

Property Crime as A Redistributive Tool : the Case of Argentina

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Abstract

In this study, we use two new data sets on crime and victimisation in Argentina. Our main results are as follows. First, we show that the worsening of income inequality or alternatively relative poverty has significantly increased property crime in Argentina during the 1990s. Second, we find that property crime has become increasingly concentrated on the middle and upper class over the period 1996-2001. Overall, these results suggest that property crime has been used as a redistributive tool for the poorest to compensate for their impoverishment during the last decade and in particular during the ultimate crisis in Argentina.

Keywords: Income Distribution, Property Crime.

JEL Codes: K40, K42

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1. Introduction

In Argentina, only 10 % of the respondents to a Gallup poll consider in 1991 that crime has risen in their neighbourhood. They were 32 % in 1997, 39 % in 2000 and 50 % in 2002³. In fact, according to official data, property crime has risen by 170 % from 1991 to 2002. During the 1990s, Argentina has experienced a significant rise in property crime rates. As a mirror of these high crime levels, one third of the households living in Buenos Aires and Gran Buenos Aires have been victimised each year since 1996⁴. Income inequality as measured by the Gini coefficient has increased on average by 12 % over the same period. At first sight, the joint rise in property crime and income inequality in the 1990s turns Argentina into a precious case study on crime and income distribution. Nevertheless, such potential link has not been thoroughly investigated until now. In other words, very few is known about the distribution of criminals and victims across Argentina's population⁵. In this paper, we successively address these two issues. Where locate both criminals and victims in the income distribution ? How their position inside the income distribution has changed at a time when income inequality significantly increased ?

To that matter, we use two new data sets. The first of these is province-level panel data over the period 1992-2002. We show that income inequality or alternatively relative poverty have a significant and positive effect on property crime. This effect is robust to many income inequality or relative poverty measures. The second data set is crime victimisation surveys that cover the period 1996-2001. Results suggest here that the middle class and the upper class have increasingly suffered from property crime from 1996 to 2001. At the beginning of the period, property crimes that disproportionately affect the rich include car theft, theft from vehicle and vehicle vandalism. This list extends to burglary and theft in 2001. These two kinds of results jointly suggest that property crime has been used as a tool for the poorest to compensate for their impoverishment during that period. For that matter, they have been targeting increasingly more the middle and upper classes.

³ La Nación, 06/07/2002.

⁴ 1996 is the first year of implementation of crime victimization surveys in Argentina.

⁵ Balbo and Posadas (1997), Kessler and Molinari (1998), Chambouleyron and Willington (1998), Cerro and Meloni (2000) use official police data. Yet, neither of these studies directly addresses the link between crime and income distribution in Argentina. Di Tella and alii (2002, 2003) use a crime victimisation survey. However, the use of a time-invariant income variable seems problematic to produce unbiased estimates.

The remainder of the paper is organised as follows. Section II is dedicated to the literature on crime and income distribution. Section III analyses the province-level data set. Section IV presents the main results from the victimisation surveys. Section V concludes.

2. Literature review on crime and income distribution

Consider first the supply side of the crime market. On the lines of the canonical model of Becker (1968), Bourguignon (1999) shows that the crime rate depends positively on income inequality, measured as the proportion of the poor, and on relative poverty, measured as the relative gain for these people to participate to illegal activities. This result applies especially to property crime⁶, but also to crime linked to illegal traffics (drugs, weapons).

On the supply side, the empirical literature addressing the relationship between crime and income distribution basically splits into two categories. The first approach is cross-sectional. Some studies find that greater income inequality (Fleisher, 1966; Ehrlich, 1973; Blau and Blau, 1982 and Kelly, 2000) or relative poverty (Land and alii, 1990; Kelly, 2000 and Demombynes and Özler, 2002) have a significant and positive effect on crime rates. However, this approach presents some drawbacks. In particular, it comes up against the difficulty to control adequately for unobserved characteristics, that are correlated both with income and criminal variables. Through the use of panel data, the second approach is more likely to alleviate the issue of the omitted variables. Examples of this approach include Andrade and Lisboa (2000), Fajnzylber, Lederman and Loayza (1999 and 2002) and Soares (2000). Their findings suggest that a higher Gini coefficient is significantly and positively associated with higher crime rates. Andrade and Lisboa (2000) produce this effect only for the homicide rate of the 15-19 years-old-cohort. Fajnzylber, Lederman and Loayza (1999 and 2002) find a significant result thanks to the GMM-system estimator, while Soares (2000) derives it directly from simple OLS estimates, but correcting for the bias due to crime underreporting.

On the demand side, rearranging the canonical model of Becker (1968), it can be shown that the rich become increasingly victimised relatively to the poor as income inequality worsens. However, the possibility for the rich to invest in private protection can distort this

⁶ Chiu and Madden (1998) present similar results specifically for burglary.

result. Accordingly, property crime victimisation of the rich may fall or rise depending on the income elasticity of private protection and its efficiency.

Several empirical studies investigate how crime victimisation is distributed across income categories and whether property crime victimisation is truly concentrated on the rich. For Latin America, Gaviria and Pages (1999) use the Latinobarometer, a crime victimisation survey that covers 17 Latin American countries during the period 1996-1998. They show that middle and upper class households are the more likely to be victim of a property crime. Gaviria and Velez (2000) use a social survey that cover the main urban areas of Colombia and obtain similar results. The rich disproportionately suffer from property crime and kidnapping. Further, they are more likely to invest in private protection strategies. Levitt (1999) investigates changes in crime victimisation over time for the United States. His main findings are that crime victimisation inequality has diminished since the mid-1970s. The successive waves of the National Crime Victimization Survey suggest that the poor have increasingly suffered from property crime since the mid-1970s (burglary, vehicle theft) while the burden of violent crime (assault, robbery) supported by the rich has increased during the same period. However, cross-sectional results do not substantially depart from the main findings of crime victimisation for Latin America: at any given point in time, the poor are more likely to suffer from violent crime, the rich from auto theft while the evidence is mixed for burglary.

Does Argentina share the same patterns of crime victimisation as those observed in other Latin American countries ? What is the relative share of property crime victimisation respectively borne by the poor and the rich in Argentina ? Di Tella and alii (2003) give a first insight into those questions. They find that the poor have suffered the main increase in home robbery during the 1990s, while all income groups show similar increases in street robbery victimisation. However, it seems that their income variable is time-invariant, which questions the validity of their results.

3. Increasingly more criminals among the poor

3.1. The Data

In this section, we use official data collected by provincial police departments⁷ and compiled by the Ministry of Justice in Argentina. Information on property crime is available annually. Table A.1. indicates that property crime has increased by around 170 % during the 1990s. Property crime includes burglary, vehicle theft, theft, robbery, fraud, and vandalism. It is clear that police data highly underestimate property crime because of victim's underreporting⁸. Victimization data indicate that 92 % of vehicle theft have been on average reported to police over the 1998-2001 period in the Province of Buenos Aires. However, the average reporting rate drops to 39 % for robbery, 35 % for burglary and 26 % for theft. Nevertheless, the use of panel data alleviates the estimation bias that the error measure is likely to induce.

We now describe all the dependent variables included in the empirical estimation. Our main dependent variable relates to income distribution⁹. In a first set of regressions, we alternatively introduce various income inequality indicators (the Gini coefficient, the Theil index, various Atkinson measures, the mean logarithmic deviation). In a second set of regressions, we introduce a relative poverty measure (proportion of the population with income inferior to 0.1 time the mean income, between 0.1 and 0.2 time the mean income and between 0.2 and 0.3 time the mean income). We do not introduce in our regressions both income inequality and relative poverty indicators because of their high correlation. Income inequality has remained stable in Argentina from 1990 to 1994, but has continuously increased since then. Moreover, the 1999-2002 economic crisis and its peak of the year 2002 account respectively for 57 % and 18 % of the total rise in income inequality, as measured by the Gini coefficient, since 1992. A thoroughly analysis shows that this rise is essentially due

⁷ Argentina is a Federal State with 23 provinces and Capital Federal. Each province has its own police and justice departments that are in charge of common crimes (theft, homicide, etc). Federal crimes (drug trafficking, smuggling) are the concern of the Federal State. Capital Federal's status is mixed. On one side, it has its own justice department like any province. On the other side, all crimes committed in the Capital Federal fall within the competence of the Federal Police.

⁸ The crime victimisation surveys used in the second part of that paper suggest that 92 % of vehicle theft have been on average reported to the police since 1998 in the Province of Buenos Aires. This figure falls to 39 % for robbery, 35 % for burglary and 26 % for theft.

to the strong impoverishment of the poorest (the two first quintiles) and, to a less extent, the accumulation of wealth by the richest (the last quintile).

We use police expenses to measure the effect of public police on property crime. This variable has been available for each province since 1991. Police expenses related to population have increased by 22 % from 1991 to 2001. Yet, once related to property crime, it appears that they have diminished by more 70 % over the same period. Figures in 2002 confirm this trend: police expenses related to population (property crime) have decreased by 15 % (35 %) in only one year. The budgetary difficulties encountered by some provinces during that year are a plausible explanation for the fall in police expenditures. In this regard, it is worth noting that the sentence rate relative to property crime has stood at very low levels in Argentina throughout the 1990s. About 2 % of these crimes have led to a sentence over that period. Sentence rate has begun in 2000 to follow the increase in property crime. Yet, it hardly rises to 2.5 % in 2002.

Some economic (unemployment rate, participation rate, provincial mean income) and demographic variables (density, proportion of the population aged 15-19 and of the population aged 20-24) are added to control for other plausible determinants of property crime variations.

We exclude from the analysis the two provinces which have missing values in some years for property crime: Jujuy and Salta. Information on income distribution is not available for the Province of Rio Negro. Lastly, Capital Federal is excluded for two reasons. First, Federal Police is in charge of public security for Capital Federal. Still, expenses of Federal Police exclusively dedicated to the Capital Federal security are unknown. Second, a large proportion of property crime is likely to be committed in the Capital Federal by criminals stemming from its suburbs located in the Province of Buenos Aires. However, no information is available to take into account this commuting effect on property crime. Accordingly, our empirical investigation covers 20 provinces since 1992.

⁹ To construct these income variables, we use the household survey (Encuestas Permanentes de Hogares, EPH) that covers in each province the main urban agglomeration. In 1991, these households surveys taken as a whole accounted for 60 % of the total population.

3.2. The Econometric Methodology

To evaluate the effect of income distribution on property crime, we estimate the following standard equation:

$$c_{i,t} = \beta_1 \cdot INE_{i,t} + \beta_2 \cdot SECUR_{i,t} + \beta_3 x_{i,t} + \lambda_t + \mu_i + \varepsilon_{i,t} \quad (1)$$

where $c_{i,t}$ is the property crime rate in province i at time t , $SECUR$ the public police expenditures, INE an income inequality measure and $x_{i,t}$ a vector of exogenous variables, μ_i is a province fixed-effect, λ_t a year fixed-effect and $\varepsilon_{i,t}$ the error term.

Province fixed-effects are included to take into account provincial unobservable characteristics that are time-invariant and may be correlated with exogenous variables. Year fixed-effects are included to eliminate unobservable factors that change in the same manner over time in all the provinces.

3.3. Some Econometric Issues

A few theoretical works suggest that present crime rates depend on their past values. Different mechanisms may explain that criminal costs have been diminishing over time: learning by doing (Glaeser and alii, 1996), stigmata of the prison sentences that make more difficult any reinsertion into legal activities (Rasmussen, 1995) or the congestion of the police and justice systems (Sah, 1991). To measure the inertia of the property crime rate, we re-estimate our model in a dynamic fashion:

$$c_{i,t} = \alpha \cdot c_{i,t-1} + \beta_1 \cdot INE_{i,t} + \beta_2 \cdot SECUR_{i,t} + \beta_3 \cdot x_{i,t} + \lambda_t + \mu_i + \varepsilon_{i,t} \quad (2)$$

Yet, it is particularly well-known that dynamic models with fixed-effects are biased when the time dimension is low (Nickell, 1981). Judson and Owen (1999) advise to implement a GMM estimator to circumvent that bias when the time dimension is inferior to 20 and the panel data are unbalanced as it is the case here. In Table A.7 we apply the GMM-

system estimator presented by Blundell and Bond (1998). We use the level lagged twice and the lagged first difference of the dependent variable as instruments respectively in equations in first difference and in levels. Results are not substantially different from those of the fixed-effects estimators.

3.4. Results

Table A.3 presents estimates of equation (1) with distinct income inequality measures. Table A.4 includes the lagged property crime rate as an additional dependent variable. Our results suggest that stronger income inequality is significantly associated with higher property crime. This finding is robust to the income inequality measure (Gini coefficient, Theil index, Mean Logarithmic Deviation, Atkinson measures with three different inequality aversion coefficients) and to the introduction of the lagged property crime. Our estimates indicate that the increase in income inequality as measured by the Gini coefficient may explain between 10 and 25 % of the rise in property crime in Argentina over the 1992-2002 period.

In Table A.5, we replace income inequality measures with several ratios of income quintiles and deciles. Results are in lines with those previously found with the income inequality measures. The disparity between any of the two highest quintiles and any of the two lowest quintiles (Q5/Q2, Q5/Q1, Q4/Q2, Q4/Q1) has a significantly positive effect on property crime. Other ratios of income quintiles have insignificant effects. In particular, the effect of the disparity between two adjacent quintiles remains insignificant. Overall, these results indicate that it is the disparity between the two income distribution ends that explain the property crime increase.

Table A.5 also shows that the income share of the two lowest quintiles (Q2 and Q1) has a significant negative impact on property crime. In Table A.6, we complete this picture by replacing income inequality measures with relative poverty measures: the proportion of households with income inferior to 0.1 time the mean income, between 0.1 and 0.2 time the mean income and between 0.2 and 0.3 time the mean income. In each case, the coefficient is positive and significant. As well as income inequality, relative poverty seems to be a robust determinant of the property crime increase. Nevertheless, as both are highly correlated, it is difficult to distinguish the two effects from one another. Whether income inequality or relative poverty is significant depends heavily on the type of the measures included in the regressions.

What emerges from all these results is that the impoverishment of the poorest is very likely to have contributed to the property crime upsurge in Argentina since 1992, even if it is impossible to consider with certainty whether it is a sufficient explanation or not. The accumulation of wealth by the richest can not be dismissed as a complementary explanation.

4. Increasingly more victims among the rich

4.1. The Data

In this section, we use the crime victimisation surveys that have been conducted annually since 1996 by the Ministry of Justice of Argentina¹⁰. These surveys were especially devised to study crime, in particular property crime, and to be representative of the population of the two main metropolitan areas of the country: Capital Federal and Gran Buenos Aires. The combined population of the urban centres included in the survey accounts for about one third of the country' s total population and 40 % of all property crime reported to the police. These victimisation surveys have the special advantage to combine detailed information about several types of crime¹¹ and about the type of private protection strategies that people adopt as a response to the crime rise¹². In addition, surveys contain information on whether people have reported crime to the police, and, if not, why.

Lastly, information on the type of housing and on particular household characteristics (age and sex, household' s size since 1997, marital status of the respondent since 2000) has been collected. However, crime victimisation surveys have been substantially modified in 2000. In particular, the question on household income has been expressed differently. In the 1996-1999 surveys, it has been asked to each respondent to classify total household income among various income categories. This question was left in 2000. It has been reintroduced in 2001 with income categories so different from those of the 1996-1999 surveys that they are

¹⁰ The baseline survey is the International Crime Victimization Survey implemented by the United Nations Interregional Crime and Justice Research Institute (UNICRI).

¹¹ The property crime categories include: vehicle theft, theft of motorcycle and bicycle, theft from vehicle, vehicle vandalism, burglary, street crimes (robbery, theft).

¹² We have above all some information about private protection against burglary. It was asked whether the household was protected by any of the following: a burglar alarm, a neighborhood watch scheme, special door locks, special window/door bars, a dog that would deter a burglar, a high fence, and security guards. Each household may choose until three among these strategies, such that the question only gives a low benchmark of effective private home protection strategies. Moreover, it was asked whether they own a gun at home and lastly

not comparable in real terms. However, crime victimisation surveys have included since 2000 information about characteristics of the household's head (education level and occupation) and about the household's wealth (ownership of cars, appliances and credit card). The designers of the 2000 round of the victimisation survey have used this information to construct an income level index according to the methodology of the Argentina Association of Marketing¹³.

Our goal is now to construct an income variable with values directly comparable for all the 1996-2001 surveys. We apply the "rank-correlation" method developed by Fournier (2001) to the 2000-2001 crime victimisation surveys. To infer income values, we use the household survey (Encuestas Permanentes de Hogares, EPH) of the closest month to that of the crime victimisation survey (CVS). Then households are matched such that the EPH and CVS marginal income distributions are identical. The procedure is as follows. In every EPH and CVS, households are classified according to their location (Capital Federal or Gran Buenos Aires), their size, and the occupation of the household's head (unemployed, worker, and retired). A rank is assigned to each household inside each group. The income index of the Argentina Association of Marketing that is supposed to be a good approximation for the true income distribution is used to determine the household rank in the CVS. The household rank in the EPH is directly derived from the marginal income distribution inside each group. The last stage is to assign to each CVS household the income level of the EPH household with the same rank. Using this new income variable, we construct income categories for 2000 and 2001 that are comparable in real terms to those of 1996-1999¹⁴.

4.2. The Econometric Methodology

With this new income variable in hand, we can now address our main question on crime victimisation. How the crime victimisation distribution has evolved in Argentina since 1996 ? For this purpose, we use the following standard specification:

whether they stay away from particular streets or places or avoid certain people for reasons of safety when they go out at night in their neighborhood.

¹³ Di Tella and alii (2002) use this income index to divide their sample between poor and rich households. They stress that the methodology of the Argentina Association of Marketin has not been developped ad-hoc for those various victimisation surveys, but obeys standard survey practices. See Appendix II for the details of the methodology.

$$v_{ij} = c + \alpha.y_{ij} + \beta.x_{ij} + \lambda_j + \varepsilon_{ij} \quad (3)$$

where v_{ij} is the probability that at least one member of the household i who lives in city j will be a victim of a crime, y_{ij} is the vector of the income level dummies (the baseline income group is the poorest one, with total household income less than 400 pesos), x_{ij} is a vector of household characteristics (type of the housing¹⁵, sex and age¹⁶, household's size that may affect the modus operandi of the criminals and as a result the likelihood of crime victimisation for the household i), λ_j is a city-fixed effect and ε_{ij} is an individual error term.

We use a Probit model to estimate this equation. Estimations with linear probability models yield very similar results. We include city-fixed effects in order to control for unobserved city characteristics¹⁷. It is worth noting that a non-negligible proportion of the respondents choose to not answer to the question on household income¹⁸. We proceed to weighted Probit estimates¹⁹ to control for the bias that these missing values might produce on the representativeness of our final samples for the period 1996-1999²⁰. Results provided by these weighted estimates do not differ substantially from those without correction²¹.

4.3. Results

¹⁴ The correlation between the income index and the new income variable is 0.89. The correlation between the original income categories of the 2001 CVS and those constructed using this new income variable is 0.59.

¹⁵ We control for the type of housing in order to examine whether living in a house affects the modus operandi of a criminal and the probability of victimisation differently from an apartment. See Glaeser and Sacerdote (2000) for the relationship between crime victimisation and housing structure.

¹⁶ We control for these variables (sex, age, household's size) for the crimes for which it was asked precisely to the respondent whether he/she has been personally victimised (robbery and theft) and not, as in the other cases, whether he/she or other members of his/her household has been victimised.

¹⁷ Capital Federal is divided in five geographic areas (south, centre-west, centre-east, north-west, north-east) and Gran Buenos Aires in four (north-east, north, south, west).

¹⁸ One third of the respondents do not answer to that particular question in 1996 and 1999. They are 11 % in 1998, 16 % in 1997 and 20 % in 2001. It was not included in the 2000 CVS.

¹⁹ Weights are derived from Probit estimates of the probability for a respondent to report household income.

²⁰ Estimates use the whole sample in 2000 and 2001, because an household income level has been assigned by construction to all respondents.

²¹ We can compare in 2001 results derived only from respondents that have answered to the income question and results derived from the whole sample by using our new income variable. They are not significantly different, which suggests that missing values do not lead to a significant bias.

Tables B.1a and B.1b present our cross-sectional findings for various property crimes. We add city-fixed effects in all regressions. In Table B.1b, we also control for some household attributes of potential interest (type of housing, age and sex of the victim, household' s size) according to the type of crime. These tables indicate that income groups are equally victims of burglary and theft of motorcycle and bicycle. 2001 appears to be a remarkable exception for burglary: the richest are then more likely to be victim of such a crime than poorer households. For other crimes on vehicle (vehicle theft, theft from vehicle and vehicle vandalism), it seems to be a positive and significant income effect. For street crimes (robbery and theft), evidence is mixed. At the beginning of the period under study, all households were victimised in the same proportions. Then some substantial changes occur. The two highest income groups have been significantly more likely to be victim of a robbery since 1998. Some of the three highest income groups become more likely to be victim of a theft in 1999 and more clearly in 2000 and 2001.

Tables B.2a and B.2b report difference-in-difference estimates respectively derived from Tables B.1a and B.1b. We make here some comparisons between two adjacent years. Interpretation is simple. For each income group, a significant and positive (negative) coefficient implies that there was an increase (decrease) in crime victimisation inequality between that particular group and the poorest group. A non-significant coefficient means that crime victimisation rates have changed in the same way. Results from these tables suggest that crime victimisation inequality between the three income groups and the poorest one has been left unchanged throughout the period for vehicle theft and theft of motorcycle and bicycle. By contrast, crime victimisation inequality has increased for burglary, theft and vehicle vandalism. In 2001, relatively more richest households suffer from burglary than in the past. The breaking year is also 2001 for vehicle vandalism and 1999 for theft. In that ultimate case, 1999 seems to be a year for the three richest groups to catch up with the poorest one. They have been confronted with significantly higher theft victimisation rates only since 2000.

In short, these results suggest that the position of the middle and upper classes has worsened since 1996. At the expenses of the wealthy, crime victimisation inequality has deepened for burglary, theft and vehicle vandalism from 1996 to 2001. It has remained identical for vehicle theft, theft of motorcycle and bicycle and robbery. It has decreased only for theft from vehicle.

We show in other regressions²² that the middle and upper classes have a significantly higher propensity to invest in some private protection devices at home for almost all types of private protection strategies. While the pseudo r-squared is low, the coefficients are highly significant. Two arguments explain why richer households are more likely to engage in some anticrime private strategies. First, they are more attractive targets for potential criminals and, as shown in the preceding section, their probability of being victimised is generally higher. Second, they have more to lose from property crime²³. However, when we consider separately the different private protection devices, results do not always reproduce this general pattern.

Clearly, the richer households are much more likely to invest in alarms and special locks and to hire private guards. By contrast, in the case of high walls and watchdog, the relationship between private protection and household income level is not necessarily positive. Indeed, while the propensity to have a watchdog at home increases with the household income level in 1998 and 1999, the relationship reverses in 2001: the poor are more likely to have a watchdog than the rich. This last result suggests that watchdogs may become the security guards of the poor as property crime increases. Another explanation is that a dog is always a pet for the richest households but becomes a watchdog for the poorer segments of the population in absence of other private protection devices and in the context of crime increase.

However, we are unable to control adequately for private protection investment in our burglary and vehicle theft victimisation estimates. First and foremost, instruments to control for the endogeneity of private protection strategies seem to be unavailable at least in the crime victimisation surveys used here. Second, the level of private protection investment is completely unknown. Some basic information on private protection suggests that its costs vary significantly in Argentina. The private protection variables at our disposal are as such very imperfect and imprecise. As a consequence of the crime increase, we expect that private protection investments have increased in the 1990s as well. In such a case, our estimates of the income inequality victimisation between the poor and the rich may be underestimated with no value for private protection investment in our regressions.

²² Not presented here.

²³ A third potential explanation is simply that some private protection devices are so expensive that only some segments of the population have access to them.

5. Conclusion

What tells us the joint rise in property crime and income inequality (or relative poverty) during the 1990s in Argentina is some kind of robin-hood story, where increasingly more people among the poorest have intended over the last decade and more specifically during the ultimate crisis to extract illegally an increasing proportion of the wealth of the richest.

We use two new data sets to corroborate this story. The first of these is official province-level data over the 1992-2002 period. Our results indicate that higher income inequality or alternatively relative poverty is strongly associated with property crime increase. This relationship is robust to various specifications and income inequality/relative poverty measures. The second data set is crime victimisation surveys conducted annually during the 1996-2001 period. Our results suggest that the middle and upper classes become increasingly more likely to suffer from a property crime. In 1996-1998, vehicle theft, theft from vehicle, vehicle vandalism and robbery are disproportionately concentrated on the middle-class and rich households. This crime list extends to theft and burglary in 1999 and 2001.

Property crime appears to have become in Argentina during the ultimate decade a redistributive tool for the poorest. It remains to evaluate whether this redistribution tool is more or less costly for the middle and upper classes than traditional legal redistributive mechanisms.

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Appendix

Appendix I. Data sources

A. Province-level official data (1992-2002):

Police variables:

Property Crime: Dirección de Política Criminal (1999-2002) and Registro Nacional de Reincidencia y Estadística Criminal (1971-1998), Department of Justice, Argentina.

Police Expenditures: Consejo Federal de Inversiones et Dirección Nacional de Coordinación Fiscal con la Provincias (Department of Justice, Argentina).

Economic variables: derived from household surveys (Encuestas Permanentes de Hogares, EPH) from Instituto Nacional de Estadísticas y Censos (INDEC). Income inequality and relative poverty measures are calculated on the basis of the household income per capita.

Demographic variables: various census (1991 and 2001) from Instituto Nacional de Estadísticas y Censos (INDEC). Density is calculated on the basis of the population living in the urban agglomeration covered by the EPH.

B. Crime Victimization Surveys (1996-2001): Dirección de Política Criminal, Department of Justice, Argentina.

Appendix II. Income level index

The income level index assigns a point average for each household according to three variables: education, wealth and occupation. The index can take values between 4 and 100 points. The variables and their possible values are summarized in the following tables:

A. Educational level of the household head: the values vary from 0 to 32 according to the following table:

Educational level:	Points:
No studies	0
Primary school incomplete	5
Primary school complete	9
High school incomplete	13
High school complete	17
Vocational school incomplete	19
University incomplete	22
Vocational school complete	31
University complete	32

B. Wealth:

1. Goods and services: It measures the household capacity of accumulation of goods and services: automatic washing machine, TV color, fridge with freezer, freezer, tumble-dryer, video recorder, PC, telephone, air conditioning, credit card. Points are assigned according to the following table:

Number of the goods owned:	Points:
0	0
1	0
2	1
3	1

4	2
5	3
6	6
7	8
8	10
9	12
10	14

2. Automobile: Questions are about the number of cars owned (excluding utility vehicles), the model, size and age of the first car, if applies, and of the second car, if applies. Then, points are assigned separately for each car according to the following table.

Car			Size		
Model	Superior	Large Medium	Medium Medium	Small Medium	Inferior
Last 2 years	10	9	8	7	6
3 to 5 years	9	8	7	6	5
6 to 9 years	7	6	6	4	3
10 to 14 years	5	4	3	2	2
More than 14 years	1	1	1	1	1

Then points are aggregated according to the following rules. If the sum of the points for both cars is inferior to 4, zero is assigned. In the case of one car, the maximum assigned is 10 and in the case of two cars 14.

C. Occupation of the household head: Values vary from 0 to 32 according to the following table:

Non Employee:	Points:	Employee:	Points:
Do not work		Domestic Employee	7
Asset Holder	20	Family Worker without Fixed Income	13
		Non-Qualified Operator	9
Self-Employed		Qualified Operator	17
Day Laborer	4	Technician/Foreman	23
Other Non-Specialized Job	11	Low Hierarchy Employee:	
Retailer without Employees	18	Public Sector	12
Technician/Specialized Worker	24	Private Sector	17
Independent Professional	30	Middle Hierarchy Employee:	
Other Self-Employed	17	Public Sector	19
		Private Sector	24
Employer		High Hierarchy Employee	
1-5 Employees	30	Public Sector	26
6-20 Employees	36	Private Sector	30
More than 20 Employees	40	Top Hierarchy Employee	
		Public Sector	28
		Private Sector	37

Graph A.1. Property crime in Argentina (1991-2002)
(per 100,000 people)

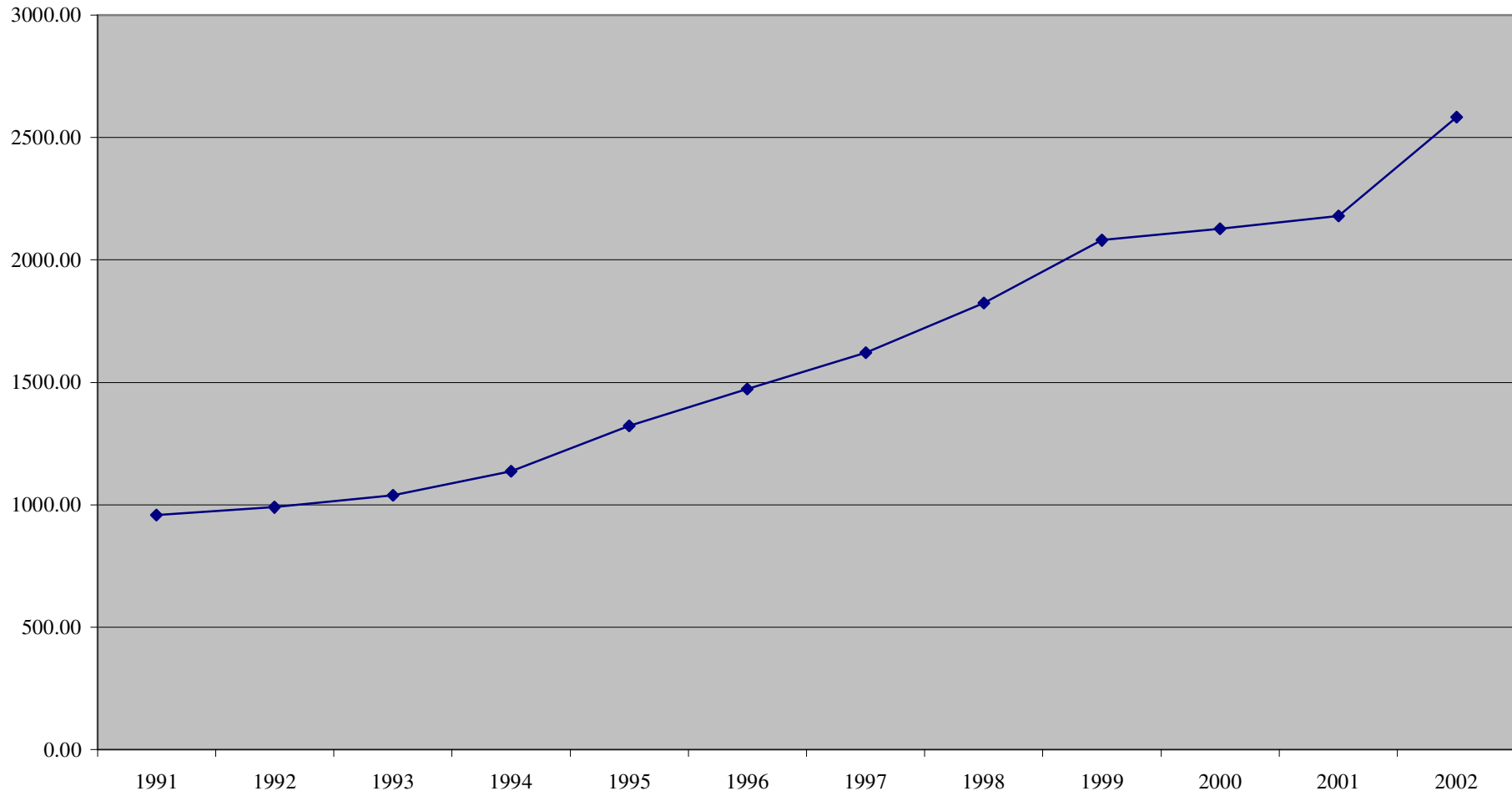


Table A.2. Summary Statistics (1992-2002)

Variable	Obs.	Mean	Ecart-type Intraprovincial	Ecart-type Interprovincial	Min	Max
Property Crime (per 100,000 people)	220	1771	550	772	523	5161
Police Expenditures (per capita)	220	98.64	10.73	57.14	43.90	308.96
Economic Variables						
Unemployment rate	220	11.31	3.34	3.30	1.9	23
Participation rate	220	37.97	1.43	3.07	30.75	49.75
ln Provincial mean income	220	5.45	0.1359	0.2546	4.74	6.19
Gini Coefficient	220	0.4714	0.0231	0.0265	0.4054	0.5738
Theil Index (GE(1))	220	0.4180	0.0530	0.0632	0.2849	1.0238
Mean Logarithmic Deviation (GE(0))	220	0.3629	0.0429	0.0417	0.2435	0.5955
Atkinson (0.5)	220	0.1769	0.0192	0.0197	0.1293	0.3016
Atkinson (1)	220	0.3194	0.0312	0.0302	0.2407	0.4539
Atkinson (2)	220	0.5455	0.0483	0.0387	0.4135	0.6789
Demographic Variables						
Population density	220	12.69	0.8828	14.77	0.6691	60.37
Proportion of population aged 15-19	220	0.0831	0.0046	0.0054	0.0538	0.1024
Proportion of population aged 20-24	220	0.0917	0.0023	0.0067	0.0687	0.1029

Observations are annual data for each province (1992-2002)

Table A.3.

Dependent Variable: In Property Crime (per capita)
 Period: 1992-2002
 Fixed-Effects Estimation

Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
In Police Expenditures (per capita)	-0.014 (0.125)	0.066 (0.142)	0.039 (0.123)	0.049 (0.131)	0.025 (0.121)	0.023 (0.112)	-0.142 (0.103)	-0.124 (0.106)	-0.124 (0.103)	-0.124 (0.104)	-0.122 (0.102)	-0.122 (0.102)
Unemployment rate	0.009 (0.006)	0.013* (0.007)	0.011 (0.006)	0.011 (0.006)	0.008 (0.006)	-0.001 (0.006)	-0.007 (0.006)	-0.006 (0.006)	-0.006 (0.006)	-0.006 (0.006)	-0.007 (0.006)	-0.007 (0.006)
Participation rate	0.006 (0.012)	0.016 (0.013)	0.001 (0.012)	0.008 (0.012)	0.001 (0.012)	-0.005 (0.011)	-0.025** (0.009)	-0.026*** (0.010)	-0.026*** (0.009)	-0.026*** (0.009)	-0.025*** (0.009)	-0.025*** (0.009)
In Provincial mean income	-0.361*** (0.102)	-0.442*** (0.113)	-0.472*** (0.106)	-0.431*** (0.107)	-0.386*** (0.102)	-0.381*** (0.096)	-0.233 (0.188)	-0.151 (0.191)	-0.239 (0.194)	-0.215 (0.190)	-0.263 (0.184)	-0.263 (0.184)
Gini Index	4.746*** (0.694)	-	-	-	-	-	1.690*** (0.606)	-	-	-	-	-
Theil Index	-	1*** (0.241)	-	-	-	-	-	0.295* (0.174)	-	-	-	-
Mean Logarithmic Deviation	-	-	2.873*** (0.467)	-	-	-	-	-	0.842** (0.350)	-	-	-
Atkinson measure (0.5)	-	-	-	4.895*** (0.852)	-	-	-	-	-	1.556** (0.635)	-	-
Atkinson measure (1)	-	-	-	-	4.261*** (0.579)	-	-	-	-	-	1.555*** (0.466)	-
Atkinson measure (2)	-	-	-	-	-	3.691*** (0.387)	-	-	-	-	-	1.444*** (0.387)
Population density	0.003** (0.001)	0.003** (0.001)	0.002** (0.001)	0.003** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)
Proportion of the 15-19 y.o.	4.266 (5.997)	7.424 (6.489)	2.014 (5.540)	5.469 (6.011)	2.390 (5.654)	-3.119 (5.321)	-11.001*** (3.632)	-11.404*** (3.557)	-11.372*** (3.543)	-11.013** (3.562)	-10.931*** (3.592)	-11.013*** (3.592)
Proportion of the 20-24 y.o.	12.743 (11.495)	17.633 (12.158)	11.329 (10.065)	12.68 (11.482)	10.580 (10.8)	13.985 (10.002)	4.636 (6.573)	5.390 (6.533)	4.862 (6.391)	4.537 (6.477)	4.403 (6.497)	4.403 (6.497)
Year Fixed-Effects	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Province Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ajusted R-2	0.8662	0.8481	0.8736	0.8616	0.8753	0.8930	0.9230	0.9214	0.9223	0.9223	0.9236	0.9236
Number of observations	202	202	202	202	202	202	202	202	202	202	202	202

Notes:

Heteroskedasticity consistent standard error in parentheses.

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Table A.4.

Dependent Variable: In Property Crime (per capita)
 Period: 1992-2002
 Fixed-Effects Estimation

Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Lagged dependent variable	0.579*** (0.121)	0.630*** (0.118)	0.555*** (0.118)	0.593*** (0.119)	0.550*** (0.119)	0.491*** (0.118)	0.321** (0.124)	0.334*** (0.124)	0.328*** (0.124)	0.329*** (0.124)	0.320*** (0.123)
In Police Expenditures (per capita)	-0.053 (0.096)	-0.020 (0.02)	-0.024 (0.095)	-0.024 (0.096)	-0.031 (0.096)	-0.026 (0.0913)	-0.135 (0.095)	-0.122 (0.096)	-0.121 (0.095)	-0.121 (0.095)	-0.120 (0.094)
Unemployment rate	0.006 (0.005)	0.008* (0.004)	0.007 (0.004)	0.007 (0.005)	0.006 (0.004)	0.0001 (0.004)	-0.006 (0.005)	-0.005 (0.005)	-0.005 (0.005)	-0.006 (0.005)	-0.007 (0.005)
Participation rate	-0.002 (0.008)	0.001 (0.008)	-0.005 (0.008)	-0.002 (0.008)	-0.005 (0.008)	-0.009 (0.008)	-0.019** (0.009)	-0.020** (0.159)	-0.020** (0.160)	-0.019** (0.163)	-0.019** (0.159)
In Provincial mean income	-0.272*** (0.08)	-0.302*** (0.084)	-0.333*** (0.082)	-0.304*** (0.082)	-0.289*** (0.08)	-0.296*** (0.076)	-0.135 (0.159)	-0.090 (0.160)	-0.156 (0.163)	-0.137 (0.159)	-0.177 (0.157)
Gini Index	2.309*** (0.674)	-	-	-	-	-	1.127** (0.547)	-	-	-	-
Theil Index	-	0.479*** (0.170)	-	-	-	-	-	0.218 (0.143)	-	-	-
Mean Logarithmic Deviation	-	-	1.525*** (0.379)	-	-	-	-	-	0.623** (0.286)	-	-
Atkinson measure (0.5)	-	-	-	2.460*** (0.701)	-	-	-	-	-	1.146** (0.537)	-
Atkinson measure (1)	-	-	-	-	2.287*** (0.548)	-	-	-	-	-	1.172*** (0.421)
Atkinson measure (2)	-	-	-	-	-	2.286*** (0.461)	-	-	-	-	-
Population density	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)
Proportion of the 15-19 y.o.	2.062 (3.643)	3.186 (3.763)	0.839 (3.380)	2.468 (3.585)	1.042 (3.455)	2.459 (3.422)	-7.805** (3.077)	-7.866** (3.035)	-7.911** (3.020)	-7.645** (3.037)	-7.656** (3.055)
Proportion of the 20-24 y.o.	-1.276 (6.797)	-0.577 (6.891)	-1.699 (6.349)	-1.948 (6.726)	-1.986 (6.608)	-1.035 (6.505)	-0.49 (5.222)	-0.262 (5.149)	-0.546 (5.087)	-0.788 (5.142)	-0.770 (5.178)
Year Fixed-Effects	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Province Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ajusted R-2	0.9118	0.9085	0.9147	0.9116	0.9153	0.9234	0.9319	0.9313	0.9318	0.9318	0.9326
Number of observations	202	202	202	202	202	202	202	202	202	202	202

Notes:

Heteroskedasticity consistent standard error in parentheses.

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Table A.5.

Period: 1992-2002

Dependent Variable: ln Property Crime (per capita)

	(1)	(2)	(3)	(4)
D10/D1	0.007*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.002** (0.001)
Q5/Q1	0.040*** (0.005)	0.016*** (0.005)	0.019*** (0.005)	0.012*** (0.004)
Q4/Q1	0.120*** (0.016)	0.052*** (0.015)	0.062*** (0.015)	0.041*** (0.013)
Q3/Q1	0.133*** (0.032)	0.049** (0.024)	0.066** (0.026)	0.041* (0.023)
Q2/Q1	0.179*** (0.056)	0.035 (0.040)	0.076* (0.041)	0.030 (0.032)
Q5/Q2	0.139*** (0.023)	0.051*** (0.016)	0.066*** (0.020)	0.036** (0.015)
Q4/Q2	0.375*** (0.086)	0.164*** (0.052)	0.206*** (0.061)	0.129*** (0.046)
Q3/Q2	0.177 (0.116)	0.111 (0.073)	0.124 (0.092)	0.096 (0.072)
Q2	-12.913*** (2.715)	-4.819*** (1.674)	-6.427** (2.219)	-3.513** (1.621)
Q1	-18.446*** (2.762)	-4.291* (2.351)	-8.482*** (2.932)	-4.291* (2.351)
Lagged dependent variable	No	No	Yes	Yes
Time Fixed-Effects	No	Yes	No	Yes
Province Fixed-Effects	Yes	Yes	Yes	Yes
Number of observations	202	202	202	202

Notes:

Independent variables include police expenditures, the unemployment rate, the participation rate, the province mean income, the density of EPH agglomerations, the proportion of the population aged 15-19 and 20-24. Heteroskedasticity consistent standard error figure in parentheses.

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Table A.6.

Dependent Variable: In Property Crime (per capita)
 Period: 1992-2002
 Fixed-Effects Estimation

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lagged dependent variable	-	-	-	0.616*** (0.122)	0.547*** (0.115)	0.645*** (0.117)	-	-	-	0.321** (0.124)	0.320** (0.125)	0.340*** (0.125)
In Police Expenditures (per capita)	-0.047 (0.141)	0.013 (0.119)	0.080 (0.147)	-0.072 (0.104)	-0.038 (0.091)	-0.019 (0.103)	-0.148 (0.104)	-0.122 (0.102)	-0.134 (0.106)	-0.140 (0.095)	-0.118 (0.093)	-0.132 (0.096)
Unemployment rate	0.003 (0.007)	0.008 (0.006)	0.017** (0.007)	0.003 (0.005)	0.005 (0.004)	0.009** (0.005)	-0.011* (0.006)	-0.007 (0.006)	-0.004 (0.006)	-0.009* (0.005)	-0.006 (0.005)	-0.004 (0.005)
Participation rate	0.019 (0.013)	0.002 (0.011)	0.015 (0.014)	0.003 (0.009)	-0.005 (0.008)	0.001 (0.008)	-0.023** (0.009)	-0.026*** (0.009)	-0.029*** (0.009)	-0.017** (0.009)	-0.019** (0.009)	-0.022** (0.005)
In Provincial mean income	-0.209* (0.121)	-0.317*** (0.105)	-0.457*** (0.120)	-0.195** (0.084)	-0.250*** (0.078)	-0.301*** (0.089)	-0.039 (0.157)	-0.213 (0.163)	-0.036 (0.170)	-0.009 (0.137)	-0.158 (0.140)	-0.022** (0.009)
Relative poverty rate (< 0.1)	7.648*** (1.326)	-	-	3.562*** (1.294)	-	-	3.505*** (1.231)	-	-	2.716** (1.193)	-	-
Relative poverty rate (0.1-0.2)	-	10.755*** (1.511)	-	-	6.252*** (1.162)	-	-	4.214*** (1.154)	-	-	3.531*** (1.095)	-
Relative poverty rate (0.2-0.3)	-	-	5.553*** (1.647)	-	-	2.227* (1.269)	-	-	0.649 (1.205)	-	-	0.111 (1.072)
Population density	0.003** (0.001)	0.002** (0.001)	0.003** (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)
15-19 y.o.	4.002 (6.644)	2.868 (5.461)	7.351 (6.543)	1.739 (3.877)	1.032 (3.431)	3.192 (3.834)	-11.997*** (3.873)	-10.968*** (3.527)	-12.139*** (3.551)	-8.452** (3.250)	-7.584** (2.998)	-8.375*** (3.017)
20-24 y.o.	24.774* (12.841)	10.317 (10.253)	18.450 (11.062)	3.314 (7.297)	-2.618 (6.266)	-0.273 (6.619)	8.694 (7.057)	3.856 (6.417)	5.595 (6.507)	2.517 (5.705)	-1.356 (5.085)	-0.001 (5.159)
Time Fixed-Effects	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Provincial Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ajusted R-2	0.8536	0.8771	0.8427	0.9093	0.9179	0.9066	0.9238	0.9243	0.9205	0.9328	0.9339	0.9308
Number of observations	202	202	202	202	202	202	202	202	202	202	202	202

Notes:

Heteroskedasticity consistent standard error in parentheses.

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Tableau B.1a Victimization probability (Gran Buenos Aires and Capital Federal)

Probit estimation

Crime	Income class	1996	1997	1998	1999	2000	2001
Burglary	401-800 pesos	0.151 (0.107)	-0.069 (0.102)	0.121 (0.080)	0.038 (0.077)	-0.002 (0.064)	0.051 (0.054)
	801-1300 pesos	0.187 (0.123)	0.004 (0.106)	-0.020 (0.094)	-0.104 (0.099)	0.017 (0.066)	0.057 (0.065)
	Superior to 1300 pesos	0.012 (0.106)	-0.045 (0.1)	0.120 (0.082)	-0.041 (0.072)	-0.013 (0.063)	0.193*** (0.064)
	Number of observations	2402	3806	5611	5600	12931	8929
	Pseudo R-2	0.0553	0.0127	0.0076	0.0158	0.0102	0.0105
Car theft	401-800 pesos	-0.197 (0.188)	0.018 (0.162)	-0.158 (0.122)	0.163 (0.136)	0.113 (0.104)	0.136 (0.094)
	801-1300 pesos	-0.139 (0.198)	0.228 (0.162)	-0.046 (0.126)	0.294** (0.145)	0.132 (0.102)	0.264*** (0.097)
	Superior to 1300 pesos	0.049 (0.166)	0.418*** (0.151)	0.027 (0.114)	0.329*** (0.125)	0.208** (0.098)	0.240*** (0.099)
	Number of observations	1563	3806	3962	3802	8260	5076
	Pseudo R-2	0.0294	0.0218	0.0122	0.0108	0.0076	0.0088
Theft of moto and bicycle	401-800 pesos		0.181 (0.134)	0.017 (0.078)	0.065 (0.095)	0.105 (0.065)	-0.005 (0.059)
	801-1300 pesos		0.220 (0.138)	0.013 (0.089)	0.146 (0.110)	0.066 (0.068)	-0.036 (0.069)
	Superior to 1300 pesos		0.112 (0.133)	0.042 (0.080)	-0.016 (0.089)	0.015 (0.066)	-0.124* (0.071)
	Number of observations		3135	5611	4323	9705	6294
	Pseudo R-2		0.0126	0.0181	0.0094	0.0169	0.0070
Theft from vehicle	401-800 pesos	0.405*** (0.151)	0.445*** (0.121)	0.320*** (0.097)	0.038 (0.097)	0.102 (0.085)	0.099 (0.070)
	801-1300 pesos	0.493*** (0.157)	0.620*** (0.122)	0.364*** (0.102)	0.135 (0.105)	0.172** (0.084)	0.271*** (0.073)
	Superior to 1300 pesos	0.538*** (0.141)	0.702*** (0.118)	0.426*** (0.095)	0.094 (0.088)	0.311*** (0.08)	0.243*** (0.074)
	Number of observations	1551	3296	4034	3832	8266	5044
	Pseudo R-2	0.0354	0.0196	0.0115	0.0026	0.0080	0.0073
Vehicle vandalism	401-800 pesos			0.231* (0.127)	0.091 (0.120)	0.144 (0.108)	0.409*** (0.075)
	801-1300 pesos			0.481*** (0.130)	0.270** (0.131)	0.239** (0.106)	0.662*** (0.080)
	Superior to 1300 pesos			0.518*** (0.122)	0.313*** (0.105)	0.460*** (0.101)	0.917*** (0.078)
	Number of observations			5611	5600	8259	8892
	Pseudo R-2			0.0312	0.0332	0.0175	0.0524
Robbery	401-800 pesos	0.168 (0.125)	0.129 (0.104)	0.171** (0.072)	0.070 (0.067)	0.053 (0.052)	0.159*** (0.048)
	801-1300 pesos	0.225 (0.142)	0.152 (0.108)	0.258*** (0.079)	0.168** (0.079)	0.228*** (0.052)	0.255*** (0.055)
	Superior to 1300 pesos	0.242** (0.119)	0.183* (0.102)	0.328*** (0.072)	0.162*** (0.061)	0.193*** (0.050)	0.227*** (0.056)
	Number of observations	2403	3806	5611	5600	12931	8924
	Pseudo R-2	0.0259	0.0066	0.0123	0.0045	0.0089	0.0074
Theft	401-800 pesos	-0.1 (0.109)	-0.007 (0.097)	-0.215*** (0.072)	0.107 (0.086)	-0.071 (0.065)	0.013 (0.060)
	801-1300 pesos	-0.135 (0.127)	-0.054 (0.102)	-0.213*** (0.081)	0.114 (0.100)	0.085 (0.064)	0.048 (0.069)
	Superior to 1300 pesos	-0.129 (0.102)	-0.044 (0.095)	-0.122* (0.071)	0.020 (0.079)	0.115* (0.060)	0.163** (0.066)
	Number of observations	2400	3805	5610	5600	12931	8910
	Pseudo R-2	0.0145	0.0140	0.0287	0.0151	0.0156	0.0115

Notes:

Explanatory variables include fixed-effects for urban areas.

Standard error in parentheses

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Tableau B.1b. Victimization probability (Gran Buenos Aires and Capital Federal)

Probit estimation

Crime	Income class	1997	1998	1999	2000	2001
Burglary	401-800 pesos	-0.066 (0.102)	0.119 (0.081)	0.021 (0.077)	-0.005 (0.064)	0.045 (0.055)
	801-1300 pesos	0.004 (0.107)	-0.028 (0.094)	-0.118 (0.099)	0.012 (0.067)	0.047 (0.065)
	Superior to 1300 pesos	-0.045 (0.101)	0.122 (0.083)	-0.060 (0.072)	-0.022 (0.064)	0.178*** (0.064)
	Number of observations	3806	5611	5600	12931	8929
	Pseudo R-2	0.0143	0.0120	0.0184	0.0108	0.0170
Vehicle theft	401-800 pesos	0.025 (0.163)	-0.170 (0.123)	0.150 (0.136)	0.108 (0.104)	0.142 (0.094)
	801-1300 pesos	0.239 (0.162)	-0.052 (0.127)	0.280* (0.145)	0.123 (0.102)	0.265*** (0.098)
	Superior to 1300 pesos	0.430*** (0.152)	0.025 (0.116)	0.308** (0.125)	0.187* (0.099)	0.241** (0.099)
	Number of observations	3806	3962	3802	8260	5076
	Pseudo R-2	0.0222	0.0193	0.0139	0.0113	0.0118
Theft of moto and bicycle	401-800 pesos	0.132 (0.135)	-0.002 (0.079)	0.041 (0.096)	0.090 (0.066)	0.001 (0.059)
	801-1300 pesos	0.166 (0.139)	-0.004 (0.090)	0.123 (0.111)	0.057 (0.068)	-0.031 (0.069)
	Superior to 1300 pesos	0.052 (0.135)	< 0.001 (0.081)	-0.043 (0.090)	-0.015 (0.067)	-0.133* (0.071)
	Number of observations	3135	5611	4323	9705	6294
	Pseudo R-2	0.0279	0.0316	0.0169	0.0304	0.0141
Theft from vehicle	401-800 pesos	0.441*** (0.121)	0.313*** (0.098)	0.032 (0.097)	0.1 (0.085)	0.103 (0.070)
	801-1300 pesos	0.614*** (0.122)	0.357*** (0.102)	0.127 (0.105)	0.169** (0.084)	0.271*** (0.073)
	Superior to 1300 pesos	0.695*** (0.118)	0.418*** (0.096)	0.085 (0.089)	0.305*** (0.080)	0.240*** (0.074)
	Number of observations	3296	4034	3832	8266	5044
	Pseudo R-2	0.0198	0.0122	0.0031	0.0087	0.0090
Vehicle vandalism	401-800 pesos		0.235* (0.128)	0.077 (0.121)	0.142 (0.108)	0.408*** (0.075)
	801-1300 pesos		0.483*** (0.130)	0.256* (0.131)	0.236** (0.106)	0.657*** (0.080)
	Superior to 1300 pesos		0.535*** (0.122)	0.297*** (0.106)	0.455*** (0.101)	0.906*** (0.078)
	Number of observations		5611	5600	8259	8892
	Pseudo R-2		0.0350	0.0341	0.0179	0.0552
Robbery	401-800 pesos	0.067 (0.107)	0.114 (0.074)	0.016 (0.069)	0.035 (0.052)	0.151*** (0.048)
	801-1300 pesos	0.065 (0.112)	0.191** (0.081)	0.094 (0.081)	0.201*** (0.053)	0.240*** (0.055)
	Superior to 1300 pesos	0.082 (0.106)	0.243*** (0.074)	0.097 (0.062)	0.153*** (0.052)	0.209*** (0.057)
	Number of observations	3806	5611	5600	12931	8924
	Pseudo R-2	0.0243	0.0379	0.0134	0.0194	0.0165
Theft	401-800 pesos	0.060 (0.101)	-0.192*** (0.074)	0.170* (0.089)	-0.049 (0.066)	0.019 (0.061)
	801-1300 pesos	0.061 (0.107)	-0.179** (0.083)	0.192* (0.105)	0.123* (0.066)	0.055 (0.070)
	Superior to 1300 pesos	0.072 (0.101)	-0.068 (0.074)	0.106 (0.084)	0.171*** (0.064)	0.168** (0.068)
	Number of observations	3805	5610	5600	12931	8910
	Pseudo R-2	0.0439	0.0472	0.0443	0.0367	0.0309

Notes:

Explanatory variables include household' s size, the type of housing (house or apartment) and fixed effects for urban areas.

The sex and the age of the respondents are added in the case of robbery and theft.

Standard error in parentheses

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Tableau B.2a. Victimization probability (Gran Buenos Aires and Capital Federal)

First-difference estimations obtained from Table B.1a.

Crime	Income class	1997/1996	1998/1997	1999/1998	2000/1999	2001/2000
Burglary	401-800 pesos	-0.22 (0.148)	0.19 (0.130)	-0.083 (0.111)	-0.04 (0.100)	0.053 (0.084)
	801-1300 pesos	-0.183 (0.162)	-0.024 (0.142)	-0.084 (0.137)	0.121 (0.119)	0.04 (0.093)
	Superior to 1300 pesos	-0.057 (0.146)	0.165 (0.129)	-0.161 (0.109)	0.028 (0.096)	0.206** (0.090)
Vehicle theft	401-800 pesos	0.215 (0.248)	-0.176 (0.203)	0.321* (0.183)	-0.05 (0.171)	0.023 (0.140)
	801-1300 pesos	0.367 (0.256)	-0.274 (0.205)	0.34* (0.192)	-0.162 (0.177)	0.132 (0.141)
	Superior to 1300 pesos	0.369 (0.224)	-0.391** (0.189)	0.302* (0.169)	-0.121 (0.159)	0.032 (0.139)
Theft of moto and bicycle	401-800 pesos		-0.164 (0.155)	0.048 (0.123)	0.04 (0.115)	-0.11 (0.088)
	801-1300 pesos		-0.207 (0.164)	0.133 (0.141)	-0.08 (0.129)	-0.102 (0.097)
	Superior to 1300 pesos		-0.07 (0.155)	-0.058 (0.120)	0.031 (0.111)	-0.139 (0.097)
Theft from vehicle	401-800 pesos	0.04 (0.193)	-0.125 (0.155)	-0.282** (0.137)	0.064 (0.129)	-0.003 (0.110)
	801-1300 pesos	0.127 (0.199)	-0.256 (0.159)	-0.229 (0.146)	0.037 (0.134)	0.099 (0.111)
	Superior to 1300 pesos	0.164 (0.184)	-0.276* (0.151)	-0.332** (0.129)	0.217* (0.119)	-0.068 (0.109)
Vehicle vandalism	401-800 pesos			-0.14 (0.175)	0.053 (0.161)	0.265** (0.131)
	801-1300 pesos			-0.211 (0.185)	-0.031 (0.169)	0.423*** (0.133)
	Superior to 1300 pesos			-0.205 (0.161)	0.147 (0.146)	0.457*** (0.128)
Robbery	401-800 pesos	-0.039 (0.163)	0.042 (0.126)	-0.101 (0.098)	-0.017 (0.085)	0.106 (0.071)
	801-1300 pesos	-0.073 (0.178)	0.106 (0.134)	-0.09 (0.112)	0.06 (0.095)	0.027 (0.076)
	Superior to 1300 pesos	-0.059 (0.157)	0.145 (0.125)	-0.166* (0.094)	0.031 (0.079)	0.034 (0.075)
Theft	401-800 pesos	0.093 (0.146)	-0.208* (0.121)	0.322*** (0.112)	-0.178* (0.108)	0.084 (0.088)
	801-1300 pesos	0.081 (0.163)	-0.159 (0.130)	0.327** (0.129)	-0.029 (0.119)	-0.037 (0.094)
	Superior to 1300 pesos	0.085 (0.139)	-0.078 (0.119)	0.142 (0.106)	0.095 (0.099)	0.048 (0.089)

Notes:

Standard error in parentheses

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Table B.2b. Victimization probability (Gran Buenos Aires and Capital Federal)

First-difference estimations obtained from Table B.1b.

Crime	Income class	1998/1997	1999/1998	2000/1999	2001/2000
Burglary	401-800 pesos	0.185 (0.130)	-0.098 (0.112)	-0.026 (0.100)	0.05 (0.084)
	801-1300 pesos	-0.032 (0.142)	-0.09 (0.137)	0.13 (0.120)	0.035 (0.093)
	Superior to 1300 pesos	0.167 (0.131)	-0.182* (0.110)	0.038 (0.096)	0.2** (0.091)
Vehicle theft	401-800 pesos	-0.195 (0.204)	0.32* (0.183)	-0.042 (0.171)	0.034 (0.140)
	801-1300 pesos	-0.291 (0.206)	0.332* (0.193)	-0.157 (0.177)	0.142 (0.141)
	Superior to 1300 pesos	-0.405** (0.191)	0.283* (0.171)	-0.121 (0.159)	0.054 (0.140)
Theft from moto and vehicle	401-800 pesos	-0.134 (0.156)	0.043 (0.124)	0.049 (0.116)	-0.089 (0.089)
	801-1300 pesos	-0.17 (0.166)	0.127 (0.143)	-0.066 (0.130)	-0.088 (0.097)
	Superior to 1300 pesos	-0.052 (0.157)	-0.043 (0.121)	0.028 (0.112)	-0.118 (0.098)
Theft from vehicle	401-800 pesos	-0.128 (0.156)	-0.281** (0.138)	0.068 (0.129)	0.003 (0.110)
	801-1300 pesos	-0.257 (0.159)	-0.23 (0.146)	0.042 (0.134)	0.102 (0.111)
	Superior to 1300 pesos	-0.277* (0.152)	-0.333** (0.131)	0.22* (0.120)	-0.065 (0.109)
Vehicle vandalism	401-800 pesos		-0.158 (0.176)	0.065 (0.162)	0.266** (0.131)
	801-1300 pesos		-0.227 (0.185)	-0.02 (0.169)	0.421*** (0.133)
	Superior to 1300 pesos		-0.238 (0.162)	0.158 (0.146)	0.451*** (0.128)
Robbery	401-800 pesos	0.047 (0.130)	-0.098 (0.101)	0.019 (0.086)	0.116 (0.071)
	801-1300 pesos	0.126 (0.138)	-0.097 (0.115)	0.107 (0.097)	0.039 (0.076)
	Superior to 1300 pesos	0.161 (0.129)	-0.146 (0.097)	0.056 (0.081)	0.056 (0.077)
Theft	401-800 pesos	-0.252** (0.125)	0.362*** (0.116)	-0.219** (0.111)	0.068 (0.090)
	801-1300 pesos	-0.24* (0.135)	0.371*** (0.134)	-0.069 (0.124)	-0.068 (0.096)
	Superior to 1300 pesos	-0.14 (0.125)	0.174 (0.112)	0.065 (0.106)	-0.003 (0.093)

Notes:

Standard error in parentheses

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Table B.3a. Victimization probability (Gran Buenos Aires and Capital Federal)

First-difference estimations from Table B.1a.

Crime	Income Class	2001/1996	2001/1997	2001/1998	2001/1999	2001/2000
Burglary	401-800 pesos	-0.1 (0.120)	0.12 (0.115)	-0.07 (0.097)	0.013 (0.094)	0.053 (0.084)
	801-1300 pesos	-0.13 (0.139)	0.053 (0.124)	0.077 (0.114)	0.161 (0.118)	0.04 (0.093)
	Superior to 1300 pesos	0.181 (0.124)	0.238** (0.119)	0.073 (0.104)	0.234** (0.096)	0.206** (0.090)
Vehicle theft	401-800 pesos	0.333 (0.210)	0.118 (0.187)	0.294* (0.154)	-0.027 (0.165)	0.023 (0.140)
	801-1300 pesos	0.403* (0.220)	0.036 (0.189)	0.31* (0.159)	-0.03 (0.174)	0.132 (0.141)
	Superior to 1300 pesos	0.191 (0.193)	-0.178 (0.181)	0.213 (0.151)	-0.089 (0.159)	0.032 (0.139)
Theft of moto and bicycle	401-800 pesos	-0.005 (0.059)	-0.186 (0.146)	-0.022 (0.098)	-0.07 (0.112)	-0.11 (0.088)
	801-1300 pesos	-0.036 (0.069)	-0.256* (0.154)	-0.049 (0.113)	-0.182 (0.130)	-0.102 (0.097)
	Superior to 1300 pesos	-0.124* (0.071)	-0.236 (0.151)	-0.166 (0.107)	-0.108 (0.114)	-0.139 (0.097)
Theft from vehicle	401-800 pesos	-0.306* (0.166)	-0.346** (0.140)	-0.221* (0.120)	0.061 (0.120)	-0.003 (0.110)
	801-1300 pesos	-0.222 (0.173)	-0.349** (0.142)	-0.093 (0.125)	0.136 (0.128)	0.099 (0.111)
	Superior to 1300 pesos	-0.295* (0.159)	-0.459*** (0.139)	-0.183 (0.120)	0.149 (0.115)	-0.068 (0.109)
Vehicle vandalism	401-800 pesos			0.178 (0.147)	0.318** (0.142)	0.265** (0.131)
	801-1300 pesos			0.181 (0.153)	0.392** (0.153)	0.423*** (0.133)
	Superior to 1300 pesos			0.399*** (0.145)	0.604*** (0.131)	0.457*** (0.128)
Robbery	401-800 pesos	-0.009 (0.134)	0.03 (0.115)	-0.012 (0.087)	0.089 (0.082)	0.106 (0.071)
	801-1300 pesos	0.03 (0.152)	0.103 (0.121)	-0.003 (0.096)	0.087 (0.096)	0.027 (0.076)
	Superior to 1300 pesos	-0.015 (0.132)	0.044 (0.116)	-0.101 (0.091)	0.065 (0.083)	0.034 (0.075)
Theft	401-800 pesos	0.113 (0.124)	0.02 (0.114)	0.228** (0.094)	-0.094 (0.105)	0.084 (0.088)
	801-1300 pesos	0.183 (0.145)	0.102 (0.123)	0.261** (0.106)	-0.066 (0.121)	-0.037 (0.094)
	Superior to 1300 pesos	0.292** (0.121)	0.207* (0.116)	0.285*** (0.097)	0.143 (0.103)	0.048 (0.089)

Notes:

Standard error in parentheses

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Table B.3b. Victimization probability (Gran Buenos Aires and Capital Federal)

First-difference estimations from Table B.1b.

Crime	Income class	2001/1997	2001/1998	2001/1999	2001/2000
Burglary	401-800 pesos	0.111 (0.116)	-0.074 (0.116)	0.024 (0.095)	0.05 (0.084)
	801-1300 pesos	0.043 (0.125)	0.075 (0.125)	0.165 (0.118)	0.035 (0.093)
	Superior to 1300 pesos	0.223* (0.120)	0.056 (0.120)	0.238** (0.096)	0.2** (0.091)
Vehicle theft	401-800 pesos	0.117 (0.188)	0.312* (0.188)	-0.008 (0.165)	0.034 (0.140)
	801-1300 pesos	0.026 (0.189)	0.317* (0.189)	-0.015 (0.175)	0.142 (0.141)
	Superior to 1300 pesos	-0.189 (0.181)	0.216 (0.181)	-0.067 (0.159)	0.054 (0.140)
Theft of moto and bicycle	401-800 pesos	-0.131 (0.147)	0.003 (0.147)	-0.04 (0.113)	-0.089 (0.089)
	801-1300 pesos	-0.197 (0.155)	-0.027 (0.155)	-0.154 (0.131)	-0.088 (0.097)
	Superior to 1300 pesos	-0.185 (0.153)	-0.133 (0.153)	-0.09 (0.115)	-0.118 (0.098)
Theft from vehicle	401-800 pesos	-0.338** (0.140)	-0.21 (0.140)	0.071 (0.120)	0.003 (0.110)
	801-1300 pesos	-0.343** (0.142)	-0.086 (0.142)	0.144 (0.128)	0.102 (0.111)
	Superior to 1300 pesos	-0.455*** (0.139)	-0.178 (0.139)	0.155 (0.116)	-0.065 (0.109)
Vehicle vandalism	401-800 pesos		0.173** (0.075)	0.331** (0.142)	0.266** (0.131)
	801-1300 pesos		0.174** (0.080)	0.401*** (0.153)	0.421*** (0.133)
	Superior to 1300 pesos		0.371*** (0.078)	0.609*** (0.132)	0.451*** (0.128)
Robbery	401-800 pesos	0.084 (0.117)	0.037 (0.088)	0.135 (0.084)	0.116 (0.071)
	801-1300 pesos	0.175 (0.125)	0.049 (0.098)	0.146 (0.098)	0.039 (0.076)
	Superior to 1300 pesos	0.127 (0.120)	-0.034 (0.093)	0.112 (0.084)	0.056 (0.077)
Theft	401-800 pesos	-0.041 (0.118)	0.211** (0.096)	-0.151 (0.108)	0.068 (0.090)
	801-1300 pesos	-0.006 (0.128)	0.234** (0.109)	-0.137 (0.126)	-0.068 (0.096)
	Superior to 1300 pesos	0.096 (0.122)	0.236** (0.100)	0.062 (0.108)	-0.003 (0.093)

Notes:

Standard error in parentheses

* Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level