Nonlinear relationship between income, age and criminal victimization in Brazil[☆]

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Abstract

This study was mainly intended to investigate the effects of the income and age of individuals on their risk of becoming victims of physical assault, theft, robbery and attempted theft or robbery. Specifically, we were looking for evidence for a nonlinear relationship between these variables and victimization risk. Data from a national victimization survey were used to estimate victimization probability models. We found that, except for robbery and physical assault, the relationship between personal income and victimization risk has an inverted-U shape. We also found an inverted U-shape relationship between the age of individuals and victimization risk for the four types of crimes analyzed.

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Resumo

O objetivo principal desse artigo é investigar o efeito da renda e da idade sobre o risco de vitimização para quatro tipos de crime (agressão física, furto, roubo e tentativa de furto ou roubo). Especificamente, buscamos evidências de uma relação não linear entre essas variáveis com o risco de vitimização. Para tanto, utilizamos dados da pesquisa nacional de vitimização realizada em conjunto com a PNAD-2009 para estimar o risco de vitimização. Os resultados sugerem, exceto para roubo e agressão física, a existência de uma relação em forma de U invertido entre o rendimento pessoal e risco de vitimização. Essa mesma relação de U invertido também foi encontrada entre a idade dos indivíduos e o risco de vitimização para os quatro tipos de crimes analisados.

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1. Introduction

Victimization has been a major issue in Brazilian society in recent years. About 10% of the Brazilian population over 10 years old had been victimized by at least one crime between September 2008 and September 2009 (PNAD, 2009). Of these, 5.4% were victims of attempted theft or robbery, 1.5% were physically assaulted, 3.7% were robbed, and 3.9% were victims of theft. In addition, 51% of all people aged 10 or over felt insecure. The fear of being victimized reduces the well-being of individuals and, consequently, the social well-being.[1] It is therefore important to investigate what are the "determinants" of victimization. Routine activities outside one's home increase the risk of victimization and convergence in time and space between victims, criminals, and the absence of police leads to victimization even without changes in the variables that determine criminal behavior (Cohen and Felson, 1979). Based on this concept, Cohen et al. (1981) formalized a "theory" according to which the risk of victimization is determined by five factors: exposure, guardianship, proximity to potential offenders, attractiveness of potential targets, and definitional properties of specific crimes themselves. The first three factors are related to routine and the fourth one is related to the victim's attributes, especially economic attributes.

In previous studies, the determinants of single victimization are usually identified using samples of data which nevertheless have little geographic coverage. In most cases, the sample is restricted to the population of a large city. For example, Gomes and Paz (2008) used a sample made up of some municipalities located in the state of São Paulo; Madalozzo and Furtado (2011), Gomes (2011), Peixoto et al. (2011), Scorzafave et al. (2011) and Justus and Kassouf (2013) used data collected in São Paulo city. Recently, Scorzafave et al. (2015) used data covering Brazil as a whole, focusing on criminal victimization in Brazilian rural areas.

In this context, this article is intended to identify "determinants" of personal victimization by four types of crimes (physical assault, theft, robbery and attempted theft or robbery) using a representative sample for all the Brazilian territory, with specific emphasis on the effects of personal income and age on this process.

Gomes and Paz (2008) and Justus and Kassouf (2013) found evidence supporting the hypothesis that the effect of wealth on victimization risk is positive, but not linear. These results were, however, obtained from samples that were rather limited geographically due to the unavailability of data when they were defined. It will therefore be investigated whether the positive and nonlinear effect of income on victimization holds for a sample covering the entire Brazilian territory with a much greater variability in income distribution.

In the literature, for example, Freeman (1999) points out that a situation in which the income of the richest increases while that of the poorest remains constant does not necessarily lead to greater victimization of the former. The latter can spend more on security devices, thus decreasing their likelihood of falling prey to crime. However, the literature does not focus specifically on analyzing the nonlinearity of the effect of income on victimization, which is one of the main aspects addressed in this article. This aspect is only discussed briefly by a few authors. For example, Gomes and Paz (2008) found that the middle class is the one exposed to the greatest risk of victimization, while for the lower and upper class the risk is less pronounced. Using dummies for household income (Souza and da Cunha, 2015) or logarithms for monthly per capita household income (Justus et al., 2015), recent research found that income affects the risk of victimization and the number of crimes (repeat victimization) of robbery, theft and attempted theft or robbery positively. Our study is therefore intended to identify the effects of personal income on victimization risk by testing the hypothesis that the income–victimization risk curve increases to a peak and then drops off.

With regard to age, it is known, on the one hand, that young people are more prone to crime both as offenders and victims (Sweeten et al., 2013; Spagnol, 2005; Beato et al., 2004; Farrington, 1986). On the other hand, the theory of predatory victimization suggests that older individuals are less exposed to criminals than younger people, especially in connection with property crimes. For this reason, it will also be investigated whether there is a nonlinear relationship between age and risk of victimization. Specifically, we will estimate the age at which the risk of victimization becomes the highest (or the lowest) for each type of crime, i.e. we will estimate an age–victimization risk curve.

The rest of this article is structured as described below. The methodology and the data are presented in Section 2. In this same section we will make a descriptive analysis of the variables of interest. The empirical results are shown in Section 3 and Section 4 concludes the study.

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[1] For a more detailed discussion on the relationship between crime and fear, see, for example, Tseloni and Zarafonitou (2008) and Borges (2013).