

Lost in corruption...
Evidence from EU funding to Southern Italy*

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Abstract

We study whether large transfers of public funds from the center increase corruption at the local level. Exploiting within municipality variation in the flow of EU funds to Southern Italy between 2007 and 2014 we find a statistically significant but relatively small effect on white collar crimes. Our estimates suggest that a 10% increase in EU disbursements is correlated with a 0.4% increase in the number of crimes in the same year. We provide evidence that this correlation is likely to reflect a causal link going from EU funds to corruption.

Keywords: corruption, EU funds

JEL Classification: D7, H3, H7

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1 Introduction

Large transfers of financial resources from higher levels of government have been shown to negatively impact on the political process at the local level ([Besley and Persson, 2008](#); [Caselli and Michaels, 2013](#)) strengthening the incentives for rent seeking ([Vicente, 2010](#); [Brollo et al., 2013](#)). Indeed, growing evidence suggests that a non-negligible fraction of the EU budget is lost in fraud and corruption, in particular when it comes to the so-called Structural and Social Funds targeting less developed areas. According to the European Anti-Fraud Office (OLAF), for example, every year nearly 1 billion euro of EU funds is wasted in such legal activities. While most cases of malfeasance in funds allocation regard Central and Eastern European countries ([OLAF, 2015](#)),¹ similar leakages occurs in the case of Italy, as often argued in policy debates ([Rossi, 2006](#)) and in the media.²

The present paper investigates the link between the receipt of EU funds and the incidence of white collar crimes in recipient localities. We focus on the case of Southern Italy, an area that has received large amounts of EU financing, exploiting detailed information on their distribution over the territory between 2007 and 2013. We combine this information with a novel dataset collecting all criminal records at the local level, and exploit within municipality variation to infer the impact of changes in the flow of such additional resources on corruption (white collar crimes).

We estimate the relationship to be positive: a 10% increase in the amount of EU funds received by a municipality is associated with an increase of about 0.4% in the number of white collar crimes committed in the same municipality and year. The results is driven by funds targeting the realization of public works, rather than those devoted to transfers to firms and households and purchases of goods and services by public administrations. Interestingly, the estimated effect is homogeneous across dimensions that are commonly associated to varying propensity to malpractices (such as the efficiency of the local administration or social capital). On the other hand, we find (weak) evidence that the recent application of an anti-corruption law partially offset the increase in white collar crimes. Finally, we find no evidence that the propensity to divert EU funds varies with the incidence of organized crime.

The relation that we identify in this paper cannot be strictly interpreted as causal, due to the possible simultaneity between the assignment of funds and the incidence of corruption. Indeed, areas with more criminal activity are generally characterized by poorer

¹See, for instance: [New York Times on Slovakia](#); [evidence from Romania](#); [New York Times on Bulgaria](#).

²For example, in September 2014 the court of Palermo started a trial against the manager of a training company accused of having subtracted about 15 million euro of EU funds for fictitious courses, while in October 2014, the director general for EU policies of the Abruzzi region was arrested for corruption ([la Repubblica](#)).

socio-economic conditions and thus will typically be assigned more funds. We account for this possibility introducing a battery of time varying controls aimed at capturing differences in local socio-economic and political conditions that vary from year to year while time invariant unobservable heterogeneity is absorbed by municipality fixed effects. Moreover, we show that EU funds do not affect other types of crimes (as violent or property crimes), suggesting that their relationship with corruption is unlikely to be driven by some independent deterioration of the regulative and market environment at the local level, which just happens to be contemporaneous to the receipt of the EU money.

The paper is structured as follows: Section 2 discusses the most relevant related literature; Section 3 describes the institutional setting; Section 4 introduces the data and some descriptive statistics; Section 5 presents our results; Section 6 provides some robustness checks and extensions; finally, Section 7 concludes.

2 Related literature

The existing empirical contributions on the determinants of corruption have highlighted different potential channels such as institutions (Fisman and Gatti, 2002), culture (Fisman and Miguel, 2007), gender (Brollo and Troiano, 2013), economic growth (Bai et al., 2013) and the spatial distribution of population (Campante and Do, 2014). In this respect, our paper is closest to the work by Brollo and Nannicini (2011); Brollo et al. (2013), who estimate for the case of Brazil the effect of transfers of intergovernmental funds to federal administrations on the propensity of local politicians and public officials to commit corruption crimes. Our study is also related to the work of Olken (2007), as we explore the role of civil society involvement in preventing corruption, and of Ferraz and Finan (2011), who study the relationship between corruption and the electoral cycle, which we also consider as a potential explanatory variable.

We also speak to the recent literature that has pointed at the existence of inefficiencies, in Italy, in the allocation and use of public funds received from a central government. Carozzi and Repetto (2014), for instance, showed that Italian municipalities that are birth towns of politicians in the national Parliament tend to receive higher transfers from the national government. Barone and Narciso (2013), moreover, highlighted how the presence of organized crime in an area would attract more transfers to the local administration. The latter paper, in particular, is highly related to our empirical investigation, as the transfers considered, those granted by Law 488/92, were partly financed through EU funds. As for the use of the public resources provided by the central authority, Rossi (2006) provided a descriptive overview of the corruption cases spurred by the transfers that the administrations of the South of Italy received in the recent past.

Finally, from a more policy oriented perspective, our study provides additional insights to the debate on the efficacy and desirability of the EU cohesion policy. The impact of structural funds in terms of employment and GDP growth has been shown to be generally moderately positive (Becker et al., 2010, 2013) across all EU countries. For what regards Italy, though, the results on the effectiveness of the EU financing schemes are generally less supportive than those found for the other EU regions (Ciani and de Blasio, 2015). Most importantly for our work, is that some recent literature revealed that there may be undesirable side effects of the policy: Accetturo et al. (2014), for example, showed that the disbursement of EU funds negatively affected the degree of civiness and social cooperation in the receiving area.

3 Institutional setting

The European regional policy³ is aimed at promoting growth and investments and reducing economic and social imbalances among European regions. The policy is implemented through the so called structural funds, which are allocated by the European Commission to the member states on a 7 year basis.

Once funds have been assigned to member states, a crucial decision becomes the level of decentralization at which to manage the funds: a more decentralized management may leave more room for discretion and hence misbehaviours on the part of local politicians (Mauro, 1998; Tanzi and Davoodi, 2000), whereas a fully centralized system would reduce the degree of accountability of the local politicians. As a matter of fact, more than 75% of the 2007-13 EU budget referring to Italy has been managed by local administrations (amounting to 46 billion euro, including the national co-financing for around 18 billion). At least in principle, EU funds represent are an extraordinary disbursement of financial resources to local administrations as they are meant to finance additional investments on top of the structural expenditure which is instead financed through local and national budgets.⁴ Yet, in many cases and especially in the South of Italy, which received 23 billion euro out of the 35 billion managed at local level, the EU funds have become the main source of funding for local administrations, which have suffered from severe spending cuts from the central government in recent years.

To improve the effectiveness of the funding mechanism and exert the maximum level of effort from local administrators, the European Commission has set a mechanism of automatic withdrawal of funds, that takes place whenever member states do not report and

³Details on the functioning of the policy can be found on the [EC dedicated webpage](#).

⁴The EC Regional Policy refers to this as the principle of “additionality” of the EU funds, by which contributions from the Funds must not replace public or equivalent structural expenditure by a Member State in the regions concerned.

certify the total spending of the assigned funds by the end of the programming period. Moreover, member states are in charge of auditing the use of funds according to rules decided at the European level and of signaling any irregularity to the European Commission.⁵ The threat of withdrawal should push national authorities to impose heavier regulations and requirements over the administration of the EU funds, and this should make corruption more difficult and costly. Moreover, in order to make the national policy makers feel more responsible about the use of the EU funds, it is established that member states and regions have to guarantee an adequate share of co-financing of the projects implemented with EU funds as a condition to receive the funds.

Despite these safeguard norms, the possibility of funds misuse should not be disregarded because the architecture of the EU funds allocation and spending is complex and involves many levels of government. This leads to major bureaucratic redundancies and to a high fractionalization of the expenditure which undermines the possibility of national authorities to adequately monitor the funds use (see, for instance, [Perotti and Teoldi, 2014](#)); moreover, although most projects are managed at the local level, more than 90 percent of co-financing comes from national resources and not from the local ones: this reduces the incentives for local authorities to monitor the spending of the funds and the implementation of the projects.

4 Data and descriptive statistics

Our dependent variable, the number of white collar crimes recorded for each municipality in each year between 2007 and 2014, is taken from SdI (Sistema d'Indagine), the archive of the Ministry of Interior that contains records of all the crimes committed in the national territory. This dataset, derived from the IT system used by the police for investigation activities, has two major advantages: first, because it reports all the open cases which are under investigation by the police, it provides an instantaneous picture of the criminal activity in the municipality, whereas most datasets on crimes only report arrests or convictions which are likely to occur with delay with respect to when the crime is committed. Secondly, our dataset is less subject to problems of underreporting of crimes because, on top of the reports filled by the victims of the crimes, it also contains records of all the investigations opened by the police forces themselves. This is a particularly valuable aspect in the case of corruption crimes in that in such crimes neither of the parties involved has any interest in reporting the crime because they would both be guilty of a criminal offense. The classification of crimes available in the SDI is made directly by

⁵Details on the functioning of the audit mechanism for the 2007-2013 programming period can be found in the [EC Regulation No 1828/2006](#).

the Ministry of Interior on the basis of the respective applicable law. We thus identify as white collar crimes all crimes committed against articles 314-323 (crimes against public administration) and 479-481 (crimes against public faith) of the Italian penal code: these include corruption, bribery, embezzlement, abuse of authority and fraud.

To build our explanatory variable of interest, instead, we exploit data on disbursements of EU structural funds published on Opencoesione, an on-line portal created in 2012 that contains geo-detailed information on the use of EU cohesion policy funds in Italy for the programming period 2007-2013. The available information includes type of financed project (public works, purchases of goods and services, subsidies for firms and workers etc.), localization (the receiving municipality), beneficiaries (public administrations or other subjects residing in the municipality), budgets and payments (inclusive of national co-financing) relative to all projects financed through structural funds. The data are reported bimonthly but, to link them with our crime data, we aggregate them on a yearly basis. In some cases a single project may involve more than one municipality so that it is not possible to recover the share of payment received by each single municipality. In these cases we imputed an equal share of payment to each municipality involved.⁶ Finally, to merge this information with our crime data, that are currently only available for white collar crimes until 2014, we used data on payments made between 2007 and 2014 (because of the EU N+2 rule, payments referring to the 2007-2013 programming cycle could be made up to 2015). Finally, we also use, as control variables, additional information at the municipality level referring to local population size, labor market participation, unemployment, educational attainment and political cycle, as well as regional GDP growth. Our control variables are taken from the Italian National Bureau of Statistics (ISTAT) and from the Italian registry of academic enrollments (MIUR).

The choice of considering only Southern municipalities is motivated by the fact that they were the target of most of the European transfers. In the programming period 2007-13, more than 70% of the total financing at the national level was allocated to this area. According to our data, EU funds disbursements amounted to about 64 euro per person per year in the South and only 10 euro in the Centre and the North. This implies that in the latter regions our explanatory variable does not show enough variation to identify a meaningful empirical relation (figure 1).

[Figure 1 about here]

Furthermore, excluding Northern and Central Italy reduces the degree of heterogeneity across municipalities in the sample in terms of their time varying characteristics, and in

⁶We exclude projects that are managed at the national or regional level and only split across municipalities those that only involve the province in which the municipality is located. These amount to about 5% of the funds considered in the analysis.

particular, of the different economic cycles experienced in the most recent years. Indeed, recent studies ([Bank of Italy, 2014](#); [SVIMEZ, 2015](#)) have shown that the latest economic crises affected the South of Italy in a very different way from the rest of the country.

[Table 1 about here]

Table 1 reports the main descriptive statistics for the sample of interest, i.e. municipalities in southern Italy in the period 2007-2014. First we report evidence on the frequency and size of EU funds disbursements. Transfers were limited in the first years of the programming period, in 2007 less than 30% of southern municipalities received money and the average amount was about 65,000 euro per municipality only. Such low level of funding in the first years mainly reflects the fact that the assignment of public tenders and other preparatory activities required time to be implemented. At the end of the programming period, indeed, over 90% of southern municipalities were receiving funds from the EU, with an average amount more than ten times bigger than at the beginning of the programming period, over 765,000 euro per municipality in 2014. We then provide evidence on the type of expenditures: around two thirds of the funds financed public works, the share being quite constant across years. Table 1 also shows the number of white collar crimes and all crimes per municipality by year. White collar crimes represent a minor fraction of the total criminal activity: in 2007 only 0.04% of total crimes. This share, nevertheless, increased over time up to more than doubling in 2011 when it reached 0.1% due to a simultaneous increase in the number of white collar crimes and a decrease in the number of total crimes. Figure 2 illustrates the distribution of white collar crimes per municipality over the whole period 2007-2014. The number of crimes is a highly discrete variable: in over 62% of the municipalities analysed there was never a white collar crime over the period of interest, and only in 6% of the municipalities there were more than ten crimes. These figures become even lower when we consider yearly variations: 87% of southern municipalities had no white collar crimes in one of the years considered, only 0.5% had more than ten in a single year.

[Figure 2 about here]

We also present descriptive statistics on the set of covariates that we will employ as control variables in our main regressions. The rate of participation in the labour market, which averages 54% in the provinces of interest, the rate of unemployment, which spiked in the South from 10% in 2007 to 19% in 2014, the number of new college graduates per year in the municipality (only 5 new college graduates every 1,000 inhabitants), the rate of GDP growth at the regional level, this fluctuated around zero over the years with the deepest negative peak in 2009. Moreover we include in the table the statistics that

refer to two features of the local political cycle: the number of years from the last local elections and the share of municipalities with a mayor who is at his second mandate (and thus cannot run for re-election anymore).

Finally, in figure 3, we show that there exists a raw positive correlation between the incidence of white collar crimes and the amount of EU funds transferred to the municipality over the same year. Yet, this correlation is likely to be spurious for the reasons exposed above, and hence a more demanding empirical specification is required to make any statement about causality.

[Figure 3 about here]

5 Empirical strategy

We aim to estimate the effect of EU funds on the insurgence of white collar crimes. If not efficiently assigned and sufficiently monitored, larger financial transfers from a centralized authority to local administrations may raise incentives for local public officers to seek rents out of them. The identification of a causal parameter is hampered by the possibility that there may be a reversed causality relation between the amount of public funds received in a certain municipality and the incidence of white collar crimes. Indeed, while the availability of large amounts of public money may create incentives to the local public officers to seek rents and thus commit white collar crimes, at the same time areas with a higher incidence of criminal activity, being typically less affluent areas, tend to be targeted by the central policy maker with larger transfers of money. It is thus hard to isolate the first effect, that we are interested in, from the latter. Our preferred specification will thus be one that exploits yearly variations in the amount of funds received by each municipality. Indeed, as shown in table 1, the amount of funds that the EU disbursed to Southern Italy municipalities varied significantly from year to year. This feature of the EU funds makes them a particularly suitable case study to analyse the effects of transfers from central to local governments in a regression with fixed effects. Indeed, unlike the transfers from the EU, the funding received from the national government for structural expenditure, being based on previous disbursements and on the population size, exhibits very little yearly variation and its effect thus tends to be absorbed by the inclusion of municipality fixed effects in the regression. Our main empirical specification, hence, is expressed as follows:

$$C_{m,t} = b_0 + b_1 \log EU_{m,t} + b_2 X_{m,t} + \phi_t + \phi_m + u_{m,t} \quad (1)$$

where $C_{m,t}$ is the number of white collar crimes committed in municipality m in year t and $EU_{m,t}$ is the corresponding (log of) EU disbursements received by the same municipality in the same year. Such longitudinal specification allows us to absorb all the time-invariant unobservable differences across municipalities by including municipality fixed effects ϕ_m , as well as any common time trend captured by the year fixed effects ϕ_t . Therefore, the coefficient of interest, b_1 , will be estimated by exploiting only the variation in the outcome within municipality over time. It follows that only municipality and time varying unobservable characteristics can confound the estimates.

A first concern, in this respect, is due to the fact that our estimation window covers the years of the economic crises whose consequences varied significantly across different areas. This may imply that corruption increased more in areas that were more severely hit by the crisis (as suggested by [Bai et al. \(2013\)](#) for the case of Vietnam), but also that more funds were transferred to those same municipalities to counterbalance the negative economic cycle. To address this concern, we control for the local economic conditions by including in the vector of covariates $X_{m,t}$ the size of the municipality population, the rate of labour market participation and of unemployment, the level of educational attainment (incidence of college graduates in the population), and a regional rate of GDP growth.

The second issue is then related to a possible direct effect of the local electoral cycle. [Ferraz and Finan \(2011\)](#), for example, find that in Brazil corruption cases are less likely to arise in municipalities where mayors can run for reelection. To control for the local electoral cycle, we also include in the vector of covariates $X_{m,t}$ the years from last elections and an indicator for second (and last) mandate mayors. Note, however, that white collar crimes as measured in the SDI archive include misconducts referring to both elected politicians and non-elected public officials. Therefore, the extent to which electoral aspects matter for our results is limited by definition.

The last critical aspect of our empirical strategy derives from the nature of the distribution of our outcome variable: as shown in figure 2, the number of crimes is a highly discrete variable, ranging between 0, in most cases, and 78 (Naples in 2012). This implies that we cannot estimate equation 1 by OLS, as the derived coefficients would be biased ([Cameron et al., 1988](#)). We thus choose to employ a specific regression model for count data so as to restrict the outcome variable $C_{m,t}$ to be nonnegative integer values. Specifically, we employ a Negative Binomial regression because our dependent variable exhibits over dispersion. With this empirical approach the parameter of interest b_1 will be interpretable as the elasticity of white collar crimes to EU funds.

6 Results

Table 2 reports the main results of the negative binomial regression⁷ In all columns we present results for the restricted sample that can be used for the fixed effects estimation. Indeed, because, as shown in figure 2, many municipalities had no white collar crimes records at all over the entire period of analysis, these drop from a regression with fixed effects. For comparability, thus, we perform all our estimation exercises on the reduced sample of 6009 observations, 891 municipalities.⁸ Column 1 shows the correlation between EU funds disbursements and the number of corruption crimes including only the population size as control to scale the variables of interest, together with year fixed effects to account for a common time trend. The estimated elasticity is 0.068 and it is highly significant. Column 2 adds indicators of socio economic activity in the area, which vary over time. When we control for all the time-invariant unobserved heterogeneity at the municipality level the coefficient remains essentially constant, equal to 0.07. Column 3, crucially, provides our preferred, and most conservative, specification which includes all time varying control variables and municipality fixed effects. According to this specification, the increase in the number of white collar crimes attributable to a 1% increase in disbursements is equal to 0.039%. This effect is about ten times smaller than the one found in [Brollo et al. \(2013\)](#) for the case of Brazil. Such discrepancy may be at least partly due to the fact that (i) the incidence of corruption is generally considerably larger in less advanced economies ([Transparency International, 2016](#)) and (ii) the type of funds analyzed by [Brollo et al. \(2013\)](#) are presumably subject to less controls compared to the EU funds.

Some of the time varying characteristics included in the regression in column 3 enter with interesting impacts. We find that better economic perspectives, as signaled by a growing GDP and higher number of college graduates, increase corruption. This correlation thus has opposite sign relative to that found by [Bai et al. \(2013\)](#) for Vietnam, the most likely reason being that corruption in Italy is a high stake business, whereas the type of corruption that is widespread in Vietnam is petty corruption, i.e. public officials that ask small amounts of money to citizens. So, the type of corruption that is most common in Vietnam is more likely to be countercyclical, when people have more money, they have less incentives to demand bribes, the type of corruption that is most common in Italy would instead be more likely to be pro cyclical, as more economic opportunities, also carry along more corruptive opportunities. We also find that municipalities with a

⁷Note that our specification allows for a flexible relationship between population and the effect of funds. Yet, our results remain essentially unchanged if we impose linearity, i.e. if we consider funds per capita as explanatory variable.

⁸The results in table 2, columns 1 and 2 are essentially unchanged when we employ the full set of observations, i.e. about 14,000.

major at her second mandate experience less corruption. Again this results is in contrast with the evidence on Brazil provided by [Ferraz and Finan \(2011\)](#), but is consistent with a setting in which mayors who cannot rerun for the same office run for higher political offices and moreover reflects the fact that our dependent variable includes not just corruption of politicians but of any public official.

Finally, column 4, provides a first raw test of the timing of the effects previously identified. We show that including in the regression the amount of EU funds transferred in the previous year does not affect the estimated coefficient of interest and does not produce any significant impact on the number of crimes recorded. We thus conclude, from this piece of evidence, that the relationship of interest, i.e. that between the disbursement of EU funds and the number of white collar crimes recorded in the municipality, is essentially a contemporaneous one.

[Table 2 about here]

We then explore several dimensions of heterogeneity in our results in table 3. First, in columns 1 to 3, we distinguish between funds that were received by municipalities to finance public works and funds received for other purposes (mainly purchase of goods and services and subsidies to firms and households). We find that the effect of the EU funds on corruption passes through the former category of expenditures. This is an expected upshot: according to the last annual report of the Italian anti-corruption agency ([Autorita' Nazionale Anticorruzione, 2016](#)), indeed, corruption seems to be nested mainly in public works, whereas the procedure for the purchase of goods and services and those to channel the funds to private agents follow more standardized rules, that are less vulnerable to misconducts.

Second, we analyse the role of several mechanisms that might shelter from illegal practices. First (column 4) we consider the quality of the local administration. Recent empirical literature on the economic impact of structural funds has shown that differences in the quality of local institutions contribute to produce heterogeneous effects of the policy on GDP growth and on the local level of civicness ([Becker et al., 2013](#); [Accetturo et al., 2014](#)). We are thus interested in checking whether the effect of EU transfers on corruption changes depending on the municipality efficiency in the provision of the public good. Indeed, more efficient municipalities generally show a higher level of administrative capacity and a lower degree of bureaucratic complexity that make corruption more costly. For instance, an entrepreneur wanting to build a EU-funded plant in a municipality that is relatively inefficient in the provision of public goods would face higher incentives to bribe local public officials rather than bearing the burden of red tape. As indicator for efficiency

we use the number of days between the date of approval of a local tax⁹ that changes at the municipal level, and the deadline for the approval of the municipal budgetary plan, that is decided at the national level. Because in recent years the Italian law on real estate tax changed very frequently, we assume that the earlier a local administration was able to update the rules on local taxation the more it is efficient (Messina and Savegnago, 2015).¹⁰ In our regressions a municipality is highly efficient if the number of days between the approval and the deadline is above the median value, this indicator is not time varying as data are only available for 2012. The coefficient associated to the interaction between the amount of funds received and the degree of local administration efficiency, reported in column 4, is not significantly different from zero indicating that all municipalities, no matter their local level of efficiency, show the same elasticity between EU funds and corruption crimes.

A second aspect that may reduce the positive effect of funds on white collar crimes, is the vibrancy of the local civic life, as measured by the municipal rate of turnout at the 2011 referendum (column 4). Referenda turnout is a long recognized measure of interest in the public good, which is exempt from particularistic interests and patronage motivations (Putnam et al., 1993). Giordano and Tommasino (2011) show that the degree of citizens' interest in politics affects local public sector efficiency due to citizens' control on politicians (grassroots monitoring). In 2011 national referendum, citizens were asked to express their preferences on four relevant topics in the national political debate. Because the referendum contained four questions and people could respond to some of them only, we take the municipality average rate of response among the four questions. We would expect that higher civicness reduces the impact of funds on corruption, yet the results in column 5 do not provide support for this hypothesis.

The last exercise of heterogeneity analysis consisted in distinguishing between municipalities with records of organized crime and municipalities without. Again, results reported in column 6, reveal no significant difference between the two groups in the estimated elasticity of white collar crimes to EU funds.

[Table 3 about here]

A complementary analysis that we perform focuses on the impact of the anti corruption law approved in 2012.¹¹ The law provided a number of restrictions in the possibility

⁹Specifically, we refer to the TASI, a locally collected real estate tax.

¹⁰This indicator of local efficiency is available for all municipalities in 2012. For the overlapping sample of municipalities, the indicator correlates well with the measure of local efficiency calculated by Barone and Mocetti (2011) and with the index proposed by Giacomelli and Tonello (2015). When aggregated at the province level the indicator correlates well with the established proxies for public sector quality, such as Giordano and Tommasino (2011) and Nifo and Vecchione (2014).

¹¹Law 190 of 2012, see ANAC for its [application to municipal governments](#)

of assigning directive positions in public administrations to those who had held political responsibilities in the previous years. At the local level the law only applies to municipalities with more than 15 thousand inhabitants. This design allows us to implement a difference in differences estimation of the impact of the anti-corruption law at the local level and to identify whether this affected the estimated elasticity between EU funds and white collar crimes. Results are reported in table 4. In column 1 we show that the implementation of the law, in 2013 and 2014, generally decreased the number of white collar crimes in the municipalities where the law was applicable. The estimated impact is large and significant. In columns 2 and 3, then, we estimated the differential effect of the funds depending on the application of the anti-corruption law. The coefficient of interest is thus the one associated to the triple interaction term. Interestingly, the coefficient is negative, suggesting that the implementation of the anti-corruption law offset the effect of EU funds on corruption. Yet, the lack of statistical significance, does not allow us to make strong statements in this regard.

[Table 4 about here]

7 Robustness checks

Our main empirical specification relies on the assumption that the effects of EU funds disbursements on the insurgence of white collar crimes are contemporaneous, i.e. that the crime is committed in the very same year in which the money is received. However, the impact of the payments may take some time to emerge, or, on the other hand, some corruptive activity might materialize in the expectation of the arrival of the money. Therefore the effect of funds on corruption may not be contemporaneous but rather driven by previous or future disbursements. In table 5 we thus re-estimate our baseline regression including lagged and leaded values of the explanatory variable. Note that this strategy generally reduces the sample size as we are forced to drop the first year of observation, when we include the lagged values, and the last in the case of leaded values. The results in columns 1 to 3 reassure us that the effect of interest is essentially contemporaneous. Indeed the main coefficient remains essentially unaffected by the inclusion of the lagged and leaded values which are also never significant. In column 4, moreover, we include the contemporaneous funds together with their variation relative to the previous year; this exercise allows us to understand whether what matters more is the level of the funds received or their growth relative to the previous year. The results obtained seem to suggest that it is more the first mechanism that is driving our results: a higher amount of funds is what increases the likelihood of a corruption crime to occur more than the increase relative to the previous year.

The inclusion in the regressions of lagged and leaded values of the explanatory variable further allows us rule out the possibility of there being reversed causality. If it was more crimes that generated an increase in the amount of EU funds disbursed to the municipality, rather than the other way around, we should have found a positive and significant relationship between funds in $t + 1$ and crimes in period t . To further explore this possibility, we performed a sort of Granger causality test, where we regressed the amount of funds received by each municipality in a given year on the number of white collar crimes recorded at the local level. because in this case the outcome variable is continuous and sufficiently normally distributed, we are able to estimate this regression, through OLS on a much larger sample. yet, for homogeneity with the other regressions, in column 7 we restrict the sample to the one used in the main analysis. The results reported show no significant inter temporal relation between crimes and EU funds so that, again, we find no support for the case of there being a causal relationship going from white collar crimes to the disbursement of funds.

[Table 5 about here]

As a second robustness check, in table 6 we provided evidence that our results are not driven by outliers. We thus checked that our coefficient of interest does not change when omitting the observations displaying a white collar crime rate and an amount of per capita transfers larger than the values in the 99th percentile of the respective distributions. Results are reported in columns 1 to 3, the produced estimates are very close to the baseline ones. In columns 4 and 5, then we performed a placebo exercise in which we tested the relationship between EU funds disbursements and other types of crimes that are less related to money disposal. The underlying intuition is that if we were to find an impact of EU funds on crimes like robberies or violent crimes that would cast doubts on the credibility of our argument. For instance, to the extent that a declining economy makes the residents find it more acceptable to live on a criminal activity, an observed positive correlation between EU funds and corruption would be driven by a deterioration of the regulative and market environment rather than the receipt of transfers per se. We thus estimate the impact of the EU funds on the total number of crimes different from those referring to corruption first (column 4), and then on violent crimes only (column 5). The results¹² show no effect at all on both variables.

[Table 6 about here]

Our last robustness check consisted in re-estimating all the most relevant coefficients employing a Poisson regression model instead of the Negative Binomial one. The results

¹²Note that the sample significantly shrinks because data on other crimes are only available until 2011.

are reported in table 7 and remain very similar to those of the main specification, with the only exception of the results on the interaction between EU funds and the presence of organized crime in the municipality. In this case, mafia type criminal organizations would offset the effect of EU funds on corruption.

[Table 7 about here]

8 Conclusions

Transfers from a central authority to local administrations are quite common around the world. They respond to a need for redistribution that arises in particular when local jurisdictions are featured by significant socio-economic heterogeneity. In this spirit, the 1986 Single European Act defined the aim of the EU cohesion policy as reducing disparities between the various regions and the backwardness of the least-favored regions. Yet, how and at what level of decentralization, the funds should be managed remains an open question. Local ownership might, indeed, allow the policy maker to better identify and target specific local needs better matching local idiosyncrasies (Oates, 1972) but, on the other hand, it might also magnify the power of local interest groups and their incentives to engage in dishonest behaviors to extract rents. In the European context, the possibility that funds are used fraudulently is a pressing concern of the EU authorities and a number of safeguards are now in place (see, for instance, the [European Commission portal on cohesion policy](#)). However, the degree to which current protections are able to prevent misbehaviors is still unclear, there being plenty of anecdotal evidence suggesting that safeguards are only partially effective.

In this paper we thus investigate the relationship between the amount of EU funds received by local authorities and the coincident occurrence of white collar crimes at the same local level. We use data from the EU programming period 2007-13 and focus on the South of Italy, where EU transfers were particularly large. Our empirical analysis is based on a unique administrative dataset of criminal episodes in Italy and on the records of transfers from the EU to each single Italian municipality.

We find evidence of a significant positive correlation between EU funds and the incidence of corruption and fraudulent behaviors. We acknowledge that the evidence we provide cannot be taken as conclusive, given the likely simultaneity of criminal activities and funds assignment and disbursements. Yet, the robustness analysis we perform suggests that the documented correlation between EU money and corruption is, indeed, likely to reflect a causal link going from the former to the latter.

In terms of external validity of our exercise, an important aspect to remind is that EU projects are heavily controlled and processed. This consideration leads to say that the

effect we estimate might represent a lower bound of the impact of extraordinary transfers on corruption relative to what would happen in the absence of such controls.

Our results, in turn, add to a growing body of previous literature suggesting that the effectiveness of EU funding in fostering growth is limited, while transfers might also have unintended negative consequences on local institutional quality and social capital endowments. In particular, our study documents - for the first time in a systematic, rather than anecdotal way - that EU funding entails a waste of resources, “lost in corruption”.

Figures and tables

Figure 1: EU funds disbursements per municipality, total over the period 2007-2014 (hundreds of thousands).

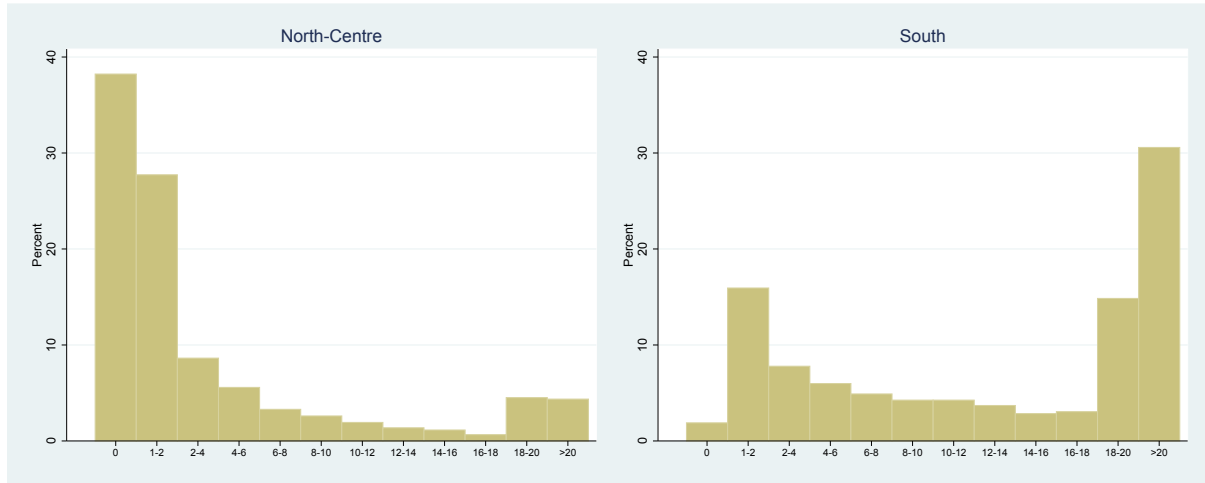


Figure 2: Number of white collar crimes per municipality, total over the period 2007-2014, Southern regions only.

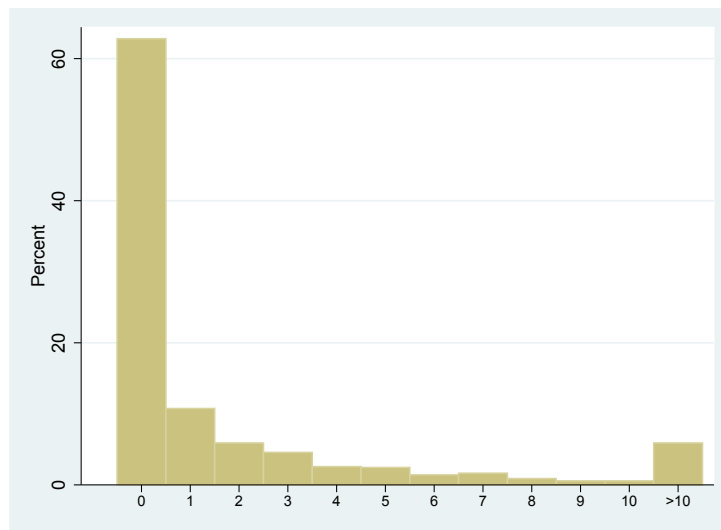
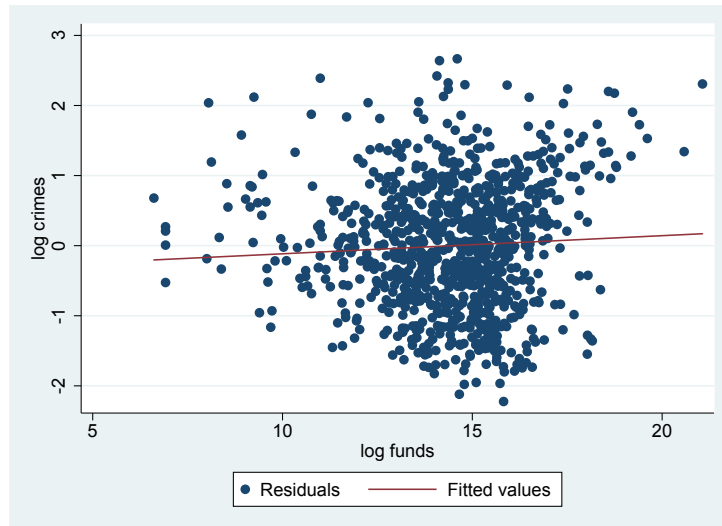


Figure 3: White collar crimes and EU funds



Notes: Variable on the y axis is the residuals from OLS regression $\log Crimes_{m,07-14} = b_0 + b_1 \log pop_{m,07-14} + e_{m,07-14}$; variable on x axis is $\log Funds_{m,07-14}$.

Table 1: Descriptive statistics by year, Southern regions only.

	2007	2008	2009	2010	2011	2012	2013	2014	Total
EU funds recipient	0.288 (0.453)	0.495 (0.500)	0.693 (0.461)	0.803 (0.398)	0.860 (0.347)	0.921 (0.269)	0.911 (0.285)	0.922 (0.268)	0.737 (0.440)
EU funds received, thousands	65.32 (422.3)	211.1 (1365.6)	433.0 (2608.6)	608.2 (6248.5)	735.0 (6896.2)	854.0 (6697.7)	962.6 (8094.0)	765.3 (5238.3)	579.3 (5407.0)
EU funds public works, thousands	40.37 (362.6)	155.4 (1129.5)	275.6 (1854.6)	446.8 (5419.8)	517.8 (5698.1)	498.6 (4370.0)	548.1 (5114.3)	489.4 (3555.8)	371.5 (3949.6)
EU funds other, thousands	24.97 (164.7)	55.73 (392.9)	157.4 (940.3)	162.0 (1020.0)	217.6 (1484.4)	355.9 (2608.3)	416.0 (3238.0)	276.1 (1997.8)	208.2 (1792.7)
White collar crimes	0.192 (1.412)	0.275 (1.723)	0.299 (1.885)	0.295 (1.916)	0.449 (1.943)	0.488 (2.455)	0.450 (1.840)	0.463 (2.252)	0.364 (1.953)
Total crimes	461.4 (2808.3)	430.6 (2621.0)	401.9 (2344.7)	402.7 (2321.0)	434.7 (2492.2)	.	.	.	426.3 (2523.6)
Labor market participation	54.19 (4.745)	54.47 (5.456)	53.11 (5.374)	52.84 (5.548)	53.10 (5.734)	55.04 (5.634)	54.01 (4.906)	54.54 (5.063)	53.91 (5.373)
Unemployment	10.40 (2.549)	11.49 (2.689)	11.84 (2.912)	12.60 (2.969)	12.71 (2.532)	16.11 (3.606)	18.28 (4.204)	19.48 (4.533)	14.14 (4.596)
College graduates per 1,000 population	4.240 (2.032)	4.408 (2.083)	4.852 (2.205)	5.027 (2.237)	5.167 (2.273)	5.252 (2.252)	5.117 (2.232)	1.079 (0.962)	4.393 (2.448)
Yearly regional GDP growth	3.166 (0.683)	1.097 (1.400)	-2.755 (0.745)	0.123 (1.152)	1.087 (1.483)	-0.851 (0.774)	-1.273 (0.766)	-0.381 (0.894)	0.0266 (1.968)
Years from elections	1.920 (1.418)	2.266 (1.519)	2.102 (1.688)	2.254 (1.769)	2.324 (1.940)	2.572 (2.066)	3.004 (2.258)	2.937 (2.567)	2.427 (1.976)
Second mandate mayor	0.0558 (0.230)	0.0959 (0.295)	0.175 (0.380)	0.228 (0.420)	0.291 (0.454)	0.318 (0.466)	0.331 (0.471)	0.354 (0.478)	0.231 (0.422)
Observations	19936								

Notes: mean coefficients; sd in parentheses. Data on non white collar crimes not available for 2012, 2013, 2014.

Table 2: Baseline results. Panel 2007-2014.

	(1)	(2)	(3)	(4)
	White collar crimes			
log disbursements	0.068*** (0.017)	0.070*** (0.017)	0.039** (0.015)	0.041** (0.020)
lag log disbursements				-0.009 (0.016)
log population	0.621*** (0.039)	0.621*** (0.040)	0.575*** (0.046)	0.562*** (0.062)
Labor market participation		-0.003 (0.008)	0.009 (0.011)	0.011 (0.011)
Unemployment		-0.029*** (0.010)	-0.018* (0.009)	-0.016 (0.010)
Years from elections		0.010 (0.017)	-0.007 (0.011)	-0.006 (0.012)
Second mandate mayor		-0.089 (0.073)	-0.096 (0.093)	-0.115* (0.068)
New college graduates per 1,000 population		0.071*** (0.027)	0.064*** (0.020)	0.52*** (0.020)
Yearly regional GDP growth		-0.041 (0.027)	0.045** (0.021)	0.048** (0.023)
Observations	6009	6009	6009	4926
Year FE	y	y	y	y
Municipality FE			y	y
Number of municipalities			891	845

Notes: Panel Negative Binomial regression, dependent variable is the number of white collar crimes in municipality i in year t . Bootstrapped standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Heterogeneous results.

	(1)	(2)	(3)	(4)	(5)	(6)
	Type of funds			Efficiency	Civicness	Mafia
log disbursements				0.044** (0.022)	0.040*** (0.015)	0.036** (0.017)
log funds for public works	0.032** (0.013)		0.025* (0.013)			
log other funds		-0.014 (0.018)	-0.021 (0.023)			
log disbursement*interaction				-0.017 (0.037)	-0.004 (0.015)	0.005 (0.014)
log population	0.601*** (0.066)	0.669*** (0.069)	0.666*** (0.094)	0.609*** (0.072)	0.576*** (0.040)	0.559*** (0.087)
Observations	4691	5111	3807	4570	6009	6009
Number of municipalities	761	829	695	677	891	891
Year FE	y	y	y	y	y	y
Controls	y	y	y	y	y	y
Municipality FE	y	y	y	y	y	y

Notes: Panel Negative Binomial regression, dependent variable is the number of white collar crimes in municipality i in year t . Controls are rate of labor market participation, unemployment rate, number of new college graduates per 1,000 inhabitants, yearly regional GDP growth. Interaction indicates being highly efficient (column 4), having high social capital (column 5) and having organized crime records (column 6). Bootstrapped standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Impact of anti-corruption law.

	(1)	(2)	(3)
	White collar crimes		
log disbursements	0.037** (0.017)	0.028 (0.020)	0.026* (0.015)
population > 15,000 × post 2013	-0.152* (0.088)	0.449 (0.509)	0.489 (0.542)
population > 15,000 × log disbursements × post 2013		-0.048 (0.037)	-0.051 (0.039)
population > 15,000 × log disbursements		0.012 (0.021)	0.014 (0.016)
post 2013 × log disbursements		0.038 (0.027)	0.047 (0.030)
log population	0.600*** (0.056)	0.556*** (0.102)	0.541*** (0.103)
Observations	6009	6009	6009
Number of municipalities	891	891	891
Year FE	y	y	y
Controls			y
Municipality FE	y	y	y

Notes: Panel Negative Binomial regression, dependent variable is the number of white collar crimes in municipality i in year t . Controls are rate of labor market participation, unemployment rate, number of new college graduates per 1,000 inhabitants, yearly regional GDP growth. Bootstrapped standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Robustness checks: Granger causality.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	white collar crimes				log disbursements			
log disbursements	0.041** (0.020)	0.036** (0.017)	0.032 (0.024)	0.032 (0.023)				
lag log disbursements	-0.009 (0.016)		-0.003 (0.017)					
lead log disbursements		0.022 (0.021)	0.022 (0.025)					
Δ log disbursements				0.009 (0.016)				
white collar crimes					0.008 (0.008)	0.012 (0.010)	0.006 (0.010)	0.012 (0.011)
lag white collar crimes					0.014 (0.009)		0.009 (0.010)	0.016 (0.010)
lead white collar crimes						-0.010 (0.010)	-0.011 (0.010)	-0.006 (0.010)
log population	0.562*** (0.062)	0.594*** (0.067)	0.599*** (0.080)	0.562*** (0.062)	-2.201*** (0.977)	-1.438 (1.261)	-2.931** (1.247)	-1.756 (1.984)
Observations	4926	4561	3688	4926	13785	12165	11488	4766
Number of municipalities	845	790	749	845	2442	2429	2429	891
Year FE	y	y	y	y	y	y	y	y
Controls	y	y	y	y	y	y	y	y
Municipality FE	y	y	y	y	y	y	y	y

Notes: Columns (1)-(3): Negative binomial regression, dependent variable is the number of white collar crimes in municipality i in year t . Standard errors in parentheses. Columns (4)-(7): OLS regression, dependent variable is the log of EU funds disbursements to municipality i in year t . Standard errors clustered at the municipality level in parentheses. Sample in column (7) restricted to that of baseline regressions. For all specifications, controls are rate of labor market participation, unemployment rate, number of new college graduates per 1,000 inhabitants, yearly regional GDP growth. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Robustness checks: eliminate outliers and placebo.

	(1)	(2)	(3)	(4)	(5)
	White collar crimes			Other crimes	Violent crimes
log disbursements	0.036** (0.015)	0.037** (0.015)	0.035** (0.015)	-0.000 (0.004)	-0.005 (0.004)
log population	0.643*** (0.081)	0.536*** (0.070)	0.595*** (0.083)	-0.123 (0.161)	0.399*** (0.116)
Observations	5810	5848	5726	3342	3335
Number of municipalities	878	880	871	831	828
Year FE	y	y	y	y	y
Controls	y	y	y	y	y
Municipality FE	y	y	y	y	y
Drop crimes outliers	y		y		
Drop funds outliers		y	y	y	y

Notes: Negative Binomial regression, dependent variable is the number of white collar crimes in municipality i in year t . Dropped outliers are those in the top and bottom 1% of the variable distribution. Sample in columns 4 and 5 is restricted to years 2007-2011 as data on non white collar crimes are not available for other years. For all specifications, controls are rate of labor market participation, unemployment rate, number of new college graduates per 1,000 inhabitants, yearly regional GDP growth. Bootstrapped standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Robustness checks: Poisson regression.

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Type of funds	Efficiency	Civicness	Mafia	Anti-corruption law
log disbursements	0.042*** (0.012)		0.054*** (0.016)	0.032** (0.014)	0.090*** (0.018)	0.067*** (0.016)
log funds for public works		0.017* (0.010)				
log other funds		-0.016 (0.016)				
log disbursements \times interaction			-0.017 (0.024)	0.033 (0.022)	-0.086*** (0.022)	-0.040 (0.029)
log population	1.17 (0.853)	1.268 (1.105)	2.917*** (0.973)	1.202*** (0.854)	1.187 (0.857)	1.134 (0.871)
Observations	6009	3807	4570	6009	6009	6009
Number of municipalities	891	695	677	891	891	891
Year FE	y	y	y	y	y	y
Controls	y	y	y	y	y	y
Municipality FE	y	y	y	y	y	y
Interacted vars.						y

Notes: Poisson regression, dependent variable is the number of white collar crimes in municipality i in year t . Controls are rate of labor market participation, unemployment rate, number of new college graduates per 1,000 inhabitants, yearly regional GDP growth. Interacted variables are population $> 15,000 \times$ log disbursements and post 2013 \times log disbursements. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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