SAPIENZA
UNIVERSITÀ DI ROMA

WORKING PAPERS SERIES

DIPARTIMENTO DI

SCIENZE SOCIALI ED ECONOMICHE

n. 8/2015

Immigrants, Natives and Crime:
A Cross-sectional and Longitudinal Analysis

Author:

Luigi M. Solivetti

Immigrants, Natives and Crime:
A Cross-sectional and Longitudinal Analysis

Luigi M. Solivetti *

Abstract

This study purpose is to verify if there is an association between foreign immigration and crime. In doing this, the study investigates also some satellite questions revolving around this possible association: the range of offences affected by immigration, the relationship between immigrant and native crime, and whether the immigration impact on crime is direct or indirect. These issues have been addressed through both a cross-sectional and a cross-sectional/time analysis. This double approach intends to find out whether variations over time in immigration and in crime confirm the synchronic analysis results, which could be biased by non-observed factors. The research is based on data of the Italian provinces. Italy represents a *critical* case for studying the migration-crime relationship, because in this country the rise in foreign immigration has been sudden and its pace feverish. The cross-sectional analysis findings show that crime rates are related to time-invariant factors and only marginally to immigration. On the contrary, the cross-sectional/time analysis shows that variations in immigration have had a positive impact on both the most serious and the most common offences. There is no evidence of indirect effects of immigration on crime or of a link with native crime. In contrast to previous literature regarding the U.S., Canada, and Australia, these results suggest that a tumultuous rise in immigration can affect crime rates.

----

* Department of Social Sciences and Economics, Sapienza University of Rome; e-mail: *luigi.solivetti@uniroma1.it*

Introduction and main theoretical issues

Since the 1980's, a series of studies conducted in most of the West European countries have found immigrant crime figures markedly higher than those observed in the national population (Andersson 1984; Junger-Tas 1985; Natale 1988; Junger 1989; Tournier and Robert 1989; Albrecht 1993; Hebberecht 1997; Killias 1997; Lagrange 2010; O'Nolan 2011; Leerkes, Engbersen and van der Leun 2012). These results were unexpected, because studies conducted during the 1950's -1960's in Europe's large scale immigration countries – Germany, Switzerland, France, Belgium and England – had found that immigrant crime rates were inferior or similar to native rates (on the entire subject, Marshall 1997; Tonry 1997; Solivetti 2010). Moreover, studies conducted outside Europe have negated higher crime rates among the immigrant population. Results obtained in larger immigration countries, such as Canada, the United States and Australia, seem to agree in confirming this picture (Yeager 1996; Rumbaut and Ewing 2007; Francis 2014; see also p. 7).

Unsurprisingly, in Western Europe the immigration-crime link has fuelled a most heated debate. Political parties have been at daggers drawn over immigration policies and immigrant crime control, and these issues are at the top of the agenda of new nationalistic political organizations. Even social scientists present different standpoints, though the major criminological theories expect immigrants to have high crime rates. The explanations provided are indeed at variance with each other.

To start with, some authors have adopted the anomie conceptual framework and in particular Merton's hypothesis (1949) that high social pressure to succeed materially in the face of scarce legitimate opportunities leads to crime and other forms of deviance. Immigrants – who averagely present lower education, lower wages and higher unemployment – are short of legitimate opportunities, whereas their pressure to succeed is high, since they moved to better their status. Therefore, they would be prone to crime (Basdevant 1983; Killias 1989; von Hofer, Sarnecki and Tham 1997; Albrecht 1997; Aoki and Todo 2009; Bovenkerk and Fokkema 2015). Other authors have supported the so called *economic model of crime*, which, following Becker's pioneering study (1968), assumes that crime is a rational option whenever its benefit outweighs its cost. Crime costs and benefits, in turn, are influenced by economic conditions, which affect both

legitimate opportunities (*supply*) and returns to crime (*demand*). Therefore – for reasons abovementioned, i.e. shortage of legitimate opportunities – the average propensity for crime among immigrants should be higher (Neumayer 2006; Vaillant and Dervaux 2008; Bell, Machin and Fasani 2010; Spenkuch 2014). Both the anomie and the economic approach to crime posit an association between immigration and utilitarian crimes, though an association with non-utilitarian crimes – mediated by frustration – cannot be ruled out in the case of anomie (Blau and Blau 1982; Bjerregaard and Cochran 2008). It should be noticed that most studies using these theories to explain immigrant crime come from Europe. Faced with a scenario of relatively low immigrant crime, most American authors emphasize, conversely, the *immigrant paradox*, namely the fact that immigrants' economic disadvantage doesn't translate into the expected high rates of deviance and crime (Sampson 2008; Stowell et al. 2009; Vaughn et al. 2014). This surprising outcome is usually ascribed to the immigrants' stronger family ties and ethnic social relations (Zhou and Bankston 1998), though the hypothesis that immigrants are less crime-prone out of fear to be "noticed" by the authorities is not excluded (Ousey and Kubrin 2009). Anyway, as a consequence of this paradox, immigration inflows would lower local crime rates.

Immigrant crime could be associated with something other than socio-economic status. First, there could be plain demographic features behind it. In many countries, immigrant population is prevalently male and young. And since males in the so called crime-prone years (Hirschi and Gottfredson 1983) make an over-proportional contribution to crime, this could, at least in part, explain immigrant crime.

Second, the *social disorganization theory*, a product of the Chicago School of Sociology, regarded immigrant crime as an ecological problem: the consequence of the lack of cohesion and social control generated by the residential mobility and ethnic heterogeneity due to large-scale immigration. This model – particularly near and dear to American authors – has been used in studies carried out also in other countries (Sampson and Groves 1989; Haynie and South 2005; Herzog 2009; Boggess and Hipp 2010). Because immigration inevitably produces residential instability, usually these two aspects are deemed synonymous: however, it is opportune to ascertain whether crime derives from instability *in se* or from the immigration behind it. To do so, it

would be necessary to verify whether instability not associated with foreign immigration has any impact on crime. Nor should we ignore that other studies contended that areas characterized by residential stability and ethnic homogeneity but also by concentrated disadvantage would produce very high crime levels (Sampson and Wilson 1995; Hipp 2010).

Third, any possible immigration-crime association could derive from an indirect effect of immigration. An inflow of foreign workers is expected to reduce natives' job opportunities, making less-skilled natives redundant and/or lowering their wages: which in turn would increase native propensity for crime. Therefore, the immigration-crime association could be a case of *ecological fallacy*. Empirical evidence supporting this hypothesis is scarce (Butcher and Piehl 1998; von Hofer and Tham 2000; Shihadeh and Barranco 2010); and the results regarding immigration impact on native unemployment are contradictory (Card 2001; Borjas 2003). The issue is complicated further by the fact that immigrant inflows could generate native internal migration (Borjas 2003), which in turn would alter local unemployment levels. Moreover, if immigrants' economic conditions lead them to settle in high-unemployment areas, a spurious immigration-unemployment link would easily arise from this. The same if instead immigrants are attracted by areas where vocational conditions are better.

Fourth, the *differential association theory* denied any immigrant penchant for crime. It regarded first-generation immigrants as less criminal than natives and the higher crime rate among second-generation immigrants as the result of their absorbing from native delinquents the attitudes and skills necessary to enter the world of crime (Sutherland 1924). This process would occur more frequently where organized crime is a time-honoured tradition (Landesco 1968). Criticized for being too generic, this theory was revised as *differential association-reinforcement* (Burgess and Akers 1966) and as such used to explain delinquency in newcomers and second-generation immigrants (Haynie and South 2005; Dipietro and McGloin 2012). It is worth trying to investigate this aspect and in particular whether new immigrant crime is an offshoot of past native crime. However, this subject is intertwined with that of immigrant location. Various scenarios are possible. 1. Immigrants settle in high-crime territorial units; local crime rates decrease; crime rates differences between all the territorial units decrease. 2.

4

Immigrants settle in high-crime territorial units; crime rates increase; cross-sectional differences increase. 3. Immigrants settle in low-crime territorial units; crime rates decrease; cross-sectional differences increase. 4. Immigrants settle in low-crime territorial units; crime rates increase; cross-sectional differences decrease. The first scenario is close to the original formulation of the theory, provided there is an increase in crime later with the second generation. The increase in crime across time and immigrant generations found support in a few studies in Europe (Killias 1989; Bovenkerk and Fokkema 2015) and in several U.S. studies (Zhou and Bankston 1998; Rumbaut and Ewing 2007; Hagan, Levi and Dinovitzer 2008). While many other U.S. studies (Sampson 2008; Stowell et al. 2009; Ousey and Kubrin 2009; Martinez, Stowell and Lee 2010; MacDonald, Hipp and Gill 2013) supported the abovementioned, more generic hypothesis of a decrease in crime concomitant with the immigration inflow. The differential association theory is ill-suited to the second scenario, because the process of *going-native*, criminally speaking, requires time; it is even less suited to the fourth one, where the original crime rate is low but it rises with immigration.

All these theoretical and empirical issues should be tested in the peculiar framework of Western Europe's immigration. Few people, even in Europe, are aware of its magnitude. In the 1990's, 1.65 million immigrants per year reached Western Europe; from 2001, about 2 million (OECD 2011). In the same period, the United States – *the land of immigration* – received an inflow of about 1 million per year. This rather uniform flow towards the U.S. since the 1990's has also been the outcome of stricter controls, which in turn have increased the migratory pressure on Europe.

Within Europe, Italy represents an ideal *critical* case for studying the migration-crime link. A country of emigration until the 1960's, Italy had in 1981 a foreign population of only 0.4%. Since the early 1990's, however, there has been a tumultuous migratory flow. The years 1995-2005 were crucial: the immigrant share rose in that period from 1.8% to 4.7% of the resident population. This in spite of the country's high unemployment (averagely 10.3%) and its high Gini's exacerbated by the poor score in economic freedom (Gwartney, Lawson and Hall 2013). These aspects inevitably dampen immigrants' vocational integration and upward mobility (Calavita 2005). Only a fraction of immigrants (16% in 2000), were from Western Europe or North America,

5

Australia, Japan etc., and most others – usually low-skilled workers – from culturally distant, relatively less-developed countries: which is considered detrimental to assimilation/integration (Karstedt 2001; Junger-Tas 2001; Albrecht 2002; Reich 2006). The inflow from less-developed countries included a substantial number of illegal immigrants – cyclically reabsorbed by ad hoc regularizations – whose condition is regarded as critical for crime control (Leerkes, Engbersen and van der Leun 2012). Such a migratory flow has mainly concerned the Central and Northern regions, where immigrants were in that period 3.3 times their number in the Southern region. The latter, in turn, is comparatively less industrialized, underdeveloped, and – as the "South" in the U.S. – with a much higher homicide rate. The Southern region is also well known for the long presence of criminal organizations rooted in the local context (Mafia, Camorra etc.). It is therefore interesting to study the immigration impact on crime in a country with these peculiar migratory features and this background.

Before we proceed, we notice that most studies on immigration and crime have been focusing on the immigrant share of crime recorded on the national territory. This approach, however, overlooks the effect of territorial features. The analysis of these features could ascertain whether the immigration-crime link is confirmed at the territorial level and whether there are territorial determinants of crime more momentous than immigration. However, even cross-sectional territorial studies are not faultless. They are good at identifying the events densities, but they miss their variations. Especially in Western Europe, immigrant crime is often a recent phenomenon, because foreign immigration as well is relatively recent. Therefore, the immigration-crime link can be obscured by crime densities due mainly to time-invariant, non-observed factors. The chance of this happening is higher wherever crime rates are also affected by age-old territorial differences, due to local cultural and socio-economic features. A fixed-effects longitudinal analysis, being based on only variations over time in the same territorial units, would bypass the effects on crime of these persistent factors and would identify the effects of change.

Second, longitudinal analyses reckon both the association between events and their temporal order. An antecedent event is not necessarily the cause of a subsequent one,

6

but it cannot be caused by the latter and ultimately longitudinal analyses can help distinguish between correlation and causality.

For these reasons, a cross-sectional/time analysis, based on relatively small territorial units, offers advantages over other methods. However, advantages are accompanied by drawbacks. It is difficult to find data for the same variables over time. Some data are gathered infrequently, for instance only in the course of censuses. Data collection procedures can differ in the territorial units. Ultimately, longitudinal studies inevitably take a lot of time, are expensive and can rely on a more limited number of variables than those available for analyses based on aggregated and synchronic data.

Unsurprisingly, immigration and crime studies using panel data based on territorial units are relatively rare. Butcher and Piehl (1998) carried out a study on 43 metropolitan areas of the United States. They found that high-crime areas were also characterized by higher immigrant shares, since immigrants settled mainly in those areas. However, when variations over time (1980-1990) were considered, immigrant share changes weren't associated with changes either in violent crime or in overall crime. Crime variations were instead found to be associated with variations in Afro-American and Hispanic populations.

Ousey and Kubrin (2009) analysed the immigration-crime link with regard to U.S. towns. They found that violent crime variations were negatively correlated with the recent (<10 years) foreign-born share, and instead positively correlated with variations in family instability, residential instability and illegal drugs diffusion. Also property crime rates were negatively associated with immigration and positively with drug diffusion. Stowell et al. (2009), examining violent crime in the U.S. metropolitan areas between 1994 and 2004, found foreign-born share changes inversely associated with crime changes. Martinez, Stowell and Lee (2010) focused on smaller territorial units (San Diego's urban sections), where they found that homicide variations were positively associated with relative deprivation but negatively with the foreign born.

Spenkuch's findings (2014) diverge from the previous ones. He analysed panel data based on U.S. counties in the period 1980-2000 and distinguished the foreign born according to their origin, finding that immigration had a significant effect on property crimes but none on "crimes of passion", such as rape and aggravated assault. Besides,

7

Spenkuch found that the presence of Mexican immigrants – averagely less vocationally integrated – had an impact on property crime. The author regarded it as consistent with the economic theory of crime.

In Europe, the panel analysis on 11 German Länder carried out by Entorf and Spengler (2000) reached the conclusion that, when controlling for unemployment, income and juvenile population, variations in the foreign population had an impact on theft and overall crime, but not on violent crime.

With regard to Italy, a panel analysis on regional data for the period 1970-1990, by Marselli and Vannini (1999), found an association between immigration and both thefts and robberies. Such immigration, however, was internal, not international, regarding people moving from the Southern regions to the Northern ones.

Later, Buonanno (2006), again on Italian regional data, found that, when controlling for urbanization, unemployment and per capita income, there was a weak association between foreign immigrants and property crime. Bianchi, Buonanno and Pinotti (2008), this time using Italian provincial data, found that variations in the immigrant share were associated with significant variations in the robbery rate.

Ultimately, we can notice some unresolved topics in the existing literature. There isn't a leading theory on the immigration-crime link. The main theories offer divergent explanations. The differences between *anomie*, *social disorganization* and *differential association* are emblematic of this situation. Therefore, an analysis of the immigration-crime link should test at least the main hypotheses revolving around it. Additionally, the validity of these hypotheses in contexts far away from those where they were developed is dubious. It is not even clear if the immigration-crime relationship in Western Europe – where sporadic longitudinal studies have only partly explored this multifaceted issue – has anything in common with that in Canada, Australia and the U.S. The Italian case moreover could provide an answer to a couple of specific questions. Is the impact on crime larger in countries where immigration has been a new phenomenon and its growth feverish? What is the relationship between native and immigrant crime where there is a long-established form of organized crime?

Data and organization of the study

The present analysis has been conducted on the 103 Italian provinces (pre-2001 boundaries). Each territorial unit comprises on average 2,900 sq. km and 550,000 people (2001). The strongly balanced panel contains four waves, corresponding to the years 1995, 1998, 2002, and 2005. To represent crime, we considered some of the most serious offences, completed intentional homicide, rape, robbery, extortion, then a less serious but more common offence against the person, i.e. grievous bodily harm, then the most common offence, theft and, last, overall crime, the total number of criminal offences, i.e. the so-called *criminality index*. The decomposition of crime into these offences was inspired also by considerations about crime underreporting. Official data tend to underrate immigrant crime, since intra-ethnic common offences such as theft and bodily harm are often underreported, especially by recent immigrants (Bell and Machin 2011), who represent a large share of the immigrant population in Italy. Underreporting occurs also with intra-ethnic rape and extortion, for obvious reasons, but more rarely with robbery. Whereas intentional homicide is not affected by underreporting. We did not take into consideration other offences, such as transnational drug trafficking, human trafficking and exploitation of prostitution, because they are regarded as rather obviously associated with immigration in Europe (Salt 2000; Paoli and Reuter 2008).

Several independent variables were selected. In the demography domain, all the adult foreign immigrants (MF, and M only), as well as the adult male immigrants belonging to the six national groups with the highest impact on crime, which are all from non-Western, relatively less-developed countries.[1] These groups were identified by their contribution to the Italian criminality index, not by their crime rate. Groups with the highest crime rates may be small and therefore they may have a limited impact on crime figures. The immigration indicators were based on the permits-of-stay and calculated as share of resident population. Ultimately, our "immigrants" are those without host country citizenship: the most marginal group among the foreign born. They are also adult, first-generation immigrants. On the other hand, immigration in those

---

[1] The countries these groups are coming from are Morocco, Albania, Romania, Senegal, former Yugoslavia and Tunisia.

years was too recent to contain a sizeable second generation. To compare the impact of variations in foreign population with that of variations in non-foreign population, we considered the number of residents holding the Italian citizenship. Variations in the number of citizens occur as a consequence first of internal migration and then of emigration, natural variation, and, fractionally, naturalization of immigrants. After these indicators, the choice fell on yearly changes of residence (internal or from abroad), as proxy for *social disorganization*. We have called this variable *residential instability*: its correlation with the immigrant share is close (r = 0.65 in the pooled cross-sectional data, controlling for time), but not such as to hinder comparison between their effects. The male population aged 15 to 24 years could be relevant as a control for the *crime-prone years* in the native and immigrant populations. Gender differences between the various ethnic groups of immigrants in Italy are substantial; but the male share in the total foreign and national populations is the same. The two populations, however, show significant age-group differences. We must remember, on the other hand, that male population aged 15 to 24 years is territorially intertwined with male unemployment (in the pooled data, r = 0.77) and per capita GDP (r = −0.78). Next, we selected chief town population and population per square km to control for urbanization. This control is relevant, because immigrants are attracted by large urban centres (OECD 2004; Jayet and Ukrayinchuk 2007). The latter in turn are the single best predictor of crime (Dijk, Kesteren and Smit 2007), because in urban centres opportunities for victimization increase while neighborhood social control declines. Therefore urbanization could cause spurious correlations between crime and immigration.

In the domain of economics, we chose per capita GDP as proxy for average economic conditions. We assume that crime, especially property crime, is counter-related to income (Hale 1998; Arvanites and Defina 2006; Altindag 2012), though it should be taken into account that a higher level of income could boost *crime opportunities* while reducing *crime motivations* (Cantor and Land 1985, 2001). Besides, it has been known for a long time (Robinson 1950) that immigrants are attracted by the more developed areas, and therefore GDP represents also an appropriate control. The number of cars was included as a further wealth indicator suitable for a nation that – among the sizeably populated countries – has the highest rate of passenger cars. This

10

variable shows a marked territorial correlation with per capita GDP ($r = 0.62$). Next, two indicators of unemployment: unemployed people as a percentage of the total labour force, and unemployed people aged 15 to 24 years (crime-prone age group) as a percentage of the same age labour force. For both the indicators, only males were considered, for the greater impact on crime expected from them. Unemployment corresponds to economic disadvantage and it has been used to proxy general economic conditions in the whole population, both unemployed and employed (Cantor and Land 2001; Phillips and Land 2012). However, unemployment implies also loss of a meaningful role in society. Therefore, we expect stronger effects on crime from unemployment than from low income (Hooghe et al. 2011) and inequality. Unemployment is the determinant of choice in the economic model of crime; and, due to its abovementioned social by-products, it fits even better analyses inspired by the socio-economic deprivation theory. Besides, if immigrants are attracted by places with low unemployment, the latter should be used as a control to identify the real effects of immigration on crime.

Last, we chose the share of people employed by economic sector – in particular the shares in the industry and in the services – to measure the impact of type and level of development (Reid et al. 2005).

To these variables we added the infant mortality rate: a variable relating to demography but regarded as a measure of actual poverty, net of any welfare benefit (Pridemore 2008; Messner, Raffalovich and Sutton 2010). Indeed, this variable seems a proxy for wide-ranging deprivation rather than just poverty, because we found that it is associated in Italy with low education and correlated closer with unemployment than with GDP.

A couple of indicators were chosen to gauge social capital for its possible role in preventing crime (Akçomak and Weel 2012). They are the number of voluntary work associations and the copies of the main general interest magazines, both per population. Initially, we considered newspapers circulation, a variable advocated by Putnam (1993) as a good indicator of social capital. However, newspapers proved to be highly correlated with chief town population and uncorrelated with both voluntary work (which is consistent with high levels of social capital) and the presence of Mafia-type

11

organizations (in turn consistent with low levels of social capital). Eventually, the choice fell on general interest magazines,[2] since they proved to be uncorrelated with urbanization and instead correlated with the abovementioned other indirect indicators of social capital, as well as with education. These magazines circulation can be regarded also as an indicator of education and culture.

Three variables were chosen to measure the dimension of an illegal and/or deviant local context that could favour further antisocial behaviour. They are the rate of people charged with "Mafia-type criminal conspiracy"; the rate of people who died from drug abuse; and that of people charged with drug trafficking offences. Deaths due to drug abuse were selected as proxy for hard drugs diffusion. In turn, hard drugs diffusion can be considered an indicator of anomie and of pressure to commit crimes: violent crime deriving from conflicts for the control of the drug market; and income-generating crime to afford the costs of hard drugs (among the massive literature on this subject, Goldstein 1985; Johnson et al. 1991; Bean 2002; Ousey and Kubrin 2009).

Last, we included in the longitudinal models controls for each of the four waves, to identify and neutralize generalized changes in the crime rates, as well as controls for peculiar crime trends in the main macro-regions, namely the Northern, the Central and the Southern ones.[3]

Due to their relevance, juvenile male population, chief town population, per capita GDP and male unemployment were used as explicative/control variables in all the full regression models. The wave controls were used in all the regression models. The area trend controls whenever their contribution was other than null.

---

[2] These magazines are *Panorama*, *L'Espresso* and *Il Mondo*.

[3] The longitudinal analysis is based on within-province fixed effects models:
$$(y_{pt} - \bar{y}_p) = \beta(x_{pt} - \bar{x}_p) + \gamma(te_{pt} - \bar{te}_p) + \delta(at_{pt} - \bar{at}_p) + (u_{pt} - \bar{u}_p)$$
where *y* is crime in the province *p* during the year *t*, *x* is an independent variable, *te* is a time effect control, *at* is an area-trend control and *u* is the (conventional) error term. We chose the FE model because a) the variables of interest registered within-province changes over time, b) there are grounds to suspect also powerful time-invariant factors and c) the FE model doesn't assume that these time-invariant factors are uncorrelated with time-varying independent variables (e.g. immigration, income, and unemployment), as the RE and GEE models do. As a consequence, the FE model controls for all the possible time-invariant factors whereas RE and GEE do not. The Hausman's test was used for the significance of time-invariant omitted variables. Possible correlations of the residuals between one wave and the next were checked by means of the Pesaran's and Frees' tests. These residuals do not represent a serious problem when the research units are numerous and the waves only a few. For the pooled data correlations and the FD regressions, we used macro-region dummies, substantially equivalent to the FE area-trend controls.

Table 1. Longitudinal data summary statistics. All the Italian provinces; four waves: 1995-1998-2002-2005; Observations (N · T) = 412

Variables by domain	Overall				Within		
	Mean	Std. dev.	Min	Max	Std. Dev.	Min	Max
Crime							
Intentional homicide	2.4	2.5	0.00	16.4	1.3	-3.4	10.6
Rape	6.1	3.1	0.00	15.9	2.4	-1.1	13.2
Grievous bodily harm	93.5	48.6	9.5	358.0	33.8	-51.0	262.1
Theft	2,251.3	1,209.3	234.9	7,820.1	757.3	-909.6	6,060.6
Robbery	51.1	52.7	6.1	491.6	18.2	-89.4	172.7
Extortion	13.5	11.4	0.2	91.9	5.0	-8.2	52.9
Overall crime	4,300.8	1,612.4	1,073.2	12,636.5	996.9	722.4	9,514.2
Population							
Adult foreign immigrants (MF) %	2.1	1.6	0.2	9.6	1.2	-1.4	7.0
Adult foreign immigrants (M) %	1.1	0.9	0.1	5.4	0.6	-1.2	4.0
High-crime nat. groups imm. (M) %	0.6	0.5	0.01	3.0	0.3	-0.1	1.7
Ln (Non-foreign population)	12.9	0.7	11.4	15.1	0.01	12.9	13.0
Residential instability per 100 pop.	2.4	0.8	1.0	4.3	0.3	1.5	3.4
Male pop. aged 15 to 24 years %	6.0	1.2	3.6	9.2	0.7	4.8	7.6
Population per square km	81.4	89.3	13.1	562.1	1.9	74.6	96.1
Ln (Chief town population)	11.5	0.9	10.0	14.8	0.02	11.4	11.6
Infant mortality per 1K pop.	4.8	1.7	1.8	11.9	1.2	2.0	8.2
Economics							
GDP per capita (,000)	17.48	5.03	7.02	33.74	2.63	11.84	24.06
Passenger cars per 100 pop.	56.7	8.0	36.2	111.0	3.8	35.2	72.2
Employed, agriculture sector %	7.0	5.2	0.3	25.2	1.4	0.3	12.4
Employed, industry sector %	29.9	9.5	12.5	53.7	1.5	23.9	34.4
Employed, services sector %	63.1	8.1	45.3	86.7	2.0	56.8	69.6
Unemployed, m. 15-24 yr old %	23.3	16.2	1.2	68.1	6.1	4.5	40.0
Unemployed, m. >=15 yr old %	7.3	5.8	0.4	27.1	2.0	-1.3	13.6
Social capital and culture							
General interest magazines per 1K pop.	16.5	5.4	6.4	29.1	1.3	12.4	20.8
Voluntary work associations per 10K pop.	3.2	2.8	0.01	28.8	1.3	-10.8	10.7
Illegal and deviant context							
Ln (Mafia-type organizations)	0.4	1.1	0.00	10.7	0.6	-3.6	5.5
Deaths due to drug abuse per 100K pop.	1.3	1.2	0.00	11.9	0.9	-2.8	8.8
Drug trafficking	49.6	33.8	1.8	266.5	15.4	-26.4	111.8

NB: Data underlying the variables were drawn from Istat (Italy's Institute of Statistics) databases. All the offences were calculated as yearly rates per 100K population. Figures regard criminal cases verified by the judiciary.

Results

The descriptive statistics show (Table 1) that the offences rates are often widely differentiated across the territorial units: this advocates a search for explanations. Concurrently, the pooled data correlations (Table 2) reveal that the main offences have dissimilar associations with the demographic-socio-economic indicators: and thus, necessarily, their distribution on the territory is dissimilar. This happens with "violent crime", such as homicides, rapes, grievous bodily harm and robberies. The same happens with "property crime": thefts and extortions are uncorrelated.

Therefore, these results reveal the risks of using, as regressands, aggregative crime categories, such as "violent crime" and "property crime". The use of these categories – which is common practice in this type of studies – is definitely misleading when trying to identify crime determinants.

Having said this, we can notice (Table 2) that homicide rates are associated territorially with the 15 to 24 year old male population, infant mortality, male unemployment, Mafia-type organizations and "South"; whereas they are negatively associated with GDP, cars, people employed in the industry sector, social capital and culture, residential instability and immigration indicators. Instead, there is no association between homicides, urbanization, and drug diffusion. Therefore, homicide is rife where there is underdevelopment, unemployment, limited social capital, residential stability and larger juvenile age groups, as is the case in a pre-modern population profile. In such a context, foreign immigration is scant, because immigrants are attracted by the richer, more developed and usually more urbanized areas, where they find better opportunities.

The territorial distribution of extortions is similar to that of homicides. Behind extortions we find the same background of economic and social underdevelopment, and a negative association with residential instability and immigration, whereas the correlation with "South" is particularly high.

14

Table 2. Pooled data of the four waves 1995-1998-2002-2005 for all the provinces. Partial correlation coefficients between the offences and the independent/control variables, controlling for the time variables; Observations (N · T) = 412

Variables by domain	Intent. homicide	Rape	Griev. bd. harm	Theft	Robbery	Extortion	Overall crime
Crime							
Intentional homicide	1.000	0.126	0.088	-0.020	0.280	0.588	0.141
Rape	0.126	1.000	0.178	0.223	0.157	0.143	0.289
Grievous bodily harm	0.088	0.178	1.000	0.133	0.001	0.069	0.398
Theft	-0.020	0.223	0.133	1.000	0.433	-0.044	0.903
Robbery	0.280	0.157	0.001	0.433	1.000	0.268	0.439
Extortion	0.588	0.143	0.069	-0.044	0.268	1.000	0.098
Overall crime	0.141	0.289	0.398	0.903	0.439	0.098	1.000
Population							
Adult foreign immigrants (MF)	-0.261	0.191	-0.072	0.282	0.038	-0.397	0.190
Adult foreign immigrants (M)	-0.233	0.172	-0.106	0.235	0.014	-0.389	0.141
High-crime nat. groups imm. (M)	-0.221	0.072	0.023	0.107	-0.124	-0.364	0.041
Ln (Non-foreign population)	0.035	0.125	-0.199	0.389	0.638	0.131	0.302
Residential instability	-0.297	-0.005	-0.111	0.217	-0.009	-0.474	0.084
Male pop. aged 15 to 24 years	0.435	-0.123	-0.083	-0.225	0.247	0.588	-0.138
Population per square km	0.045	0.189	-0.070	0.452	0.698	0.067	0.439
Ln (Chief town population)	0.052	0.284	-0.066	0.561	0.664	0.094	0.492
Infant mortality	0.437	-0.030	0.000	-0.094	0.229	0.543	-0.030
Economics							
GDP per capita	-0.459	0.152	-0.116	0.316	-0.096	-0.577	0.159
Passenger cars	-0.325	-0.020	-0.014	0.209	-0.067	-0.424	0.116
Employed, agriculture sector	0.389	-0.075	0.018	-0.349	-0.134	0.502	-0.242
Employed, industry sector	-0.453	-0.131	-0.205	-0.073	-0.239	-0.437	-0.226
Employed, services sector	0.288	0.204	0.231	0.309	0.369	0.196	0.422
Employed per population	-0.496	0.137	-0.124	0.263	-0.138	-0.561	0.102
Unemployed, m. 15-24 yr old	0.602	0.047	0.140	-0.057	0.362	0.622	0.107
Unemployed, m. >=15 yr old	0.614	0.026	0.053	-0.100	0.376	0.624	0.033
Social capital and culture							
General interest magazines	-0.404	0.158	0.024	0.305	-0.171	-0.566	0.221
Voluntary work associations	-0.234	0.084	-0.097	0.017	-0.252	-0.392	-0.087
Illegal and deviant context							
Ln (Mafia-type organizations)	0.565	0.012	0.044	-0.067	0.200	0.528	0.031
Deaths due to drug abuse	-0.070	0.040	0.137	0.306	0.124	-0.165	0.279
Drug trafficking	-0.031	0.167	0.143	0.308	0.167	-0.060	0.309
Territory							
Northern provinces	-0.270	0.033	-0.055	0.137	-0.106	-0.427	0.029
Central provinces	-0.221	-0.004	0.002	0.107	-0.100	-0.209	0.094
Southern provinces	0.468	-0.032	0.055	-0.233	0.195	0.623	-0.110
Time							
t	-0.051	-0.557	-0.224	0.083	-0.062	-0.043	-0.037
t+1	0.075	0.110	-0.123	0.182	0.099	0.054	0.150
t+2	0.032	0.223	0.159	-0.100	0.002	0.008	-0.056
t+3	-0.056	0.224	0.187	-0.165	-0.039	-0.019	-0.057

NB: Coefficients >=0.178, p. <0.001; coeffs >=0.131, p. <0.01; coeffs >= 0.097, p. <0.05

Robberies, in turn, are correlated with some indicators of social malaise characterizing the previous offences. However, robberies are first of all marked by their close association with urbanization. There is also an association with drug diffusion and "South", but no association with the immigration indicators. From all this we can infer that robberies are more common in less-developed urban areas, which aren't particularly attractive to foreign immigrants.

Rapes, as noticed, show a territorial distribution dissimilar from that of other "violent crimes", such as homicides and robberies. Rapes are correlated with foreign immigration and, in addition, with urbanization, income, the services sector, magazines circulation, and with drug trafficking as well. All in all, rapes are associated with a context of material wellbeing, attracting immigrants, where also deviant behaviour (drug trafficking) is rife. When we introduce the main controls, however, immigration loses its significance.

A further type of violent crime, namely grievous bodily harm, shows an association with the services sector and drug trafficking, but no association with the foreign immigration indicators.

The most common offence against property, theft, shows a distribution that is associated with urbanization, income, cars, culture, drug trafficking, drug diffusion, and foreign immigration. It shows also some association with residential instability. The theft-unemployment correlation instead has negative sign. This is partly due to the underlying link between income and unemployment ($r = -0.80$). If we regress thefts controlling for income, unemployment becomes positively associated with thefts and both income and unemployment are significant. On the other hand, immigrants prefer to settle in high-income provinces, as shown by the correlation between immigration and GDP ($r = 0.76$) and confirmed by the association between lagged GDP and variations in immigration over the period 1995-2005 ($r = 0.78$). And immigration is also negatively correlated with unemployment (in the pooled data, $r = -0.53$). Therefore, even the association between immigration and theft should be treated with caution. Indeed, controlling for unemployment and GDP, the immigration-theft relationship becomes weak.

Last, overall crime is significantly associated with urbanization, the services sector, culture and both drug diffusion and drug trafficking. Also its correlation with foreign population is positive. As for theft, controlling for GDP and unemployment, this correlation becomes weak.

When we move from the pooled data to the longitudinal analysis, we meet a different scenario. First, we notice within-province changes in the offences rates (Table 1). Some changes over time were generalized: rapes and grievous bodily harm registered marked increases; whereas thefts registered a decrease (see Table 2, Time). Changes due to a "shock period" imply that – since immigration soared in the said period of time – we would probably have a positive association between immigration and the offences on the increase; and a negative association between immigration and the offences on the decrease. It is therefore necessary to control for the various waves: we discovered that otherwise both the pooled data correlations and the longitudinal regression outcomes for most of the offences would be drastically different and ultimately unreliable.

Second, the crime trends over time presented some differences in the main macro-regions. E.g., the homicide and extortion trends were negative in the Northern and Central macro-regions and positive for the Southern one. So, for some regression models, the controls based on macro-region time trends can prevent spurious results.

Having said this, we notice that – contrary to what emerged from the pooled data – variations in foreign immigrants are statistically significant for all the offences considered. This occurs in both the FE models: the basic and the full regression model (Table 3). The effect of the immigration indicators is robust in all the cases, but for the extortion basic model. For each percentage change in male immigrants, the percentage change in homicides is 0.28 and in rapes 0.15 (basic models); for each percentage change in high-crime national groups, the percentage change in grievous bodily harm is 0.23, in thefts 0.12, in robberies 0.25, and in overall crime is 0.11. The effect size of male immigrants is slightly higher than that of male and female immigrants, but similar in most cases to that of the high-crime national groups (males). The latter indicator, however, is particularly relevant in the case of thefts and overall crime, where the share

Table 3. Within-province fixed effects multiple regression models for main criminal offences and various independent/control variables. Four waves: 1995-1998-2002-2005. Coefficients and standard errors

Variables	Model 1a Intent. homicide		Model 1b Intent. homicide		Model 2a Extortion		Model 2b Extortion		Model 3a Robbery		Model 3b Robbery		Model 4a Rape		Model 4b Rape	
	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.
t+1	0.34	0.21	-0.27	0.49	1.24	0.95	1.18	1.55	12.50	2.73	8.05	5.09	3.27	0.29	2.05	0.51
t+2	-0.10	0.24	-1.06	0.95	-0.91	1.54	-2.02	2.91	-1.37	3.06	-10.7	10.2	3.55	0.33	0.18	1.03
t+3	-0.89	0.32	-1.79	1.26	-3.01	2.29	-4.26	3.66	-12.80	4.04	-23.8	12.6	3.03	0.44	-1.34	1.28
Northern prov. area-trend			-0.112	0.051	0.024	0.196										
Southern prov. area-trend			-0.054	0.066	0.28	0.24										
Adult foreign immigrants (M)	0.68	0.19	0.90	0.30									0.85	0.26	1.24	0.41
High-crime nat. groups imm. (M)					3.62	1.78	5.19	1.84	22.47	4.56	18.61	5.88				
Ln (Non-foreign population)			-14.21	6.51												
Residential instability			-0.37	0.54			-2.61	1.91							-1.64	0.72
Male pop. aged 15 to 24 years			-1.18	0.50			-0.35	1.85			-6.36	6.52			-1.39	0.67
Ln (Chief town population)			0.31	4.08			7.60	14.63			34.2	52.2			7.96	5.32
Infant mortality			0.40	0.10												
GDP per capita			0.021	0.121			0.13	0.45			0.30	1.55			0.29	0.16
Employed, industry sector											-0.38	0.74				
Unemployed, males >=15 yr old			0.027	0.047			-0.21	0.18			0.35	0.67			-0.142	0.065
General interest magazines			-0.055	0.072			-0.28	0.28								
Voluntary work associations																
Ln (Mafia-type organizations)			1.28	0.33			7.53	1.28			3.11	4.63				
Drug trafficking			0.0076	0.0049											0.0117	0.0067
Constant (ave. value of FE)	1.86	0.17	326	111	-208	301	-65.0	166.4	37.43	2.50	-306	596	2.75	0.24	-79.0	60.4
Observations (N · T)	412		412		412		412		412		412		412		412	
R-squared	0.072		0.211		0.034		0.156		0.162		0.169		0.514		0.544	

18

Table 3. Continued

Variables	Model 5a		Model 5b		Model 6a		Model 6b		Model 7a		Model 7b	
	Grievous bd. harm		Grievous bd. harm		Theft		Theft		Overall crime		Overall crime	
	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.
t+1	2.63	5.74	-9.59	11.98	97.4	134.4	544	225	202	182	775	352
t+2	14.49	9.34	-24.6	26.9	-705	219	55.9	416.5	-949	296	110	737
t+3	0.22	13.89	-52.0	35.4	-1,126	324	-17.9	525.7	-1,658	439	-210	977
Northern provinces area-trend	-1.43	1.19	-0.54	1.30	-4.80	27.83			14.7	37.7	38.5	38.5
Southern provinces area-trend	3.34	1.46	2.69	1.73	45.3	34.2			146.5	46.3	81.6	53.1
Adult foreign immigrants (MF)							-536	148			-532	202
High-crime nat. groups imm. (M)	43.9	10.8	37.8	12.3	715	252	1,748	388	1,553	342	2,589	531
Ln (Non-foreign population)											-6,476	5,091
Residential instability							-122	300			-287	426
Male pop. aged 15 to 24 years			-3.77	12.79			594	269			740	391
Ln (Chief town population)			115.1	93.9			2,900	2,185			6,531	3,234
Infant mortality			-3.02	2.49								
GDP per capita			0.91	3.02			148.5	67.1			124.8	96.0
Passenger cars			2.06	1.06								
Employed, services sector			2.95	1.27								
Unemployed, males 15-24 yr old							13.0	10.7			25.1	14.8
Unemployed, males >=15 yr old			-1.54	1.19			-24.1	36.1			-61.8	50.8
General interest magazines							29.3	41.5				
Drug trafficking			0.053	0.122								
Constant (ave. value of FE)	-998	1,820	-2,905	2,238	-22,338	42,598	-37,528	24,944	-111,613	57,679	-85,336	85,899
Observations (N · T)	412		412		412		412		412		412	
R-squared	0.241		0.276		0.169		0.234		0.122		0.185	

19

of male and female immigrants plays the role of control variable. Instead, variations in non-foreign population are never significant, in any model and for any offence.

With regard to other indicators, we notice that – as in the pooled data – the contribution of Mafia-type organizations is robust for homicide and extortion. Also infant mortality is still relevant for homicide. Drug trafficking plays some role only for rape. The role of chief town population is definitely modest. The significance of social capital and culture indicators evaporates.

As mentioned earlier, changes in immigration are associated with changes in residential instability; moreover, lagged immigration predicts instability variations (t = 5.4). However, lagged instability does not predict immigration variations: therefore, immigrants are not attracted by high instability areas. In all the models, for any offence, residential instability exhibits a null or negative relationship with crime variations.

With regard to the economic indicators, we notice that GDP variations make a contribution to theft variations only. Changes in unemployment, in turn, are never significant, even when controlling for GDP in simpler models. The presence of the immigration variables eclipses the role that GDP and unemployment had as predictors of thefts in the pooled data analysis.

The unemployment variable was put under scrutiny also to test the hypothesis of immigration indirect effects on crime. To do this, we calculated the immigration impact on male unemployment and youth male unemployment. However, we know that immigrants prefer to settle where economic-vocational conditions are better. Besides, foreign immigrant inflows could generate native internal migration. All this could blur the immigration-unemployment link. Therefore, we used controls for these aspects. The analysis was conducted for the entire period 1995-2005 and for the various waves as well. The results were convergent. Conditional on baseline unemployment and other controls, immigration variations have no significant impact on unemployment. In particular, no impact on the unemployment of the critical 15 to 24 years age group (Table 4, Models 1). Moreover, we found no association between immigrant inflows and negative variations in the non-foreign population, no matter the model (see also Table 4, Model 3-4). This contradicts the hypothesis of native internal migration as a consequence of foreign immigration. With regard to the immigration impact on income,

Table 4. Within-province first differences multiple regression models for criminal offences and other variables. Four waves: 1995-1998-2002-2005.
Coefficients and standard errors

Variables	Model 1 (Unemployed, m. 15-24 yr old) t+3		Model 2 (GDP per capita) t+3		Model 3 Δ_3 (Adult foreign immigr. (MF)) t+3		Model 4 Δ_3 (Adult foreign immigr. (MF)) t+3		Model 5 Δ_2 (Theft) t+3		Model 6 Δ_2 (Robbery) t+3		Model 7 Δ_2 (Overall crime) t+3	
	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.
Northern provinces	1.54	2.02	-0.30	0.35	-0.26	0.30	-0.43	0.30	-304	317	2.15	6.77	-68.7	411.1
Southern provinces	4.07	2.71	-0.96	0.48	-1.02	0.44	-1.23	0.44	-190	405	-6.59	8.84	-492	526
Δ_3 (Adult foreign imm. (MF)) t+3	0.066	0.672	0.19	0.11										
Δ_3 (ln (Non-foreign population)) t+3	-29.5	22.7	-9.07	3.86	3.88	3.97	6.00	3.81						
(Male pop. aged 15 to 24 yrs) t					-0.21	0.21	-0.16	0.20						
Δ_3 (Male pop. aged 15 to 24 yrs) t+3	1.59	1.87	-0.57	0.32					433	357	1.38	7.45	651	451
(ln (Chief town population)) t	2.02	0.92	0.58	0.15	0.10	0.13	0.29	0.14						
Δ_3 (ln (Chief town population)) t+3									431	2,514	-81.8	54.6	1,365	3,295
(GDP per capita) t	-1.55	0.49	1.123	0.087	0.170	0.075	0.205	0.075						
Δ_3 (GDP per capita) t+3									148.3	94.3	3.39	2.03	110	122
(Unemployed, m. 15-24 yr old) t	0.254	0.075												
(Unemployed, m. >=15 yr old) t			-0.044	0.038	-0.023	0.035	-0.0035	0.035						
Δ_3 (Unemployed, m. >=15 yr old) t+3									12.9	44.5	-0.32	0.98	-24.4	57.8
(Grievous bodily harm) t					-0.0051	0.0018								
(Theft) t									-0.25	0.11				
(Robbery) t											-0.444	0.053		
(Overall crime) t							-0.000201	0.000069					-0.225	0.097
Constant	11.89	8.91	-2.50	1.53	1.53	1.85	-1.00	1.89	-99.7	833.9	-10.7	18.1	934	1,090
Observations (N)	103		103		103		103		103		103		103	
R-squared	0.781		0.959		0.688		0.689		0.117		0.511		0.110	

we conducted an analogous analysis. We found that immigration variations haven't a negative impact on per capita GDP (Table 4, Model 2). Ultimately, these results do not support the hypothesis of an indirect impact of immigration on crime.

Next, we tested the hypothesis that immigrant crime has been the offshoot of previous, native crime. Our data showed that foreign immigration was attracted by wealth, lower unemployment and urbanization; such factors being equal, immigrant variations over the entire period 1995-2005 were inversely associated with previous crime rates (Table 4, Model 3-4, showing the cases of overall crime and grievous bodily harm). Therefore, immigrant population grew particularly where crime rate was originally lower. Moreover, the first differences analysis revealed that crime variations were inversely associated with previous crime level (Table 4, Models 5-6-7, showing thefts, robberies and overall crime; the results for homicides, rapes and bodily harm are equivalent).[4] If immigrant crime were the offshoot of previous, native crime, we would expect some crime intensification in high-crime areas, and only in the long term. Instead, crime growth followed immigrant inflows without delay (Table 3 FE models: the temporal distance between the panel waves is 3.3 years) and such a growth was higher where crime had been lower. Consequently, crime distribution changed. As immigration soared, its territorial distribution became more homogeneous: from 1995 to 2005, the standard deviation to the mean of the immigrant share in all the provinces decreased from 70 to 57: concurrently, overall crime standard deviation decreased from 41 to 35. Homicides, rapes, robberies, extortions and grievous bodily harm exhibited the same downward trend.

Discussion

A first result of the present study is the alternative scenario brought to light by the longitudinal analysis. When the analysis focused on pooled cross-sectional data, only two offences – rape and theft (plus overall crime) – showed a clear positive association with foreign immigration. Two more offences – grievous bodily harm and robbery – had no association. What is more, the remaining offences – homicide and extortion – showed patent negative associations with foreign immigration. When the analysis focused on cross-sectional/time data, the scenario dramatically changed: all the

---

[4] In this analysis, we used Δ_2 (dep. var.) t+3 in lieu of Δ_3 (dep. var.) t+3, because otherwise the baseline values of the dependent variable would be on both sides of the equation, inflating the errors.

offences emerged as associated with foreign immigrant indicators, and both in the basic and in the full regression models. This association is particularly robust for homicide, robbery, theft, grievous bodily harm, rape and overall crime. The results obtained using the "male foreign immigrants (all)" variable were in most cases similar to those obtained with "high-crime national groups (males)". And this supports the FE results reliability. Instead, variations in non-foreign population were never significant in predicting the various types of offences. The latter results indirectly emphasize the relevance of the immigration-crime association.

In the light of the longitudinal findings, the cross-sectional data results should be reconsidered. The rates of some crimes – first homicides and extortions, then robberies – are affected by time-invariant factors belonging to a background of underdevelopment, unemployment, Mafia-type organizations and limited social capital. This background, characterizing the Southern region, is unsurprisingly associated also with scarce population mobility and limited foreign immigration. In turn, the number of thefts increases with the income level. Ultimately, the difference between the results obtained from the cross-sectional data and those from the cross-sectional/time data suggests that the outcomes of studies based on synchronic analyses, the standard approach till now, could be misleading.

Further considerations can be drawn from the results obtained with *unemployment*, a variable deemed momentous for crime prediction. The cross-sectional data analysis has shown that male unemployment is closely correlated with homicides, extortions and, at a lower degree, with robberies. It is not correlated with thefts, the very offence one would expect to be most correlated with unfavourable economic conditions. Instead, thefts are territorially correlated with GDP. Therefore, a higher GDP does not seem to curtail the interest in stealing by increasing affluence and indirectly legitimate opportunities (*supply*), but it seems to affect theft by making more goods available to thieves. For the crucial offence against property, i.e. theft, unemployment seems to play a subordinate role by comparison with the presence of goods. Still, controlling for income, cross-sectional unemployment differences predict thefts.

Unemployment variations *over time*, however, do not predict crime variations, not even in the case of thefts. Concurrently, decreases in GDP do not result in more crime. This is at odds with both the economic model of crime and the anomic strain or relative deprivation approach. One could affirm that the abovementioned hypotheses are

indirectly confirmed, though unemployment *in se* is non-significant, because variations in foreign immigrants – who are averagely in worse economic conditions than natives – are associated with crime. The fact that the aforesaid six national groups from non-Western, less-developed countries, are particularly significant in predicting thefts could be another hint going in the same direction. The status of these groups is indeed averagely lower than that of other immigrants. However, one should admit that even so the crime determinant would not be a generic "lower economic status" as rather immigrants' specific economic deprivation.

To assemble this puzzle pieces, we should take into account that *structural* unemployment effects are far removed from *frictional* unemployment ones. In Southern Italy there are provinces characterized by age-old structural unemployment – almost 4 times the national average – and male youth unemployment affecting two-thirds of the pertinent population (Table 1). The Italian welfare is rather generous toward frictional unemployment, but powerless against such structural unemployment. Moreover, people in frictional unemployment can usually rely on their savings. People in structural unemployment cannot do that. Understandably, high rates of structural unemployment are associated with high rates of crime, firstly professional crime like extortion. Whereas temporary increases in unemployment – alleviated by savings and unemployment benefits – do not significantly affect crime. This tallies with the unemployment strong association with crime when dealing with *stock* data and its non-significant effect when dealing with *flow* data; it tallies also with GDP decreases over time that do not result in more crime. With regard to immigrants, their relative economic deprivation is hardly cushioned by savings and in particular illegal immigrants cannot rely on welfare benefits. All in all, their condition bears some similarity with that of *structurally unemployed people*, and the immigrant inflow has been closely followed by increases in crime.

This picture would suggest a link between immigrant economic deprivation and property crime. Indeed, previous longitudinal studies found a link between immigration and only property crimes, or no link at all. The present study results endorse a link concerning property crimes as well as violent crimes. The immigration elasticity of robbery is high: but so is that of grievous bodily harm. The immigration elasticity of rape – an offence most distant from utilitarian crime – is higher than that of theft. From these results it is possible to draw some theoretical considerations. This compound

criminal scenario is hardly attributable only to the immigrants' recourse to illegitimate opportunities. This scenario suggests rather a multifaceted explanatory framework, where immigrant lower economic options are accompanied by alienation, frustration and problematic social interaction. This doesn't fit the economic model of crime but is compatible with the anomic strain theory.

The present analysis allowed us to check also the indirect effects of immigration on native crime. Such effects could arise – as stated previously – from an increase in natives' unemployment and a decrease in their income. This issue has generated scant empirical analysis. We found no evidence of any increase in unemployment and decrease in income after the massive growth of foreign population. These results could be the consequence of the fact that the immigration impact on native unemployment and income should be sizeable where the labour market is open and immigrant labour competitive. This impact is probably limited where the labour market is segmented and immigrants non-competitive, also due to their low skills, as it seems to be the case in Italy. The present analysis, being conducted on macro data, is not particularly suitable to distinguish between direct and indirect effects. However, it shows that, whereas increases in immigration are good crime predictors, they do not seem to have an unfavourable impact on unemployment and income. Therefore, the hypothesis of indirect effects of immigration on crime, mediated by the worsening of natives' employment and income, remains unsubstantiated. The alternative hypothesis of *direct* effects emerges fortified by these results.

The panel analysis has been useful to check also other theoretical paradigms.

Residential instability embraces changes of residence of both the national and the foreign population and it is associated with immigrant inflows. Consequently, one could hypothesize that residential instability is a good crime predictor. However, variations in residential instability alone do not predict crime variations. Nor they magnify the immigration effect on crime in the full regression models. Therefore, the present research results do not support *social disorganization* theory, insofar as the latter emphasizes the relevance of residential instability as a crime determinant. Any increase in foreign population implies also an increase in the residential instability figures. Only foreign population variations, however, are significant.

The present findings are also at odds with the *differential association* hypothesis. There was already evidence that immigrant crime rates in Europe were higher than

native rates. And this was *in se* discordant with the abovementioned hypothesis, which was developed in the U.S. when immigrant crime rates were averagely lower than native ones but higher in the case of the second generation. Now, our data deal with the first generation only: however, one couldn't exclude that immigrants replicated and further expanded native crime. Since Italy is well known for serious offences due to long-established criminal organizations, such hypothesis is intriguing. The present study shows, however, that this hypothesis is implausible, for a combination of results: because the immigrant inflow was lesser where crime rate was higher; because crime rapidly grew where immigrant population increased; and consequently crime rates rose where they had been lower. An unsuspected event associated with foreign immigration has been the evener distribution of crime rates over the national territory. The immigration-crime link did not entail a generalized rise in crime but, specifically, a territorial increase in crime concomitant with immigration.

Conclusions

This study – the first territorial panel analysis in Europe testing the main theoretical hypotheses on the immigration-crime relationship – found that the immigration-crime association, hardly detectable in the cross-sectional analysis, becomes manifest in the cross-sectional/time one. The rise in foreign immigrants resulted in positive variations in both serious and common crime. This in spite of the fact that immigrant crime tends to be underreported and therefore underrated. Contrary to expectations derived from previous literature, the immigration-crime association is not restricted to property crimes. The immigrants taken into consideration in this study were *foreign citizens*, the most recently arrived and marginal share of the foreign born. This could explain the present findings and in particular these immigrants' impact on crime: their impact is reminiscent of that of *structural* socio-economic deprivation. In turn, social phenomena usually regarded as crime determinants, i.e. residential instability, unemployment and income, have emerged in Italy as relatively poor predictors of crime, when compared with immigration through cross-sectional/time testing. The immigration impact on crime seems direct, rather than indirect via an increase in native crime, because immigration did not affect native unemployment and income. In spite of the long presence of Mafia-type criminal organizations in Italy, the new crime associated with immigration is not the offshoot of traditional crime: on the

contrary, as immigration soared, crime rate rose where it had been lower. The whole picture of the Italian *critical case* – characterized also by tumultuous rise in immigration, exotic origin of most immigrants and limited opportunities for them, due to scant economic freedom – contrasts with that of the West European countries in the 1950's-1960's, when immigrants came from Western Europe itself, *pull factors* prevailed, manufacturing jobs were plentiful, illegal immigrants rare, and immigrant crime low. The Italian case stands in clear contradiction also to that of the U.S., Canada, and Australia, where the immigration impact on crime has remained non-significant or negative. In particular, the Italian case challenges the possibility of generalizing the U.S. *immigrant paradox*, i.e. low crime in the first-generation immigrant population in spite of its relative socio-economic disadvantage.

References

Akçomak, I. Semih, and ter Weel, Bas. 2012. "The Impact of Social Capital on Crime: Evidence from the Netherlands." *Regional Science and Urban Economics* 42: 323–340.

Albrecht, Hans-Jörge. 1993. "Ethnic Minorities: Crime and Criminal Justice in Europe." Pp. 84–100 in *Crime in Europe*, edited by Francis Heidensohn and Martin Farrell. London: Routledge.

Albrecht, Hans-Jörge. 1997. "Ethnic Minorities, Crime, and Criminal Justice in Germany." Pp. 31–99 in *Ethnicity, Crime and Immigration*, edited by Michael Tonry. Chicago and London: The University of Chicago Press.

Albrecht, Hans-Jörge. 2002. "Fortress Europe? Controlling Illegal Immigration." *European Journal of Crime, Criminal law and Criminal Justice* 10(1): 1–22.

Altindag, Duha T. 2012. "Crime and Unemployment: Evidence from Europe." *International Review of Law and Economics* 32: 145–157.

Andersson, Jacob. 1984. "Policing in Multi-Ethnic Areas in Stockholm." Pp. 57–60 in *Policing and Social Policy*, edited by John Brown. London: Review Publishing.

Aoki, Yu, and Todo, Yasuyuki. 2009. "Are Immigrants More Likely to Commit Crimes? Evidence from France." *Applied Economics Letters* 16: 1537–1541.

Arvanites, Thomas M., and DeFina, Robert H. 2006. "Business Cycles and Street Crime." *Criminology* 44: 139–164.

Basdevant, Claire. 1983. "Les Carrières Scolaires. Étude Comparative de la Trajectoire Scolaire d'Adolescents Français et Immigrés." *Annales de Vaucresson* 20: 89–101.

Bean, Philip. 2002. *Drugs and Crime*. Cullompton – Portland, Or.: Willan.

Becker, Gary. 1968. "Crime and Punishment: An Economic Approach." *The Journal of Political Economy* 76: 169–217.

Bell, Brian, and Machin, Stephen. 2011. *The Impact of Migration on Crime and Victimisation*. London: Centre for Economic Performance, LSE.

Bell, Brian, Machin, Stephen, and Fasani, Francesco. 2010. *Crime and Immigration: Evidence from Large Immigrant Waves*. Bonn: Forschungsinstitut zur Zukunft der Arbeit.

Bianchi, Milo, Buonanno, Paolo, and Pinotti, Paolo. 2008. *Immigration and Crime: An Empirical Analysis*. Rome: Banca d'Italia Working Papers.

Bjerregaard, Beth, and Cochran, John K. 2008. "Want Amid Plenty: Developing and Testing a Cross-National Measure of Anomie." *International Journal of Conflict and Violence*, 2(2): 182 – 193.

Blau, Judith R., and Blau, Peter M. 1982. "The Cost of Inequality: Metropolitan Structure and Violent Crime." *American Sociological Review* 47 (1): 114–129.

Boggess, Lyndsay N., and Hipp, John R. 2010. "Violent Crime, Residential Instability and Mobility: Does the Relationship Differ in Minority Neighborhoods?." *Journal of Quantitative Criminology* 26: 351–370.

Borjas, George J. 2003. "The Labor Demand Curve is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market." *Quarterly Journal of Economics* 118(4): 1335–1374.

Bovenkerk, Frank, and Fokkema, Tineke. 2015. "Criminaliteit onder Marokkaanse Jongemannen in Nederland: Speelt Regionale Herkomst een Rol?." *Tijdschrift voor Criminologie*, 57(1): 59-83.

Buonanno, Paolo. 2006. "Crime and Labour Market Opportunities in Italy (1993–2002)." *Labour* 20(4): 601–624.

Burgess, Robert L., and Akers, Ronald L. 1966. "A Differential Association-Reinforcement Theory of Criminal Behavior." *Social Problems* 14(2): 128–147.

Butcher, Kristin F., and Piehl, Anne Morrison. 1998. "Cross-City Evidence on the Relationship between Immigration and Crime." *Journal of Policy Analysis and Management* 17(3): 457–493.

Calavita, Kitty. 2005. *Immigrants at the Margins: Law Race, and Exclusion in Southern Europe*. Cambridge: Cambridge University Press.

Cantor, David, and Land, Kenneth. 1985. "Unemployment and Crime Rates in the Post World War II United States: A Theoretical and Empirical Analysis." *American Sociological Review* 50(3): 317–332.

Cantor, David, and Land, Kenneth. 2001. "Unemployment and Crime Rate Fluctuations: A Comment on Greenberg." *Journal of Quantitative Criminology* 17(4): 329–342.

Card, David. 2001. "Immigrant Inflows, Native Outflows, and the Local Market Impacts of Higher Immigration." *Journal of Labor Economics* 19: 22–64.

Dijk, Jan, van, Kesteren, John, van, and Smit, Paul. (2007). *Criminal victimisation in international perspective*. Den Haag: WODC.

DiPietro, Stephanie M., and McGloin, Jean Marie. 2012. "Differential Susceptibility? Immigrant Youth and Peer Influence." *Criminology* 50(3): 711–742.

Entorf, Horst, and Spengler, Hannes. 2000. "Socioeconomic and Demographic Factors of Crime in Germany: Evidence from Panel Data of the German States." *International Review of Law and Economics* 20: 75–106.

Francis, Ronald D. 2014. *Birthplace, Migration and Crime*. Houndmills, Basingstoke: Palgrave Macmillan.

Goldstein, Paul J. 1985. "The Drugs/Violence Nexus: A Tripartite Conceptual Framework." *Journal of Drug Issues* 13: 493–506.

Gwartney, James, Lawson, Robert, and Hall, Joshua. 2013. *Economic Freedom of the World*. Vancouver, B.C.: Fraser Institute

Hagan, John, Levi, Ron, and Dinovitzer, Ronit. 2008. "The Symbolic Violence of the Crime–Immigration Nexus: Migrant Mythologies in the Americas." *Criminology & Public Policy* 7(1): 95–112.

Hale, Chris. 1998. "Crime and the Business Cycle in Post-War Britain Revisited." *British Journal of Criminology* 38(4): 681–698.

Haynie, Dana L., and South, Scott J. 2005. "Residential Mobility and Adolescent Violence." *Social Forces* 84(1): 361–374.

Hebberecht, Patrick. 1997. "Minorities, Crime and Criminal Justice in Belgium." Pp. 151–174 in *Minorities, Migrants and Crime*, edited by Ineke Haen Marshall. Thousand Oaks, Cal.: Sage.

Herzog, Sergio. 2009. "Ethnic and Immigrant Residential Concentration, and Crime Rates." *Journal of Criminal Justice* 37: 427–434.

Hirschi, Travis, and Gottfredson, Michael. 1983. "Age and the Explanation of Crime." *The American Journal of Sociology* 89(3): 552–584.

Hooghe, Marc, Vanhoutte, Bram, Hardyns, Wim, and Birca, Tuba. 2011. "Unemployment, Inequality, Poverty and Crime: Spatial Distribution Patterns of Criminal Acts in Belgium, 2001–06." *British Journal of Criminology* 51(1): 1-20.

Jayet, Hubert, and Ukrayinchuk, Nadiya. 2007. "La Localisation des Immigrants en France : Une Première Approche." *Revue d'Économie Régionale & Urbaine* (4): 625-649.

Johnson, Bruce D., Wish Eric D., Schmeidler James, and Huizinga, David. 1991. "Concentration of Delinquent Offending: Serious Drug Involvement and High Delinquency Rates." *Journal of Drug Issues* 21(2): 205–229.

Junger, Marianne. 1989. "Ethnic Minorities, Crime and Public Policy." Pp. 142–173 in *Crime and Criminal Policy in Europe*, edited by Roger Hood. Oxford: University of Oxford.

Junger-Tas, Josine. 1985. *Young Immigrants in the Netherlands and their Contacts with the Police*. The Hague: Ministry of Justice.

Junger-Tas, Josine. 2001. "Ethnic Minorities, Social Integration and Crime." *European Journal on Criminal Policy and Research* 9: 5–29.

Karstedt, Susanne. 2001. "Comparing Cultures, Comparing Crime." *Crime, Law & Social Change*, 36: 285-308.

Killias, Martin. 1989. "Criminality among Second-Generation Immigrants in Western Europe: A Review of the Evidence." *Criminal Justice Review* 14(1): 13–42.

Killias, Martin. 1997. "Immigrants, Crime and Criminal Justice in Switzerland." Pp. 375–405 in *Ethnicity, Crime and Immigration*, edited by Michael Tonry. Chicago and London: The University of Chicago Press.

Lagrange, Hugues. 2010. *Le Déni des Cultures.* Paris: Le Seuil.

Landesco, John. 1968. *Organized Crime in Chicago*. Chicago: The Chicago University Press.

Leerkes, Arjen, Engbersen, Godfried, and van der Leun, Joanne. 2012. "Crime among Irregular Immigrants and the Influence of Internal Border Control." *Crime Law Social Change* 58(1):15–38.

MacDonald, John M., Hipp, John R., and Gill, Charlotte. 2013. "The Effects of Immigrant Concentration on Changes in Neighborhood Crime Rates." *Journal of Quantitative Criminology*, 29:191–215.

Marselli, Riccardo, and Vannini, Marco. 1999. *Economia della Criminalità.* Torino: UTET.

Marshall, Ineke Haen (ed.). 1997. *Minorities, Migrants and Crime*. Thousand Oaks, Cal.: Sage.

Martinez, Jr., Ramiro, Stowell, Jacob I., and Lee, Matthew T. 2010. "Immigration and Crime in an Era of Transformation: A Longitudinal Analysis of Homicides in San Diego Neighborhoods, 1980–2000." *Criminology* 48(3): 797–829.

Merton, Robert K. 1949. *Social Theory and Social Structure*. Glencoe, Ill.: The Free Press.

Messner, Steven F., Raffalovich, Lawrence E., and Sutton, Gretchen M. 2010. "Poverty, Infant Mortality, and Homicide Rates in Cross-National Perspective: Assessments of Criterion and Construct Validity." *Criminology* 48(2): 509–537.

Natale, Luisa. 1988. "Stranieri e Criminalità: Alcune Considerazioni Basate su un'Analisi Strutturale." *Rivista Italiana di Economia, Demografia e Statistica* XLII(3–4): 133–150.

Neumayer, Eric. 2006. *Is Inequality Really a Major Cause of Violent Crime? Evidence from a Cross-National Panel of Robbery and Violent Theft Rates*. London: LSE Research Online.

O'Nolan, Caroline. 2011. "Penal Populations in a World in Motion: The Case of the Republic of Ireland (ROI)." *The Howard Journal of Criminal Justice* 50(4): 371–392.

OECD. 2004. *Trends in International Migration: SOPEMI 2003*. Paris: OECD.

OECD. 2011. *International Migration Outlook: SOPEMI 2011*, Paris: OECD.

Ousey, Graham C., and Kubrin, Charis E. 2009. "Exploring the Connection between Immigration and Violent Crime Rates in U.S. Cities, 1980–2000." *Social Problems* 56(3): 447–473.

Paoli, Letizia, and Reuter, Peter. 2008. "Drug Trafficking and Ethnic Minorities in Western Europe". *European Journal of Criminology* 5(1): 13-37.

Phillips, Julie, and Land, Kennet. 2012. "The Link between Unemployment and Crime Rate Fluctuations: An Analysis at the County, State, and National Levels." *Social Science Research* 41: 681–694.

Pridemore, William A. 2008. "A Methodological Addition to the Cross-National Empirical Literature on Social Structure and Homicide: A First Test of the Poverty-Homicide Thesis." *Criminology* 46(1): 133–154.

Putnam, Robert D. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, N.J.: Princeton University Press.

Reich, Kestin. 2006. "Immigration and Juvenile Delinquency in Germany." Pp. 89-102 in *Migration, Culture Conflict, Crime and Terrorism*, edited by Joshua D. Freilich and Rob T. Guerette. Aldershot: Ashgate.

Reid, Lesley W., Weiss, Harald E., Adelman, Robert M., and Jaret, Charles (2005). "The Immigration-Crime Relationship: Evidence across US Metropolitan Areas." *Social Science Research* 34: 757-780.

Robinson, William S. 1950. "Ecological Correlations and the Behavior of Individuals." *American Sociological Review* 15(3): 351–357.

Rumbaut, Rubén G., and Ewing, Walter A. 2007. *The Myth of Immigrant Criminality and the Paradox of Assimilation*. Washington, DC: American Immigration Law Foundation.

Salt, John. 2000. "Trafficking and Human Smuggling: A European Perspective." *International Migration*, 38(3): 31–56.

Sampson, Robert J. 2008. "Rethinking Crime and Immigration." *Contexts*, 7(1): 28–33.

Sampson, Robert J., and Groves, W. Byron. 1989. "Community Structure and Crime: Testing Social-Disorganization Theory." *American Journal of Sociology* 94(4): 774–802.

Sampson, Robert J., and Wilson, William Julius. 1995. "Toward a Theory of Race, Crime, and Urban Inequality." Pp. 177–189 in *Crime and Inequality*, edited by John Hagan and Ruth D. Peterson. Stanford, Cal.: Stanford University Press.

Shihadeh, Edward S., and Barranco, Raymond E. 2010. "Latino Employment and Black Violence: The Unintended Consequence of U.S. Immigration Policy." *Social Forces* 88 (3): 1393–1420.

Solivetti, Luigi M. 2010. *Immigration, Social Integration and Crime: A Cross-National Approach*. Abingdon – New York: Routledge.

Spenkuch, Jörg L. 2014. "Understanding the Impact of Immigration on Crime." *American Law and Economics Review* 16(1): 177–219.

Stowell, Jacob I., Messner, Steven F., McGeever, Kelly F., and Raffalovich, Lawrence E. 2009. "Immigration and the Recent Crime Drop in the U.S.: A Pooled, Cross-sectional Time-series Analysis of Metropolitan Areas." *Criminology* 47: 889–928.

Sutherland, Edwin H. 1924. *Criminology*. Philadelphia: Lippincott.

Tonry, Michael (ed.). 1997. *Ethnicity, Crime and Immigration: Comparative and Cross-National Perspectives*. Chicago and London: The University of Chicago Press.

Tournier, Pierre, and Robert, Philippe. 1989. "Migrations et Délinquances: Les Étrangers dans les Statistiques Pénales." *Revue Européenne des Migrations Internationales* 5(3): 5–31.

Vaillant, Nicolas, and Dervaux, Benoît. 2008. *La Dissuasion des Homicides Volontaires: Une Analyse Économétrique sur Données de Panel Françaises*. Lille: Université Catholique de Lille.

Vaughn, Michael G., Salas-Wright, Christopher P., DeLisi, Matt, and Maynard, Brandy R. 2014. "The Immigrant Paradox." *Social Psychiatry and Psychiatric Epidemiology,* 49(7): 1129–1137.

von Hofer, Hanns, Sarnecki, Jerzy, and Tham, Henrik. 1997. "Minorities, Crime, and Criminal Justice in Sweden." Pp. 62–85 in *Minorities, Migrants and Crime*, edited by Ineke Haen Marshall. Thousand Oaks, Cal.: Sage.

von Hofer, Hanns, and Tham, Henrik. 2000. "Theft in Sweden 1831–1998." *Journal of Scandinavian Studies in Criminology and Crime Prevention* 1(2): 195–210.

Yeager, Matthew G. 1996. *Immigrants and Criminality: A Meta Survey*. Ottawa: Government of Canada.

Zhou, Min and Carl L. Bankston III. 1998. *Growing up American: How Vietnamese Children Adapt to Life in the United States*. New York: Russell Sage.