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Crime Inequality when Victims Adapt

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Abstract

Crime levels have risen significantly in Argentina during recent years. In this study, we analyze the relationship between crime victimization and income distribution. Our main question is whether the rich or the poor have been the main victims of this crime rise. For home robberies, we found that the poor have suffered the main crime increases. For street robberies, both groups show similar augments in victimization. The findings are consistent with the hypothesis that the rich are better able to protect their houses through private security devices than the poor. Additional evidence supports this interpretation.

JEL: K42
Keywords: Crime victimization, income distribution, private security.

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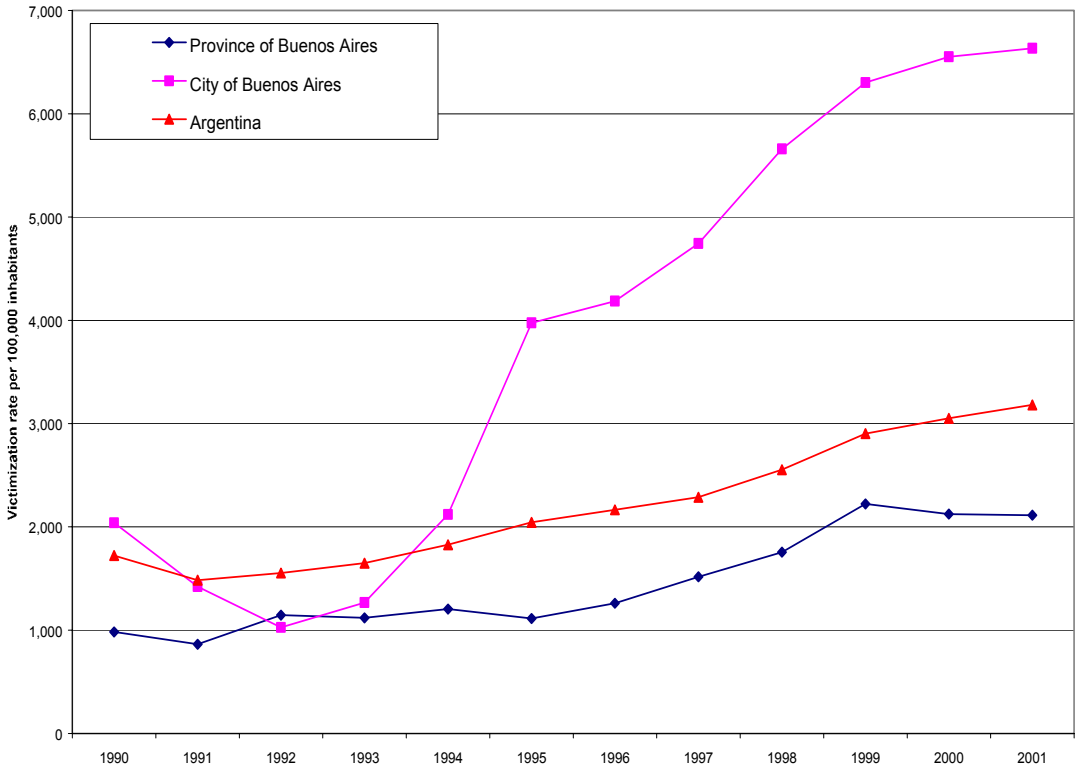
I. Introduction

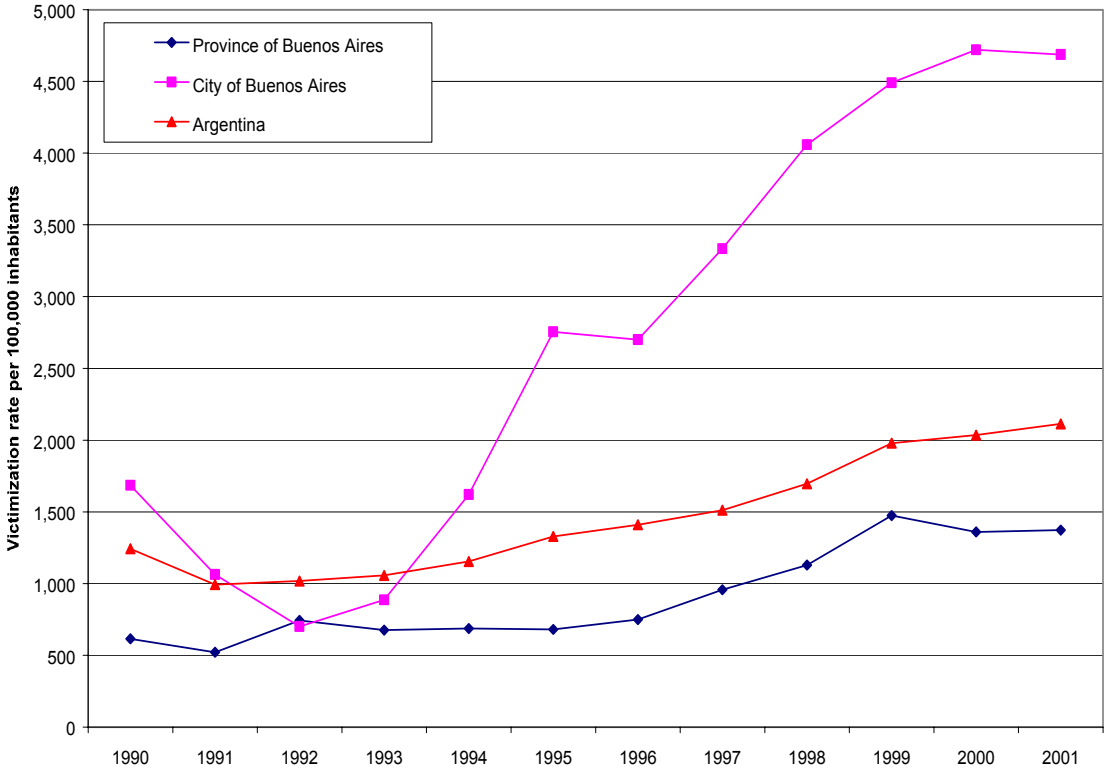
During the 1990s, Argentina suffered drastic increases in crime levels. Official statistics show that reported property crimes increased in Argentina by 93%, from 404,465 in 1990 to 782,784 in 2001, while the number of total crimes more than doubled from 560,240 in 1990 to 1,178,530 in 2001.[1] This increase has been particularly severe in the Province of Buenos Aires, where crime levels tripled, and even more dramatic in the City of Buenos Aires, where they quintupled. Figure 1 and 2 ilustrate the evolution of the total crime and property crime rates per 100,000 unhabitants, for Argentina, the Province of Buenos Aires, and the City of Buenos Aires since 1990.

Figure 1: Total Reported Crime



[1] Fajnzylber, Lederman, and Loayza (1998) report a significant increase in crime throughout the world, including Latin American countries.

Figure 2: Reported Property Crime



Because of victims' tendency to underreport, these figures highly underestimate crime levels. According to a recent victimization survey, 41% of the surveyed people declare to have suffered a crime during 1999, but only 29% of those crimes were reported to the police (Ministerio de Justicia, 2000). In our survey, more than 30% of the people interviewed report that at least one member of his or her household has been robbed during 2001. Another recent survey (Catterberg & Asoc, 2001) shows that 23.7% of the interviewed people declare to have suffered a crime during the past 12 months, and 5.1% during the last month. The figures reach 40.4% and 13.6%, respectively, when the question refers to all the members of the household. Crime has become one of the main concerns of the population according to recent opinion polls (Clarin, April 29, 2001).[2]

[2] In that poll, 74.6% of the surveyed people declare to be concerned about unemployment, 66.3% concerned about crime, and 42.9% concerned about corruption, as the three main population worries. Opinion polls in 17 Latin American countries describe violence as "the region's main social and economic problem" (Londoño and Guerrero, 1999).

The increase in crime rates is a pretty well documented fact. The purpose of our study is to analyze which social groups have been the main victims of this significant increase in crime. In order to address this question empirically, we run a survey on current and past victimization rates and income levels. For home robberies, we found that the poor have suffered the main crime increases. During the first half of the decade, high-income households had suffered a significantly higher victimization rate than low-income households. The difference has now turned non-significant. For street robberies, instead, both groups show similar augments in victimization.

Our findings are consistent with additional evidence showing that the rich are able to protect their houses through private security devices better than the poor. The use of private security devices was highly unusual in Argentina a few years ago. The use of private security in home protection was restricted to a small number of very high-income people. Private neighborhoods with gated access (*barrios privados*) were largely non-existent. With low levels of private protection and a relatively even distribution of public police protection, criminals tended to target high-income booties. However, this reality changed drastically when unemployment and crime started to rise. As the likelihood of becoming the victim of a crime raised, high and middle-income citizens increased the consumption of private security devices. Many high and middle-income neighborhoods have now private security protection and gated access. Homes and cars are now protected by a variety of security devices. Our findings show that high-income groups are more likely than low-income groups to use hire private security guards. However, the ability to use protection devices against street robberies seems to be limited.

If high and middle-income citizens responded to the crime increase by protecting their homes, low-income houses might have suffered the main burden of the crime increase, suggesting the presence of significant negative externalities associated with the use of home security devices. Without a similar ability to hire street protection devices, both rich and poor seem to have suffered a similar increase in street victimization rates.

In the rest of the paper, Section 2 describes the previous literature and its relationship to the empirical exercise that we conduct. Section 3 presents a model that ilustrates the effect of increases in victimization by social groups. Section 4 describes our survey, while the results are presented in Section 5. The last section discusses policy implications and concludes.

II. Literature Review

The relationship between the protection of property rights and income distribution has received considerable attention. However, this attention has mostly focused on analyzing the effect of income distribution on crime levels. In one of the first papers in the crime literature, Ehrlich (1973) pointed out that both theory and empirical evidence suggest a positive correlation between income inequality and crimes against property. Since then, there has been a series of papers that have dealt with this question, either directly or indirectly, using a variety of empirical strategies.

A natural idea is to exploit cross-country variations in income inequality. Most work on crime, however, has been reluctant to make international comparisons. Cross-country studies of crime have important data problems because official crime data is often not comparable across countries. There are differences in underreporting and in the definitions of crime in different countries. Fajnzylber, Lederman and Loayza (2000b) is one of the first attempts at explaining crime patterns across countries. To solve the data limitations outlined above they focus on the rate of homicides (per 100,000 people) as the proxy for violent crimes, arguing that this type of crime suffers the least from underreporting and idiosyncratic classification. The authors use a sample of 45 developed and less developed countries for the period 1965-1995. The main conclusion of the paper is that income inequality, measured by the Gini index, has a robust, significant and positive effect on the incidence of violent crimes. The econometric methodology is a GMM IV estimator that controls for unobserved country-specific effects and the possible endogeneity of the explanatory variable. The strong correlation between income inequality, measured by the Gini index, and crime survives after controlling for relative

poverty, ethnic polarization, unequal distribution of police protection, and access to the judicial system.

An interesting aspect of this study is the connection between income inequality and economic opportunities in the fight against crime. Violent crime rates decrease when economic growth improves. However, the crime-reducing impact of the GDP growth rate is weaker when income inequality is larger. Interestingly, relative poverty does not seem to affect the crime rate once income inequality is included in the regression. It does, however, have an indirect impact. The positive effect of inequality falls as the poor become richer. It is also worth noting that crime exhibits a considerable degree of persistence measured by a large and significant coefficient on the lagged dependent variable.

Andalon-Lopez and Lopez-Calva (2001), and Fajnzylber, Lederman, and Loayza (2000a) also analyze the relationship between crime, income inequality, and polarization. Raphael and Winter-Ebmer (2001) summarize the results of 68 studies on unemployment and crime. The literature finds a strong positive relationship between the unemployment rate and, on the one hand, income inequality (e.g. Blinder and Esaki (1978)) and, on the other, crime rates (Ehrlich (1973), Freeman (1991), Tauchen, Witte and Griesinger (1994), inter alia -but also see Papps and Winkelman (1996)-).

A shorter literature, however, has analyzed the different question of who are the main victims of crime. From the basic model of crime of Becker (1968), one would expect that the rich are more attractive targets for the poor.[3] On the other hand, if the rich can protect themselves so as to avoid victimization it is possible that any increase in crime falls on the disadvantaged. Levitt (1999) argues that the poor suffer disproportionately more from property crime today than what they did twenty years ago, possibly because of the

[3] Becker's work started an enormous literature in economics that uses that rational choice paradigm (see Witte (1980), McCormick and Tollison (1984), Ehrlich and Brower (1987), Andreoni (1991), Freeman (1996), Glaeser, Sacerdote and Scheinkman (1996), Levitt (1997), *inter alia*).

increased reliance on theft-prevention devices by higher income groups. He also indicates that, in stark contrast to property crime, homicide appears to have become more dispersed across income groups, at least based on neighborhood-level data for Chicago. Moreover, the political economy of crime protection suggests that more intense public police deterrence will occur in rich neighborhoods. Income distribution may affect public provision as richer households may be able to supplement votes with campaign contributions.

An important class of papers in this topic involves so-called crime victimization studies. Gaviria and Pages (2002) provide an example of such a study for Latin America. They show that property crime in Latin America affects mostly rich and middle class households living in larger cities. They also find that households living in cities with rapid population growth are more likely to be victimized than households living in cities with stable population. The main data set used is the Latinobarometer. This is a public opinion survey restricted to urban populations that covers 17 Latin American countries and more than 50,000 households between 1996 and 1998. The key survey question used in this paper is *"Have you or any member of your family been assaulted, robbed or victimized in any way during the past twelve months?"* Demographic characteristics of the respondent and the head of the household contained in the Latinobarometer are used in the analysis as control variables. The authors assume that all the reported victimization rates correspond to property crime. They construct an index of long-term economic status with data about the ownership of appliances and durable goods and housing characteristics that the survey contains (because household income or wealth is missing from this data set). Victimization surveys from Colombia, El Salvador and Peru are also used to complement the analysis and give a deaggregated picture of type of crime in those countries. Gaviria and Velez (2001) perform a similar study for Colombia. These studies do not analyze chages in victimization distribution under fluctuations in crime levels.

An important issue on victimization differences across social groups is that income levels affect households' ability to protect themselves against crime. Garcette (2001) presents a

model to study how crime victimization is distributed across the poor and the rich. The main result of the paper is that crime victimization inequality increases in the income of the pivotal voter who sets the level of public protection expenditures. Empirical studies have to recognize that private security devices may reduce the level of crime in some areas, but displaced it to other areas. Thus, observable private security may induce negative externalities into neighboring areas.[4] Di Tella and Schargrodsky (2003) show the highly local deterrent effect of standing guard policemen. The complementary set of questions is asked by Ayres and Levitt (1998), Lott (1998), and Duggan (2001). These papers study the effect of the introduction of unobservable protection devices (Lojack and concealed handguns) with potentially positive externalities. These market failures may generate suboptimal provision of private security by the free market.

3. A Simple Model

Our hypothesis is that, as the crime increase led high-income citizens to protect themselves through private security devices, low-income households suffered the main burden of the increase in victimization. We illustrate these ideas using a model built on the traditional vertical differentiation model (see Tirole 1989). In our model potential criminals have the opportunity of being honest or committing one criminal act. If the potential thieves decide to be honest, they take home with certainty the salary *w* obtained in legal activities. Instead, if criminal *i* attacks victim *j*, his utility level is given by:

$$u_{ij} = \alpha_i b_j - s_j$$

where: α_i is a preference parameter uniformly distributed in the population of potential criminals between 0 and 1; b_j is the booty obtained from potential victim *j*; and s_j is the desutility generated by the level of protection hired by potential victim *j*. There are two types of potential victims: rich (R) and poor (P). We assume that $b_R > b_P$, i.e., rich

[4] For a survey of the criminology literature on displacement the reader is referred to Cornish and Clarke (1987) and Hesseling (1994).

victims have more valuable booties. We also assume that the poor cannot hire private security (perhaps, because of its high cost), while the rich can hire the private security that induces disutility s_j at a fixed cost c.[5] Unrealistically, we treat here the decision to install a private security device as a unified decision by the rich community with an individual cost c.[6] This leaves all the risk-neutral, identical, rich agents with two options. If they do not hire private security, their individual net wealth levels are given by:

$$R|_{s=0} = W - \left(P_R|_{s=0}\right)b_R,$$

where W is the gross wealth and $P_R|_{s=0}$ is the probability of the rich being attacked under no private security. Alternatively, rich agents can hire private security receiving net wealth:

$$R|_{s=1} = W - \left(P_R|_{s=1}\right)b_R - c$$

As a benchmark, let's start solving the model assuming that private security is not available. In this case, every potential criminal that decides to commit a crime will prefer to attack a rich household because $b_R > b_P$. This leaves potential criminals with only two options: being honest or attacking the rich. There will be a potential criminal with preference parameter $\hat{\alpha}$ (such that $w = \hat{\alpha} b_R$) that is indifferent between these two options. All the potential criminals with $\alpha_i > \hat{\alpha}$ will attack a rich household, while the rest will work in honest activities. Normalizing M, the total population of rich, and N, the total population of potential criminals, to 1, the probability for the rich agents of suffering an attack is given by:

[5] In reality, private security protection can also be hired in low-income neighborhoods. We are simply assuming here that the fixed cost c is high enough as to being unaffordable for the low-income households or that the value of the expected loss in the poor neighborhood is lower than the security costs. The argument just needs that private protection is a normal good. Note that, in practice, the hiring of private security always involves fixed costs.

[6] This is just a simplification to isolate our argument from problems of collective decisionmaking. Of course, negative externalities within the rich neighborhoods could also be present.

$$P_R\big|_{s=0} = \frac{\left(1-\frac{w}{b_R}\right)N}{M} = \left(1-\frac{w}{b_R}\right)$$

As expected, crime levels are lower when the salary w that potential criminals can obtained from legal activities is higher. As long as $b_R > w$, there will be some positive level of crime. Note that, as w decreases, the marginal criminal that switches to illegal activities has a lower preference parameter α. As said before, under no security all the crime is suffered by the rich.

Let's incorporate now the possibility that rich households hire private protection. In this case, all the identical rich households have two options. If they do not hire private protection, their net wealth level is given by:

$$R\big|_{s=0} = W - \left(P_R\big|_{s=0}\right)b_R = W - \left(1-\frac{w}{b_R}\right)b_R$$

Instead, if the rich hire private protection, the potential criminals now have three options: being honest, attacking the poor, or attacking the rich. There will be a potential criminal with preference parameter $\breve{\alpha}$ (such that $w = \breve{\alpha} b_P$) who is indifferent between being honest or attacking the poor; and a potential criminal with preference parameter $\tilde{\alpha}$ (such that $\tilde{\alpha} b_R - s = \tilde{\alpha} b_P$, i.e., $\tilde{\alpha} = \frac{s}{(b_R - b_P)}$) who is indifferent between attacking the rich or the poor. Thus, all the potential criminals with $\alpha_i > \tilde{\alpha}$ will attack a rich household, the ones with $\breve{\alpha} > \alpha_i > \tilde{\alpha}$ will attack a poor household, while the rest will work in honest activities. Now the probability for the rich agents of suffering an attack is given by:

$$P_R\big|_{s=1} = \left(1-\frac{s}{b_R - b_P}\right)$$

which gives net wealth levels:

$$R\big|_{s=1} = W - \left(P_R\big|_{s=1}\right) b_R - c = W - \left(1 - \frac{s}{b_R - b_P}\right) b_R - c$$

Thus, the rich decide to hire private security when:

$$R\big|_{s=1} > R\big|_{s=0} \Leftrightarrow W - \left(1 - \frac{s}{b_R - b_P}\right) b_R - c > W - \left(1 - \frac{w}{b_R}\right) b_R \Leftrightarrow \frac{s b_R}{(b_R - b_P)} - c > w$$

Thus, when the salary *w* that potential criminals can obtained from legal activities is high, $w \geq \frac{s b_R}{(b_R - b_P)} - c$, the rich do not protect themselves and they are the only targets of criminal activity. In this case, $P_R\big|_{s=0} = \left(1 - \frac{w}{b_R}\right)$ and $P_P\big|_{s=0} = 0$. Instead, for $w < \frac{s b_R}{(b_R - b_P)} - c$, the rich decide to hire private security. In this case, the level of crime suffered by the rich is fixed at $P_R\big|_{s=1} = \left(1 - \frac{s}{b_R - b_P}\right)$, while the poor suffer $P_P\big|_{s=1} = \left(\frac{s}{b_R - b_P} - \frac{w}{b_P}\right)$.

Simple comparative statics of this model for changes in *w* provide predictions that we will then analyze using our data on the evolution of crime in Argentina during the 1990s. At a high salary *w* obtained from legal activities (a low unemployment rate), crime was low. Initial reductions in w only imply higher crime victimization rates for the rich. If *w* keeps falling (if unemployment keeps increasing), however, there is a point at which the rich hire private protection. After that point, subsequent unemployment increases only increase crime levels suffered by the poor. Crime rises as a result of the increase in unemployment, but it concentrates in poor neighborhoods as high-income neighborhoods hire private security devices that induced negative externalities over poor neighborhoods.

In summary, the model has three predictions. First, the use of private security devices increases with the number of criminals. Second, the consumption of private security devices reduces crime victimization levels of the consumers. Third, the main burden of crime increases is suffered by the poor.

IV. Data Description

A household survey specially designed is the main source of information for this study. The target population of the study is the population of the Buenos Aires Metropolitan Area. We surveyed 200 households in the City of Buenos Aires and 200 households in the suburban Great Buenos Aires through telephone interviews. In addition, we performed 100 street interviews to people that declared not to have a home telephone line. The survey collected information on victimization events, crime reporting, behavioral responses to crime, consumption of private protection, and income and demographic household information.[7]

Although the survey is cross-sectional, we asked households to report retrospective information for the entire decade. However, retrospective information is always subject to recall bias. Thus, we designed the survey exploiting several techniques specially developed to minimize this nuisance. First, we restricted the information set to major crime events: armed robberies and forcible entry into their homes. The restriction to major events significantly reduces typical recall bias of retrospection, which is mainly associated to microscopic events (see Aday, 1996, and Reuband, 1994). Moreover, for our main results we just concentrate on whether the household has been victim of a crime during a period of time, but not on the number of times this has occurred. We should expect that recall bias has a larger effect on the latter, than on the former. Additionally, we used bounded recall procedures to reduce underreporting of crime events as a result of telescoping events from past periods. Although this procedure was designed for panel surveys, Sudman, Finn and Lannom (1984) consider its use for a cross-sectional survey.

[7] See Di Tella, Galiani, and Schargrodsky (2002) for the exact version of our survey and the detailed household responses.

Subsequent research has confirmed that asking people twice about the same events, first in connection with a given reference period and then in connection with the period of interest, is very effective in reducing underreporting or, in general, recall bias (Aday, 1996). More importantly, our main question is which group has been mostly affected by the increase in crime levels. As this question refers to the changes in victimization rates rather than the levels, it will not be affected if recall bias affects both groups (rich and poor) similarly.

When we asked households retrospective information, we preferred to sacrify precision in the exact year of an event, but win confidence by considering longer time periods. Thus, we defined three periods: 1990-1994 (the first part of the decade with low unemployment and strong growth), 1995-2000 (the period after the Tequila crisis with significant unemployment and a declining economy), and the final year of 2001 (right before the default of the external debt, the end of Convertibility, and the current unemployment peak).

A first look at the results in Table 1 shows that 10.2% of the households interviewed in our survey suffered a home robbery (forcible entry into their house) during 2001. This percentage was the same for the whole period 1995-2000, and 7.9% for 1990-1994. 43.1% of these crimes were reported to the police in 2001, but the figure was larger in the previous years (45.1% for 1995-2000, and 74.4% for 1990-1994). For robberies outside the home, 36.8% of the interviews show that at least one member of the household has been robbed during 2001. This percentage was 27.5% for 1995-2000, and 10.0% for 1990-1994. The reporting rate of this type of crime tends to be lower than for home robberies, but similarly decreasing over time (36.8% for 2001, 46.7% for 1995-2000, and 51.1% for 1990-1994).

Table 1

	Home Robbery		Street Robbery	
	%Victimization	%Reporting	%Victimization	%Reporting
1990-1994	7.9	74.4	10.0	51.1
1995-2000	10.2	45.1	27.5	46.7
2001	10.2	43.1	34.6	36.8

These figures suggest that there was a significant increase in victimization rates (remember that the question refers to periods of different length), and a decrease in reporting rates. Consistently, Table 2 shows a growing feeling of insecurity in the population.

Table 2

Perceived Insecurity	%
In your neighborhood, would you say that insecurity with respect to one decade ago has increased a lot, some, a little, has not changed at all, or has decreased?	
Increased a lot	38.8
Increased some	30.0
Increased a little	11.6
No change	18.8
Decreased	0.8

A final data issue is that the measure of income levels through surveys is always a delicate matter. Many people decline to reveal their income in a survey. When they answer, it is well known that the rich tend to underreport their income, while the poor may overdeclare. The best strategy to address this problem is to ask questions on education level, ocupation, and availability of cars, appliances (PC, air conditioner, and authomatic washing machine), and credit cards, in order to infer income levels from these variables. In the absence of income data, the opinion poll company, following the methodology developed by Asociación Argentina de Marketing (1998), provided us with an index of income level that collapses all the indicators of household education, ocupation, and wealth into a continuous variable. Di Tella, Galiani, and Schargrodsky (2002) show the details of this methodology. Using this index, we now proceed to answer our research questions.

V. Empirical Results

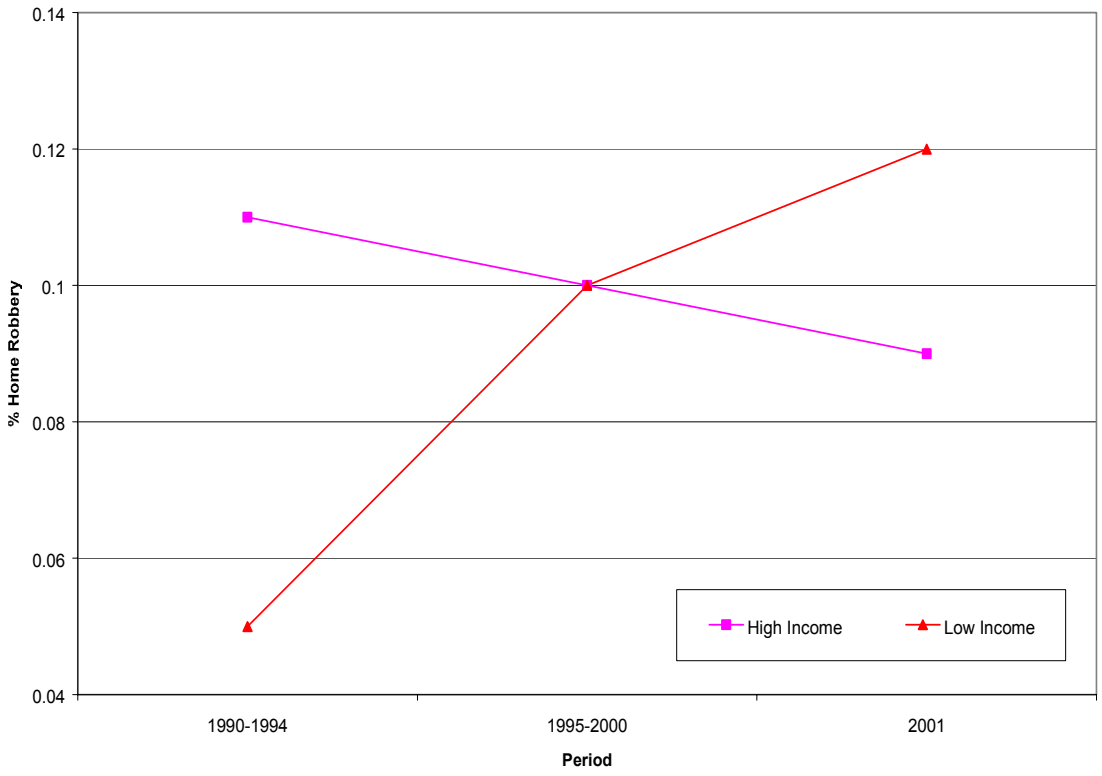
V.1. The Evolution of Crime Victimization by Income Group

Our main question is which social group has been most affected by the significant increase in crime suffered in Argentina during the 1990s. Thus, we want to compare the

change in crime levels for the high-income group relative to the *change* in crime levels for the low-income group. We took the median of the income level index to classify the households in the high and low-income level category. Note that this comparison will not be affected by recall bias as long as this bias is uncorrelated with income levels.[8]

To analyze which social group has been most affected by the crime increase, Figure 3 starts by illustrating the differential evolution of victimization rates for home robberies across income groups:

Figure 3: Home Robberies



[8] In the first part of the survey we asked the number of times a member of the household had been robbed during the period 1990-94. To control for the consistency of the responses, at the very end of the questionnaire we asked the number of times a member of the household had been robbed during 1990-92, and during 1993-94. 92% of the interviewed people responded consistently (i.e., the sum of the responses to these two final questions equaled the previous response for the whole period). The correlation between our income level index and this consistency measure is very low (-0.12).

Table 3 compares these figures to obtain a difference-in-differences estimator of the variation in home robberies by income levels. For the period 1990-1994, high-income households suffered a significantly higher home victimization rate than low-income families. After that period, low-income households suffered a significant increase in victimization likelihood, while high-income families show a non-significant decline. The cross-sectional difference becomes insignificant in those subsequent periods. Thus, the victimization rate of the low-income households caught up to the high-income rate during the decade. Importantly, the difference-in-differences tests show that the change in the victimization rate of the low-income group is significantly different from the change for the high-income households.

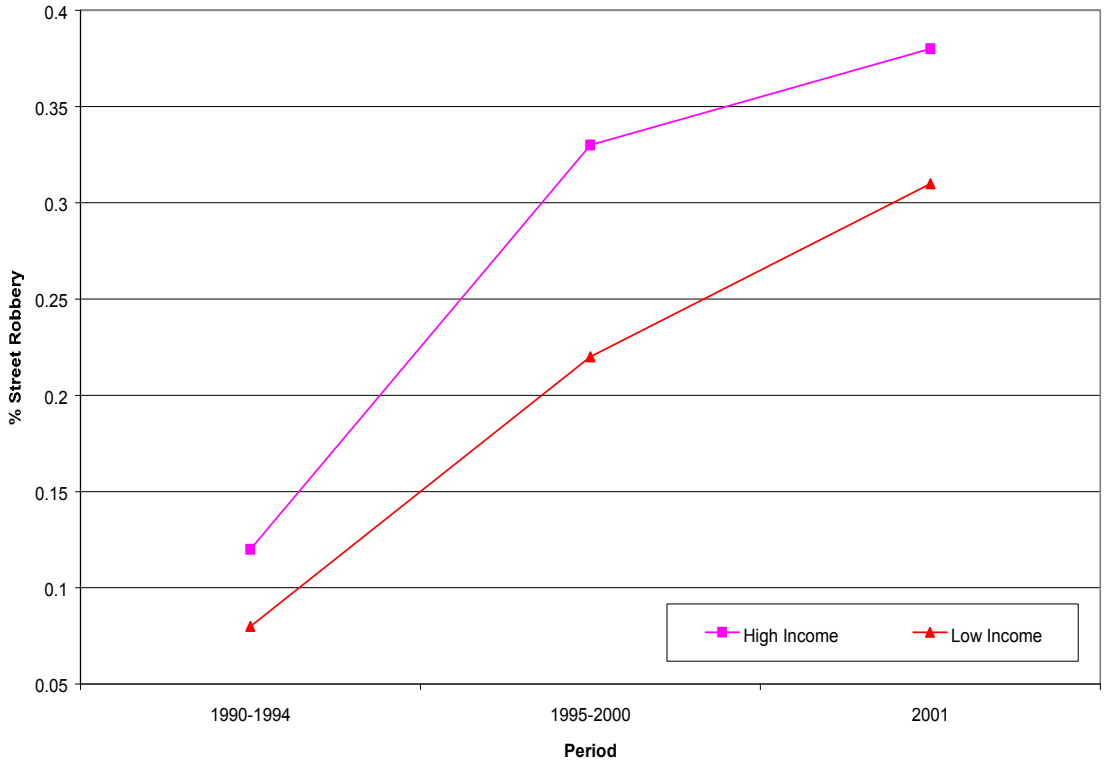
Table 3

Home Robbery		90-94	95-00	2001	[2001]-[95-00]		[95-00]-[90-94]		[2001]-[90-94]	
					Diff	se	Diff	se	Diff	se
High		0.11	0.10	0.09	-0.02	(0.03)	-0.01	(0.03)	-0.02	(0.03)
Low		0.05	0.10	0.12	0.02	(0.03)	0.06**	(0.02)	0.07***	(0.02)
High-Low	Diff	0.06***	0.00	-0.03	-0.03		-0.07*		-0.10***	
	se	(0.02)	(0.03)	(0.03)	(0.04)		(0.04)		(0.04)	

Note: Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Figure 4 pictures the evolution of victimization rates for street robberies across income groups:

Figure 4: Street Robberies



The difference-in-differences analysis for robberies suffered by household members outside the house is performed in Table 4. For the three periods, high-income households suffered a higher victimization rate than low-income families. The cross-sectional difference seems significant for the three periods. Moreover, both groups have suffered a significant increase in crime levels. The difference-in-differences tests, however, are never significant, suggesting that the evolution of victimization rates has not differed across groups.

Table 4

Street Robbery		90-94	95-00	2001	[2001]-[95-00]		[95-00]-[90-94]		[2001]-[90-94]	
					Diff	se	Diff	se	Diff	Se
High		0.12	0.33	0.38	0.05**	(0.04)	0.20***	(0.04)	0.26***	(0.04)
Low		0.08	0.22	0.31	0.09	(0.04)	0.14***	(0.03)	0.23***	(0.03)
High-Low	Diff	0.05*	0.11***	0.08*	-0.04		0.06		0.03	
	se	(0.03)	(0.04)	(0.04)	(0.06)		(0.05)		(0.05)	

Note: Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

We now want to explore whether the difference-in-differences results from Tables 3 and 4 are robust to the inclusion of pertinent control variables. We want to analyze the change in the likelihood of suffering a crime for different social groups after controlling for personal characteristics, neighborhood characteristics, and type of home (apartment or house). We also include random-effects to control for potential correlation in the victimization suffered by the same family over time. To identify which social group has been most affected by the crime increase, we first estimate the following Logit model:

$$\text{Prob}(z_{it}=1) = F(\alpha_{H,1990\text{–}94}\, H_i I_{1990\text{–}94} + \alpha_{H,1995\text{–}2000}\, H_i I_{1995\text{–}2000} + \alpha_{H,2001}\, H_i I_{2001} +$$
$$+\alpha_{L,1990\text{–}94}\, L_i I_{1990\text{–}94} + \alpha_{L,1995\text{–}2000}\, L_i I_{1995\text{–}2000} + \alpha_{L,2001}\, L_i I_{2001} + \beta x_{it} + \lambda_i + \mu_i)$$

where z_{it}=1 if household i has been victimized during period t, H_i and L_i are dummy variables indicating whether the family belongs to the high or low income group, $I_{1990\text{-}94}$ $I_{1994\text{-}2000}$, and I_{2001} are dummy variables for each period, x_{it} is a vector of household covariates (that may or may not vary over time), λ_i is a neighborhood fixed effect, and μ_i is a household random effect. We are not interested in the α's, which capture the level of the victimization likelihood for each group in each period. The focus of our analysis are neither the differences $(\alpha_{A,T1} - \alpha_{A,T2})$, that capture the change for one group between two different periods $T1$ and $T2$, nor $(\alpha_{A,T1} - \alpha_{B,T1})$, that captures the cross-sectional difference between both groups at the same period. Instead, we want to test the null hypothesis of similar change for both groups. Defining $\Delta_{A,T1\text{–}T2} = \alpha_{A,T1} - \alpha_{A,T2}$, we test whether $\Delta_{H,T1\text{–}T2} = \Delta_{L,T1\text{–}T2}$.

Table 5 presents this difference-in-differences estimates for the home robberies. In column A, our estimates are obtained from a pooled Logit where the only control is whether the household lives in a building apartment or in a house. The next column

incorporates household random effects in a panel Logit regression.[9] The characteristics of the household head (education level, gender, age, and age squared) are incorporated in column C, while neighborhood dummies are added in the last column. The results are extremely similar for the four specifications. The increase in crime victimization for the low-income group is higher than the change experienced by the high-income group. The difference is significant at the 1% level.

Table 5

Dependent Variable: Home Robbery Dummy	(A)	(B)	(C)	(D)
H95	-0.47**	-0.60	-0.61	-0.61
	(2.00)	(1.52)	(1.53)	(1.52)
H01	-0.56	-0.62	-0.63	-0.63
	(1.47)	(1.57)	(1.58)	(1.57)
L90	-0.59	-1.18***	-0.91*	-0.92*
	(1.52)	(2.88)	(1.81)	(1.83)
L95	-1.13***	-0.15	0.13	0.12
	(2.90)	(0.44)	(0.30)	(0.27)
L01	-0.13	-0.01	0.26	0.25
	(0.43)	(0.04)	(0.60)	(0.58)
Constant	-0.01	-1.98***	-0.67	-0.41
	(0.03)	(6.64)	(0.33)	(0.20)
χ^2 Null Hypothesis:				
$\Delta_{H,95-90} = \Delta_{L,95-90}$	8.67***	8.97***	9.05***	9.05***
$\Delta_{H,01-90} = \Delta_{L,01-90}$	10.44***	10.79***	10.87***	10.86***
$\Delta_{H,01-95} = \Delta_{L,01-95}$	0.08	0.09	0.09	0.09
Individual Controls	No	No	Yes	Yes
Zone Controls	No	No	No	Yes
Random Effects	No	Yes	Yes	Yes
Observations	1195	1193	1193	1193

Note: Weighted Logit model. All the regressions include a Building Apartment dummy. Absolute value of z-statistics in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

In Table 6, we perform the same exercise for the robberies suffered by the household members outside the home. Again, we run four different specifications. We never find significant differences in the changes in crime victimization suffered by low and high

[9] Note that the whole set of α's cannot be identified in a fixed effects regression.

income households. These results suggest that the evolution of crime victimization does not differ across groups for street robberies.

Table 6

Dependent Variable: Street Robbery Dummy	(A)	(B)	(C)	(D)
H95	1.41***	1.52***	1.52***	1.52***
	(4.47)	(4.56)	(4.56)	(4.56)
H01	1.62***	1.76***	1.75***	1.75***
	(5.17)	(5.28)	(5.29)	(5.28)
L90	-0.39	-0.42	0.05	0.01
	(1.06)	(1.10)	(0.12)	(0.03)
L95	0.91***	0.96***	1.45***	1.41***
	(2.96)	(2.89)	(3.75)	(3.65)
L01	1.26***	1.35***	1.84***	1.80***
	(4.16)	(4.10)	(4.78)	(4.68)
Constant	-2.14***	-2.35***	-7.07***	-7.41***
	(8.01)	(7.89)	(4.00)	(4.18)
χ^2 Null Hypothesis:				
$\Delta_{H,95-90}$-$\Delta_{L,95-90}$	0.07	0.09	0.07	0.07
$\Delta_{H,01-90}$-$\Delta_{L,01-90}$	0.00	0.00	0.01	0.01
$\Delta_{H,01-95}$-$\Delta_{L,01-95}$	0.19	0.20	0.21	0.22
Individual Controls	No	No	Yes	Yes
Zone Controls	No	No	No	Yes
Random Effects	No	Yes	Yes	Yes
Observations	1182	1181	1181	1181

Note: Weighted Logit model. Absolute value of z-statistics in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

In these two tables, we have consider the dependent variable as a binary indicator that takes the value of 1 when household i has suffered a crime in period t, and 0 otherwise. This binary definition has the advantage of minimizing recall biases (it is easier to remember whether a household has suffered a robbery, rather than the exact number of times it has happened), but at the cost of losing information by treating similarly at households that have suffered a different number of crimes. As a robustness checks, we now reproduce our exercise in a linear random-effects regression. In this specification, we also correct for the different duration of the time periods by defining the dependent variable q_{it} as the average number of robberies per year that household i has suffered during period t:

$$q_{it} = \alpha_{H,1990\text{–}94}\, H_i I_{1990\text{–}94} + \alpha_{H,1995\text{–}2000}\, H_i I_{1995\text{–}2000} + \alpha_{H,2001}\, H_i I_{2001} +$$

$$+ \alpha_{L,1990\text{–}94}\, L_i I_{1990\text{–}94} + \alpha_{L,1995\text{–}2000}\, L_i I_{1995\text{–}2000} + \alpha_{L,2001}\, L_i I_{2001} + \beta x_{it} + \lambda_i + \mu_i + \nu_{it}$$

where ν_{it} is the error term. Again, we are interested in testing the null hypothesis of similar change for both groups between two periods: $\Delta_{H,T1\text{–}T2} = \Delta_{L,T1\text{–}T2}$.

Table 7 presents these difference-in-differences estimates for the changes in the number of home robberies under different specifications. In the three cases, we find that the increase in crime victimization of the low-income group is higher than the change experienced by the high-income group. The difference is statistically significant at levels below 5% level. The only difference with the previous result is that, after correcting for the different period duration by taking the yearly average number of robberies, the difference-in-differences estimates are now significant for the changes from 2001 with respect to the other two periods, while in Table 5 the change became significant from 2001 and 1995-2000 relative to the first period.

Table 7

Dependent Variable: Number of Home Robberies	(A)	(B)	(C)
H95	-0.02	-0.02	-0.02
	(0.23)	(0.23)	(0.24)
H01	0.06	0.06	0.06
	(0.65)	(0.64)	(0.64)
L90	-0.02	-0.07	-0.09
	(0.24)	(0.65)	(0.84)
L95	0.00	-0.05	-0.07
	(0.01)	(0.45)	(0.64)
L01	0.34***	0.29***	0.27**
	(3.84)	(2.66)	(2.49)
Constant	0.02	0.17	0.05
	(0.25)	(0.38)	(0.11)
χ^2 Null Hypothesis:			
$\Delta_{H,95-90} = \Delta_{L,95-90}$	0.12	0.12	0.13
$\Delta_{H,01-90} = \Delta_{L,01-90}$	5.72**	5.72**	5.87**
$\Delta_{H,01-95} = \Delta_{L,01-95}$	4.16**	4.17**	4.26**
Individual Controls	No	Yes	Yes
Zone Controls	No	No	Yes
Observations	1192	1192	1192

Note: Weighted random effects model. All the regressions include a Building Apartment dummy. Absolute value of z-statistics in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

In Table 8, we perform the same exercise for the number of robberies suffered by the household members outside the home. As it happened previously with our binary dependent variable specification, we find no significant differences in the changes in street robberies suffered by low and high-income households.

Table 8

Dependent Variable: Number of Street Robberies	(A)	(B)	(C)
H95	0.08	0.08	0.08
	(1.04)	(1.04)	(1.04)
H01	0.63***	0.63***	0.63***
	(8.29)	(8.30)	(8.22)
L90	-0.04	0.02	0.01
	(0.49)	(0.21)	(0.14)
L95	0.05	0.10	0.10
	(0.68)	(1.18)	(1.12)
L01	0.46***	0.51***	0.51***
	(6.45)	(5.86)	(5.83)
Constant	0.06	-0.31	-0.37
	(1.08)	(0.88)	(1.06)
χ^2 Null Hypothesis			
$\Delta_{H,95-90}$-$\Delta_{L,95-90}$	0.00	0.00	0.00
$\Delta_{H,01-90}$-$\Delta_{L,01-90}$	1.95	1.93	1.90
$\Delta_{H,01-95}$-$\Delta_{L,01-95}$	2.14	2.15	2.11
Individual Controls	No	Yes	Yes
Zone Controls	No	No	Yes
Observations	1181	1181	1181

Note: Weighted random effects model. Absolute value of z-statistics in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

V.2. The Use of Security Protection Devices

Our previous results show that the poor have suffered the main burden of the increase in home robberies; while both groups have suffered similar increases in victimization outside the house. These findings could be consistent with differences in the ability that people have to protect themselves against different types of crimes. We asked in our survey on the use of private security. Almost 20% of the households in our survey currently hire private security guards. We investigate the differential use of security devices by income level by running the following cross-sectional Logit model:

$$\text{Prob}(\text{sd}_i = 1) = F(\alpha_L L_i + \beta \text{x}_i + \lambda_i)$$

where sd_i=1 if household i utilizes private security, L_i is a dummy variables indicating whether the family belongs to the low-income group, x_i is a vector of household covariates, and λ_i is a neighborhood fixed effect. The significance of the coefficient α_L will tell us whether low-income households show a different likelihood than high-income households to hire private security. At no surprise, Table 9 shows that high-income households are more likely to use private security than low-income families.

Table 9

Dependent Variable:	Security	
	(A)	(B)
Low Income	-0.79 ***	-0.69 ***
	(0.26)	(0.29)
Individual and Zone Controls	No	Yes
Observations	493	504

Note: Regressions include a Building Apartment dummy. The constant is not reported. Standard errors in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Perhaps, there is little that people can do to avoid becoming the victim of a robbery outside their houses.[10] More than 60% of the interviewed people declare to avoid being outside at night, and 40% have changed their itineraries or transportation means. Moreover, around 40% avoid carrying documents, credit cards, or jewelry in order to prevent the losses. However, according to our interviews there is not much else that people can do to avoid street robberies.[11] Moreover, the superiority of high-income families to protect themselves against this type of crime seems weaker. In Table 10 we find that rich groups avoid carrying valuable objects. Low-income families are somewhat more likely to avoid dark areas, but a similar pattern is not observed for changes in itineraries or transportation means.

[10] Of the 127 households that declare that one of its members has been robbed outside the house during 2001, those robberies took place in the street (92), in a car or public transportation (19), at work (3), in a shop or restaurant (11), or at a bank or ATM (2).

Table 10

Dependent Variable:	No Documents		No Jewel	
	(A)	(B)	(C)	(D)
Low Income	-0.52**	-0.40*	-0.54**	-0.46**
	(2.40)	(1.69)	(2.56)	(2.00)
Individual and Zone Controls	No	Yes	No	Yes
Observations	399	399	395	395

Table 10 (cont.)

Dependent Variable:	Darkness		Places	
	(E)	(F)	(G)	(H)
Low Income	0.28	0.44*	-0.22	-0.04
	(1.33)	(1.85)	(1.04)	(0.15)
Individual and Zone Controls	No	Yes	No	Yes
Observations	396	396	397	397

Notes: Weighted Logit model. The constant is not reported. Absolute value of z-statistics in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Thus, there seem to be strong differences in the use of home private protection by different social groups, while cross-sectional differences in street protection devices appear weaker. It is important to note the high observability of home protection devices used by the households in our sample. It is expected that the use of observable devices by a household leads criminals to target another property, inducing negative externalities. Instead, the diffusion of unobservable security devices may generate positive externalities by increasing the expected probability for a criminal of getting caught when facing any target. This is the focus of a significant literature in economics and criminology (recent papers include Ayres and Levitt (1998) who focus on unobservable anti-theft devices produced by the Lojack company, and Lott and Mustard (1997) and Duggan (2001) who focus on the right-to-carry concealed handguns laws). Thus, we not only find that rich-households are more likely to use private security, but the observable nature of these

[11] Very rich people can, of course, resort to bodyguards and armored cars, but these is extremely expensive and infrequent in Argentina.

devices suggest that they may shift crime from the areas that have observable protection to those that do not or, in our set-up, from rich to poor areas.

V.3. The Effect of Private Security on Crime

In this section we estimate the causal effect of having private security on the probability of becoming the victim of a crime. The identification of the causal effect of private security on home robbery requires attention to the possible endogeneity of private security. It may be the case that those households that demand private security are more likely to be assaulted at home for reasons that are unobservable to us. If these unobservable factors are time-invariant, then a fixed effect model would identified the desired causal effect. However, if they are time-varying, then a instrument variable that affects outcome solely through its impact on the binary private security regressor is required. Even if this instrument is time invariant, relying on the cross section dimension of the data set identifies the parameter of interest.

Omitting any time dimension of the structure of the data, following Angrist (1999), the simplest option to estimate the causal effect of private security on crime is by using a linear, constant-effects model to describe the relationship of interest:

$$E[Y_{oi}] = X_i' \beta$$

and

$$Y_{i1} = Y_{oi} + \alpha$$

where Y is a dichotomous variable indicating whether the household was assaulted at home during the period considered, the subindex 0 indicates that the household does not posses private security while 1 indicates that the household posses it, and X is a vector of control variables. Let D be a zero-one indicator of private security. These assumptions lead a linear causal model,

$$Y_i = X_i'\beta + \alpha D_i + \varepsilon_i,$$

that is easily estimated by 2SLS. A recurrent issue that arises in this setting is that, because D is binary, a nonlinear first-stage such as probit or logit may seem appropriate for 2SLS estimation. But the resulting second-stage estimates are inconsistent, unless the model for the first-stage conditional expectation function is actually correct. On the other hand, conventional 2SLS using a linear probability model are consistent whether or not the first-stage conditional expectation function is linear. Thus, it is safer to rely on a linear first-stage.

In column (A) of table 11 we report the effect of private protection on home robbery estimated using the cross-section data for 2001 considering private security in the two previous periods as our instruments. The F-test shows that these instruments are not weak. In column (B), we exploit the panel dimension and attempt to identify the parameter of interest by exploiting the within group variability existent in the data. Unfortunately, most variability occurs between periods 1 and 2 and hence we cannot use lagged values of private security to instrument the current level of this variable. Thus, this strategy relies on assuming that, once we control for household fixed effect, private security is not correlated with the unobserved time-varying component of home robbery. In column (C) we replicate the exercise by estimating a Probit model with an endogenous instrumented variable as suggested in Newey (1987). The instruments are the same used in column 1. Finally, in column (D) we replicate the exercise by estimating a Logit fixed effect model.

Table 11: The impact of private security on home robbery

Dependent Variable: Home Robbery

Independent Variables	2SLS	LSDV	IV Probit	Logit Fixed Effects
Private Security	- 0.071 * (0.041)	-0.123 *** (0.048)	-0.552 * (0.311)	-1.434 *** (0.574)
Period Effects	-----	Yes	-----	Yes
Individual and Zone Effects	Yes	-----	Yes	-----
First Stage F-Test	F(2,469) = 1618	-----	-----	-----
N of Observations	492	1472	487	360

In Table 12 we explore indirectly the issue of endogeneity of private security. Suppose that the households that demand private security are those who are more concerned with being assaulted or those who are more prone to being assaulted, as a result of individual characteristics or because of unobservable neighborhood effects –defined narrowly as not being captured by the zone control effects included in all regressions- then it would be the case that private security would be correlated with street robbery. Table 12 shows that this is not the case.

Table 12: The impact of private security on street robbery

Dependent Variable: Street Robbery

Independent Variables	2SLS	LSDV	IV Probit	Logit Fixed Effects
Private Security	- 0.004 (0.063)	-0.014 (0.068)	0.013 (0.188)	-0.271 (0.521)
Period Effects	-----	Yes	-----	Yes
Individual and zone control	Yes	-----	Yes	-----
N of Observations	493	1457	493	712

V.4. Access to Justice and Public Police Protection

If private provision is relevant for crime protection, income inequality may explain why poor people are underprotected against crime. The poor may lack resources to hire and buy protection devices (Anderson, 1999). Without resources to "buy" security, poverty leads to underprotection. However, we may fear that some additional factors worsen the situation. Poor citizens may suffer a weak definition of their property rights. Without legal proof of their property rights (or without proper personal identification documents),[12] the poor cannot resort to the police and the judiciary. In addition, public officials might have biases against the poor in the provision of their services (World Bank, 2000). In addition, the complexity of the legal system, educational handicaps, and the costs associated with judiciary processes (court fees, legal aid, time and transportation costs) may act as exclusionary barriers to the access to justice by the poor (World Bank, 2000). Furthermore, if the consumption of private protection by the rich induces negative externalities, it should be optimal that public police forces follow crime by moving to low-income areas. We also exploit our survey to analyze whether there are differences in the treatment and protection that the poor receive from the police relative to the rich.

Table 13 presents the survey responses on public police protection. We ask at which frequency police walks or drives in front of people's houses. At first glance, police protection in high-income areas seems to be slightly better.

Table 13

	Income Level		Total
	Low	High	
Total number of households	196	204	400
How often does the police usually patrol your house?			
Every day	91	103	194
Twice or three times a week	22	23	45
Once a week	13	8	21
At least once a month	12	9	21
Less than once a month	3	7	10
Never	30	27	57
No answer	25	27	52

We then perform an Ordered Logit of this frequency on income levels in Table 14. With no controls in Column A and with household controls in Column B, police protection seems to be similar across social groups. However, we can still wonder whether this is optimal. If high-income groups protect themselves through the hiring of private security guards, it might be socially optimal that police forces follow crime moving to low-income areas. This does not seem to be the case. In the last column of the table we include the use of private security as a control in order to analyze whether private protection reduces the frequency of public police protection. The security variable results insignificant. It does not seem to be the case that public police is being redeployed to compensate for negative externalities generated by private security.

[12] This problem may be particularly relevant for illegal immigrants. For example, Bolivian workers are frequent targets of robberies in Northern Great Buenos Aires (La Nacion, June 24,

Table 14

Dependent Variable: Frequency of police patrolling	(A)	(B)	(C)
Low Income	0.26	0.01	0.03
	(1.23)	(0.05)	(0.12)
Private Security			-0.04
			(0.14)
Individual and Zone Controls	No	Yes	Yes
Observations	359	359	359

Note: Weighted Ordered Logit model. The constant is not reported. Absolute value of z-statistics in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

VI. Policy Implications and Conclusions

Crime has risen significantly in Argentina during recent years, together with unemployment and the deterioration of social conditions. We analyze which social groups have been the main victims of this increase in crime. For home robberies, we found that the poor have suffered the main crime increases. During the first half of the decade, high-income households used to suffer a significantly higher home victimization rate than low-income households. The difference has now turned non-significant. For street robberies, instead, both groups show similar augments in victimization. Our findings are consistent with additional evidence showing that the rich have been able to protect their houses through pecuniary security devices better than the poor. Instead, the ability to use protection devices against street robberies seems limited.

Our results on the distributional effect of the use of private security devices may have important implications for the design of public protection policy. First, if high-income neighborhoods hire crime protection devices to protect themselves, it would be optimal that police forces follow crime moving to low-income areas. Our evidence on police patrolling does not suggest that a compensatory redeployment of public protection has been taking place.

2000).

Second, if there are significant negative externalities associated with the use of private security devices, some form of taxation or regulation of the crime protection industry may be necessary. Ayres and Levitt (1998) show the economic importance of private security expenditures in the US and how such private spending has outgrown public spending over the recent past. This is also true in many developing countries, including Argentina. The sector is largely unregulated, particularly outside the US. In most countries that we know of, citizens are free to hire visible private protection. If such activities induce negative externalities, these market failures may generate an overprovision of private security by the free market.

References:

Aday, L. (1996), Designing and Conducting Health Surveys, Jossey-Bass.

Andalón-López, Mabel and Luis F. López-Calva (2001), "Income Inequality, Polarization, and Violent Crime: Evidence from Mexico," mimeo, *El Colegio de México*.

Anderson, Michael (1999), "Access to Justice and Legal Process: Making Legal Institutions Responsive to Poor People in LDCs," World Bank.

Andreoni, James (1991) "Reasonable Doubt and the Optimal Magnitude of Fines: Should the Penalty Fit the Crime?", *RAND Journal of Economics*, 22 (3), 385-95.

Asociación Argentina de Marketing (1998), "Indice de Nivel Socio Económico Argentino".

Ayres, Ian and Steven Levitt (1998) "Measuring Positive Externalities from Unobservable Victim Precaution: An Empirical Analysis of Lojack", *Quarterly Journal of Economics,* 113 (1), 43-77.

Becker, Gary (1965) "A Theory of the Allocation of Time," *Economic Journal*, 75, 493-517.

Becker, Gary (1968) "Crime and Punishment: An Economic Approach", *Journal of Political Economy*, 76 (2), 169-217.

Blinder, A. and Howard Esaki (1978) "Macroeconomic Activity and Income Distribution in the Postwar United States", *Review of Economics and Statistics*, 60, 604-9.

Catterberg & Asoc. (2001), "Encuesta sobre Inseguridad Ciudadana", mimeo.

Cornish, Derek and Ronald Clarke (1987) "Understanding Crime Displacement: An Application of Rational Choice Theory", *Criminology*, 25, 933-47.

Di Tella, Rafael and Ernesto Schargrodsky (2003) "Do Police Reduce Crime? Estimates using the Allocation of Police Forces after a Terrorist Attack", mimeo, Harvard Business School.

Di Tella, Rafael, Sebastian Galiani and Ernesto Schargrodsky (2002) "Crime Victimization and Income Distribution", mimeo, Inter-American Development Bank.

Duggan, Mark (2001) "More Guns, More Crime", *Journal of Political Economy*, 109, 1086-1114.

Ehrlich, Isaac (1973) "Participation in Illegitimate Activities: A Theoretical and Empirical Investigation", *Journal of Political Economy*, 81 (3), 521-65.

Ehrlich, Isaac and George Brower (1987) "On the Issue of Causality in the Economic Model of Crime and Law Enforcement: Some Theoretical Considerations and Experimental Evidence", *American Economic Review*, 77 (2), 99-106.

Fajnzylber Pablo, Daniel Lederman, and Norman Loayza (1998), "Determinants of Crime Rates in Latin America and the World, An Empirical Assessment," The World Bank.

Fajnzylber Pablo, Daniel Lederman, and Norman Loayza (2000a), "Crime and Victimization: An Economic Perspective," Economia (LACEA), 1(1), 219-302.

Fajnzylber, Pablo, Daniel Lederman, and Norman Loayza (2000b) "What Causes Violent Crime?", *European Economic Review*, forthcoming.

Freeman, Richard (1996) "Why Do So Many Young American Men Commit Crimes and What Might We Do About It?", *Journal of Economic Perspectives*, 10 (1), 25-42.

Freeman, R. (1991) "Crime and the Employment of Disadvantageous Youths", NBER 3875.
Gaviria, Alejandro and Carmen Pages (2002) "Patterns of Crime Victimization in Latin American Cities," *Journal of Development Economics*, 67, 181-203.
Gaviria, Alejandro and Carlos Vélez (2001) "Who Bears the Burden of Crime in Colombia?", mimeo.
Garcette, Nicolas (2001) "Income Inequality and Crime Protection", mimeo DELTA.
Glaeser, Edward, Bruce Sacerdote, and Jose Scheinkman (1996) "Crime and Social Interactions", *Quarterly Journal of Economics*, 111 (2), 507-48.
Hesseling, Rene (1994), "Displacement: A Review of the Empirical Literature", in Ronald Clarke, ed., Crime Prevention Studies, III, 197-230.
Levitt, Steven (1997) "Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime", *American Economic Review*, 87 (3), 270-90.
Levitt, Steven (1999) "The Changing Relationship between Income and Crime Victimization", *FRBNY Economic Policy Review*, 87-99.
Londoño, Juan L. and Rodrigo Guerrero (1999), "Violencia en América Latina: Epidemiología y Costos," InterAmerican Development Bank.
Lott, John and David Mustard (1997) "Crime, Deterrence, and Right-to-Carry Concealed Handguns", *Journal of Legal Studies*, 26 (1), 1-68.
Lott, John (1998) More Guns, Less Crime, The University of Chicago Press: London.
McCormick, Robert and Robert Tollison (1984) "Crime on the Court", *Journal of Political Economy*, 92 (2), 223-35.
Miller, Matthew (2001) "The Poor Man´s Capitalist", *New York Times Magazine*, July 1, 2001.
Ministerio de Justicia (2000) "Estudio de Victimización en Centros Urbanos de la Argentina", mimeo.
Papps, K. and R. Winkelmann (1996) "Unemployment and Crime: New Answers to an Old Question", mimeo.
Raphael, Steven and Rudolf Winter-Ebmer (2001) "Identifying the Effect of Unemployment on Crime", *Journal of Law and Economics* 44(1), 259-283.
Reuband, K. (1994), "Reconstructing Social Change Through Retrospective Questions: Methodological Problems and Prospects", in Autobiographical Memory and the Validity of Retrospective Report, Schwartz, N. and S. Sudman (eds.), Springer-Verlag.
Sudman, S., A. Finn and L. Lannon (1984), "The Use of Bounded Recall Procedures in Single Interviews", *Public Opinion Quarterly*, 48, 520-24.
Tauchen, Helen, Ann Dryden Witte, and Harriet Griesinger (1994) "Criminal Deterrence: Revisiting the Issue with a Birth Cohort"*, Review of Economics and Statistics*, 76, 3, 399-412.
Witte, Ann (1980) "Estimating the Economic Model of Crime with Individual data", *Quarterly Journal of Economics*, 94 (1), 155-67.
World Bank (2000), "Attacking Poverty," World Development Report 2000/2001.