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PERCEPCIONES DE CRIMEN Y REALIDAD EN AMÉRICA LATINA

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RESUMEN

El estudio muestra que las percepciones de inseguridad están fuertemente correlacionadas con la victimización a nivel individual y sugiere que las razones por las cuales esta relación no es usualmente encontrada en estudios simples, comparativos entre países, se debe a que estos no toman en cuenta diferencias observables entre individuos que posiblemente enfrenten diferentes percepciones de inseguridad así como diferentes probabilidades de victimización. Nuestros resultados son consistentes con el modelo donde los individuos priorizan el crimen relativo a otros problemas dependiendo en si ellos han desarrollado mecanismos de supervivencia para atenuar el impacto del crimen en su bienestar, la hipótesis es que el peso que el individuo asigna al crimen depende más en cambios del crimen actual que en el nivel. El estudio no pretende establecer una relación causal entre la victimización y la percepción, pero se ha subido la barra para aquellos estudios que afirman una ausencia de correlación.

Palabras clave: crimen, América Latina, percepciones

Códigos JEL: K14, O1, D84

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ABSTRACT

We show that perceptions of insecurity are strongly correlated with victimization at the individual level and suggest that the reason this relationship is usually not uncovered in simple cross country studies is that they fail to consider observable differences across individuals who may face different perceptions of insecurity as well as different probabilities of victimization. Our findings are consistent with a model where individuals rank crime relative to other problems depending on whether they have developed coping mechanisms to attenuate the impact of crime on their wellbeing, the implication is that the weight individuals' place on crime depends more on changes in actual crime than on its level. We do not claim to establish a causal relationship between victimization and perception, but we raise the bar for claims of the absence of a correlation.

Keywords: Crime, Latin America, Perceptions.

JEL Codes: K14, O1, D84

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Crime perceptions and reality in Latin America

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(Preliminary, comments welcome)

Abstract

We show that perceptions of insecurity are strongly correlated with victimization at the individual level and suggest that the reason this relationship is usually not uncovered in simple cross country studies is that they fail to consider observable differences across individuals who may face different perceptions of insecurity as well as different probabilities of victimization. Our findings are consistent with a model where individuals rank crime relative to other problems depending on whether they have developed coping mechanisms to attenuate the impact of crime on their wellbeing, the implication is that the weight individuals' place on crime depends more on changes in actual crime than on its level. We do not claim to establish a causal relationship between victimization and perception, but we raise the bar for claims of the absence of a correlation.

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1 Introduction

Public perception of insecurity has worsened dramatically in Latin America since the mid 1990s, so much, that in many countries crime has overtaken unemployment as the main public concern. Figure 1 shows the most commonly used measure of perception of insecurity, the fraction of the population that mentions insecurity as their main concern, which went from around 5% of the population to over 25% between 1994 and 2010. Governments and international agencies all over the region are giving precedence to insecurity over other topics[1]. Perceptions of insecurity are important because they have a direct effect on welfare, potentially influencing familial decisions regarding investments in private security, education, and labor supply; they also shape political pressures faced by the authorities, which in turn influence policy choices and public resource allocation decisions (Behrman and Craig, 1987).

A longstanding debate in the criminology literature has questioned whether there is a divide between fear and actual crime, frequently citing three related empirical regularities observed in the United States: first, the demographic groups with the highest probability of victimization (young males) do not have the highest fear of crime, second, there are more fearful individuals than victims of crime and third, areas with higher crime rates are not necessarily the ones with highest measured fear (Taylor and Hale, 1986). In Latin America, this apparent divide has also been underscored in certain settings (Restrepo and Moreno, 2007), and is often commented in policy circles[2]. This has led to some citizen security strategies geared towards improving perceptions of insecurity, or fear, instead of targeting actual crime in order to reduce political pressures from political constituencies. Crime imposes a major cost on society and represents a real burden on its development prospects (Soares, 2005), so an adequately focused anti-crime strategy should bring significant short and long term benefits to the region. If perceptions were somehow unrelated to real crime as some analysts have suggested, the focus of anti-crime public policy might be thinned down by efforts to improve perceptions alone, especially if such efforts have little effect on actual crime.

This article shows that perceptions of insecurity and crime are closely correlated when analyzed using appropriately disaggregated data. When looking simply at the cross-country patterns of crime, victimization and perceptions of insecurity, there appears to be no relation: some countries with very high crime rates have relatively low perceptions of insecurity and others, relatively safe countries, place crime as the top concern. We show that when looking at individual level data over a long time span and using a very large set of individual-level controls, victimization and other measures of the probability of victimization have a strong and very robust positive correlation with perceptions

[1] See the OAS declaration of San Salvador on the importance of citizen security, www.oas.org/en/41ga/

[2] See the discussion by Mascott(2002) on the mexican Congress' website

of insecurity. Moreover, perceptions of insecurity are negatively correlated with past victimization in the individual's social reference group (in terms of age, education and socioeconomic status). This is consistent with a model where the perceived probability of being victimized (measured by recent individual victimization) affects the weight a person places on insecurity, and therefore its ranking, but also where coping capabilities (measured by past victimization of the reference group) may attenuate the effect of crime on the amount of stress it generates for the individual. One implication is that individuals appear to react to changes in crime more than to the level of crime, which could imply a weak cross sectional correlation between actual crime and the perception of insecurity at the aggregate level, as is observed in the data. In addition, we find that individual perceptions of insecurity vary significantly with socio-economic status, place of residence and other characteristics that are related to the probability of victimization.

2 Analytical framework

In the household surveys used in this paper and in most work on perceptions of insecurity, it is measured as whether the person ranks insecurity as his/her most pressing problem or public policy issue, this is then aggregated as a fraction of the population. A person's concern about insecurity (and the likelihood of ranking it as the top issue) is increasing in their expected loss from crime:

$$E(Loss\_C_i|\Omega_i) = \phi_i * Pr(Victim|\Omega_i) * Cost_i \tag{1}$$

Where the distribution from which the probability of victimization is drawn (Ω_i) may vary across individuals depending on their characteristics, as well as the cost incurred in the event of victimization ($Cost_i$); ϕ is a preference parameter that captures the direct welfare loss (i.e. stress) resulting from a high perceived probability of victimization, it can also be interpreted as the individual weight given to a given cost from victimization. We posit that the stress parameter is a function of perceived changes in the probability of victimization, which is consistent with various psychological models of stress, in particular Lazarus transactional model of stress (Lazarus, 1966), whereby individuals initially evaluate the significance of the stressor (primary appraisal) and then consider his or her own coping resources (secondary appraisal) which in turn are related to whether the stressor is new or if it is a situation or stimulus to which the person is accustomed (Glanz et al., 2002), so the level of stress a person experiences when facing a given perceived probability of victimization is a function of the innovation to his/her perception:

$$\phi_i = \phi_i(Pr(Victim|\Omega_i)_t - Pr(Victim|\Omega_i)_{t-1}) \tag{2}$$

These considerations suggest a potentially non-linear relationship between measures of current and lagged probability of victimization as well as individual characteristics that may influence both the probability and the cost incurred in the event of victimization. Our proposed baseline specification, however, focuses on a linear-in-regressors model, as we are not seeking to test this particular theory. Our model using individual-level data is:

$$p_{it} = F(\rho_0 + \rho_1 vit + \rho_2 V_{it} - \rho_3 V_{it-1} + \Gamma X_{it} + \epsilon_{it}) \tag{3}$$

where p_{it} is equal to 1 if person i responds that crime is his/her most pressing concern, v_{it} is equal to 1 if the individual's household has been victim of a crime in the previous 12 months, V_{it} is the fraction of the individual's reference group (constructed by age, education and income groups) that was victimized in the previous 12 months excluding individual i, V_{it-1} is the previous year's victimization of i's reference group, X_{it} is a vector of individual characteristics and ϵ_{it} is the error term. Strictly, the term v_{it} is a proximate measure of the probability of being victimized in the near future, for if an individual is victimized, it is natural for her to infer that she has a higher probability of another victimization. In the empirical analysis below, we use two additional measures of the perceived probability of victimization. The function $F()$ simply captures the fact that this model can be estimated under a linear probability specification or some other such as Probit or Logit. Before we provide estimates of this model, the following section illustrates the typical cross sectional regression that does not consider potential individual-level omitted observed variables.

3 A look at the cross section

We begin by illustrating the source of the commonly held view of the absence of a relationship between crime and perceptions of insecurity. Table 1 shows estimates of the correlation between perceptions of insecurity and measures of victimization and also officially reported homicide rates (the most commonly used most reliable measure of crime). We the most popular measure of the perception of insecurity: the fraction of the population considering crime as the most important problem. Simple cross sectional regressions for the latest available year of data using national averages generally shows no significant correlation between perception of insecurity and victimization or crime (column 1). Pooling all years where the aggregate level data is available yields similar results, even after controlling for year and country level fixed effects and including the lagged value

of victimization or crime (columns 2 and 3 respectively). Aggregate data cannot account for characteristics that may be correlated with the individuals perception of insecurity and his probability of victimization. Individuals residing in high crime areas, have a high probability of victimization, but under model (1) - (2), may develop coping mechanisms that help them moderate the level of stress produced by their criminal environment, and could therefore place less weight on crime as compared to other issues regarding their quality of life such as labor market conditions or health risks. Socioeconomic status, education and age, among other things, could be closely related both to the probability of victimization and the importance given to crime relative to other issues.

For illustrative purposes, suppose we estimated $p_{jt} = \beta_0 + \beta_1 v_{jt} + \epsilon_{jt}$ but the true model of perceptions were $p_{jt} = \rho_0 + \rho_1(v_{jt} - v_{it-1}) + u_{jt}$; then $E[\epsilon_{jt} v_{jt}] = -\rho_1 E[v_{jt} v_{it-1}]$, which under the assumption that $v_{jt} = \delta v_{jt-1} + \epsilon_{jt}$ (with $0 < \delta < 1$) is equal to $-\rho_1 \delta \sigma_1^2/(1-\delta^2)$ and which implies that the OLS estimate of β_1 will be equal to $\rho_1(1-\delta)$, an attenuated estimate of the true relationship between current victimization and perception of insecurity, ρ_1. Note that this argument applies to aggregate or individual level data, as j could index countries or people. The key point is that a correlation with aggregate data, will be biased downward by omitted variables that are positively related to victimization and negatively related to perceptions of insecurity. Omitted variables that are positively related both to perceptions and victimization will generate a positive bias in the correlation. We consider individual-level data in the next section, where it is possible to control for many observable characteristics.

4 Individual level data

Aggregate data may conceal several factors influencing both the perception of insecurity and the probability of victimization at the individual level, such as the socioeconomic and demographic composition of certain groups within the population. Individual level data allows for the inclusion of a detailed set of controls for several observable factors and the analysis of heterogeneous relationships across types of individuals whose perceptions may react to crime differently than others. We use all individual level records from all rounds of the Latinobarometro survey between 1995 and 2010 and estimate the correlation of the perception of insecurity (rank measure) with individual victimization, controlling for a large number of observable characteristics: age, gender, level of education, occupation, wealth and marital status. Individual victimization may increase the importance people assign to insecurity because it increases the perceived probability of further victimization, so we use three additional indicators: the victimization rate in the individuals social reference group (as determined by country of residence, age group, gender, education and socioeco-

nomic level), whether the person responds that living in the country has become more dangerous, and whether she believes insecurity has worsened in the last year, as alternative measures of the perceived probability of victimization in the near future. Our basic specification is a linear version of (3) and our basic results are shown in table 2. We do not report the coefficients on most controls, except for the measure of wealth, since it is particularly relevant for policy debates and it provides some insight into the reasons why the aggregate correlations reported in table 1 may be downward biased. Column 1 shows a positive and very statistically significant conditional correlation of individual victimization and perception of insecurity, column 2 includes victimization of the individuals reference group and its lag and confirms the same strong correlation. The negative and significant coefficient on the lagged victimization of the reference group is consistent with the hypothesis that individuals may react more to surprises in their perceived probabilities of victimization than to the level itself, although this is far from a definitive causal estimate of this relationship.

Column 3 includes an indicator of whether the person believes the country has become more dangerous and column 4 an indicator of whether the person believes insecurity has increased over the previous year. Both variables are positively and significantly correlated with perceptions of insecurity. Columns 5 and 6 replicate column 1 but including the two additional victimization probability measures, and overall the results on all variables are consistent: There is a strong positive association between perceptions of insecurity and victimization and complementary measures of the probability of being victimized in the near future. In addition, the evidence is consistent with a story where individuals react to changes in the perceived probability of victimization. The fact that the coefficient on the lagged victimization of the individuals reference group loses significance when we include the perception of an increase in insecurity over the last year suggests that these variables are both getting at the change in perceived probability of victimization. It is also noteworthy that the coefficient on this variable in column 4 is 4 times larger than the coefficient on individual victimization. This is consistent with the psychological model outlined before, where individuals adapt to the criminal environment where they live, develop coping mechanisms and are therefore more susceptible to increases or decreases in the level of victimization than to the level itself.

We construct a wealth index that adds 11 dichotomous variables that take the value of 1 if the person owns his house, owns certain appliances at home, a car, or whether his house has access to water mains, hot water and sewage facilities, the index is then clustered in low, medium and high wealth categories. In the analysis, medium wealth is the excluded category. Table 2 shows that poorer individuals tend to rank insecurity lower than the medium wealth group, and that the richer segment has the highest perception of insecurity, controlling for many other individual level characteristics. These coefficients do not necessarily mean that increases in the level of wealth

are associated with a reduced sense of reduced personal safety or of the persons property; higher wealth may well be a proxy for the level of crime in the environment individuals live in, and in that case, given the fact that poorer individuals tend to live in higher crime areas (DiTella, Galiani and Schargrodsky, 2010), these correlations would also suggest a certain degree of adaptation to the criminal environment. That is, poorer individuals are able to cope better with crime may be out of a sense of resignation given their perceived lack of resources to effectively protect themselves against crime.

5 Media exposure

Perceptions of crime are influenced by an array of factors ranging from family, friends and acquaintances to media exposure, trust in institutions and possibly even satisfaction with the physical environment in which one lives. These factors may help to shape perceptions directly as people learn that other people have been victimized, or may do so indirectly by facilitating or hindering the occurrence of crimes (corrupt police forces or dysfunctional judicial system). One potentially important factor in perceptions that is frequently cited in policy discussion regarding insecurity is the exposure to alternative media outlets. In table 3 we examine the correlation of media exposure with perceptions of insecurity. Media exposure is measured as the number of days in a week that an individual watches, reads and/or listens to news. For each type of media we then separate the answers into two groups: high and low exposure, where high is defined as utilizing the particular outlet five days a week or more.

The first thing to note is that the correlation of perception and individual victimization is robust to the inclusion of these measures of media exposure. Lagged victimization of the reference group is negative and significant (column 1), and the specifications that use the alternative measures of the perceived probability of victimization are also consistent with the previous findings. All of these regressions, in addition to the controls included in table 2, also include the wealth indicators as controls but are not reported so as to not encumber the table.

Exposure to different media outlets is correlated with perceptions of crime. People who usually get their news from newspapers tend to prioritize insecurity more, relative to other issues, as do people getting their news mostly from television programs, although to a slightly lesser degree. Individuals receiving their news primarily from radio programs on the other hand, tend to systematically weigh insecurity less. Beyond the extensive set of controls included in these regressions, it may be true that exposure to different media outlets is correlated with socioeconomic status, and with the likelihood of living in more or less criminogenic environments, or could also simply imply a correlation between

preferences for media outlets and perceived costs of victimization or perception of insecurity more generally, this could also be picking up the fact that people in higher socioeconomic strata (who have the highest perception of insecurity) are the most frequent consumers of newspapers, whereas the lower strata tend to get their news from radio programs. Despite these considerations, it appears that information channels containing visual images could have a significant effect on perceptions, which is apparent in particular from the correlation with television exposure, which is not strongly correlated with socioeconomic status.

6 Concluding remarks

This paper does not pretend to measure the causal effect of victimization or any other measure of the probability of future victimization on individual perceptions of insecurity, it simply sets out to refute the commonly held claim that perceptions of insecurity are uncorrelated with actual crime. We provide a rationale for the frequent uncorrelated finding based on the suggestion that at the aggregate level, there are many omitted variables that bias the regression coefficient towards zero: in the first place, the possibility that perceptions respond significantly to changes in crime and not so much to its level, which would be consistent with certain (prominent) psychological theories on the determinants of stress and coping mechanisms, but also to a very wide variety of observable characteristics at the individual level that may be correlated with the probability of victimization, the costs incurred in the event of victimization, the subjective value placed on personal safety, and therefore also with the perception of insecurity as measured by the importance the individual gives the issue relative to other social problems.

We do not claim to have provided solid evidence that one or another model of perception formation is more accurate, we do not even claim to have provided a causal estimate of the effect of victimization on perception, we have simply raised the bar to any claim that perception and crime are uncorrelated. We argue that thus far, estimates with such a claim are essentially falling prey to major omitted variables problems, and that once one goes even a small way into controlling for some of these important factors, a very strong and robust correlation between perception of insecurity and crime emerges. Of course, factors other than actual crime and victimization may have a causal impact on perceptions of insecurity, and that may be important in and of itself, but the idea that people's perceptions of insecurity can be acted upon as a matter of policy without special regard to the effectiveness of policies geared towards curbing crime, should probably be put to much more serious scrutiny than it has thus far.

7 References

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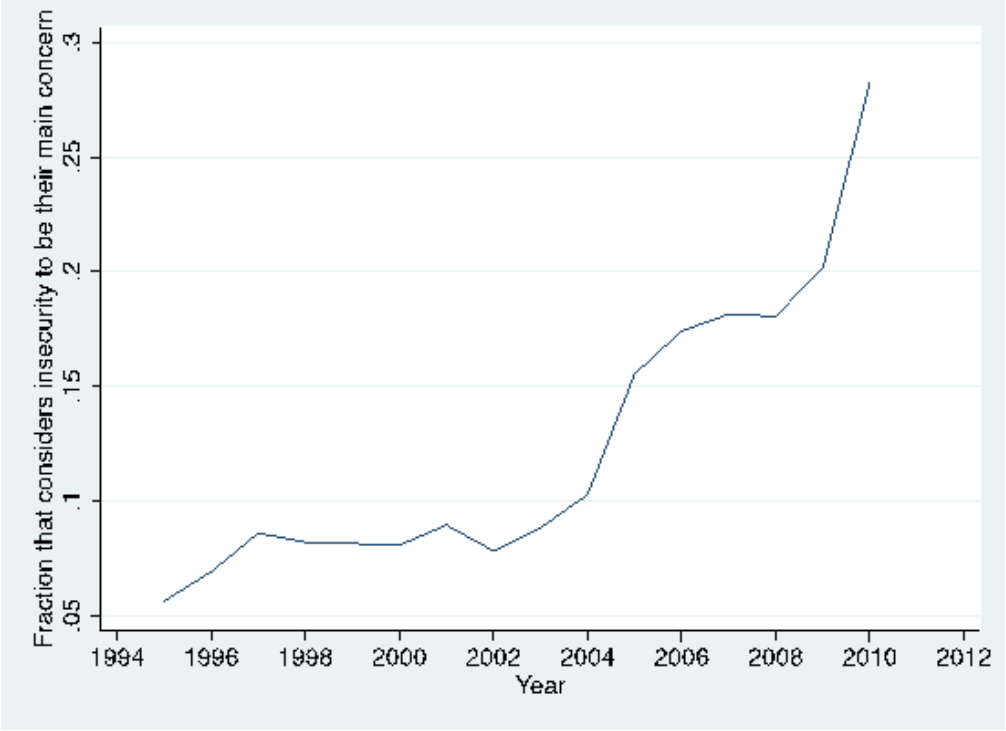
Figure 1. Perception of insecurity



Source: Latinobarometro and UNODC, several years.

Table 1. Aggregate correlations between perceptions of insecurity and crime

	Cross section (2010)	Pooled data	
	(1)	(2)	(3)
Victimization	0.233	0.008	-0.006
	(0.25)	(0.04)	(0.08)
Lagged Victimization			-0.020
			(0.04)
R-squared	0.026	0.672	0.684
Observations	18	256	220
Homicide rate	0.002	0.001*	0.000
	(0.00)	(0.00)	(0.00)
Lagged Homicide rate			0.001
			(0.00)
R-squared	0.079	0.684	0.695
Observations	13	214	185

Note: Statistically significantly different than zero at 90% (*) confidence. Robust standard errors in parentheses. Pooled regressions include country and year fixed effects. Cross-section analysis corresponds to latest available year. Victimization takes value one if individual or anyone in his family was a victim of crime during the last 12 months and zero otherwise. The Latinobarómetro data set was used for all variables except for homicide rates, which correspond to official data gathered by UNODC.

Table 2. Individual level correlations between perceptions of insecurity and victimization, controlling for observable characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
Victimization	0.008***	0.009***	0.013***	0.006**	0.014***	0.006**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Low wealth	-0.014***	-0.016***	-0.016***	-0.010**	-0.018***	-0.010**
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
High wealth	0.015***	0.019***	0.023***	0.011***	0.026***	0.014***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Country has become more dangerous			0.021***		0.021***	
			(0.00)		(0.00)	
Insecurity has increased in the last year				0.025***		0.027***
				(0.00)		(0.00)
Victimization of reference group		-0.006			0.018	0.001
		(0.01)			(0.02)	(0.01)
Victimization of reference group in previous year		-0.024***			-0.061***	0.007
		(0.01)			(0.02)	(0.01)
Observations	148,766	127336	50,932	59,783	50,614	49,942
R-squared	0.084	0.088	0.111	0.054	0.112	0.062
Number of years	15	13				
Number of countries	19	18				

Note: Standard errors in parentheses. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence. Robust standard errors in parentheses. All regressions include controls for age, gender, education, occupation, wealth and marital status and country and year fixed effects. Victimization takes value one if individual or anyone in his family was a victim of crime during the last 12 months and zero otherwise. The reference of group of each individual was built using country of residence, age group, gender, education and socioeconomic level in a specific year, and the victimization of an individual's reference group is the victimization rate in a given year, excluding the individual. Wealth variables were built using a wealth index, that adds up 11 dichotomous variables that take value 1 if the person owns his house, whether he owns certain appliances at home, a car, and whether his house has access to water mains, hot water and sewage facilities. This wealth index was then cluster in three categories: low, medium and high wealth

Table 3. Individual level correlations between perceptions of insecurity, victimization and media exposure, controlling for observable characteristics

	(1)	(2)	(3)
Victimization	0.007***		
	(0.00)		
Victimization of reference group	-0.006		
	(0.01)		
Victimization of reference group in previous year	-0.015**		
	(0.01)		
Country has become more dangerous		0.023***	
		(0.00)	
Insecurity has increased in the last year			0.024***
			(0.00)
TV Days ≥ 5	0.001***	0.000	0.001*
	(0.00)	(0.00)	(0.00)
Newspaper Days ≥ 5	0.003***	0.004***	0.002***
	(0.00)	(0.00)	(0.00)
Radio Days ≥ 5	-0.002***	-0.001*	-0.001**
	(0.00)	(0.00)	(0.00)
Observations	85,804	30,645	41,749
R-squared	0.095	0.125	0.057
Number of years			
Number of countries			

Note: Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence. Robust standard errors in parentheses. All regressions include controls for age, gender, education, occupation, wealth and marital status and country and year fixed effects. Victimization takes value one if individual or anyone in his family was a victim of crime during the last 12 months and zero otherwise. The reference of group of each individual was built using country of residence, age group, gender, education and socioeconomic level in a specific year, and the victimization of an individual's reference group is the victimization rate in a given year, excluding the individual. Media exposure is a dummy of using the outlet 5 days a week or more.