

LATIN AMERICAN CRIME AND THE ISSUE OF INEQUALITY*

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I. INTRODUCTION: CRIME AS A STRATEGIC DEVELOPMENT ISSUE IN LATIN AMERICA¹

Crime is an increasingly worrying social phenomenon in the developing world in general, and in Latin America in particular. As shown in Figure 1[‡], the crime rate (measured by homicide/100 000, as reported to the UN crime surveys by national police authorities) has virtually exploded since mid 1980s in Latin America, Sub-Saharan Africa and Eastern Europe. Latin America clearly stands out as an exceptional case. Annually in Latin America, approximately 140 000 people are murdered (Londoño & Guerrero 1999:27). Using other sources does not really change this picture. Figure 2 confirms the exceptional position of Latin America, where the source in mortality statistics is collected from national health authorities instead of the police. Indicators of crime other than homicide are less reliable for international comparison, but estimates point in the direction of Latin America being way above the average for any other region of the world (Bourguignon 1999, Table 1). It has been estimated that 28 million Latin American families are victims of theft or robbery every year (Londoño & Guerrero 1999:3).

Crime and violence are now viewed as a development issue of importance, which was probably not the case two decades ago. Development agencies such as the World Bank and Inter-American Development Bank (IDB) have quite recently initiated ambitious research projects on crime and violence. Projects directed to the judicial system or police authorities have increased their share in the project portfolio of multilateral as well as bilateral development cooperation agencies. More importantly, crime is becoming a major concern in the daily life of an

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‡ Editor's Note: All tables and figures are located at the end of the article.

increasing number of citizens in the developing world, manifesting itself in national political agendas, in higher crime related expenditures and, not the least, in human suffering.

There are several reasons to regard crime as a social phenomenon with strong and complex ties to the development process in general. In Latin America, crime is a potential threat to what most people would regard as encouraging development trends, especially after "the lost decade" of the 1980s, in terms of democratization and resumed growth. The following examples may illustrate how continuous progress in these areas are being made more difficult by the increasing crime levels:

Crime and Political Development

In El Salvador, concern over violence and crime is becoming the number one electoral issue as reflected in public opinion polls, replacing economic issues and peace (IUOP 1998:4). Similar trends have been noted in the opinion polls in other countries (Londoño & Guerrero 1999:6). For obvious reasons this is likely to affect the political agenda as well as the choice of candidates, paving the way for populism and "strong men". In the news media one often reads about the resurgence of a phenomenon that resembles the death squads of the 1980s, but only now under the banner of 'social cleansing' (*limpieza social*) with delinquents as their major target rather than political opponents – Guatemala, El Salvador, Brazil, Colombia are some examples. Public opinion polls indicate that an alarmingly large portion of the population in crime stricken urban areas under some circumstances justify social cleansing and the use of torture by the police (Ibid.:36)². Reports from offices of the Human Rights Ombudsman reveal that one of the most important categories of abuse stems from charges made by victims of crime, or victims of abuse by the police or the judiciary when dealing with crime. In Honduras, the army on several occasions has been called out to the streets to assist the police in crime prevention, while the process of "demilitarization" of the police forces has been affected by delays. All these examples illustrate how crime is a potential obstacle to good governance, rule of law, less authoritarian rule, respect for human rights and a modernized role of the military forces.

Crime and Economic Development

Crime is costly. A number of attempts have been made to estimate the cost of crime and violence in relation to GDP, involving a series of difficulties in terms of concepts and data. Table 1 shows a "best estimate" made in a research project on violence in Latin America funded by the IDB. The cost of violence in urban areas is estimated to be approximately

14 percent of urban GDP. About half of this amount is categorized as “intangibles”, estimated from willingness to pay studies. (The study is not explicit about how the risk of double-counting is avoided when mixing estimates based on direct costs and estimates based on willingness to pay). El Salvador and Colombia stand out with costs estimated at 25 percent of GDP. In Mexico and Brazil (comprising more than half of the population of the continent), the estimate is approximately 10 percent of GDP. The difficulties in setting these kind of monetary price tags on the effects of violence should of course be recognized³, and the figures are therefore to be interpreted with care. However, there is no doubt that crime and violence are costly, both in terms of human suffering, as well as in terms of economic resources that are diverted from alternative uses.

II. EXPLAINING VARIATIONS IN AGGREGATED CRIME RATES: A SELECTIVE OVERVIEW OF CRIME RESEARCH

What does contemporary research tell us about the factors behind the variations in crime rates between different societies? There exists a long tradition of research on crime applied primarily to the developed nations, with contributions from disciplines such as criminology, sociology, economics, public health, psychology, political sciences and anthropology. A substantial share of these studies aim at identifying factors explaining variations in aggregated crime rates, with aggregates varying from communities to nations. Different disciplines have produced results within this field, but often with different theoretical approaches and interpretations. The following is a stylized overview (without any claims of being exhaustive):

Economics of Crime

The “economics of crime approach” dates back to the 1960s. The economics of crime model, in its most orthodox version, portrays criminals as rational agents who are able to weigh the expected return from criminal behavior against the risk and cost of getting caught, plus the forgone opportunity earnings of legal activity. Based on these assumptions of rational behavior econometric models are specified, typically involving indicators such as policing (indicating risk of getting caught), punishment (the cost of getting caught), education level, poverty and income inequality (reflecting earnings of alternative legal activity and availability of opportunities for crime). One of the earliest contributions in the economics of crime tradition is Becker (1968). Excellent overviews are found in Eide (1997) and Glaeser (1999).

Public Health

Analysis of variations in mortality causes – over time or between aggregations such as communities, socioeconomic groups or nations – has a long history in the health sciences. Homicide is often analyzed as just one of the several mortality causes to be explained, which is a distinguishing trait of the public health approach. Explanatory factors that are studied are numerous, but typically include socioeconomic factors (poverty, inequality, etc), life styles and demographic indicators. An interesting result in the various studies is that homicide is often found to be related to explanatory factors in the same way as several other, less abnormal, mortality categories. Examples of contributions in the public health tradition are Wilkinson (1996), Kennedy (1998) and Lynch (1997).

Criminology

Criminologists obviously have the longest history and the widest spectra of approaches in crime research. The sociology of crime is a sub discipline in which the variations of crime rates in the U.S. have been intensely studied; paying attention to such explanatory factors as poverty, inequality, unemployment, age structure, race, fire arm availability, divorce rates and socioeconomic segregation. One of the earliest contributions to the sociology of crime tradition is Shaw and McKay (1942). Examples of more recent contributions are Hagan (1995), Sampson (1997) and Kovandzic (1998).

Anthropology

Anthropologists have written some of the more interesting recent case studies on crime in Latin America. Their method is inductive, producing in depth analyses of the social interaction within crime stricken communities or youth gangs. These studies frequently use the concept of social capital or related concepts. Examples relevant to Latin America and the Caribbean are found in Moser (1999).

Political Science / Peace Research

Some of the most crime stricken countries in Latin America and elsewhere have been, or still are, subject to domestic armed conflicts (Guatemala, El Salvador, Colombia, Nicaragua, South Africa). For political scientists studying armed conflicts and peace processes, the continuation of expressions of violence after peace has been settled are subject to increased attention. Some examples relevant to the Central American peace processes are found in Fundación Arias (1994a; 1994b), Cuadra Lira et. al. (1998) and Salomon (1999).

It is obvious from above that researchers from various disciplines are fishing in the same waters. When doing regression analyses (at least economists, criminologists and health scientists make frequent use of this method) they tend to end up with the same indicators, but often with different theoretical motivations. However, a general impression after having reviewed some of this literature is that the cross-fertilization between the different disciplines is quite limited. When glancing through the references in an article on homicide rates in the journal *Criminology* one finds very few references to *American Journal of Public Health*, where a rich body of research has been presented on the same or closely related topic. If an economist discusses the issue of crime and inequality, references to Gary Becker (1968) are almost obligatory while the contributions by Shaw and McKay (1942) on how social disorganization may constitute a link from poverty/inequality to crime is completely overlooked. One would hope that the developing agencies such as the World Bank and IDB would be less inclined to pursue this kind of academic one-eyedness. However, the recently initiated research project by the World Bank does not seem to be very encouraging in this respect.⁴ IDB's research project is more open-ended and is an interesting combination of economics of crime and public health (see Londoño & Guerrero 1999).

III. ON SOURCES, COVERAGE AND QUALITY OF CRIME DATA

When trying to explain variations in aggregated crime rates the most common procedure is to apply some variant of regression analysis. It requires comparable statistics on crime variables as well as the explanatory variables within the sample to be studied. Crime statistics are recognized to be full of pitfalls, but the homicide rate is generally thought to be the indicator least influenced by data problems such as underreporting and/or varying definitions of crime. It is hence the most preferred crime indicator especially when dealing with international samples. A substantially higher degree of sophistication is possible in studies of crime variations within nations where data restrictions are less severe.

There are basically three international sources of homicide statistics:

- i) *United Nations World Crime Surveys* which is based on police reports throughout the world. Thus far five surveys have been made, presenting data covering the period 1970-94. Its coverage was rather low in the initial surveys but in the 1994 survey approximately 60 countries provided reports on homicide. The indicators are available on the Internet (see references for relevant web-sites).

- ii) *INTERPOL* has gathered crime statistics from police authorities since the early 1970s. *INTERPOL* simply publishes the forms as they have been filled in at the national level, without analysis or data screening (but with the warning that the data does not permit inter-country comparisons). Its coverage is more complete and up-dated than the UN surveys. The latest survey year at this point in time is 1997, and includes indicators for 110 countries.
- iii) *WHO's World Health Statistics Annual* includes homicide as one of the mortality causes. Unfortunately *WHO's* coverage is low. However, the good news is that Latin America seems to be something of a leader in the developing world when it comes to presenting comparable mortality statistics (data is assembled by the *Pan American Health Organization*, PAHO, which is *WHO's* branch in Latin America). Indicators of "mortality caused by homicide" are available for some 22 Latin American and Caribbean countries for at least one year in the 1990s.

The fact that data emanates from different source opens up the possibility to check for quality. Doing so one finds individual cases where the homicide indicator varies considerably depending on the source. In particular, the statistics from *INTERPOL* need careful data screening (Neapolitan 1996). However, taken as a whole the picture is not that discouraging. The general pattern in terms of international variations in homicide rates is confirmed by two independent sources (Newman 1999:13)⁵.

IV. RESULTS FROM STUDIES APPLYING REGRESSION ANALYSIS

Table 2 summarizes the results from a selection of studies; most of them made during the last five years. Coverage is by no means claimed to be complete. The number of studies that have used regression analysis to explain variation in crime rates are so numerous that it is impossible to be comprehensive. In particular, studies on crime variation in the U.S are so numerous that only a selection of studies has been included.

The table gives rise to the following comments and reflections:

- i) One of the indicators that is most consistently presented as significantly related to crime is income inequality – most often measured by the GINI index. This relationship is repeated in studies based on national as well as international samples. The relationship has remained robust even when control variables such as poverty, GNP/capita, household size; age structure and race have been

included. In fact, among the cross-country studies in Table 2, income inequality is the only variable that consistently shows up as significant. Examples of variables found to be non-significant or not robust in several international studies are demographic indicators (age structure, urbanization, population growth), education, and ethnic heterogeneity.

- ii) Indicators of “social capital” or “social disorganization” such as trust, norms and civic behavior (more about social capital below) have been found to be significant determinants of crime in a number of studies based on national samples (U.S. UK, Russia, Colombia). However, it has not been possible to identify any study on international variations in crime where social capital indicators have been used.
- iii) There is no striking pattern of inconsistencies between results from studies using national samples and studies based on international samples.

A review of studies conducted earlier than those summarized in Table 2 is found in Hsieh and Pugh (1993), which is a meta-analysis made of 34 studies that have related crime to poverty and inequality indicators (national as well as international samples). Of the 34 studies, practically all found a positive correlation between crime and poverty and inequality; with approximately 80 percent being of at least moderate strength (i.e. correlation >0.25).

None of the explanatory variables in Table 2 distinguish Latin America to the same extent as the measures of income inequality. Figure 3 illustrates the position of Latin America with regard to the inequality-crime link. A substantial share of the countries of the continent is located in the upper left part of the diagram. Furthermore, in Latin America there has been a sharp increase in crime since the early 1980s, while the income distribution line has changed its course in the same direction (see Londoño & Guerrero 1999 [chart 1.3]; and Londoño & Székely 1997:36). Together, it could be taken as an argument in favor of regarding inequality as *the* factor behind both Latin America's exceptional crime rate, *and* its recent increase. However, these correlations do also give rise to methodological headaches. If the international variation in crime to a large extent is a Latin American phenomenon, then any variable that is distinguishing for Latin America might do part of the explanatory job. In fact, introducing a dummy for Latin America, which is done in the cross-section regressions in Faynzylber (1998) and Neapolitan (1994), substantially reduces the significance of inequality as an explanatory variable. For instance, Latin

America might also be described as an exceptional case in terms of alcohol consumption and problems of mental health (Londoño & Guerrero 1999:31). Or in terms of a culture of “machismo” combined with a peculiar history of conquest, “*caudillos*” and oppressed indigenous populations (as argued in Neapolitan 1994). All of this may be related to the social structure that is captured by the inequality indicator, but not necessarily so. A similar kind of concern may be raised over the Latin American crime-inequality correlation over time; the GINI-coefficient and the crime rate are far from being the only variables in Latin America that changed their course in the early 1980s.

This methodological complication resembles the difficulties (and lengthy debates) one encounters in the U.S. – only studies over the issues of “race” and “southern states” (both variables highly correlated with inequality and crime). There are of course statistical techniques to deal with both these methodological problems. The trouble, however, is that it demands a higher degree of technical sophistication that in turn might require a quantity and quality of data that is not available.

Having made this reservation concerning the difficulties in interpreting the results, I now move on to the subject in the rest of this paper: how to understand the link between crime and inequality.

V. UNDERSTANDING THE INEQUALITY-CRIME LINK

If the evidence leads us to believe (with some reservations) in a strong link between inequality and crime, how is such a link to be understood? This question, it turns out, contains far more intellectual stimuli than a newcomer to crime research would expect. It seems as if each discipline has its favorite interpretation, influenced by specific theoretical assumptions but still based on a rather thin layer of empirical evidence. Reviewing some of the literature leads to the following list of broad categories of interpretations (see Figure 4 for an overview):

- i) *Economics of crime.* Income inequality may indicate that “crime is a comparatively rewarding activity for the very low income groups who may find a lot to steal from the rich” (Eidie 1997:10). Building models with optimizing agents and differentiating with regard to income or wealth of different income groups, reveals that link from inequality to crime may not be this straightforward (see Deutsch 1992 & Bourignon 1999). However, the basic “economics of crime” interpretation remains the same in the sense that the link from inequality to crime is intermediated through individuals’ perceptions of economic incentives. All economists are of course not

fully orthodox in this sense. Some of them permit an “envy effect” in their models in addition to the economic incentives, in which case inequality may also have an impact on crime by reducing “the individual’s moral threshold” (see for instance Fajnzylber 1999:8). However, in general economists also recognize that the economics of crime approach has tended to disregard issues relating to the social formation of norms and values⁶.

- ii) *Political economy.* A second interpretation, put forward by economists as well as health scientists, is that inequality may be a determinant of the way the public sector is able to prevent or cope with crime. One line of thinking involves the role of deterrence and public police forces. In an unequal society the rich are less interested in paying taxes for public police protection as they can buy the same protection at a lower price on the private market. Under certain “political economy” assumptions this will affect the efficiency of public crime deterrence (Bourgignon 1999). If we add to this argument the idea that private crime deterrence – armed guards in front of the houses of the rich as is seen throughout Latin America today – might have an escalating effect on the level of violence in a society, then the argument becomes even stronger (the latter argument is not put forward by Bourgignon). The corresponding public health argument is that a society which is unequal in income is probably also more unequal in access to public social services that may help to prevent crime, and less likely to intervene to assist certain high risk groups (Lynch 1997 reviews these arguments). In both cases, whether the link is public deterrence or social services, “the way the public sector works” lies on the causal pathway from inequality to crime.
- iii) An argument against this line of interpretation is that when studies are made to assess the impact of public sector action on crime (or on health in general), it is either difficult to establish these effects or the magnitudes are too small. Wilkinson (1996:2) argues along these lines when it comes to the role of the social sectors. Glaeser gives account for the difficulties in empirically verifying the link “more police/punishment-less crime” (Glaeser 1999:11). An open question is of course whether this is mainly a problem of reversed causality (i.e. the policy response to reduce crime is stimulated by an increase in crime, so the causal relation is obscured when statistical relations are sought). A related issue that is subject to empirical studies is the

social distribution of crime victims. A recent study commissioned by the IDB concludes that in Latin America's wealthier individuals are more likely to become victims of crime, indicating a limited effectiveness of private protection measures (Gaviria & Pages 1999).

- iv) *Social Capital*. As can be seen in Table 2 there exist a number of studies that have identified "social capital" indicators (or indicators of "social disorganization") as explanatory variables of crime. The concept of "social capital" is today in frequent use within different disciplines, sometimes overlapping with previously existing concepts and theories. However, a stringent and generally accepted definition is apparently lacking (see for instance Edwards 1997; Paldam 1998; Social Capital web site of The World Bank)⁷. Here we will sidestep the conceptual difficulties and simply use "social capital" as an elastic umbrella that covers a family of related ideas. Examples of social capital related indicators that have been used in crime research are trust, participation in voluntary organizations and friendship networks, the existence of norms and the readiness to enforce them. They are most commonly elaborated from surveys where respondents have to answer questions such as "Do you believe that people in general are to be trusted?" or "Do you participate in any of the organizations on the following list?"

Among the studies in Table 2 there are a couple (all of them made on national samples) that claim that the link from inequality to crime is intermediated through social capital. Inequality, it is argued, undermines trust and broad-based participation in voluntary organizations, readiness to make sacrifices for the common good, social cohesion etc. Concerning the mechanism leading from this to crime, at least two alternatives are present in the literature. One has to do with the establishment of 'norms and efficacy of collective action'. In a community with low social capital people are less likely to establish joint norms (which is facilitated by social interaction and trust), to intervene against juvenile delinquents or to organize themselves in support of action by the police or social workers (Kennedy 1998a; Sampson 1997). Long before social capital become a fashionable concept criminologists have used "theories of social disorganization" to tell stories that essentially follow this line of argument (see Kovandzic 1998 for a synthesized overview).

Another line of reasoning is that the link from social capital to crime is intermediated through *psychosocial factors* at the individual level.

Social capital is not only related to mortality due to homicide, but to a number of other mortality categories and health indicators as well (Kawachi/Kennedy 1997 and Kawachi/Kennedy 1999). Erosion of social capital may increase the level of isolation, stress, insecurity and anxiety and increase the frequency of homicide just as it seems to increase the risk of heart disease or car accidents (where norms and collective action is less likely to be the key issue). Arguments along these lines are to be found in, for instance, Wilkinson (1996).

- v) A difficulty with the hypothesis of an “inequality-social capital-crime” link are the observations (made for instance by anthropologists, Moser 1999) of a reversed causal link from crime to destruction or distortion of social capital. If this is a strong effect, there is a potential problem of reversed causality that would require more sophisticated treatment in a regression analysis. None of the studies on crime and social capital cited above have explicitly brought the reversed causality issue into their models.
- vi) *Inequality interacting with norms.* A variant of the social capital interpretation is that inequality is interacting with, rather than causing, certain norms and values. In Krahn (1986), it is argued that the inequality-crime link is likely to exist primarily among nations with more egalitarian value systems. He provides some preliminary empirical evidence by dividing his sample (cross-country, INTERPOL data) into two shares with respect to a political democracy index, showing a much stronger inequality-crime link among nations that score highly on the democracy index. Hence, the argument here is not that the inequality-crime link is intermediated through certain variables reflecting norms, but that it is the coexistence of inequality with these norms that is crime producing.
- vii) *A non-issue explained by confounding factors.* Another way of understanding the inequality-crime link is to claim that the link is either spurious or in some other way explained by confounding factors. The race issue, “southern states”, age structure and poverty have all surfaced as potential confounding factors in the debate over US crime. As seen from above “being a Latin American country” has the potential of becoming a similar confounding factor when dealing with international samples. Another confounding factor could be that inequality and potential crime-producing factors – such as urban growth and rapid modernization of social and economic relations – tend to coexist in a specific stage of the development

process, without inequality directly causing crime (this would be a sort of a "Kuznetz curve" argument). All of this can be resolved in principle; it boils down to having the appropriate control variables in your regressions to eschew that the link inequality-crime reflects issues we are not primarily interested in. However, with data availability being a restriction and the underlying theories not that firm, there are no guarantees that full clarification will be achieved.

There seems to be a fair degree of reasonableness in all of the five categories of interpretations listed above. In principle, they are all open to empirical testing. However, surprisingly little empirical work seems to have been done to confirm or reject these hypotheses. An exception is Kennedy (1998a). This study, which has U.S. states as the sampling unit, shows firstly that income inequality is strongly associated with levels of social trust and group membership, and secondly that inequality (as well as trust and group membership) are strongly associated with crime. A statistical method of "path analysis" (based on Alwin 1975) is applied which in essence suggests that the indirect effect of inequality on crime – i.e. the effect that works via "social capital" – is stronger than the direct effect from inequality to crime. They concluded that social capital is an important intermediating variable from inequality to crime.

A similar kind of path analysis is applied in Sampson (1989, 1997), but in this case to demonstrate how socioeconomic status, residential mobility and some other "exogenous" variables are intermediated to crime through indicators reflecting "social disorganization" (the issue of inequality is not explicitly dealt with). Sampling units of these two studies are UK communities and communities in the Chicago area, and intervening social disorganization are indicators such as "access to local friendship networks", "organizational participation" and the "degree to which the youth is being supervised". Sampson's conclusion is in essence that the link from the exogenous variables to crime is intermediated through "social disorganization". Veysey (1999) reviews Sampson's 1989 findings and comes up with a somewhat modified interpretation saying that socioeconomic indicators and social disorganization indicators have strong independent effects as well.

Among the studies using international samples there are few examples where attempts are made to verify the intermediating link from inequality to crime. The study by Krahn (1986) mentioned earlier is to some extent an exception. In a very recent contribution (Fajnzylber 1999), alternative interpretations of the inequality-crime link are tested in a 45-country panel data sample. It concludes that straight income inequality,

measured by the gini index, has a robust and significant effect on violent crime. None of their competing hypotheses for the observed connection between inequality and crime (relative poverty, education inequality, income or ethnic polarization, and unfair distribution of police and justice protection) are able to drive away such connection.

Our understanding of the inequality crime link is of course not just an issue of academic controversy. A thorough understanding of the character of that link could provide important keys to the handling of a serious development issue. The interpretations reviewed above do in fact point in different directions with regard to anti-crime policies.

VI. DISENTANGLING THE INEQUALITY-CRIME LINK: SOME PRELIMINARY FINDINGS

As mentioned above, the same inequality-crime link is established within various academic disciplines but understood in the light of different theories. The ideal way of resolving the issue would be through an interdisciplinary approach where ways are sought to test these different theories against each other, or to make them work in conjunction. Such a full-fledged empirical analysis is simply beyond the scope of this paper – and possibly also beyond reach due to data restrictions, at least in cross-country studies. However, an attempt is made below to shed some additional light on the inequality-crime link by experimenting with some “new” indicators, which to the knowledge of the author, have not thus far been used in international samples. The results are to be interpreted as preliminary and as ideas for future research, rather than final evidence on the subject matter.

The analysis is limited to a regression analysis at cross-country level. The availability of social capital related indicators at country level, which are necessary to test some of the theories presented above, constitutes a severe sample restriction. Indicators have been elaborated from the World Value Survey (Inglehart 1998) which includes a wealth of social capital related indicators for approximately 40 nations. These nations constitute our sample. It includes 4 Latin American nations (Mexico, Brazil, Chile and Argentina), 2 African, 3 Asian, 11 Eastern European/Central Asian and 19 high-income nations.

The dependant variable is the $\log^8$ of committed intentional homicides per 100 000, averages for the 1990s. My first hand data source on homicide is the UN Crime Survey. Where UN data is found missing/lacking, I make use of the INTERPOL data (if at least three reliable⁹ data points are available for the 90s). When neither UN nor

INTERPOL data was available, the WHO data has been used[‡]. In this way, it is possible to arrive at a homicide indicator for 38 of the 40 nations in the World Value Survey.

The independent variables are listed below. The heading "traditional variables" includes most of the variables found to be significantly related to homicide in at least some of the cross-country studies reported in Table 2. We have also added some demographic variables. Under the heading "social capital related indicators" variables are found that possibly could reflect the different pathways proposed by theories claiming that social capital is an intermediating link from inequality to crime¹⁰. Interaction variables between these variables and the GINI-index (i.e. GINI*DISCONTENT etc.) are also included to reflect the Krahn (1986) hypothesis that the inequality-crime link is reinforced, rather than causally intermediated, by variables reflecting norms and values. All variables are for the 1990s (for sources and comments to the indicators see annex 1)¹¹:

Traditional variables:

GINI	measure of income inequality
GNPc	gross national product per capita at purchasing parity prices
URBANIZATION	% living in urban areas
YOUNG	% of population below age of 15
POPGROWTH	population growth 1970-95
URBGROWTH	growth of urban population 1970-95
POVERTY	% of population below 2 USD/day

Social capital related variables:

TRUST	% respondents that believe "most people can be trusted"
NORMS	Strength of norms: Average of % respondents stating that it is never justified to "claim a government benefit you are not entitled to", "avoid fare on public transport", "cheat on taxes", "buy stolen goods", "accept bribes"
FEELOK	Average of % describing their "state of health as very good" and that in general "they are satisfied with their lives".
CONFIDENCE	Confidence: Average of % stating they have a great deal of confidence in parliament, civil service, legal system and the police.
DISCONTENT	Political discontent: Average of % stating that "there is injustice in our society" and "society must be radically changed"

[‡] Data sets and detailed regression results are available from the author on request

GINI*DISC	GINI multiplied by DISCONTENT
GINI*TRUST	GINI multiplied by (100 minus TRUST)
GINI*NORMS	GINI multiplied by (100 minus NORMS)
GINI*CONF	GINI multiplied by (100 minus CONFIDENCE)

The experiment is conducted in two steps. First the computer is loaded with the traditional indicators. I then prompt the computer to select the combination of variables that maximize the significance of the regression¹². I then add the "social capital related variables" and repeat the experiment allowing the computer choose its favorite model specification. It is recognized that this is an untheoretical way of model specification. However, as there are at least five different theories at stake it is not too obvious what the theoretically correct model specification would look like. The procedure may be justified as a way of spotting variables one should include in future research efforts.

Experiment 1:

	VARIABLES SELECTED BY THE COMPUTER				ADJUSTED R ² F-VALUE
	GINI	GNPc	0.31	9.6	
Coefficient	0.017	-0.00019			
Significance ¹³	0.010	0.013			

Variables dropped by the computer:

POVERTY, YOUNG, URBANIZATION, URBGROWTH, POPGROWTH

Sample: N=38

Dependant variable: HOMICIDE/100.000 (log)

The result of experiment 1 is not at odds with the results of previous cross-country studies presented in Table 2, where the GINI repeatedly shows up as closely related to homicide. The GINI-variable remains significant together with either GNPc or POVERTY (or both), indicating that the inequality-crime link does have something to do with relative, rather than absolute, levels of income. The demographic variables seem to have a quite limited explanatory force – they have also been tested in this sample one by one and in different constellations. The result was also checked for robustness using regional dummies¹⁴.

Experiment 2:

	VARIABLES SELECTED BY THE COMPUTER		ADJUSTED R ²	F-VALUE
	GINI*DISC	NORMS	0.52	21.9
Coefficient	0.0008	-0.0100		
Significance	0.000	0.028		

Variables dropped by the computer:

GINI, GNPC, POVERTY, YOUNG, URBANIZATION, URBGROWTH, POPGROWTH, TRUST, CONFIDENCE, FEELOK, GINI*TRUST, GINI*CONF, GINI*NORMS

Sample: N=38

Dependant variable: HOMICIDE/100.000 (log)

The experiment 2 completely changes the picture. The computer opts for the variables GINI*DISCONTENT and NORMS and drops all the traditional variables from experiment 1. The share of variation explained rises considerably (R^2 up from 0.31 to 0.52).

Experiment 2 was also made by desegregating the social capital related variables per income group (introducing an indicator measuring responses in low-income groups only for each of the social capital related variables). The computer then selected GINI*DISCONTENT and "NORMS/LOWINCOME". When the NORMS indicator was divided into its different component ("cheating on taxes", "claiming benefit you are untitled to", "free-riding on public transport", "accept bribe" and "buying of stolen goods", all of them highly correlated), the computer opted for the variables GINI*DISCONTENT and "buying of stolen goods/low income groups" (with R^2 reaching 0.64). The experiment was also repeated without including the interaction variables. The computer then opted for the specification GINI, DISCONTENT and NORMS. When combining the interaction term GINI*DISC with the interacting terms GINI and DISC, the interaction term is the only one that is significant.

The robustness of the results of experiment 2 was checked by introducing regional dummies and excluding outlying values (i.e. South Africa), without changing the computer's selection of variables or affecting their level of significance more than marginally.

The fact that these variables come out so strongly in experiment 2 illustrate the limitations of any crime theories that tend to disregard that human behavior may be strongly influenced by socially determined norms and values¹⁵. The fact that the interaction variable GINI*DISCONTENT is

so strong provides mild support for the Krahn (1986) hypothesis that inequality may be particularly crime producing when interacting with certain values. That the NORMS variable comes out strongly is what the social disorganization theory in criminology essentially would predict (and then particularly NORMS among low-income groups).

When correlating the social capital related variables one by one it can be shown that TRUST is significantly correlated with GINI (Pearson correlation = -0.349), moderately correlated with HOMICIDE (-0.28) and significantly correlated with DISCONTENT (-0.51) and CONFIDENCE (0.54). The FEELOK is significantly correlated with TRUST (0.59), as predicted by some public health theories, but only moderately correlated with homicide (-0.24). This is obviously a group of variables that tend to move together and their multicollinearity makes it difficult to use them in conjunction – the exception is NORMS which by itself is not significantly correlated with any of the other social capital related variables.

There are of course strong reasons to be extremely cautious when interpreting these results. Firstly, the sample is both small and highly heterogeneous. Secondly, data reliability and validity are far from ideal. Doubts can of course be expressed over what is really measured when people from different cultures are asked questions whether they trust people in general or have confidence in the civil service. Thirdly, and probably most importantly, the regressions have been made without dealing with the issue of causality directions (from dependant to independent variables, and among the dependant variables). Norms and values may of course cause crime, as well as being caused by it.

Over the coming decade, it is likely that these issues might come closer to being resolved, and that we will see studies based on international samples reproducing some of the results established in national samples using social capital related variables – possibly also using panel data analysis, as the World Value Surveys are being up-dated continuously, with improved coverage). As data becomes available for more Latin American nations it will also be possible to come to a closer understanding of what accounts for the extreme position of Latin America in terms of crime, and for the variations in crime rates within the region. The experiments above have possibly identified some of the candidates to be tested more rigorously in the future as data availability improves. It also indicates what is being missed when running cross-country regressions using only the “traditional” variables.

VII. CONCLUDING REMARKS

- i) Crime is a salient development issue with complex ties to the development process in general. It merits a greater degree of attention considering the proportions it has taken, particularly in Latin America.
- ii) Evidence of a strong inequality-crime link abounds and is further confirmed in this paper. The link remains robust together with a large number of control variables and in different samples. Based on empirical evidence, one may argue that crime should be added to the list of costs to be paid by unequal societies.
- iii) Understanding the inequality-crime link is challenging. Different disciplines have tended to interpret this link in the light of their dominating theories. This paper has categorized these interpretations as "economics of crime", "political economy" (via public deterrence or via social sectors), "social capital" (via norms and collective action, via psychosocial health or as interaction) and "confounding factors". Empirical evidence of these interpretations is still relatively weak. This is especially the case for the inequality-crime link that is to be found between nations.
- iv) "Social capital related" indicators have been identified as significant explanatory factors to crime in national based studies, but have thus far not been used in studies on international variations in crime rates (to the knowledge of the author). Some experiments are made in this paper showing that these indicators merit being included in future research on cross-country variations of crime rates.
- v) An interdisciplinary approach is warranted, considering that parallel results are being produced by different disciplines while competing theories exist on how to interpret the empirical evidence.

Table 1 - The Cost of Urban Crime in Latin America (% urban GDP)

Cost category	% of urban GDP
A. Costs related to health (health treatment and loss of "quality adjusted years of life")	1.9
B. Material losses (police, justice system, private protection)	3.0
C. Intangibles (estimated from willingness to pay for "living without violence")	7.1
D. Transfers (property being transferred from one person to another due to crime)	2.1
E. Total (average for the continent)	14.2
<i>Estimates for individual countries:</i>	
El Salvador	24.9
Colombia	24.7
Venezuela	11.8
Brazil	10.5
Peru	5.1
Mexico	12.3

Source: Londoño/Guerrero 1999, pp 22-26

Table 2 – Factors Explaining National and International Variations in Homicide. Summary of Results

STUDY	DEPENDENT VARIABLE	EXPLANATORY VARIABLE REPORTED AS SIGNIFICANT	EXPLANATORY VARIABLE NOT SIGNIFICANT OR NOT ROBUST	SAMPLE
A. INTERNATIONAL SAMPLES:				
Fainzylber 1998 (1)	Homicide (log) (UNICJ+PAHO)	Inequality (log gini) Drug producers GDP growth rate lagged homicide (i.e. crime inertia). Police and conviction rate	Education (partially) GNP/capita Urbanization rate	68 countries 1970-94 Panel data
Fainzylber 1998 (2)	Homicide (log) (UNICJ+PAHO)	Inequality (log gini) Drug producers	Education GNP/capita Urbanization Death penalty Ethnic fractionalization Police and conviction rate Age structure Alcohol/firearms*	62 countries Cross-country OLS
Londoño 1999 (1)	Homicide (PAHO)	Inequality (gini) poverty		17 countries 1970-95 panel data Latin
America only				
Londoño 1999 (2)	Homicide (PAHO)	GNP/cap "education gap" inequality (gini) GNP/cap		17 countries cross-country Latin
Neapolitan 1994	Homicide (log) (INTERPOL WHO data also tested with similar results)	Inequality (gini) Latin America-dummy	GDP/capita Population density Urbanization Age structure	118 countries cross-section
Neapolitan 1998	Homicide (log) INTERPOL	Inequality (gini)	GNP/capita. Race Ethnic heterogeneity Mean household size. Urbanization Age structure	118 countries cross-section

continued...

Table 2 – Factors Explaining National and International Variations in Homicide. Summary of Results

... continued

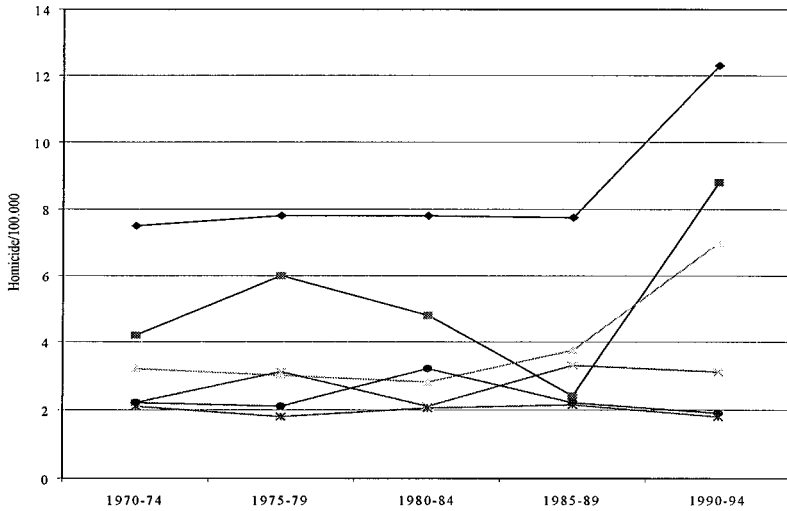
STUDY	DEPENDENT VARIABLE	EXPLANATORY VARIABLE REPORTED AS SIGNIFICANT	EXPLANATORY VARIABLE NOT SIGNIFICANT OR NOT ROBUST	SAMPLE
Krahn 1986	Homicide (log cross-section	Inequality (log gini) (INTERPOL) Democracy index	GDP/capita Population growth Population density Ethnic fractionalism Defence expenditure	65 countries
B. NATIONAL SAMPLES:				
Ousey 1999	Homicide	Race. Inequality. Poverty Unemployment. Female-headed household. Age structure	(Homicide desegregated for black/white offenders. Inequality, unemployment) Female household and age not significant for black homicide	US, 125 cities
Veysey 1999	Homicide	Social disorganization indicators. Family disruption. Urbanization Socioeconomic status	Residential stability	England/Wales 238 communities (based on Sampson 1989)
Landmann 1999	Homicide	Inequality (diff. Measures). Demographic density	Median income. Poverty. Illiteracy	Brazil, 70 subregions of the state of Rio de Janeiro
Kennedy et al 1998a	Homicide	Inequality (Robin Hood index). Trust. Group membership (age, race, poverty, firearm availability controlled for)		US states

continued...

Table 2 – Factors Explaining National and International Variations in Homicide.
Summary of Results
 ... continued

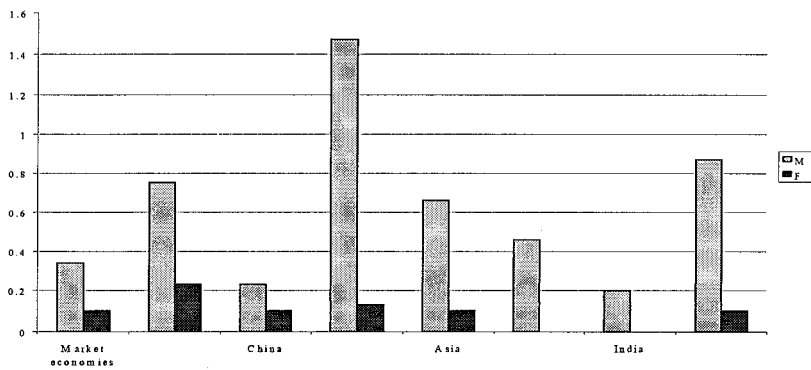
STUDY	DEPENDENT VARIABLE	EXPLANATORY VARIABLE REPORTED AS SIGNIFICANT	EXPLANATORY VARIABLE NOT SIGNIFICANT OR NOT ROBUST	SAMPLE
Kovandzic 1998	Homicide	Inequality (gini). Poverty. Unemployment. Race, divorce rate	Southern state Percentage young Population density	US, 190 cities
Londoño 1999	Homicide	Social capital		Colombia, regions
Kennedy et al 1998b	Mortality due to external cause	Social capital (income/poverty controlled)		Russia, 40 regions
Sampson et al 1997	Homicide	Collective efficacy (composite of trust, willingness to intervene for public good etc.) Concentrated disadvantage (a composite of indicators as poverty, being unemployed etc.) Residential stability	Immigrant concentration	US, 343 Chicago neighborhoods

Figure 1 - Median Homicide Rates by Regions, 1970-94



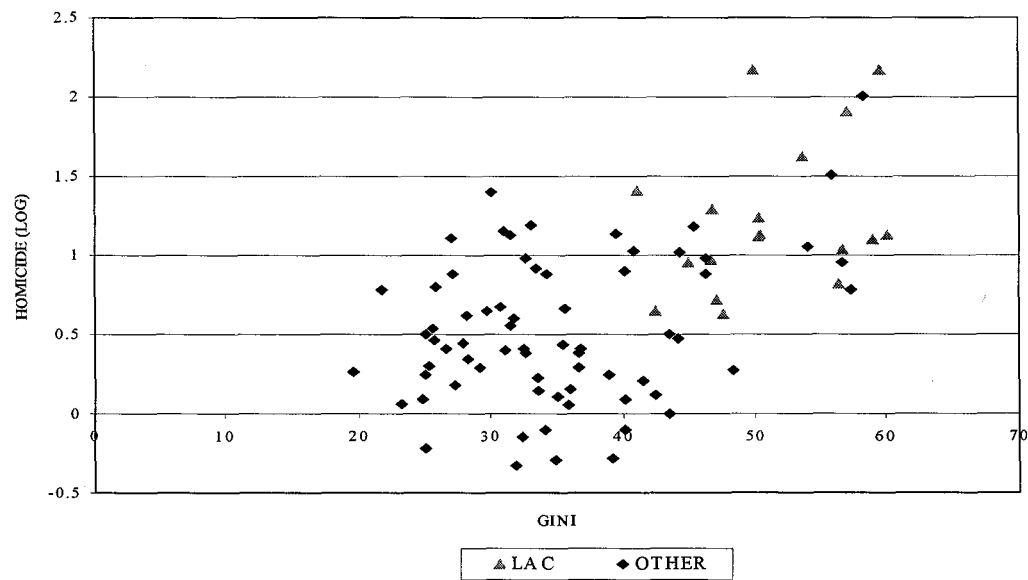
Source: adapted from Fajnzylber 1998 (original source UN crime surveys)

Figure 2 - Probability of Dying (in %) Due to Homicide/Violence for Males (M) and Females (F) by Region 1990



Source: WHO 1994

Figure 3 - Homicide and Inequality, LAC and Other Countries



Source: Homicide: See annex 1 for data sources

ANNEX 1

DATA SETS AND SOURCES

(Data sets and detailed regression results can be made available from the author on request.)

HOMICIDE

Source: Main source is UN Crime surveys (committed intentional homicide per 100.000). For missing data points use have been made of INTERPOL data when at least three "reliable" data points exist (extreme data variations taken as indicator of data unreliability). When INTERPOL data has not been available WHO data has been added.

GINI

Source: World Bank, World Development Report 1999. Data from the Deninger/Squire data sets added in some cases if categorized as of high quality. Argentina represented with its urban GINI.

GNPc (gross national product per capita at purchasing parity prices, 1997)

Source: World Bank, World Development Report 1999. For some small countries not reported alternative sources have been identified.

URBANIZATION

Source: UNDP Human Development Report

POVERTY (%below 2USD/day)

Source: World Bank, World Development Report 1999. For most developed nations this indicator is not available. Substitution has been made using the value (if positive) predicted by GNPc and GINI. In practical this procedure meant that most developed nations are given a 0% for "population living below 2USD/day".

TRUST (% respondents that believe "most people can be trusted")

Source: Inglehart 1998

NORMS (Strength of norms: Average of % respondents stating that it is never justified to "claim a government benefit you are not entitled to", "avoid fare on public transport", "cheat on taxes", "buy stolen goods", "accept bribe")

Source: Elaborated from Inglehart 1998

FEELOK (Average of % describing their "state of health as very good" and that in general "they are satisfied with their lives".)

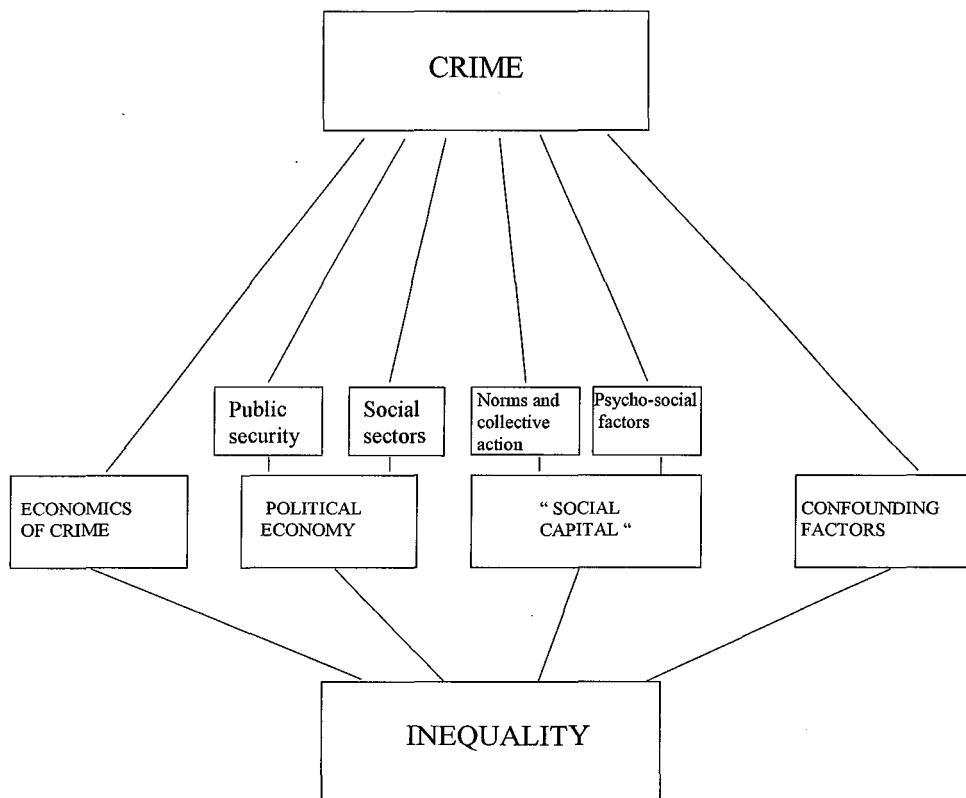
Source: Elaborated from Inglehart 1998

CONFIDENCE (Confidence: Average of % stating they have a great deal of confidence in the parliament, civil service, the legal system and the police.)

Source: Elaborated from Inglehart 1998

DISCONTENT (Political discontent: Average of % stating that "there is injustice in our society" and "society must be radically changed")

Source: Elaborated from Inglehart 1998

Figure 4 - Alternative Interpretations of the Inequality-Crime Link

Notes

- 1 This paper is influenced by research papers focusing either on crime and violence, or both. All crime is not violent (i.e. fraud) and all violence is not regarded as criminal behavior (i.e. certain forms of intra-family violence in some countries). However, the categories crime and violence overlap to a large extent. Hence, quite often what is true about crime is also true about violence, and vice versa. In this paper, it is mainly the term 'crime' that is used, simply because it is short and without any claims to conceptual sophistication. When references are made to research where the main category of analysis has explicitly been stated as violence, rather than crime, the term violence will be used. All indicators of crime that are referred to in this paper fall within the category of "violent crime".
- 2 63% of respondents in San Salvador, and 73% of respondents in Caracas approved of social cleansing, or at least in some way found it justified. In Cali, Rio de Janeiro and San José the corresponding figures were 35-40%. Approval of "police torture at least in some cases" ranged from 10 to 18% in these five cities.
- 3 An alternative estimate is found in Bourignon 1999. His category of analysis is crime rather than violence and the cost is measured in relation to total rather than urban GDP. His estimate (which is partially based on Loïdono and Guerrero) for the average for Latin America is 9%, including "transfers" (i.e. the monetary amount transferred due to property crime).
- 4 The World Bank research project on crime, violence and civil wars states already in its initial declaration (see web-site indicated among the references): "We will essentially model an agent's decision to participate in criminal activity or civil wars as the product of a rational cost-benefit analysis. We will consider how a number of variables may affect that calculus and we expect to find that many of these variables are important for both crime and rebellion". The fundamental question whether crime is primarily a product of rational choice *by the* individual or rather a product of aspects related to the social interaction *between* individuals – a question that begs for an empirical answer – seems to be side-stepped by this World Bank project even before initiating the research.
- 5 The correlation coefficient between WHO and INTERPOL data on homicide rates (after correcting the INTERPOL data for "attempts") has been calculated to 0.87 (R2) (Lester 1996:14).
- 6 "In theories of economics of crime, norms are seldom studies, or even mentioned. Preferences as a whole are assumed to be constant, and authors do not find it necessary, or do not feel competent to discuss norms" (Eide 1997:5, in *Encyclopedia of Law and Economics*).
- 7 The following definition is to be found on the introductory page of the social capital web site of The World Bank: "Social capital is defined as the norms and social relations embedded in the social structures of societies that enable people to coordinate action to achieve desired goals." It illustrates at least three conceptual difficulties. First of all, if the concept is defined by "what it produces" and not by "what it is", then the question "what does social capital produce" becomes a tautology, with risks of falling into circular reasoning. Secondly, it is apparent from the definition above that it describes something

that probably is quite characteristic not only of well functioning and socially unproblematic communities, but also of the Mafia and certain youth gangs. This has led to attempts to distinguish between "perverse" and "non perverse" social capital, and between "distortion" vs. "destruction" of social capital, which opens the door for a new set of conceptual difficulties. A third difficulty lies in drawing the borderline. Should we only include trust at the horizontal level (between neighbor etc), or should we also include something of the vertical level trust, and if so how much (trust in local government, civil servants...).

- 8 Most studies cited above have used the LOG of homicide as the dependant variable. It can be shown that it makes the regressions "look better". But a theory of why logged values of homicide rates are to be preferred seems to be lacking.
- 9 Countries with unreasonable inter-year variations in homicide rates indicating unreliability have been excluded. When possible INTERPOL data was adjusted for "attempted homicides".
- 10 A variable reflecting participation in voluntary organizations should ideally have been included, but this indicator is not available for a substantial group of countries in the World Value Survey.
- 11 In a few cases, methods for substituting missing data have been used. The poverty indicator is not available for most developed nations. It has been substituted with the value predicted by GINI and GNPc (in practice this meant that most developed nations got 0% of their population below 2 USD/day). The mean substitution was used for a limited number of data points for social capital variables (applied to 2 data points among the social capital related variables on the list above, and for some additional data points when these variables were desegregated).
- 12 The computer is asked to follow a stepwise procedure whereby variables are entered and removed depending on how they affect the probability of the F-value (SPSS software).
- 13 if <0.05 significant at 5% level.
- 14 Introducing a dummy for Eastern Europe made GNPc pass below the significance level, but strengthened the significance of GINI. A Latin America dummy did only marginally affect the level of significance of GINI and GNPc (it shall be kept in mind that the Latin American nations with highest homicide rates are not present in this sample).
- 15 "Since economists generally have little to contribute, especially in recent times, to the understanding of how preferences are formed, preferences are assumed not to be very different between wealthy and poor persons, or between persons in different societies and cultures" (Becker 1976:5).

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