



Social Cohesion Indicators Flanders

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A Spatial Analysis of Belgian National Crime Records, 2001-2005.

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Abstract

In this paper, we investigate the occurrence of criminal acts at the community level in Belgium for the 2001-2005 period. Multivariate analysis shows that income levels do not have a significant effect on the occurrence of property crime, violent crime or homicide. Rather unemployment figures prove to be the strongest determinant of crime rates in general. Contrary to what has been shown by US research, we did not detect any patterns for homicide, an act that seems to be randomly spread across the territory.

Introduction

Explaining spatial diffusion patterns of crime is a continuing concern within criminology. Traditionally it has been argued that economic deprivation and inequality are positively correlated to the occurrence of criminal acts (Blau and Blau, 1982; Sampson, 1985). More specifically we want to investigate whether poverty, inequality or unemployment can be regarded as the strongest predictors for crime rates. Our hypothesis in this analysis is that inequality has a stronger effect on crime rates than absolute levels of poverty (Blau and Blau, 1982). We also pay special attention to the effects of unemployment. While previous studies have shown that unemployment has strong effects on crime in countries with a conservative social security system (and thus restrictive rules on unemployment allocations), there is less evidence available on the effect of unemployment in countries with a more generous social security system. Since Belgium clearly belongs to this latter category (e.g., unemployment benefits are not restricted in time), we can assume that the Belgian data are especially relevant in this regard.

Unemployment and (Relative) Poverty

The study of local differences in crime rates can be seen as one of the oldest research questions within the field of criminology. Already from the early days of the Chicago school, a concentration of economic disadvantage was assumed to be a key element in the occurrence of crime (Park and Burgess, 1924). In addition, in more recent research various authors have claimed that the quality of neighbourhood relations can be a key factor in explaining the concentration of crime and delinquency (Sampson and Groves, 1989; Sampson, Raudenbush and Earls, 1997). Within the literature, however, there is a dispute over the question whether absolute poverty, income inequality or rather unemployment levels should be held responsible for high crime rates in a community.

The fact that we find strong relations between poverty indicators and crime rates, however, does not inform us yet about the causal mechanism that might be responsible for this relations. As Sampson (2002, 216) argues, the central question is: “why does concentrated poverty, which is after all the concentration of poor *people*, matter?”. We can assume that economic disadvantage and social exclusion has a harmful impact on the social organization of a community, as it erodes networks of solidarity and trust (Sampson and Morenoff, 2004). These processes, in turn, reduce the collective efficacy of a local community as they prevent the community from maintaining a high level of social control.

Hypotheses

To test our hypotheses, we will rely on nation-wide crime figures for Belgium that only recently have become available for scientific research. Since 2001 a uniform crime recording protocol has been used by the Belgian police force, and this leads to a reliable measurement of registered crime in the country. Belgium is a small country in Western Europe, with a population of 10,540,000 inhabitants. The country is divided in 589 municipalities, with on average 17,900 inhabitants. The municipality, therefore, can be considered not only as an important political and administrative unit, we can also claim that the average scale of a municipality still allows for a feeling of ‘community’ among the inhabitants of that municipality.

The hypotheses to be tested in this article are thus rather straightforward:

H1. Crime rates will be higher in communities with high levels of income inequality

H2. Crime rates will be higher in communities with high unemployment figures.

We also assume that this relationship will be valid for various forms of criminal acts. Self-evidently, the specific nature of our data implies that we include a sufficient number of control variables in order to arrive at a fully specified model. Most studies on the spatial diffusion of crime focus only on metropolitan or urban areas. Since our data were collected across the entire territory of a country, we are confronted with data from both rural and urban areas. Rural crime is generally understudied in criminology, but it is safe to assume that crime rates will be dramatically lower in rural areas than in the urban regions of Belgium (Wells and Weisheit, 2004). Various control variables therefore had to be included to be able to accommodate these sharp differences.

In line with the insights from ‘new economic geography’, we can also assume that crime is subject to a dynamic of spatial diffusion, according to core-periphery relations. Although it

has to be acknowledged that Belgium is just a small country, we considered it useful to test the spatial diffusion of criminal activities according to a core-periphery model. This thesis can be operationalized in an efficient manner since the capital Brussels is not just situated in the geographical centre of the country, but Brussels can also be considered as the economic center of the country, with a concentration of economic activity, population density (10 per cent of the total population), and a concentration of transportation infrastructure (highways, rail road, and the international airport of Brussels). We therefore can assume that proximity to the capital of Brussels can be used to operationalize the core-periphery concept.

Data and methods

It is only recently that uniform crime data have become available for the entire territory of Belgium. Before the year 2001, these data were assembled on a local or regional level, and the data were not always comparable (Pauwels, 2007). New procedures were implemented from 2001 on, and although self-evidently the black number of unreported or unregistered crime acts still remains a crucial problem, we can be confident that these data allow us a reliable overview of registered crime in Belgium.

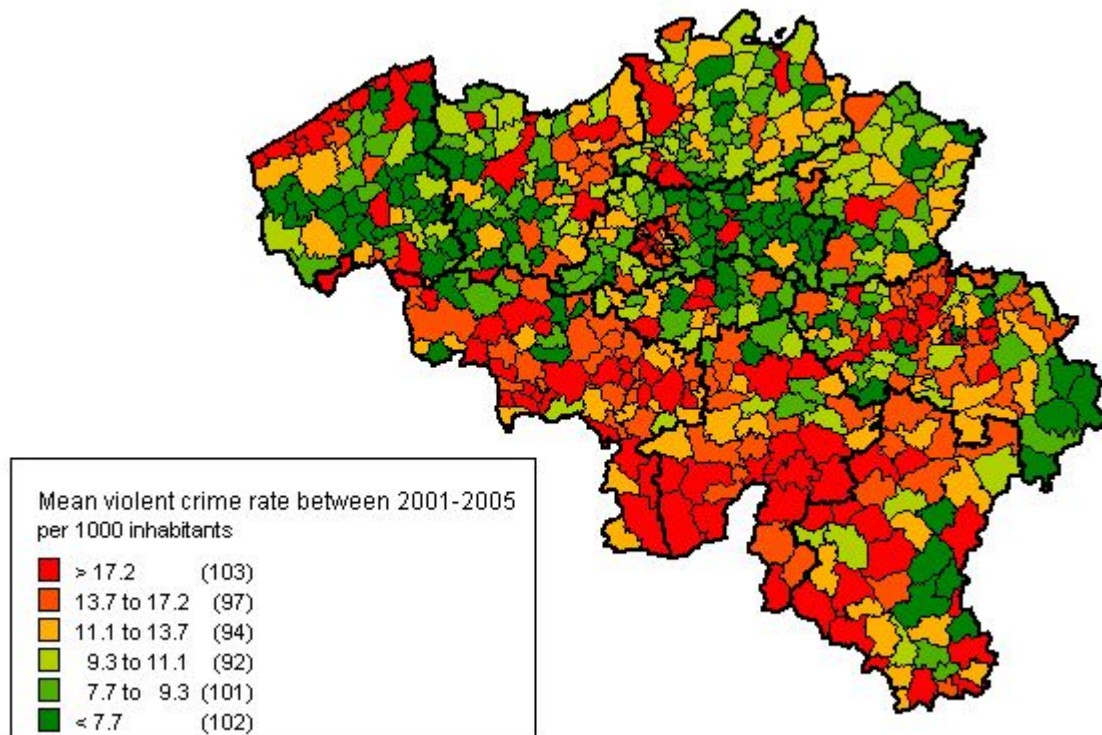
In line with the literature, we will introduce a distinction between violent crime, property crime and homicide (Wikström, 1991; Byrne, 1986). In the Belgian police records, and in according with the Belgian criminal code, violent crime refers to the acts of ‘intentional assault and battery’, ‘vandalism’ (whether aimed at cars or other material goods) and ‘destruction and damaging’. Property crime refers to theft from motor vehicles, stealing motor vehicles and burglary. Homicide refers to the act of murder, and the occurrence of homicide will be treated separately, both for theoretical reasons as for the fact that it does allow us to develop a control on the dark number phenomenon. It can be safely assumed that every case of homicide is indeed reported and registered in the Belgian context.

While these three crime measurements are strongly correlated, both theoretically and empirically it makes sense to distinguish them in the analysis.

It is believed that these three different kinds of crimes will have different patterns of geographical concentration (Kowalski, 1979; Kposowa et al, 1995).

At this moment, the data are available for the years 2001 to 2005. Since we have only five observations, we cannot conduct a reliable trend analysis. In order to take account of temporary variations, we pooled the data for these five observations, so that the crime rate for every municipality is composed of the average of five different observations. Self-evidently, for every single year the crime rate has been calculated using the population figure for that specific year. Figure 1 demonstrates there is a considerable amount of local variation on violent crime in Belgium.

Figure 1: Spatial Distribution of Violent Crime



Note: Violent crime rates, averages 2001-2005 for 589 Belgian municipalities. Source: Belgian Federal Police, Operational police information.

Building the Model

As dependent variables, we include the three crime rates that we have developed. Since this is a continuous variable, we can use ordinary least square regression models.

For the independent variables, we will include both absolute and relative economic deprivation indicators. For poverty, we use data derived from the Belgian tax administration, documenting the average fiscal revenue in a municipality, for the period 2001-2005. Within the literature there is some controversy on how poverty or income levels can best be measured (Wellford, 1974; Watts and Watts, 1981; Beasley and Antunes, 1974; Mladenka and Hill, 1976). In this study, we use the median income in the municipality as an indicator for income. In other models, we tested poverty using the average income, but this did not lead to substantially different results.

For relative poverty, we relied on the same fiscal data that also include a measurement of income variation within the municipality. For reasons of privacy, we did not get access to all the data on incomes within a municipality, and full gini coefficients are therefore not available for every municipality. But we did obtain a quartile coefficient of dispersion, or coefficient of quartile variation in incomes in the municipality. The interquartile range (IQR) is the distance between the 75th percentile (Q3) of all incomes and the 25th percentile (Q1). The formula in this case is: $CQV = (Q3 - Q1) / (Q3 + Q1)$.

Finally, we also include the unemployment rate as a proxy variable for relative poverty and social exclusion. The underlying logic here is that poverty is not necessarily limited to a lack

of financial resources, but in general can be considered as an exclusion from meaningful social interaction, most notably paid work. The unemployment rate is provided by the State Institute for Labor, and is expressed as the percentage of unemployment works compared to the total labor force.

In order to arrive at fully specified models, we also needed to include various control variables, regarding demography, urbanization and geographical position.

With regard to demographics, we include the percentage of young inhabitants as a control variable. Our inclusion of this variable is based on the previous finding that some crimes are disproportionately being performed by young people or even by juveniles (Cohen, 1955; Sykes and Matza, 1957; Miller, 1958; Cloward and Ohlin, 1960). 1996). Since the demographic figures on Belgian municipalities are provided by 5 year intervals, we opted for a pragmatic solution by testing which cut off point works best. After testing the age limits of 19, 24, 29 and 34 years, the preliminary analysis showed that including the percentage of inhabitants between 15 and 34 years old shows the strongest relation with crime rates.

One of the most straightforward operationalizations of urbanisation could be the number of inhabitants. A problem however is that some of the larger agglomerations in Belgium for political reasons are divided in small autonomous municipalities. The Brussels agglomeration, e.g., with some 1,000,000 inhabitants, is divided in 19 separate and sometimes small municipalities. Therefore we opted for 'population density' as an indicator for urbanization, by dividing the population by the surface of the municipality.

In line with the core-periphery theory, we include the distance to the economic and geographical centre of Brussels as a indicator for the accessibility of the municipality. Given the fact that most highways and railroads in the country radiate from that geographical centre, we can assume that for criminal activities too, Brussels will function as a major transport hub. Some literature suggests that the presence of non-nationals too will be associated with high levels of crime (Valier 2003). Although by no means this relation should be taken as having been firmly established (Sampson 2008), we still considered it safe to include the percentage of foreigners (i.e., non-Belgians) in the total population as a control variable in our models. Finally, a typical Belgian feature is that Belgium is a federal country, with strong autonomous regions. To control for the possible effect of regional policy differences, we included a dummy variable to indicate whether the municipality belongs to the Walloon, the Brussels or the Flemish autonomous region.

The level of analysis is the municipality. Not only is this level sufficiently small to assume that a municipality still reflects a real community, it also should be remembered that local mayors have some authority on police policy in their municipality. As such, the municipality can be seen as a natural entity for this form of analysis.

Results of the Analysis

Table 1: Explaining Property Crime Rates in Belgian Municipalities

	Model I			Model II		
	B	Std. Error	Beta	B	Std. Error	Beta
Median income	.001	.000	-.154***	.001	.000	.039
Income Inequality	.074	.028	.092**	.147	.025	.184***
Unemployment Rate				.589	.052	.424***
Population rate for ages 15-34	.031	.015	.063*	.036	.014	.074**
Population Density	.002	.000	.357***	.002	.000	.331***
Distance to Brussels	-.057	.007	-.269***	-.030	.006	-.139***
Percentage non-nationals				.035	.004	.261***
Region: Flanders	-6.158	.547	-.350***			
Region: Brussels	6.291	2.400	.127***			
(Constant)	16.579	5.016		22.066	.398	
Explained variance (adj. r2)	.596			.657		

Entries are result of an OLS regression analysis at the level of the municipality. Dependent variable: average property crime rate, 2001-2005. Sig. : *<.05; **<.01; ***<.001. n= 589.

When building our first model on property crime rates, we are immediately confronted with a problem of multicollinearity, as often happens if one uses community level variables. Therefore, it proved to be impossible to build stable models including all the relevant variables simultaneously. More specifically, the region and the unemployment rate seemed to correlate too strongly, so we had to include them in different models. The analysis proceeds in two distinct steps (Models I and II in Table 1), and in these models, the multicollinearity statistics do not prove a problem. The first model in Table 1 suggests that absolute poverty and income inequality have an equally strong effect on property crime rates. Most of the control variables show the effects that we expected, with higher crime rates in urban, densely populated regions and in the area surrounding Brussels. In the Dutch speaking area in the north of the country, property crime rates are remarkably lower.

If we include the unemployment rate (Model II in Table 1) in our models, we can observe that the explained variance rises substantially. Unemployment rates prove to be the most important determinant of property crime, and the effect of absolute poverty even completely disappears. The control variables on population density and geographical position keep most of their original strength. This first analysis, therefore, suggests that unemployment and income inequality have a much stronger effect on property crime rates than absolute income levels.

Table 2: Explaining Violent Crime Rates in Belgian Municipalities

	Model I			Model II		
	B	Std. Error	Beta	B	Std. Error	Beta
Median income	-.001	.000	-.350***	.000	.000	-.077
Income Inequality	-.105	.021	-.220***	-.079	.019	-.165***
Unemployment Rate				.416	.039	.500***
Population rate for ages 15-34	-.006	.011	-.020	-.004	.010	-.012
Population Density	.000	.000	.170**	.000	.000	.058
Distance to Brussels	-.016	.005	-.128**	-.003	.005	-.020
Non-nationals				.004	.003	.047
Region Flanders	-2.350	.441	-.223***			
Region Brussels	-2.662	1.805	-.090			
Cte.	44.600	3.773		20.370	4.076	
Explained Variance (adj. r ²)	.362			.454		

Entries are result of an OLS regression analysis at the level of the municipality. Dependent variable: average violent crime rate, 2001-2005. Sig. : *<.05; **<.01; ***<.001. n= 589.

When turning to the violent crime rate (Table 2), we follow the same model of analysis, given the same constraints of multicollinearity. Here, the initial effect of a low median income (Model I) disappears if we include the unemployment rate. Unemployment indeed seems to have a strong effect on violent crime rates, with a standardized coefficient of .50. This effect is so particularly strong, that even population density and the percentage of foreigners no longer seem to be related to the violent crime rate in Belgian municipalities. For violent crime, too, therefore, it seems that unemployment is a crucial element, and not the absolute level of the median income in a municipality.

The models for homicide, however, proved to be a major disappointment from a statistical point of view. While in other countries, meaningful concentrations of murder or homicide can be detected and analyzed, we have to conclude that the models for homicide arrive at an explained variance of no more than .02 or .03. In fact, only the percentage of young people reaches some sort of significance, at the .05 level. All other indicators that proved to be so successful in explaining property and violent crime rates do not have a bearing on homicide rates. This is quite remarkable, since research in the large metropolitan areas of the United States repeatedly has shown that exactly the same explanations that are valid for property and violent crime, also have a bearing on homicide. For Belgium, at least, this proves not to be the case, and the frequency of homicide seems totally unrelated to all other major crime acts. To put it differently: homicide is randomly distributed across Belgian society. Anecdotal evidence indeed suggests that the bulk of all murder cases in Belgium is not related to any other criminal activity, but occurs within the context of family or relational problems.

Therefore, it can be safely assumed that in reality, homicide is not related to other forms of criminal behavior. By itself, this is an interesting finding, since homicide is often used as an indicator for overall unsafety. Maybe this is a valid reasoning in countries with high homicide rates, where murder is often related to other forms of crime. But in countries with low homicide rates, homicide seems to be a totally different phenomenon.

Discussion

In the current paper, we have tried to apply some of the well-established theories on the occurrence of crime to the situation on Belgium. As far as we know, there are very few countries where a comprehensive and state-wide system of uniform crime registration exists in this manner.

Our main conclusion is that absolute poverty does not seem to be the most important determinant of crime levels at the community level. Rather, unemployment figures do have a very strong effect on almost all forms of criminal behavior. Only for homicide rates, we did not find any meaningful relation.

We believe our findings have a number of theoretical and policy consequences. On a theoretical level, it might suggest that some of the earlier conclusions on (relative) poverty might be drawn too rapidly. Since we can assume that unemployment will lead to larger income gaps within a community, the effect of relative poverty might become spurious once we take into effect adequate controls for unemployment. Furthermore, it has to be acknowledged that the effects of unemployment are not just financial. Earlier research has shown that those who are unemployed, can also be confronted with a lack of purpose in their lives, a feeling of rejection and the trauma of no longer having a socially accepted role in life. All these social and psychological element might explain why a criminal option might be a more attractive option in those circumstances. It has to be remembered, however, that our analysis was based on community level data, so we should also take into account community level effects of unemployment. On a more structural level, we can point to the fact that the unemployed often are structurally available for other forms of economic activities, given the fact that they are not confronted with time demands from the labour market. In future research, the precise causal mechanism, linking crime acts and unemployment should be further investigated.

On a policy level, the main conclusion could be that especially unemployment can be considered as harmful for the order and cohesion within a society. While earlier studies have focused on poverty, most authorities, especially at the local level, will have a hard time to reduce poverty within their region. Income inequality, too, might not always be easily influenced by some simple policy measures. Both regional as national authorities, however, do have a number of policy mechanisms available to reduce unemployment within their region. The current analysis would seem to suggest that reducing unemployment levels is not just beneficial from an economic point of view, but that this might also have a number of social benefits, as it is associated with a reinforced social order. We do not wish to enter the perennial debate about economic and repressive approaches to the crime problem. But the current analysis seems to suggest that crime reduction is not just a matter of demographics or repression, but is also strongly correlated with socio-economic variables at the community level.

We want to close with a rather methodological note. In US research, homicide is often treated as the quintessential crime, and it can be considered as representative for a whole complex of

criminal acts. In large metropolitan areas of the United States, homicide indeed seems to be correlated to burglary, assault and other elements of gang related crime. Belgium has a far lower homicide rate than the United States, and in this respect it is typical of Western European countries. Within the context of low homicide rates, murder does not seem to be a typical crime after all, on the contrary. Property and violent crimes in Belgium seem to obey to a well-defined logic, with a concentration in deprived urban areas with a high unemployment rate. Homicide, on the contrary is spread randomly across the territory. Contrary to what is often assumed, in Belgium homicide does not seem to be a collineary attribute to other forms of criminal behavior. As such, it merits a completely different study approach than is the case in US studies.

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