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Civic Capital and the Vertical Integration of Service Provision: Evidence from Italy [*]

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Résumé

Cet article étudie la capacité du capital civique à atténuer le comportement opportuniste des agents économiques impliqués dans une transaction marchande, en analysant le degré d'externalisation de services d'un panel d'entreprises italiennes. Nos résultats montrent que les entreprises des régions les plus dotées en capital civique ont en moyenne une plus grande appétence pour l'externalisation. Cet effet est particulièrement marqué chez les entreprises opérant dans des secteurs où les contraintes d'ajustement du niveau de services à leurs besoins sont moins fortes. Afin de se prémunir contre d'éventuels biais d'endogénéité, nous utilisions des mesures historiques de capital civique à titre d'instrument. Nous soutenons alors que la plus forte externalisation de services s'explique par une diminution du comportement opportuniste des parties impliquées dans une transaction.

Mots clés: Capital civique ; opportunisme ; intégration verticale ; externalisation des prestations de services ; théorie du coût de transaction

Codes JEL : Z13, L23, A13, D23

Abstract

This paper studies whether civic capital acts an effective restraint against opportunistic behavior in transactions, looking at the degree of outsourcing to external suppliers of services in Italian firms. Our results show that, on average, firms tend to outsource more services where civic capital is higher. This effect is particularly strong for firms operating in industries where businesses can easily adjust the level of purchased services to their idiosyncratic needs. To address the issue of endogeneity we also instrument the current stock of civic capital by historical variables. We argue that the rise in the propensity to engage in transactions with outside service suppliers is evidence of a decrease in the opportunistic behavior between the parties involved in the transaction.

Keywords: Civic capital; opportunism; vertical integration; service outsourcing; transaction cost economics.

JEL Classification: Z13, L23, A13, D23

Understanding the determinants of firm boundaries is a fundamental concern in economics. Over the last 40 years, important theoretical contributions have highlighted the role of incomplete contracts and transaction costs for the firms' decision of whether to produce a given input in-house or to purchase it from external suppliers. In a nutshell, these theories sustain that if contracts are not fully enforceable by third parties or unforeseen contingencies occur, agents have an incentive to renege on initial agreements and behave opportunistically, something which reduces the efficacy of written agreements and creates contracting costs. Firms then choose the form of production that minimizes costs, taking duly into account transaction costs.

The present paper analyzes the role of informal institutions, proxied by the stock of local civic capital, for the firms' organization of production. The importance of civic capital for the firm's make-or-buy decision resides in the fact that the underlying civic values and beliefs attenuate individual opportunistic behavior. Hence, if the likelihood of opportunism decreases with the stock of civic capital, we expect the incidence of contractual hazards in economic transactions to be lower in more civic areas. As a consequence, the firm's organization of production should vary with the stock of civic capital characterizing the area where it is located. More precisely, according to the influential transaction cost economics literature, contractual hazards are more easily dealt with in integrated production processes. Consequently, outsourcing should be lower in areas where civic capital is low (and opportunism is high) and more pronounced where civic capital abounds.

Using Italian firm level data, this paper tests whether the firms' integration decision of service inputs is sensitive to the stock of civic capital of the province where the firm is located. Contracts governing service transactions tend to be highly incomplete, as services are afflicted by measurement and hold-up problems as well as hazards related to asymmetric information between provider and client. Moreover, services are predominantly acquired on the local market which makes the effect of local civic capital on service outsourcing more straightforward to identify. Empirically, the firm's intensity of service outsourcing is proxied by its "purchased service intensity" (PSI), calculated as the ratio of total expenses for external service provision over sales.

The empirical results highlight the following. First, the firm's intensity to purchase services from external providers increases with the stock of provincial civic capital. Quantitatively, the estimates suggest that the average PSI of firms located in the province of Naples - where civic capital is scarce - would increase by 10% if the province had the same stock of civic capital of Milan. In this way, civic capital accounts for 25% of the overall difference in PSI between the two provinces. Second, the effect of civic capital on service outsourcing varies with the characteristics of the industry in which a firm operates. More precisely, civic capital matters more in those industries where the employed production technology gives firms more freedom to choose their amount of purchased services. An increase in civic capital corresponding to the difference

between the provinces of Naples and Milan raises the PSI of Neapolitan firms by 34% for firms in the retail sector, where the level of purchased services can be adjusted quite easily. The same increase in civic capital would raise PSI by 19% for firms that manufacture wearing apparels (an industry with limited individual adjustment scope of PSI). The empirical strategy carefully addresses concerns related to omitted variables and unobserved geographic heterogeneity by including relevant firm-level and provincial controls, with the latter including a measure of the quality of formal contracting institutions. Moreover, in all econometric specifications narrowly defined geographic fixed effects are included. Finally, evidence from instrumental variables' analysis, where civic capital is measured by historical variables, documents that the effect is unlikely to be driven by measurement error or reversed causation.

1 Introduction

Understanding the determinants of firm boundaries is a fundamental concern in economics. Over the last 40 years, important theoretical contributions have highlighted the role of incomplete contracts and transaction costs for the firms' decision of whether to produce a given input in-house or to purchase it from external suppliers. If contracts are not fully enforceable by third parties or unforeseen contingencies occur, agents have an incentive to renege on initial agreements and behave opportunistically, something which reduces the efficacy of written agreements and creates contracting costs. Firms then choose the form of production that minimizes costs, taking duly into account transaction costs.

At the same time, a well developed literature documents that civic capital or societal trust have far reaching implications for economic outcomes in general (Guiso et al., 2011; Putnam, 1993; Algan and Cahuc, 2014) and the behavior of firms in particular (Bloom et al., 2012; Bürker et al., 2013; Bürker and Minerva, 2014). The key merit of the underlying values and beliefs that account for the stock of civic capital is that they attenuate narrow-minded self interested behavior. The propensity of individuals to engage in opportunistic behavior is thus lower in areas where civic values are more widespread.

In this paper, we combine the key insights from these two literatures and analyze whether civic capital alters the boundaries of the firm: if the degree of opportunism decreases with the stock of civic capital, we expect the incidence of contractual hazards to be lower in more civic areas. As a consequence, the firm's organization of production should vary with the stock of civic capital characterizing the area where it is located. More precisely, according to the influential transaction cost economics literature (Williamson, 1975, 1985), contractual hazards are more easily dealt with in integrated production processes. Consequently, we should observe less outsourcing in areas where civic capital is low (and opportunism is high) and more outsourcing where civic capital is high.

Employing Italian firm level data, we then test whether there is a relationship between the firms' integration decision and the stock of civic capital in the province where the firm is located. Concerning vertical integration, we focus on the purchase of a specific item, namely services. The choice of using services rather than raw material inputs is dictated by several reasons. First, as we explain in detail in section 2, the transactions involving service purchases are particularly sensitive to contractual incompleteness, because they tend to be afflicted by measurement and hold-up problems, and are plagued by asymmetric information. This makes them a suitable input to look at for our purposes. Second, services are predominantly acquired on the local market (Schwartz, 1993; Ono, 2003; Merino and Rodrand, 2007). This makes the effect of local civic capital on service outsourcing more straightforward to identify, as both the buyer and the provider turn out to be located in the same area, and hence share exactly the same level of civicness.

Our empirical results show that the stock of civic capital in a given province determines firm intensity to purchase services from external providers. In particular, we find that firms located in more civic provinces outsource on average more services. The effect is heterogeneous across industries. In particular, civic capital

increases service outsourcing more in those industries where firms have greater freedom to individually adjust the level of purchased service inputs. The results are robust against the inclusion of relevant firm-level and provincial controls, such as the quality of formal contracting institutions. Our empirical strategy carefully addresses concerns related to omitted variables and unobserved geographic heterogeneity. Finally, evidence from instrumental variables' analysis documents that the effect is unlikely to be driven by measurement error or reversed causation.

We provide evidence that informal institutions such as civic values and beliefs determine the boundaries of the firm. The fact that civic capital increases service outsourcing of firms strongly suggest that societal values and beliefs reduce the propensity of the parties involved in a transaction to defect. In this way, our analysis confirms Williamson's hypothesis that "societal culture" can improve the efficacy of contracts by reducing opportunism (Williamson, 1993). Civic capital reduces the cost of contracting which allows firms to engage in more service transactions with external suppliers.

The present analysis complements the existing literature along several lines. The literature on the institutional determinants of vertical integration (Acemoglu et al., 2009; Macchiavello, 2012) shows that the relationship between institutional development and the firms' decision to vertically integrate is subtle. Acemoglu et al. (2009) find that the quality of contracting institutions has no direct effect on the degree of vertical integration. However, contracting institutions matter once industry heterogeneity is taken into account, implying that the efficiency of the judiciary has a greater effect on vertical integration in industries in which hold-up problems are more acute. Macchiavello (2012), in turn, analyzes the interaction between industrial structure (in particular the industry's firm size distribution), financial development and vertical integration. Empirical evidence from manufacturing industries shows that the degree of vertical integration decreases with financial development in industries where small firms generate a large share of revenues.

We complement these two papers in the following manner. First, both papers focus exclusively on the role of formal institutions, while our analysis reveals that informal institutions like civic spirit shape firms' organization of production even after controlling for other aspects of institutional quality, such as the efficiency of the judiciary and the level of financial development. Second, both Acemoglu et al. (2009) and Macchiavello (2012) define vertical integration with respect to material inputs, while we analyze the extent of service outsourcing. Third, we measure the institutional environment at a detailed geographic partition (103 Italian provinces) rather than at the country level, and so we are able to assess the impact of the within-country variation in institutional quality, which can be substantial. Finally, in contrast to these papers, we find a direct effect of the (informal in our case) institutional environment on outsourcing. Our results do not necessarily contradict Acemoglu et al. (2009) provided that we focus on the sourcing decision of an input for which contract incompleteness is particularly severe. Similarly to Acemoglu et al. (2009), our results show that the intensity of the effect of the institutional environment on outsourcing varies across industries.

Our paper is also related to the literature looks at the determinants of service outsourcing. Several factors that influence the propensity of firms to purchase services from external providers have been identified, ranging from labor cost savings (Abraham and Taylor, 1996), ICT investment (Abramovsky and Griffith, 2006), firm size (Abraham and Taylor, 1996; Merino and Rodrand, 2007) or demand fluctuations (Abraham and Taylor, 1996), to the characteristics of the local market, in particular market size (Ono, 2007). None of these studies however focuses on how contractual difficulties and the quality of informal institutions shape the firms' decision to outsource services.

This paper is organized as follows. The next section provides the theoretical framework and derives testable implications. Section 3 describes the data and the variables employed. In section 4 we lay out the estimation strategy while section 5 describes the empirical results. The last section concludes.

2   Civic capital and service outsourcing: conceptual framework

In markets, it is impossible to setup written agreements that specify contingencies for all possible future states. Rather, contracts are incomplete and their enforceability by third parties is limited which gives the contracting parties an opportunity to renege on initial agreements and, as a consequence, undermines the efficacy of contracts. The fact that ex-ante incomplete contracts involves contractual hazards ex-post is a direct consequence of opportunistic behavior on the part of the agents involved in the transaction (Williamson, 1985). More generally, the influential transaction cost literature (Williamson, 1985, 1975) states that opportunism is a necessary condition for the emergence of contractual hazards. If opportunistic behavior, defined as "self-interest seeking with guile" (Williamson, 1996), were absent the efficiency of contracts would be guaranteed even if the underlying agreement was not enforceable by third parties. In such a setting, it is sufficient to specify automatic adaptation clauses that apply once the conditions require un update of the written agreement.

In this study, we take a closer look on how variations in opportunistic behavior shape the efficacy of contracts. We achieve this by analyzing how the firm decision to outsource or not services varies with the degree of opportunistic behavior characterizing the environment in which the transaction takes place. Studying the sourcing decision of services, rather than material inputs, has two advantages. First, the incidence of contract incompleteness is particularly strong in service transactions. This makes them particularly sensitive to the effect of opportunism. As services are intangible and often non-standardized, the responsibilities and duties for each contracting party are hard to define and penalties for defection difficult to specify. Moreover, service transactions are likely to be afflicted by hold-up problems if the provider has to acquire specific physical or human capital to meet the specific needs of the client. Similarly, it might be that the client has to align its work setting or require specific knowledge in order to allow the provision of the service or to assist effectively the provider (DeBandt, 1996). Contractual frictions further increase due

to measurement difficulties. As services are intangible and often lack well-defined technical standards it is generally difficult to measure quality or simply compare it across different suppliers. Therefore, it is cumbersome to write a contract that specifies ex-ante clauses for each possible contingency that might emerge during the course of the contractual relationship. Rather, the contract that governs a service transaction is ex-ante incomplete and requires ex-post adaptation to unforeseen contingencies.

The second advantage of studying transactions involving services resides in their limited tradeability. This is an important aspect, as our variable of interest is the opportunistic attitude that characterizes the environment in which a transaction takes place. Hence, the effect is most accurately identified if both transacting partners are located in the same area. While we do not have precise information on the location of the transacting parties, we are confident that this condition is likely to be fulfilled in the case of service transactions. First, the role of spatial proximity is pretty evident if services such as repairing and maintenance, cleaning, or security are considered. Services are usually non-standardized products that are tailored to the specific needs of the client, and require repeated personal interaction between the client and the provider (DeBandt, 1996).[1] Differently from services, raw materials are more tradeable, and hence the supplier's location can be far from the buyer's. The assignment of an appropriate level of opportunism is puzzling in this case, and hence they constitute a less suitable object of analysis.

We associate the degree of opportunism in a given area to the stock of civic capital in the province where the firm is located. We have good reasons to believe that civic capital is a good proxy for the behavioral traits that inform about opportunistic behavior in economic transactions. Civic capital is defined as "those persistent shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities" (Guiso et al., 2011). Put differently, it captures all those societal values and beliefs that mitigate the free-rider problem, a genuine form of opportunistic behavior. Therefore, we conjecture that the stock of civic capital increases the efficacy of contracts as agents have a lower probability to defect. The concept of civic capital comes close to what Williamson terms "societal culture". More precisely, he emphasizes that societal culture increases the efficacy of contracts as it limits the incidence of opportunistic behavior (Williamson, 1993).[2]

What are the implications of the reduction in contracting costs brought about by civic capital for the firms' intensity of service outsourcing? Transaction costs economics posits that if contractual hazards are acute the provision of the product is more efficiently achieved within an organization, as the hierarchical

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[1]According to the Survey of Industrial and Service firms, conducted by the Bank of Italy in 2007, 2/3 of Italian firms purchase services exclusively from providers that are located in the same region. Even if we work with a smaller geographic partition (on average there are 5 provinces per region) this evidence confirms that service tradeability is limited.

[2]Relational contracts too have been found to affect the firms' integration decision (Baker et al., 2002), but they operate differently from civic capital. Relational contracts are sustained by the value of future relationships; that is, agents have a material interest not to renege on contractual agreements even if they are not enforceable by third parties. In contrast, the behavioral traits underlying civic capital deviate from strict self-interested behavior. Here, it is a given set of societal values and beliefs that attenuate opportunism and hence ensure cooperation, even if the transaction is not repeated in the future.

structure is better able to solve disputes that may arise during the course of production. On the other hand, if contractual difficulties are negligible, a product is efficiently provided by an independent supplier and then exchanged through a market transaction. The empirical literature has provided overwhelming evidence that confirms the prediction. Products that are complex and afflicted by hold-up problems between suppliers and clients give rise to contractual frictions and lead to an integrated production (Lafontaine and Slade, 2007).

Based on these insights, we establish the following hypothesis. Firms located in areas with low endowments of civic capital acquire less services from external suppliers. In these locations, opportunism is widespread, something which undermines the efficacy of arm's length contracts. In these locations firms tend to rely more on the internalization of service provision. Conversely, where civic capital abounds transaction costs are lower, as agents have a lower propensity to renege on initial agreements and behave opportunistically. In this case, relatively more transactions concerning services are realized through arm's length relationships, so we should observe greater outsourcing.

We also analyze whether the effect of civic capital on service outsourcing varies across industries. In particular, we argue that the impact of civic capital on service outsourcing depends on the technology used in the production process. If the production technology of a particular industry is such that it requires a fixed amount of purchased services, individual firms in the industry are left with a small idiosyncratic variation in the level of external services around this fixed amount. In these industries the impact of civic capital is attenuated, as firms have limited freedom to choose the level of external service inputs. Conversely, in industries where the production technology allows firms to choose the amount of services to be purchased more freely, the impact of civic capital should be more pronounced.

3 Data and variables

3.1 Firm-level variables

The primary source of information is AIDA, a firm-level dataset administered by the Bureau van Dijk. AIDA is a commercial dataset which provides information on balance sheets and profit and loss statements for hundreds of thousands of Italian businesses. Out of this dataset, we keep information on sales, the number of workers, total tangible fixed assets, value added, service purchases, total wage bill, firm age, the financial stakes a firm holds in a parent, subsidiary, or associate company, and the amount of receivables and payables from affiliated businesses. We also retain information about firm geographic localization (in terms of Italian province) and the 4-digit industry it operates in (NACE rev. 1.1). Data from AIDA refer to the year 2001. An advantage of the AIDA dataset is that it includes firms operating in all industries.

This implies that our results apply to the whole spectrum of economic activity.[3]

Analyzing service outsourcing with information collected at the firm-level rather than at the plant-level might be inaccurate if a firm runs multiple establishments. To the extent that decisions on service outsourcing are taken at the central firm headquarters, and are not decentralized to individual plants, there is no error due to firm-level aggregation. Under centralization, the degree of outsourcing of the entire firm will be decided by the managers located at the central office, and, according to our framework, it will be affected by the level of civic capital of the central office's province. Moreover, if the sourcing decisions are made at individual plants the use of firm-level data is still adequate as long as plants and headquarters are located in the same province, since the different units are influenced by the same set of provincial regressors. The only case where firm-level data are problematic is when the decision to outsource services is decentralized at the plant level and plants are located outside of the province of the firm headquarters.[4]

The degree of service outsourcing at the firm-level is measured as follows. The item *services* in the profit and loss statement informs about the total expenditures paid by the firm for external service provision.[5] Since items recorded in the income statement are collected for accounting purposes, the purchase of specific services is not singled out, and we have only information on the total amount of purchased services. As in Abramovsky and Griffith (2006) and Görg and Hanley (2011), we divide service purchases by the total amount of sales in order to retrieve what we call Purchased Service Intensity (PSI hereafter). We now show in which manner the PSI variable is related to value added over sales, the standard way of measuring vertical integration employed in the literature.[6] The ratio of value added over sales captures how much of firm production is carried out within the firm boundaries. Leaving aside the variation in inventories to simplify notation, value added can be written as

$$VA = Sales - Services - Material\ Inputs - Other\ non\text{-}financial\ non\text{-}labor\ costs \tag{1}$$

and then

$$\frac{VA}{Sales} = 1 - PSI - PII - \frac{Other\ non\text{-}financial\ non\text{-}labor\ costs}{Sales} \tag{2}$$

where PSI is Purchased Service Intensity, while PII is Purchased (Material) Inputs Intensity. Consequently, the firm's overall degree of vertical integration, measured by value added over sales, can be decomposed in three parts: PSI, which measures the contribution that the purchase of services on the market, instead of their production in-house, provides to the firm's degree of integration; PII, which measures the contribution that the purchase of material inputs on the market, instead of their production in-house, provides to the

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[3]The only industries that we exclude are Public administration (NACE rev 1.1. code 75), Other services (95, 96, 97) and Extraterritorial organizations (99).

[4]We are not the first to employ firm-level data to investigate the determinants of the degree of vertical disintegration. See Li and Lu (2009) for a paper about input outsourcing in China and Merino and Rodrand (2007) who analyze service outsourcing of Spanish firms.

[5]In Appendix 8 we give a detailed description of the kind of services that enter this item.

[6]The classical reference is Adelman (1955).

firm's degree of integration; a residual term, which is related to the decision to purchase on the market other types of inputs. For the reasons explained above, in this paper we are going to focus on the effect that civic capital exerts on firm-level vertical integration through the purchase of services only.

After removing outliers and observations with abnormal values, the final sample consists of more than 95,000 firms.[7]

In section 4.2, we study whether the effect of civic capital on PSI is sensitive to industry characteristics. In order to minimize endogeneity concerns, the information used to calculate our measure of industry heterogeneity in PSI is taken from the French database *Fichier bancaire des entreprises* (FIBEN). Based on tax statements, *FIBEN* contains detailed information on balance sheet and profits and loss accounts of French firms whose annual sales exceed 750,000 Euros. The database is administered by the Banque de France and includes more than 300,000 firms per year. After removing outliers[8], we use information from more than 290,000 French firms in 2010 to calculate the coefficient of variation for PSI.[9]

Table 1 depicts descriptive statistics of PSI in the Italian sample. On average, the amount of purchased services equals 16,3% of firm sales, the median value of PSI is slightly larger (18%). Figure 1 shows average PSI across provinces. Overall, the pattern suggests that there is substantial geographic variation in business service outsourcing. Firms located in Northern Italy outsource more services than businesses in the South of the country. Moreover, firms in provinces that host large cities purchase more services from external suppliers. Average PSI of firms in the provinces of Rome (27.1%), Milan (27.1%), and Turin (25.1%) belong to the 9th decile of the distribution of provincial PSI. This is in line Ono (2007) who finds that agglomeration economies favor service outsourcing of firms. An interesting exception in this regard is the province of Naples. The average PSI of firms located in this province equals 19.4%, which is substantially lower than in the other agglomerated areas (the value is situated in the 4th decile of the distribution of provincial PSI). This is surprising, as the province is the third largest of the country and has the highest population density. At the same time, this evidence is supportive of our idea that civic capital favors service outsourcing. As we will show below, the province of Naples has the lowest endowment of civic capital.

Figure 2 shows that the geographic pattern of PSI shown in Figure 1 is not driven by the spatial sorting of industries with higher average PSI in the Center-North: even after removing the variation in PSI that is explained by industry affiliation, service outsourcing is still higher in the North of the country.[10] Besides a pronounced North-South gap, the graph suggests that PSI is highest in the Center-North of the country

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[7]Firms with negative firm-level values or whose PSI exceeds 100% are excluded. Observations whose value of PSI is larger (smaller) than the 99.5th (0.05th) percentile are flagged as outliers.

[8]As before, we exclude firms whose value of PSI is above (below) the 99.5th (0.5th) percentile of the distribution of PSI.

[9]Information on acquired services collected in *FIBEN* is slightly different from the information available in the AIDA data. In the case of FIBEN the expenses for external service purchases are subsumed in the item "Other acquisitions and external expenses" of the profits and loss account, which includes also non-stockable material inputs in addition to service inputs.

[10]Specifically, Figure 2 shows average provincial residuals obtained from regressing the log of PSI on the full set of 4-digit industry dummies.

which corresponds to the areas with the greatest endowment of civic capital.

3.2   Measurement of civic capital

We quantify the stock of civic capital in a given province by three proxies, namely electoral turnout in referenda, blood donations in 2000 and volunteering in non-profit organizations in 2002, the latter two variables are standardized by population.[11] These variables are standard measures of civic capital in the empirical literature and have been used in numerous studies.[12]

The motivation to use them as proxies descends from the following reasoning. Individuals that donate blood, vote in referenda or volunteer in non-profit organizations make an effort without receiving any personal, pecuniary compensation. Moreover, legal authorities neither provide incentives nor punish these kind of activities. Individuals who pursue these activities deviate from narrow-minded self-interested behavior and express a concern for the common good. Therefore, these activities can be considered as an expression of those societal values and beliefs prevailing in the local area that sustain cooperation. This is precisely the behavioral trait civic capital aims to capture. Hence, the incidence of these activities informs about the strength of cooperative values and beliefs in a given province. Obviously, each of these proxies is only an imperfect measure of civic capital. In order to purge these proxies of the noise, we extract the first principal component. As expected, we find a strong common pattern in the data. All three proxies are highly correlated and the eigenvalue of the first principal component is 2.48 while the associated eigenvector explains 75% of the total variance.

Figure 3 shows the geographic variation of civic capital across Italian provinces when measured by the first principal component. The map confirms the well-established North-South divide in the endowment of civic capital. Northern provinces, in particular in the Center-North have high stocks of civic capital whereas the endowment of civic capital in the South is considerably lower. Comparing the geographic distribution of civic capital with the average provincial PSI in Figure 2 reveals striking similarities. The sharp North-South gap in the endowment of civic capital coincides almost perfectly with average provincial PSI net of industry fixed effects. Moreover, the Central-Northern regions with the highest PSI are those where the stock of civic capital is the most pronounced. The analogy between the two maps provides strong visual evidence of a positive relationship between civic capital and the extent of service outsourcing. This is in line with our idea that civic capital facilitates service outsourcing.[13]

In section 6 we use historical variables of civic capital as instruments. The first measure is average electoral turnout in elections during the period 1919-1921. The second historical measure is membership in mutual aid societies in 1873, standardized by population. These mostly urban associations served craftsmen

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[11]A complete description of the variables is provided in the appendix.

[12]See for example Guiso et al. (2004), Buonanno et al. (2009), de Blasio and Nuzzo (2010), Bürker and Minerva (2014), Bürker et al. (2013).

[13]Notice that in the paper we are going to exploit within-regional variation since we include regional dummy variables.

and artisans as a form of insurance against economic and social calamities. Both variables are available at the regional level.[14] The last historical instrument delves even deeper into history. According to Putnam (1993), the differences in civic capital across Italy were determined by different political regimes prevailing at the beginning of the second millennium. In particular, he stresses the role of free-city states that emerged in the Northern part of the country for the accumulation of civic capital. Based on information provided in Guiso et al. (2008a), we construct two instrumental variables for the contemporaneous stock of provincial civic capital. First for each province we count the number of cities that were free-city states before 1300. The second measure is the weighted average of the length of communal independence, where city size in 1861 is used as weight.

3.3 Control variables

In the regression, a set of appropriate control variables is included that capture relevant characteristics of the firm as well as attributes of the province where the firm is located. At the local level, we employ the size of the service market, calculated as the total number of service workers employed in each province. The decision of the firm to outsource a given input depends on the search costs for finding the appropriate supplier (Grossman and Helpman, 2002). This is particularly important in the case of services which are typically less standardized and require a high level of customization. Greater availability of local service providers reduces search costs and improves the match between the client and the supplier of the service. Moreover, the size of the local service market controls for the effect of agglomeration on contractual hazards. For example, in a buyer-supplier relationship, the threat of holding-up the contract partner is less severe in agglomerated areas, due to the high number of potential alternative buyers (Helsley and Strange, 2007). Hence, we expect a positive relationship between the size of the local service market and the extent of service outsourcing of firms.[15] As in Merino and Rodrand (2007), we focus on knowledge intensive business services (KIBS) which consist of the 2-digit NACE industries 72, 73, and 74. In the robustness checks we measure the size of the local service market through the number of workers employed in all service industries. To have an exact measure of service employment, we take this information from the 8th Census of Industry and Services carried out by the Italian national statistic authority (ISTAT) in 2001.[16]

Next, we account for the quality of formal contracting institutions, which is an important determinant of contracting costs. We measure the performance of contracting institutions at the local level by the average number of days it takes for a civil proceeding to be completed in the tribunals located in the province.[17]

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[14]For a detailed description consult Putnam (1993).

[15] Obviously, the eventual size of the local service market is in turn affected by the propensity of firms to outsource business services. In other terms, local service market is endogenous to firm-level PSI.

[16]When a firm in the sample belongs to the service sector we subtract its size from the overall number of service workers in the local area.

[17]In some province there is more than one tribunal. We calculate the average for each province over all courts located in the province.

Consequently, service outsourcing should be higher in those provinces where proceedings are shorter.

We also include the number of bank branches, normalized by population. As in Benfratello et al. (2008), the number of bank branches is related to the level of financial development achieved in a given province. Financial development, in turn, may be correlated to PSI as it could promote the birth of innovative suppliers providing specialized services to downstream firms, thus increasing outsourcing. More generally, by inducing firm entry and hence the degree of competition, financial development drives smaller, non-integrated firms out of the market, thereby increasing the equilibrium level of vertical integration (Macchiavello, 2012).[18] As service industries tend to be skill-intensive, another variable which can be linked to the availability of a large set of service varieties is the number of skilled workers. This variable is measured by the share of the provincial population holding a university degree. Finally, in order to account for the substantial variation in socio-economic development across Italian regions, we include regional dummies. This set of detailed fixed effects - each region hosts on average 5 provinces - should minimize unobserved geographic effects on PSI.

In addition to these attributes of the local market, the intensity of service outsourcing depends on the characteristics of the individual firm. First, the firm's capital stock and its number of employees are included. The two factors of production are important controls, as they influence firm-level demand in services. For example, the larger the stock of machinery, the greater the expenditure for services like repair and maintenance. At the same time, capital and labor proxy for the the existence of economies of scale in internal service provision (Abraham and Taylor, 1996). Larger firms realize economies of scale in in-house production of services which makes service outsourcing less attractive. Next, we control for the average wage level of the firm. Abraham and Taylor (1996) find that firms contract out services in order to save on wage and benefit payments, so there should find a positive relationship between the average wage level and PSI. The age of the firm is also included in order to capture differences in the firm's reputation.

Finally, in the robustness checks we include two more relevant firm-level controls. The first is a binary variable that indicates whether a firm holds financial stakes in a parent, subsidiary, or associated firm. Businesses that belong to a corporate group might have better access to service provision through the network of affiliated firms. The dummy equals one if a firm has non-negative financial stakes, accounts receivables or accounts payables in affiliated businesses.[19] As this information is not always available, we prefer to work with the full sample in the main regression and include this control in a robustness check. The second variable that is included is the firm's value added. By construction, value added is negatively related to PSI.[20] However, including value added is useful since it takes care of the overall degree of vertical

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[18]Alternatively, the fact that financial development increases competition could also reduce the average degree of vertical integration in an industry: to the extent that only large firms are vertically integrated, more intense competition and hence lower profits reduces the growth of firms. See (Macchiavello, 2012) on this issue

[19]A more precise measure of membership in a corporate group would be obtained by analyzing the individual shareholders of the firm. Unfortunately, the dataset does not allow us to single out the firm's equity holders.

[20]Value added is defined as *sales - intermediate inputs - raw materials - service expenditures*. Ceteris paribus, higher ratios

integration at the firm level. In this way we also control for the decision, which affects value added, to purchase on the market material inputs, or other non-financial non-labor inputs.

4   Econometric specification

4.1   Baseline analysis

In our baseline setup, we assess the impact of civic capital on PSI by estimating the following equation:

$$\ln PSI_{i,j,s} = \alpha_0 + \alpha_1 CC_j + \ln X_i' \overline{\beta} + \ln Z_j' \overline{\delta} + \gamma_r + \gamma_s + \epsilon_{i,j,s} \tag{3}$$

where $\ln PSI_{i,j,s}$ is the log of purchased service intensity of firm i in province j and 4-digit industry s. Our variable of interest is CC_j, the stock of civic capital in province j. Firm level controls are denominated by $\ln X_i$, which include the number of employees, capital stock, age, and average wage. At the level of the local area, the vector $\ln Z_j$ subsumes the provincial covariates, namely length of trials, stock of human capital, financial development and the size of the service market. We control for unobservables at the regional level through a set of 20 regional dummy variables, γ_r, to minimize the impact of unobserved geographic heterogeneity on PSI. Moreover, the equation includes a full set of 4-digit industry dummies, γ_s, that account for systematic differences in service outsourcing across industries. Finally, the error term $\epsilon_{i,j,s}$ allows for correlation between observations in the same province and in the same 4-digit industry (two-way clustering). Equation (3) is then estimated by fixed effects where the panel variable is γ_s, the 4-digit industry-level effect. In the baseline analysis, the stock of civic capital is assumed to be exogenous. In section 6 we relax this assumption and instrument CC_j with historical measures.

4.2   Industry heterogeneity in service outsourcing

Next, we exploit heterogeneity across industries in terms of the *range of variation* of firm's service outsourcing to further analyze the link between PSI and civic capital. To do so, we calculate for each 2-digit industry a measure of volatility in external service provision across firms. This measure is the coefficient of variation in PSI for firms in 2-digit industry s' (hereafter $CV_{s'}$), obtained by dividing for each 2-digit industry the standard deviation of PSI by the industry's average. $CV_{s'}$ is thus a normalized measure of dispersion of PSI. This measure of volatility is supposed to capture the adjustment scope in the use of external services faced by firms in a certain industry. In an industry where PSI is highly volatile across individual firms, i.e. $CV_{s'}$ is large, firms have more freedom to choose their optimal level of PSI, i.e. they are able to fine-tune the purchase of services from external suppliers according to their specific needs. In contrast, a low value of $CV_{s'}$ suggests that the individual firm's choice to outsource services is limited, so firms tend to have similar values of PSI. Variation in $CV_{s'}$ across industries can be rooted in the technology characterizing the

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of purchased services over sales translate into lower value added.

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production processes. We comment more on this below. In order to minimize endogeneity problems, the industry coefficient of variation is calculated using information from French firms recorded in the database FIBEN. By doing so, we assume that industry characteristics in France are representative for Italy.

[Insert Table 2 about here]

Table 2 shows the average coefficient of variation of PSI for five groups of industries.[21] The table suggests that the volatility of PSI is the lowest in extracting industries where the coefficient of variation reaches 0.48. The low dispersion of PSI in extracting industries might be driven by the fact that these firms operate under a non-flexible technology, which limits their scope in the choice of the optimal level of PSI. In manufacturing, CV reaches an average of 0.52 whereas the most volatile industries are in the service sector, with an average CV of 0.63. Following the same line of reasoning, this highlights that firms operating in service industries possess a flexible technology of production, and this allows them more choice in the level of PSI.

Given the above reasoning, the effect of civic capital should be more pronounced in industries where $CV_{s'}$ is high; that is, in those industries where the desired level of PSI can be adjusted more freely by the individual firm. This prediction is taken to the data by estimating the following regression:

$$\ln PSI_{i,j,s} = \alpha_0 + \alpha_1 CC_j \times CV_{s'} + \ln X_i' \overline{\beta} + \ln Z_j' \overline{\delta_2} \times CV_{s'} + \gamma_j + \gamma_s + \epsilon_{i,j,s}, \tag{4}$$

where the two-digit industry is denominated by s', and γ_s is a fixed effect at the 4-digit level. In this specification, the direct effect of the coefficient of variation on PSI is captured by γ_s. Notice that the interaction with $CV_{s'}$ is repeated for each province-level control, through the terms $CV_{s'} \times \ln Z_j'$. Provided that the key regressor is the interaction of the stock of provincial civic capital with $CV_{s'}$, we are allowed to include the province fixed effects γ_j in the regression. This increases the reliability of our results as geographic heterogeneity is further washed out: unobservable province characteristics that have a direct effect on firms' PSI are wiped out by γ_j.

5   Econometric results

5.1   Results from the baseline specification

This section discusses the results from the estimation of our baseline baseline econometric model. In Table 3 we show the estimates of equation (3). In columns from (1) to (3), results of a parsimonious version of equation (3) are shown, where the log of PSI is regressed on the stock of civic capital, region fixed effects and a set of 4-digit industry dummies. The three proxies of civic capital are employed separately in the first three columns, while column (4) shows the result when civic capital is measured by the first

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[21]We provide average for five groups of industries to make

principal component of the three proxies. As expected, in each specification the coefficient suggest a positive relationship relationship between the stock of provincial civic capital and firm-level PSI. Even when we include 20 regional dummies there is a statistically significant effect of civic capital on service outsourcing. Only when civic capital is measured through blood donations the coefficient is not statistically different from zero.

In columns from (5) to (8), we include the set of firm-level and provincial control variables. Again, the estimates suggest a positive relationship between civic capital and service outsourcing, with the only exception of column (6) where civic capital is measured by blood donations. Compared to columns (1) - (3), the magnitude of the coefficient of civic capital decreases in most specifications suggesting that the variation in civic capital in the parsimonious specification is confounded by other characteristics of the province. Nevertheless, the coefficient of civic capital is statistically different from zero at the 1% level in the case of electoral turnout in referenda, and at the 5% level for the principal component. From an economic point of view, the estimates imply that average PSI of Neapolitan firms (Naples is a low civic capital province) would increase by 10% if the province had the same stock of civic capital of Milan. In this way, civic capital explains about 25% of the overall difference in average PSI between the two provinces.

[Insert Table 3 about here]

Turning to the estimates of the control variables characterizing the province where the firm is located, the only statistically significant coefficient refers to size of the service market. It suggests that firms in thick markets purchase relatively more services from external suppliers, in line with the findings of Ono (2007).

Regarding the control variables at the level of the individual firm, the number of employees is negatively associated with PSI. A negative relationship between the number of employees and the firm's service outsourcing points to the existence of economies of scale in the production of services. To the extent that in-house production of service is subject to fixed costs, smaller firms with lower demand for services should outsource more. This result has also been found in other studies (Abraham and Taylor, 1996; Merino and Rodrand, 2007). The amount of fixed assets held, ceteris paribus, is positively correlated to PSI. In this case, the rise in external service consumption relative to sales could be due to an increased demand for capital-related services, such as maintenance or repairing. The age of the firm is negatively related to the level of PSI, and this finding is close to the results found by Abramovsky and Griffith (2006) in a similar setting.

5.2   Industry heterogeneity

Results from the estimation of equation (4) are presented in Table 4. As before, columns from (1) to (4) include a parsimonious specification in which PSI is regressed on the interaction of civic capital with the industry's coefficient of variation in PSI and a set of 4-digit industry and province fixed effects. Results show

that the coefficient of the interaction term is positive and significant for each proxy of civic capital. The positive sign of the interaction coefficient implies that the effect of civic capital on PSI is stronger in those industries that have a larger coefficient of variation, i.e. where firms have a greater individual adjustment scope to outsource services. In columns from (5) to (8) the full set of control variables is included. The coefficients of interest are reduced in magnitude, but they are statistically different from zero in the case of the number of volunteers and in the case of the principal component, which is the most precise measure of civic capital.

[Insert Table 4 about here]

Let us now turn to the economic magnitude implied by our estimates. The average PSI of firms that operate in Naples in an industry with limited adjustment scope, with $CV_{s'}$ equal to 0.48 (the average value for extracting industries, or the exact value for the 2-digit industry manufacturing of wearing apparel) would increase by 19% if Naples had Milan's endowment of civic capital. Obviously, the impact of change in civic capital is more pronounced in industries with more adjustment scope. Consider the case of the retail trade industry, situated at the 90th percentile of the distribution of $CV_{s'}$. If Naples had the same stock of civic capital than Milan, the average PSI of Neapolitan firms in this industry would increase by 34%. This corresponds to one third of the observed difference in average PSI between Naples and Milan in this industry.

Similarly, the positive coefficient of the size of the local service market increases with the industry's adjustment scope in service outsourcing. The analysis also reveals that the quality of formal contract enforcement matters statistically for service outsourcing. Once we allow for heterogeneous effects across industries, the coefficient of the interaction between the length of trials and the industry coefficient of variation is negative. The negative sign implies that firms in provinces where courts are more efficient (low duration of trials) outsource significantly more services than firms in provinces with less efficient courts, and this behavior is more pronounced the higher it is $CV_{s'}$.[22] Summarizing our findings we can say that an industry characteristic such as the adjustment scope in PSI exerts a magnification effect on our main regressor of interest (civic capital) and on the controls that are positively associated to PSI (thickness of the local service markets, courts efficiency).

5.3   Robustness checks

In Table 5 we report the results from several robustness checks.

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[22]The comparison with the finding of Table 3 of a non-significant coefficient for the length of trials is not easy, because in the specification (4) we have provincial dummy variables, while in (3) we have regional dummy variables. In any case estimation of (4) does not allow to infer the overall impact of the length of trials for a given $CV_{s'}$, because to get the total impact we would need the coefficient of the interaction term and the coefficient of the level term, but the latter is absorbed by the provincial dummy variables.

[Insert Table 5 about here]

In column (1), we include firm value added and a dummy that indicates whether a firm belongs to a corporate group. As expected, value added is negatively related to PSI, but civic capital remains significant even if we control for the firm's overall level of integration. Firms that belong to a corporate group outsource significantly more services. A reason might be that these firms have better access to services through their network of affiliated firms. The coefficient of civic capital is not affected by the additional controls. If anything, its magnitude increases slightly. Column (2) allows for nonlinearities in firm level variables by including squared firm controls, in column (3) provincial GDP is included as an additional regressor, while column (4) entails a broader measure of the size of the local service market, measured by the number of all service workers. In all cases, the coefficient of interest remains unchanged. Finally, in column (5) the provinces of Milan, Rome and Turin are excluded. Results suggest that the coefficient of civic capital is still statistically significant and reasonably stable compared to the baseline estimates.

6 Instrumental variables estimates

6.1 Motivation and identifying assumptions

The econometric specification in equation (3) assumes that, conditional on the covariates, the stock of civic capital is uncorrelated with the error term $\epsilon_{i,j,s}$. However, this might be a strong assumption. Imagine an economically dynamic province with many service providers and efficient institutions. In such a business environment, firms might have a higher tendency to purchase services from external suppliers which increases their PSI. At the same time, if economic prosperity fosters civic behavior, the observed positive relationship between civic capital and PSI shown in Table 3 is in fact driven by third factors. Similarly, our OLS estimates might be inconsistent if civic capital is measured with error even after extracting the principal component of our three proxies.

In the following, we address endogeneity concerns related to measurement error or omitted variables by instrumenting civic capital with historical measures. More specifically, we closely follow Bürker and Minerva (2014) and de Blasio and Nuzzo (2010) and use two sets of historical instruments. The first set measures civicness during through electoral turnout in the 1920s and membership in mutual aid societies that emerged in the late 19th century.[23] As mentioned above, individuals that participate in political elections express a concern for a common good without receiving any material benefits in return which makes it a suitable proxy of civic capital.[24] The measure of electoral turnout in the 1920s, the first with universal suffrage is an

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[23]For a detailed description of these variables see Putnam (1993).

[24]One can object that in contrast to referenda, casting a vote in regular elections is driven by egoistic incentives if the voter expects material benefits from a particular political candidate. However, Putnam (1993) provides evidence that electoral turnout at the beginning of the 20th century is likely to be driven by civic-minded behavior as voter turnout strongly correlates with other measures of social solidarity.

average of voter participation over two national elections from 1919 and 1921 and two communal elections from 1920. On the other hand, mutual aid societies were created in the middle of the 19th century as a response to the economic and social hardships brought about by the process of industrialization. These aid societies provided basic services such as medical care and insurance against work accidents to their members; according to Putnam (1993), they were a "locally organized, underfunded, self-help version of what the twentieth century would call the welfare state". Importantly, Putnam (1993) stresses that the cooperation necessary for the functioning of mutual aid societies was sustained by mutual reciprocity rather than formalized enforcement and monitoring. As such, they are expression of the values and beliefs that sustain cooperation which are the traits civic capital aims to capture.[25] The importance of mutual aid societies at the local level is measured by the membership rate, i.e. the number of members in mutual aid societies per 100,000 inhabitants. This information is available at the regional level and refers to the year 1873.

The second set of historical variables goes back to the middle age and captures information on the free city states that existed before 1300 in Northern Italy. Lacking any central power, free city states were created by their citizens to address problems of common interest, in particular to provide mutual security. These republican city states were characterized by a high degree of civic participation in the political decision processes, at least for historical standards. The free city state experience favored the creation of horizontal ties and a strong sense of civic cooperation. According to Putnam (1993), these cooperative values and beliefs persist until today and explain the abundance of civic capital in the Center-North of the country. Based on information provided in Guiso et al. (2008a), we count for each province the number of free-city states that existed before 1300. The resulting variable varies between 0 and 3. As the free-city states existed predominantly in the North and Center of the Italian peninsula, the Southern part is not included in the regressions.[26] We also use as instruments the length of provincial independence, which is a weighted average of the years of independence of all cities located in a provinces, where weights are given by the urban population in 1861.

Instrumenting civic capital with historical measures is a widely adopted strategy in the literature trying to establish causal relationships of civic capital on socio-economic outcomes (Tabellini, 2010; de Blasio and Nuzzo, 2010; Guiso et al., 2008a; Bürker and Minerva, 2014; Bürker et al., 2013). Lagged measures of civicness are natural candidates for instruments as civic behavior tends to be highly persistent over time. In fact, the theoretical models developed by Tabellini (2008) and Guiso et al. (2008b) show that a given endowment of civic behavior is transferred over long periods of time through the inter-generational transmission of values and beliefs from parents to their offspring. Hence, we expect a strong first stage relationship between the instruments and the instrumented variable. Furthermore, using historical measures of civicness

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[25]A detailed discussion of whether these variables qualify as proxies for past civic capital is provided in Bürker and Minerva (2014).

[26]Specifically, the regions of Campania, Molise, Puglia, Basilicata, Calabria, Sicily, and Sardinia are dropped.

increases the probability that the instrumental variables are exogenous in the first stage regression. This is especially true for the free city state instrument which describes historical events that occurred more than 700 years ago.

On the other hand, in order to be valid instruments past proxies of civicness must affect PSI only through the contemporaneous stock of civic capital. In other words, conditional on the other regressors, civic behavior in the past has to be uncorrelated with the error term $\epsilon_{i,j,s}$ in equation (3). The empirical literature on civic capital has acknowledged that the appropriateness of lagged instruments is less straightforward in this regard (Tabellini, 2010; Durlauf, 2002; Guiso et al., 2011). The main problem is that the historical episodes that determine the accumulation of civic capital, such as the free-city state experience, might have also boosted other forms of assets that persist until today and that could directly affect the dependent variable. If this were the case, the exclusion restriction is violated and the instruments invalid. However, while most of this literature tries to explain economic development in general, here we study the extent to which firms outsource business services. To some extent, we believe that this concern is mitigated here compared to an income equation where historical variables are used as instruments. Analyzing a particular firm activity allows us to identify more precisely the relevant explanatory variables. This should increase the probability that any direct effect of the instruments on PSI is captured by the set of control variables included in the regression. Arguably, it is more complex to single out the different determinants of overall economic development. Nevertheless, we follow Guiso et al. (2008a) and Bürker and Minerva (2014) and include provincial GDP as an additional control in all IV regressions. The idea behind is that provincial GDP today captures any residual effects of our instrument on PSI that go through the level of economic development.

6.2   Results from IV regressions

In order to provide OLS estimations comparable to the 2SLS results, in columns (1) of table 6 we have estimated equation (3) replacing the regional dummies γ_r with macro region dummies.[27] This is necessary, as the data on mutual aid societies and turnout in the 1920 is available only at the regional level. [28] In column (2), the Southern regions are dropped as free city states were absent in this part of the country.[29]

The last three columns of table 6 provide the two-stage least squares (2SLS) results. In all IV regressions, the full set of control variables augmented by provincial GDP is included in both stages. In column (3) electoral turnout in the 1920s and the number of mutual aid societies are used as instruments for civic

[27]This set of geographic controls consists of five areas: North West, North East, Center, South and Islands.

[28]Compared to the baseline regression, the coefficients of civic capital in columns (1) are much larger in magnitude which is likely to be driven by the replacement of 20 regional dummies with 5 macro region fixed effects which perform less well in controlling for unobserved heterogeneity at the local level.

[29]The OLS regression in column (2) is interesting on its own as the sample variation in civic capital, and socio-economic performance in general, is substantially reduced if the South and the islands are dropped. The fact that the estimates resulting from a more homogenous sample are robust further increases the reliability of our results.

capital. The first stage, shown in Panel B, confirms the persistence of civic capital over time as shown by the positive sign of the coefficients. The F-statistics for the excluded instruments is comfortably large (14.96) and both variables are jointly highly significant, even if the partial significance of *Aid societies 1873* is not statistically different from zero at reasonable levels (p-value is 0.15). Moreover, the R^2 of 0.84 reveals that the regressors explain a huge share of the overall variation in contemporaneous civic capital. In sum, our instruments exhibit the expected strong first stage relationship. The second stage results are depicted in Panel A. The positive and significant coefficient implies that civic capital favors business service outsourcing of firms which mirrors the OLS results. However, the magnitude of the 2SLS coefficient is higher than its OLS counterpart shown in column (1). The fact that IV coefficients exceed the corresponding OLS estimates is often found in empirical studies in this literature (Guiso et al., 2008a; Tabellini, 2010; Acemoglu et al., 2001; Gorodnichenko and Roland, 2011; Bürker and Minerva, 2014). Acemoglu et al. (2001) and Gorodnichenko and Roland (2011) argue that the increase is likely to be driven by measurement error in the endogenous variable; a problem that applies also in the present case. This would imply that even after extracting the principal component, civic capital is still noisily measured which creates a downward bias the OLS estimate. Hence, 2SLS estimation helps to identify the true impact of civic capital on service outsourcing of firms.

The less benign explanation of the rise in the coefficient is that the instruments affect service outsourcing through channels other than civic capital, even after conditioning on provincial GDP and the other regressors. If mutual aid societies and turnout in the 1920s capture some local characteristics (for example differences in economic prosperity prevailing at that time) that exert an effect on PSI 100 years later the IVs would be invalid. Given that we have two instruments (and one instrumented variable) we test the overidentifying restriction according to which at least one of the instruments is endogenous under the null hypothesis. The p-value of the Hansen test is 0.11, which allows us to reject the null hypothesis at conventional level even though the value is not sufficiently high to provide reassuring evidence. [30]

[Table 6 about here]

In column (4) we instrument civic capital with the number of free-city states that existed before 1300 in each province. The first stage results, shown in panel B, reveal that the instruments are strong. A free-city state experience in a province in 1300 significantly increases the stock of civic capital compared to provinces without free-cities. The increase in the current stock of civic capital is larger if the province hosted two free-city states in the Middle-Age, instead of just one. The three instrumental variables are jointly very significant with a satisfactory F-statistic (9.6). Moreover, the exogenous variables in this specification explain two thirds of the total variation in current civic capital. The second stage results, depicted in panel A, again confirm previous findings. Even when instrumented with historical events that occurred more than 700 years ago, civic capital increases service outsourcing of firms. In contrast to the results in column

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[30]However, the test result should be interpreted with caution as it tests the correlation of one instrument with the error term $\epsilon_{i,j,s}$ assuming that the other instrument is truly exogenous.

(3), the magnitude of the estimated 2SLS coefficient is slightly smaller than its OLS counterpart (shown in column (2)). This result provides some safeguards against a possible violation of the exclusion restriction, even if the test for overidentifying restrictions produces similar results than before.[31] If the existence of free-city states fostered the accumulation of other forms of capital in the local area that are not controlled for in our specification and that have an effect on PSI, we would expect, if anything, an upward bias in the estimated IV coefficient. Observing a slight decrease therefore makes us more confident that any direct effects of the instrument on PSI are negligible.

Finally, in column (5) we use the weighted average of the length of independence of the free city states, with weights coming from the urban population in 1860. Again, the years of independence appear to have predictive power on the stock of today's civic capital (see Panel B). The coefficient is positive and significant and the R^2 is similar to column (4) suggesting that the instrument is strong. As before, the second stage produces a positive and statistically significant coefficient which again suggests that civic behavior increases service outsourcing of firms. The 2SLS coefficient rises moderately when compared to the OLS estimate. This increase is comparable to Guiso et al. (2008a) who use exactly the same instruments for civic capital in an income regression.

In sum, the IV regressions produce a coherent picture, independently of whether we instrument civic capital with measures of civic participation shortly after the Italian unification or with historical events that occurred at the beginning of the second millennium. As in the case of OLS, estimates from 2SLS strongly suggest that local civic capital alters the firms' organization of production as it allows them to increase service outsourcing. Even if it is notoriously difficult to entirely eradicate concerns related to the validity of our instruments, the IV regressions produce results which suggest that the concern is less relevant in the present context. We therefore conclude that it is unlikely that the positive coefficient of civic capital shown in table (3) is driven by reversed causation or omitted variables.

7   Conclusion

This paper provides empirical evidence that civic capital determine the firms' intensity of service outsourcing. The results can be attributed to the fact that in more civic areas, the incidence of opportunistic behavior on the part of the contracting parties is reduced which improves contractual outcomes and sustains more exchanges between independent firms.

Understanding the firm's choice of whether to produce a given input or purchase it from external suppliers is a fundamental concern in economics. Despite several influential theories and a huge amount of empirical studies, the pronounced differences that exist in the organization of production of firms across countries

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[31]The reliability of this test is even more questionable in this case as the three instrumental variables differ only in the number of times a given historical event (a free-city state) occurred in a province. Therefore, it appears as futile to test the exogeneity of, say, *1 free city-state before 1300* assuming that *2 free city-state before 1300* is truly exogenous.

are not yet fully understood. Analyzing the importance of informal institutions, in particular the role of cooperative values that prevail in a given area might advance our understanding as this type of informal institutions alter the costs of contracts, which are at the heart of most of the theoretical contributions in this field.

At the same time our analysis might shed some light on why civic capital spurs aggregate economic performance. While in general it is not straightforward to establish a direct relationship between the organizational mode and firm performance, there is some evidence that firms might benefit from greater service outsourcing. Intuitively, outsourcing allows firms to concentrate on their core activities and to benefit from greater specialization. Similarly, firms that produce a wider range of inputs might face larger governance costs associated with running a less specialized organization (Williamson, 1985). These effects might be particularly pronounced for services, which are often ancillary inputs with respect to the main product of the firm. Empirical evidence tends to corroborate this reasoning. For example, Görg and Hanley (2011) find that greater service outsourcing increases innovative activities of firms. To the extent that service outsourcing allows firms to focus on their core competencies, and eventually increases their productive efficiency, our paper uncovers a micro channel that helps to explain the positive effect of civic capital on aggregate economic performance (Algan and Cahuc, 2010; Tabellini, 2010).

8 Appendix

8.1 Definition of Purchased Services

Under the Italian accounting system, the exact amount of purchased services is reported in a specific item in the profit and loss account of each firm in the section dedicated to the costs of production. This item contains all the services expenses coming from ordinary firm activity. The list that follows provides some of the most common services purchases: Electricity, telephone, fax, water, gas, and other utilities - Travel and accommodation expenses - Repairing and maintenance carried out by external firms - Intermediate production stages outsourced to external firms - Advising in the technical, legal, fiscal, administrative, commercial and accounting fields - Advertising and marketing - Commissions and reimbursement of expenses for agents and representatives - Vigilance and security - Cleaning - Remunerations and reimbursements paid to administrators and auditors - Costs for the personnel temporary hired from other firms - Costs for the canteen, nursery school, holiday camps, employees clubs, etc. (these costs are net of the amount of money that is to charged to employees) - Costs for luncheon vouches distributed to employees - Costs for refresher courses for employees. - Costs for board and lodging of employees in secondment. The item B7 also lists costs for services provided by banks and financial agencies different from true financial charges. Those include: rental fees for safe-deposit boxes, service payments for utilization fees, costs for safe-keeping of bonds, commissions for bond bails (if not held to obtain financing), expenses and commissions

for factoring (excluding financial charges), expenses for valuation of real estates to obtain loans, expenses for preliminary investigations of real estates and financing (in general, all those expenses different from interests and discounts, commissions of financing and bank charges and their collateral.)

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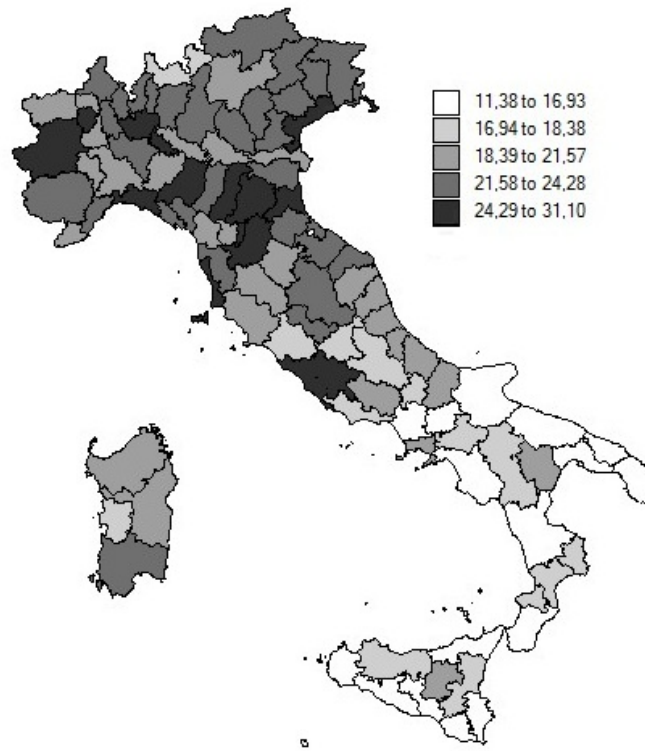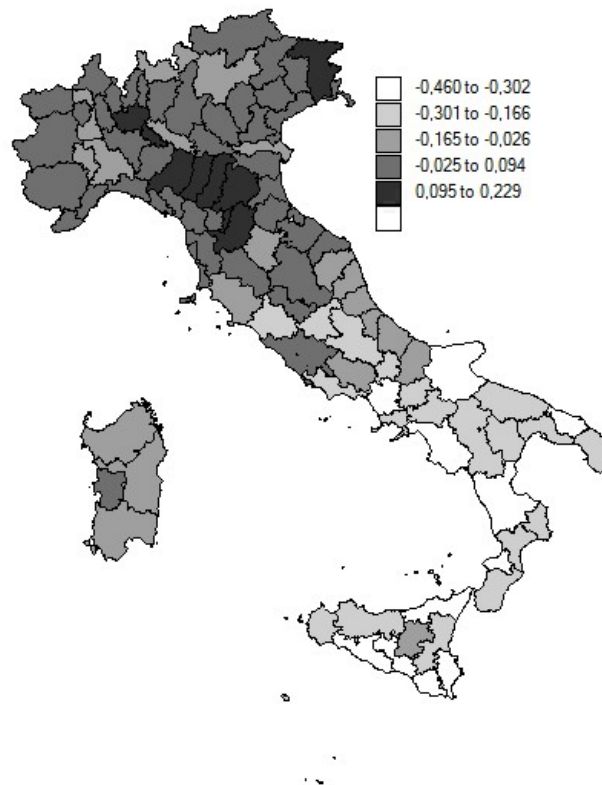Figure 1: Average Purchased Service Intensity across provinces (in %).

Figure 2: Purchased Service Intensity after removing industry fixed effects. The figure plots the provincial average of firm-level residuals of a regression of PSI on 4-digit industry dummies.
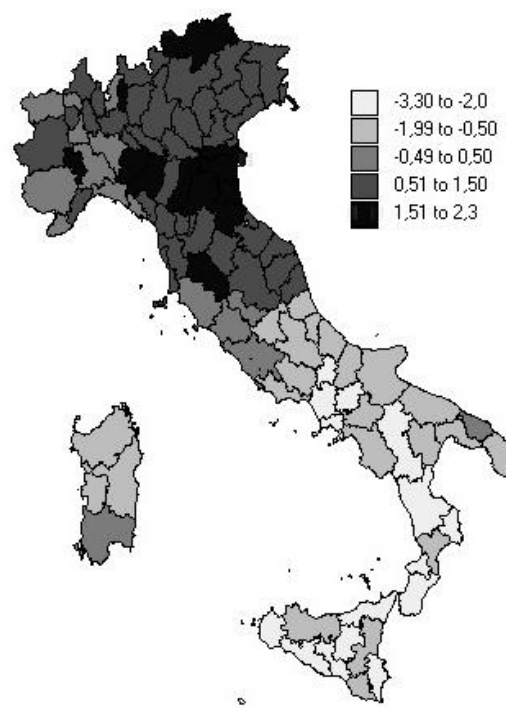
Figure 3: Map of civic capital measured by the first principal component of blood donations, volunteering, and electoral turnout.

Table 1: Descriptive statistics

Variable	Obs.	Mean	S.D.	Min	Max	1st Quartile	Median	3rd Quartile
Firm level variables								
PSI (log)	96 378	2.79	0.89	-0.25	4.55	2.22	2.89	3.42
Employees (log)	96 378	2.61	1.27	0.00	12.20	1.61	2.56	3.40
Capital (log)	96 378	12.42	1.93	0.00	24.61	11.11	12.40	13.70
Age (log)	96 378	2.51	0.94	0.00	4.62	1.95	2.64	3.09
Average wage (log)	96 378	2.93	0.46	-11.72	13.12	2.90	2.97	3.07
Value added (log)	96 378	6.45	1.34	-6.21	16.75	5.65	6.38	7.16
Group membership	81 499	0.12	1.33	0.00	1.00	0.00	0.00	0.00
Civic capital variables								
Blood donations (log)	103	3.57	0.42	2.50	4.44	3.26	3.64	3.84
Volunteers (log)	103	8.53	0.63	7.10	10.01	8.15	8.60	8.93
Referenda turnout (log)	103	4.39	0.11	4.13	4.52	4.30	4.42	4.47
Principal component	103	0	1.5	-3.35	2.31	-1.23	0.44	1.13
Historical instrumental variables								
Aid societies in 1873 (log)	20	4.03	0.09	3.82	4.21	3.97	4.03	4.08
Turnout in 1920s (log)	20	6.25	0.98	4.16	7.47	5.41	6.54	7.07
Number of free-city states	67	0.85	0.78	0	3	0	1	1
Years of independence (log)	67	3.04	2.22	0.00	6.36	0.00	4.16	4.79
Industry variables (2 digit NACE rev. 1.1)								
PSI Coeff. of variation	56	0.56	0.14	0.32	0.96	0.48	0.53	0.58
Other explanatory variables								
Service (log)	103	9.31	0.90	7.59	12.63	8.74	9.23	9.80
All Services (log)	103	10.83	0.82	8.97	13.74	10.29	10.72	11.29
University graduates (log)	103	1.85	0.18	1.46	2.45	1.73	1.85	1.93
Bank branches (log)	103	1.59	0.44	-0.66	2.33	1.27	1.72	1.91
Length of trials (log)	103	6.94	0.34	6.19	7.72	6.72	6.92	7.18
GDP (log)	103	15.79	0.80	14.05	18.57	15.23	15.71	16.24

Note: The table provides descriptive statistics for the variables used in the regressions. The dependent variable, *PSI (log)*, is the log of purchased service intensity, defined as the amount spent on external service provision divided by sales. *Employees (log)*, is the log of the number of employees. *Capital (log)*, is the log of the firms' capital stock, defined as total tangible fixed assets. *Age (log)*, is the log of the firm age. *Average wage (log)*, is the log of average wage, defined as total wage bill divided by the number of employees. *Value added (log)*, is the log of firm value added. *Group membership* equals 1 if the firm belongs to a group, 0 otherwise. All firm level variables are taken from AIDA and refer to the year 2001. We consider the following variables to measure civic capital: *Blood donations* is the log of the number of blood donations per 100,000 inhabitants in 2002; *Volunteers* is the log of the number of volunteers in non-profit institutions per 100,000 inhabitants in 2000; *Referenda turnout* is the log of the average electoral turnout in referenda between 1946 and 1987; *Principal component* is the first principal component of the above mentioned three proxies of civic capital. The historical instruments are: *Aid societies in 1873* is the log of the members of mutual aid societies per 100,000 inhabitants in 1873; *Turnout in 1920s* is the the log of turnout in the elections that took place in Italy in the 1920s; *Number of free-city states* is the number of free-city states in the territory of each province in 1300. *Years of independence (log)* is the log of the years of independence of the province and equals the weighted average of independence of cities located in a province, where weights is city population in 1861. The *PSI coefficient of variation* is a normalized measure of dispersion in PSI for each two digit industry, obtained by dividing the industry's standard deviation in PSI by the industry average. Data refers to the year 2010 and is taken from the French firm level database *FIBEN*. The provincial controls refer to the year 2001 and include the following: *Service (log)* is the log of total service workers in a given province (NACE rev 1.1 two digit industries 72-74) *All Services (log)* is the log of all service workers in a given province (NACE rev 1.1 two digit industries 50-74); *University graduates* is the log of the share of university graduates over total population; *Bank branches* is the log of the number of bank branches per 1000 inhabitants; *Length of trials* is the log of the number of days it takes to complete a first-degree trial in civil affairs.

Table 2: Coefficient of Variation (CV) of PSI (averages by sector)

	Coefficient of Variation
Agriculture/Fishing	0.57
Extracting Industries	0.48
Manufacturing	0.52
Services	0.63
Construction	0.54

Note: The table shows the average coefficient of variation of purchased service intensity for 5 groups of industries. Data refer to the year 2010 and come from the 290,000 firms included in the French database FIBEN.

Table 3: Baseline regressions

	(1) Coef./se	(2) Coef./se	(3) Coef./se	(4) Coef./se	(5) Coef./se	(6) Coef./se	(7) Coef./se	(8) Coef./se
Referenda turnout (log)	0.532** (0.23)				0.570*** (0.20)			
Blood donations (log)		0.019 (0.03)				-0.002 (0.02)		
Volunteers (log)			0.044* (0.02)				0.015 (0.02)	
Principal component				0.039*** (0.01)				0.021** (0.01)
Employees (log)					-0.013* (0.01)	-0.013* (0.01)	-0.013* (0.01)	-0.013* (0.01)
Capital (log)					0.025*** (0.00)	0.025*** (0.00)	0.025*** (0.00)	0.025*** (0.00)
Firm age (log)					-0.012*** (0.00)	-0.012*** (0.00)	-0.012*** (0.00)	-0.012*** (0.00)
Average wage (log)					0.015 (0.01)	0.015 (0.01)	0.015 (0.01)	0.015 (0.01)
Service (log)					0.058*** (0.01)	0.052*** (0.01)	0.052*** (0.01)	0.053*** (0.01)
Length of trials (log)					-0.029 (0.02)	-0.015 (0.02)	-0.017 (0.02)	-0.021 (0.02)
Bank branches (log)					0.008 (0.01)	0.008 (0.01)	0.007 (0.01)	0.005 (0.01)
University graduates (log)					-0.083** (0.04)	-0.043 (0.04)	-0.047 (0.04)	-0.057 (0.04)
4-digit fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (within)	0.030	0.030	0.030	0.030	0.036	0.036	0.036	0.036
Obs.	95,360	95,360	95,360	95,360	95,360	95,360	95,360	95,360

Note: Dependent variable is the log of Purchased Service Intensity. The table provides the results of the fixed effect estimator where the panel variable are 4-digit industries dummies. All columns include 20 regional dummies. Standard errors are clustered at the province and industry level. ***,**,* denote significance at the 1%, 5%, 10% level, respectively.

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Table 4: Industry heterogeneity: Coefficient of variation in PSI

	(1) Coef./se	(2) Coef./se	(3) Coef./se	(4) Coef./se	(5) Coef./se	(6) Coef./se	(7) Coef./se	(8) Coef./se
Referenda turnout (log) * Ind. CV	1.219*** (0.46)				0.558 (0.57)			
Blood donations (log) * Ind. CV		0.287** (0.12)				0.109 (0.13)		
Volunteers (log) * Ind. CV			0.297*** (0.07)				0.245*** (0.07)	
Principal comp. * Ind. CV				0.110*** (0.03)				0.078** (0.04)
Employees (log)					-0.014* (0.01)	-0.014* (0.01)	-0.014* (0.01)	-0.014* (0.01)
Capital (log)					0.025*** (0.00)	0.025*** (0.00)	0.025*** (0.00)	0.025*** (0.00)
Firm age (log)					-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)
Average wage (log)					0.014 (0.01)	0.014 (0.01)	0.014 (0.01)	0.014 (0.01)
Service (log) * Ind. CV					0.067* (0.04)	0.069* (0.04)	0.077** (0.03)	0.072** (0.03)
Length of trials (log) * Ind. CV					-0.293*** (0.08)	-0.283*** (0.09)	-0.191** (0.08)	-0.214** (0.09)
Bank branches (log) * Ind. CV					0.007 (0.05)	0.019 (0.05)	-0.046 (0.08)	-0.032 (0.03)
University graduates (log) * Ind. CV					-0.012 (0.18)	0.017 (0.18)	-0.08 0 (0.16)	-0.046 (0.18)
4-digit fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (within)	0.037	0.037	0.038	0.037	0.041	0.041	0.041	0.041
Obs.	95,360	95,360	95,360	95,360	95,360	95,360	95,360	95,360

Note: Dependent variable is the log of Purchased Service Intensity. The table provides the results of the fixed effect estimator where the panel variable are 4-digit industry dummies. All columns include 103 province dummies. *Ind. CV* denominates the coefficient of variation in PSI for the 2-digit industry the firm operates in. Standard errors are clustered at the province and industry level. ***,**,*, denote significance at the 1%, 5%, 10% level, respectively.

Table 5: Robustness checks

	(1) Firm controls I Coef./se	(2) Firm controls II Coef./se	(3) GDP Coef./se	(4) All services Coef./se	(5) MI-RM-TO Coef./se
Principal component	0.025**	0.020**	0.021**	0.020*	0.025***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Employees (log)	0.031**	0.004	-0.013*	-0.013*	-0.012
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Employees (log), squared		-0.003			
		(0.00)			
Capital (log)	0.029***	0.053***	0.025***	0.025***	0.026***
	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)
Capital (log), squared		-0.001*			
		(0.00)			
Firm age (log)	-0.012***	0.013	-0.012***	-0.012***	-0.010**
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Firm age (log), squared		-0.006**			
		(0.00)			
Average wage (log)	0.043***	-0.001	0.015	0.015	0.019*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Av. wage (log), squared		0.004**			
		(0.00)			
Value added (log)	-0.058***				
	(0.02)				
Group membership	0.068***				
	(0.01)				
All services (log)				0.057***	
				(0.01)	
GDP (log)			0.047		
			(0.05)		
4-digit fixed effects	Yes	Yes	Yes	Yes	Yes
Province controls	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes
R^2 (within)	0.038	0.036	0.036	0.036	0.040
Obs.	81,475	95,360	95,360	95,360	73,152

Note: The dependent variable is the log of Purchased Service Intensity. The table provides the results of the fixed effect estimation where the panel variable are 4-digit industries. In all columns 20 regional dummies are included. In column (1) we include firm value added and a dummy indicating group membership as additional firm-level controls. In column (2) we include squared firm controls as additional regressors. In column (3) we include *GDP*, nominal gross domestic product, as an additional province level control. In column (4) we proxy the size of the service market by *All Services*, measured as the log of the number of workers in service industries. In column (5) we exclude observations from the provinces of Rome, Milan and Turin. Standard errors are clustered at the province and industry level. ***,**,* denote significance at the 1%, 5%, 10% level, respectively. For a description of the variables see Table 3.

Table 6: IV Estimates

Panel A: Second Stage (Dep.Var.: Log of PSI)					
	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	IV	IV	IV
	Coef./se	Coef./se	Coef./se	Coef./se	Coef./se
Principal component	0.046***	0.054***	0.078***	0.041**	0.075***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
Service (log)	0.113***	0.097*	0.073*	0.093	0.105*
	(0.03)	(0.06)	(0.04)	(0.06)	(0.06)
Length of trials (log)	-0.031	-0.008	-0.012	-0.024	0.018
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
GDP (log)	-0.089***	-0.070	-0.042	-0.065	-0.080
	(0.03)	(0.06)	(0.04)	(0.06)	(0.06)
Bank branches (log)	0.003	-0.001	-0.008	0.003	-0.009
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
University graduates (log)	-0.021	-0.030	-0.021	-0.024	-0.039
	(0.04)	(0.05)	(0.05)	(0.06)	(0.06)
Hansen test (p-value)			0.112	0.108	
Macro-regional dummies	Yes	Yes	Yes	Yes	Yes
Firm level covariates	Yes	Yes	Yes	Yes	Yes
Province covariates			Yes	Yes	Yes
R^2 (within)	0.034	0.008	0.034	0.008	0.008
Obs.	95,360	79,133	95,360	79,133	79,133
Panel B: First Stage (Dep.Var.: Principal Component)					
Turnout 1920s (log)			4.053***		
			(1.07)		
Aid Societies 1873 (log)			0.339		
			(0.23)		
1 free-city state in 1300				0.401***	
				(0.15)	
2 free-city state in 1300				0.728***	
				(0.16)	
3 free-city state in 1300				-0.183	
				(0.22)	
Years independence (log)					0.092***
					(0.03)
F-statistic			14.96	9.60	11.17
F-test (p-value)			0.000	0.000	0.000
Macro-regional dummies			Yes	Yes	Yes
Firm level covariates			Yes	Yes	Yes
Province covariates			Yes	Yes	Yes
R^2 (within)			0.839	0.659	0.629
Obs.			95,360	79,133	79,133

Note: The table provides the results of the fixed effect two-stages least squares estimator where the panel variable are 4-digit industries. 5 macro-regional dummies are also included. Standard errors are clustered at the province and industry level. Panel A shows the second stage, while Panel B shows the first stage. All variables included in the second stage are also included in the first stage. *Province Covariates* include the log of all provincial controls shown in Table 3. In all specifications, the log of provincial GDP is also included. See text for description of the remaining variables. ***,**,* denote significance at the 1%, 5%, 10% level, respectively.

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