verify to what extent trust is important. If trust also positively affects the percentage of wealth invested in deposits, then it implies that the importance of trust is very pervasive.

Of course, all these implications are *ceteris paribus*. Thus, in the empirical specifications we have to control for several household characteristics (such as wealth, education, age, etc.). Fortunately, the dataset is sufficiently rich to allow us to do so.

B Trust and the Use of Checks

The use of personal checks is clearly an activity that requires a lot of trust. In fact, trust is needed from both sides. The person receiving the check has to trust that the issuer has enough funds in the bank to honor the payment. On the other hand, the person issuing the check has to trust the receiver not to falsify the amount written on the check. Furthermore, if the check is mailed, the issuer has to trust that the check will not be stolen in the mail and cashed by a different person. This is not an unusual event in Italy, so much that it influences people willingness to use checks. For example, one of the authors was very hesitant to purchase mutual funds via a check in the United States, for fear the check might be stolen.

Thus, we should expect that households living in low-trust areas are less likely to use checks. At the same time, we expect that the probability of using checks is affected not only by the trust of the place of residence, but also by the trust of its place of origin. Mistrust in others might be retained, even after moving to a different environment, as our personal experience suggests.

C Trust and Lending

Lending is also a trust intensive activity. Thus, we expect that the supply of loans to households and to firms is positively affected by the average level of trust in the province.

Fortunately, the data allow us to separate demand and supply. For both households and firms we have the information on whether the respondent requested a loan and was turned down or was discouraged from applying. Thus, a higher level of trust should decrease the the probability a household (a firm) is denied credit or is discouraged from applying.

D Trust and Family Lending

One interesting feature of our dataset is that it contains also information on informal lending: loans by relatives and friends. How do we expect them to vary with the degree of trust?

As for any type of lending, a higher level of trust should lead to more lending. In this case, however, there are three forces pushing in the opposite direction. First, informal lending is a substitute for formal lending, when the latter is either unavailable or too expensive. As we argued above, the access to formal lending is jeopardized by lack of trust. Thus, the demand for loans from friends and family increases in areas with low trust. Since for these informal loans we do not separately observe the demand and supply, but simply their existence, it is well possible that the demand effect dominates and that the likelihood of loans by friends and family is higher in areas with low trust.

Second, there might be a substitution effect on the supply of loans. In low trust areas, the group with the highest comparative advantage in undertaking trust intensive activities (such as lending) is a group with a comparatively high level of trust (such as friends and family).

Finally, many authors (Banfield (1958), Fukuyama (1995)) have emphasized that low levels of trust toward others are generally associated with high levels of trust within subgroups, such as the family. The term “amoral familism” coined by Banfield signifies the existence of very high levels of trust within the family, and very low levels outside of it. This leads naturally to move transactions from the market to the restricted family circle.

Given the importance of these three factors, we should expect a higher incidence of loans by friends and family in low-trust areas (thus a negative correlation between the likelihood of informal loans and the level of trust).

E Trust and Ownership Structure

The firm dataset also contains information about ownership structure. In particular, we are able to determine whether the firm has a single shareholder or multiple ones.

Since the firms in our sample are mostly privately held, increasing the number of shareholders often implies sharing control in some form or another. Thus, a single owner is less willing to expand the shareholders base if he does not trust the new potential participants. On the other hand, potential investors are less willing to invest in the firm, if they do not trust the person running it.

Thus, in this case both demand and supply considerations lead to predict a lower incidence of a single shareholder in high-trust areas.

F When Does Trust Matter More?

Thus, far we have implicitly assumed that the degree of trust required is a characteristic of a financial instrument. However, the importance of trust in fostering financial transactions is likely to be affected by other environmental and individual characteristics.

The importance of trust is larger in areas where law enforcement is not prompt. If it takes more than three years to enforce a contract (as is the case in Italy), the willingness to finance a person or enterprise will depend even more crucially on the degree to which this person or firm is trusted by the financier. This suggests that on average we should expect a bigger effect of trust on financial development in Italy than in countries like Sweden or the United States where law enforcement is more efficient. More importantly, the above reasoning suggests that cross-sectionally we should expect a higher marginal effect of trust in parts of Italy where law enforcement is comparatively worse.

The degree of trust required for a financial transaction should also depend on the level of education of the individuals involved in the transaction. Compare two investors considering

buying a stock: an educated investor, who can read and understand the fine prints of a financial prospectus, and an unsophisticated one, who cannot understand most of the terms. The latter clearly needs a much higher dose of trust to buy the same stock. The inability to fully grasp all the details of the contract involved make it impossible for the unsophisticated investor to discriminate between legitimate investments and frauds. At the same time, lacking the understanding of the legal protections offered, the unsophisticated investor would be more suspicious in general. Finally, if an investor is not endowed with the necessary ability or information to make sophisticated financial decisions (e.g. managing his portfolio) he can delegate this function to somebody else. But delegation requires trusting other people. For these reasons, the unsophisticated investor will require more trust to enter into a financial contract. The prediction, then, is that the marginal impact of trust on the use of financial contracts is higher among uneducated people than among educated people.

G Origin of Trust

The term trust is used to explain very different phenomena. Trust can simply be the equilibrium outcome of a society where legal enforcement leads people to maintain their promises. Defined in this way, the concept of trust is rather uninteresting, since the benefits of law enforcement have long been recognized. To ensure that this is not what we are capturing, in all our regressions we control for the quality of legal enforcement.

Alternatively, trust could be the equilibrium outcome of a society where non-legal mechanisms force people to behave cooperatively. For example, in small communities, with multi-dimensional interactions, people may rely more on others keeping their promises, for fear of being ostracized by the community (Spagnolo (1999)). Finally, trust may reflect the expectation that people will behave cooperatively as a result of a moral attitude imprinted with education (Banfield, 1958). According to these two latter non mutually exclusive definitions, trust is something above and beyond the effect of legal enforcement: an element that fosters cooperation and economic development. It is the social capital Fukuyama (1995) talks about.

If trust is the expectation of non-legal enforcement, each individual should have a level of trust that depends on the opportunity he has to retaliate. Since the opportunity to retaliate

is driven by the level of social interactions, an individual should reflect the level of trust of the area in which he lives, regardless of the one in which he was born. On the other hand, if trust is a moral attitude imprinted with education, an individual should retain the level of trust typical of the place where he grew up.

Of course, these effects cannot be separated for people who were born and live in the same place. But the existence of several movers in our sample provides us with the opportunity to try and distinguish between these two possible sources of trust.

Interestingly, the relative importance of the trust of origin and the trust of residence should not necessarily be the same for all the financial contracts we study. Some (like access to loans) depend on how much the respondent is trusted by other people living in the province, while others (like the investment in stock) depends on the trust the respondent has in others.

This distinction, however, is possibly confused by discrimination: it may be the case that the trust of origin captures the attitude of indigenous toward "foreign born". Thus, it is highly possible that a northern banker will *ceteris paribus* more likely turn down the loan application of a southern applicant than the one of a northern applicant.

IV Empirical Results in the Household Sample

A Investment in Cash

Tables 2A and B report the results of the effect of trust on the amount of cash held by a household. The proportion of financial wealth detained in cash is regressed on the level of trust, the level of judicial efficiency (linear and squared), the GDP per capita, several household characteristics, and three calendar year dummies.

All three variables of interest are measured at the province level. As this might just reflect correlation in the residuals, we correct the standard errors for clustering at the provincial level.

The household's specific variables (coefficient not reported) are household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, households head age (linear and squared),

his/her education (number of years of schooling), an indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has.

Column I reports the tobit estimates of the basic specification. As expected, the level of trust has a negative and highly statistically significant coefficient on the proportion of wealth a household invests in cash. A one standard deviation increase in local trust reduces the amount of cash by 7 percentage points: a reduction of almost a third in the amount of cash held.

The degree of judicial inefficiency has a non linear effect on the amount retained in cash. This nonlinearity, which is present in most specifications, is consistent with the role played by courts. At low levels of inefficiency, small variations can have a large impact on portfolio choices. But beyond a certain point, legal enforcement becomes inframarginal and a further increase in the degree of judicial inefficiency has very little impact.

The level of per capita GDP has a negative and statistically significant effect on the amount retained in cash. Since other studies (Knack and Keefer (1996), Zak and Knack (1999)) have shown that the level of trust is positively correlated with economic development, the per capita GDP might absorb some of the effect of trust. Nevertheless, we think it is necessary to insert it into the regression to control for factors that are associated with financial development, but have nothing to do with trust. Consistent with our prior, excluding per capita GDP from the regression (not reported) increases both the size of the coefficient of trust and its statistical significance.

Column II reports the estimates obtained from a similar specification, where, as a proxy for trust, we use instead two indicator variables, for the Northern and the Southern regions. As expected, households in the North (where trust is higher) retain 5% less cash than households in the Center (the omitted dummy), while households in the South (where trust is lower) retain 15% more cash, even after controlling for differences in wealth, income, etc. Thus, Northern households hold 20% less cash than Southern households.

One might object that this result may be due to the higher presence of organized crime in the South, who prefer to retain wealth in cash to be less visible. This objection, however,

ignores the fact that the data come from personal interviews conducted by the Bank of Italy. Thus, it is highly unlikely that an organized crime participant would agree to answer these questions. Another possibility is that households retain their financial wealth in cash to hide it from tax investigations. Even in this case it would be surprising that the same people would be willing to reveal this information to the Bank of Italy, which is a Government institution. Most likely they would refuse to participate in the survey or, if they participate, to under-report the amount of cash holdings.⁶

Consistent with our using them as a proxy for trust, the North-South indicator variables turn out to be highly correlated with the Putnam measure of trust. The correlation between the North indicator and our measure of trust is 58%, while there is a negative correlation of 85% between the South indicator and trust. This might generate the suspicion that the effect we are capturing is due to some other differences between the North and the South of Italy, which happen to be correlated with our measure of trust. Column III of Table 2 shows that this is not the case. After controlling for the North and South indicator variables, trust still has a negative and statistically significant effect on the proportion of wealth retained in cash.

This last specification, however, does not completely eliminate the suspicion that some environmental variable other than trust might be driving the results. For example, trust may be capturing background risk (Kimball (1993)). The only way to rule this out would be to estimate a model with fixed provincial effects, which absorb all the factors that vary only at provincial level.⁷ Unfortunately, these fixed effects would also absorb our measure of trust.

Therefore, in order to identify the effect of trust, we resort to the trust of origin, i.e., the level of trust prevailing in the province where an individual was born. If trust is “the product of preexisting communities of shared moral codes or values” (Fukuyama, 1995), it might be assimilated with education in the early years of one’s life. In such a case the level of trust an individual has vis-à-vis the rest of the world might be accurately reflected by the

⁶However, to rule out the possibility that tax evasion is driving our results we run the same regressions excluding self-employed workers (income underreporting is easier and thus more widespread among self employed workers). The results (not reported) are unchanged.

⁷We will deal with background risk more specifically in the next paragraph.

trust prevailing in the province where he was born. For all the people who are not resident in the province of birth, this measure of trust is not collinear with the province fixed effect. Thus, we estimate a linear probability model with province fixed effects and the trust of origin (plus the usual control variables). The trust of origin has a negative and statistically significant effect on the level of wealth invested in cash and this effect cannot be attributed to omitted variables at the local level.

One possible critique to our fixed effect estimates is that the results may be driven entirely by movers born in areas with very low levels of trust. To make sure that the effect of trust is not driven by a few individuals, we re-estimate the fixed effect model considering only movers moving from areas with low trust to areas with high trust. All results (not reported) remain the same.

A final concern is that the sample we use contains some repeated observations. While the level of wealth invested in cash changes over time, the residuals might be correlated across observations of the same individual. Since the cross-sectional correlation in the residuals is confined to only a subset of the observations, and among these, to pairs of observations, this is unlikely to be a problem. But rather than speculate, in Table 2B we re-estimate all the regressions restricting the sample to the first observation of every household. As expected, the standard errors are slightly bigger. But all the results remain the same.

B Investment in Deposits

Table 3 repeats the same regressions of Table 2 with the proportion of financial wealth invested in deposits as a dependent variable. Interestingly, when we use the Putnam measure of trust the proportion of financial wealth held in deposits increases in trust and this effect is statistically significant.

When we use the geographical indicator, however, we find that deposits are lower in the South (where trust is very low), but also lower in the North (where trust is high), albeit this latter effect is not statistically significant. This suggests that the proportion of deposits is particularly high in the central region of Italy. This is not very surprising. As we discuss in Section III, the predicted effect of trust on deposits is ambiguous, depending on whether the

most relevant portfolio choice is between cash and deposits or between deposits and stock. In the South, it is probably the former, in the North the latter. This will find confirmation when we look at the proportion of wealth invested in stock.

As Column III shows, trust still has a positive and statistically significant effect on the proportion of wealth held in deposits, even after controlling for North and South. By contrast the impact of trust of origin on deposits is negative, albeit not statistically significant.

C Investment in Stock

Table 4 estimates the effect of trust on the proportion of financial wealth invested in stock. As predicted, the effect is positive and statistically significant. This is true regardless of the measure of trust used. In particular, the trust of origin has a strong positive effect on the proportion of financial wealth invested in stock, even after controlling for fixed province effects. The impact is also economically meaningful. A one-standard deviation increase in trust leads to an increase of 13 percentage points in the proportion of wealth invested in stock – 4.4 times the mean.

There are two concerns with our specification. The first is that portfolio allocations are affected by the individual level of risk aversion and it may be possible that our trust measure is in fact capturing it. Fortunately, the 1995 survey makes an attempt to elicit attitudes towards risk: each survey participant is offered a hypothetical lottery and is asked to report the maximum price that he would be willing to pay in order to participate. By using the responses to the question we are able to construct an Arrow-Pratt measure of absolute risk aversion for 4,301 households. We thus re-estimated our basic regressions for cash, deposits and stocks on this sub sample including among the regressors the inverse of a measure of relative risk aversion, as implied by the solution of a standard portfolio problem a la Merton (Merton 1971). We compute the relative risk aversion by multiplying the absolute risk aversion and the level of household's consumption. In all three specifications, the coefficients of trust preserve the same signs and are still statistically significant, in spite of the smaller

sample.⁸

The second concern is that trust, as mentioned earlier, may be capturing differences in consumers exposure to uninsurable sources of uncertainty (background risk) which make them less willing to buy risky assets. To address this potential problem we use a section of the survey that collects data on the subjective probability distribution of future earnings: in the 1995 survey for half of the sampled households each household member in working age is asked to report his subjective assessment of the probability that he/she will lose his/her job (if employed) or find one (if unemployed) in the following twelve months. Conditional on being employed he/she is then asked to report the minimum and maximum earnings and the probability that earnings will fall below the mid-point of this range. Following Guiso, Jappelli and Pistaferri (1998) we have used this information, referred to the household head and available for 1916 households, to compute a measure of expected earnings and their variance. We then re-estimated our regressions for cash, deposits and stocks adding these variables scaled by total financial assets. In all cases the sign and significance of the coefficient of our measure of trust was unaffected, indicating that it is not reflecting omitted measures of background risk; the latter instead has a negative effect on the demand for stock and a positive one on that for deposits as suggested by theory.

In sum, the data confirm our predictions of the relation between trust and portfolio allocation in cash and stocks. These results cannot be attributed to some omitted variables at the local level and do not seem attributable to a spurious correlation of trust with risk aversion, or background risk.

D Use of Checks

Another useful indicator of the use of financial instruments is the reliance on checks to clear transactions. Table 5 reports the probit estimates of the effect of trust on the probability a household uses checks (recall that almost half of the sample does not).

⁸As further evidence that the coefficient of trust is not capturing risk aversion, we found that the correlation of trust and our measure of absolute risk aversion is negative, as one would expect, but extremely low (-.03). Also, in a regression of the logarithm of absolute risk aversion on the logarithm of consumption and trust, the latter carries a small negative coefficient but is statistically insignificant.

As the table shows, trust increases the probability of using checks, and this effect is statistically significant at the 1% level. The reported coefficients are the effect of a marginal change in the corresponding regressor on the probability of writing checks. Thus, we can easily compute the impact of a one standard deviation increase in trust: it leads to a 10% increase in the probability of using a check. Per capita GDP also has a positive impact on the probability of using checks. This effect, which is highly significant, also captures some of the relation between trust and use of checks. Finally, as to be expected, in areas where courts are more inefficient households use less checks, but this effect is not statistically significant. It is well possible that the cost of a legal procedure (relatively to the size of the check) to recover the money from a bad check is so large everywhere that differences in the level of legal enforcement become unimportant. If this interpretation is true, the role of trust is even more important in this market.

A household can write a check only if it owns a checking account. On the other hand, the reluctance in using checks and the lack of acceptance of personal checks undermine the main reason to hold a checking account, i.e., being able to write checks. Thus, we think it is correct not to restrict the sample to households that hold a checking account. At the same time, we saw in Table 3 that the decision to hold an account in general is influenced by trust, thus we want to be able to distinguish the effect of trust on check writing from the effect of trust on deposits.

For this reason, in column II the sample is restricted to households that own a checking account. The size of the coefficient of trust is halved, but it is still positive and statistically significant (at the 10% level). Thus, there is an independent effect of trust on check writing.

We find similar results when we use the geographical indicators of trust (column III). Checks are used less in the South (where trust is very low), and more in the North (where trust is high). Controlling for these geographical indicators, Putnam measure of trust still has a positive effect on the probability of writing a check (column IV), but this effect is not statistically significant.

In the linear probability model, however, the trust of origin is positive and highly statistically significant. This is interesting not only because it reassures us of the non spurious

nature of the results, but also because it sheds some light on the mechanism through which trust can work. In fact, the trust of origin reflects the level of trust of the household writing the check, but most likely not the level of trust of the people accepting checks. Thus, the results in column V suggest that the lack of trust in others not forging or stealing a check plays an important role. Alternatively, one can interpret this result as saying that indigenous populations do not accept checks from people coming from areas with low trust. This is a rational response if our measure of trust is also a proxy for trustworthiness, as found by Glaeser et al. (1999). Finally, we cannot rule out pure discrimination. Since most movers are southern, it may be the case that they tend to use less checks, not (only) because their level of trust in others is low, but also because other people in their province of residence are not willing to accept their checks.

E Availability of Credit to Consumers

Table 6 reports the results regarding the effect of trust on the availability of loans to households. We estimate a probit model of the effect of trust on the probability of being a discouraged or turned-down borrower, conditional on applying for a loan.⁹

As the table shows, trust has a negative effect on the probability of not having access to credit. This effect is statistically significant at the 1% level. The reported coefficients in Table 6 show that a one standard deviation increase in trust leads to a 0.48% decrease in the probability of being discouraged or turned down. This corresponds to a 16% decrease in the sample average probability of being a discouraged or turned down borrower.

We find much weaker coefficients when we use the geographical indicators of trust (column II). As expected, households in the North (where trust is higher) are less likely to be credit rationed than households in the South (where trust is lower), but the coefficients are much lower than those for the Putnam measure of trust. This suggests that the indicator variables capture some other effects that may be going in the opposite direction. For example, it is possible that in the South the larger presence of state-owned banks and the existence of

⁹We also estimated two separate probit models on the probability of being a discouraged borrower and on the probability of being turned down. The results (not reported) confirm those showed in Tables 6.

subsidized loan programs, controlling for other characteristics, increases the availability of loans to households. To isolate the impact of trust from other differences between North and South we estimate the effect of the Putnam measure of trust, controlling for the North and South indicators (column III). In both regressions the coefficient of trust is even larger than the one obtained in column I, suggesting that the geographical indicators of trust do not capture anything beyond Putnam measure of trust.

Column IV of Table 6 shows that in the linear probability model the trust of origin coefficient is negative and highly statistically significant.

F Informal Credit Market

Thus far, our analysis was restricted to institutional forms of investment and credit. Our dataset, however, provides us with information on the presence of informal loans, i.e., loans extended by friends or family members not living in the same household. As discussed in Section III, we expect that informal credit might partially substitute for formal credit wherever the latter is unavailable. Table 7 tests this prediction.

We estimate a probit model of the likelihood a household has a loan outstanding with friends or relatives on our measures of trust and the usual control variables (income, wealth, their squares, demographic characteristics, etc.). As expected, informal credit by friends or relatives is more widespread in low trust areas. This effect is statistically significant and economically non-negligible. A one standard deviation decrease in trust boosts the likelihood of an informal loan by almost 1% – a 24% increase in the sample average.

When we use the geographical indicators of trust (column II) the results are mixed. Contrary to what theory would predict, households living in the North (where trust is higher) are not less likely to receive loans from relatives and friends. By contrast, such probability is 1.3% higher for households living in the South (where trust is lower). Once we control for North and South, the effect of the Putnam measure of trust is virtually unchanged and still highly significant (column III).

These results are fully supported by the linear probability model that controls for province fixed effects (column IV). Households that come from low trust areas are more likely to receive

loans from friends or relatives. This is consistent with Banfield's (1958) and Fukuyama's (1995) claims that low trust societies rely more heavily on naturally high-trust relationships like friends and family. It is also consistent with individuals absorbing these attitudes in the early years of their lives.

V Empirical Results in the Firm Sample

Thus far, we have shown that trust affects the portfolio allocations of households, their use of financial instruments, and their access to formal and informal credit. An obvious question is whether these results would extend to more complex organizations like firms. Firms operate constantly on the market and, as such, may develop a reputation or may create alternative mechanisms to alleviate the negative effects of the lack of trust.

For this reason, we now move to analyze the impact of trust on firms' financing ability. We focus on two dimensions. First, we look at the probability that a firm's demand for credit is turned down, as done in Table 6.B for households. Second, we look at the availability of equity finance by studying the ownership structure of these firms. Since most of the firms in our sample are privately held, a good indicator of access to outside equity finance is the presence of other shareholders besides the controlling one.

A Availability of Credit to Firms

Table 8 reports the results regarding the effect of trust on the availability of loans to firms. We estimate a probit model of the effect of trust on the probability of a firm being turned down, conditional on applying for a loan. Besides controlling for GDP per capita and judicial efficiency in the province, as done in the households estimates, all regressions include a set of firm-level variables (a dummy equal to 1 for firms with below median employees, dummies for whether the firm belongs to a business group, is incorporated or has its major competitors in the same region; firm age, the three-year growth rate in sales, return on assets and a measure of leverage) which are meant to proxy for a firm's riskiness and profitability.

As the table shows, trust decreases the probability of being turned down and this effect

is statistically significant at the 1% level. The economic significance is even stronger: a one standard deviation increase in trust leads to a 2% decrease in the probability of being turned down, corresponding to a 36% decrease in the sample average probability of being turned down.¹⁰

As with households, we find a weaker effect when we use geographical indicators of trust (column II). As expected, firms located in the North (where trust is higher) are less likely to be credit rationed than firms located in the South (where trust is lower), but both coefficients are not statistically significant.

When we control for North and South (column III), the effect of Putnam measure of trust is still positive and borderline statistically significant.

B Ownership Structure

In Section C we showed that households are less likely to invest in equity in low trust areas. The counterpart of this effect should be that in these areas firms are less likely to have multiple shareholders. We test this hypothesis in Table 9. We estimate a probit model of the effect of trust on the probability of a firm having a single shareholder.

Firms located in high trust areas are more likely to have multiple shareholders and this effect is statistically significant at the 1% level. A one standard deviation increase in trust leads to a 3% increase in the probability of having a single shareholder, corresponding to an 17% increase in the sample average probability.

We find a weaker effect when we use geographical indicators of trust (column II). As expected, firms located in the North (where trust is higher) are less likely to have a single shareholder, while firms located in the South (where trust is lower) are more likely, but none of the two coefficients is statistically significant.

When we control for North and South (column III), the effect of Putnam measure of trust is still positive and statistically significant.

¹⁰Some of the coefficients that are estimated but not reported are interesting on their own. The probability of being turned down is lower for larger firms and firms belonging to a group; it is increasing in leverage and decreasing in age, profitability and sales growth.

VI When Does Trust Matter More?

Results so far have shown a remarkable and pervasive correlation between the degree of trust of an area and the use and availability of financial contracts. To gain more confidence on the causal nature of this correlation, we want to explore whether the magnitude of this effect varies according to the theoretical predictions outlined in Section III. Therefore, we will analyze how the impact of trust varies according to the quality of legal enforcement and the level of education of the investors.

A Trust and Legal Enforcement

If trust is important when contracts are incomplete, it should be particularly relevant when law enforcement is weak. Thus, we expect a higher marginal effect of trust in parts of Italy where law enforcement is comparatively worse.

In Table 10 we re-estimate our basic specifications, splitting the sample between provinces with relatively efficient judicial system (judicial inefficiency below the median of 3.7 years) and provinces with relatively inefficient judicial system (judicial inefficiency above the median).

Table 10.A reports the tobit estimates of the effect of trust on the fraction of financial wealth invested in cash, deposits, and stocks. In all cases the impact of trust is larger (in absolute terms) in areas with more inefficient courts. The effect of trust on the fraction of wealth invested in stock is three times as large in areas with weak law enforcement and this difference is statistically significant at the 1% level. Also, in the case of wealth invested in cash, the impact of trust is lower (only two-thirds) where the courts work better, albeit the difference is not statistically significant. Only in the case of deposits are the two coefficients very similar. As discussed in Section III, the demand of deposits requires less trust because they can be called on demand and because the supervision of the Bank of Italy reassures investors. Both of these protections do not rely on the efficiency of the court system. Thus, it is not very surprising that the effect of trust does not vary according to the quality of law enforcement.

The first two columns of Table 10.B present the probit estimates of the likelihood of using checks split according to the quality of legal enforcement in the area. The effect of trust is three times as large as areas with weak legal enforcement. The difference is statistically significant at the 1% level. In areas with better legal enforcement, trust does not have a statistically significant impact on the probability of using checks.

A similar picture emerges if we look at the effect of trust on access to credit. In areas with weak law enforcement, the effect of trust has the expected sign and is statistically significant both for the probability of being discouraged from borrowing and for the probability of being turned down after applying for a loan. By contrast, the effect is not significant (and quantitatively very small) in areas with better law enforcement.

Consistently, the effect of trust on informal credit is not statistically significant in areas with better law enforcement, while it is three times as big and statistically significant in areas with weak legal enforcement.

Similarly, the effect of trust on firms applying for a loan is not significant (both economically and statistically) in areas with a better court system, while it is three times as big and statistically significant in areas with weak legal enforcement (Table 10.C).

The only exception to this pattern emerges in the last two columns of Table 10.C, where the effect of trust on the likelihood of having a single shareholder is larger in areas with a better court system, albeit the difference is not statistically significant.

Overall, the results seem to conform very well to the prediction that trust matters more where legal enforcement is weak. This result raises the possibility that countries lacking social capital can compensate for it with better legal enforcement. In practice, however, countries deficient in social capital also have weak legal enforcement. For example, in the sample of 28 countries in Knack and Keefer (1996), we find a correlation of 0.83 between trust and judicial efficiency. This might not be a simple coincidence. Putnam (1993) and La Porta et al. (1997a) suggest that the lack of social capital may negatively affect the working of institutions, thus also the quality of law enforcement. If this were the case, our estimates would grossly underestimate the overall impact of social capital.

B Trust and Education

Information and the ability to assimilate it are essential inputs for portfolio allocation. If some investors are not endowed with the necessary ability or information to manage their portfolio, then they need to delegate this function. For the uninformed, delegation is the only alternative to keeping their money under a mattress. But delegation requires trust. Thus, to invest money in assets other than cash, trust becomes more necessary, the less sophisticated the investor. Similarly, understanding the risks involved with writing a check and the way to minimize them (e.g., writing ‘not transferable’ on the back) requires some level of sophistication. In the absence of sophistication, people will have to rely more on trust.

In our empirical analysis, we use education as a measure of access to information and information processing ability. The household sample contains the number of years of education of the household head. We split the sample at the median level of education (8 years, corresponding to the end of junior high school). Since for many years this was the mandatory level of schooling, there exists a large mass of people at that level, which we include in the low-education group. Hence, the higher number of observations in this subsample.

Table 11 presents the impact of trust on the portfolio allocation and use of checks subdivided according to the household heads level of education. As we can see in the first two columns, the impact of trust on the proportion of wealth invested in cash is three times larger for low-educated households than for highly educated households. The difference is statistically significant at the 1% level.

The same can be said for deposits. In fact, trust has no significant impact on the proportion of wealth invested in deposits among educated people, as should be the case, since deposits are very well protected contractually. By contrast, trust has an economically and statistically significant impact on the proportion of wealth invested in deposits among households with low levels of education. A one standard deviation increase in trust increases the proportion of wealth in deposits by 8 percentage points, equal to a 14% increase with respect to the mean. The difference between the impacts of trust in the two subgroups is significant

at the 1% level.

Also the proportion of wealth invested in stocks is more sensitive to trust among less educated people. The difference, however, is quantitatively small (only 20%) and is not statistically significant. This is surprising, because we would have expected the effect to be stronger for equity investments, which require much more knowledge to be analyzed. This weak result might be due to the paucity of low-educated families who own stock (3.6% versus 15% of the well educated families and a population average of 7%). The extreme infrequency of the phenomenon makes it more subject to confounding effects. For example, widows may retain the portfolio allocation of their deceased husbands, even when they do not have the same level of education. To see whether this plays any role we re-estimated the two regressions restricting the sample to male household's head. The difference (not reported) increases to 34%, but it is still not statistically significant.

Finally, the last two columns of Table 11 report the estimates of the impact of trust on the probability of using a check in the two subsamples. The impact of trust among low educated people is eight times as big as the impact of trust among highly educated people, and this difference is statistically significant at the 1% level. In fact, trust has no statistically significant impact among highly educated people.

Overall, the results suggest that trust is a more important input among less educated people.

VII The Origins of Trust

In all the regressions we controlled for a measure of the quality of the court system. Therefore, our results on trust cannot be interpreted as just the expectation of prompt legal enforcement. This rules out the first of the three hypotheses on the ultimate origin of trust discussed in Section III. The other two interpretations are not mutually exclusive. Trust may capture the expectation of non-legal enforcement, as argued by Putnam and formalized by Spagnolo (1999). People trust each other because they interact in many dimensions and thus have a lot of opportunities of “punishing” a person who abuses their trust (Coleman, 1990).

Alternatively, trust may reflect the expectation that people will behave cooperatively, as a result of a moral attitude imprinted with education.

To try and identify the relative importance of the two, we focus on the households that moved from their place of origin. For those, it is possible to separately identify the effect of the environment they grew up in and the environment where they live. For these households, then, we create two separate measures of trust. One is the Putnam measure of trust for the province of birth, the other is the Putnam measure of trust for the province of residence. To allow for possible differences between movers and non movers, we introduce a separate measure of trust for the households that did not move. This is the Putnam measure of trust for the province of residence, which by construction coincides with the province of birth.

In Table 12 we re-estimate all the households regressions introducing these three variables.¹¹ The pattern of all the results is fairly similar. In all the specifications, the trust of origin has the same sign as the trust of residence and in four out of seven cases it is statistically significant at conventional levels. With only one exception, the trust of residence is always more important, representing between 55 and 92% of the overall effect of trust (i.e., the sum of the effect of the trust of origin and the trust of residence). We think that this decomposition may hold in general, since the overall effect of trust for movers is almost identical to the effect of trust for non movers in all regressions.

We find that the likelihood of receiving a loan from relatives and friends is more sensitive to the trust of origin than to that of residence, albeit the difference is not statistically significant. This is not surprising, since the network of friends and family should remain where individuals grew up, and not where they currently live.

One possible objection to our interpretation that the trust of origin affects the use and availability of financial contracts is that the estimated coefficients may simply capture the effects of discrimination. While we cannot exclude this in general, in some cases we can rule out that discrimination is the only source of this effect. In fact, it would be hard to argue that individuals born in low trust areas hold more cash and less stock as a result of

¹¹Of course, we cannot perform the same tests for firms, since they do not have a province of birth.

discrimination, as columns I and III of Table VII indicate.

On the other hand, we do not think that statistical discrimination (i.e., the use of the place of origin as a proxy for the true trustworthiness) is necessarily inconsistent with (or alternative to) the importance of trust. In fact, if people coming from low trust areas are less trustworthy (as suggested by the work of Glaeser et al. (1999)), it is optimal for others to infer their level of trustworthiness on the basis of their ethnicity or place of birth. This would be tantamount to discriminating against them.

Finally, if discrimination plays a very big role in the relation between trust and the use of financial contracts, the overall effect of trust for movers should be much bigger than the effect of trust for non movers who do not face discrimination. As we already mentioned, this is not the case. The sum of the effects of the two trust measures for movers is almost identical to the total effect for non movers.

VIII Conclusions

Our analysis identifies a very strong correlation between the level of social capital prevailing in an area and the use and availability of financial contracts. This effect is not simply due to omitted environmental variables, because the behavior of movers is still affected by the level of trust of their provinces of origin. This effect is also bigger when legal enforcement is weaker and when theory predicts social capital should matter more.

Thus, our findings show that social capital plays an important role in the degree of financial development across different parts of Italy. The obvious question is how generalizable these results are. Is this just a feature of a country with an inefficient legal enforcement? Is it an effect we can find only in a microeconomic analysis that does not have any aggregate consequences?

We cannot fully rule out the first possibility. In fact, our analysis of the interaction between trust and legal enforcement suggests that trust is much less important (sometimes not important at all) where the court system is more efficient or where people are more educated. One could legitimately question the importance of social capital in highly developed coun-

tries, with good legal enforcement and high levels of education. Most of the world, however, does not fit this description. Hence, social capital is likely to be very important in explaining the success (or lack thereof) of developing countries.

We can, instead, try to answer the second question. Knack and Keefer (1996) report an aggregate measure of trust by country, derived from the World Values Survey. After controlling for the degree of law enforcement, we find a positive and statistically significant correlation between this measure of trust and several indicators of financial development used by La Porta et al. (1997b): the ratio of stock market capitalization to GDP, the number of listed companies per million of population, and the diffusion of corporate ownership. While this is far from a definite proof, it suggests that our results extend beyond a single country. More importantly, all these results together emphasize the pervasiveness of the effects of social capital and the importance of more research in this area.

Table 1:

Summary Statistics

Panel A comes from the Survey of Households Income and Wealth (SHIW), covering the period 1989-1995. The proportion of a household portfolio invested in cash/deposits/stocks is obtained as the amount of holdings in cash/deposits/stocks divided by total household financial wealth. "Use of checks" is an indicator variable equal to one if a household responds positively to the question: "Did you or some other member of the household issue checks in the course of the year to settle transactions?". "Discouraged and Turned down" is an indicator variable equal to one if an household responds positively to at least one of the following questions: "During the year did you or a member of the household think of applying for a loan or a mortgage to a bank or other financial intermediary, but then changed your mind on the expectation that the application would have been turned down?"; "During the year did you or a member of the household apply for a loan or a mortgage to a bank or other financial intermediary and your application was turned down?". "Family loan" is an indicator variable equal to one if an household responds positively to the question: "As of the end of the year did you have debts outstanding towards friends or relatives not living with you?" Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. The variable north (south) is an indicator variable taking value one if an individual is resident in a northern (southern) region of Italy (which according to Putnam (1993) are characterized by different level of social capital and trust). Trust of origin is the Putnam measure of social capital computed for the province of birth of an individual. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. For monetary variables, as Per Capita GDP, Household Income and Household Wealth, we use an exchange rate of \$ 1 = Lit 1,800.

Panel B comes from the Survey of Manufacturing Firms (SMF) conducted every three years in Italy on a sample of small and medium-sized manufacturing firms with at least 10 employees. "Turned down" is an indicator variable taking value one if a firm answers positively to the question: "In 1994 did you apply to a bank or a financial intermediary to have your loans increased and have been turned down by all of those you applied to". "One shareholder" is an indicator variable taking value one if the largest shareholder holds 100 percent of the firm's shares. Firm's age is computed as 1994 minus the year of foundation. Leverage is the ratio of total firm debt as of the end of 1993 to total end of period asset. "Number of employees" is the number of firm's employees as of the end of 1993. "Sales" is the firm's sales (million dollars) as of the end of 1993. "Group" is an indicator variable equal to one if the firm belongs to a group; zero otherwise. "Corporation" is another indicator variable equal to one if the firm is incorporated. Small size is an indicator variable taking value one if the number of employees in 1994 is below the median value (which is equal to 67). "Local competition" is an indicator variable equal to one if the firm's major competitors are located in the same geographical area. For monetary variables, as Per Capita GDP, and Sales, we use an exchange rate of \$ 1 = Lit 1,800.

Panel A: Household Sample

	Mean	St. Dev.	Min.	Max.	N
% wealth in cash	0.24	0.34	0.00	1.00	32,286
% wealth in deposits	0.56	0.38	0.00	1.00	32,286
% wealth in stock	0.03	0.12	0.00	1.00	32,286
Use of checks	0.49	0.50	0.00	1.00	32,617
Discouraged	0.02	0.14	0.00	1.00	32,617
Turned down	0.01	0.10	0.00	1.00	32,617
Family loans	0.03	0.18	0.00	1.00	32,617
Trust	0.78	0.07	0.63	0.89	32,617
Trust -Origin	0.77	0.08	0.62	0.89	32,136
Judicial inefficiency	3.63	1.25	1.44	8.32	32,617
Judicial inefficiency squared	14.75	11.10	2.08	69.28	32,617
North	0.42	0.49	0.00	1.00	32,617
South	0.37	0.48	0.00	1.00	32,617
Per capita GDP (in dollars)	16,666	5,555	5,555	38,888	32,617
Household Income (in dollars)	25,318	18,429	0	428,376	32,617
Household Wealth (in dollars)	136,451	233,101	-104,023	9,888,889	32,396
Age	53.04	15.10	17.00	90.00	32,617
Education	8.21	4.67	0.00	18.00	32,617
# people living in the house	3.00	1.37	1.00	9.00	32,617
Married	0.74	0.44	0.00	1.00	32,617
Male	0.78	0.42	0.00	1.00	32,617
# Kids	0.65	0.94	0.00	7.00	32,617

Panel B: Firm Sample

	Mean	St. Dev.	Min.	Max.	N
Turned down	0.05	0.22	0.00	1.00	3,556
One shareholder	0.16	0.37	0.00	1.00	4,173
Trust	0.82	0.05	0.62	0.89	4,361
North	0.73	0.44	0.00	1.00	4,434
South	0.09	0.29	0.00	1.00	4,434
Judicial Inefficiency	3.16	0.91	1.44	8.32	4,361
Judicial inefficiency squared	10.79	7.41	2.07	69.28	4,361
Per capita GDP (in dollars)	16,666	5,555	5,555	38,888	4,361
Age	26.34	23.18	0.00	144.00	4,403
Growth (%)	1.24	1.08	0.00	54.90	4,152
Leverage	0.26	0.19	0.00	0.83	3,582
ROA	0.03	0.09	-0.63	1.69	3,572
# employees	231	1,329	3	76,000	3,572
Sales (million dollars)	50,555	493,333	0	22,550,000	3,572
Group	0.32	0.47	0.00	1.00	4,419
Corporation	0.85	0.36	0.00	1.00	4,434
Small size	0.50	0.50	0.00	1.00	4,434
Local competition	0.17	0.38	0.00	1.00	4,434

Table 2:

Effect of Trust on the Amount of Financial Wealth Invested in Cash

The dependent variable is the proportion of financial wealth a household detains in cash. For all columns but the last one the reported coefficients are tobit estimates. In the last column the reported coefficients are OLS estimates with fixed province effects. The sample is a quasi-panel of Italian families in 1989, 1991, 1993 and 1995. Some of the individuals are interviewed in more than one year. Panel A contains multiple observations of the same individual, while Panel B contains only the earliest observation for every respondent. Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. The variable north (south) is an indicator variable taking value one if an individual is resident in a northern (southern) region of Italy (which according to Putnam (1993) are characterized by different level of social capital and trust). Trust of origin is the Putnam measure of social capital computed for the province of birth of an individual. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, household head age (linear and squared), his/her education (number of years of schooling), indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has, plus three calendar year dummies. The standard errors reported in parentheses are corrected for clustering of the residual at the provincial level.

Panel A: Whole Sample

	I	II	III	IV
Trust	-1.013 (0.162)		-0.539 (0.197)	
North		-0.051 (0.016)	-0.048 (0.014)	
South		0.148 (0.028)	0.087 (0.028)	
Trust of origin				-0.236 (0.040)
Judicial inefficiency	0.127 (0.028)	0.084 (0.027)	0.087 (0.024)	
Judicial inefficiency squared	-0.014 (0.003)	-0.010 (0.003)	-0.010 (0.003)	
Per capita GDP	-1.001 (0.356)	-0.323 (0.485)	-0.151 (0.390)	
Pseudo-R2	0.199	0.202	0.204	0.259
N	32,286	32,286	32,286	31,805

Panel B: Only Non-Repeated Observations

	I	II	III	IV
Trust	-0.998 (0.165)		-0.579 (0.200)	
North		-0.046 (0.017)	-0.044 (0.014)	
South		0.146 (0.030)	0.079 (0.031)	
Trust of origin				-0.257 (0.047)
Judicial inefficiency	0.134 (0.033)	0.093 (0.033)	0.097 (0.030)	
Judicial inefficiency squared	-0.014 (0.004)	-0.010 (0.004)	-0.011 (0.004)	
Per capita GDP	-1.365 (0.382)	-0.747 (0.519)	-0.518 (0.410)	
Pseudo-R2	0.206	0.207	0.210	0.272
N	23,019	23,019	23,019	22,658

Table 3:

Effect of Trust on the Amount of Financial Wealth Invested in Bank Deposits

The dependent variable is the proportion of financial wealth a household detains in bank and postal deposits. For all columns but the last one the reported coefficients are tobit estimates. In the last column the reported coefficients are OLS estimates with fixed province effects. The sample is a quasi-panel of Italian families in 1989, 1991, 1993 and 1995. Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. The variable north (south) is an indicator variable taking value one if an individual is resident in a northern (southern) region of Italy (which according to Putnam (1993) are characterized by different level of social capital and trust). Trust of origin is the Putnam measure of social capital computed for the province of birth of an individual. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, household head age (linear and squared), his/her education (number of years of schooling), indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has, plus three calendar year dummies. The standard errors reported in parentheses are corrected for the potential clustering of the residual at the provincial level.

	I	II	III	IV
Trust	0.845 (0.153)		0.648 (0.197)	
North		-0.021 (0.014)	-0.024 (0.013)	
South		-0.128 (0.025)	-0.055 (0.024)	
Trust of origin				-0.069 (0.049)
Judicial inefficiency	-0.074 (0.027)	-0.070 (0.028)	-0.074 (0.026)	
Judicial inefficiency squared	0.008 (0.003)	0.008 (0.003)	0.008 (0.003)	
Per capita GDP	-0.543 (0.511)	-0.521 (0.555)	-0.729 (0.446)	
Pseudo-R2	0.045	0.044	0.046	0.062
N	32,286	32,286	32,286	31,805

Table 4:

Effect of Trust on the Demand for Equity

The dependent variable is the proportion of financial wealth a household detains in stocks or mutual funds. For all columns but the last one the reported coefficients are tobit estimates. In the last column the reported coefficients are OLS estimates with fixed province effects. The sample is a quasi-panel of Italian families in 1989, 1991, 1993 and 1995. Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. The variable north (south) is an indicator variable taking value one if an individual is resident in a northern (southern) region of Italy (which according to Putnam (1993) are characterized by different level of social capital and trust). Trust of origin is the Putnam measure of social capital computed for the province of birth of an individual. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, household head age (linear and squared), his/her education (number of years of schooling), indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has, plus three calendar year dummies. The standard errors reported in parentheses are corrected for the potential clustering of the residual at the provincial level.

	I	II	III	IV
Trust	1.883 (0.361)		0.873 (0.492)	
North		0.219 (0.044)	0.210 (0.042)	
South		-0.229 (0.067)	-0.130 (0.087)	
Trust of origin				0.052 (0.015)
Judicial inefficiency	-0.071 (0.099)	0.046 (0.081)	0.037 (0.076)	
Judicial inefficiency squared	0.006 (0.011)	-0.003 (0.010)	-0.002 (0.010)	
Per capita GDP	1.017 (1.664)	-0.175 (0.992)	-0.464 (0.894)	
Pseudo-R2	0.258	0.265	0.267	0.138
N	32,286	32,286	32,286	31,805

Table 5:

Effect of Trust on the Use of Checks

The dependent variable is an indicator variable taking value one if the interviewed household responds positively to the question: “Did you or some other member of the household issue checks in the course of the year to settle transactions?” For all columns but the last one the reported coefficients are probit estimates of the effect of a marginal change in the corresponding regressor on the probability of using a check, computed at the sample mean of the independent variables. The coefficients reported in the last column are from a linear probability model with fixed province effects. The sample is a quasi-panel of Italian families in 1989, 1991, 1993 and 1995. In column II the sample is restricted to the individuals owning a bank account. Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. The variable north (south) is an indicator variable taking value one if an individual is resident in a northern (southern) region of Italy (which according to Putnam (1993) are characterized by different level of social capital and trust). Trust of origin is the Putnam measure of social capital computed for the province of birth of an individual. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, household head age (linear and squared), his/her education (number of years of schooling), indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has, plus three calendar year dummies. The standard errors reported in parentheses are corrected for the potential clustering of the residual at the provincial level.

	I	II	III	IV	V
Trust	0.713 (0.196)	0.364 (0.205)		0.157 (0.250)	
North			0.107 (0.031)	0.106 (0.032)	
South			-0.098 (0.028)	-0.080 (0.034)	
Trust of origin					0.231 (0.055)
Judicial inefficiency	-0.097 (0.065)	-0.061 (0.065)	-0.033 (0.051)	-0.034 (0.051)	
Judicial inefficiency squared	0.009 (0.006)	0.005 (0.006)	0.003 (0.005)	0.004 (0.005)	
Per capita GDP	4.632 (0.944)	4.502 (0.924)	3.450 (0.636)	3.401 (0.637)	
Pseudo-R2	0.270	0.207	0.275	0.275	0.329
N	32,396	27,683	32,396	32,396	31,915

Table 6:

Effect of Trust on the Availability of Consumer Credit

The dependent variable is an indicator variable taking value one if a household responds positively to at least one of the following questions: “During the year did you or a member of the household think of applying for a loan or a mortgage to a bank or other financial intermediary, but then changed your mind on the expectation that the application would have been turned down?”; “During the year did you or a member of the household applied for a loan or a mortgage to a bank or other financial intermediary and your application was turned down?”. In columns I-III, the reported coefficients are probit estimates of the effect of a marginal change in the corresponding regressor on the probability of being discouraged or turned down, computed at the sample mean of the independent variables. In column IV the reported coefficients are OLS estimates of a linear probability model with fixed province effects. The sample is a quasi-panel of Italian families in 1989, 1991, 1993 and 1995. Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, household head age (linear and squared), his/her education (number of years of schooling), indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has, plus three calendar year dummies. The standard errors, which are reported in parentheses, are corrected for the potential clustering of the residual at the provincial level.

	I	II	III	IV
Trust	-0.064 (0.018)		-0.085 (0.024)	
North		-0.005 (0.003)	-0.005 (0.003)	
South		0.003 (0.004)	-0.006 (0.004)	
Trust of origin				-0.041 (0.022)
Judicial inefficiency	0.011 (0.004)	0.009 (0.005)	0.010 (0.004)	
Judicial inefficiency squared	-0.001 (0.000)	-0.001 (0.000)	-0.001 (0.000)	
Per capita GDP	0.276 (0.103)	0.235 (0.081)	0.261 (0.087)	
Pseudo-R2	0.068	0.067	0.069	0.020
N	32,396	32,396	32,396	31,915

Table 7:

Effect of Trust on the Informal Credit Market

The dependent variable is an indicator variable taking value one if a household responds positively to the question: “As of the end of the year did you have debts outstanding towards friends or relatives not living with you?” In columns I-III the reported coefficients are probit estimates of the effect of a marginal change in the corresponding regressor on the probability of being indebted with a relative or friend, computed at the sample mean of the independent variables. In column IV the reported coefficients are OLS estimates of a linear probability model with fixed province effects. The sample is a quasi-panel of Italian families in 1989, 1991, 1993 and 1995. Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. Trust of origin is the Putnam measure of social capital computed for the province of birth of an individual. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, household head age (linear and squared), his/her education (number of years of schooling), indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has, plus three calendar year dummies. The standard errors reported in parentheses and are corrected for the potential clustering of the residual at the provincial level.

	I	II	III	IV
Trust	-0.104 (0.026)		-0.129 (0.043)	
North		0.004 (0.006)	0.005 (0.005)	
South		0.011 (0.006)	-0.004 (0.006)	
Trust of origin				-0.072 (0.023)
Judicial inefficiency	-0.001 (0.008)	0.001 (0.008)	0.002 (0.007)	
Judicial inefficiency squared	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	
Per capita GDP	0.198 (0.124)	0.106 (0.143)	0.144 (0.152)	
Pseudo-R2	0.083	0.080	0.083	0.032
N	32,396	32,396	32,396	31,915

Table 8:

Effect of Trust on the Availability of Credit to Firms

The dependent variable is an indicator variable taking value one if a firm responds positively to the question: “In 1994 did you apply to a bank or a financial intermediary to have your loans increased and have been turned down by all of those you applied to”. The sample is a cross-section of Italian manufacturing firms with at least 10 employees. Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): firm age (computed as 1994 minus the year of foundation), its growth rate in sales, its leverage (ratio of debt to total assets), return on assets, indicator variables for whether the firm belongs to a group, is incorporated, has a number of employees below the median value, and has its major competitors located in the same area. The reported coefficients are probit estimates of the effect of a marginal change in the corresponding regressor on the probability of being turned down, computed at the sample mean of the independent variables. The standard errors reported in parentheses and are corrected for the potential clustering of the residual at the provincial level.

	I	II	III
Trust	-0.261 (0.066)		-0.142 (0.082)
North		-0.001 (0.014)	0.001 (0.014)
South		0.068 (0.028)	0.041 (0.027)
Judicial inefficiency	0.001 (0.020)	0.003 (0.020)	0.001 (0.020)
Judicial inefficiency squared	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)
Per capita GDP	-0.351 (0.270)	-0.225 (0.274)	-0.229 (0.266)
Pseudo-R2	0.039	0.040	0.041
N	2,840	2,840	2,840

Table 9:

Effect of Trust on Firms' Ownership Structure

The dependent variable is an indicator variable taking value one if a firm has a single shareholder owning all the shares. The sample is a cross-section of Italian manufacturing firms with at least 10 employees. Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): firm age (computed as 1994 minus the year of foundation), its growth rate in sales, its leverage (ratio of debt to total assets), return on assets, indicator variables for whether the firm belongs to a group, is incorporated, has a number of employees below the median value, and has its major competitors located in the same area. The reported coefficients are probit estimates of the effect of a marginal change in the corresponding regressor on the probability of having just one shareholder, computed at the sample mean of the independent variables. The standard errors reported in parentheses and are corrected for the potential clustering of the residual at the provincial level.

	I	II	III
Trust	-0.394 (0.152)		-0.468 (0.167)
North		-0.023 (0.017)	-0.015 (0.017)
South		0.021 (0.030)	-0.029 (0.028)
Judicial inefficiency	-0.039 (0.029)	-0.028 (0.030)	-0.026 (0.029)
Judicial inefficiency squared	0.003 (0.004)	0.004 (0.004)	0.004 (0.004)
Per capita GDP	0.324 (0.402)	0.319 (0.483)	0.286 (0.420)
Pseudo-R2	0.105	0.104	0.105
N	3,268	3,268	3,268

Table 10:

Trust and Law Enforcement

This table re-estimates the basic regressions, splitting the sample between provinces with relatively efficient judicial system (judicial inefficiency below the median) and provinces with relatively inefficient judicial system (judicial inefficiency above the median). Judicial inefficiency is measured by the number of years it takes to complete a first-degree trial in the local courts. Panels A and B refer to the household sample, Panel C to the firm sample.

In Panels A and B, the proportion of a household portfolio invested in cash/deposits/stocks is obtained as the amount of holdings in cash/deposits/stocks divided by total household financial wealth. “Use of checks” is an indicator variable equal to one if a household responds positively to the question: “Did you or some other member of the household issue checks in the course of the year to settle transactions?”. “Discouraged or Turned down” is an indicator variable equal to one if an household responds positively to at least one of the following questions: “During the year did you or a member of the household think of applying for a loan or a mortgage to a bank or other financial intermediary, but then changed your mind on the expectation that the application would have been turned down?”, “During the year did you or a member of the household applied for a loan or a mortgage to a bank or other financial intermediary and your application was turned down?”. “Loan F&F” is an indicator variable equal to one if a household responds positively to the question: “As of the end of the year did you have debts outstanding towards friends or relatives not living with you?”. Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. The variable north (south) is an indicator variable taking value one if an individual is resident in a northern (southern) region of Italy (which according to Putnam (1993) are characterized by different level of social capital and trust). Trust of origin is the Putnam measure of social capital computed for the province of birth of an individual. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, household head age (linear and squared), his/her education (number of years of schooling), indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has, plus three calendar year dummies.

In Panel C, “turned down” is an indicator variable taking value one if a firm answers positively to the question: “In 1994 did you apply to a bank or a financial intermediary to have your loans increased and have been turned down by all of those you applied to”. “One shareholder” is an indicator variable taking value one if the largest shareholder holds 100 percent of the firm’s shares. All the regressions contain the following control variables (not reported): firm age (computed as 1994 minus the year of foundation), its growth rate in sales, its leverage (ratio of debt to total assets), return on assets, indicator variables for whether the firm belongs to a group, is incorporated, and has a number of employees below the median value.

Panel A reports Tobit estimates, panel B and C probit ones. In such cases the reported coefficients are probit estimates of the effect of a marginal change in the corresponding regressor on the probability of having just one shareholder, computed at the sample mean of the independent variables. The standard errors reported in parentheses are corrected for the potential clustering of the residual at the provincial level.

Panel A: Household sample - I						
	% cash in portfolio		% deposits in portfolio		% stock in portfolio	
	Efficient	Inefficient	Efficient	Inefficient	Efficient	Inefficient
Trust	-0.729	-1.172	0.707	0.847	0.891	3.277
	(0.228)	(0.209)	(0.192)	(0.243)	(0.419)	(0.495)
Judicial inefficiency	-0.307	-0.025	-0.187	0.077	1.468	-0.327
	(0.133)	(0.058)	(0.155)	(0.066)	(0.446)	(0.216)
Judicial inefficiency squared	0.069	-0.001	0.030	-0.004	-0.282	0.032
	(0.026)	(0.005)	(0.029)	(0.006)	(0.080)	(0.019)
Per capita GDP	-1.108	-0.479	-0.617	-0.158	1.622	-5.236
	(0.620)	(0.588)	(0.564)	(0.727)	(1.715)	(1.897)
Pseudo-R2	0.253	0.156	0.052	0.060	0.237	0.278
N	17,144	15,142	17,144	15,142	17,144	15,142

Panel B: Household sample- II						
	Prob. Use of checks		Prob. Discouraged or turned down		Loans F & F	
	Efficient	Inefficient	Efficient	Inefficient	Efficient	Inefficient
Trust	0.267	1.106	0.000	-0.109	-0.048	-0.152
	(0.267)	(0.169)	(0.027)	(0.024)	(0.036)	(0.043)
Judicial inefficiency	0.518	-0.028	-0.039	0.010	0.052	-0.043
	(0.419)	(0.084)	(0.019)	(0.013)	(0.048)	(0.020)
Judicial inefficiency squared	-0.101	0.004	0.009	-0.001	-0.008	0.004
	(0.074)	(0.007)	(0.003)	(0.001)	(0.009)	(0.002)
Per capita GDP	4.561	2.893	0.040	0.552	0.033	0.141
	(0.963)	(0.591)	(0.128)	(0.105)	(0.120)	(0.247)
Pseudo-R2	0.239	0.284	0.067	0.075	0.082	0.093
N	17,198	15,198	17,198	15,198	17,198	15,19

Panel C: Firm sample				
	Prob. Turned down		Prob. Only one sharehold.	
	Efficient	Inefficient	Efficient	Inefficient
Trust	-0.104	-0.278	-0.588	-0.374
	(0.158)	(0.064)	(0.235)	(0.182)
Judicial inefficiency	-0.189	-0.021	0.291	0.094
	(0.168)	(0.029)	(0.337)	(0.055)
Judicial inefficiency squared	0.041	0.001	-0.054	-0.007
	(0.040)	(0.003)	(0.074)	(0.005)
Per capita GDP	0.740	-0.705	-1.460	1.490
	(0.334)	(0.286)	(0.408)	(0.556)
Pseudo-R2	0.045	0.060	0.108	0.127
N	1,194	1,616	1,397	1,871

Table 11:

Trust and Education

This table re-estimates the basic regressions for the use of financial instruments, splitting the sample on the basis of the level of education of the household's head. A household is defined low educated if the head has no more than 8 years of education. Correspondingly, a household is defined as highly educated if the head has more than 8 years of education. The proportion of a household portfolio invested in cash/deposits/stocks is obtained as the amount of holdings in cash/deposits/stocks divided by total household financial wealth. "Use of checks" is an indicator variable equal to one if a household responds positively to the question: "Did you or some other member of the household issue checks in the course of the year to settle transactions?". Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. The variable north (south) is an indicator variable taking value one if an individual is resident in a northern (southern) region of Italy (which according to Putnam (1993) are characterized by different level of social capital and trust). Trust of origin is the Putnam measure of social capital computed for the province of birth of an individual. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, household head age (linear and squared), his/her education (number of years of schooling), indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has, plus three calendar year dummies.

Panel A reports Tobit estimates, panel B and C probit ones. In such cases the reported coefficients are probit estimates of the effect of a marginal change in the corresponding regressor on the probability of having just one shareholder, computed at the sample mean of the independent variables. The standard errors reported in parentheses are corrected for the potential clustering of the residual at the provincial level.

	% cash in portfolio		% deposits in portfolio		% stock in portfolio		Use of checks	
	Education level		Education level		Education level		Education level	
	Low	High	Low	High	Low	High	Low	High
Trust	-1.186	-0.387	1.148	-0.037	1.999	1.651	0.857	0.084
	(0.212)	(0.081)	(0.200)	(0.102)	(0.501)	(0.322)	(0.183)	(0.167)
Judicial inefficiency	0.155	0.056	-0.115	0.024	0.131	-0.158	-0.097	-0.055
	(0.034)	(0.017)	(0.034)	(0.027)	(0.124)	(0.103)	(0.057)	(0.055)
Judicial inefficiency squared	-0.017	-0.006	0.013	-0.002	-0.020	0.016	0.009	0.004
	(0.004)	(0.002)	(0.004)	(0.003)	(0.015)	(0.012)	(0.005)	(0.006)
Per capita GDP	-1.025	-0.534	-0.161	-1.439	-0.793	1.503	4.868	1.839
	(0.490)	(0.245)	(0.454)	(0.717)	(2.207)	(1.537)	(1.210)	(0.678)
Pseudo-R2	0.172	0.984	0.061	0.084	0.247	0.183	0.246	0.113
N	22,353	9,933	22,353	9,933	22,353	9,933	22,353	9,933

Table 12:

The Origins of Trust

In this table we modify the way in which trust enters all the basic regressions for households. For the families that moved across provinces, we differentiate between trust of the province of birth and trust of the province of residence. Then, we have the trust of people who did not move. The proportion of a household portfolio invested in cash/deposits/stocks is obtained as the amount of holdings in cash/deposits/stocks divided by total household financial wealth. "Use of checks" is an indicator variable equal to one if a household responds positively to the question: "Did you or some other member of the household issue checks in the course of the year to settle transactions?". "Discouraged or Turned Down" is an indicator variable equal to one if a household responds positively to at least one of the following questions: "During the year did you or a member of the household think of applying for a loan or a mortgage to a bank or other financial intermediary, but then changed your mind on the expectation that the application would have been turned down?", "During the year did you or a member of the household applied for a loan or a mortgage to a bank or other financial intermediary and your application was turned down?". "Loan F&F" is an indicator variable equal to one if a household responds positively to the question: "As of the end of the year did you have debts outstanding towards friends or relatives not living with you?" Trust is an indicator of social capital at the local level devised by Putnam (1993). It is the average participation to national referendums, measured at the provincial level. The variable north (south) is an indicator variable taking value one if an individual is resident in a northern (southern) region of Italy (which according to Putnam (1993) are characterized by different level of social capital and trust). "Trust non movers" is our measure of trust interacted with a dummy variable equal to one if the province of residence is equal to the province of origin of the household's head. "Trust of origin movers" is our measure of trust computed for the province of birth of the household's head interacted with a dummy variable equal to one if the province of origin is not equal to the province of residence. "Trust of residence movers" is our measure of trust computed for the province of residence interacted with a dummy variable equal to one if the province of origin is not equal to the province of residence. Judicial inefficiency is the number of years it takes to complete a first-degree trial in the local courts. All the regressions contain the following control variables (not reported): household income (linear and squared), household wealth (linear and squared), the number of people belonging to the household, the number of kids in the household, household head age (linear and squared), his/her education (number of years of schooling), indicator variables for whether the head is married, is a male, for the sector in which he/she works, and for the level of job he/she has, plus three calendar year dummies. The first three columns report Tobit estimates, the others probit ones. In these latter cases the reported coefficients are estimates of the effect of a marginal change in the corresponding regressor on the probability of having just one shareholder, computed at the sample mean of the independent variables. The standard errors reported in parentheses are corrected for the potential clustering of the residual at the provincial level.

	Cash	Deposits	Stock	Checks	Discouraged or Turned down	Loan from F&F
Trust non movers	-1.035 (0.162)	0.833 (0.155)	2.026 (0.365)	0.733 (0.195)	-0.071 (0.018)	-0.118 (0.026)
Trust of origin movers	-0.279 (0.100)	0.050 (0.122)	0.657 (0.189)	0.300 (0.082)	- 0.027 (0.017)	-0.066 (0.022)
Trust of residence movers	-0.777 (0.174)	0.806 (0.185)	1.347 (0.210)	0.480 (0.203)	-0.041 (0.025)	-0.046 (0.031)
Judicial inefficiency	0.125 (0.028)	-0.074 (0.027)	-0.061 (0.032)	-0.096 (0.064)	0.011 (0.004)	0.000 (0.007)
Judicial inefficiency squared	-0.013 (0.003)	0.008 (0.003)	0.005 (0.004)	0.009 (0.006)	-0.001 (0.000)	0.000 (0.001)
Per capita GDP	-1.015 (0.357)	-0.610 (0.003)	1.197 (0.663)	4.518 (0.920)	0.260 (0.107)	0.169 (0.127)
Pseudo-R2	0.201	0.046	0.260	0.270	0.069	0.086
N	31,805	31,805	31,805	31,915	31,915	31,915

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Appendix

1. The SHIW

The Bank of Italy Survey of Household Income and Wealth (SHIW) collects detailed data on demographics, households' consumption, income and balance sheets. The survey started to be run in the mid 1960s but is available on tape only since 1984. Over time, the survey has gone through various changes regarding sample size and design, sampling methodology and questionnaire contents. Since 1989, however, sampling methodology, sample size and broad contents of the information collected is unchanged. For this reason, in this study we choose to rely on the four latest waves (1989, 1991, 1993 and 1995). Each survey covers more than 8,000 households for a total of 32,648 household-year observations. Each SHIW surveys a representative sample of the Italian resident population. Sampling is in two stages, first municipalities and then households. Municipalities are divided into 51 strata defined by 17 regions and 3 classes of population size (more than 40,000, 20,000 to 40,000, less than 20,000). Households are randomly selected from registry office records. Households are defined as groups of individuals related by blood, marriage or adoption and sharing the same dwelling. The head of the household is conventionally identified with the husband, if present. If instead the person who would usually be considered the head of the household works abroad or was absent from the household at the time the interview took place, the head of the household is the person responsible for managing the household's resources. The net response rate (ratio of responses to contacted households net of ineligible units) is 38 percent in 1989, 33 percent in 1991, 58 percent in 1993, and 57 percent in 1995. Increased response rate may be due to a change in the surveying company in 1993. Brandolini and Cannari (1994) present a detailed discussion of sample design, attrition, and other measurement issues, and comparisons of the SHIW variables with the corresponding aggregates. Starting in 1989, each SHIW has re-interviewed some households from the previous surveys. The panel component has increased over time: 15 percent of the previous survey sample was re-interviewed in 1989, 27 percent in 1991, 43 percent in 1993, and 45 percent in 1995. In the panel component, the sampling procedure is also determined in two stages: selection of municipalities (among those sampled in the previous survey), and then selection of households re-interviewed. This implies that there is a fixed component in the panel (for instance, households interviewed 5 times between 1987 to 1995, or 4 times from 1991 to 1995) and a new component in every survey (for instance, households re-interviewed only in 1989).

Variables' Definition:

In the empirical estimates all demographic variables - age, education, gender, whether is married, type of occupation and sector - refer to the household head. Monetary variables (income, wealth and consumption) are deflated using the Consumer Price Index and expressed in 1995 lire.

Cash holdings

The following question was asked of household heads in each of the surveys: "What is the average amount of cash held in your family?"

Deposits, Stocks and mutual funds ownership and amounts

In a typical survey households are asked first to report ownership of the specific financial instrument and then to indicate the portfolio share, in 1989, or to report the asset bracket in a list of 14 possible brackets, in 1991, 1993 and 1995. In 1989 assets amounts are obtained combining knowledge of the shares, of the value of financial wealth held in cash and the fact that portfolio shares add up to 1. In 1991, 1993 and 1995, assets amounts are imputed assuming that the household holds the mid-point of the reported interval. It is clear from this procedure that while stocks and mutual funds ownership only suffers from non-reporting, their amounts is affected by imputation errors. For details on how financial assets values are computed in the SHIW see Guiso and Jappelli (1999)

Discouraged borrowers and turned down consumers

The following questions were asked in each survey: "During the year did you or a member of the household think of applying for a loan or a mortgage to a bank or other financial intermediary, but then changed your mind on the expectation that the application would have been turned down?" Those answering yes to this question are classified as "discouraged borrowers". Those answering yes to the following questions are classified as "turned down" consumers: "During the year did you or a member of the household applied for a loan or a mortgage to a bank or other financial intermediary and your application was turned down?"

Use of checks and number of checks issued

The following questions were asked to household heads in each of the surveys: "Did you or some other member of the household issue checks in the course of the year to settle transactions?" If the answer to the question is yes "How many checks did your family issued on average in per month over the year?" To obtain the number of checks issued in a year we multiply the reported monthly figure by 12.

Loans from friends or relatives

The following questions were asked to household heads in each of the surveys: "As of the end of the year did you have debts outstanding towards friends or relatives not living with you? If yes, what is their amount?" This information is used to compute the existence and value of informal loans.

Consumption, income and wealth

Consumption is the sum of the expenditure on food consumption, entertainment, education, clothes, medical expenses, housing repairs and additions, and imputed rents. Expenditures on durable goods (vehicles, furniture and appliances, art objects) are therefore not included in the definition of consumption. Income is the sum of earnings of all members of the households that worked for part or the whole year, pension income accruing to retired members, income from capital and transfers. Wealth is the total of financial and real assets net of household debt. The first is the sum of cash balances, checking accounts, savings accounts, postal deposits, government paper, corporate bonds, mutual funds and investment fund units, stocks. In 1989 total financial wealth is readily available. For other years it must be estimated because the categories of financial assets (except cash holdings) were provided in 15 bands; the average value between the lower and the upper band was used in determining the level of each asset. Real assets include investment real estate, business wealth, primary residence and the stock of durables.

Education of the household head

This variable is originally coded as: no education (0); completed elementary school (5 years); completed junior high school (8 years); completed high school (13 years); completed college (18 years); graduate education (more than 20 years). The variable is coded according to the values given in parenthesis. For the highest class we assume a value of 20 years.

Relative risk aversion

Relative risk aversion is the product of the Arrow-Pratt measure of absolute risk aversion and household's consumption. The Arrow-Pratt measure of absolute risk aversion is obtained from a direct question to a survey lottery. Each survey participant is offered a hypothetical lottery and is asked to report the maximum price that he would be willing to pay in order to participate. Specifically, he is asked the following question:

"We would like to ask you a hypothetical question that we would like you to answer as if the situation was a real one. You are offered the opportunity of acquiring a security permitting you, with the same probability, either to gain 10 million lire or to lose all the capital invested. What is the most that you are prepared to pay for this security?"

Ten million lire correspond to about Euros 5,000. Interviews are done personally at the consumer premises by professional interviewers. These, in order to help understand the question, show an illustrative card to the respondent and are ready to provide explanations. The respondent can answer in one of following three ways: a) declare the maximum amount he is willing to pay to participate; b) don't know; c) unwilling to answer.

2. The 1994 SMF

The Survey of Manufacturing Firms (SMF) is conducted every three years on a sample of small and medium-sized manufacturing firms with at least 10 employees. The sample comprised about 5,000 units until the last wave, the 1994, which contains 4,431 firms. The information collected includes employment and its composition, investment undertaken and types of investments and R&D activities, location, ownership structure, industrial sector, year of foundation, capacity utilization, total sales, export sales and a number of balance sheet items for the survey year and the two previous years. Also, detailed information on mergers, acquisitions and break-ups is available. For firms with less than 500 employees, the sample is stratified by gross product per employee in order to ensure representativeness.

Variables' Definition:

Ownership concentration

Dummy variable = 1 if the largest shareholder holds 100 percent of the firm's shares.

Turned down for credit

Firms in the survey were asked the following question: "In 1994 did you apply to a bank or a financial intermediary to have your loans increased and have been turned down by all of those you applied to". Firms

answering yes are classified as turned down.

Firm Size

Dummy = 1 if the number of employees in 1994 is below the median value, equal to 67.

Leverage

Ratio of total firm debt as of the end of 1993 to total end of period firms liabilities.

Age

Computed as 1994 minus the year of foundation.

Group membership

Dummy variable: equal to 1 if the firm belongs to a group; zero otherwise.

Growth

Is the rate of growth in firm sales between 1989 and 1994.

Sector

Firms in the survey are classified in one of four sectors based on the SEC 4 digit industry classification: traditional productions; productions involving large scale economies; highly specialized productions; firms in high-tech productions.

3. Other variables

Trust and trust of origin

Trust is measured with voter turnout at the province level. Using data for all the European elections (1979, 1984, 1989, 1994 and 1999) and on six referenda. These are: the institutional referenda for the choice between monarchy and republic (June 1946); the referenda on public order (June 1978); the referenda on wage indexation (June 1985); the second referenda on public order (May 1981); the referenda on nuclear power (November 1987) and referenda on the electoral system in local government (the 1991). We did not use turnout in the referenda on divorce (May 1974) and the referenda on abortion (May 19981) on the grounds that participation was mainly driven by ideology and religion. For each province turnout data were than average across time. Elections and referenda. Each family or firm was attached the measure of trust in the province where it is located. For households, trust of origin is the measure of trust in the province of birth of the household head.

Courts inefficiency

The indicator of court inefficiency is computed as the mean number of years it takes to complete a first-degree trial by the courts located in a province. It has been computed using courts level data on the length of trials and then averaging out across courts located in the same province.