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Trust, Firm Organization and the Structure of Production

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Abstract

Interpersonal trust favors the expansion of organizations by allowing the delegation of decisions and tasks among anonymous others or people that interact only infrequently. We document these facts for a representative survey of Italian manufacturing firms and use this source of data to construct an industry-specific measure of need-for-delegation in production. We then show that trust shapes comparative advantage, as high-trust regions and countries exhibit larger value added and export shares in delegation-intensive industries relative to other industries. Such effects are associated with an increase in average firm size, while the number of firms is not significantly affected. Larger average size reflects in turn a shift of the distribution away from the smallest firms, consistently with the idea that trust allows organizations to expand beyond the narrow circle of family members and close friends.

Keywords: Trust, delegation, firm size, comparative advantage
JEL Codes: Z01, D2, L1

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1. Introduction

Trust has long been recognized as a key ingredient for the functioning of market economies. In the words of Arrow (1968), "one of the characteristics of a successful economic system is that the relations of trust and confidence between *principal* and *agent* are sufficiently strong (…) the lack of such confidence has certainly been adduced by many writers as one cause of economic backwardness". Consistent with this idea, a large strand of research documents that trust fosters financial development by allowing transactions in asset markets, which are greatly exposed to principal-agent problems due to the asymmetric information and moral hazard issues that characterize financial contracts (see e.g. Guiso at al., 2004, 2008a, Karlan, 2005, and Carlin et al., 2009).

However, market failures are ubiquitous also outside the financial sector of the economy. Principal-agent conflicts hinder transactions between different actors in the market (e.g. input providers and downstream producers), as well as the internal relationships among different members of the same organization (e.g. owners and managers or employers and employees). In this latter respect, principal-agent conflicts hamper corporate governance and the reallocation of decision-making power further down the managerial hierarchy.

While sound legal systems and efficient contract enforcement may limit the scope for principal-agent problems in market transactions between different economic organizations, the decentralization of decisions and tasks within firms and companies falls to a great extent outside the shadow of law. The complexity of modern production processes (e.g. in terms of unforeseen contingencies) may in fact raise to prohibitive levels the transaction costs of contracting inside the firm (e.g. in terms of monitoring by third parties). These forms of contract incompleteness may lead to coordination failures among the different members of each organization, which in turn prevent the efficient division of labor within the economy.

Interpersonal trust may attenuate such inefficiencies by sustaining cooperation among anonymous others and people outside the narrow circle of family members and close friends (Putnam, 1993). For this reason, trust has long been recognized as the very fundamental factor behind the rise of large organizations, including firms and companies (Fukuyama, 1995, La Porta et al., 1997). Through the

same channel, greater trust should eventually lead to higher levels and better efficiency of production in all contexts in which decentralization allows taking advantage of changing profit opportunities (Rajan and Zingales, 2001, and Thesmar and Thoenig, 2000).

In this paper, we investigate the effect of trust on the industry composition and the organization of production across Italian regions and European countries. In particular, we exploit between-industry differences in the intensity of delegation to show that high-trust regions and countries exhibit comparative advantage and larger firm size in high-delegation industries, once time-invariant area- and industry-specific factors are taken into account.

In order to measure differences in the intensity of decentralization across industries, we collected firm-level data on the degree of internal delegation of responsibilities and decisions for a representative sample of Italian firms. We then decomposed differences in delegation into regional and industry components, and interpreted the latter as the average level of delegation required to produce in each industry (net of the role of any region-specific factor and controlling for firm size). Consistently with previous theoretical work (Rajan and Zingales, 2001, Acemoglu et al., 2007), the intensity of production in human capital and intangible assets is positively related to the need-for-delegation across industries. The same methodology is applied to survey information about experiences at work for a sample of European individuals, which allows recovering an alternative measure suitable for cross-country comparisons. Despite different sources and samples, the firm- and individual-based industry rankings line up nicely, which adds to the credibility of both variables as measures of industry intensity in delegation.

Turning to our main empirical results, we find that trust is associated on average with greater decentralization and larger firm size across Italian regions. Exploiting industry variation (and controlling for region- and industry-specific factors) we show that high-trust regions exhibit a larger share of value added and exports in industries characterized by greater need-for-delegation. The effect is driven by a shift of the firm size distribution away from the smallest units (those with up to 19 employees) toward firms in higher size classes. These latter findings vindicate the argument of Fukuyama (1995) about the "strong relationship between high-trust societies with plentiful social

capital (…) and the ability to create large, private business organizations" (see also La Porta et al., 1997, and Bertrand and Schoar, 2006).

All our results are robust to controlling for other determinants of comparative advantage that vary across regions and industries (in addition to the full sets of fixed effects along each dimension), paying particular attention to judicial quality as an alternative enforcement device and to human capital intensity as an important factor inducing need-for-delegation. We also allow the cultural values and beliefs prevailing in each region to be jointly determined with the pattern of specialization. Instrumental variable estimates exploiting variation in historical institutions across Italian regions as an exogenous determinant of today's cultural traits (in a way similar to Tabellini, 2010) allow for a causal interpretation of trust effects.

While the striking differences in civic traditions between Northern and Southern Italy provide a useful source of variation to identify the effect of cultural factors separately from that of common legal and political institutions (see Banfield, 1958, Putnam, 1993, and Guiso et al. 2004, 2008b), we also examine the effect of trust on industry data across 15 European countries. Overall, the results of the cross-country analysis are very similar to those obtained for Italian regions, suggesting that trust fosters value added and exports in delegation-intensive industries by favoring the expansion of firms and companies in such industries.

The estimated relationships are not only statistically significant but also economically meaningful when compared to other determinants of industry specialization and firm organization such as human capital, physical capital and judicial quality. Our findings imply that increasing trust by an amount corresponding to the inter-quartile range of its distribution across Italian regions would raise value added in a delegation-intensive industry (such as "Manufacture of machinery and equipment") relative to a less intensive industry ("Leather, leather products and footwear") by 24% (19% when using cross-country data). This amounts to about two-thirds of the implied effect of raising human capital, and is larger than the effect of physical capital or contract enforcement.

All in all, our evidence documents an additional channel through which trust may shape the pattern of production across countries and industries. While previous work has emphasized the role of trust *via* institutional arrangements that are conducive to economic growth, like greater financial

development (Guiso at al., 2004, 2008a, Karlan, 2005, and Carlin et al., 2009) or lighter regulatory burden (Aghion et al., 2010; 2011), we focus on the direct impact on the organization of production and the structure of the economy. In this last respect our work is closely related to Bloom et al. (2012), who show that trust increases decentralization and average firm size for a sample of large national and multinational companies across 12 countries.

The first contribution of the present paper is to document that the same relationship holds widely across the firm size distribution; indeed, we find that the largest shifts occur along the lower tail of the distribution, consistent with the idea that trust allows for an expansion of smaller firms beyond the narrow circle of family members and close friends. Our second contribution is to show that such relationship has immediate implications for the pattern of specialization across Italian regions and European countries. In particular, interpersonal trust turns out to be an important source of comparative advantage, in the same way as physical and human capital endowments or the quality of formal institutions.

The rest of the paper is organized as follows: Section 2 justifies our empirical framework in light of previous literature on decentralization and production activity; Section 3 describes our measure of delegation and provides some preliminary evidence on its relationship with average trust and firm size across Italian regions, while Section 4 presents the results of the econometric analysis across regions, countries and industries; finally, Section 5 concludes.

2. Background and empirical approach

2.1 Agency problems and firm organization

Production activity in market economies is based on the efficient division of labor within large organizations such as firms and companies (see Penrose, 1959 and Chandler, 1962). In such context, limited span of control over the different stages of complex production processes induces "principals" (e.g. owners and entrepreneurs) to delegate decisions and tasks to a variety of "agents" (e.g. managers and employees) in order to maximize productivity.

According to the economic theory of organization (see Bloom et al, 2010, for a survey), the reallocation of decision-making power down the managerial hierarchy is associated to several advantages. First,

decentralization allows exploiting intensively scarce factors such as the informational advantage of managers and the specific skills of some categories of technicians and workers. This is essential whenever production requires the combination of different talents and abilities, for instance in human capital- and technology-intensive industries (Rajan and Zingales, 2001). Second, it allows saving on the costs of information transfer, allowing its processing at the level where it is most likely to be used, as well as on the costs of codification, transmission and analysis at subsequent upstream levels (Bolton and Dewatripont, 1994). Finally, it increases firms' ability to promptly respond to changes in profit and growth opportunities. Adjustment to market conditions involves in fact the coordination of many activities, which may be easier when responsibility is transferred to downstream teams of workers (Thesmar and Thoenig, 2000).

In a context of contract incompleteness, however, delegation exposes the principal to the risk of expropriation by the agents. One leading example is shirking by employees, whose extent has been shown to vary greatly with the system of societal values and beliefs (Ichino and Maggi, 2000). Another example are managers running away from the company with intangible assets such as ideas and client relationships (Rajan and Zingales, 2001); the greater the extent of delegation, the higher the vulnerability of company owners to managers' actions. More in general, agency problems are a recurrent theme in the literature on firm organization and corporate governance at least since the works of Alchian and Demsetz (1972), Holmstrom (1982) and Fama and Jensen (1983).

To some extent, effective contract enforcement may mitigate the risks associated with principal-agent conflicts, as discussed in the literature analyzing the patterns of trade when relationship-specific investments along the production chain are a relevant source of comparative advantage (Levchenko, 2007 and Nunn, 2007). Yet, legal enforcement is likely less relevant for the internal working of an economic organization, as contracting inside the firm faces usually high transaction costs due to the difficulty for the principals to fully predict and specify all possible state-contingencies, as well as to monitor the agents' effort and performance.[1] While incentive schemes have been devised to align the objectives of different members of the organization, they always involve some trade-off. For instance,

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[1] An earlier analysis of these issues may be found in Knight (1921), while Lafontaine and Slade (2007) provide a recent overview.

efficiency wages raise the expected costs of shirking for the employees, but they are also expensive for the firm that has to pay above-market wages; stock options align the objectives of managers with those of the owners but may cause myopic managerial strategies, and so on.

As an alternative solution, close personal relationships such as family ties, friendship and other types of connections may go a long way toward reducing agency problems, especially in countries with weak legal institutions (Bertrand and Schoar, 2006). However, they necessarily limit firm size to the span-of-control of family members or close friends, implying a misallocation of talents and preventing the expansion of firms that would have the potential to do so (Caselli and Gennaioli, 2012, and Perez-Gonzales, 2006).

By contrast, trust allows for cooperation inside the organization without limiting its size. Higher interpersonal trust means in fact that the principal attaches a lower probability to the event of expropriation by other agents, and is therefore more prone to delegate decisions and tasks whenever this yields to cost advantages or to firm growth opportunities. Therefore, firms in high-trust countries and regions should exhibit on average greater internal delegation and larger size.

In the next section, we show that the latter prediction is consistent with preliminary evidence across Italian regions. However, such correlations may reflect omitted variation in several economic and institutional characteristics. To address this issue, Bloom et al. (2012) focus on the sub-sample of multinational subsidiaries included in their survey of firms and exploit trust differences for the country in which the headquarters are located (controlling for the subsidiary's location), as well as variation in countries' bilateral trust (between the headquarters' and subsidiaries' locations). The present paper exploits an alternative source of variation, namely differences in the level of delegation required for producing in different industries within the same region or country.

2.2 Trust, delegation and comparative advantage

Several recent papers (e.g. Acemoglu et al., 2007, and Bloom et al., 2010) show that intensity in decentralization varies with the characteristics of the production process (e.g. the technology used). Following the cross-country, cross-industry approach popularized by Rajan and Zingales (1998), we may thus investigate whether trust influences firm organization and the production structure via

greater decentralization by looking at its effect on industries characterized by different intensity in decentralization. In particular, controlling for other area- and industry-specific factors, trust-abundant regions and countries should exhibit disproportionately larger firm size, value added and export shares in decentralization-intensive industries.

Our baseline estimating equation is therefore

$$Y_{jr} = \alpha + \beta(Trust_r \times Delegation_j) + \delta'X_{jr} + \mu_r + \mu_j + \varepsilon_{jr} \tag{1}$$

where Y_{jr} is industry specialization, as measured by the log-value added and exports in industry j and region (or country) r; $Trust_r$ is average trust in each region (or country) and $Delegation_j$ is an industry-specific measure of need-for-delegation; X_{jr} is a vector of other determinants of specialization, while μ_r and μ_j are local and industry-specific fixed effects, respectively; finally, ε_{jr} is an error term summarizing the effect of other omitted factors.

The inclusion of area fixed effects, combined with the log-linear specification, allows interpreting the coefficient β as the comparative advantage of trust-abundant regions in industries with greater need-for-delegation. Also, the full set of fixed effects along both dimensions (regions and industries) addresses obvious endogeneity issues: across regions, aggregate economic outcomes and beliefs could be jointly determined in equilibrium, as shown for instance by Giuliano and Spilimbergo (2009) and Aghion et al. (2010, 2011); across lines-of-work, global growth opportunities in industries that are more (less) dependent on delegation would bias the interaction coefficient upward (downward). The cross-area, cross-industry specification in (1), pioneered by Rajan and Zingales (1998) to study the effect of finance on growth, addresses these issues through the inclusion of a full set of fixed effects along both the local and sectoral dimension. For this reason, it has been extensively used to study several sources of comparative advantage, namely physical and human capital (Romalis, 2004; Ciccone and Papaioannou, 2009), contract enforcement (Nunn 2007) and institutional quality (Levchenko 2007).[2]

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[2] From a methodological perspective, Ciccone and Papaioannou (2010) discuss the merits of the cross-country, cross-industry approach.

Empirically estimating equation (1) raises some methodological issues, the most important of which concerns the measurement of the need-for-delegation in each *j*-th industry.

3. Data and preliminary evidence

Measuring delegation is not an easy task. This section describes how we constructed an industry-specific indicator of delegation based on survey evidence on the organization of Italian firms.[3]

3.1 The Bank of Italy survey

The survey on the investments of Italian firms (INVIND) has been conducted each year by the Bank of Italy since the early 1970s. The sample, originally including a few hundreds manufacturing firms, has been progressively expanded to about 6,500 units, which are representative of all private, non-agricultural firms with more than 20 employees. In addition to measuring production inputs and outputs (e.g. investment, sales, exports, etc.) on a regular basis, the survey provides "soft" information on issues such as organization, governance and expectations; most of the latter questions are included only in some years and/or for a subsample of firms.[4]

In particular, we included in the 2009 round of the survey one question about the number of responsibility centers, defined in the management literature as the units of the organization whose managers are accountable for a set of activities or a specific project (Atkinson and Kaplan, 1998, Horngren et al., 2009): other things equal, the number of responsibility centers increases with the extent of delegation inside the organization.[5] The question was addressed

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[3] In Section 4.4 we present an alternative measure recovered from European individual-level data.

[4] Such questions have been extensively used in previous work, see e.g. Guiso and Parigi (1999)

[5] Responsibility centres include cost, revenues, profit and investment centres, according to the variable under the actual control of the manager. This further classification does also provide important insights into the actual extent of delegation inside the firm and has therefore been adopted, among others, by Acemoglu et al. (2007). We chose not to include it in the INVIND survey in order to limit non-response issues.

to the sub-sample of 1,853 manufacturing firms; the response rate was above 80%, which is relatively high for this type of non-routinary questions.

About one third of the respondents turn out to be extremely centralized, exhibiting just one responsibility centre. As it should be expected, these are on average the smaller firms, with a median and average number of employees equal to 88 and 127, respectively (the corresponding figures for the whole group of respondents are 96 and 200, respectively). On average, firms are organized into 5 responsibility centers (median equal to 3), or 3.6 every 100 employees (median 2.4).

3.2 Delegation across manufacturing industries

The estimating equation (1) exploits variation in trust across regions or countries and differences in need-for-delegation of production activities across industries (*Delegation$_j$*). To measure the latter, we regress the number of responsibility centers in each *i*-th firm on a full set of region and industry fixed effects, keeping constant the (log) number of workers *L* employed in firm *i*,

$$Centers_{ijr} = \eta + \theta \ln L_{ijr} + f_j + f_r + v_{ijr}, \tag{2}$$

where the sub-indexes *j* and *r* denote industries and regions, respectively, f_j and f_r are the corresponding fixed effects and v_{ijr} is an idiosyncratic error term. Each estimated fixed effect $\hat{f}_j$ equals the average residual level of delegation for firms operating in the *j*-th industry, keeping constant any time-invariant, region-specific factor (including trust, which is absorbed by the region-specific fixed effects), as well as the size distribution of firms. In this sense, it can be interpreted as an industry-specific component that depends only on the characteristics of the industry (for instance, the complexity of the production process). The set of (estimated) industry fixed effects in equation (2) represents thus a measure of industry-specific need-for-delegation in equation (1). To account for the presence of a generated regressor, we will

bootstrap standard errors by drawing 200 random samples with replacement from the firm-level and the region-industry (or country-industry) datasets.[6]

In line with the conjecture of Rajan and Zingales (2001), intensity in delegation increases with the intensity of production in human capital and intangible assets; see Figure 1. For this reason, in the empirical analysis it will be important to account for the potentially confounding role of these other industry characteristics.

3.3 Trust

Equation (1) interacts industry intensity in delegation with interpersonal trust. To measure the latter we refer to the trust question in the World Values Survey (WVS): "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?". The finest level of geographical detail reported in the WVS is the region in which the interview was conducted.[7] We thus measure trust by the average fraction of respondents that answers "Most people can be trusted" in each region over the three waves of the WVS conducted in Italy (1990, 1995 and 2005).[8]

Table 1 and the Appendix Figure A5 reproduce the well-known divide between northern and southern Italy in terms of trust (as well as along several other dimensions of social capital), which has been extensively documented at least since Putnam (1993). Table 1 does also report the region fixed effects estimated in (2), which measure average delegation across regions holding the industry composition constant, as well as the average firm size in each region (from the 2005 industry census). Figure 2 shows that trust is positively correlated with

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[6] In practice, boostrapping makes little or no difference for the estimated standard errors and the statistical significance of the results.

[7] Italy comprises 20 regions, corresponding to level 2 of the Eurostat Nomenclature of Territorial Units for Statistics (NUTS). In 2010, the average population per region was about 3 million, the median was 1.85 million. The small autonomous region of Valle d'Aosta, at the border with France, is aggregated to Piedmont. The complete list of regions, along with some basic information, is reported in Table 1.

[8] The WVS is currently in its fifth wave and data are available for the first four waves.

delegation and average firm size across regions. In particular, a standard deviation increase in trust is associated with 1/2 and 2/3 standard deviation increases in delegation and firm size (statistically significant at the 5% and 1% confidence level), respectively.

Of course, such huge effects may reflect, at least in part, the significant gap between northern and southern regions along many economic and social dimensions other than trust endowments. The cross-region, cross-industry specification in (1) allows estimating the effect of trust accounting for such differences, as well as for industry-specific characteristics. Moreover, it allows identifying the channel through which trust impacts on the structure of production, namely differences in the need-for-delegation across different economic activities.

4. Results

In this section, we empirically estimate equation (1) across Italian regions and industries. The variable of main interest is the interaction between local trust and the industry-specific component of firm delegation, described in the previous section.

4.1 Italian regions: trust and comparative advantage

Table 2 shows the estimated effect of differences in regional trust and industry intensity in delegation on the pattern of comparative advantage across regions, measured both in terms of industry log value added (Panel A) and exports (Panel B).[9] The results in Panel A suggest that higher trust yields an increase in the relative share of production in delegation-intensive industries. The estimate is strongly statistically significant and high in terms of magnitude. One way to get a sense for the size of the effect is to consider the share of value added in an

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[9] Absent regional accounts with a detailed industry breakdown, the levels of value added and exports are obtained aggregating firm-level (INVIND) survey data. While the survey is representative only of the universe of firms with more than 20 employees, the latter account for the bulk of production in non-construction sectors (more than 70% of total employment and around 80% in terms of revenues). We will be using fully representative data on average firm size in Section 4.2 (from the Italian industry census of 2005), as well as on all outcome variables in the cross-country analysis in Section 4.4 (from countries' National Accounts).

industry close to the 75th percentile of delegation intensity ("Manufacture of machinery and equipment") relative to an industry at the 25th percentile ("Leather, leather products and footwear"). The estimated coefficient in column (1) implies that such differential would rise by approximately 24% if trust increased by an amount corresponding to the difference between a region close to the 25th percentile of average regional trust (as Abruzzo) and one close to the 75th percentile (as Tuscany).

The implied differential effect is slightly higher according to the estimates in column (2), where we account for factor endowments as additional determinants of comparative advantage (see Romalis, 2004, Nunn, 2007 and Ciccone and Papaioannou 2009): *College X HC int.* is the interaction between the human capital endowment of region *r* and the intensity in human capital of industry *j*, while *Capital X Cap. Int.* is the interaction between the stock of private net capital and industry capital intensity. Both coefficients are statistically significant and are in line with previous evidence that human capital is the most prominent determinant of the pattern of specialization (see e.g. Romalis, 2004).[10] In any case, and notwithstanding the strong correlation between delegation and human capital intensities across industries (see Figure 1), the interaction coefficient of trust is unaffected.

In column (3) we include two additional determinants of comparative, namely financial development and judicial quality. As to the former, Guiso et al. (2004) show that trust fosters financial development across Italian regions, while Rajan and Zingales (1998) document its effect on the firm size distribution. Since industry intensity in delegation is also positively correlated with dependence on external finance (the correlation coefficient is equal to 0.57 and statistically significant at the 5% level), the observed pattern of comparative advantage may be picking up the role of finance. However, the direct effect of trust remains significant even

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[10] According to our estimates, increasing human capital form the low levels of Basilicata to the high levels of Lombardy would increase the value added share of a skill-intensive industry (as Transportation equipment) relative to a less intensive industry (as Manufacture of non metallic mineral product) by nearly 37%. This is also higher than that the 17% increase implied by an analogous thought experiment based on the stock of physical capital.

after controlling for its indirect effects through financial development, i.e. including the interaction between regional financial development and industry dependence on external finance (*FD X ED*).

In the same column, we also show that our coefficient is not capturing differences in the quality of the judicial system, which in principle could represent an alternative enforcement device. While the quality of formal institutions (including the judicial system) remains constant within the same country, differences in informal values and beliefs could impact on the their working across different areas. In particular, the average length of civil trials, which is one of the most commonly used indicators of judicial quality (see e.g. the Doing Business project), exhibits considerable variation across Italian regions.[11] Since the effectiveness of contract enforcement is also an important determinant of organizational choices, we interact the negative logarithm of such variable with a measure of industry intensity in institutional quality. One such measure is the fraction of intermediate inputs used by each industry (according to the input-output tables) that is *not* traded in an organized exchange market, thus requiring relationship-specific investment; in a context of contract incompleteness, input-providers for such industries would be more vulnerable to weak contract enforcement (Nunn, 2007). According to the results in column (3), however, trust and human capital are the only significant sources of comparative advantage across Italian regions.

We next experiment with alternative estimation methods meant to account for the possibility of error in the measurement of aggregate quantities using the INVIND data. While representative of the Italian economy at the regional level, INVIND data are not meant to be representative of the region-industry cells we are focusing on. In column (4) we thus weight observations by employment in each region-industry cell, while in column (5) we employ the Huber-White robust regression approach to assign lower weight to influential observations.

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[11] The average length of civil trials across Italian regions is reported by the Italian Statistical Institute (ISTAT).

In both cases, the estimated coefficients are still positive and slightly higher in magnitude with respect to OLS estimates (see the Appendix for the detailed results).

Panel B of Table 2 reports the results for exports. While the coefficients are somewhat less precisely estimated, they are qualitatively very similar to the previous ones and indicate that high-trust regions export relatively more in decentralization-intensive industries. As to the implied magnitude, the most conservative estimate in column (5) suggests that the export share of a high-delegation industry ("Manufacture of machinery and equipment") relative to a low-delegation industry ("Leather, leather products and footwear") would increase by around 40% if the average level of trust increased from the low level of Abruzzo to the high level of Tuscany.

4.2 Italian regions: Trust and firm size

Overall, the results in Table 2 suggest that higher trust is associated with a relative increase of production and exports in decentralization-intensive industries. According to the discussion in Section 2, such effect should be associated with an expansion of firm size beyond the level achievable in a low-trust environment. To isolate this channel more precisely, we re-estimate equation (1) replacing value added and exports with average firm size and other measures of the size distribution as the dependent variable. The results are reported in Panel A of Table 3.

The first three columns adopt the same specification as in Table 2. According to our estimates, high-trust areas are populated by larger firms in high-decentralization industries. As to the implied effects, the estimated coefficient in column (1) means that the differential in average firm size between a more decentralized industry ("Manufacture of machinery and equipment") and a less decentralized one ("Leather, leather products and footwear") would increase by 14% when moving from a trust-scarce region (Abruzzo) to a trust-abundant one (Tuscany).

The subsequent columns examine the robustness of these findings to two alternative mechanisms that have been previously investigated in the literature. First, Rajan and Zingales (2001) argue that "a more sophisticated legal system is needed to enforce property rights to intangible assets such as ideas or client relationships […] the relative size of firms in industries with intangible assets should increase when the efficiency of the judicial system improves". However, accounting for the interaction between legal efficiency and a measure of industry intensity in intangible assets (from Claessens and Laeven, 2003) does not reduce the role of trust (column 4).

The second possibility is that trust affects firm size through the decision of whether to integrate or not along the production chain, as lower trust toward input providers could yield greater vertical integration and larger firm size. Notice that, if this was true, the empirical relationship between trust and firm size (Figure 2) would provide a lower bound to the (positive) effect of trust through delegation. However, the interaction between trust and an industry measure of propensity to vertical integration (as calculated by Acemoglu et al., 2010) does not seem to be significantly related with firm size (column 5). Most importantly, the effect of trust (through delegation) remains unaffected, even when including all the other (column 6).

The exercise reported in Panel B looks more closely at the relationship between trust and the overall distribution of firm size (not just its average value). The first two columns confirm that trust favors the expansion of industries' through the increase in the average size of firms as opposed to their number, as the latter is only slightly affected. Exploiting the breakdown by firm size provided by the Italian industry census (1-19, 20-49 and 50+ employees), the last three columns of Panel B show that the increase in firm size is driven by a rightward shift of the distribution away from the smallest firms (1-19 employees). This is consistent with the idea that trust allows for an expansion of smaller firms beyond the narrow circle of family members and close friends.

4.3 Instrumental variable estimates

If the cultural traits prevailing in a given region reflect the economic payoffs of alternative sets of values and beliefs (for instance because they are transmitted throughout generations, see Bisin and Verdier, 2001), the region-specific fixed effects in equation (1) may not completely rule out reverse causality. In particular, average trust could evolve to accommodate pre-existing patterns of comparative advantage across regions. For instance, Tabellini (2010) shows that trust is negatively correlated with preferences for hierarchical societies, as captured by the fraction of respondents in the WVS mentioning "obedience" as an important quality to teach to children; if less (more) hierarchical societies enjoy a comparative advantage in industries characterized by horizontal (vertical) organizations, they could have developed the cooperative values and beliefs required to sustain production in such industries. By the same argument, average regional trust may be correlated with other country characteristics along several (possibly hard-to-measure) dimensions. If this is the case, even after controlling for region and industry fixed effects (as well as for the other control variables discussed in Table 2 and Table 3) the distribution of trust across regions would still be correlated with the error term in equation (1).

To address this issue, we follow Tabellini (2010) and exploit regional variation in past institutions and literacy rates as a source of variation in trust that is uncorrelated with current economic outcomes. Political regimes and educational systems in place before the formation of the Unitarian state in 1861 shaped values and beliefs across Italian regions, which translated into differences in contemporaneous cultural traits due to the persistence of culture over very long periods of time. Moreover, since contemporaneous institutions are constant across regions within the same country, past institutions should affect current outcomes only

through the persistence of moral values and beliefs (as captured by average trust). These two conditions imply that past institutions are a valid instrument for trust in equation (1).[12]

In practice, we regress current trust on the historical variables in Tabellini (2010): the quality of political institutions during the years 1600-1850 (as coded by the *constraints on the executive* variable from the POLITY IV project) and literacy rates in 1880. We then use the interaction between the linear prediction from this regression and *Delegation$_j$* as an instrument for the interaction between trust and delegation in equation (1). Figure 3 shows that differences in early institutions explain a large fraction of the regional variance in trust; the correlation coefficient between the two variables is 0.83, significant at the 1% level, so that the first stage of the regression is not weak (see also the F-statistic for the excluded instrument reported in the last row of Table 4). Turning to the second stage results, they are qualitatively similar (and somewhat larger in magnitude) relative to their OLS counterparts.

4.4 Cross-country evidence

The evidence presented so far confirms that trust fosters delegation inside firm organizations, which in turn shifts comparative advantage toward industries in which the production process relies heavily on the decentralization of decisions and tasks. In this section, we examine the robustness of these findings across countries. While the multi-country analysis is more prone to omitted variable bias, it is on the other hand informative about the external validity of our results outside the Italian case. Based on the availability of the industry and social survey data described below, we will focus indeed on a group of advanced European economies that exhibit considerable variation along the cultural dimension, but remain relatively homogenous in terms of economic development and institutional arrangements.

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[12] Tabellini (2010) exploits this idea to distinguish between the effect of culture and institutions across regions within each country in Europe.

Data. Cross-country data allow for better measurement of industry aggregates, as value added and exports are based on national industry censuses that cover the universe of firms (as opposed to regional aggregates of survey data). Such information, together with the number of people engaged in each industry, is available from the OECD Structural Analysis Database (STAN), while the number of firms and the fraction of self-employed are from the Business Demography Statistics (also from the OECD).

As to the measures of trust and decentralization, we exploit information from the European Social Survey (ESS). The ESS is a cross-sectional survey administered every two years since 2002 in a large sample of European nations. During each round, the ESS interviews a representative sample of around 2,000 individuals about a wide range of topics in the economic, social and cultural sphere. Merging this information with the OECD industry data, our final sample include 14 countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Italy, Netherland, Portugal, Spain, Sweden and United Kingdom. Figure A6 in the Appendix shows that this sample is characterized by a rich variation in cultural traits, with Scandinavian and Mediterranean countries lying at the top and bottom of the ranking of the trust endowments measured by the ESS.

The survey also asks "how much the management at your work allows/allowed you to influence policy decisions about the activities of the organization", with 0 indicating "I have no influence" and 10 "I have complete control". Differently from the INVIND variable, the ESS indicator captures mostly perceptions on the actual degree of delegation from the point of view of employees (as opposed to formal organigrams). As in the previous case, we projected the variable (over 8000 individual-level observations referring to workers employed in manufactures) on a full set of country and industry fixed effects, and take the latter as a measure of industry intensity in delegation (see Section 2).[13]

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[13] The specification is exactly the same as in equation (2) except for the fact that the ESS does not provide the actual size of the firm the individual works in but only a categorical variable indicating 5 size classes.

Figure 4 shows that there is a strong correlation between the two measures of industry intensity in delegation, the one based on the INVIND survey of the Bank of Italy and the other one based on the ESS; the only outlier is the residual category "manufacturing not elsewhere classified". The relationship is indeed remarkable as the two variables are based on independent surveys that cover different types of agents (firms and individuals, respectively), were conducted in different countries and are aggregated at a different geographical level (regions and countries, respectively). The fact that they are nevertheless significantly correlated adds to their credibility as measures of the same industry-specific characteristic, namely intensity in decentralization.

Results. The results of the cross-country, cross-industry analysis are summarized in Table 5 and Table 6. The main difference with respect to the approach adopted across Italian regions is that the multi-country exercise requires controlling for variation along a greater number of institutional dimensions. For brevity, we report and discuss only the coefficients of interest. The reader can refer to the Appendix Tables A12 to A16 for the complete results as well as for additional evidence and robustness checks.

In Table 5 we report the estimates obtained for several specifications of log value added and exports (see also the Appendix Tables A12 and A13). In particular, columns (1) to (3) and (5) to (7) show that trust-abundant countries specialize in delegation intensive industries and that the effect is robust to controlling for human and physical capital endowments, as well as for the other sources of comparative advantage considered before, namely judicial quality and financial development. In columns (4) and (8) we augment the specification with other potential determinants of comparative advantage that vary with country-level institutional settings. We include entry regulations, which could impact differentially on the competitiveness of industries characterized by a different turnover of producers (Fisman and Sarria-Allende, 2010); labor market regulations, which by an analogous argument affect labor-intensive industries (Cingano et al., 2010); and property rights protection, which (similarly to

the case of judicial quality) represent a source of comparative advantage in industries characterized to a greater extent by contract incompleteness (Levchenko, 2007, and Nunn, 2007).

The coefficient of main interest remains positive and statistically significant at conventional confidence levels; it slightly decreases in magnitude when the additional interaction terms are included on the right-hand side, confirming the importance of accounting for other determinants of industry structure and comparative advantage. As to the implied effect, they are lower than in the regional analysis, in particular for the case of exports. The most conservative estimate of column (8) implies in fact that exports in a high-delegation industry ("Manufacture of machinery and equipment") would increase by about 15% relative to a low-delegation industry ("Leather, leather products and footwear") if average trust increased from the level of countries close to the 25th percentile of the trust distribution (such as Spain or Greece) to that of countries around the 75th percentile of the distribution (Germany or the Netherlands). A very similar result holds in the case of value added (the increase would amount to around 19%). [14]

Table 6 replicates the analysis in Table 3 on the relationship between trust and the size distribution of firms (see also the Appendix Tables A14 and A16). In Panel A we report the estimated effects on average firm size, which are positive and highly statistically significant in all specifications; they imply that the size differential between a high-delegation and a low-delegation industry would increase by between 10% (column 5) and 15% (column 1) if average trust in the country increased from the 25th to the 75th percentile. The breakdown by size class in Panel B confirms that (i) there is no significant relationship between trust and the number of firms, so that all the effect on industry value added goes through an increase in

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[14] As in the case of Italian regions, the implied effect of trust compares fairly well with that of human capital. According to our estimates, increasing the average skills of the population from the low levels of Poland to those of the UK would increase the value added share of a skill-intensive industry (such as Transportation equipment) relative to a less intensive industry (Manufacture of non metallic mineral product) by nearly 38%.

average firm size, and (ii) such increase is due to a shift of the firm size distribution away from the smaller firms (1-19 employees). Both findings are remarkably similar to those estimated in the case of Italian regions. Finally, and consistently with the above findings, the coefficient in column (6) of Panel B indicates that the share self-employed individuals in delegation-intensive industries tends to be disproportionately lower in high-trust countries.

Unlike for the case of Italian regions, OECD data based on National Accounts allow investigating the effect of trust on value added growth. We focus on the period 1995-2005, for which industry-level value added data are available for all countries in our sample. The estimates in Table 7 suggest indeed that trust fosters value added growth in decentralization-intensive industries. The growth differential between a high-delegation industry ("Manufacture of machinery and equipment") and a low-delegation industry ("Leather, leather products and footwear") increases on average by 1.17 percentage points when trust increases from levels around those of Spain or Greece to those of Germany or the Netherlands. As a reference, the median growth rate in our sample is 1.1 percent per year.

4.5 Further sensitivity analysis

The results in Tables 2 to 6 show that high-trust regions and countries exhibit comparative advantage and larger firm size in industries with greater need-for-delegation; such relationships are robust to controlling for additional determinants of comparative advantage and firm organization, such as production factors or institutional endowments. A more demanding test consists in examining whether such determinants might favor the expansion of firms in delegation-intensive industries, over and above the role of trust. This seems particularly important in the case of human capital and judicial quality (contract enforcement), which represent important inputs for the management and governance of horizontal organizations (Bloom et al. 2010).

We test the relevance of such threat to the identification of trust effects by interacting both human capital and judicial quality with our measures of industry intensity in delegation. We then examine the role of each factor for the structure of production (in terms of value added, exports and firm size) and check whether their inclusion significantly affects our previous estimates. Evidence from European countries (Table 8), suggests that both human capital and judicial quality endowments are correlated with specialization in delegation-intensive industries (see columns 2 and 4). However, controlling for such additional factor as in columns (3) and (5) does not considerably alter the effect of trust on the structure of production, as it can be seen comparing the results with the baseline estimates (replicated in the first column). Similar patterns emerge from Table 9, performing the same sensitivity analysis on Italian data.

5. Conclusions

We investigate one specific channel through which interpersonal trust matters for the organization of production and the level economic activity. Since trust allows the decentralization of decision making within firms, high-trust regions and countries exhibit larger value added and exports in decentralization-intensive industries; by the same argument, such industries are characterized by larger average firm size. We document these facts combining micro and macro data on the organization and structure of production in Italian regions and European countries. Our estimates suggest that, after controlling for other determinants of comparative advantage and specialization, trust endowments shape the structure of production in the same way as (and to an extent that is comparable with that of) other factors that are commonly examined in the literature, such as human and physical capital or the quality of formal institutions.

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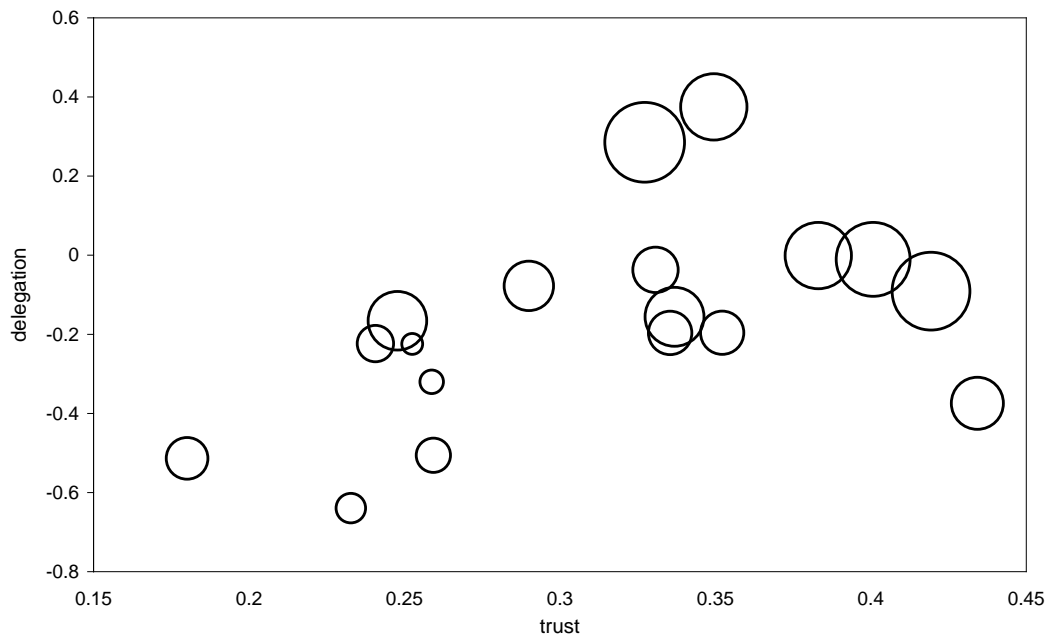
Figures

Figure 1: industry intensity in delegation and dependence on human capital and intangible assets
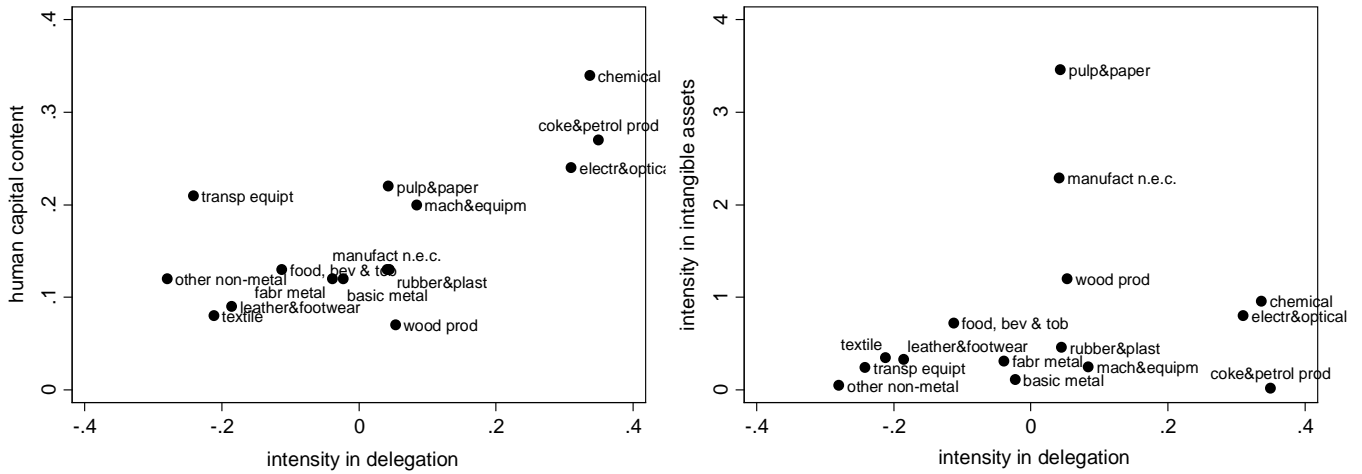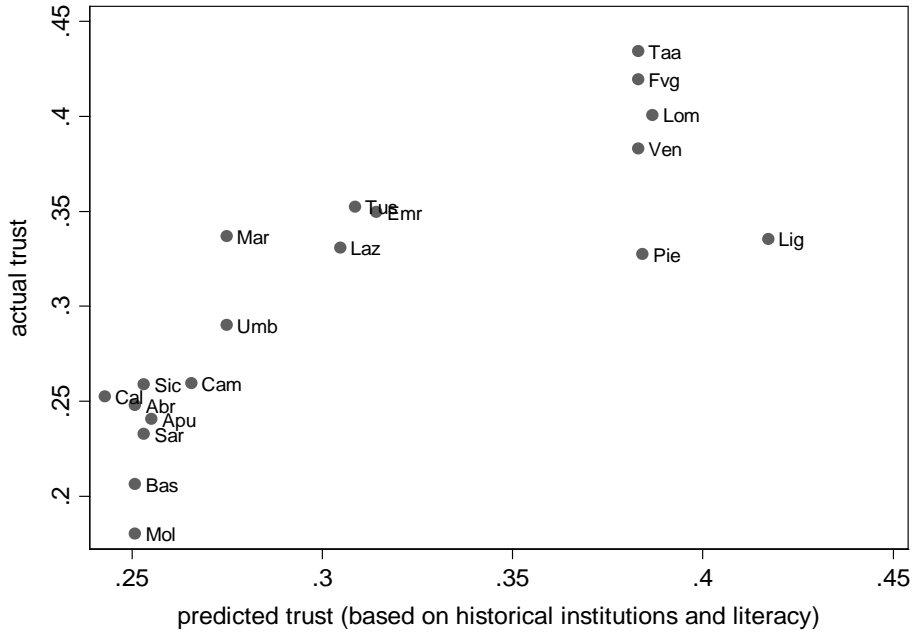

*Notes***:** This figure plots industry intensity in delegation against human capital intensity (left graph) and intensity in intangible assets (right graph) across 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC).

Figure 2: trust, delegation and firm size across Italian regions


*Notes***:** This figure plots average interpersonal trust (horizontal axis) against the average level of delegation in productive activities (vertical axis) and the average size of firms (the size of the ball) across Italian regions.

Figure 3: actual and predicted average trust across Italian regions

*Notes***:** This figure plots average interpersonal trust, as measured by the World Values Survey, against predicted trust based on historical institutions across Italian regions.

Figure 4: correlation between different measures of industry intensity in delegation
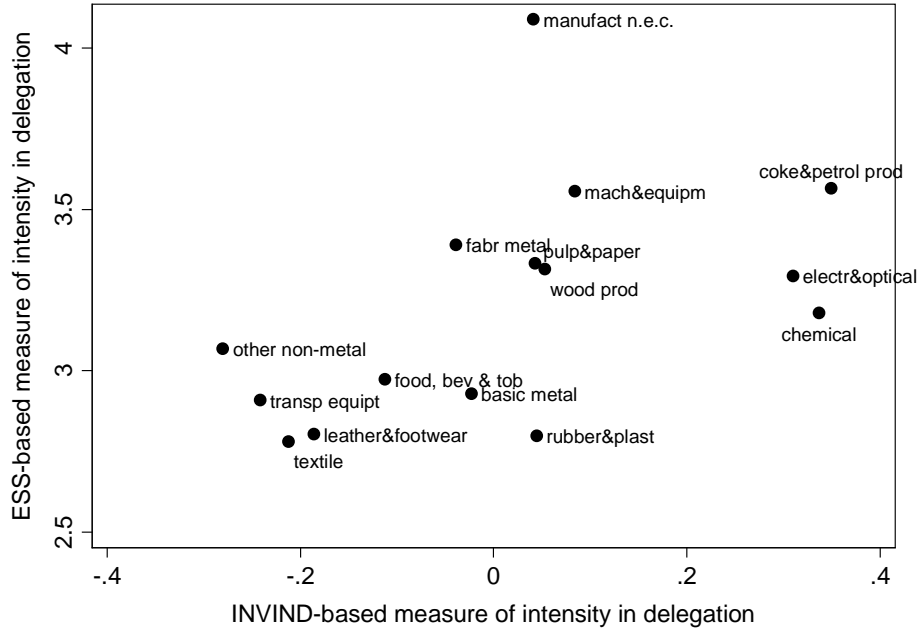
*Notes***:** This figure plots two different measures of industry intensity in delegation, based respectively on the INVIND survey of Italian firms (horizontal axis) and on the European Social Survey (vertical axis) across 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC).

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Tables

Table 1: main characteristics of Italian regions

Region	Label	Area	GDP, % Italy	GDP per cap.	pop. (1000s)	Trust	Delegation	Firm size
Piedmont & Valle d'Aosta	Pie & Vda	28,664	8.4%	28,714	4,502	0.33	0.29	12.6
Lombardy	Lom	23,861	20.8%	33,442	9,594	0.40	-0.01	11.7
Liguria	Lig	5,421	2.8%	26,813	1,609	0.34	-0.20	6.9
Trentino Alto Adige	Taa	13,599	2.1%	32,403	1,001	0.43	-0.37	8.3
Veneto	Ven	18,390	9.4%	30,244	4,803	0.38	0.00	10.5
Friuli Venezia Giulia	Fvg	7,712	2.3%	29,238	1,217	0.42	-0.09	12.3
Emilia Romagna	Emr	22,122	8.8%	32,113	4,250	0.35	0.37	10.5
Tuscany	Tus	22,990	6.7%	28,431	3,658	0.35	-0.20	6.9
Umbria	Umb	8,454	1.4%	24,493	879	0.29	-0.08	7.8
Marche	Mar	9,695	2.6%	26,502	1,545	0.34	-0.16	9.4
Lazio	Laz	17,210	10.8%	30,306	5,527	0.33	-0.04	7.2
Abruzzo	Abr	10,793	1.8%	21,602	1,317	0.25	-0.17	9.3
Molise	Mol	4,438	0.4%	19,951	321	0.18	-0.51	6.6
Campania	Cam	13,592	6.3%	16,909	5,801	0.26	-0.51	5.4
Apulia	Apu	19,364	4.5%	17,111	4,073	0.24	-0.22	5.8
Basilicata	Bas	9,992	0.7%	18,699	591	0.21		7.4
Calabria	Cal	15,083	2.2%	16,938	2,003	0.25	-0.22	3.3
Sicily	Sic	25,701	5.6%	17,179	5,023	0.26	-0.32	3.8
Sardinia	Sar	24,090	2.2%	20,405	1,663	0.23	-0.64	4.7

Notes: This figure reports the main characteristics of Italian regions.

Table 2: trust and industry comparative advantage across Italian regions

	(1) Baseline	(2) Factors	(3) Institut.	(4) WLS	(5) H-W
			PANEL A: log of VALUE ADDED		
Trust X Delegation	9.958**	11.008***	11.552***	13.935**	12.627***
	(4.241)	(4.005)	(4.137)	(6.430)	(4.356)
College X HC int.		3.817***	3.821***	2.213***	3.795***
		(0.887)	(0.910)	(0.991)	(1.094)
Capital X Cap. Int.		5.041*	4.849	4.137	-0.182
		(2.780)	(3.135)	(3.271)	(4.892)
JQ X differentiated			1.351	6.187*	1.314
			(1.617)	(3.332)	(1.972)
FD X ED			0.079	-0.803	0.319
			(0.490)	(0.988)	(0.550)
Observations	269	269	269	269	269
Adjusted R^2	0.559	0.618	0.617	0.757	0.631
F	17.79	17.92	16.88	26.12	13.41
			PANEL B: log of EXPORTS		
Trust X Delegation	22.670*	23.689**	25.705**	19.543***	15.077*
	(13.372)	(11.858)	(12.343)	(8.823)	(7.207)
College X HC int.		4.955***	4.868***	3.051**	4.159***
		(1.904)	(2.074)	(1.569)	(1.380)
Capital X Cap. Int.		6.056	6.092	10.040	15.749
		(7.186)	(7.388)	(8.364)	(10.79)
JQ X differentiated			0.187	4.648	2.355
			(2.701)	(3.800)	(2.262)
FD X ED			1.081	-0.455	1.057
			(1.272)	(1.094)	(0.845)
Observations	269	269	269	269	269
Adjusted R^2	0.499	0.523	0.520	0.653	0.689
F	12.41	13.51	13.13	16.29	17.06

*Notes***:** This table presents the results of OLS estimates of the differential effect of trust on log value added (Panel A) and exports (Panel B) across industries characterized by a different intensity in delegation. The unit of analysis are region-industry observations for 19 Italian regions and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of regional average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the INVIND survey of Italian firms. The other explanatory variables are described in the Appendix. Region and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Base	Factors	Instit.	RZ	Vert Integ	All

PANEL A: log of average FIRM SIZE

	Base	Factors	Instit.	RZ	Vert Integ	All
Trust X Delegation	6.138**	5.374**	5.547**	5.690**	5.466**	5.611**
	(2.465)	(2.143)	(2.268)	(2.543)	(2.227)	(2.496)
College X HC int.		1.928***	1.921***	1.918***	1.923***	1.919***
		(0.602)	(0.628)	(0.674)	(0.641)	(0.587)
Capital X Cap. Int.		0.072	0.057	0.068	0.055	0.073
		(0.667)	(0.723)	(0.656)	(0.783)	(0.680)
JQ X differentiated			0.248	0.269	0.174	0.123
			(0.967)	(1.096)	(1.166)	(1.197)
FD X ED			0.013	0.018	0.005	0.003
			(0.324)	(0.366)	(0.343)	(0.336)
JQ X Intangible Assets				-0.045		-0.076
				(0.135)		(0.139)
JQ X Vert. Integration					-0.013	-0.028
					(0.059)	(0.065)
Observations	285	285	285	285	285	285
Adjusted R²	0.711	0.734	0.732	0.731	0.731	0.730
F	31.50	32.71	30.99	30.14	30.11	29.12

PANEL B: Size Distribution of firms

	log-number of firms			*log-number by size class*		
	Base	Factors		1-19	20-49	50+
Trust X Delegation	0.143	3.332		-2.234***	6.971***	4.429*
	(3.085)	(2.572)		(0.776)	(2.201)	(2.401)
College X HC int.		0.951***		-0.083	0.624*	1.918***
		(0.368)		(0.090)	(0.342)	(0.361)
Capital X Cap. Int.		1.679**		-0.201	1.413	0.869*
		(0.728)		(0..215)	(0.543)	(0.493)
JQ X differentiated		1.410**		0.410*	0.707	0.277
		(0.617)		(0.237)	(0.652)	(0.769)
FD X ED		0.240		-0.053	0.310	-0.130
		(0.274)		(0.046)	(0.228)	(0.383)
Log total number of firms				1.015***	0.975***	0.756***
				(0.012)	(0.057)	(0.058)
Observations	285	285		285	285	285
Adjusted R²	0.711	0.734		0.732	0.731	0.731
F	31.50	32.71		30.99	30.14	30.11

Notes: This table presents the results of OLS estimates of the differential effect of trust on average firm size (Panel A) and the firm size distribution (Panel B) across industries characterized by a different intensity in delegation. The unit of analysis are region-industry observations for 19 Italian regions and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of regional average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the INVIND survey of Italian firms. The other explanatory variables are described in the Appendix. Region and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table 4: trust, comparative advantage and firm size across Italian regions and industries, 2SLS estimates

	(1)	(2)		(3)	(4)
		PANEL A: Comparative advantage			
	log of VALUE ADDED			*log of EXPORTS*	
Trust X Delegation	13.132**	13.495***		27.638**	29.048***
	(5.479)	(4.826)		(11.194)	(10.316)
Observations	269	269		269	269
Controls	NO	YES		NO	YES
Adjusted R²	0.558	0.616		0.498	0.520
First Stage F (excl. instr)	158.878	158.878		160.37	160.37

		PANEL B: Firm size distribution			
	log of average FIRM SIZE		*log- number of firms by size class*		
			1-19	*20-49*	*50+*
Trust X Delegation	7.793***	7.930***	-2.496***	8.525***	6.665***
	(2.670)	(2.796)	(0.571)	(1.938)	(2.490)
Log total number of firms			1.015***	0.971***	0.791***
			(0.010)	(0.051)	(0.054)
Observations	285	285	285	285	285
Controls	NO	YES	YES	YES	YES
Adjusted R²	0.730	0.710	0.998	0.941	0.899
First Stage F (excl. instr)	167.662	167.662	163.876	163.876	162.208

*Notes***:** This table presents the results of two-stage-least-squares estimates of the differential effect of trust on log value added and exports (Panel A) as well as average firm size and the firm size distribution (Panel B) across industries characterized by a different intensity in delegation. The unit of analysis are region-industry observations for 19 Italian regions and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of regional average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the INVIND survey of Italian firms. The first stage instrument for the interaction of trust and delegation is the interaction between predicted trust, based on historical regional institutions, and delegation; the F-statistic for the excluded instrument is reported on bottom of each panel. The other explanatory variables in the second stage are described in the Appendix. Region and industry fixed effects are included in all specifications. Robust standard errors are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table 5: trust and industry comparative advantage across European countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	log of VALUE ADDED				*log of EXPORT*			
	Baseline	Factors	Instit.	Controls	Baseline	Factors	Instit.	Controls
Trust X Delegation	2.682***	2.393***	2.367***	2.018**	2.015**	1.746**	1.775**	1.866**
	(0.859)	(0.818)	(0.789)	(0.832)	(0.786)	(0.810)	(0.819)	(0.825)
Observations	205	205	205	205	203	203	203	203
Prod. Factors	NO	YES	YES	YES	NO	YES	YES	YES
Institutions	NO	NO	YES	YES	NO	NO	YES	YES
Add. Controls	NO	NO	NO	YES	NO	NO	NO	YES
Adjusted R^2	0.881	0.893	0.893	0.899	0.863	0.875	0.875	57.65
F	65.64	67.52	64.28	69.22	54.60	54.53	0.828	38.98

Notes: This table presents the results of OLS estimates of the differential effect of trust on log value added (Panel A) and exports (Panel B) across industries characterized by a different intensity in delegation. The unit of analysis are country-industry observations for 14 European countries and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of country average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the European Social Survey. The bottom part of the table indicates which additional controls are included, the detailed results are reported in Table A12 and Table A13, all the variables are described in the Appendix. Country and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table 6: trust and firm size across European countries and industries

	(1)	(2)	(3)	(4)	(5)	(6)
	Base	Factors	Institutions	Controls	RZ	Vert. Int.
	PANEL A: log Average Firm Size					
Trust X Delegation	1.687**	1.671***	1.637**	1.609**	1.559**	1.153*
	(0.735)	(0.595)	(0.700)	(0.691)	(0.678)	(0.656)
Observations	222	222	222	207	207	207
Factors	NO	YES	YES	YES	YES	YES
Institutions	NO	NO	YES	YES	YES	YES
Add. Controls	NO	NO	NO	YES	YES	YES
Adjusted R2	0.832	0.831	0.831	0.828	0.828	0.835
F	48.85	46.79	43.35	38.98	37.88	38.35
	PANEL B: Size Distribution of firms					
	log Number of firms			by size class		Share of
	Base	Factors	Institut	1-19	20-49	self empl.
Trust X Delegation	0.907	0.655	0.296	-0.207**	1.781***	-0.126***
	(0.809)	(0.646)	(0.694)	(0.084)	(0.598)	(0.047)
Control for log-number of firms in country-industry				YES	YES	YES
Observations	222	222	207	220	220	218
Factors	NO	YES	YES	YES	YES	YES
Institutions	NO	NO	YES	YES	YES	YES
Adjusted R2	0.919	0.925	0.928	0.731	0.833	0.673
F	143.9	127.3	112.6	20.04	39.59	15.41

*Notes***:** This table presents the results of OLS estimates of the differential effect of trust on average firm size (Panel A) and the firm size distribution (Panel B) across industries characterized by a different intensity in delegation. The unit of analysis are country-industry observations for 14 European countries and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of country average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, , based on the European Social Survey. The bottom part of the table indicates which additional controls are included, the detailed results are reported in Table A14 and Table A15, all the variables are described in the Appendix. Country and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table 7: trust and industry growth across European countries

	(1)	(2)	(3)	(4)
	VALUE ADDED growth			
	Baseline	Factors	Instit.	Controls
Trust X Delegation	0.144**	0.145**	0.143**	0.144**
	(0.061)	(0.064)	(0.070)	(0.073)
Observations	204	204	204	204
Prod. Factors	NO	YES	YES	YES
Institutions	NO	NO	YES	YES
Add. controls	NO	NO	NO	YES
Adjusted R²	0.423	0.471	0.470	0.477
F	5.716	5.554	5.363	5.193

*Notes***:** This table presents the results of OLS estimates of the differential effect of trust on value added growth across industries characterized by a different intensity in delegation. The unit of analysis are country-industry observations for 14 European countries and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of country average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the European Social Survey. The bottom part of the table indicates which additional controls are included, the detailed results are reported in Table A16, all the variables are described in the Appendix. Country and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table 8: trust, comparative advantage and firm size in European countries, robustness

	(1) Baseline	(2) Judicial Quality	(3)	(4) Human capital	(5)
Panel A: log of VALUE ADDED					
Trust X Delegation	2.682***		2.194**		2.559***
	(0.889)		(0.992)		(0.878)
JQ X Delegation		3.639***	1.312		
		(1.390)	(1.338)		
HC X Delegation				0.347*	0.060
				(0.187)	(0.157)
Observations	205	205	205	205	205
Adjusted R²	0.881	0.877	0.881	0.872	0.881
F	65.64	65.49	65.75	57.56	62.28
Panel B: log of EXPORTS					
Trust X Delegation	2.015**		2.098**		2.369***
	(0.797)		(0.959)		(0.852)
JQ X Delegation		1.939	-0.198		
		(1.202)	(1.349)		
HC X Delegation				0.126	-0.159
				(0.190)	(0.186)
Observations	222	222	222	222	222
Adjusted R²	0.863	0.859	0.862	0.857	0.863
F	54.60	52.17	52.34	50.35	53.34
Panel C: log of average FIRM SIZE					
Trust X Delegation	1.687**		1.331		1.466*
	(0.749)		(0.935)		(0.810)
JQ X Delegation		2.206**	0.849		
		(0.856)	(1.024)		
HC X Delegation				0.276**	0.099
				(0.134)	(0.133)
Observations	222	222	222	222	222
Adjusted R²	0.832	0.829	0.832	0.827	0.832
F	48.85	46.91	46.41	48.24	47.20

*Notes***:** This table presents the results of OLS estimates of the differential effect of trust on log value added (Panel A), exports (Panel B) and log average firm size (Panel C) across industries characterized by a different intensity in delegation. The unit of analysis are country-industry observations for 14 European countries and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of country average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the European Social Survey. The other explanatory variables are interactions of the same index of delegation with other country characteristics described in the Appendix. Country and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table 9: trust, comparative advantage and firm size in Italian regions, robustness

	(1)	(2)	(3)	(4)	(5)
	Baseline	Judicial Quality		Human capital	

Panel A: log of VALUE ADDED

	(1)	(2)	(3)	(4)	(5)
Trust X Delegation	9.958**		21.766**		7.951*
	(4.330)		(10.489)		(4.146)
JQ X Delegation		1.587	-4.434		
		(1.511)	(3.431)		
HC X Delegation				0.954**	0.841*
				(0.473)	(0.479)
Observations	269	269	269	269	269
Adjusted R²	0.559	0.552	0.561	0.564	0.567
F	17.79	16.53	17.65	16.26	17.22

Panel B: log of EXPORTS

	(1)	(2)	(3)	(4)	(5)
Trust X Delegation	22.670*		28.833		19.373*
	(12.766)		(23.198)		(10.778)
JQ X Delegation		5.662	-2.314		
		(3.697)	(6.950)		
HC X Delegation				1.658	1.382
				(1.071)	(0.935)
Observations	269	269	269	269	269
Adjusted R²	0.499	0.493	0.497	0.497	0.505
F	12.41	12.16	12.47	11.54	12.27

Panel C: log average FIRM SIZE

	(1)	(2)	(3)	(4)	(5)
Trust X Delegation	6.138***		14.891***		5.069**
	(2.286)		(5.475)		(2.026)
JQ X Delegation		0.817	-3.244**		
		(0.574)	(1.581)		
HC X Delegation				0.702**	0.649**
				(0.337)	(0.314)
Observations	285	285	285	285	285
Adjusted R²	0.711	0.702	0.718	0.723	0.729
F	31.50	31.71	30.66	31.25	31.32

*Notes***:** This table presents the results of OLS estimates of the differential effect of trust on log value added (Panel A), exports (Panel B) and log average firm size (Panel C) across industries characterized by a different intensity in delegation. The unit of analysis are region-industry observations for 19 Italian regions and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of regional average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the INVIND survey of Italian firms. The other explanatory variables are interactions of the same index of delegation with other region characteristics described in the Appendix. Region and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Appendix – not for publication

Figure A5: average interpersonal trust across Italian regions

*Notes***:** This figure shows the distribution of average interpersonal trust across Italian regions, as measured by the World Values Survey. Darker colors correspond to higher interpersonal trust.

Figure A6: average interpersonal trust across European countries

*Notes***:** This figure shows the distribution of average interpersonal trust across the 14 European countries included in our sample, as measured by the European Social Survey. Darker colors correspond to higher interpersonal trust.

ADDITIONAL RESULTS

Table A10: trust, value added and exports in Italian regions, employment weighted and Huber-White robust regression

	(1)	(2)	(3)		(4)	(5)	(6)
	Base	Factors	Institutions		Base	Factors	Institutions
	log of VALUE ADDED				*log of EXPORT*		
EMPLOYMENT WEIGHTED							
Trust X Delegation	14.844***	16.696***	13.935**		17.147**	21.270***	19.543**
	(5.44)	(5.190)	(5.917)		(7.612)	(7.320)	(8.940)
College X HC int.		1.987*	2.213***			2.938*	3.051**
		(1.030)	(0.747)			(1.586)	(1.555)
Capital X Cap. Int.		5.726*	4.137			11.242	10.040
		(3.092)	(3.443)			(7.129)	(8.396)
JQ X differentiated			6.187*				4.648
			(3.433)				(3.575)
FD X ED			-0.803				-0.455
			(0.935)				(1.297)
Observations	269	269	269		269	269	269
Adjusted R²	0.717	0.732	0.757		0.619	0.648	0.653
F	20.98	22.92	26.12		17.85	18.80	16.29
HUBER-WHITE ROBUST							
Trust X Delegation	14.044***	11.894**	12.627***		12.693*	13.494*	15.077*
	(5.042)	(4.791)	(4.840)		(7.362)	(7.780)	(8.528)
College X HC int.		3.822***	3.795***			4.228***	4.159***
		(1.067)	(0.982)			(1.635)	(1.329)
Capital X Cap. Int.		0.134	-0.182			16.042	15.749
		(4.768)	(4.406)			(10.70)	(10.68)
JQ X differentiated			1.314				2.355
			(1.991)				(2.430)
FD X ED			0.319				1.057
			(0.554)				(0.989)
Observations	269	269	269		269	269	269
Adjusted R²	0.602	0.635	0.631		0.778	0.695	0.689
F	13.28	14.34	13.41		29.41	18.46	17.06

*Notes***:** This table presents the results of employment-weighted-least-squares (top panel) and Huber-White robust estimates (bottom panel) of the differential effect of trust on log value added and exports across industries characterized by a different intensity in delegation. The unit of analysis are region-industry observations for 19 Italian regions and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of regional average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the INVIND survey of Italian firms. The other explanatory variables are described in the Appendix. Region and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table A11: trust and firm size in Italian regions, employment weighted and Huber-White robust regression

	(1)	(2)	(3)	(4)	(5)
	Base	Factors	Institut.	RZ	Vert. Int.

	EMPLOYMENT WEIGHTED				
Trust X Delegation	8.764***	7.042***	6.420**	6.952**	6.511**
	(3.049)	(2.575)	(3.218)	(3.261)	(3.160)
College X HC int.		1.413**	1.448**	1.423**	1.453***
		(0.554)	(0.611)		(0.542)
Capital X Cap. Int.		-2.017	-2.495	-2.379	-2.491
		(1.812)	(1.932)	(1.740)	(1.825)
FD X ED			1.842	1.762	2.045
			(1.759)	(1.803)	(1.976)
JQ X differentiated			-0.154	-0.133	-0.126
			(0.413)	(0.453)	(0.401)
JQ X Intangible Assets				-0.140	
				(0.181)	
JQ X Vert. Integration					0.051
					(0.088)
Observations	269	269	269	269	269
Adjusted R²	0.860	0.870	0.874	0.874	0.874
F	39.27	38.32	43.78	44.01	44.61
	HUBER-WHITE ROBUST				
Trust X Delegation	4.571*	4.896**	5.232*	5.211*	5.254**
	(2.358)	(2.342)	(2.761)	(2.934)	(2.389)
College X HC int.		1.361***	1.373***	1.374**	1.372***
		(0.466)	(0.493)		(0.496)
Capital X Cap. Int.		-0.085	-0.058	-0.059	-0.058
		(1.115)	(1.153)	(1.147)	(1.027)
FD X ED			-0.570	-0.572	-0.543
			(1.178)	(1.113)	(1.114)
JQ X differentiated			0.145	0.143	0.145
			(0.452)	(0.471)	(0.489)
JQ X Intangible Assets				0.005	
				(0.120)	
JQ X Vert. Integration					0.005
					(0.062)
Observations	285	285	285	285	285
Adjusted R²	0.824	0.829	0.831	0.829	0.829
F	41.40	40.34	38.62	37.28	37.34

Notes: This table presents the results of employment-weighted-least-squares (top panel) and Huber-White robust estimates (bottom panel) of the differential effect of trust on the log of average firm size across industries characterized by a different intensity in delegation. The unit of analysis are region-industry observations for 19 Italian regions and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of regional average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the INVIND survey of Italian firms. The other explanatory variables are described in the Appendix. Region and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table A12: trust and industry value added in European countries, additional results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trust X Delegation	2.682***	2.393***	2.367***	2.366***	2.230***	2.154**	2.018**
	(0.859)	(0.818)	(0.789)	(0.894)	(0.786)	(0.902)	(0.832)
College X HC int.		2.901***	2.885***	2.884***	2.511***	2.808***	2.434***
		(0.648)	(0.761)	(0.765)	(0.704)	(0.776)	(0.740)
Capital X Cap. Int.		0.025	0.010	0.010	-0.007	-0.000	-0.017
		(0.147)	(0.166)	(0.114)	(0.116)	(0.133)	(0.129)
FD X ED			0.006	0.006	-0.006	0.006	-0.006
			(0.036)	(0.034)	(0.038)	(0.030)	(0.038)
JQ X differentiated			2.876	2.913	3.671	2.812	3.581
			(2.486)	(2.425)	(2.436)	(2.679)	(2.576)
Entry Barriers X Turnover				0.002			-0.002
				(0.020)			(0.021)
EPL X Labor Intensity					0.456**		0.456**
					(0.177)		(0.178)
Prop. Rights Prot X Int. Assets						0.038	0.038*
						(0.023)	(0.021)
Observations	205	205	205	205	205	205	205
Adjusted R²	0.881	0.893	0.893	0.893	0.898	0.894	0.899
F	65.64	67.52	64.28	61.91	71.19	63.44	69.22

Notes: This table presents the results of OLS estimates of the differential effect of trust on log value added across industries characterized by a different intensity in delegation. The unit of analysis are country-industry observations for 14 European countries and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of country average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the European Social Survey. The other explanatory variables are described in the Appendix. Country and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table A13: trust and industry exports in European countries, additional results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trust X Delegation	2.015**	1.746**	1.775**	1.782**	1.727**	1.934**	1.866**
	(0.786)	(0.810)	(0.819)	(0.790)	(0.772)	(0.808)	(0.825)
College X HC int.		3.066***	2.683***	2.689***	2.515***	2.560***	2.345**
		(0.729)	(0.840)	(0.886)	(0.829)	(0.868)	(0.94)
Capital X Cap. Int.		-0.080	-0.091	-0.091	-0.098	-0.105	-0.114
		(0.079)	(0.072)	(0.066)	(0.065)	(0.085)	(0.088)
FD X ED			0.045	0.045	0.043	0.036	0.029
			(0.033)	(0.032)	(0.036)	(0.040)	(0.047)
JQ X differentiated			1.729	1.569	1.997	2.319	2.655
			(2.115)	(2.156)	(2.271)	(2.541)	(2.646)
Entry Barriers X Turnover				-0.009			-0.008
				(0.024)			(0.025)
EPL X Labor Intensity					0.225		0.264
					(0.209)		(0.208)
Prop. Rights Protection X Int. Assets						0.020	0.020
						(0.038)	(0.036)
Observations	222	222	222	222	222	207	207
Adjusted R²	0.863	0.875	0.875	0.875	0.876	0.877	0.828
F	54.60	57.65	54.53	52.71	55.53	53.66	38.98

Notes: This table presents the results of OLS estimates of the differential effect of trust on exports across industries characterized by a different intensity in delegation. The unit of analysis are country-industry observations for 14 European countries and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of country average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the European Social Survey. The other explanatory variables are described in the Appendix. Country and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table A14: trust and firm size in European countries, additional results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trust X Delegation	1.687**	1.671***	1.637**	1.636**	1.639**	1.607**	1.609**	1.559**	1.153*	1.158
	(0.735)	(0.595)	(0.700)	(0.682)	(0.642)	(0.671)	(0.691)	(0.678)	(0.656)	(0.729)
College X HC int.		0.355	0.600	0.599	0.607	0.486	0.490	0.512	0.509	0.505
		(0.689)	(0.757)	(0.765)	(0.696)	(0.774)	(0.845)	(0.786)	(0.704)	(0.743)
Capital X Cap. Int.		-0.028	-0.027	-0.027	-0.027	-0.030	-0.030	-0.028	-0.016	-0.017
		(0.140)	(0.098)	(0.134)	(0.151)	(0.135)	(0.128)	(0.120)	(0.149)	(0.106)
FD X ED			-0.027	-0.027	-0.027	-0.039	-0.038	-0.039	-0.017	-0.017
			(0.034)	(0.036)	(0.035)	(0.040)	(0.045)	(0.045)	(0.040)	(0.042)
JQ X differentiated			0.109	0.139	0.097	-0.859	-0.958	-0.999	-3.216	-3.228
			(2.235)	(2.198)	(2.123)	(2.291)	(2.569)	(2.318)	(2.257)	(2.475)
Entry Barriers X Turnover				0.002			-0.006	-0.006	-0.007	-0.007
				(0.018)			(0.020)	(0.018)	(0.017)	(0.015)
EPL X Labor Intensity					-0.010		-0.003	-0.013	-0.052	-0.051
					(0.158)		(0.180)	(0.164)	(0.160)	(0.175)
Prop. Rights Prot. X Int. Assets						0.026	0.026	0.007	0.002	0.005
						(0.024)	(0.027)	(0.047)	(0.025)	(0.047)
JQ X Intangible Assets								0.367		-0.061
								(0.638)		(0.652)
JQ X Vertical Integration									-0.474***	-0.478***
									(0.175)	(0.177)
Observations	222	222	222	222	222	207	207	207	207	207
Adjusted R²	0.832	0.831	0.831	0.830	0.830	0.830	0.828	0.828	0.835	0.834
F	48.85	46.79	43.35	41.94	43.26	41.66	38.98	37.88	38.35	38.32

Notes: This table presents the results of OLS estimates of the differential effect of trust on the log of average firm size across industries characterized by a different intensity in delegation. The unit of analysis are country-industry observations for 14 European countries and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of country average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the European Social Survey. The other explanatory variables are described in the Appendix. Country and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table A15: trust and firm size distribution in European countries, additional results

	(1)	(2)	(3)	(4)	(5)	(6)
	log total number of firms			by size class		Share of self-empl.
				1-19	20+	
Trust X Delegation	0.907	0.655	0.296	-0.207**	1.781***	-0.126***
	(0.809)	(0.646)	(0.694)	(0.084)	(0.598)	(0.047)
College X HC int.		2.501***	2.039**	-0.332***	1.091*	0.129**
		(0.758)	(0.836)	(0.113)	(0.595)	(0.052)
Capital X Cap. Int.		-0.020	-0.038	0.037	-0.018	-0.001
		(0.137)	(0.111)	(0.032)	(0.063)	(0.008)
FD X ED		0.009	0.012	0.002	-0.025	0.002
		(0.041)	(0.006)	(0.027)	(0.003)	
JQ X differentiated			1.855	0.695**	-0.088	-0.127
			(2.431)	(0.349)	(1.309)	(0.150)
Entry Barriers X Turnover			0.021			
			(0.019)			
EPL X Labor Intensity			0.494***			
			(0.181)			
Prop. Prot X Int. Assets			-0.010			
			(0.025)			
JQ X Vertical Integration			-0.162			
			(0.179)			
log number of firms				0.075***	-0.413***	
				(0.018)	(0.075)	
Observations	222	222	207	220	220	218
Adjusted R²	0.919	0.925	0.928	0.731	0.833	0.673
F	143.9	127.3	112.6	20.04	39.59	15.41

Notes: This table presents the results of OLS estimates of the differential effect of trust on average firm size and the firm size distribution across industries characterized by a different intensity in delegation. The unit of analysis are country-industry observations for 14 European countries and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of regional average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the European Social Survey. The other explanatory variables are described in the Appendix. Country and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

Table A16: trust and industry growth in European countries

	(1) Baseline	(2) Factors	(3) Institutions	(4)	(5) Additional control variables	(6)	(7)
Trust X Delegation	0.144**	0.145**	0.143**	0.143**	0.148**	0.140**	0.144**
	(0.061)	(0.064)	(0.070)	(0.063)	(0.065)	(0.068)	(0.073)
College X HC int.		0.125*	0.123	0.123*	0.124	0.107	0.108
		(0.074)	(0.079)	(0.065)	(0.079)	(0.080)	(0.079)
Capital X Cap. Int.		-0.015	-0.014	-0.014	-0.014	-0.015	-0.015
		(0.025)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)
FD X ED			-0.001	-0.001	-0.001	-0.001	-0.001
			(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
JQ X differentiated			-0.172	-0.173	-0.174	-0.113	-0.118
			(0.227)	(0.221)	(0.206)	(0.237)	(0.229)
Entry Barriers X Turnover				-0.000			-0.000
				(0.001)			(0.001)
Prop. Prot X Int. Assets					-0.001		-0.001
					(0.002)		(0.002)
EPL X Labor Intensity						0.026**	0.026**
						(0.011)	(0.011)
Observations	204	204	204	204	204	204	204
Adjusted R²	0.423	0.471	0.470	0.467	0.468	0.483	0.477
F	5.716	5.554	5.363	5.387	5.235	5.382	5.193

Notes: This table presents the results of OLS estimates of the differential effect of trust on value added growth (1995-2005) across industries characterized by a different intensity in delegation. The unit of analysis are country-industry observations for 14 European countries and 15 industries, as defined according to the 2-digit International Standard Industry Classification (ISIC). The main explanatory variable is the interaction of country average trust (as measured by the World Values Survey) and an industry-specific measure of need-for-delegation, based on the European Social Survey. The other explanatory variables are described in the Appendix. Country and industry fixed effects are included in all specifications. Bootstrapped standard errors based on 200 replications are reported in parenthesis; *, ** and *** denote coefficients significantly different from zero at the 90%, 95% and 99% confidence level, respectively.

DATA DESCRIPTION

Industry data

Delegation$_j$	**Italian regions**: intensity in decentralization. Variable estimated on the 2009 wave of the Survey on Investments of Italian firms (INVIND) exploiting self-reported number of responsibility centers, defined in the management literature as the units of the organization whose managers are accountable for a set of activities or a specific project. The variable is estimated according to the following procedure: (*a*) Regress firm-specific decentralization measures *Centers$_{ijr}$* on region dummies, industry dummies and the log of firm size (equation 2 in the main text). (*b*) Predict *Delegation$_j$* as the value of the estimated industry dummy.
	European countries: a similar procedure is applied to the degree of delegation within firms in 14 European countries as reported by workers interviewed in the first three waves (2002-2005) of the European Social Survey.
HC intensity$_j$	Average years of schooling at the industry level in the US (as obtained from the US 1990 Integrated PUMS).
Cap. intensity$_j$	Ratio between real fixed capital stock and gross value added at current basic prices in the US (1995). Source: Nunn (2007)
Differentiated$_j$	Industry intensity in relationship-specific investments, computed as the fraction of intermediate inputs that is not traded in a standardized market. Source: Nunn (2007)
ED$_j$	Industry dependence on external finance, defined as capital expenditure minus internal funds. Source: de Serres *et al*. (2006) on Thomson Financial Worldscope database.
Labor intensity$_j$	Industry labor intensity measured as the ratio between employees and total assets in the US in 1996. Source: OECD STAN database (total assets are computed from investment data using the perpetual inventory method with a 15% depreciation rate).
Turnover$_j$	Firm turnover in the US, average rate 2004-2006. Source: OECD Standard Business Statistics.
Int. Assets$_j$	Industry in intangible intensity in the US. Source: Claessens and Laeven (2003).
Vertical integrat.$_j$	Industry propensity to vertically integrate computed on US data. Source: Acemoglu et al., (2010)

Italian regional data

Trust$_r$	Average trust in region *c* in. Measured as the fraction of respondents that answers "Most people can be trusted" – answer coded with "1" as opposed to "0"- to the question "…would you say that most people can be trusted or that you need to be very careful in dealing with people?". Obtained pooling the 1990, 1995 and 2005 waves of the survey. Source: World Value Survey
College$_r$	share of college graduates in 2001. Source: ISTAT
Capital$_r$	log of physical capital-to-employment ratio in 1994. Source: Bank of Italy
JQ$_r$	Negative log of the average length of civil trials. Source: ISTAT
FD$_r$	Financial development in region *r* measured as number of bank branches over total population in 2001. Source: Bank of Italy Statistics on Credit and Finance.
VAj$_{jr}$	Level of industry *j* real value added in region *r* in 2005. Source: INVIND data, representative of 20+ Italian firms.
EXPORT$_{jr}$	level of industry *j* exports from region *r* in 2005. Source: INVIND data, representative of 20+ Italian firms.
FIRMSIZE$_{jr}$	Average size of firms in industry *j* in region *r* over in 2005. Source: ISTAT.
number of firms$_{jr}$	Number of firms by size classes in industry *j* in region *r* in 2005. Source: ISTAT.

European data

$Trust_c$	Average trust in country c in 2005 or earlier years when unavailable. Measured as the fraction of respondents that answers "Most people can be trusted – answer coded with "1" as opposed to "0"- to the question "…would you say that most people can be trusted or that you need to be very careful in dealing with people?". Source: World Value Survey
$College_c$	labor force quality index measured on a (0-100) scale. Source: Bosworth and Collins (2003)
$Capital_c$	log of physical capital-to-employment ratio in 2005. Source: Euklems Database
JQ_c	Index of Quality of contract enforcement, measured as the extent to which agents have confidence in and abide by the rules of society. Source: Governance Matters Indicators of the World Bank
FD_c	Financial development in country c measured as Private Credit by Deposit Money Banks over GDP in 1996. Source: World Bank's financial development and structure database (based on IMF's Financial Statistics).
EPL_c	Indicator of employment protection in 1988-1995. Source: Fonseca and Utrero (2006).
$Entry\ Barriers_c$	Direct start-up costs of obtaining legal status to operate a firm as a share of per capita GDP in 1999. Source: Djankov *et al.* (2002).
$VA_{j,c}$	Level of industry j real value added in country c in 2005. Source: OECD STAN database.
$EXPORT_{j,c}$	level of industry j exports in manufacturing in country c in 2005. Source: OECD STAN database.
$FIRMSIZE_{j,c}$	Average size of firms in industry j in country c in 2005. Source: OECD Standard Business Statistics.
$number\ of\ firms_{j,c}$	Number of firms by size classes in industry j in country c in 2005. Source: OECD Standard Business Statistics.
$Self\text{-}employed_{j,c}$	Share of self employed in 2005. Source: OECD Standard Business Statistics.
$VAGROWTH_{j,c}$	Constant prices value added growth in industry j in country c over the 1995-2005 period. Source: OECD STAN database.