What determines crime rates? An empirical test of integrated economic and sociological theories of criminal behavior

Peter-Jan Engelen [a,*], Michel W. Lander [b], Marc van Essen [c]

[a] *Utrecht University, The Netherlands*
[b] *HEC Paris, France*
[c] *University of St. Gallen, Switzerland*

A B S T R A C T

Research on crime has by no means reached a definitive conclusion on which factors are related to crime rates. We contribute to the crime literature by providing an integrated empirical model of economic and sociological theories of criminal behavior and by using a very comprehensive set of economic, social as well as demographic explanatory variables. We use panel data techniques to estimate this integrated crime model for property and violent crime using the entire population of all 100 counties in North Carolina for the years 2001–2005. Both fields contribute to the explanatory power of the integrated model. Our results support the economic explanation of crime with respect to the deterrent effect of the probabilities of arrest and imprisonment concerns, as well as the time allocation model of criminal activities. In contrast, the integrated model seems to reject the impact of the severity of punishment on crime levels. With respect to the sociological theories of crime, we find most support for the social disorganization theory and for the routine activity theory. Finally, we find differences between property and violent crimes, mostly explained by the sociological models.

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1. Introduction

Sociologists and economists alike have a long standing research interest in which factors are associated with crime rates. Traditionally, sociologists have sought to explain crime levels through the exploration of the influence of social structures and institutions. For instance, sociologists connect crime to social subcultures or social disorganization. In order to understand the dynamics of crime deterrence, some sociological research uses a person's predisposition as determinant and focuses on the unique individual motivations for engaging in illegal activities (Lilly, Cullen, & Ball, 2002). As this type of research often involves data at the individual level, it is not used in sociological research focusing on higher levels such as work on county or country level. When looking to these macro levels, the predominantly used theories are the social disorganization, routine activity theory, structural strain and deprivation theories (Miethe, Hughes, & McDowall, 1991).

Economists approach this policy question from a completely different perspective and focus on efficiency grounds by looking at costs and benefits and determining the optimal amount of enforcement. "During the last 30 years economists have invaded the [criminological] field using their all-embracing model of individual rational behavior, where a criminal act is preferred and chosen if the total pay-off, including that of sanctions and other costs, is higher than that of legal alternatives." (Eide, 2000,

* Corresponding author at: Utrecht University, School of Economics, Kriekenpitplein 21-22, 3584EC Utrecht, The Netherlands.
Tel.: +31 30 253 99 43.
E-mail address: p.j.engelen@uu.nl (P.-J. Engelen).

p. 345). The economic analysis of crime goes back to the seminal article of Becker (1968), in which he sought to explain crime through an economics lens in search of the most efficient way to combat crime. Becker (1968) showed that the probability of arrest and the severity of punishment had a strong deterring effect on crime. The stream of research that used Becker's work as a template became known as the economic approach to crime. Later Ehrlich (1973) expanded this model by showing that opportunity costs to engage in illegal activities are also determinants of criminal behavior. In his model Ehrlich not only took into account the cost of punishments, but he also incorporated the potential returns of illegitimate versus legitimate activities. In this, the presence of job opportunities and job compensation levels became important. Ehrlich and many subsequent scholars in effect no longer tried to uncover the optimal levels of punishment but rather focused on the question whether punishment in itself had a deterring effect on crime (Ehrlich, 1996; Pratt & Cullen, 2005).

Both the economic and the sociological explanations of crime have been developed separately from each other. Albeit there have been some previous integration attempts (Gibbs, 1975; Tittle, 1995), the number of comparative tests remains very small. Saridakis and Spengler (2012, p. 173) therefore suggest that further research should start expanding current economic models to better explain criminal behavior in two directions: "[a] For example, violent crime may be better explained in the context of sociological and criminological theories of crime and therefore, theoretical integration may help better understand violent behavior. [. . .] [b] The availability of more informative macro panel data may also provide further insights." We take up both calls for extending the current literature by using a comprehensive set of explanatory variables and by integrating economic and sociological theories of criminal behavior.

We contribute to the literature in four ways. First, we construct a new, rich database containing data from all 100 counties in the state of North Carolina for the period 2001–2005 and collect data on 22 explanatory variables. This new informative panel data set is much richer than existing empirical economic studies, which typically use less than half the amount of explanatory variables we use. For instance, Saridakis and Spengler (2012) only use four variables, while Entorf and Winker (2008) use eight variables and Buonanno and Montolio (2008) use 10 variables. Because of the longitudinal nature of the dataset and the measurement model employed we will be able to control for unobserved heterogeneity, a methodological issue often neglected in earlier research.

Second, we use a detailed set of deterrence variables. Confronted with concerns about the empirical validation of the deterrence hypothesis (Cornwell & Trumbull, 1994), later economic empirical studies focused on adding socioeconomic and demographic variables. While this literature has its merit in enriching the economic models, they often ignored data on deterrence variables (Altindag, 2012; Ochsen, 2010) or simplified the full set of deterrence variables to only one variable (Entorf & Spengler, 2000). We use data on arrest rate (clear-up rate), conviction rate, imprisonment rate, as well as data on the severity of punishment

(fines, sentence length, forfeitures, life imprisonment, capital imprisonment) to fully capture the effect of deterrence on crime.

Third, several empirical studies add socioeconomic and demographic variables to their econometric model in an attempt to add more real-life explanatory power to the model, but do so on an ad-hoc basis without clear link to a good theoretical basis (Buonanno & Montolio, 2008). We explicitly embed all our variables into a clear conceptual framework.

Fourth, having a rich macro panel data set combined with linking our explanatory variables to both economic and social sciences' theories allows us to better understand the factors related to criminal behavior. Our article contributes to the current literature by conducting a thorough comparative test of economic and sociological explanations to crime. By using an integrated empirical model incorporating variables from both disciplines, we can test which theoretical models relate to which types of crimes. Besides economic models (Becker, 1968; Ehrlich, 1973), we will include variables drawn from routine activity theory (Cohen & Felson, 1979), social disorganization theory (Shaw & McKay, 1942), strain theory (Merton, 1938), deprivation theory (Blau and Blau, 1982; Bonger, 1969; Lilly et al., 2002), social support theory (Cullen, 1994), and subcultural theory (Gastil, 1971). Gaining insight in the economic and sociological drivers of crime levels in an integrated model is of the utmost importance for policymakers.

Our main findings show that both the economic and the sociological fields contribute to the explanatory power of the integrated model. Our results support the economic explanation of crime with respect to the deterrent effect of the probabilities of arrest and imprisonment, as well as the time allocation model of criminal activities. In contrast, the integrated model seems to reject the impact of the severity of punishment in explaining crime levels. With respect to the sociological theories of crime, we find most support for the social disorganization theory and for the routine activity theory.

This article is organized as follows. First, we provide an overview of the two fields of crime research as well as their respective theoretical framings. Next our dataset, measures and analytical model are presented. This will be followed by a presentation of the results, and their implication for criminal policy.

2. Economic approach to crime

2.1. Deterrence

In the economic approach to investigating crime, deterrence probabilities are of significant importance. Although Becker (1968) aimed to find the optimal level of crime deterrence measures in terms of government involvement, he was the first to introduce the influence of the probabilities of arrest and punishment as a determinant factor in explaining crime.[1] Moreover, he included variables

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[1] Strictly speaking Cesare Beccaria already introduced this idea in 1764.