Regional Science and Urban Economics 44 (2014) 75–81

Contents lists available at ScienceDirect

Regional Science and Urban Economics

journal homepage: www.elsevier.com/locate/regec

Migrating mafias ☆

Paolo Buonanno [a,*], Matteo Pazzona [b]

[a] University of Bergamo, Department of Economics, Via dei Caniana 2, 24127 Bergamo, Italy
[b] Universidad Catolica del Norte, Department of Economics, Avenida Angamos 0610, Antofagasta, Chile

ARTICLE INFO

Article history:
Received 25 January 2013
Received in revised form 18 November 2013
Accepted 30 November 2013
Available online 9 December 2013

JEL classification:
J61
K14
R10

Keywords:
Migration
Mafia-type organizations
Policy changes

ABSTRACT

In the last decades, Italian southern-based mafia organizations have expanded their sphere of influences to the traditionally immune Northern regions. We empirically investigate the channels that favored the diffusion of southern Italian mafias to the northern Italian provinces. We focus our attention on two key factors: i) the large influx of southern migrants during the economic miracle period and ii) the application of the *confino* law which imposed *mafiosi* to resettle far from their province of origin. Our findings suggest that the interaction between forced resettlement and migration has represented a crucial factor in favoring criminal organization transplantation to central and northern regions.

1. Introduction

Organized crime is a pervasive phenomenon with profound socio-economic consequences ranging from lower economic growth rate to infiltrations of criminal organizations into the political sphere (Pinotti, 2012). Despite such evidence, the economic literature has devoted little attention and effort to explore the nature and the structure of these organizations.

Mafia-like organizations are geographically rooted and historically have exerted their influence in neighboring areas close to their regions of origin. Indeed, we often refer to criminal organizations' "country of birth" such as Sicilian Mafia, Hong Kong Triads, Russian Mafia, Japanese Yakuza or Medellin and Cali cartels in Colombia. However, they have progressively expanded their geographical sphere of influence abroad (Varese, 2006, 2011). Recent judicial and investigative efforts provide growing evidence about the seriousness of the problem represented by the diffusion of criminal organizations. For instance, the Russian Mafia operates in more than 60 countries (Finckenauer and Voronin, 2001), whereas the Calabrian 'Ndrangheta is active in more than 20 countries (Varese, 2006). 'Ndrangheta attracted international attention when six members were slaughtered by a rival gang outside a pizzeria in Duisburg (Germany) in 2007. In 2011, Italian prosecutors issued arrest warrants for 41 suspected members of the same organization operating in Italy, Germany, Canada and Australia. Another example of the international expansion of organized crime groups is represented by the Central American "*Maras*" that are present in a large part of the US. FBI estimates that *Mara Salvatrucha 13*, described as America's most dangerous gang, operates in at least 42 US states and has about 6000–10,000 members nationwide. All this evidence confirms that mafias go global.

The growing concern about the diffusion of criminal organizations outside their original territories is confirmed by the adoption in 2000 of the United Nations Convention against Transnational Organized Crime. This represents the main international instrument in the fight against transnational organized crime.

The study of the expansion of mafia-like organizations outside their original territories has been almost neglected by the empirical economic literature. We propose to fill this gap by studying the factors which made possible for mafia groups to move successfully to new geographic regions. We focus our attention on Italy, which has experienced, over the last twenty years, a pervasive infiltration of criminal organizations from the southern to the northern regions. This has been confirmed by the Anti-mafia Parliamentary Commission (*Commissione Parlamentare Antimafia*, CPA) annual reports and judicial and investigative evidence.[1]

☆ We wish to thank the Editor and two anonymous referees for their very constructive feedback on an earlier version of this paper. We would like to thank Juan Fernando Vargas for valuable comments. All errors are our responsibility. Paolo Buonanno gratefully acknowledges financial support from the University of Bergamo. Much of the work on this paper was done when Paolo Buonanno was visiting Inter-American Development Bank in Washington DC. He thanks Inter-American Development Bank for its hospitality.

* Corresponding author. Tel.: +39 0352052681; fax: +39 0352052549.
E-mail addresses: paolo.buonanno@unibg.it (P. Buonanno), mpazzona@ucn.cl (M. Pazzona).

[1] In particular, 1976 and 1994 CPA reports provided compelling evidence about the expansion of criminal organization to northern and central regions of Italy.

0166-0462/$ – see front matter © 2013 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.regsciurbeco.2013.11.005

Historically, mafia emerged in Sicily during the Italian unification after the second half of the XIX century. After the WWII, mafia-like organizations based in Campania and Calabria (*Camorra* and 'Ndrangheta) expanded their influences toward southeastern regions and acquired relevant economic interests in northern Italy (Sciarrone, 2009; Pinotti, 2012). Several researchers and official sources agreed in tracing back the first signs of mafia activity in northern Italy at the end of the '60s (Lupo, 1993; Dalla Chiesa, 2010; Varese, 2006, 2011). However, it was not until the second half of the '70s that mafia-like organizations started to exert a pervasive influence in the northern regions. During this period, mafia groups exploited and took control of the profitable illegal markets, such as drug, kidnapping and extortion. As a consequence, during the '80s and the '90s, organized crime groups became more and more entrenched in the local socio-economic power and expanded their grip not only to other illegal sectors, but also to the legal ones.

Several prominent sources have reached a consensus on two key factors (CPA, 1976; Dalla Chiesa, 2010; Varese, 2006) that favored mafia transplantation into the northern regions: i) massive migration flows from southern Italy to the northern regions during the economic boom from early '60s to early '70s; ii) a peculiar Italian policy measure (forced resettlement or *confino*), implemented mainly in the '60s and '70s that consisted in the compulsory displacement of people strongly suspected of being part of mafia-like organizations.

Despite being two separate and independent phenomena, the simultaneity between the implementation of *confino* and migration flows represents a crucial aspect to explore. Indeed, it is likely that migration and *confino* are two sides of the same coin. Complementarities among them are relevant to explain the expansion of criminal organizations in the northern and central regions.

Several official sources, in particular the 1976 CPA final report, stressed how suspected *mafiosi* acted as seeds in transplanting and reconstructing organized crime-specific institutions in mafia-free areas, as unintended side effects of the policy measure. As stated by Gaspare Mutolo, former *mafioso* turned into collaborator of justice: "… the policy of forced resettlement has been a good thing, since it allowed us to contact other people, to discover new places, new cities". In fact, the 1956 law conceived the forced resettlement as an instrument to "purify" confined *mafiosi*. As pointed by Varese (2006), this policy relied on the naïve assumption that away from their home base and immersed in the civic, law-abiding culture of the North, they would abandon their old ways. Even if the idea of the legislator was that rotten apples would blossom if stored with healthy fruit, as we show in this paper, that belief turned out to be wrong.

Nevertheless, we do not believe that the unusual policy of reallocating *mafiosi* in the North is a sufficient condition for transplantation. *Confino* started and was heavily implemented during the economic boom, when massive migration flows of workers from the South to the fast growing and industrialized northern metropolitan areas (Milan, Turin and Genoa), took place. Migration flows significantly affected the demographic composition in the northern provinces, and even more heavily the labor market dynamics. As stressed in the 1976 CPA final report, criminal organizations exploited the sizable southern labor force. Labor racketeering has represented a relevant issue in the growing and expanding construction sector, where the unskilled workforce coming from the South of Italy was competing with native workers. The interaction and simultaneity between *confino* policy and migration represented a fertile condition for organized crime to develop and expand in the northern regions. Provinces hosting a higher number of *mafiosi* and receiving more immigrants from the south of Italy may have been more likely to experience mafia expansion.

The diffusion of organized crime to the north of Italy presents several similarities to the development of Mafia in the US. Prominent historians and criminologists (Lupo, 1993, 2008; Varese, 2011) linked the emergence of American mafia to the wave of Italian and Sicilian immigration, during the 1920s. Nevertheless, other simultaneous events took place during that period determining the condition for mafia to emerge. First, the fascist crack-down of the mafia in Italy forced many mafia mobs to leave Sicily and resettle in the US. Second, during the prohibition period, a profitable and common business of the criminal organization was labor racketeering, favored by the large number of immigrant workers. As a result, American mafia developed and was able to plant its roots in the American soil.

Exploiting available data we study the effect of the interaction between forced resettlement and migration (mafia potential) using a panel dataset for the northern and central Italian provinces over the period 1983 to 2000. In particular, we test whether mafia potential, as defined above, is related to several outcomes related to mafia presence. Following the conclusions of the 1976 CPA final report we consider murder, extortion, robbery, kidnapping and bomb attack.

A relevant issue in measuring crime, and mafia-related crime in particular, is under-reporting. To overcome such issue, several scholars rely on murder (Peri, 2004; Pinotti, 2012). As it has been stressed in the 1976 and 1994 CPA reports, criminal organizations silently infiltrated into the north of Italy. The clans soon realized that the North was different from the South, where they had operated with impunity, open arrogance and defiance of the State institutions. It was necessary to maintain a low profile, to blend in and not make their moves apparent to the authorities. Therefore, the methods used and the types of crime perpetrated were significantly different from the ones used in their regions of origin. The most common crimes were extortion, kidnapping, robbery, intimidation through bomb attack and drug dealing, while murder was rather infrequent and rare. Using a detailed breakdown of several mafia-related crimes allows us to test whether the conclusions by the CPA are correct and to shed light on the causes of mafia diffusion in the North.

A relevant issue in interpreting causally our results relates to the endogeneity of our main explanatory variables. *Confino*, as we will discuss in the following section, is safely exogenous with respect to mafia-related crime, while the same is not true for migration. Sorting and self-selection represent two relevant issues for migration. Thus, we need to find a credible instrument for the latter. For this purpose, we rely on a standard supply-push component instrument for migrant stocks (Card, 2001; Ottaviano and Peri, 2006; Cortes, 2008).

Our results confirm the role of mafia potential, given by the interaction of *confino* and migrant stock, in explaining the diffusion of mafia in the northern regions. As suggested by the reports by CPA, criminal organizations exploited non-traditional methods to infiltrate into the North. Indeed, we find that mafia potential is strongly related to extortion, kidnapping, robbery and bomb attack, while it is not correlated with murder. The latter suggests that mafia infiltration in the northern societies happened gradually, minimizing open inter-clan conflicts and operating in a non-traditional manner.

The remainder of the paper is organized as follows. Section 2 presents the historical background and motivation. Section 3 provides a discussion of the empirical methodology and the data on crime, while the following section presents OLS and IV estimates. Section 5 concludes.

2. Historical background and motivation

2.1. Migration

Italy has been characterized by a massive emigration outflows in the period roughly comprised between the Italian unification, in 1861, and the Italian economic miracle in the '60s. The Italian *diaspora* involved nearly 25 million Italians and it is considered one of the biggest mass migrations of contemporary times.

The turning point in the Italian economic history has been the economic miracle (*miracolo economico*) between the late '50s and the early '70s. In the post-war period, Italy experienced a rapid industrialization in many strategic industrial sectors such as automobile, textile, chemistry and electric appliance. This led to a rapid increase of real GDP

and to a transition from an agriculture-based economy to an industrialized one. Despite a general increase in economic and living conditions, the economic miracle had the effect of exacerbating the dualism between the North and the South of the country. The economic growth remained predominantly confined to the northern and central regions. Meanwhile, southern Italy remained impoverished, and its inhabitants migrated to the northern regions in large numbers until the late '70s.

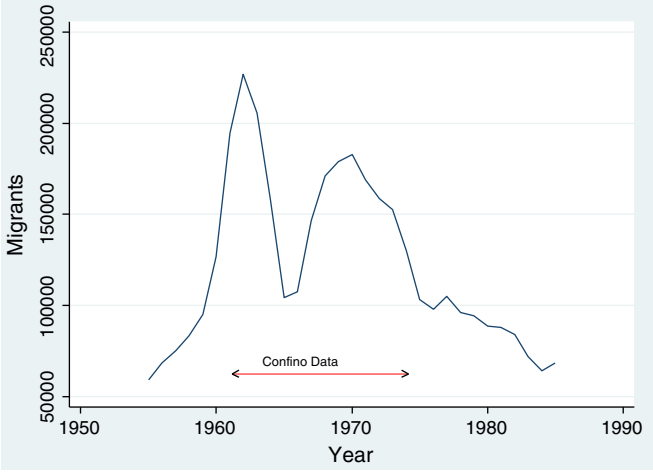
As a result, the post-war period experienced a massive increase of the Italian internal migration from the South to the rest of Italy. Overall, from the late '50s to the early '70s roughly 4 million people emigrated from the southern regions, as shown in Fig. 1.

The massive internal and interregional migration flows significantly affected the demographic composition in the hosting provinces and regions. The majority of migrants moved from Campania, Sicily, Apulia and Calabria. These are the regions associated with the highest mafia density. As discussed in Varese (2006), the demographic composition in the destination provinces experienced a dramatic change. For instance, the percentage of residents living in Turin born in Sicily, Calabria or Campania changed from 2.4% in 1951 to 12.2% in 1971, while passed from 2.2% in 1951 to 8.8% in 1971 in the city of Milan.

Internal migration in the post-war period mainly depended on different labor market conditions between the host province and the province of origin. Indeed, unemployment rate in southern Italy was near to 50%, while the North was experiencing a dramatic economic boom. Nevertheless, community networks had played a crucial role in affecting migrants' choices through the influence of former migrants in determining destination choices of the new ones (Bauer and Zimmermann, 1997; Moretti, 1999; Munshi, 2003; Vergalli, 2008). In an uncertain environment, migration networks provide support for labor market search or housing, reducing the costs of relocation to a different and foreign country (Carrington et al., 1996; Chiswick and Miller, 1996; Epstein and Gang, 2006). New immigrants aim to integrate in the destination country and this may be facilitated through existing community networks. As noted by Vergalli (2008), integration means being accepted in the host community both as individuals and as groups. More importantly, new migrants tend to integrate in existing groups based on ethnicity, religion and culture.

This analysis perfectly applies to the Italian post-war internal migration. Indeed, it happened that southern migrants living in the center-north of Italy tended to recreate, totally or partially, communities based on social norms, habits and customs of the provinces of origins. This tendency was a consequence of the difficult and problematic integration of southern migrants in the northern regions. The 1976 CPA stressed how migrants did not feel welcome and were often rejected by local communities. Although they belonged to the same country, there existed many social, cultural and even linguistic barriers between the southerners and the northerners, which may have prevented integration.

In this perspective, these migrants' communities might have provided a not hostile environment for mafia groups to settle. This is not to say that southern migrants provided favorable grounds for mafia to develop, but that it is more likely that mafia-type groups settled where people were accustomed to the presence of such organizations. Nevertheless, migrants' communities may have played a relevant role in the labor market, helping in finding a job for new comers. Criminal organizations influenced the formal economy and, in particular, sectors as the construction one. As a consequence, they exploited cheap workforce, such as the poor migrants from the southern regions. Thus, it is likely that mafia-like organizations may have expanded more easily in migrant-rich areas.



Note: This figure shows the overall internal migration flows from southern provinces to northern provinces over the period 1955-1986.

Fig. 1. Flows of migrants from southern to northern provinces. Note: This figure shows the overall internal migration flows from southern provinces to northern provinces over the period 1955–1986.

2.2. Forced re-settlement

A crucial boost to mafia transplantation, often cited as the main cause, has been represented by the policy adopted by the Italian government to punish mafia members.

The law n. 1423 passed in 1956, subsequently modified in 1965 by the law n. 575, forced well-known individuals suspected to belong to criminal organizations to move outside their province of residence for a period between 1 and 3 years. This measure targeted suspects for whom the prosecutors did not have enough evidence to send them to jail. The forced resettlement (*confino*) policy aimed at removing these people from their background of origin, implicitly assuming that mafia was the product of backward and low-trust societies. The naïve view was to redeem lawbreakers sending them into civic, high-trust, law-abiding and social capital rich areas. In such a way, they could have worked and integrated in a mafia-free culture.

The decision regarding the place and duration of *confino* was taken by the judge who headed the tribunal in the province where the suspected criminals were residing. However, the law was vague and did not specify the characteristics of the hosting town or cities where suspected members of criminal organizations were supposed to be relocated. The scant available data, coming from the parliamentary reports, show that 56.7% of relocated *mafiosi* were assigned to municipalities within 30 km of provincial capitals (CPA, 1976; p. 290). As discussed in the CPA report, very often they were sent to small towns in the outskirts of the cities, as it would have been easier to control them. Indeed, criminals were required not to leave the municipality. Moreover, they were continuously monitored as to comply with certain terms and conditions for the duration of their *confino*.

This policy relocated a huge number of mafia members to the northern and central provinces. Available data on forced resettlement show that, over the period 1961–1974, 2918 individuals suspected to belong to criminal organizations were sent to *confino*; 80% of all *mafiosi* resettled were sent to northern and central provinces. A regional breakdown allows to better characterize the effect of the policy (Table 1). The four regions, which hosted the highest number of lawbreakers, were: Lombardy (15.9% of the total), Emilia Romagna (10.2%), Tuscany (9.9%) and Piedmont (9.6%). Unfortunately, the existing sources (CPA, 1976, 1983) only allow knowing the total number of *mafiosi* relocated in the period 1961–1974 in each province, but they did not contain characteristics regarding the province of origin or any personal information of individuals sent to *confino*. The 1994 CPA report (p. 19) stressed that the Minister of the Interior only kept track of aggregate data, deleting personal information on relocated *mafiosi* once they ended their period of forced resettlement.

Confino policy and its implementation were fiercely opposed by majors of the municipalities hosting suspected *mafiosi* (CNEL, 2010).

Table 1
Summary statistics.

	Obs	Mean	Std. dev.	Min	Max
extortion rate	1152	3.339	2.694	0	50.269
bomb attack rate	1152	.281	.643	0	6.131
robbery rate	1152	22.673	17.865	0	117.708
kidnapping rate	1152	1.242	1.017	0	10.565
murder rate	1152	.800	.613	0	4.3142
mafia pca	1152	15.880	11.135	.430	74.254
GDP per capita	1152	12.521	5.899	1.647	28.884
population density	1152	232.038	236.318	34.617	1450.59
$migr_{mafia}$	1152	6.389	4.768	1.558	23.406
$migr_{strong}$	1152	4.255	3.410	1.007	16.925
$confino_{mean}$	1152	.469	.499	0	1
$confino_{median}$	1152	.531	.499	0	1
$confino_{level}$	1152	35.297	19.262	0	80

Note: This table reports the descriptive statistics for all dependent and explanatory variables across the 65 northern and central Italian provinces during the period 1983–2000.

Table 2
Geographical distribution of individuals sent to *confino* by hosting region (1961–1974).

Hosting region	no. of people sent to *confino*	% of national total
Lombardy	463	15.87
Emilia Romagna	298	10.21
Tuscany	289	9.90
Piedmont	281	9.63
Marche	190	6.51
Abruzzo	188	6.44
Veneto	183	6.27
Lazio	176	6.03
Liguria	88	3.02
Umbria	65	2.23
Friuli Venezia Giulia	55	1.88
Aosta Valley	0	0.00
Trentino Alto Adige	0	0.00
Other regions	642	22.00
Total	2918	

As the CPA (1976) had to admit, mafia members were not able to receive beneficial influences from a different social and cultural environment and ended being a major facilitator of mafia transplantation.

3. Data and variable definition

We collected data on crime for all central and northern Italian provinces for the period 1956–1959 and 1983–2008, while data on immigration are available from 1955 to 2000.[2] Italian provinces correspond to level 3 in the Eurostat Nomenclature of Territorial Units for Statistics (NUTS) classification; they are comparable in size to US counties. Crime data are made available by ISTAT (Italian Institute of Statistics), while migration data come from the IRPSS (Institute for Research on Population and Social Policies). Descriptive statistics are reported in Table 2.

Our analysis is heavily affected by data availability for mafia-related crimes. First, crime data at the provincial level are available for a limited period before 1960 (1956–1959) and only after 1983 ISTAT started to systematically collect crime data at the provincial level. Second, the categories of crime recorded by ISTAT before 1960 were significantly different from the ones recorded after 1983 making it difficult to compare crime over time.

A crucial aspect is to define an appropriate mafia measure. The scant economic literature on organized crime did not reach a consensus on how to measure mafia. As stressed by Pinotti (2012), the under-reporting issues, that typically affect all official crime statistics, may be particularly acute for mafia-related offenses due to *omertà* (code of silence) and intimidations that may discourage victimized individuals to report to the judicial authority. For such a reason, the use of murder as measure of mafia presence is popular among scholars (Peri, 2004; Pinotti, 2012). While most regions in Italy are characterized by an extremely low number of homicides, the murder rate is exceptionally high in Calabria (6 murders every 100,000 inhabitants over the 1983–2008 period), Sicily and Campania (about 4 murders). Nevertheless, as stressed in the Introduction and confirmed by several reports by the CPA, murder is not representative of the presence of criminal organizations in northern and central provinces. For the above reason, we collected data on extortion, robbery, kidnapping, bomb attack and murder. We also use a complementary strategy and extract the principal component (*mafia_pca*) of the mafia measures, and use it as measure of mafia presence. The advantage of this strategy is that mafia crime measures are noisy, thus their common component may contain more information.

Migration data refer to the stock of migrants residing in province *i* coming from each other Italian province every year. We restrict our analysis to the stock of migrants going from the southern regions to the central and northern provinces considered in our analysis. We construct two different measures for the stock of migrants in each province of northern Italy. Along with the total number of migrants coming from the three historical mafia strongholds (Calabria, Campania and Sicily) ($migr_{mafia}$), we also consider the number of migrants coming only from high mafia provinces ($migr_{strong}$) according to the historical evidence.[3] Both measures are scaled by province population.

Data on forced resettlement (*confino*) refer to the period 1961–74 and were obtained from the 1976 CPA report (CPA, 1976). In particular, for each northern and central province we derived the total number of *mafiosi* hosted following the application of the 1956 law. As discussed in the previous section, data are only available until 1974 and do not allow a breakdown by province of origin. We consider several measures: i) the raw number of *mafiosi* sent to *confino* for each province ($confino_{level}$); ii) a dummy which equals one if the hosting province had more resettled *mafiosi* than the median for all northern and central provinces ($confino_{median}$) and iii) a dummy which equals one if the hosting province had more resettled *mafiosi* than the average for all northern and central provinces ($confino_{mean}$).

An obvious concern is that government may have chosen to place more *mafiosi* in areas which had relatively less crime. We cannot exclude that government set unwritten and informal rules to which judges had to comply with when deciding where to send suspects. A simple, and informal, way to test it is to regress the measure for *confino* on average crime rate over 1956–1959 and pre-1960 characteristics (i.e. population density and GDP per capita). As shown in Table 3, we could exclude that provinces were receiving *mafiosi* because of their crime rate or other pre-existing characteristics.

4. Empirical analysis

4.1. Panel analysis

As we are interested in testing complementarities between *confino* and migration, our main explanatory variable is the interaction term between these two variables. As previously discussed, the measure for *confino* is time invariant and by interacting it with the migration measure we construct a time varying variable that allows us to estimate the effect of mafia potential on several crimes in a panel of Italian provinces from 1983 to 2000.

[2] In our analysis we consider provinces belonging to Piemonte, Valle d'Aosta, Lombardia, Veneto, Friuli Venezia Giulia, Emilia Romagna, Liguria, Toscana, Marche, Umbria, Lazio and Abruzzo.

[3] In particular, we include the following provinces: Napoli, Caserta, Reggio Calabria, Catanzaro and the western Sicilian provinces (Palermo, Trapani, Agrigento, Caltanissetta and Enna).

Table 3
Informal test for exogeneity of *confino*.

	(1)	(2)	(3)
	$confino_{median}$	$confino_{mean}$	$confino_{level}$
theft	0.000	0.000	0.027
	(0.000)	(0.000)	(0.015)
density	−0.000	0.000	−0.004
	(0.000)	(0.000)	(0.021)
GDP per capita	−0.074	−0.105	−5.469
	(0.102)	(0.086)	(3.499)
R^2	0.015	0.027	0.054
	(1)	(2)	(3)
	$confino_{median}$	$confino_{mean}$	$confino_{level}$
murder	−0.133	−0.142	−5.257
	(0.181)	(0.173)	(6.078)
density	0.000	0.000	0.001
	(0.000)	(0.000)	(0.021)
GDP per capita	−0.116	−0.134	−4.785
	(0.087)	(0.076)	(2.909)
R^2	0.05	0.065	0.059
Obs.	65	65	65

Note: This table present OLS estimates on a cross-section of all northern and central Italian provinces. Dependent variables are defined as follows: i) the raw number of *mafiosi* sent to *confino* for each province ($confino_{level}$); ii) a dummy which equals one if the hosting province has more resettled *mafiosi* than the median for all northern and central provinces ($confino_{median}$) and iii) a dummy which equals one if the hosting province has more resettled *mafiosi* than the average for all northern and central provinces ($confino_{mean}$). Theft and murder are theft and murder reported by the police over the total population (average 1956–1959), density and GDP per capita are the average population density and the average GDP per capita for the period 1956–1959. Robust standard errors are presented in parentheses. *, ** and *** denote rejection of the null hypothesis of the coefficient being equal to 0 at 10%, 5% and 1% significance levels, respectively.

Our panel data structure allows us to control for province and time fixed effects thus absorbing persistent differences between provinces over different dimensions.

Our main estimating equation is:

$$crime_{it} = \beta mafia\_potential_{it} + \gamma' X_{it} + \varphi_i + \varphi_t + \varepsilon_{it} \quad (1)$$

where $crime_{it}$ is the crime rate in province i during year t, $mafia\_potential_{it}$ is the interaction between *confino* and the stock of migrants from mafia provinces in province i at year t, X_{it} is a set of control variables, φ_i and φ_t are province and year fixed effects; finally, ε_{it} is an error term. We are mainly interested in identifying the coefficient β that represents the type of complementarities between *confino* and migration. Finding a positive and significant coefficient would confirm the existence of complementarities.

The set of control variables comprises standard socio-economic controls in the economics of crime literature. We thus include population density, which is considered a key determinant of the level of criminal activity (Glaeser and Sacerdote, 1999) and the GDP at constant 2000 prices, which measures the legitimate and illegitimate earning opportunities (Ehrlich, 1973). OLS estimates are presented in Tables 4 and 5. The variable used for mafia potential is the interaction between the measure for *confino* and migration as defined above. In particular, we used the interaction between $confino_{mean}$ and $migr_{mafia}$ in Panel A and the interaction between $confino_{level}$ and $migr_{mafia}$ in Panel B.[4]

Our results suggest that our measures of mafia potential are significantly correlated with several mafia-related crimes (extortion, kidnapping, bomb attack, robbery and mafia PCA), while they do not exert any effect on kidnapping and murder. Our findings are consistent with the evidence provided by the CPA and support the idea that mafia gradually infiltrated the northern and central regions, maintaining a low profile and without attracting the authorities' attention.

Turning to the socioeconomic controls, population density is negatively and significantly correlated with mafia-related crimes, whereas, GDP per capita does not exert a statistically significant effect.

However, there could be several reasons why the size of the immigrant population is systematically correlated with crimes, some of which may not be adequately captured by control variables. Therefore, identifying causality requires a source of exogenous variation in the immigrant population, an issue that we tackle in the next section.

4.2. Causality and instrumental variable estimates

Our main identification assumption regards the exogeneity of both forced resettlement and migration with respect to mafia-related crime rates. Forced resettlement is safely exogenous since *mafiosi* were not allowed to choose their destination and, as shown in the previous section, we do not observe any systematic relation between the allocation of *mafiosi* and the crime rate before 1960. Migration is more problematic as it could be possible that crime opportunities could affect migration decision or there might exist unobserved factors that could simultaneously affect both migration and crime decisions, as widely discussed in Bianchi et al. (2012).

In order to take these concerns into account, we use an instrumental variable technique that exploit the (exogenous) supply-push component of migration by province of origin as an instrument for shifts in the immigrant population across Italian provinces. This approach, originally proposed by Card (2001), is very popular and several scholars have constructed outcome-based measures of supply-push factors using total migration flows by nationality toward the destination country of interest (see, for instance, Ottaviano and Peri, 2006; Cortes, 2008). The instrument exploits the fact that new immigrants tend to settle in areas with a large enclave of previous immigrants from the same region or country (Munshi, 2003).

Our instrument uses the 1955 distribution of southern immigrants from a given province across northern Italian provinces to allocate the new wave of immigrants from that province of origin. Formally, the instrument for the number of southern immigrants in the destination province i is:

$$migr_{i,t} = \sum_j \frac{migr_{i,j,55}}{migr_{j,55}} migr_{j,t} \quad (2)$$

where j are all regions of origin, $migr_{i,j,55}/migr_{j,55}$ is the share of all immigrants from province j residing in province i, and $migr_{j,t}$ represents the total number of emigrants from province j at time t. Thus, we instrument both the interaction terms by interacting the measure for *confino* with the instrument for migration and $migr_{mafia}$ using the instrument for migration as described above.

IV diagnostic shows the relevance of the instruments. The F-statistic in every specification is well above the lower bounds indicated by the literature on weak instruments (Stock and Yogo, 2005).

Overall, 2SLS estimates, presented in Table 5, are qualitatively and quantitatively consistent with the OLS results. Once we account for endogeneity it emerges that, with the only exception of extortion and murder, mafia potential exerts a strong and statistically significant effect on the measures of mafia considered. Interestingly, the fraction of resident coming from mafia provinces is statistically and negatively related to mafia-related crimes, suggesting that the confine has represented the main factor favoring mafia diffusion in the north of Italy during the 80s and 90s. In terms of magnitude, an increase of one standard deviation of the interaction term would imply an increase of bomb attack rate by 3 standard deviations, an increase of robbery rate and kidnapping rate

[4] In Tables 4 and 5 we present OLS and IV estimates using the interaction between $confino_{mean}$ and $migr_{mafia}$ and the interaction between $confino_{level}$ and $migr_{mafia}$. Results using alternative measures of mafia-potential are qualitatively similar. For the sake of space and for easiness in result presentation we opted to consider only the two measures of mafia potential discussed above.

Table 4
Panel regressions.

	(1)	(2)	(3)	(4)	(5)	(6)
	Extortion	Bomb attack	Robbery	Kidnapping	Murder	Mafia PCA
Panel A—Mafia potential: $migr_{mafia} * confino_{mean}$						
mafia potential	2.591**	0.719	13.074**	0.449	−0.360	8.944**
	[1.192]	[0.564]	[5.551]	[0.440]	[0.279]	[3.501]
$migr_{mafia}$	−0.247	0.416	0.331	0.305	0.290	0.302
	[1.071]	[0.627]	[4.399]	[0.377]	[0.233]	[2.910]
GDP per capita	−0.056	0.008	0.451	0.007	0.009	0.246
	[0.078]	[0.022]	[0.512]	[0.039]	[0.015]	[0.330]
density	0.008	0.006**	−0.091**	−0.002	−0.001	−0.052**
	[0.006]	[0.003]	[0.035]	[0.003]	[0.002]	[0.023]
R^2	0.152	0.356	0.112	0.154	0.052	0.145
Panel B—Mafia potential: $migr_{mafia} * confino_{level}$						
mafia potential	0.039	0.016	0.315**	0.006	−0.013**	0.201**
	[0.037]	[0.010]	[0.157]	[0.013]	[0.006]	[0.097]
$migr_{mafia}$	−0.725	0.103	−6.084	0.249	0.619*	−3.579
	[1.822]	[0.728]	[7.896]	[0.670]	[0.342]	[5.149]
GDP per capita	−0.044	0.010	0.475	0.009	0.010	0.268
	[0.080]	[0.021]	[0.516]	[0.039]	[0.015]	[0.333]
density	0.007	0.005*	−0.106**	−0.002	−0.001	−0.061**
	[0.007]	[0.003]	[0.042]	[0.003]	[0.002]	[0.028]
R^2	0.351	0.347	0.355	0.352	0.347	0.355
Obs.	1152	1152	1152	1152	1152	1152
Province	64	64	64	64	64	64
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table presents the results of OLS estimates on a panel of yearly observations for all 65 northern and central Italian provinces during the period 1983–2000. The dependent variable is crimes reported by the police over the total population, for each category of criminal offense. The variable mafia potential is the interactions between *confino* measures, as defined in the text, and immigrants from mafia provinces over province population. In particular, we used as a measure for mafia potential: the interaction between $confino_{mean}$ and $migr_{mafia}$ in Panel A and the interaction between $confino_{lev}$ and $migr_{mafia}$ in Panel B. Province and year fixed effects are included in all specifications. Robust standard errors clustered at the province level are presented in parentheses. *, ** and *** denote rejection of the null hypothesis of the coefficient being equal to 0 at 10%, 5% and 1% significance levels, respectively.

Table 5
IV estimates.

	(1)	(2)	(3)	(4)	(5)	(6)
	Extortion	Bomb attack	Robbery	Kidnapping	Murder	Mafia PCA
Panel A—Mafia potential: $migr_{mafia} * confino_{mean}$						
mafia potential	2.946	2.498***	23.512**	1.642**	−0.276	15.724***
	[1.913]	[0.631]	[9.333]	[0.745]	[0.461]	[5.877]
$migr_{mafia}$	1.587	−1.669**	−6.364	−1.353**	−0.134	−3.587
	[1.827]	[0.750]	[6.253]	[0.660]	[0.467]	[3.941]
GDP per capita	−0.074	0.003	0.377	0.005	0.011	0.195
	[0.064]	[0.017]	[0.233]	[0.028]	[0.015]	[0.152]
density	0.023	−0.007	−0.125**	−0.013**	−0.005	−0.071**
	[0.015]	[0.007]	[0.052]	[0.006]	[0.004]	[0.031]
f-test (excl. inst.)	21.741					
Panel B—Mafia potential: $migr_{mafia} * confino_{level}$						
mafia potential	0.026	0.055***	0.815***	0.059**	−0.009	0.515***
	[0.044]	[0.015]	[0.172]	[0.023]	[0.012]	[0.109]
$migr_{mafia}$	1.656	−2.857***	−29.178***	−3.026**	0.129	−17.678***
	[2.767]	[1.068]	[10.671]	[1.251]	[0.734]	[6.687]
GDP per capita	−0.054	0.010	0.364	0.003	0.011	0.195
	[0.065]	[0.018]	[0.250]	[0.029]	[0.014]	[0.162]
density	0.023	−0.011	−0.193***	−0.018**	−0.004	−0.113***
	[0.017]	[0.008]	[0.063]	[0.007]	[0.004]	[0.038]
f-test (excl. inst.)	15.855					
Obs.	1152	1152	1152	1152	1152	1152
Province	64	64	64	64	64	64
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table presents the results of IV estimates. The variable $mafia\ potential_{IV}$ is the interaction between the measure for confino and an instrument constructed as the sum of the immigration population stock for some provinces at the national level weighted by the 1955 share of each province of origin in Italian provinces (see Eq. (2)). All control variables in Table 3 are always included, both in the first and the second stage. The F-statistic for excluded instruments refers to the null hypothesis that the coefficients of such instruments is equal to zero in the first stage. In particular, we used as a measure for mafia potential: the interaction between $confino_{mean}$ and $migr_{mafia}$ in Panel A and the interaction between $confino_{lev}$ and $migr_{mafia}$ in Panel B. Province and year fixed effects are included in all specifications. Robust standard errors clustered at the province level are presented in parentheses. *, ** and *** denote rejection of the null hypothesis of the coefficient being equal to 0 at 10%, 5% and 1% significance level, respectively.

by 2.5 and 1.4 standard deviations respectively. Overall, our findings confirm the relevance of complementarities between *confino* and migrants from southern regions in the diffusion of criminal organizations in the North of Italy.

5. Conclusions

Recent judicial investigations are unambiguously revealing the high degree of infiltration of southern mafias in the socio-economic textures of the northern provinces (Dalla Chiesa, 2010; Direzione Nazionale Antimafia, 2011). Such criminal organizations have now interests in a variety of legal and illegal sectors, raising a big proportion of their revenues outside their traditional territories. Despite the relevance of this problem, the empirical literature on this topic is very scant. Our paper attempts to fill the gap by studying the conditions which most likely have influenced such transplantation. In particular, we focus on the two factors recognized as the most important (Varese, 2006): migration from the South to the North and *confino*. We argue, coherently with the community network approach (Moretti, 1999; Munshi, 2003), that migration might have provided a unhostile environment for mafia to develop. The *confino* policy imposed perilous *mafiosi* to re-settle outside their provinces in order to weaken their criminal networks. On the contrary, this policy favored mafia transplantation to traditional immune areas of the country.

Our findings provide evidence of the existence of complementarities between *confino* and immigration in the expansion of mafia in the northern provinces. The *confino* policy puts in place the know how to seed. The confino policy puts in place the know-how to seed, the immigration the labor. Sole mafia leaders would not have been able to recreate entire mafia-like organizations by their own. On the other side, some migrants from the south would not have been able to solve agency problems (i.e., finding a job) without the help from *mafiosi*.

Some policy implications can be derived by our results. First, *confino* policy ended up having the exact opposite effect of what it was intended to achieve. In fact, not only did it not redeem mafiosi but it also did favor mafia export to the North of Italy. This was also due to the fact that this unusual policy has been implemented during the economic recovery following the WWII, when huge flows of immigrants moved from the South to booming and industrialized northern regions.

Our results draw analogies with historical and more recent examples of mafia expansion outside their area of origin, such as the birth of the American mafia or the diffusion of central American *Maras*. Furthermore, these findings also raise questions on how the migration process was conducted in the northern provinces. Indeed, targeted policies aimed at facilitating the integration of migrants might have avoided clustering and, eventually, reduced mafia expansion. This is a lesson which is also relevant for the present as mass migration from developing countries seems to be somewhat connected with increase in foreigner gangs' activities.

References

Bauer, T., Zimmermann, K., 1997. Network migration of ethnic Germans. Int. Migr. Rev. 1 (1), 143–149.

Bianchi, M., Buonanno, P., Pinotti, P., 2012. Do immigrants cause crime? J. Eur. Econ. Assoc. 10 (6), 1318–1347.

Card, D., 2001. Immigrant inflows, native outflows, and the local labor market impacts of higher immigration. J. Labor Econ. 19, 22–64.

Carrington, W., Detragiache, E., Vishwanath, T., 1996. Migration with endogenous moving costs. Am. Econ. Rev. 86 (4), 909–930.

Chiswick, B., Miller, P., 1996. Ethnic networks and language proficiency among immigrants. J. Popul. Econ. 9 (1), 19–35.

Commissione Parlamentare Antimafia, 1976. Relazione conclusiva. VI Legislatura. Camera dei Deputati, Roma.

Commissione Parlamentare Antimafia, 1983. Relazione conclusiva. VIII Legislatura. Camera dei Deputati, Roma.

Commissione Parlamentare Antimafia, 1994. Relazione conclusiva. XI Legislatura. Camera dei Deputati, Roma.

CNEL, 2010. L'infiltrazione della criminalità organizzata nell'economia di alcune regioni del Nord Italia, Roma.

Cortes, P., 2008. The effect of low-skilled immigration on U.S. prices: evidence from CPI data. J. Polit. Econ. 116, 381–422.

Dalla Chiesa, N., 2010. La convergenza. Mafia e politica nella seconda repubblica. Melampo, Milano.

Direzione Nazionale Antimafia, 2011. Relazione semestrale, secondo semestre. Ministero della giustizia, Roma.

Ehrlich, I., 1973. Participation in illegitimate activities: a theoretical and empirical investigation. J. Polit. Econ. 81, 521–565.

Epstein, G.S., Gang, I.N., 2006. The influence of others on migration plans. Rev. Dev. Econ. 10 (4), 652–665.

Finckenauer, J.O., Voronin, Y.A., 2001. The Threat of Russian Organized Crime. National Institute of Justice, Washington DC.

Glaeser, E.L., Sacerdote, B., 1999. Why is there more crime in cities? J. Polit. Econ. 107, 225–229.

Lupo, S., 1993. Storia della mafia. Dalle origini ai nostri giorni. Donzelli, Roma.

Lupo, S., 2008. Quando la mafia trovò l'America. Einaudi, Torino.

Moretti, E., 1999. Social networks and migrations: Italy 1876–1913. Int. Migr. Rev. 333 (3), 640–657.

Munshi, K., 2003. Networks in the modern economy: Mexican migrants in the U.S. labor market. Q. J. Econ. 188 (2), 549–599.

Ottaviano, G.I.P., Peri, G., 2006. The economic value of cultural diversity: evidence from US cities. J. Econ. Geogr. 6, 9–44.

Peri, G., 2004. Socio-cultural variables and economic success: evidence from Italian provinces 1951–1991. Berkeley Electron. J. Macroecon. Top. 4, 1–12.

Pinotti, P., 2012. The economic consequences of organized crime: evidence from southern Italy. Working paper.

Sciarrone, R., 2009. Mafie vecchie, mafie nuove. Donzelli, Roma.

Stock, James H., Yogo, Motohiro, 2005. Testing for weak instruments in linear IV regression. In: Andrews, D.W.K., Stock, J.H. (Eds.), Identification and Inference for Econometric Models: Essays in Honor of Thomas Rothenberg. Cambridge University Press, pp. 80–108.

Varese, F., 2006. How mafias migrate: the case of the 'Ndrangheta in northern Italy. Law Soc. Rev. 40, 411–444.

Varese, F., 2011. Mafias on the Move: How Organized Crime Conquers New Territories. Princeton University Press, Princeton.

Vergalli, S., 2008. The role of community in migration. Labour 22, 547–567.