Doing Business Below the Line: Screening, Mafias and Public Funds

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Abstract

Criminal organizations make large profits misappropriating public funds, causing an economic loss for the state and the strengthening of criminal groups. This paper evaluates a policy aimed at fighting this phenomenon and the displacement effects the policy caused. In 2013, the Italian government enforced a law screening mafia-related firms out of the application for European subsidies when applying for more than 150,000 Euros. We exploit this time-varying discontinuity to identify firms self-selecting below the threshold after the law was approved. We observe a large jump in firms applying for just below 150,000 Euros after 2013. Firms sorting are more likely to come from mafia-affected cities, display worse performances, operate in typical mafia-affected sectors and have balance sheet indicators suggesting potential for money laundering. The jump we identify corresponds to 3.8% of all subsidies assigned in our sample. Our findings shed light on the extent to which mafia-connected firms misappropriate public funds and on the effectiveness of screening policies applied discontinuously when mafias behave strategically.

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1 Introduction

Organized crime groups are increasingly active in the legal economy, using channels ranging from the traditional, like extortion and racketeering[1], to more sophisticated tactics such as money laundering and the misappropriation of public funds. For instance, London's financial hub is considered the global money-laundering center of the drug trade (National Crime Agency UK, 2017; Masciandaro, 2017), while Mexican drug cartels have recently diversified their activities by entering the food business to control profitable export products, such as limes, whiskey and avocados (Aranda, 2013; Garcıa-Ponce and Lajous, 2014). The misappropriation of public funds represents an important opportunity for profit by criminal organizations (Schelling, 1971; Barone and Narciso, 2015; Boas, Hidalgo, and Richardson, 2014). Organized crime groups can acquire public money in several different ways in various countries. First, they can steal public money or extort it from politicians. A notable example is the Nigerian criminal group led by the dictator Sani Abacha, who during the 1990s looted at least $2 billion USD of public funds, corresponding to 4% of the country's GDP (Monfrini, 2008). Second, companies controlled by criminals can extract large profits from public procurement contracts by using cheaper materials, illegal labor and recording fake expenditures (Buscaglia, 2005). A third type of misappropriation, which we focus on here, is through government subsidies. News and judicial investigations have documented how criminal organizations create ad hoc firms to apply for subsidies and often bribe officials in order to obtain them. For example, judicial inquiries have revealed how criminal organizations have embezzled the bulk of European subsidies for green energy and EU farm subsidies (Canep-

[1]Extortion and private protection are supposedly the earliest businesses carried out by criminal organizations, as shown by scholars studying the origins of the Sicilian mafia (Buonanno et al., 2015; Dimico, Isopi, and Olsson, 2017; Acemoglu, De Feo, and De Luca, 2017).

pele, Riccardi, and Standridge, 2013).[2] According to the European Antifraud Agency, every year the EU funnels hundreds of millions of euros into projects which fall into the hands of criminals.[3]

The misappropriation of public funds generates negative political and economic effects in three main ways. First, this practice reinforces criminal organizations by directly financing them, expanding their financial resources, and providing them with patronage opportunities, such as employing the local population in their companies or assigning subcontracts and buying materials from affiliated firms. Patronage is a fundamental tool used by criminal groups to create social consensus and thus maintain control in a territory (Gambetta, 1996; Blattman et al., 2018). Second, the misappropriation of public funds results in the provision of low-quality public goods, such as infrastructure built with low-quality materials. Third, appropriating funds to criminals diverts funding from clean companies that could use the money for their own development.[4]

This paper examines an Italian government policy designed to screen mafia-related firms out of the application process for government subsidies. Italian government subsidies are awarded to support firms' investments in machinery, innovation and green energy, human capital and business development. Eligible firms can apply for these subsidies, depending on the require-

[2]This scandal resulted in the recent resignation of Slovakian Prime Minister Robert Fico and the murder of the journalist reporting on it, Ján Kuciak.

[3]The agency estimates an increase from 300 million in 2012 to 900 million in 2014 (European Anti-Fraud Office, 2017).

[4]Governments worldwide increasingly rely on support measures to push development in strategic sectors that benefit the country's economy. All Organisation for Economic Co-operation and Development (OECD) countries subsidize firms, ranging from 0.01% (Chile) to 0.47% (Russian Federation) of the country's GDP. `http://www.oecd.org/sti/rd-tax-stats.htm`.

ments of each specific call for applications.[5] The Italian Antimafia Information Law (hereafter the Antimafia Law) requires checks on firms' connections with organized crime if they request subsidies over 150,000 euros. We study firms' behavior around this exogenous threshold to understand whether this policy is effective at reducing misappropriation and to test whether firms self-select below the cutoff in order to avoid police screening. This setting has three advantages. First, in contrast to other countries, in which controls on firms applying for subsidies are extended to any type of corruption, the Italian screening process focuses solely on relationships with mafias. This allows us to examine the law's effectiveness at screening out mafia firms – rather than firms that engage in fiscal evasion or other forms of illegal behavior. Second, the law was substantially strengthened in 2013. This allows us to consider differences in values at the discontinuity before and after the new law, thus accounting for constant characteristics of requests for funding at this threshold, such as round number effects. Finally, the police bear the full costs of the investigations undertaken during the screening; the firms play no role in this process, allowing us to exclude the possibility that they simply sort below the threshold to avoid bureaucratic costs. In Italy, as well as in other European countries, a large share of firm subsidies is co-financed by EU funds. We use data on all firm subsidies co-financed by the EU from 2008 to 2015, and estimate the difference in funding at the 150,000-euro threshold before and after the 2013 strengthening of the law. We identify the amount of sorting using difference-in-differences (DID) estimates – but we show that bunching estimation provides very similar results.

[5]For instance, in 2013 the government announced a call for subsidies (with a total budget of 144 million euros) for small firms in the poorest areas of Sicily. In 2012, a regional council (Puglia) opened a call for young entrepreneurs (total budget of 73 million euros). In the same period, the Lazio regional council opened a call for subsidies for local firms to improve energy efficiency, with a total budget of 145 million euros. In 2010, another regional council (Veneto) opened a call for subsidies tailored to innovative start-ups with a total budget of 67 million euros.

We find that the Antimafia Law has produced a substantial strategic response: the requests for funding just below 150,000 euros are four times higher than at any other amount, and only after the 2013 law strengthening. In line with an explanation that involves strategic sorting driven by mafia-connected firms, we find that this effect is stronger in mafia-affected cities and in sectors traditionally infiltrated by organized crime. Moreover, firms sorting right below the threshold are more likely to display worse performance, such as delaying the conclusion of the funded project and providing private co-financing. They are also substantially more likely to have been created right before applying for the subsidies, and they have lower bank debts; both characteristics align with our knowledge of how mafia-affiliated firms conduct money laundering operations (Bianchi et al., 2017; Transcrime, 2018). Our findings are robust to using different sizes of bins and are not determined by 150,000 euros being a round number. We run a series of placebo tests on cases in which we should not expect to see sorting, such as agricultural subsidies or cities where the government was dissolved for mafia infiltration. In the first case, firms cannot precisely determine the amount they will be assigned; in the second, the law requires extending screening to all funding requests independently of amount. We find no sorting in these settings, which confirms that our findings are linked to the Antimafia Law. Finally, in an attempt to estimate the cost of sorting for mafia-connected firms, we find that after 2013, fewer subsidies over 150,000 euros were awarded in mafia-affected cities.[6]

The paper discusses three main findings. First, criminals strategically adapt to changes in law enforcement: they apply for funding below the threshold to avoid monitoring. In other words, sorting below the threshold can be interpreted as evidence of displacement. Indeed, we find that the

[6]In the Appendix, we provide some suggestive evidence of an alternative strategy (i.e. trusted figureheads), which criminal firms might use to circumvent police screening even after the increased enforcement and obtain subsidies of any amount.

number of firms denied funding over 150,000 euros after failing the screening process is close to zero. Moreover, their reaction is immediate, as the analysis considers only the two years after the law strengthening: this shows the high level of sophistication and adaptation reached by criminals.

Second, this setting allows us to conduct the first evaluation of a screening policy designed to prevent the misappropriation of public funds. We find that the law was successful at screening a large number of firms below the threshold, which represents a considerable economic loss for mafia-related companies that could not obtain larger amounts. The fact that these companies overwhelmingly submitted applications for amounts below the threshold suggests that the policy was effective at creating a credible threat (police screening), which companies took seriously. However, the effectiveness of the policy is limited, since mafia-linked firms can easily game the law by applying for amounts just under the threshold.

This last consideration leads to two policy implications. First, a back of the envelope calculation suggests that lowering the threshold would be beneficial, as the mafias losses would be higher than the bureaucratic costs of additional screenings: our estimates suggest that the threshold could be moved from 150,000 euros to amounts as low as 5,000 euros. Second, our findings demonstrate that policymakers should monitor companies that deliberately (and perhaps naively) avoid arbitrary anti-corruption thresholds, such as the one we study, and highlight the potential for such cutoffs to be exploited when studying the characteristics and behavior of criminal companies. While sorting at the threshold does not constitute conclusive evidence of mafia infiltration, it can be considered a 'red flag' that deserves further investigation.

Finally, we provide evidence of a new mechanism to explain the negative economic effects of organized crime (Rios, 2008; Robles, Calderón, and Mag-

aloni, 2013; Pinotti, 2015).[7] Specifically, criminal firms distort the allocation of EU firm subsidies by diverting them away from 'clean' firms. Thus, mafias' capture of firm subsidies might partially explain why European transfers destined for development (about 347 billion euros in our period of interest) have triggered economic growth in most European regions, but not in Southern Italy (Becker, Egger, and Von Ehrlich, 2013).

This paper is primarily related to the literature evaluating the effectiveness of policies to fight organized crime. Several studies have focused on measuring the effect of policies to curb drug cartels. Evidence from drug wars shows that crackdowns on cartels can be effective but are associated with violent reaction from criminal groups, who fight to control valuable prohibited commodities (Castillo, Mejıa, and Restrepo, 2016; Castillo and Kronick, 2017), to replace weakened incumbents (Calderón et al., 2015; Dell, 2015), or who fight the state back to stop the crackdown, particularly when this is unconditional (Lessing, 2017b; Kleiman, 2011). Unintended consequences also stem from policies of mass incarceration of criminals from organized groups, particularly when jails are crowded with gang members, creating incentives for seeking extralegal governance (Skarbek, 2011; Skarbek, 2016) and strengthening criminal networks (Lessing, 2017a). In the Italian context, Daniele and Geys (2015) show that higher payoffs lead competent politicians to run for office after a policy aimed at breaking ties between mafias and local politicians. In this paper, our focus is not on ties between politicians and criminals, but on a policy aimed at fighting organized crime by reducing misappropriation of public funds.

More generally, this paper relates to the emerging literature that eval-

[7]Previous papers have studied mafias' influence on elections, a complementary mechanism to ours, to help understand the adverse economic effects of organized crime: criminals can manipulate the political process at different stages, from political selection (Daniele and Geys, 2015; Daniele, 2017) to voting (Alesina, Piccolo, and Pinotti, 2018; De Feo and De Luca, 2017), leading to policies that favour their private interests (Daniele and Dipoppa, 2017; Di Cataldo and Mastrorocco, 2016).

uates the effect of anti-corruption policies. Previous studies have primarily focused on the effects of anti-corruption audits on politician behavior; they have found mixed results in Brazilian (Avis, Ferraz, and Finan, 2016; Hidalgo, Canello, and Lima-de-Oliveira, 2016; Ferraz and Finan, 2011; Zamboni, Litschig, et al., 2013; Colonnelli and Prem, 2017), Mexican (Larreguy, Marshall, and Snyder Jr, 2015) and Puerto Rican municipalities (Bobonis, Cámara Fuertes, and Schwabe, 2016). This literature has also examined the effect of auditing public infrastructure in Argentina and Indonesia (Di Tella and Schargrodsky, 2003; Olken, 2007). We differ from previous papers in two ways. First, we focus on firms rather than politicians (similarly to Colonnelli and Prem (2017)). Second, instead of auditing assigned public funds, we focus on a screening process that takes place *before* the assignment of funds.[8]

In the next section, we describe the institutional features of the Antimafia Law, discussing firms' incentives when they apply for funding and the reasons why we expect the threshold to only deter mafia-related companies. We present our data sources in Section 3, providing non-parametric evidence of the distribution of subsidies before and after the 2013 Antimafia Law. In Sections 4, we present our empirical strategy and results on sorting to avoid the Antimafia Information threshold. In Section 5, we provide a series of pieces of evidence in line with the idea that companies sorting are related to mafia. We conclude in Section 6.

[8]Screening policies have also been used to fight other types of corruption, such as electoral fraud, as studied in Callen and Long (2015).

2 Organized crime in the legal economy and the Antimafia Law

2.1 Mafia–linked firms

In Italy, as well as in other countries, criminal organizations use legal markets to launder their revenues and to profit both directly, by applying for public funds, and indirectly, by extracting patronage opportunities such as creating jobs for their affiliates (Sciarrone, 2009; Savona, Riccardi, and Berlusconi, 2016; Berlusconi, 2014). These practices not only empower organized crime; they also affect the overall economy, as criminal organizations aim to capture the markets in which they are active through extortion and violence (Di Cataldo and Mastrorocco, 2017; Daniele and Dipoppa, 2017). Piemontese (2018) estimates that the welfare loss due to mafia extortion in Northern Italy is 4.2 billion euros.

In turn, business owners may cooperate with criminal groups due to the fear of punishment, or actively comply with criminals in expectation of financial rewards. For instance, business owners who struggle to access bank loans might benefit from mafias' illegal capital to expand their businesses. Firms might also be willing to accept extortion in exchange for private protection, especially where trust and legal guarantees are weak (Gambetta, 1996). By investing in the legal economy, organized crime might also create social consensus, acting as a sort of social insurance or an alternative provider of capital and jobs (Le Moglie and Sorrenti, 2017).

2.2 The Antimafia Information Law

In this paper, we consider a unique policy designed to prevent mafia-linked firms from receiving government subsidies. Although several countries forbid

charged business owners with a history of criminal activity from applying for government funds, Italy is the only country that enforces a screening mechanism exclusively targeting organized crime, allowing us to identify the effect of this policy on mafia-related firms rather than on the mix of firms engaging in fiscal evasion, corruption or other illegal behaviors. The Antimafia Information is a permit released by the police to firms willing to receive firm subsidies. The government initially passed this law in 1965, and updated it in 1994 and 1998, to tackle the dynamic approaches of criminal organizations[9]. Importantly, this policy was fully strengthened and made more effective in 2013. Before 2013, the law stated that business owners who had direct or indirect ties to organized crime were not eligible to apply for subsidies, but the evidence of a mafia connection was based solely on the presence of an official investigation or trial against the owner of the business. These controls were carried out by the Territorial Police Office (*Prefectures*)[10] and were mandatory for subsidies above 154,937 euros (300 million Italian lire).

More recently, policymakers have started to consider a full policy change, as over time, investigations have revealed that criminals systematically circumvent the Antimafia Law, for instance by registering a firm in the name of a family member (Fantò, 1999). In 2013, the national government approved a new version of the Antimafia Law with several changes to guarantee a complete and effective screening process (Law n. 159/2011).[11] The law substantially expanded the scope of controls by extending the screening to (i) family members living with the owners, who were often used as figureheads; (ii) non-governmental organizations (NGOs) and public firms, legal forms

[9]Before 1998, there was a unique type of police check, called an Antimafia Certificate. From 1998 onwards, the law distinguishes between antimafia communication and information; the second involves more rigid controls, checking for crimes as well as attempted mafia infiltration into the company. We focus on information only (Decree n.252/1998).

[10]Prefectures are Interior Ministry agencies representing the central government in each province.

[11]The law was adopted on February 12, 2013.

used by criminals to avoid arousing suspicion; (iii) new types of mafia-related crimes, such as firms that fail to report requests for extortion and corruption, illegal subcontracting, waste trafficking or the manipulation of public procurement processes. The law also reduces the cost for the police to run the screening, by (iv) unifying the legislation to reduce the scope for unclear interpretations and (v) creating a centralized dataset of mafia-related crimes. Finally, the law reduced the threshold to requests of more than 150,000 euros. Below this threshold, firms applying for subsidies have to simply provide a self-certification, stating the lack of any criminal charge.[12]

In our analysis, we focus on the effects of this policy on firm subsidies, [13] which can be issued by a national or local body, such as a city or a provincial or regional council. Subsidies are released based on an application process, which can include different eligibility rules (e.g. directed to young or female entrepreneurs), requirements and deadlines. The general aim is to provide financial aid to support firms' investment (e.g. in machinery or green energy) and human capital growth (e.g. IT trainings) in key economic sectors.

Calls are generally open for periods going from few weeks to few months. Eligible firms can submit a budget for their project proposals (e.g. investment

[12]Even if the law does not require it, a local institution can also enforce checks on firms applying for amounts below the threshold. However, this rarely happens. As explained in the next section, we collected data on the routine followed by each *Prefecture* in releasing the Antimafia Information. Of the 45 responding prefectures, only three acknowledged the existence of these protocols across multiple cities. Checks below the threshold uncorrelated with the treatment would simply introduce measurement error in the dependent variable, leaving our estimates unbiased. Firms also have to undertake other controls, such as being registered with the national registry and certified to work (D.Lgs. 276/2003). On-site checks related to compliance with health standards in the work environment are run on a random sample of firms (L.R. 51/2009). All these controls happen independently of the amount of requested funding.

[13]While the law also applies to firms applying for public procurement contracts, we focus only on subsidies because for public procurement the public institution launches the offer to set the price and to determine whether the Antimafia Information is required. This means that firms have no control over whether the Antimafia Law will apply; they can only decide whether to participate in the call.

in machinery, innovation, learning activities). After an evaluation process, the local awarding bodies list the winning firms; only at this point do they contact the Territorial Police Office (*Prefectures*) to release the Antimafia Information for the successful firms. Figure 9 graphically shows the steps of the application process.

2.3 Firms' decisions to apply for funding

An ordinary firm, with no mafia ties, will likely apply for the highest subsidy available. However, when planning a budget, a business owner has to consider that larger budget requests are more complex: they have to be carefully thought through and tailored to the specific call. Therefore, requesting larger subsidies increases the cost of applying and reduces the chances of success. In line with this idea, in the next section, we find quite a smooth distribution of subsidies in our sample.[14]

Mafia-linked firms interested in applying for subsidies have the additional constraint of the screening policy. This implies that they have four options. First, they can apply for subsidies above 150,000 euros and risk a very high likelihood of rejection and the potential seizure of the company. This strategy seems uncommon, as an insignificant number of firms are rejected during the police screening process.[15] Second, they can apply for funds below the threshold and provide a self-certification that they have not been charged with any criminal offenses. However, if the call allows requests above the threshold, this will force the applicant to forego potential additional profits. Third, they can still apply for subsidies above the threshold, circumventing

[14]Note that we cannot test the impact of the threshold on the likelihood of receiving a subsidy, as the data include only awarded subsidies, and not all subsidy requests. The next section provides more details.

[15]To estimate the number of rejected certificates, we submitted Freedom of Information Act (FOIA) requests to all police departments in charge of this policy. We received only nine answers about the number of rejections, which is 0.1%.

the law, for instance, by registering the company in the name of a figurehead. This strategy is optimal when the cost of finding a trustworthy figurehead is lower than the cost of foregoing potential profits due to applying for funds below the threshold. We provide suggestive evidence on this strategy in Section G in the Appendix.

An additional way to circumvent the screening process could be to apply for more than one subsidy under 150,000 euros within the same call. However, we do not find any increase in the number of firms applying for more than one subsidy within the same call for values below 150,000 after 2013. The few companies who do apply for multiple subsidies are are well–known public firms created by regional governments specifically to attract investments, such as European Funds. It seems therefore possible that, while repackaging might be attempted and firms might be requesting more than one subsidy for less than 150,000 euros, the probability of actually winning more than one subsidy for the same company might be small, excluding large public companies.

A final possibility is that criminal organizations file multiple applications below the threshold using different front firms. Detecting this strategy is more difficult, as we cannot establish which of the firms applying for funds is linked to mafias. As an indirect test of this hypothesis, we check whether the number of companies applying for funds below 150,000 Euros increases more in mafia affected cities after 2013. If this was the case, an increase could be consistent with the possibility that criminal organizations create new ad-hoc companies in order to apply for multiple small funds after the Antimafia Information Law is reinforced. However, this does not seem to be the case. The number of new firms is larger before 2013 in mafia affected areas: before 2013, 89 newly created firms apply for funds below the threshold in mafia-affected cities versus 50 in cities without mafia. After 2013, this number is 18 in mafia affected cities and 22 in areas without mafia. While indirect, this

test suggests that there seems to be little support for the idea that criminal organizations circumvent the Antimafia Law by creating new companies to apply for multiple smaller funds after 2013.

2.4 Alternative reasons to avoid the Antimafia threshold

This paper explores the effects of a policy designed to screen mafia-related firms out of the application process for firm subsidies. One potential threat to the identification of this effect is that firms could be discouraged not by the mafia screening but instead by the bureaucratic costs associated with the release of the certificate. Firms might also avoid the threshold if they are afraid the screening process will reveal other crimes they are guilty of, such as fiscal evasion. This section discusses the reasons why those mechanisms are unlikely to drive our findings. First, we describe the legislative structure of the Antimafia Law, discussing why its release imposes no bureaucratic costs on the firms and the fact that no other crimes are investigated. Second, we provide qualitative evidence regarding the procedures to be followed by the *Prefecture* in releasing the certificate. For this purpose, we sent questionnaires to each of the country's 110 prefectures using FOIA requests; 43 prefectures responded. We present the results from these surveys in Table 1. The sample includes a proportional number of provinces from each region, including *Prefectures* from the south (50%) and from regions historically affected by mafias, such as Sicily and Campania. The Results section provides quantitative evidence corroborating the hypothesis that firms sort to avoid the Antimafia screening, and that alternative explanations can be safely excluded.

Bureaucratic costs: The Italian government designed the Antimafia

Law to avoid placing any burden on firms; it shifted all costs to the police. The firm has no role in providing documentation, as all documents are gathered through the local institution.[16] The screening process, conducted entirely by the *Prefecture*, consists of verifying information on a digital database[17], matching firms' data with the owners' criminal records. Only where mafia ties are suspected is the local police office contacted; further investigations are then undertaken. This rarely occurs: all prefectures that answered this question on our questionnaire confirmed that the release of the certificate simply involves the procedures described above (Table 1) and that on-site checks are only rarely executed.[18] This means that firms can expect to face little or no bureaucratic costs in order to obtain this certification, unless they have connections to organized crime.

Avoiding project delays: Business owners might also be afraid the release of the Antimafia Information might take too long, delaying receipt of the funds and potentially preventing the firm from applying if the certificate does not arrive on time. However, the law requires the certificate to be released within 30 days or else it is considered granted.[19] This provision was included to avoid situations in which firms are excluded from a call due to the length of bureaucratic procedures. We can also rule out the possibility that firms are rejected due to police' uncertainty about their relationship with mafias: the law allows no 'grey areas' in the rejection of the certificate, a code followed by 100% of the prefectures in our sample.

[16] Art. 83, Comma 1 and 2, D.Lgsl. 159/2011 and Art. 23 D.P.C.M. 30 October 2014, n. 193.

[17] Banca Dati Nazionale Unica, D.Lgsl. 159/2011, Libro II, Capo V. The digital database, replacing archival research, was only available after the 2013 law change. Its introduction gradually took place during 2014.

[18] Two prefectures gave us information on how many on-site checks were run in their province of competence – they were 2 and 1 in the period from 2015 to 2017, respectively.

[19] Art. 88, comma 4 and 4-bis; Art. 92, comma 2 and 3 of D.Lgsl. 159/2011.

Risk of being charged for other crimes: Another potential concern is that firms might sort below the 150,000-euro threshold to avoid the risk of being charged for other non-mafia crimes, such as tax evasion. As discussed above, the prefectures only screen for mafia connections and not other criminal offenses, as indicated by both the law and the replies to our questionnaire. Additionally, even if a business owner was guilty of fiscal evasion, this crime could not lead to the rejection of the Antimafia Information; therefore it is not investigated when running checks for the Antimafia Information release. It is therefore unlikely that tax-evading firms will sort below 150,000 euros for fear of being discovered. A business owner applying for funds must be simultaneously *uninformed* about the types of checks carried out and *informed* about the law changes introduced after 2013 for non-mafia-related sorting to be possible. If this were true, our findings would include some firms whose owner is guilty of other non-mafia-related crimes. We provide some indirect evidence against this explanation with reference to fiscal evasion, showing that there is no relationship between sorting at the Antimafia Law threshold and the level of fiscal evasion in a province (Appendix, Section F).

In conclusion, the law and the procedures followed by the prefecture suggest that only connections to criminal organizations should lead a firm to worry about the Antimafia Information screening, and thus motivate it to strategically avoid it by applying for funding just below 150,000 euros.

3 Data

The empirical analysis is based on data made publicly available by OpenCoesione, an ambitious open government project managed by the Department for Cohesion Policy at the Presidency of the Council of Ministers.[20].

[20]See `www.opencoesione.gov.it/en/`

Procedure to release the Antimafia Information	Yes %	No %	No mention of this item
Releasing the Antimafia Information based on consulting the database	100	0	6
In case of uncertainty, additional checks with police	100	0	19
On-site checks only if the two above return suspicion of mafia infiltration	100	0	23
Rejection of the Information for uncertainty	100	0	12
Considers the 2013 reform effective	90	10	32
Total number of responses	43		

Table 1: Answers to questionnaire sent to Italian prefectures

The table reports answers of the Territorial Police office (prefecture level) to a FOIA request in which we asked each Prefecture to provide a detailed account of the procedure they follow to release the Antimafia Information. The request included questions on the use of on-site checks, on the rejection for uncertainty and a judgment on the effectiveness of the new 2013 law. As we asked open questions, some Prefectures reported additional details which we report in the text, when relevant. The sample of Prefetture answering is balanced across mafia-affected areas and north and south of Italy.

OpenCoesione publishes data on all projects covered by the Cohesion Policy, financed by European Structural Funds with a national co-financing requirement. The data consist of the EU multi-year budget for 2007–2013, which includes projects that could be financed up to the end of 2015. Data on the current cycle (2014–2020) are not available yet. Cohesion Funds are a crucial component of the EU's regional policy, which aims to reduce disparities in economic development across regions. For Italian firms, those funds represent the main source of public financing. The 2007–2013 budget is 347 billion euros, complemented by national and private co-financing of about 160 billion euros.[21] The total Italian expenditure certified to the EU was 46.2 billion euros.[22]

[21] http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52007DC0798

[22] https://opencoesione.gov.it/en/spesa-certificata/

We first restrict our analysis to subsidies close to the 150,000 threshold (154,937 before 2013). We start from 50,000 euros, as below this threshold the number of projects increases exponentially, complicating the analysis. We drop projects above 250,000 euros to maintain a symmetrical window on the left/right side of the discontinuity. In any case, there are few projects above 200,000 euros, as firm subsidies can be released above this threshold only under specific conditions (European Commission Regulation No 1407/2013). Importantly, our results are not dependent on this restriction (results available upon request). The available data include only awarded (not requested) subsidies. This is not a concern in our case, as in the vast majority of the examined calls for subsidies the selection committee evaluates only whether to award the submitted project; therefore the requested budget generally corresponds to the awarded funding.[23] When this general rule is not respected, our measure is noisy as there might be a difference between the awarded and requested funds. Such mismeasurement would lead us to underestimate the real effect, as some requests above 150,000 euros will appear in our analysis below the threshold if a firm requests more than 150k but is awarded less than the threshold.[24]

The second data source is Aida, a database provided by Bureau Van Dijk, which includes detailed data on all 2 million Italian firms required to file their

[23]Beyond consulting the application forms, we also submitted a FOIA request to local institutions awarding subsidies to investigate this matter. Although it was impossible to systematically collect a comprehensive dataset on requested subsidies, we gathered data on more than 3,500 requested subsidies distributed across eight calls. In all cases, the requested subsidy corresponded to the awarded one. (These results are available upon request).

[24]We cannot directly test whether local bodies disproportionally accept projects right below or above the threshold because, as explained in the previous section, we do not have data on the sample of all subsidy requests. A possible bias could take place if local authorities strategically assigned funds below 150,000 euros to avoid bureaucratic costs. However, such a mechanism should be time invariant or less likely after 2013, as the bureaucratic burden for the police and the local awarding institutions have likely decreased with the new law (see Section 2).

accounts.[25] Aida contains comprehensive information from 2008 onwards, which we use to test for heterogeneities in Section 5. However, due to missing company identifiers in the OpenCoesione database, we can only match 45% of the observations. For consistency, we use the matched database for all the analyses in the paper. We include all tests we can run on the full sample of companies in the Appendix (Section D). Descriptive statistics on all variables used in the analyses are included in Appendix Table 4. In the Appendix, Figure 6 and Figure 7 report the distribution of projects by economic sector and by institution in charge of the call for subsidies. Appendix Figure 6 shows that R&D investments are the main type of subsidies, followed by construction. Appendix Figure 7 highlights how calls for subsidies are almost uniquely awarded by regional councils. Due to the unavailability of data on Italian firms from 2007, our final sample covers the period 2008–2015. Running our model on the full sample of subsidies, we can show that dropping observations from 2007 does not impact our results. Indeed, since 2007 was the first of 7 years in which firms could apply for funding, only 671 projects (3% of the total) were financed in that year, compared to a median of 2,948 subsidies in the subsequent years. We also show that matching with the firms database (Aida) produces a comparable number of subsidies in each year (Table 5 in the Appendix). Overall, our final matched sample includes almost 10,000 subsidies spread across 437 different calls.

Figure 1 plots the distribution of subsidies from 50,000–250,000 euros for the periods before and after 2013. The figure shows a striking jump in subsidies released right before the 150,000 euro threshold, i.e. the threshold at which the Antimafia Law applies after 2013. This descriptive evidence is in line with the idea that firms might self-select below the threshold to avoid the antimafia checks. A similar jump is not visible at the pre-2013 threshold

[25] All firms requesting subsidies have to file their accounts publicly, so all the firms we consider in OpenCoesione are potentially also included in Aida.

of 154,937 euros. Additionally, we observe three smaller peaks at 60,000, 100,000 and 200,000 euros, which are probably driven by round numbers acting as reference points (Ashworth and Heyndels, 1999). However, these peaks are quite similar before and after 2013, while we observe a very different pattern at the 150,000 euros level, which strongly peaks after 2013.

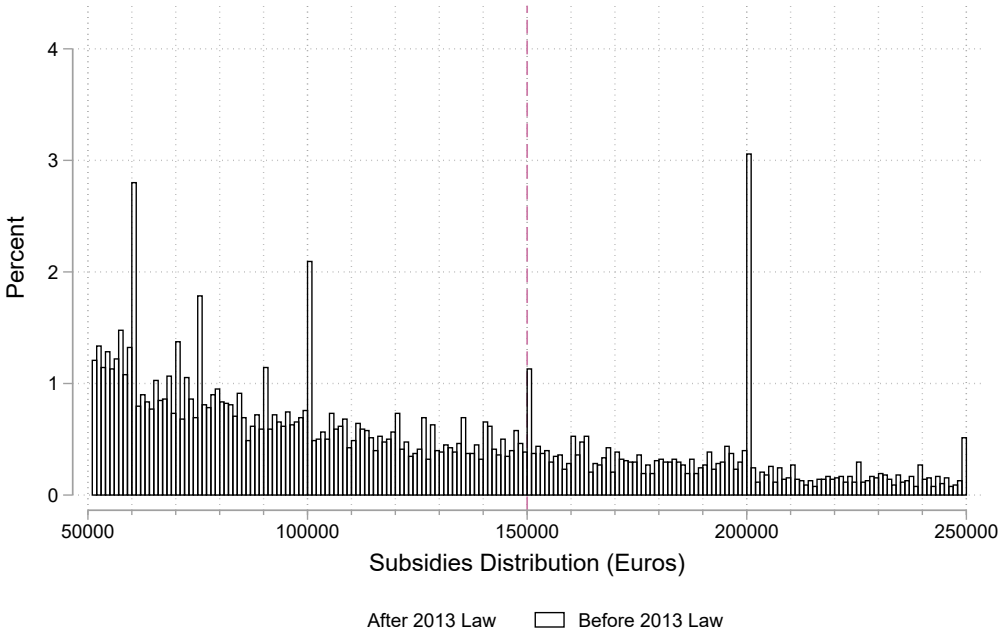
4 The effect of the policy: firms sorting at the threshold

Our empirical investigation tests two hypotheses. First, we predict that a significant number of firms submit funding requests just below the threshold, leading to a jump in the density of the requested amount. Second, we hypothesize that this jump can be attributed to the Antimafia Law was strengthened in 2013, rather than to other factors. We now describe the estimation strategy and results of each of these hypotheses in turn.

4.1 Estimation strategy

We test for the presence of sorting in requests for funding at the 150,000-euro threshold using a DID specification[26]. First, we collapse the database into bins of 1,000 euros, obtaining 1,600 bins of values between 50,000 and 250,000 euros for each year from 2008 to 2015. We then compare the number of requests for funding in each bin before and after the strengthening of the Antimafia Law in 2013, focusing on the bin right below the previous threshold (including funding between 154,000 and 155,000 euros) and just below the new threshold (values 149,000–150,000 euros, where the value of 150,000 euros is included). Specifically, for each bin j in year t, we consider:

[26] A regression discontinuity is not the correct approach in this context, as the forcing variable – the amount of funding requested – is endogenously determined since we are interested in studying firms' decisions about how much funding to request .



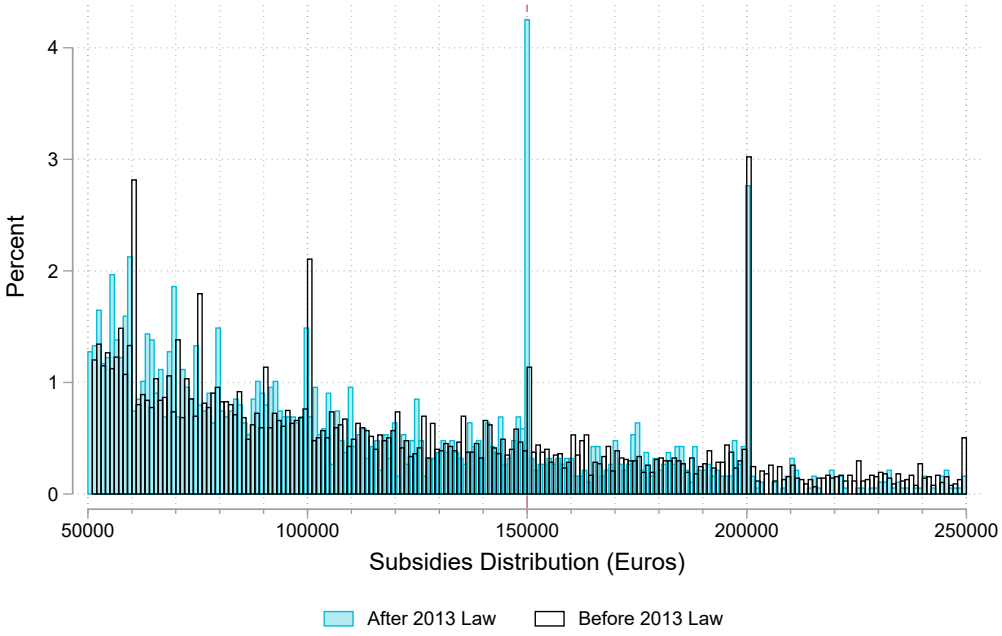


Figure 1: Distribution of subsidies before and after 2013 law

$$NRequests_{jt} = \theta_t + \sum_{a=50k}^{250k} \beta_j Amount_j + \gamma_t Antimafia Law_t + \sum_{a=50k}^{250k} \delta_{jt} Amount_j * Antimafia Law_t + \epsilon_{jt} \quad (1)$$

where $Nrequests_{jt}$ is the count of the number of subsidies in each bin-year; $Amount_j$ is a vector representing each bin in our distribution (amount between 50,000 and 250,000 euros, in which the first bin, 50,000–51,000 is the base category); $Antimafia Law$ is a dummy equal to 1 after the strengthening of the Antimafia Law in 2013.[27] Our coefficient of interest is δ when $a = 149,000 - -150,000$, which captures the increase in requests in the bin just below the threshold after the approval of the strengthening of the law. We are also interested in testing whether the old law, with the threshold of 154,937 euros, had any effect on producing sorting, which is captured by the same variable when $a = 154,000 - -155,000$. Notice that with this specification, we obtain standard errors close to zero, as those are calculated based on a binned database and using the actual number of subsidies per bin as outcome variable. We can, however, estimate the same specification using instead of *Amount* for each bin, a dummy equal to 1 when the amount is 150,000 euro. In this way, the estimated standard errors are different from zero (this result is reported in column 3 of Appendix Table 6). Additionally, we show that our results are equivalent to adopting a bunching estimation strategy. The estimation strategy for bunching and the results are described in detail in

[27] We consider *Post* to be the period from 2014 onwards (and not from 2013 onwards) because our data include the date of delivery rather than the date the funding was awarded. The awarding bodies generally assign funds a few months after they are requested; the time lapse is variable and depends on the complexity of the application process. If we included 2013 in the *Post* period, we would therefore include several requests submitted before the strengthening of the law in 2013 in February 2013. Note that our findings are not affected by including 2013 in the treated period.

Appendix Section B.

4.2 Identification assumptions

The model described above correctly identifies the sorting at the threshold if the assumptions of the DID are met. First, no other change at the 150,000 euros value should take place after 2013. To the best of our knowledge, the Antimafia Law is the only policy affecting this threshold in the period of observation. It is still possible, however, that some local governments chose to set a maximum value of 150,000 euros in subsidy calls, thus increasing the likelihood of awarding funding at this amount. Our data do not include information on whether a call had a maximum value and by what amount.[28] Therefore, to account for the potential effect of maximum values in a call, we manually search and drop all observations in the 149,000–150,000 euros range stemming from calls that state 150,000 euros as the maximum value. This process, which biases our results towards zero by asymmetrically reducing the sample in the 150,000 euros bin only, resulted in dropping one call for subsidies corresponding to two observations.

Second, we need to demonstrate that the parallel trend assumption is met. Following Kahn-Lang and Lang (2018), this means showing that (i) trends in the number of requests sent in treated (150,000 euros) and control units are parallel before 2013 and that (ii) the gap in levels between treatment and control groups does not impact the differences in trends. In Figure 2, we consider the average number of subsidies grouped by year and 10,000-euro values (101,000–190,000 euros).[29] Figure 2 shows a general common trend across

[28]The lack of this information prevents us from dropping subsidies calls setting a maximum value below 150,000 euros. It is not possible to infer the maximum set amount from our data, as calls can finance subsidies also through national or local funds, that would not appear in our data.

[29]Notice that we consider a different bin size than in the main specification (10,000 euros instead of 1,000) so that we can observe a trend rather than idiosyncratic variations in how many subsidies are released for each specific amount.

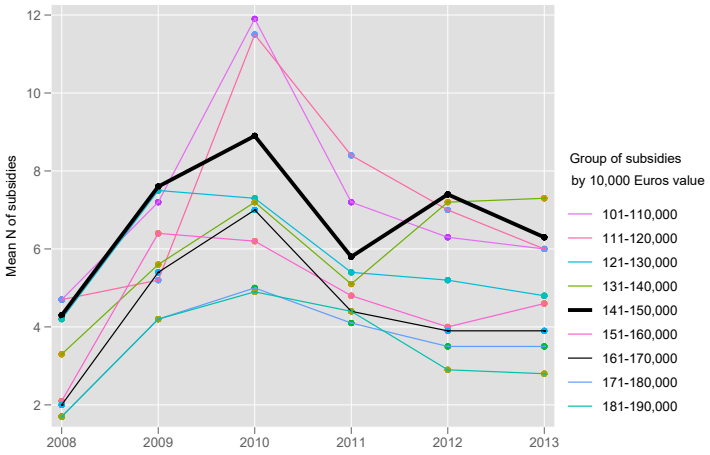


Figure 2: Parallel trends in the subsidies by 10,000-euro groups

Note: The figure plots the average number of subsidies per year for groups of 10,000-euro values. The treated group is 141,000–150,000 euros, including all subsidies awarded just below the 2013 law threshold, including 150,000 (solid thick black line). All other groups are controls. Within each group, the yearly average is calculated on the 1,000-euro bins database. For example, an average of 8 for the treated group (thick solid line) in 2009 means that in the 10 bins between 141,000 and 150,000 euros, the average number of awarded subsidies was 8.

the several control groups (dashed lines) and our treated group (including values from 141,000 to 150,000 euros). Finally, the differences in levels are mostly due to more subsidies of smaller amounts (101,000–120,000 euros). This pattern is unlikely to affect trends when focusing on the comparison between subsidies just below and just above 150,000 euros.

4.3 Results

Figure 3 and Table 6 show the results from estimating Equation 1.[30] Each dot in Figure 3 is a coefficient representing the change in the number of subsidies in the corresponding bin after the enforcement of the Antimafia Law in 2013; the dotted vertical line indicates the 150,000-euro threshold. In the bin including values from 149,001 to 150,000 euros, there are 30.57 more subsidies after 2013 with respect to the bin just on the other side of the threshold (150,001–151,000 euros), a strikingly large difference corresponding to a 400% increase in the mean number of requests sent per bin (6) and an outlier of the distribution, located at more than 4 standard deviations away from the mean (the standard deviation of the distribution is 6.56 – see Table 4 in the Appendix). Using the 155,000-euro coefficient for the old law, the change in the number of subsidies was -0.85 before the threshold was removed and -0.14 after. Both coefficients are in line with average fluctuations over time in our distribution, and the negative sign before 2013 indicates that, even with the old law, firms were not systematically sorting at this threshold. This behavior is in line with anecdotal evidence suggesting that screening was ineffective before the 2013 law strengthening. Figure 3 also demonstrates that there are no significant differences at round numbers such as 100,000 and 200,000 euros in the number of requests before and after 2013.[31] As men-

[30] As explained above, in column 3 of Appendix Table 6), we estimate the same specification using instead of *Amount* for each bin, a dummy equal to 1 when the amount is 150,000 euro.

[31] As mentioned above, smaller fluctuations between periods are normal and due to idiosyncratic differences in the number of subsidies released for each specific amount. Slightly larger differences, such as the negative change observable at 100,000 and 200,000 euros, can also be due to varying changes in the threshold imposed by specific calls and unrelated to our treatment. For instance, in one year there might be one or more calls offering subsidies for values up to 100,000 or 200,000 euros, and this might drive larger variations in subsidy applications submitted for this amount. To account for the possibility that maximum values are driving our finding on sorting, for all subsidies just below 150,000 euros we searched for the corresponding application and removed those that specified 150,000 euros as the maximum value, as explained in Section 4.2.

tioned in Section 4.2, the parallel trend assumption seems to be respected, as the change in the overall distribution of subsidies for the untreated group is flat around 0. In the Appendix, we show that the findings are not driven by a specific year after the enforcement of the new law (Appendix Figure 12), and that they are robust to increasing or reducing the size of the bins to 2,000, 500 or 100 euros (Appendix Figure 13), to changing the reference category (Figure 14), to removing year fixed effects (Figure 15), and to using the full sample of subsidies rather than the subset for which we could match information on firm characteristics (all results, including those for the robustness tests, are repeated on this sample and available in Appendix Section D).

In summary, how many firms applying for funds are connected to mafias? Although we cannot make statements on mafia connections in the absence of a judicial investigation, it is striking that the number of firms just below the 150k threshold increases from 1.4% to 5.2% after the Antimafia Law enforcement was strengthened in 2013. If mafia-connected firms drove this entire growth, then at least 3.8% of the firms receiving European subsidies would be connected to criminal organizations. Finally, it is worth noting that this is a lower bound for two reasons. First, firms connected to mafias might apply for amounts below 150,000 euros independently of the threshold. Second, other firms connected with mafias might still circumvent the threshold using alternative methods (see the Appendix section on figureheads).

Is sorting driven by a higher volume of requests?

As described in the Data section, we can only observe subsidies awarded and not subsidies requested. This means that the jump we observe at the threshold could be driven by either (i) firms requesting more subsidies for this amount, as we suggest, or (ii) local governments awarding subsidies at a higher rate only in this bin and only after 2013. While it seems difficult to imagine a story supporting this time sensitive and bin-specific variation

in local government behavior, it is indeed possible that the awarding rate changed as a result of a change in the type of firms populating this bin after 2013. If the 150,000-euro bin is comprised of a different type of firm (mafia-related) after 2013, then the probability that these firms are awarded a subsidy might change as a result of their different characteristics. Mafia-related firms might be more likely to win subsidies than the average firm (for example, because they corrupt the awarding committee or because they are better at writing proposals); in this case, part of the jump we observe would be driven by more subsidies being awarded for this amount. Alternatively, mafia-related firms might be *less* likely to win subsidies because they perform worse on average (we show results in line with this idea in Section 5.3). If this were the case, we might be observing a smaller jump than the increase in requests due to a negative awarding rate. In either of these scenarios, in order for a change in local government behavior that is bin and time specific to take place, we need to assume that there was a change in the type of firms applying for funds only at this bin and only after 2013. In other words, even if the jump could be partially driven by a change in the awarding rate, it must be initially driven by an increase in requests for subsidies from a different type of company. In the next section, we make the case that those companies are likely to be mafia related.

No sorting where the threshold does not apply

We provide another piece of evidence in line with the hypothesis that the jump we observe is driven by the attempt of some firms to avoid the antimafia screening threshold: when the threshold is absent or does not systematically apply, we observe no sorting behavior. First, in a scenario in which screening takes place for any amount requested, firms should have no incentive to sort below the 150,000-euro threshold. This is the case in city councils that were dissolved due to mafia infiltration in the past 5 years (Daniele and Geys,

2015): checks in these cities are performed on every company requesting funding, independently of the amount requested. Subsetting the sample to those cities, we observe no sorting at the 150,000-euro threshold after 2013 (Appendix Figure 16, Panel (a)).[32]

We run a second placebo test exploiting European funds to farmers through the Common Agricultural Policy (CAP). While the subsidies in our analysis are a one-off contribution based on firms' requests, CAP transfers take place every few months, depending on the types of funding. The agricultural transfers are based on a quite complex formula that takes into account the farms' characteristics, such as the quantity of commodity produced, the amount of inputs used, the area farmed and a fixed component based on the farmers' historical revenues. Moreover, payments are delivered whether production takes place or not (Moreddu, 2011). These characteristics make CAP transfers another ideal placebo for our test, as firms' strategic behavior is strongly limited by the strict CAP regulations. In other words, we expect the incentives for sorting to be lower due to the possibility to request subsidies more frequently. We therefore do not expect any firm to be able to sort at precisely the 150,000-euro threshold due to the complexities of determining funding assignments. In line with this intuition, Figure 16, Panel (b), shows that there is no large increase in the probability of submitting a CAP request for just below 150,000 euros after 2013 compared to other sums of money. We see a very small jump at 147,000–148,000 euros, which could be in line with attempts to sort by a much smaller share of firms.

The results presented so far suggest that firms are sorting at 150,000 euros to avoid the Antimafia Law threshold. In the next section, we investigate whether sorting is related to the mafia.

[32]As an additional test, we tried to replicate this finding only in provinces in which we observe significant sorting at the threshold after 2013. However, this overly reduces our sample size.

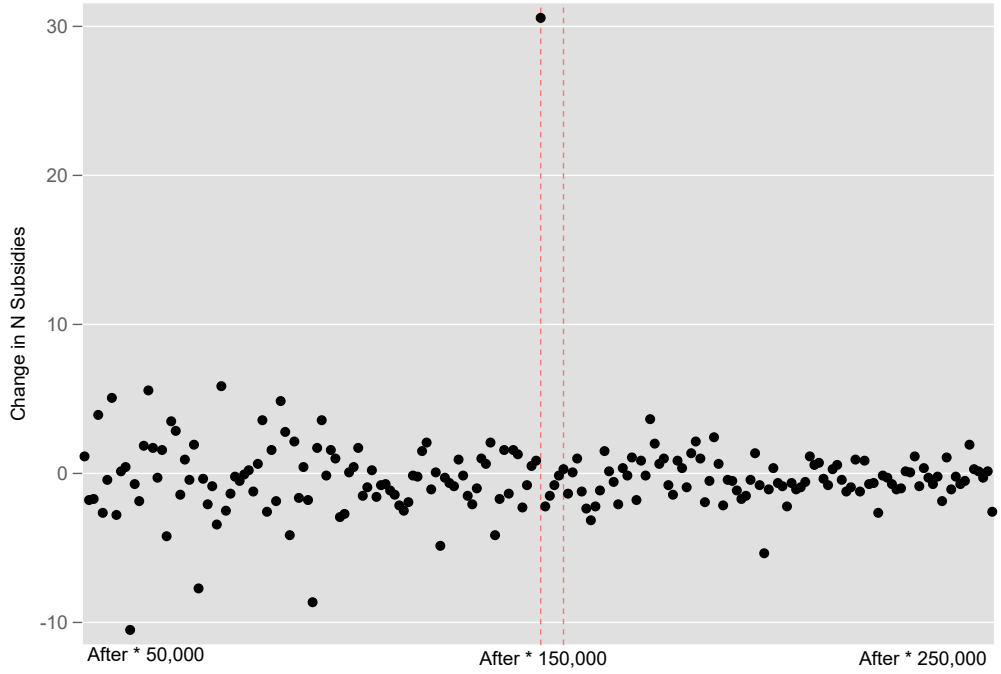


Figure 3: Change in subsidies by bin after 2013 Law

The figure shows coefficients from the DID specified in Equation 1, estimating the change in the number of subsidies for each bin of the distribution (50,000 to 250,000 euros) before and after the Antimafia Law in 2013. The coefficient of interest is at the 150,000-euro threshold imposed by the strengthened enforcement (the first vertical line), including values from 149,001 to 150,000 euros (included). The second vertical line indicates the 154,937-euro threshold imposed by the old law. The reference category is the bin right after the threshold, 151,000 euros. Robust standard errors clustered at the bin level are included.

5 Is sorting driven by mafia-connected firms?

In the previous section we established that there is a sizable jump in subsidies after 2013, and only at the bin at which the Antimafia Information Law applies. The next question is whether the firms sorting at this threshold indeed have mafia connections. In the absence of judicial investigations of each of these firms, we cannot provide a definite answer to this question. However, we can provide a series of pieces of evidence that are in line with this interpretation. First, we show that sorting is mostly driven by cities affected by mafias. Second, we show that this effect is even stronger if we consider a particular criminal organization ('Ndràngheta) that is strongly kinship based and is thus more likely to be affected by the Antimafia Law, which investigates family members. Third, we study the characteristics of the firms sorting at the threshold and show that they are different from firms that do not, and display features consistent with our knowledge of mafia-related companies.

5.1 Stronger sorting where the mafia is present

If mafia-related companies are driving the sorting we observe, we should expect the sorting to be stronger in areas that have a greater criminal presence. In Figure 4 and Table 6, Column 2, we explore this heterogeneity. Specifically, we consider the city in which each firm is located and measure mafia presence at this level. To the best of our knowledge, there are four proxies for organized crime in Italy at this geographic level: (i) city councils dissolved due to ties between criminals and local politicians in the period 1991–2017 (Daniele and Geys, 2015); (ii) mafia victims starting from 1950

(e.g. judges, journalists, entrepreneurs, union leaders);[33] (iii) firms and (iv) property seized from criminal organizations from 1983 to 2017.[34] We create a dummy equal to 1 (0, otherwise) if at least one of these four events took place in a city. This measure has several advantages: (i) it allows us to measure the presence of mafias at highly disaggregated levels; (ii) it includes a heterogeneous set of variables that capture different dimensions of this phenomenon (from violence to control of the legal economy) and different ways to unveil it (from judiciary-driven discoveries, such as seizures, to homicides); (iii) it provides an updated picture of Italian mafias, which takes into account their expansion to Northern Italy in recent decades. Appendix Figure 8 shows the distribution of mafias in Italian cities based on this measure and a similar map highlighting the cities in which we observe firms with subsidies in the bin 149,000–150,000 euros after 2013.[35]

To examine the differential impact of mafia presence on propensity to sort, we estimate a triple-difference model interacting each bin of the distribution of requests with $AntimafiaLaw$, as in Equation 1, and with a dummy indicating mafia presence. The triple interaction, $Bin = 150,000$ x $AntimafiaLaw$ x $Mafia$, allows us to consider the effect of the Antimafia Law in producing sorting just below the threshold in mafia-affected versus non-affected areas.[36] Figure 4 and Table 6 show that our findings are mostly

[33]This dataset was collected by Libera, a leading network of more than 1,200 NGOs working on anti-mafia prevention (see www.libera.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/70). Libera's volunteers collected a list of all mafia victims based on newspapers, books and police reports. We transformed their report into a database including year, location and name of the victim.

[34]A 1982 law (Law Rognoni-La Torre N. 646) permits the seizure of firms and property that have mafia ties.

[35]Interestingly, the latter shows that firms that sort at the threshold are not clustered in the areas of traditional mafia influence (i.e. Sicily, Calabria and Campania).

[36]To estimate this model, we create a new binned database of requests in which each bin is duplicated if there are requests sent from both cities with and without mafias. The number of observations is therefore automatically doubled.

driven by firms located in mafia-affected areas, where there are 20.7 more subsidies just below the threshold with respect to the effect measured by the simple interaction $Antimafia Law$ x $Bin = 150,000$ – which is still positive, with a coefficient of 4.9.

5.2 Sorting in kinship-based criminal organizations

In a similar vein, we test the heterogeneity of the results based on the organizational structure of one of the main Italian criminal organizations: the 'Ndràngheta (from Calabria), which, unlike Camorra, Cosa Nostra and Sacra Corona Unita (from Campania, Sicily and Apulia, respectively) relies heavily on family ties for its recruitment. Kinship relations are the most common and most direct way to become a 'Ndràngheta member, as male family members are automatically "baptized" into the organization. Those from outside the family need to be introduced by a family member to become part of the organization. Marriages are typically used to create alliances between *cosche* (clans) or to end wars. Family ties are also the only way to access leadership positions (Varese, 2006). The same set of rules does not apply for other Italian criminal organizations.

Considering the importance of family ties for 'Ndràngheta, we expect the new Antimafia Law to be more disruptive for firms linked to this criminal organization, as it imposes checks on the business owner's family members. 'Ndràngheta-linked firms might be more likely to sort below the 150,000-euro threshold after 2013 due to the difficulty of finding alternative figureheads outside the family. In this test, we consider only the sample of provinces in which at least one of the three criminal organizations is active, and test whether there is a stronger sorting after 2013 in the areas dominated by the 'Ndràngheta than in those dominated by Camorra or Cosa Nostra. We use the Transcrime (2013) index to classify provinces based on the presence

of a specific criminal organization. While this measure is only available at the province (rather than city) level, it allows us to assess the prevalence in each area of one or the other criminal structure, information we do not have at the city level. We run a triple-difference model similar to the one presented above for mafia-affected cities, this time at the provincial level. In this case, we interact Bin x $AntimafiaLaw$ with a dummy taking a value of 1 in provinces affected by 'Ndràngheta, 0 in provinces affected by Camorra or Cosa Nostra, and missing otherwise.[37] The bottom panel of Figure 4 plots the differential effect of the Antimafia Law in 'Ndràngheta-affected areas and compares it to the results we presented in the previous test on mafia presence. In line with our expectations, the probability of sorting to avoid the threshold is considerably higher in 'Ndràngheta provinces, suggesting that the Antimafia Information Law was more disruptive for 'Ndràngheta related firms.[38]

5.3 Sorting firms behave like mafia companies

In this section, we show that firms that sort exhibit different traits in terms of project performance, financial accounts, sector and longevity. We consider a dataset at the subsidy level, rather than a binned one, to account for the individual characteristics of firms and subsidies. We consider some subsidy-level measures (e.g. delays in completing the project for which the funding was awarded) and some firm-level characteristics (e.g. a firm's economic

[37] We also consider areas in which 'Ndràngheta as well as other mafia groups are both active to be 'Ndràngheta active provinces . Different definitions of this variable, allowing for mutually exclusive categories, do not change the results of this test but they affect the significance of the findings.

[38] All the results presented in this section are replicated on the entire sample, and explained in more detail in the Appendix.

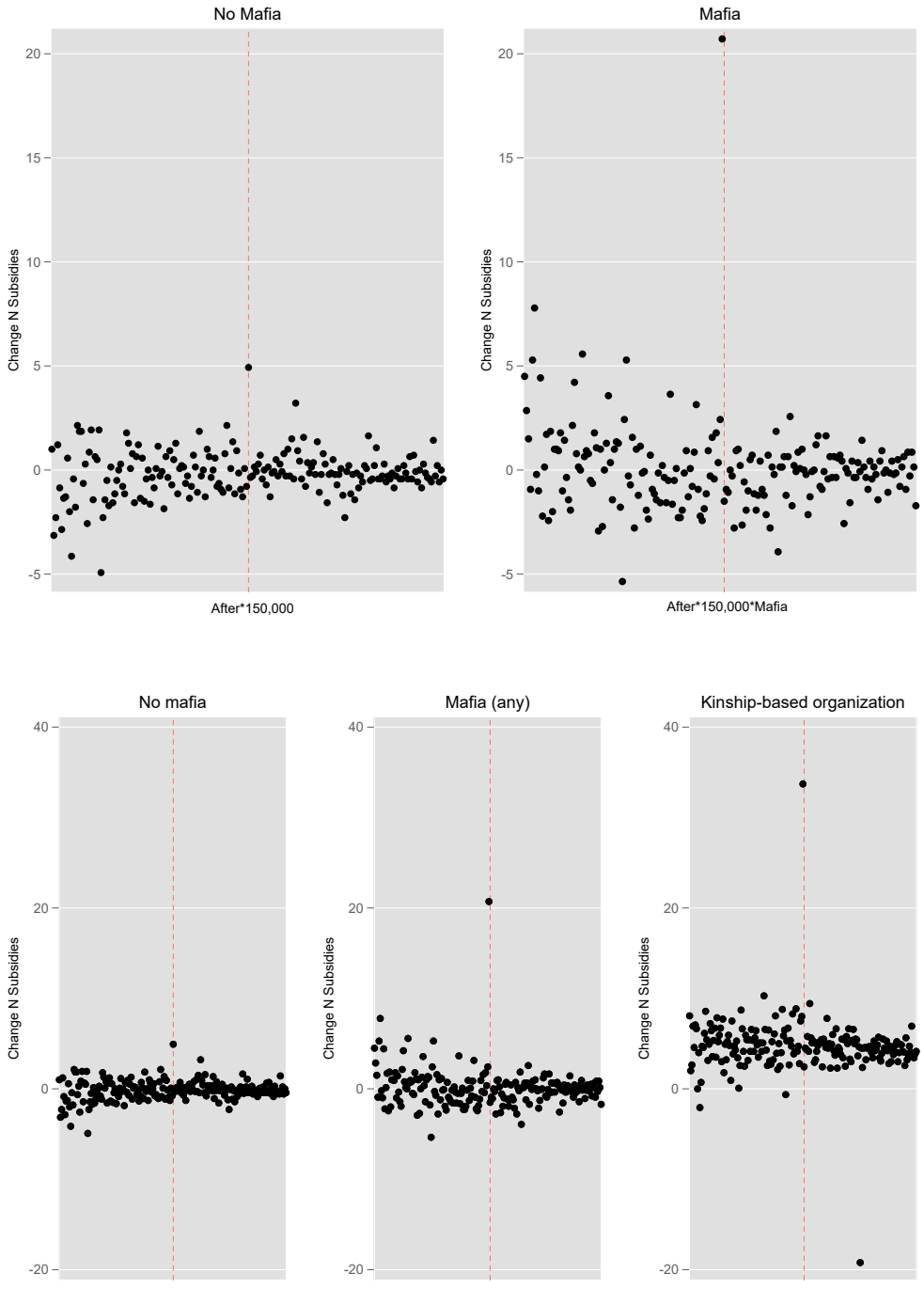


Figure 4: Change in subsidies after 2013, by mafia and 'Ndràngheta presence

The two top panels plot coefficients from the DID estimate (Equation 1) interacted with a dummy indicating the presence of mafias in a city. On the left(right), we show the change in the number of subsidies per bin after the approval of the new Antimafia Law in cities without(with) mafia presence. In the three panels below, we present a similar test by 'Ndràngheta presence.

sector).[39] For a subsidy i issued by a firm having legal form l and based in municipality m, and awarded in year t, we estimate the following equation:

$$\begin{aligned} Y_{ilmt} =& \lambda_l + \mu_m + \theta_t + \gamma_1 Antimafia Law_t + \gamma_2 Just Below_i \\ &+ \gamma_3 Antimafia Law * Just Below_{it} + \epsilon_{ilmt} \end{aligned} \tag{2}$$

where λ_l, μ_r and θ_t are, respectively, the type of institution awarding the subsidy, city and year fixed effects; $Antimafia Law$ is a dummy equal to 1 after the approval of the 2013 law; $Just Below$ is a dummy equal to 1 for subsidies *just below* the 150,000-euro discontinuity and above 148,999 euros. The dependent variable Y refers to characteristics of a subsidy or firm, depending on the specification. This DID specification allows us to consider whether firms sorting at the 150,000-euro threshold after the approval of the Antimafia Law differ in meaningful ways from those submitting requests at any threshold before and after 2013.[40]

We present the results from these analyses in Table 2 and in a compact form in Figure 5 using standardized values. In the discussion of our results we will refer to the table to comment on the magnitude of the coefficients, but we included the figure with our z-scored dependent variable to ease the visualization of results.

[39] In order to consider firm- or subsidy-level characteristics, we cannot use the same identification strategy as in Section 4, which relied on a binned database in which each observation corresponded to a bin-year, with bins corresponding to values between 50,000 and 250,000 euros. Instead, we could consider the firm- or subsidy-level specification. As few firms received more than one subsidy in our sample, we prefer a subsidy-level analysis. Therefore, in these specifications, we control for whether more than one subsidy has been issued to the same firm.

[40] However, the sample of firms receiving more than one subsidy is too small around the 150,000-euro threshold to implement specifications including firm-level fixed effects.

Performance and financial accounts

First, we find that firms that sort at the threshold are more likely to display worse project performance. As the data do not include any evaluation of the project outcomes, we rely on two proxies, which are available in our data: (i) whether, and to what extent, a firm delays the conclusion of the project for which the funding was awarded; and (ii) whether a firm was able to find a source of co-financing for the subsidy. While the former is a standard measure of efficiency, the lack of private financing is in line with rent-seeking behavior on the part of the firm. Table 2, Column 1 shows that firms that are more likely to apply for 149,000–150,000-euro subsidies after 2013 are significantly more likely to delay project completion – by almost 3 months. Firms sorting after 2013 are also 25% less likely to find private co-financing for their projects (Table 2, Column 2).

We also investigate whether these firms differ from others in terms of financial outcomes. Consistently with recent evidence on criminal firms (Transcrime, 2013; Furciniti and Frustagli, 2013), we find that firms that sort have lower debts by almost half a standard deviation with respect to other firms, and lower bank debts by 544,000 euros (Appendix Table 7, Columns 1 and 2). The intuition behind this finding is that if criminals exploit a firm for money laundering, they often camouflage the illegal source of cash by repaying 'fake debts' to external or internal creditors. As a result, they close their balance sheets with lower debts than average and, specifically, with lower debts from banks, which are heavily regulated against money laundering and do not allow opportunities for recycling through fake debt declarations. These lower debts are unlikely to stem from virtuous behavior of these firms, if we consider that they also display worse performance in terms of delays and private co-financing and that they do not display higher profitability. Running the same analysis using return on assets as the dependent variable, a measure of

firm productivity, we indeed find negative and insignificant effects (Table 7, Column 5). This inconclusive finding is likely the mix of several effects at play when considering criminal firms: on the one hand, they might just be an unproductive proxy used for money laundering. On the other hand, they might be productive firms that flourish due to extortion and violence, which distorts the competition and captures entire markets. The idea that mafia-related companies can be used either as pure money laundering devices or as a source of actual profit is supported by evidence from Mirenda, Mocetti, and Rizzica (2017). We also provide results on cash and cash ratio, on which the literature has provided contrasting predictions. We find a weakly positive effect on cash ratio and no effect on cash (Table 7, Columns 3 and 4).

Sectors

Our knowledge on mafias suggests that criminal firms have a comparative advantage in sectors that are local in scope and have low entry barriers (Varese, 2011). Mafia infiltration is more common in sectors with these features, such as construction and local transportation, and rare in export-oriented sectors requiring high technology and specialized labor, such as research and innovation (Lavezzi, 2008). Thus we should expect higher sorting in the first type of sectors and lower sorting in the others. Table 2, Columns 3 and 4 show that firms sorting after the approval of the 2013 law are 30% more likely to operate in sectors such as construction and transportation, and 17% less likely to be in research, innovation and education.

Short-lived firms

Another feature of sorting firms is that they tend to be younger than other firms. In the fifth column of Table 2, we show that sorting firms are 7% more likely to have been created less than two years before receiving the subsidy,

as measured by a dummy equal to 1 when a firm has been registered less than 25 months.[41] The effect of short-lived firms is substantial in magnitude if we consider that the average life of a company in our database is 16.6 years. An extremely short lifespan has been identified as a typical feature of criminal companies that were expressly created to exploit calls for subsidies, and which are created shortly after the publication of the call (Fantò, 1999; Savona, Riccardi, and Berlusconi, 2016).

Boards of Directors from mafia provinces

Our last piece of evidence that aligns with the idea that sorting companies might be infiltrated by the mafia is the likelihood that the Board of Directors is originally from mafia-affected provinces – a probability that is higher when we consider companies just below the threshold and after 2013, even comparing observations within cities (using city fixed effects) accounting for average differences in mafia presence across cities.

The sample of firms just above

We replicate all the tests in Table 2 comparing observations just below the threshold with those just above it, in the group 150,000–160,000 euros. The group applying for little more than 150,000 euros consists of firms that exceed the Antimafia threshold even when they could avoid being screened for mafia connections with very limited losses in terms of foregone profits. Therefore, they constitute an ideal control group of firms with no mafia connections. When comparing this group with sorting firms, the coefficients on delay, private co-financing and sectors are substantially larger. We do not find statistically significant results on firms' longevity, which might be driven by

[41] Note that only in this test, we control for firms' legal status, as many calls focus only on start-ups, whereby very young firms could be over-represented in our sample. The results are not affected by this additional control.

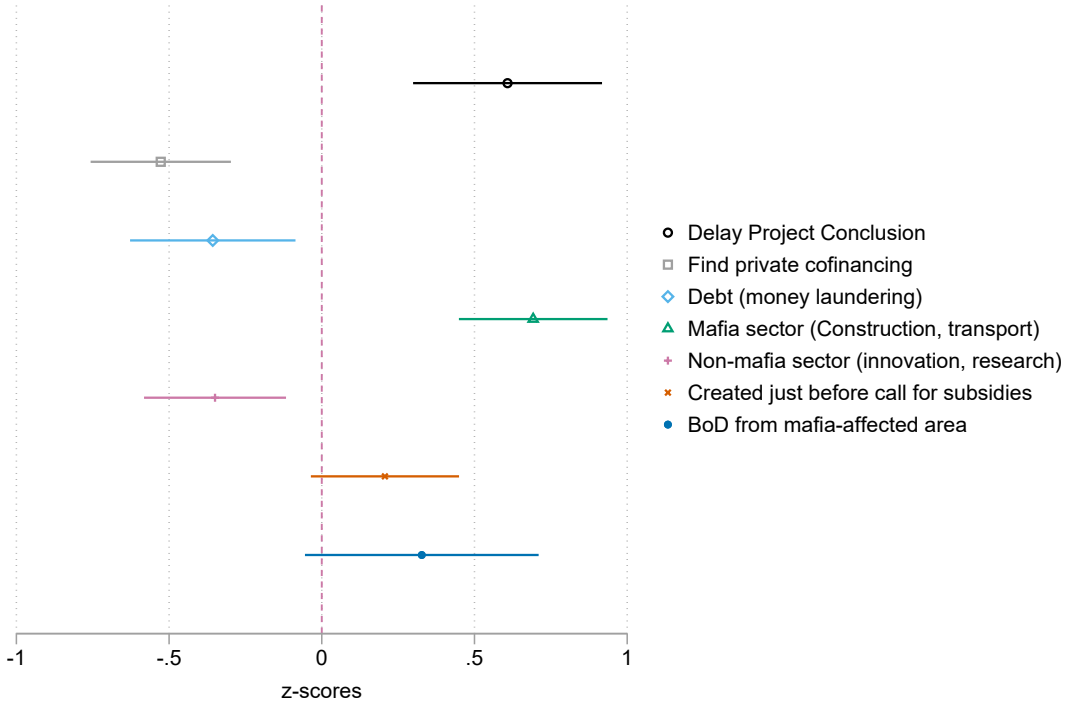


Figure 5: How sorting firms differ from other firms

The figure shows coefficients from the interaction $JustBelowxAntimafiaLaw$ in Equation 2, capturing the effect of being just below the threshold after 2013 on a set of firm characteristics. In this figure, we use z-scores for each dependent variable. $Delay$ is the z-score of the number of months of delay in project completion. $Privateco-financing$ is the z-score transformation of a dummy equal to 1 when the company co-financed the project. $Debt$ is the z-scored winsorized total debt, which is lower when a company launders money. $Mafia$ and $Nomafiasector$ are dummies equal to 1 when the company operates in a sector typically infiltrated (or not) by mafias, as defined in Section 5. $Createdjustbefore$ is a dummy equal to 1 if the company was formed less than 2 years before the funding application. Finally, we consider whether the Board of Directors is originally from mafia-affected areas. Robust standard errors are included.

the small sample size. All results are shown in Appendix Table 8.

5.4 Evidence of subsidies displacement

One last piece of evidence in line with our story comes from observing where the increase in subsidies for 150,000 Euros is coming from in terms of the pre-2013 distribution. If sorting is caused by avoiding the Antimafia Information threshold, we should observe a reduction in subsidies *above* the threshold after 2013. This trend is difficult to see in Figure 3, where we consider the change in subsidies at each value in the distribution. Since we are not interested in the behavior of any particular bin, but rather we want to capture the overall effect for any value above the threshold and after 2013, we simply consider the effect of the triple interaction *Above* x $AntimafiaLaw$ x $Mafia$ on subsidies released, where *Above* is a dummy equal to 1 for any subsidy above 150,000 euros.

Table 3 reports this specification. Column 1 shows that there is not any lower or higher number of subsidies released above 150,000 after the law strengthening. However, when we consider the triple interaction in Column 2, we find that in mafia areas, this is the case. The negative coefficient of the triple interaction indicates that for each bin above 150,000 euros there are 0,71 less subsidies requests after 2013 from firms located in areas with mafia presence. This analysis is consistent with the hypothesis that the increase in subsidies below 150,000 euros comes from a reduction in funding for larger amounts. In other words, mafia-related companies have lost potential income in terms of missed subsidies for larger amounts due to the barrier represented by the antimafia screening.

6 Conclusions

In this paper, we study a policy designed to fight the influence of criminal organizations in the legal economy by screening mafia-connected firms out of calls for subsidies. Our main finding is that firms began to strategically self-select below the threshold at which this law is enforced after it was strengthened in 2013. We exploit this time change jointly with a discontinuity in the law enforcement to provide causally identified estimates of the number of companies related to mafias that avoid the threshold and still apply for public funds below it. We find that the probability of receiving funding just below the discontinuity and after the strengthening of the law is four times higher than for any other amount, a sizeable increase corresponding to 3.8% of all the firms in our sample. This behavior suggests that some firms reduce rent seeking in exchange for avoiding police screening.

We provide a series of pieces of evidence in line with the interpretation that companies sorting are mafia-related. First, we show that sorting is mostly driven by cities affected by mafias. Second, we show that this effect is even stronger if we consider a kinship-based criminal group ('Ndrangheta), more likely to have been affected by the investigation of family members included in the new Antimafia Information Law. Third, we study the characteristics of the firms sorting at the threshold and show that they are considerably different from firms that do not and display features consistent with our knowledge of mafia-related companies.

Overall, our results suggest a strategic and sudden response by mafia-affiliated firms, which immediately react to a new law enforcement and strategically submit applications right below the threshold. This implies i) that firms are certain that anti-mafia checks will not be undertaken below the 150,000 euros threshold and that ii) police will not – at least in the short run – find out about the strategic sorting of mafia-affiliated firms. Are these

assumptions plausible? The first one relies on the repeated interactions between firms and local institutions: if, before 2013, police was systematically enforcing controls only below the old threshold at 154,937 euros (as also confirmed by our survey on *Prefetture)*, mafia-affiliated business owners might expect a similar pattern with the new law, based on the new threshold at 150,000 euros. The second assumption is plausible as i) *Prefetture* have access only to local data, which might not necessarily show the patterns shown in this paper; ii) and there is not any national authority specifically aimed at tackling the influence of mafias in calls for firm subsidies.[42] This might explain why we are the first to highlight such patterns in firm subsidies data.

Our findings highlight the evolving face of criminal organizations, which in recent decades have expanded their businesses to new geographic areas and infiltrated the legal economy in unprecedented ways. The strategic and sudden response of mafia-affiliated firms to this law strengthening should be taken as additional evidence of how well structured and organized is the presence of criminals in the legal economy and in the receipt of public money. These results call for global evaluations of anti-corruption policies, investigating areas and activities besides those directly targeted by the policy and taking into account the strategic and fast-adjusting behavior of criminal actors.

At least one important question is left unanswered: overall, does the strategic response by mafia-affected firms outweigh the benefits of increased oversight on large contracts? Does the gain from protecting some public funds from mafia appropriation compensate for the cost of higher scrutiny from the state? In Appendix H, we provide a back of the envelope calculation which is based on our findings and on estimates from previous works of the Antimafia screening costs. This calculation suggests that the gains for the

[42]Conversely, there is a national authority, which focuses on corruption and mafia infiltration in public procurements (National Anti-Corruption Authority).

State (i.e. lower misappropriation of subsidies by mafia firms) would be higher than the costs when reducing the threshold up to very low amounts as 5,000 euros.

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	(1) Delay (months)	(2) Private co-financing	(3) Mafia sector	(4) Not mafia sector	(5) Created 2y before call	(6) BoD from mafia area
JustBelow	-0.0588	0.0881**	-0.0212	0.0442	-0.04	-0.0645
	(0.0439)	(0.0359)	(0.0401)	(0.0477)	(0.029)	(0.0788)
Antimafia Law	-0.249***	-0.0128	-0.0658	-0.0524	-0.129**	0.388***
	(0.0784)	(0.0552)	(0.0728)	(0.0653)	(0.0374)	(0.051)
JustBelow×Law	0.268***	-0.246***	0.311***	-0.171***	0.069*	0.163*
	(0.0695)	(0.0548)	(0.0557)	(0.0579)	(0.0365)	(0.041)
Constant	0.535***	0.0560	0.162*	-0.251***	0.098	0.787***
	(0.142)	(0.116)	(0.0937)	(0.0793)	(0.178)	(0.190)
Observations	9,667	9,667	9,667	9,667	9,655	4,777
R-squared	0.123	0.368	0.198	0.275	0.153	0.240
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Years Activity	Yes	Yes	Yes	Yes	No	No
Firm Type FE	No	No	No	No	Yes	Yes

Table 2: How sorting firms differ from other firms

Note: The table shows results from estimating Equation 2 using different dependent variables. $Delay$ is a variable equal to the number of months of delay in project completion. $Privateco-financing$ is a dummy equal to 1 when the company co-financed the project. $Mafia$ and $Nomafiasector$ are dummies equal to 1 when the company operates in a sector typically infiltrated (or not) by mafias, as defined in Section 5. Finally, $Created2ybeforecall$ is a dummy equal to 1 if the company was created two years or less before receiving the subsidy. Finally, $BoDfrommafiaarea$ is a dummy taking a value of 1 when members of the Board of Directors are originally from mafia-affected provinces. Robust standard errors are included in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1) N subsidies	(2) N subsidies
Above	-5.158***	-1.884***
	(0.546)	(0.212)
Antimafia Law	3.412***	1.660***
	(0.528)	(0.185)
Above×Antimafia Law	-0.308	0.205
	(0.421)	(0.160)
Mafia		2.296***
		(0.188)
Antimafia Law×Mafia		0.119
		(0.291)
Above×Antimafia Law×Mafia		-0.719**
		(0.311)
Constant	2.780***	0.236
	(0.321)	(0.147)
Observations	1,809	3,591
Number of bins	201	399
Year FE	Yes	Yes
Mean DV	6.02	3.01
Std Dev DV	6.58	3.78

Table 3: Evidence of displacement: Change in subsidies above the threshold after 2013 Law

Note: The table displays regression coefficients from a DID model. Differently from Equation 1, our main independent variable, *Above*, is a dummy equals to 1 for subsidies requests above 150,000 euros. The dependent variable is the number of subsidies in each bin from 50,000 to 250,000 euros. $AntimafiaLaw$ is a dummy equal to 1 after 2013, when the new law is strengthening. $Mafia$ is a dummy equal to 1 in cities with a history of mafia presence, as defined in the Results section. Standard errors are clustered at the bin level. *** p<0.01, ** p<0.05, * p<0.1.

A Descriptive Statistics

	N	Mean	Std. Dev.	Min	Max
Number of requests for bin (binned database)	1608	5.985	6.56	0	96
Amount of subsidies		116,000	52,026	50,000	250,000
Just below 150k, dummy		0.018	0.132	0	1
Delay, months		-1.94	10.37	-72.36	71.79
Private co-financing		0.678	0.467	0	1
Construction, transport		0.280	0.449	0	1
Research, education		0.392	0.488	0	1
Company life		16.83	13.45	0	127
Company life, 1 year		0.084	0.277	0	1
Board of Directors from mafia area		0.552	0.497	0	1
Bank debt, winsorized		601	900	0	2762
Total debt, winsorized		3285	3815	152	11702
Cash ratio		0.006	0.031	0	0.873
Total cash		22.37	489.2	-7.510	35823
Return on assets		2.11	14.98	-884	162
Observations	9,702				

Table 4: Descriptive statistics

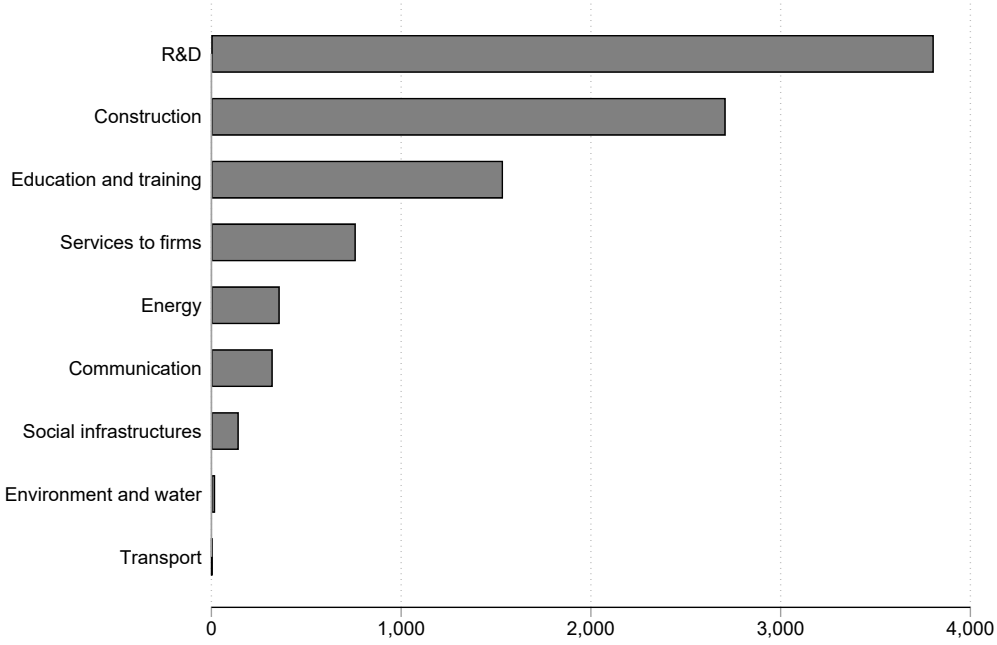

Figure 6: Distribution of subsidies by economic sector

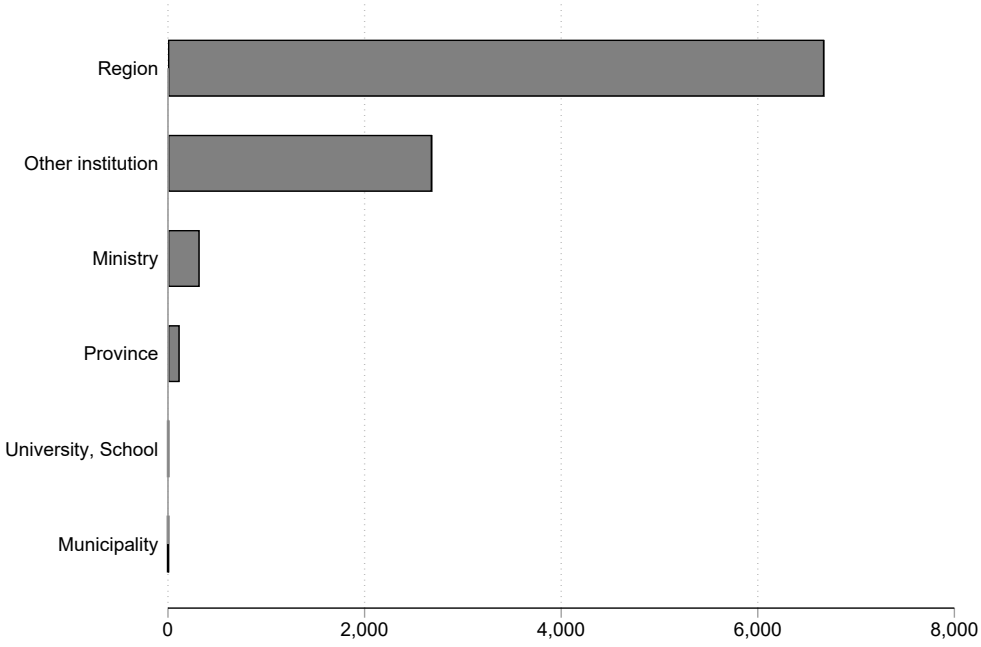

Figure 7: Distribution of subsidies by awarding institutions

Other institution includes local/regional public agencies or *Chambers of Commerce*.

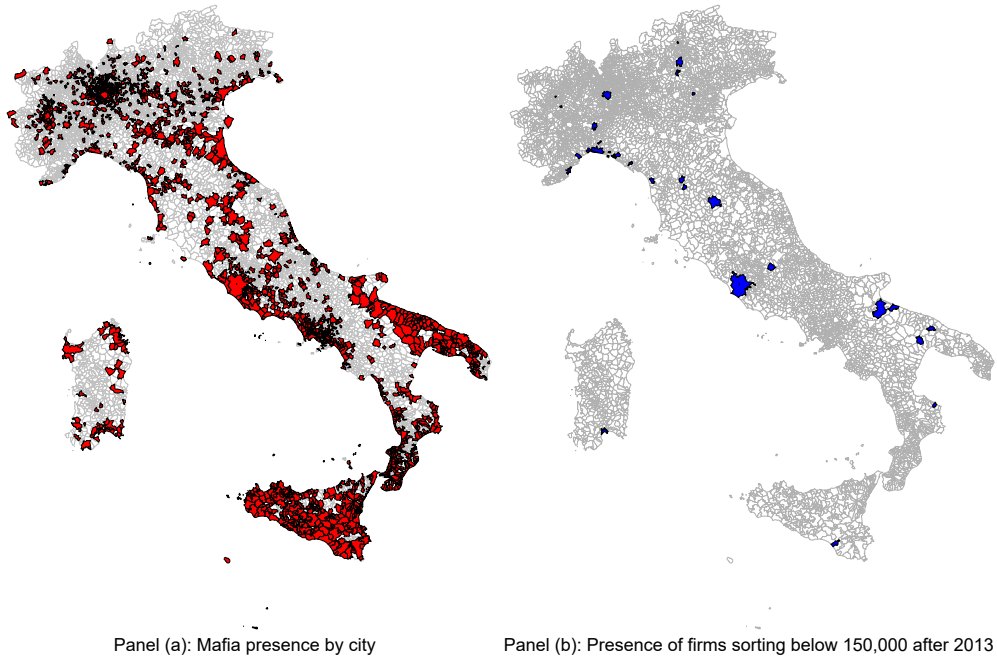

Figure 8: Presence of mafias and sorting in Italian cities

The figure maps observations at the city level. Panel (a) maps mafia presence as defined by a dummy equal to 1 for mafia-affected cities as defined in Section 4. Panel (b) maps cities with companies sorting just below the 150,000-euro threshold after the strengthening of the 2013 Antimafia Law.

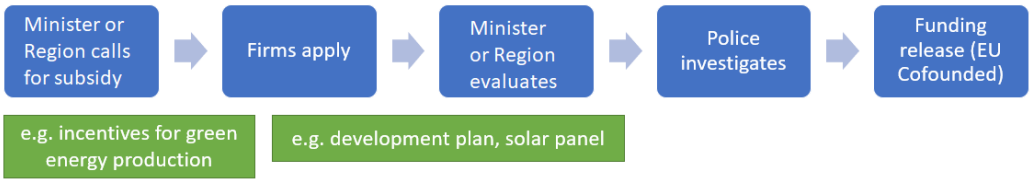

Figure 9: The Antimafia Information Law and the subsidies application process

	Full database		Matched database	
Year	N req	%	N req	%
2007	671	3.05	.	.
2008	1,723	7.83	750	7.79
2009	3,055	13.88	1,354	14.07
2010	3,796	17.25	1,675	17.4
2011	3,190	14.49	1,418	14.73
2012	2,978	13.53	1,327	13.79
2013	2,918	13.26	1,218	12.66
2014	2,340	10.63	1,184	12.3
2015	1,341	6.09	698	7.25

Table 5: Number of requests per year in full and matched database

Note: The table shows the number and percentage of requests per year in the full database, including all data from `OpenCoesione` (Columns 2 and 3) and in the database matched with firms' information (Columns 4 and 5).

B Bunching with a kink

An alternative specification to test for the presence of sorting is to estimate the amount of bunching at the threshold. Our case is a kink, as defined by Kleven and Waseem (2013), a discontinuity in the choice sets of business owners, which creates an incentive for firms to move from the region above the cutoff to the region below. In our setting, the enforcement of an effective screening mechanism at the 150,000 euro threshold creates an incentive for companies related to mafias to move from the region above the threshold to the region just below in order to avoid detection. For companies without a connection to mafias, there is no change in incentives for funding application. The enforcement of the Antimafia Law in 2013 effectively creates a kink for mafia-related companies, which we identify using the bunching estimator.

First, we group requests for funding into 100 euro bins. We then calculate the counterfactual distribution of requests as the probability density function

of our observed distribution, *excluding* the area where we observe the kink – 149,900–150,000 euros. In particular, grouping requests into bins of 100 euros (indexed by j), we fit a flexible polynomial of the observed distribution, excluding the affected range:

$$N_j = \sum_{i=0}^{p} \beta_j^0 Amount_j{}^i + \epsilon_j \tag{3}$$

where $Amount_j$ is the amount of funding requested in all bins j except the 149,000–150,000 euros one; N_j is the number of requests sent in bin j; p is the order of polynomial and β_j is the estimate of the counterfactual distribution. Estimating the amount of bunching corresponds to estimating the following polynomial:

$$N_j = \sum_{i=0}^{p} \beta_j^0 Amount_j{}^i + \sum_{i \in [z_-^0, z_+^0]} \gamma_j^0 1\{Amount = j\} + \epsilon_{ij} \tag{4}$$

where β_j is the counterfactual distribution estimated above and γ_i is the effect of the threshold on the number of requests in the affected range $[z_-^0, z_+^0]$. This procedure, however, overestimates the amount of bunching because it does not account for the additional requests at 150,000 euros due to the fact that this is a round number. We therefore consider the amount of bunching to be the difference between the probability density function of the distribution before and after the 2013 law enforcement, estimated above, and the observed distribution. We display our findings in Figure 10 below, showing the amount of bunching before the strengthening of the Antimafia Law in 2013 (panel on the left), and after (panel on the right). The figures show the predicted distribution using a seventh-degree polynomial and a window of 10,000 euros centered around the kink. Our estimated coefficient for bunching is 56 before 2013 and 79 after the strengthening of the 2013 law. We also estimate the amount of bunching on the difference between the number of requests sent

after and before the new law. The results, displayed in Figure 11, again show a sharp jump in requests at 150,000 euros after the strengthening of the new law. In line with our main results, the amount of bunching at the threshold is significantly higher in the period after the strengthening of the 2013 Antimafia Law.

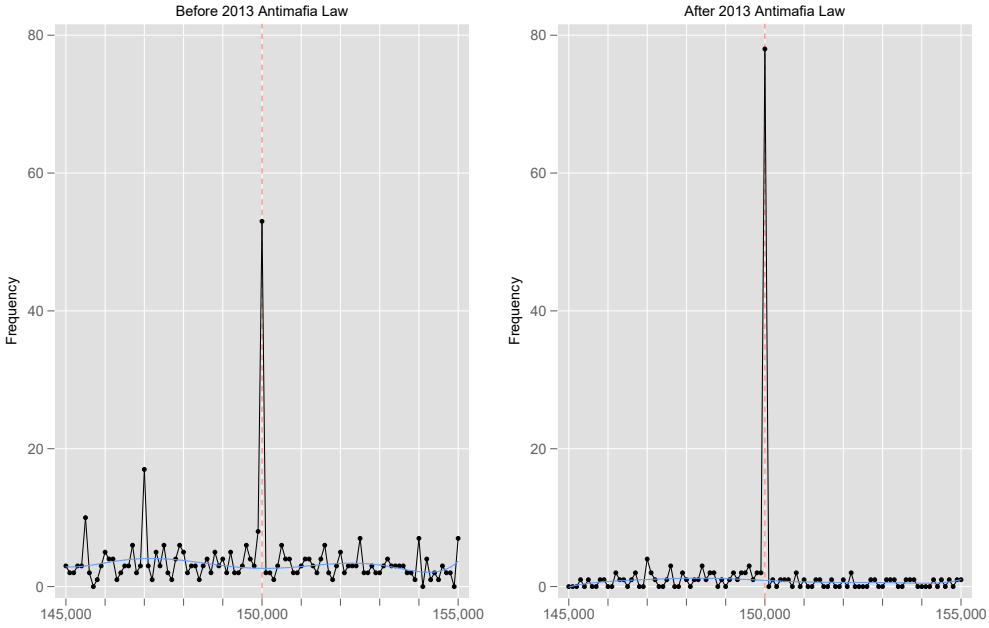

Figure 10: Sorting at the 150,000-euro threshold, bunching estimation

The figure shows the distribution of requests around the 150,000 discontinuity, overlayed with the counterfactual distribution (blue line) estimated as in Equation 4 and using a seventh-degree polynomial. The dependent variable is N_j, the number of requests in each 100-euro bins. The independent variable is $Amount_j$, indicating each bin in the distribution. We plot this figure for both before the strengthening of the Antimafia Law in 2013 (left panel), and after (right panel). We calculate standard errors using a parametric bootstrap procedure.

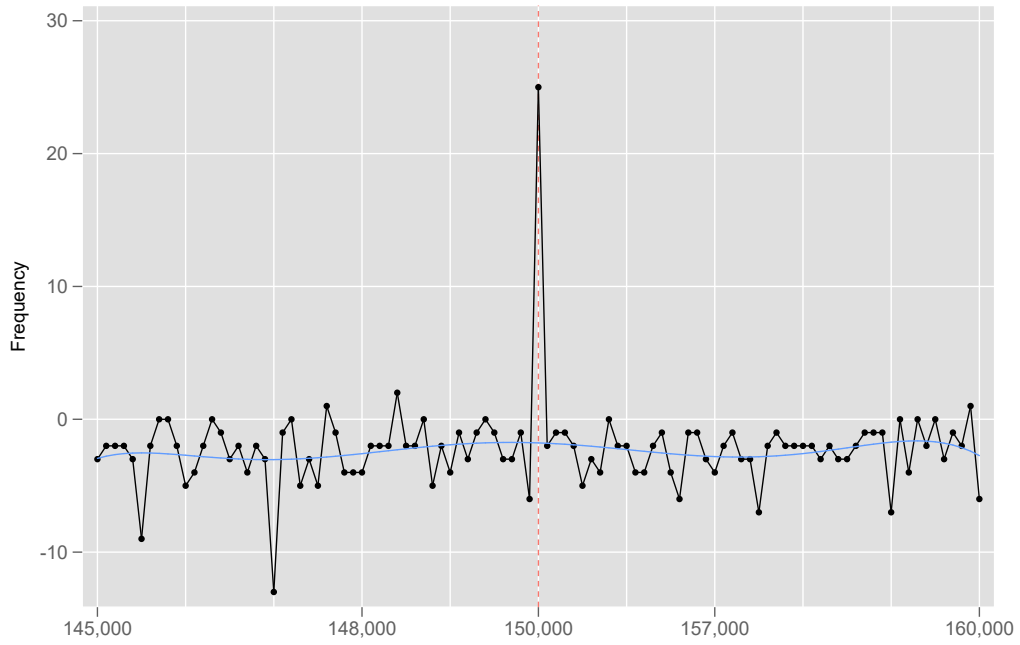

Figure 11: Sorting at the 150,000-euro threshold, bunching estimation using differences

The figure shows the distribution of requests around the 150,000 discontinuity, overlayed with the counterfactual distribution (blue line) estimated as in Equation 4 and using a seventh-degree polynomial. The dependent variable is the difference in N_j, the number of requests in each 100-euro bins, before and after 2013. The independent variable is $Amount_j$, indicating each bin in the distribution. We calculate standard errors using a parametric bootstrap procedure.

C Sorting at the threshold: robustness tests

In this section, we show the results from robustness and placebo tests on the main findings. First, we present the regression table for our main specification measuring the change in the number of subsidies by bin after 2013. Second, we present robustness checks on the main analysis. We test whether our results are driven by one particular year by considering the difference in funding before and after 2014, instead of 2013. This allows us to test whether sorting is still evident if we consider 2015 only as a treated year: the results, shown in Figure 12, are very similar to the main findings. In Figure 13 we show that our findings are robust to varying the size of bins to 2,000 euros, 500, and 100 euros (instead of 1,000), to changing the reference category (Figure 14), and to dropping year fixed effects (Figure 15). Third, Figure 16 displays the results of two placebo tests. The first considers funding in situations in which there is no threshold for antimafia screening: in cities dissolved for mafia infiltration in the last 5 years, companies have to be screened for mafia infiltration for any subsidy requested, independently of the amount. Given the lack of incentives for requesting less than 150,000 euros, we should see no sorting at the threshold. This is indeed what we find: while observations are considerably less than in the full sample, we observe no jump in requests around the discontinuity (Figure 16, Panel a). The second placebo test we perform is on agricultural funds, which, as discussed in Section 4, are subject to lower incentives for sorting. In line with the expectations, we see no substantial sorting at the 150,000-euro threshold and only a small increase at the 147,000–148,000 euros bin. This increase suggests some strategic sorting even in this setting.

	(1) N subsidies	(2) N subsidies	(3) N subsidies
Bin=149-150,000	8.429***	4.571***	7.062***
	(0)	(0)	(0.328)
Antimafia Law	3.103***	1.928***	3.104***
	(0.349)	(0.175)	(0.284)
Bin=149-150,000×Law	30.57***	4.929***	30.93***
	(0)	(0)	(0.145)
Bin=154-155,000	-0.857***		-2.22***
	(0)		(0.330)
Bin=154-155,000*Law	-0.143***		0.220
	(0)		(0.146)
Mafia		1.857***	
		(0)	
Law×Mafia		-0.357***	
		(0)	
Bin=149-150,000×Law×Mafia		20.71***	
		(0)	
Constant	-1.176***	-1.537***	0.189***
	(0.360)	(0.180)	(0.055)
Observations	1,809	3,591	1,809
Number of bins	201	399	201
Year FE	Yes	Yes	Yes
Interactions bins×Law	Yes	Yes	No
Mean DV	6.02	3.01	6.02
Std Dev DV	6.58	3.8	6.58

Table 6: Change in subsidies by bin after 2013 Law

Note: The table displays regression coefficients from the DID model (Equation 1). The dependent variable is the number of subsidies in each bin. We report only the coefficients of interest, for the bin below the new Antimafia Law threshold ($149,000 - -150,000$ bin) and below the old threshold ($154,000 - -155,000$ bin). $AntimafiaLaw$ (or Law) is a dummy equal to 1 after 2013. $Mafia$ is a dummy equal to 1 in cities with mafia presence. The reference category is 151,000 euros. In column 3, we estimate the same specification using instead of the vector $Amount$, estimating the change in subsidies for each bin, a dummy equal to 1 only when the amount is in the 150,000 euros bin and equal to 0 for every other bin. Standard errors are clustered at the bin level. *** p<0.01, ** p<0.05, * p<0.1.

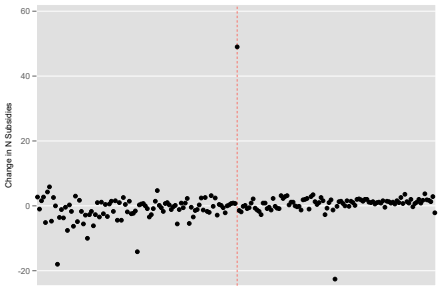

Figure 12: Requests by bin after 2014 (Robustness)

The figure shows coefficients from the DID specified in Equation 1 considering only 2015 as the period of the new Antimafia Law. The coefficient of interest is at the 150,000-euro threshold imposed by the Antimafia Law, which corresponds to the vertical line.

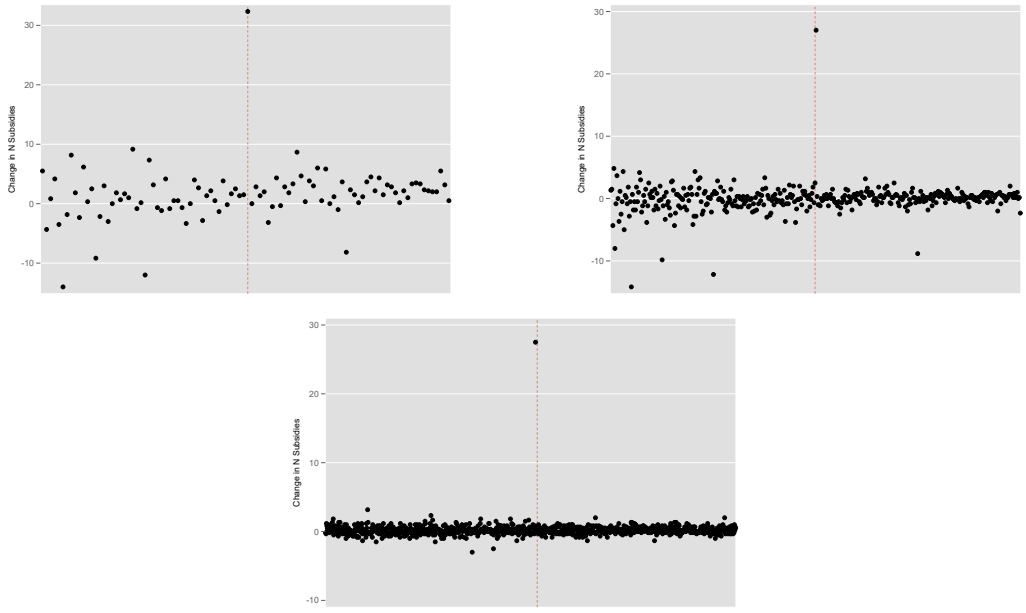

Figure 13: Requests by bin after 2013 (2,000, 500 and 100 euro bins)

The figure shows coefficients from the DID specified in Equation 1 modifying the size of bins to 2,000 (Panel a), 500 (Panel b) and 100 euros (Panel c) instead of 1,000, as in the main specification. For the 100-euro test, we had to restrict the sample to requests between 110,000–190,000 euros, rather than 50,000–250,000 euros as in all other cases, for power calculation reasons. The coefficient of interest is the 150,000-euro threshold imposed by the Antimafia Law, denoted by the vertical line.

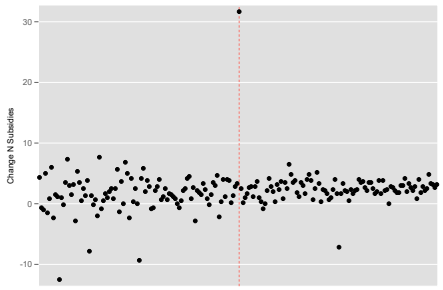

Figure 14: Requests by bin, changing reference category to 250,000 euros (robustness)

The figure shows coefficients from the DID specified in Equation 1 considering 250,000 euros as the reference category instead of 50,000. The coefficient of interest is the 150,000-euro threshold imposed by the Antimafia Law, denoted by the vertical line.

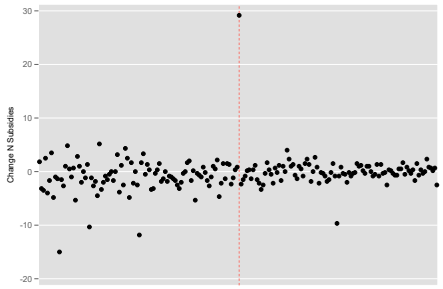

Figure 15: Requests by bin, removing years fixed effects (robustness)

The figure shows coefficients from the DID specified in Equation 1 removing year fixed effects. The coefficient of interest is the 150,000-euro threshold imposed by the Antimafia Law, denoted by the vertical line.

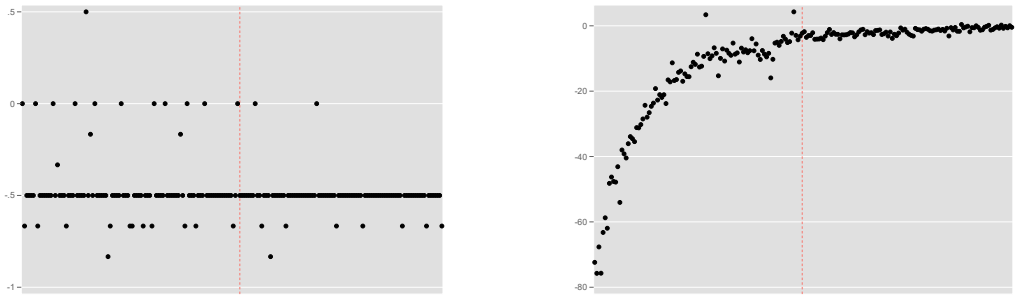

Figure 16: Requests by bin after 2013 when (a) No threshold applies (city councils dissolved due to mafia ties) (b) Low incentives for sorting (agricultural funds)

The figure shows coefficients from the DID specified in Equation 1. We consider two placebo tests: city councils dissolved due to mafia ties, in which no threshold applies (Panel a) and agricultural funds, in which incentives for sorting are lower (Panel b). The coefficient of interest is the 150,000-euro threshold imposed by the Antimafia law, denoted by the vertical line.

D Full sample from OpenCoesione

In this section we replicate all the tests from Section 4 using the full sample of companies from OpenCoesione. As discussed in Section 3, we match funding data from OpenCoesione with firm-level data from Aida to perform heterogeneity tests revealing which firms sort and who their owners are. We chose to use the matched database for our main analyses to show results on a consistent set of data. In this section, we repeat all tests for which we do not need data from Aida on the full database, including all the total of observations from OpenCoesione[43]. Figure 17 shows the results from our main test on whether sorting happens at the 150,000-euro threshold. Consistently with our main findings, we observe large and significant sorting, with the number of requests for 150,000-euro subsidies submitted after the Antimafia Law strengthening higher than the baseline. Using the full database, we find again no evidence that sorting happened at the threshold imposed by the previous law. We can show that these results are robust to only considering subsidies after 2014 (Figure 18), to varying the size of bins (Figure 19) and that the placebo test on city councils dissolved for mafia infiltration works also in this context (Figure 20). Finally, we repeat the heterogeneity by mafia presence on these findings, showing a very similar effect to the one found in the main analyses: sorting is driven by mafia-affected cities (Figure 21) and even more by 'Ndrangheta-affected areas (Figure 22).

[43]We drop an outlier in the distribution of subsidies represented by one large call that required firms in the Trento province to apply for 200,000 euros and which was awarded to 106 different firms. Its inclusion simply creates a jump in correspondence with 200,000 Euros which however - unlike the 150,000 threshold - is driven by this unique observation. In the interval 149,000–150,000 euros, instead, there are 349 subsidies spread across 87 different calls for subsidies. Dropping this unique large call completely eliminates this outlier. As this specific call represents an outlier unrelated to our study, we exclude it from the analysis.

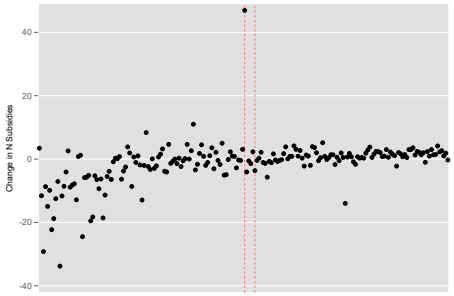

Figure 17: Requests by bin after 2013, Full database

The figure shows coefficients from the DID specified in Equation 1 run on the full sample of observations from OpenCoesione (rather than on the matched sample with the database of firms, Aida, which we use for our core analysis). The coefficient of interest is the 150,000-euro threshold imposed by the new Antimafia Law strengthening in 2013, denoted by the first vertical line. The second vertical line indicates the dismissed threshold imposed by the old law at 154,934 euros.

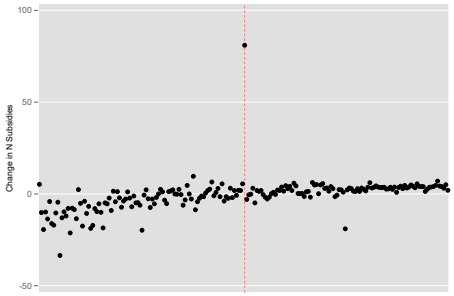

Figure 18: Requests by bin after 2014, full database

The figure shows coefficients from the DID specified in Equation 1 run on the full sample of observations from OpenCoesione (rather than on the matched sample with the database of firms, Aida, which we use for our core analysis). In this test, we consider only 2015 as the treated year to show that our findings are not driven by a specific year.

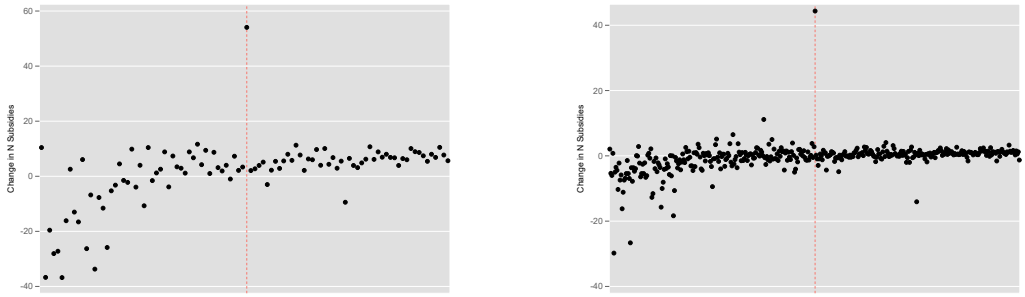

Figure 19: Requests by bin after 2013, full database, 2,000- and 500-euro bins

The figure shows coefficients from the DID specified in Equation 1 run on the full sample of observations from OpenCoesione (rather than on the matched sample with the database of firms, Aida, which we use for our core analysis). Here, we modify the size of bins to 2,000 (Panel a) and 500 euros (Panel b) instead of 1,000. The coefficient of interest is the 150,000-euro threshold imposed by the Antimafia Law.

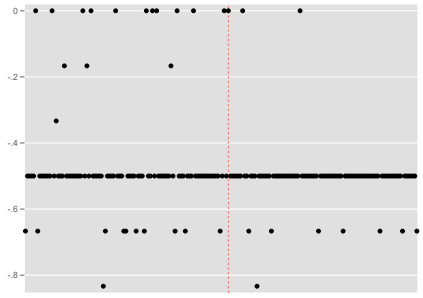

Figure 20: Requests by bin after 2013, full database, when no threshold applies – city councils dissolved due to mafia infiltration

The figure shows coefficients from the DID specified in Equation 1 run on the full sample of observations from OpenCoesione (rather than on the matched sample with the database of firms, Aida, which we use for our core analysis). Here, we consider a placebo test on city councils dissolved due to mafia infiltration in the past five years, where the Antimafia Information has to be released for funding of any amount and thus no threshold applies. The coefficient of interest is, again, the one corresponding to the 150,000-euro threshold (red vertical line), which in this case has no significant effect.

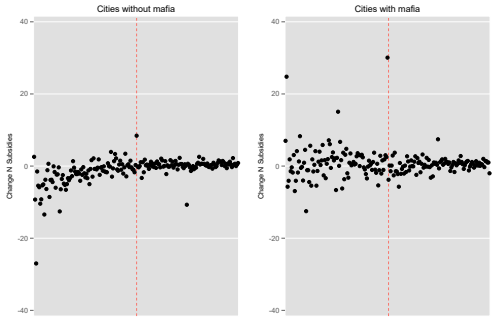

Figure 21: Requests by bin after 2013, full database, by mafia presence

The figure shows coefficients from the DID specified in Equation 1 run on the full sample of observations from OpenCoesione (rather than on the matched sample with the database of firms, Aida, which we use for our core analysis). Here, we consider the heterogeneity by presence of mafias in a city as defined in Section 5. The coefficient of interest is, the one corresponding to the 150,000-euro threshold (red vertical line) while the base category is 151,000-euro.

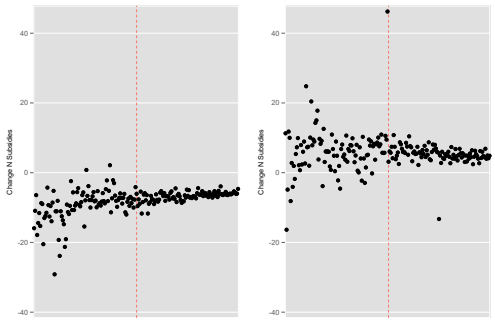

Figure 22: Requests by bin after 2013, full database, by mafia presence

The figure shows coefficients from the DID specified in Equation 1 run on the full sample of observations from OpenCoesione (rather than on the matched sample with the database of firms, Aida, which we use for our core analysis). Here, we consider the heterogeneity by presence of 'Ndrangheta (on the right 'Ndrangheta areas) in a province as defined in Section 5. The coefficient of interest is, the one corresponding to the 150,000-euro threshold (red vertical line) while the base category is 151,000-euro.

E Firms characteristics, robustness tests

We present results from robustness tests on our analysis on firms' characteristics. First, we consider the results on balance-sheet outcomes. A recent empirical literature has started investigating the effects of the presence of mafias on the characteristics of firms, providing descriptive evidence on balance sheet outcomes after mafia penetration or in mafia-affected areas. As mentioned in Section 5, a consistent finding is on bank debt: firms affected by mafias display lower levels of bank debts, in line with a money laundering explanation in which 'fake debts' used to launder dirty money are more difficult to set up with banks (Transcrime, 2013; Furciniti and Frustagli, 2013). Consistently with this evidence, in our data, firms sorting after 2013 display 544,000 euros lower bank debts and 1,895,000 lower total debts than other firms (Table 7, Column 1). The literature provides contrasting conclusions about cash and cash ratio (Bianchi et al., 2017; Transcrime, 2013) and return on assets (Bianchi et al., 2017; Mirenda, Mocetti, and Rizzica, 2017). We find a weakly positive effect on cash ratio, and a null impact on cash and return on assets (Table 7).[44] However, due to the contrasting conclusions provided by this literature, on cash ratio, cash and ROA, we consider these results to be inconclusive.

In Table 8 we present the same analysis on the main firms characteristics repeated comparing the sample just below the threshold to the sample just above it, in the group 150,000–160,000 euros. The group applying for little more than 150,000 euros is made of firms deliberately accepting to undergo the the Antimafia investigation, even when they could avoid it with very limited losses in terms of foregone profits. Therefore, they constitute an ideal control group of firms with no mafia connections. Due to the much

[44] We also test the effect on other types of debts, and find inconclusive evidence. Results are available upon request.

smaller sample size (we pass from 9,657 to 501 firms), we have insignificant findings if we consider a specification with the full set of firm–type, city, year and year of activity fixed effects (odd columns in Table 8). However, if we remove fixed effects, we obtain significant and much stronger results (even columns).

	(1) Bank Debt winsorized	(2) Tot Debt winsorized	(3) Cash Ratio	(4) Cash	(5) ROA
Just Below	432.6***	1,480***	-0.00212	-5.387	-1.727
	(122.6)	(461.1)	(0.00177)	(8.887)	(1.074)
Antimafia Law	35.02	-229.8	0.00203	43.35*	5.044**
	(235.7)	(766.7)	(0.00326)	(22.86)	(2.570)
JustBelow×Law	-544.3***	-1,895***	0.0188*	115.4	-2.258
	(161.0)	(599.1)	(0.0112)	(141.9)	(3.229)
Constant	150.5	1,314	0.0133*	-23.24	-5.004
	(342.8)	(1,000)	(0.00768)	(27.70)	(8.975)
Observations	6,382	6,554	4,683	4,683	6,571
R-squared	0.335	0.428	0.074	0.011	0.052
City FE	Yes	Yes	Yes	Yes	Yes
Institution Type FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Years of Activity	Yes	Yes	Yes	Yes	Yes

Table 7: Requests by bin after 2013 – Balance sheet outcomes

Note: The table shows results from estimating Equation 2 using different financial outcomes of the companies we study as dependent variables. $BankDebt$ and $TotalDebt$ are continuous variables winsorized at the top 0.1 percentile. $CashRatio$ is the fraction of $Cash$ (a count variable in Column 4) and $TotalAssets$. ROA is the return on asset. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1) Delay	(2) Delay	(3) Prv	(4) Prv	(5) M.Sec	(6) M.Sec	(7) No M.Sec	(8) No M.Sec	(9) 21 year	(10) 2 year	(11) BoD M.	(12) BoD M.
Just Below or Above	-0.0636	-4.269***	0.0691	0.204***	0.0427	-0.0779	-0.137*	0.0718	-0.0148	0.0221	-0.0714	-0.216**
	(0.0657)	(1.476)	(0.0543)	(0.0488)	(0.0657)	(0.0501)	(0.0718)	(0.0614)	(0.0389)	(0.0382)	(0.143)	(0.0926)
Antimafia Law	0.437**	-2.400**	-0.484**	0.0899	-0.832***	-0.0165	0.369	0.124*	0.0449	0.0357	0.421	-0.0191
	(0.199)	(1.150)	(0.232)	(0.0670)	(0.206)	(0.0649)	(0.238)	(0.0736)	(0.0899)	(0.0484)	(0.324)	(0.0982)
JB or A×Law	0.0275	6.563***	-0.177	-0.613***	0.121	0.576***	0.0248	-0.447***	-0.0812	-0.0787	0.141	0.445***
	(0.124)	(1.718)	(0.121)	(0.0927)	(0.128)	(0.0905)	(0.129)	(0.100)	(0.0800)	(0.0654)	(0.197)	(0.139)
Constant	1.000***	-0.0144	-0.0243	0.637***	1.327***	0.271***	-0.764***	0.440***	0.447***	0.0916***	0.756	0.595***
	(0.211)	(0.743)	(0.224)	(0.0292)	(0.359)	(0.0270)	(0.271)	(0.0302)	(0.121)	(0.0175)	(0.493)	(0.0460)
Observations	501	491	501	501	500	501	501	501	501	501	237	237
R-squared	0.374	0.259	0.616	0.468	0.535	0.459	0.519	0.396	0.409	0.240	0.548	0.477
City FE	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Institution Type FE	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Year FE	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Years of Activity	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No

Table 8: Requests by bin after 2013 - Just below or Just Above (Robustness)

Note: The table shows results from estimating Equation 2 comparing companies just below and just above the 150,000-euro discontinuity. *Delay* is a variable equal to the number of months of delay in project completion. *Prv* is a dummy equal to 1 when the company found a private source to co-finance the project. *M.Sec* and *NoM.Sec* are dummies equal to 1 when the company operates in a sector typically infiltrated (or not) by mafias, as defined in Section 5. Finally, 2*year* is a dummy equal to 1 if the company was formed less than 2 year ago and *BoDM.* a dummy equal to 1 if the board of director is from a mafia-affected province. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

F Excluding tax evasion

In Section 2.4, we discussed why tax evasion should not be a reason to avoid the Antimafia Law threshold. Tax evasion is not among the crimes leading to a refusal of the Antimafia certificate and, as such, it is not investigated by police when deciding on the release of this information. For these reasons, we suggest that tax-evading firms have no incentive to apply for lower levels of funding just to avoid the Antimafia Law. Here, we provide empirical evidence indirectly supporting this claim. Recent provincial-level data on tax evasion from the Italian Tax Agency rank areas according to how frequently sampled companies evaded taxes in that province using a 0–4 scale (Carbone, 2015). Table 9 shows that companies sorting at the Antimafia threshold are not located in areas with higher levels of tax evasion. Indeed, sorting at the threshold and fiscal evasion seem to be slightly negatively related.

G Circumventing the threshold through figureheads

Sorting below the threshold might not be the only game in town. Another strategy commonly used by criminals is to circumvent police controls by registering the company to trusted figureheads, people who have never been convicted of mafia-related or any other crimes. This allows criminal organizations to conduct legal businesses and access calls for subsidies, and even obtain the Antimafia certificate for funds above the 150,000-euro threshold (Fiandaca, 2007; Savona and Berlusconi, 2015; Savona, Riccardi, and Berlusconi, 2016).

While figureheads are clearly convenient to use, a trustworthy individual with a clean criminal record who is willing to undergo the risk of being

	(1) Tax evasion (0-4) (0-4)	(2) Tax evasion above median	(3) Tax evasion above 75 percentile
Just Below	-0.129*	-0.0935*	-0.0708**
	(0.0739)	(0.0485)	(0.0302)
Antimafia Law	0.610***	0.292***	0.239***
	(0.0449)	(0.0206)	(0.0198)
Just Below×Law	-0.536***	-0.180***	-0.0924**
	(0.118)	(0.0631)	(0.0378)
Observations	9,358	9,358	9,358
R-squared	0.489	0.416	0.461
City FE	Yes	Yes	Yes
Institution Type FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Table 9: Requests per bin after 2013 law depending on tax evasion

Note: The table shows results from estimating a DID specification estimating the effect of being just below the Antimafia Law threshold, i.e. in the bin 149,000-150,000 euros ($JustBelow = 1$), after the approval of the law ($AntimafiaLaw = 1$) on the probability of being in a province with high levels of tax evasion (as from Carbone (2015)). Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

imprisoned for mafia ties might be a rather scarce resource. This is especially true if, as established by the new Antimafia Law, family members undergo the same screening as business owners. The limited availability of this resource allows us to formulate some suggestive hypotheses on the characteristics of the owners in charge of companies circumventing the Antimafia Law through a figurehead.

First, as figureheads are hard to find, we expect that the same resource will be used multiple times, i.e. the same person will be appointed in several positions of the firm. Second, we exploit a demographic feature that is apparently common among figureheads: as explained by a 'Ndràngheta member

in a phone-tapped conversation, the figurehead "must be someone in his 60s or 70s"[45]. Older people tend to be employed as figureheads because they are less likely to be screened by the police, they are considered to be more loyal and, if charged, they are more likely to face house arrest rather than jail.

Our data on business owners allows us to run tests to check whether, after the 2013 law change, there is an increase in 'fishy' business owners among firms applying for subsidies *above* the 150,000-euro threshold. In particular, based on the assumption that it would not be worth it to use a figurehead to apply for just over 150,000 euros, we use 160,000 euros as a discontinuity for this test.[46] In Table 10 we test the triple-interaction coefficient *Antimafia Law x Mafia x Above*, which captures the behavior of firms obtaining subsidies above 160,000 euros after 2013 in cities with mafias.[47] Descriptive statistics on all variables used in the analysis are reported in Table 11.

We find that firms in mafia-affected areas applying for more than 160,000 euros after 2013 are more likely to have a higher level of power concentration, i.e. the same person is appointed to many positions of the company board (Column 1). We also show that firms' ownership is more likely to be registered to people aged 65 or over (Columns 2–3) only when focusing on old individuals born in regions traditionally affected by mafias (i.e. Sicily, Calabria and Campania) (Column 3). We interpret this set of findings as preliminary evidence that, in areas with a higher mafia presence, criminal organizations might resort to trustworthy figureheads to circumvent the An-

[45] `http://www.affaritaliani.it/milano/tangenti-21-persone-arrestate in-quattro-regioni-anche-un-ex-magistrato-541211.html?refresh_ce`

[46] The results do not depend on this specific choice, and are similar when exploiting other cutoffs above 150,000 euros or when using a continuous variable.

[47] We define mafia-affected as explained in Section 4. Interestingly, Figure 11 shows that sorting firms are not located in regions historically affected by organized crime (i.e. Sicily, Calabria and Campania). This might be due to the fact that figureheads are more widely exploited in these areas. However, we cannot precisely test whether this is the case, as when we replicate the tests in Table 10, considering only mafia-affected cities in these three regions, the number of observations is too limited.

timafia certificate and still apply for funds above the 150,000-euro threshold.

H Optimal threshold choice

The selection of a threshold above which screening for mafia–connection is performed imposes a trade–off for any government willing to contrast public fund misappropriation. On the one hand, governments gain from reducing profits made by criminal organizations – both by reducing looting of public resources and by avoiding reinforcing criminal organizations, making it attractive to reduce the threshold to zero. On the other hand, screening imposes costs on the government and lowering the threshold increases the number of subsidies requiring police attention. A natural policy question arising from this trade–off is what would be the optimal threshold to minimize mafia gains and screening costs. In this section, we run a back of the envelope exercise based on estimates from our study and on approximate costs that the Italian government faces to screen more subsidies.

For the purpose of this simulation, we will assume the utility of the State to depend positively on mafia losses and negatively on screening costs ($U_{state} = ((1 - \pi_{mafia}) - costscreening)$). A government might deem it optimal to incur in an economic loss from over screening if they think that misappropriation has larger negative effects than the simple welfare loss caused by the misappropriation of public funds. However, for the purpose of this exercise, we simply consider the net gains and losses from reducing subsidies misappropriation and screening costs.

For each hypothetical threshold value, we calculate the net gains of the state as the difference between yearly mafia losses and yearly estimated costs from screening, as summarized in Table 12. For a given threshold (θ), screening costs are equal to the number of subsidies below θ times the cost to screen each subsidy. Calderoni (2012) undertook an exploratory study on this topic,

	(1) Board Concentration	(2) Age 65+	(3) 65+ from Mafia Region
Antimafia Law	-0.0365*	-0.0399	0.0229**
	(0.0198)	(0.0282)	(0.00988)
Mafia	0.0522***	-0.0537***	0.0174***
	(0.0107)	(0.0140)	(0.00371)
Law×Mafia	-0.0980***	-0.0333	-0.0134*
	(0.0170)	(0.0228)	(0.00738)
Above	-0.0347**	0.0737***	0.0275***
	(0.0148)	(0.0200)	(0.00546)
Law×Above	0.0331	-0.0697*	-0.0251*
	(0.0314)	(0.0390)	(0.0151)
Mafia×Above	-0.0486***	-0.0573**	-0.0324***
	(0.0181)	(0.0238)	(0.00674)
Law×Mafia×Above	0.123***	0.0781	0.0396**
	(0.0385)	(0.0484)	(0.0192)
Observations	12,029	12,029	12,029
R-squared	0.423	0.145	0.059
City FE	Yes	Yes	Yes
Institution Type FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N Projects	Yes	Yes	Yes

Table 10: Characteristics of business owners (alleged figureheads)

Note: The table shows results from a triple-diff estimation of the effects of the $AntimafiaLaw$ (dummy=1 post 2013) in $Mafia$-affected cities (dummy=1) for companies applying *Above* the Antimafia threshold (dummy=1 for funding above 160,000 euros). The dependent variable in Column 1 is the share of positions held by the same person; in Column 2, the dependent variable is a dummy equal to 1 when the owner is more than 65 years old and in Column 3 when the owner is older than 65 and from Sicily, Calabria or Campania, i.e. highly mafia-affected areas. Robust standard errors are included in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	N	Mean	Std. Dev.	Min	Max
Mafia presence, dummy		0.657	0.475	0.000	1.000
Board composed of same person		0.456	0.368	0.001	1.000
Company owner 65+ years old		0.218	0.413	0.000	1.000
Company owner 65+ years old–mafia area		0.163	0.126	0.000	1.000
Observations	12,073				

Table 11: Descriptive statistics, figureheads analysis (database at the firms owner level)

interviewing two large *Prefectures*, one in the North (Milan) and one in the South (Catania). Based on this work, on average one official is in charge of releasing 327 Antimafia Information per year.[48] Based both on Calderoni (2012) and on the law establishing the wage of police officers in Italy[49], the yearly cost of hiring an additional official in charge of the Antimafia Certificate is 30,000 Euros per year. The cost of screening one subsidy is thus estimated at 92 Euros.

We estimate mafia gains as the summation of the gains from sorting at the threshold plus the gains from applying below the threshold. Both these quantities require some assumptions. First, we assume the number of subsidies at θ to be the same that we observe at 150,000 Euros for every bin and multiply this number for the threshold to obtain the gains at θ. Second, we need to make an assumption on the share of subsidies connected to mafia below θ. Based on the 3.8% increase in subsidies at 150,000 after 2013, we assume that this share cannot be larger than 3.8% and we set it at 1%.[50]

[48] According to Calderoni (2012), in Catania the yearly number of Information released is 1,354 per 6 officials, i.e. 225 per person per year. In Milan, the yearly number of Information is 3,858 per 9 people, or 428 Information per official per year. Our benchmark for the number of Information released per official per year is thus the average of these two.

[49] Wages are established every three years, as regulated by D.L. 1980, n. 312.

[50] This estimate is clearly arbitrary. However, we consider 1% as a lower-bound, considering that recent papers provide higher estimates of this share (Le Moglie and Sorrenti, 2017; Piemontese, 2018).

Mafia gains below the threshold are calculated as the number of subsidies in our sample per year below every θ times this share. Total mafia losses simply correspond to the total mafia gains when there is no screening (i.e. when θ=250,000) minus total mafia gains.[51]

Finally, we estimate state gains as the difference between mafia losses and the cost of screening. Using data from our sample, estimated screening costs and assumptions on the mafia-related subsidies, the net utility for the state becomes close to negative when the threshold is set at 4,000 euros.

This back of the envelope calculation suggests that reducing the threshold could be optimal even for subsidies of small amounts, close to 4,000 euros. This result crucially depends on the number of subsidies' requests, as a much higher number of requests would change our findings.

[51]The number of firms sorting below the threshold might be increasing for lower thresholds, as more and more mafia-connected firms get screened. However, calls include only requests within a certain interval: therefore, some mafia-firms would be pushed out of the calls, without the opportunity of sorting at a lower threshold. The inclusion of this dynamic would require additional assumptions without substantially affecting our findings.

Table 12: Simulation for optimal threshold selection

A Thres-hold (θ)	B Unit cost screening	C N subs screened	D Tot screen cost (B*C)	E Mafia subs at θ x year	F Mafia gain at θ (A*E)	G Avg amount below θ	H Mafia-subs below θ	I Mafia gains below θ (G*H)	J Tot Mafia Gains (F+I)	K Tot Mafia Loss (J_{250k}−J)	L State Net Gain (K-D)
250,000	92	0	0.0	23	5,750,000	15,636	333.98	5,222,111	10,972,111	0	0
150,000	92	552	50,642	23	3,450,000	12,729	328.46	4,180,967	7,630,967	3,341,143	3,290,501
100,000	92	1,237	113,486	23	2,300,000	10,335	321.61	3,323,839	5,623,839	5,348,271	5,234,785
50,000	92	2,672	245,137	23	1,150,000	7,502	307.26	2,305,065	3,455,064	7,517,046	7,271,909
25,000	92	4,756	436,330	23	575,000	5,360	286.42	1,535,211	2,110,211	5,520,756	5,084,425
10,000	92	8,756	803,302	23	230,000	3,503	246.42	863,209	1,093,209	4,530,630	3,727,327
5,000	92	13,520	1,240,367	23	115,000	2,654	198.78	525,773	640,773	2,814,291	1,573,924
4,000	92	18,408	1,688,807	23	92,000	2,000	149.90	299,800	391,800	1,718,411	29,603

Note: Column A: Threshold (θ) of the Antimafia Law; Column B: Unit cost of subsidies screening; Column C: Number of subsidies screened at θ; Column D: Total screening cost (B*C); Column E: Number of mafia subsidies right below θ; Column F: Mafia gains from sorting right below θ (A*E); Column G: Average value of subsidies below θ; Column H: Number of mafia subsidies below θ, i.e. 1% of the total number of subsidies below θ; Column I: Mafia gains in the area below θ, H*G; Column J: Total mafia gains (F+I); Column K: Total mafia loss, i.e. the difference in gains between two consecutive thresholds; Column L: State net gain, i.e. mafia total loss (K) - screening costs (D).