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A Cross-National Test of Institutional Anomie Theory: Do the Strength of Other Social Institutions Mediate or Moderate the Effects of the Economy on the Rate of Crime?[1]

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Abstract. *This study presents a test of Messner and Rosenfeld's theory of institutional anomie. It employs cross-national data on the rates of homicide and theft, as well as a variety of indicators of the economy and of the ineffectiveness of non-economic social institutions. Finally, it examines the degree to which non-economic social institutions mediate and/or moderate the effects of the economy on these cross-national rates of crime. As previous tests of this theory have also found, the level of support our results provide for the theory is dependent upon both the measures employed and the functional forms of the relationships.*

Keywords: institutional anomie; economy; social institutions; cross-national crime rates.

Introduction

In 1938, Robert K. Merton published his groundbreaking article entitled, "Social Structure and Anomie." In this thesis, Merton proposed that crime rates could be explained by examining the cultural and social structure of society. In particular, Merton developed the theory to explain the relatively high rates of crime present in the United States. He postulated that these rates could be explained by focusing on the cultural goals stressed by American society, especially the disproportionate emphasis placed on the goal of attaining monetary success (the American Dream) relative to that placed upon the legitimate means for attaining it. Merton also made special note of the structural strain built into the social organization of American society in which the opportunities to achieve these goals were unequally distributed; that is, openly available to some, while blocked for others. Subsequently, Merton's theory has been identified as one of the most influential theories of crime to be developed in the last century (Messner and Rosenfeld, 2001: 12). Succeeding its introduction, a number of theorists have both modified and expanded Merton's original ideas.

In 1994, Messner and Rosenfeld, drawing heavily on Merton's theoretical propositions, proposed a compatible theory of institutional anomie (IAT). Their theory was similarly designed to explain crime rates at the aggregate level and again focused on explaining the high crime rates in the United States. In particular, Messner and Rosenfeld (1994) focused on the interrelationships among the various social institutions in society. They hypothesized that an overemphasis on economic goals, coupled with a devaluation of the non-economic institutions in society, results in higher rates of crime.

Messner and Rosenfeld (1994) left us with a very intriguing structural theory of crime, but no way of directly testing it. In fact, some of the biggest challenges have been that many of the main assumptions and primary assertions made by the theory are difficult, at best, to examine empirically, particularly at the aggregate-level, because the requisite data needed to test these assertions have not been systematically collected. Messner and Rosenfeld (2006:130-131) lamented that the "high level of abstraction" of IAT "renders empirical assessments difficult" and that deriving "specific causal propositions and identifying operational measures of key concepts pose daunting challenges." Nevertheless, since its introduction, several researchers have attempted to examine key tenants of this theory and to at least partially test its fundamental propositions (Chamlin and Cochran, 1995; Messner and Rosenfeld, 1997; Hannon and DeFronzo, 1998; Piquero and Piquero, 1998; Savolainen, 2000; Batton and Jensen, 2002; Stucky, 2003; Maume and Lee, 2003; Schoepfer and Piquero, 2006). But data limitations have forced them to rely on indirect or partial tests. In fact, Messner and Rosenfeld (1997) had to settle for an indirect test of their own theory. While the current study follows the model of others by utilizing indirect tests to

examine the theory, it enhances the existing research in a number of important ways. First, this research utilizes cross-national data to examine both violent and utilitarian offenses. Many of the earlier studies used data for the United States alone (Chamlin and Cochran, 1995; Hannon and DeFronzo, 1998; Piquero and Piquero, 1998; Stucky, 2003; Maume and Lee, 2003; Schoepfer and Piquero, 2006). Second, because Piquero and Piquero (1998) found that support for IAT was highly sensitive to the measures employed, this study utilizes new measures to examine the role of the economy in influencing cross-national crime rates. Finally, it tests whether the ineffectiveness of non-economic social institutions mediate or moderate the influence of the economy of crime rates, an issue unresolved in the extant research (Chamlin and Cochran, 1995; Maume and Lee, 2003).

Messner and Rosenfeld's Institutional Anomie Theory

In 1994, Messner and Rosenfeld, drawing heavily on Merton's theoretical propositions, proposed a compatible theory of anomie also designed to explain the high rates of crime in the United States. They agree that American society places an over emphasis on material and monetary attainments, the American Dream. They define the American Dream as the "commitment to the goal of material success, to be pursued by everyone in society, under conditions of open, individual competition" (Messner and Rosenfeld, 1994:69). Similar to Merton, they contended that the American Dream also embodies other fundamental value orientations stressed by our culture, those of individualism, universalism, achievement, and materialism (Messner and Rosenfeld, 1994:69; 2006:129).

They then expanded Merton's theory by integrating his anomie theory with certain aspects of structural control theory[2]. Specifically, Messner and Rosenfeld examined the impact of social institutions in the generation of crime. It was their contention that the social institutions of societies develop to help individuals "(1) adapt to the environment; (2) mobilize and deploy resources for the achievement of collective goals; and (3) socialize members to accept the society's fundamental normative patterns" (Messner and Rosenfeld, 1994:72-73). They identified four social institutions as those primarily responsible for meeting these objectives: the economy, the polity, the family, and the educational system.

The economy is the social institution that is responsible for the production and distribution of goods in society. The family regulates sexual activity and the propagation of society. Further, the family provides care for dependent persons and emotional support to its members. Similarly, the educational system is responsible for conveying both cultural standards and skills to the younger generations. Lastly, the polity is responsible for mobilizing and distributing power to attain collective goals.

Messner and Rosenfeld (1994:76) asserted that it is the economy that operates to promote the main values of the American Dream (e.g., monetary and material achievement, individualism, competition) and that the most important characteristic of our economy is its capitalistic nature. They identified the "defining characteristics of a capitalist economy as the private ownership and control of property, and free market mechanisms for the production and distribution of goods and services (Messner and Rosenfeld, 1994:76). It is the emphasis on monetary success promoted in a capitalistic society coupled with weakened controls from non-economic institution – an imbalance of institutional power skewed toward the economy (i.e., "institutional anomie") – that ultimately results in comparatively high rates of crime, especially utilitarian crime, within the United States.

Messner and Rosenfeld (1994) argued that this economic dominance is evidenced by: (1) the devaluation of non-economic institutional functions and roles; (2) the accommodation to economic requirements by other non-economic institutions; and (3) the penetration of economic norms and values into the other non-economic institutions. They provided several examples to support these propositions. First, they pointed to the devaluation of education in our society. Today, education is valued as a means of obtaining occupational and monetary success. Learning for its own sake has become devalued. Likewise, the family and parental tasks of nurturing are devalued. Persons responsible for these tasks, mainly women, are accorded inferior status in our society. Politicians that promote values such as public service are likewise devalued.

Further, these non-economic social institutions also must make accommodations to further the dominance of the economy. Messner and Rosenfeld pointed out that family time is often sacrificed for work or economic purposes. Likewise, educational institutions are designed to provide a steady flow of employable youth to the labor market. Workers who further their education frequently do so for the sole purpose of enhancing their employment opportunities.

Lastly, they argued that economic norms have permeated these other non-economic social institutions. Schools utilize rewards such as grades to motivate students, fostering an environment of competition. Politicians are judged

on their ability to effectively deliver on their promises for a better future (e.g., "a chicken in every pot"). The role most valued in the family is that of the "breadwinner" (Messner and Rosenfeld, 1994).

Eventually, these non-economic social institutions operate, in part, to support the pursuit of economic goals (Chamlin and Cochran, 1995), which, in turn, promotes institutional anomie. In fact, the proliferation of economic opportunities or meritocracy can actually enhance societal strain as it can lead to increased competition for the allocation of scarce resources and rewards and, therefore, will also lead to an increase in anomie (Rosenfeld, 1989).

In sum, Messner and Rosenfeld (1994) expanded Merton's theory of structural anomie to include the relationships among the various social institutions in society. In particular, they stressed the relevance of the imbalance of institutional power that occurs when an economy dominates a society, as with the United States. Messner and Rosenfeld asserted that the American Dream influences our crime rates in two related ways. First, like Merton, they contended that our cultural imbalance promotes anomic conditions which, in turn, lead to increases in crime. Further, they argued that it also contributes to high crime rates by encouraging an institutional imbalance of power which weakens or renders ineffective the social control functions of the other non-economic social institutions. Therefore, one would expect crime rates to be highest in advanced capitalistic societies with weakened or co-opted non-economic social institutions.

Mediation or Moderation?

Messner and Rosenfeld made it clear that the influence of the economy on crime will vary with the ineffectiveness of the non-economic social institutions. Less clear is the exact nature (functional form) of this relationship. In other words, does the ineffectiveness of non-economic institutions mediate or moderate the relationship between the economy, anomie, and crime? Messner and Rosenfeld (2001:77) asserted that the dominance of the economy "fosters weak social controls" implying an indirect or mediated effect. Likewise, they also stated that "the American Dream contributes to high levels of crime in two important ways, one direct and the other indirect" (Messner and Rosenfeld, 1999:175). In contrast, Chamlin and Cochran (1995:413) believed that weak controls must be "coupled with" cultural pressures to achieve materialistic wealth in order to increase instrumental crimes. This asserts that the ineffectiveness of non-economic social institutions condition or moderate the effects of the economy on the rate of crime.

The current research has not fully resolved the question. While most researchers have found support for the notion that non-economic institutions moderate the influence of the economy on crime rates (Chamlin and Cochran, 1995; Messner and Rosenfeld, 1997; Hannon and DeFronzo, 1998; Piquero and Piquero, 1998; Savolainen, 2000; Stucky, 2003; Schoepfer and Piquero, 2006), Maume and Lee (2003) found that the strength of non-economic social institutions mediated the relationship between the economy and crime. Thus, while the majority of the research supports the notion of moderated effects, this issue is still not fully settled.

Empirical Tests of IAT

To date very few empirical assessments of Messner and Rosenfeld's institutional anomie theory have been conducted[3]. In all likelihood, this lack of attention is due to the methodological difficulties presented by this theory and its data needs (Messner and Rosenfeld, 2006). Nevertheless, despite the inherent difficulties involved, several criminologists have attempted to empirically test this theory.

Chamlin and Cochran (1995) were the first to test one of IAT's main propositions, specifically the idea that the effect of economic conditions on the rate of economic crime varies depending on the strength of the other non-economic social institutions. In order to test this proposition, they examined state rates of profit-oriented crime. They utilized the percentage of families below the poverty level to measure economic conditions. In addition, they examined divorce rates (family disruption) as a measure of the ineffectiveness of the family, church membership rates as a measure of the strength of religion, and the percentage of voting-age persons who actually voted in congressional contests as a measure of the strength of the polity. The researchers created several interaction terms to examine the moderating impact of the strength of the non-economic social institutions on the relationship between economic conditions and crime rates. Their findings supported Messner and Rosenfeld's original proposition, demonstrating that when non-economic social institutions are strong (low divorce rates, high church membership rates, and high rates of voting), the impact of poverty on the rate of economic crime was at its lowest (Chamlin and Cochran, 1995)[4].

In 1997, Messner and Rosenfeld examined the impact of market forces and the decommodification of labor on cross-national homicide rates. In particular, they were

interested in examining how the decommodification of labor, or societal policies designed to empower the citizenry, interacts with the economy to influence homicide rates. While controlling for a variety of socioeconomic and demographic characteristics of a sample of 45 nations, they found that nations with greater decommodification scores tended to have lower homicide rates (Messner and Rosenfeld, 1997). They concluded that nations with greater decommodification of labor reduced the reliance of their citizens on the market for their personal well-being, thus highlighting the interaction between the economy and the polity in influencing homicide rates (see also Jensen, 2002). They also acknowledged that they had restricted their analyses to only this interaction and suggested that it was still important to investigate the conditioning influence of other non-economic social institutions (Messner and Rosenfeld, 1997).

Hannon and DeFronzo (1998) integrated IAT with social support theory and tested the hypothesis that levels of welfare assistance moderate the effects of economic deprivation on crime rates. They examined data on the 1990 total, violent, and property crime rates for a sample of large metropolitan areas in the United States. They found, consistent with IAT, that "higher levels of welfare assistance reduce the strength of the positive relationship between the size of the disadvantaged population and crime rates" (Hannon and DeFronzo, 1998:389).

Piquero and Piquero (1998) also tested IAT by utilizing cross-sectional data from the United States. They also tested the efficacy of the theory in terms of explaining both property crime and violent crime rates. They tested both the impact of the strength of the core non-economic social institutions (i.e., the family, the polity, and education) as well as a series of interaction effects between the strength of the economy and the strength of these core social institutions. Furthermore, they engaged in sensitivity analyses by testing alternative operationalizations of the key independent variables. Initially, they found that the percentage of persons enrolled full time in college (education) as well as the percentage of the population receiving public assistance (the polity) had a negative impact on both types of crime. Both the percentage of the population below the poverty level (economy) and the percentage of single-family homes (family) positively influenced these offenses. More important, the cross-product term representing the interaction between the economy and education was also significantly related to the rate of crime. That is, the economy was found to have the least influence on property crime when more persons were enrolled in college. For violent offenses, both the economy by education and the economy by polity interactions were found to be significant. However, when they employed alternative operationalizations of the key concepts (percent of persons who voted in the 1988 presidential election and the percent of high school dropouts), these results were not replicated. They therefore concluded that empirical tests of IAT are "extremely sensitive to the operationalizations of key variables" (Piquero and Piquero, 1998:80).

Savolainen (2000) examined the impact between economic inequality and cross-national homicide rates hypothesizing that this relationship would vary depending on the strength of both the economy and other non-economic social institutions in society. Savolainen's findings provide support for some of the key propositions of IAT. Specifically, he found that the interactions between income inequality, economic discrimination, and decommodification were, as expected, negatively, although often insignificantly, related to homicide victimization rates. He also discovered a significant, strong, negative relationship between the interaction of income inequality and welfare spending on the homicide victimization rate. Savolainen pointed out that the nations with considerable welfare programs also tended to have the lowest levels of income inequality, noting that this provides strong support for the notion that economic inequality is a predictor of homicide rates in societies with weak welfare support.

Batton and Jensen (2002) examined the main effects of the decommodification of labor (a measure of the extent to which the other non-economic social institutions have tamed the market) in a time-series analysis of homicide rates in the United States (1900 - 1997). Although the direct effect of decommodification was not significantly related to U.S. homicide rates for the entire length of the time series, they did observe a significant direct effect for the first half of the series until the end of World War II. They concluded that the decommodification index had an effect on homicide rates that occurred only under unique institutional circumstances.

Stuckey (2003), like Chamlin and Cochran (1995), Hannon and DeFronzo (1998), and Piquero and Piquero (1998), focused on sub-national units within the United States. Integrating IAT with "systemic" social disorganization theory, he predicted that the responsiveness of local political structures would condition the effects of economic deprivation on crime. His findings were consistent with this prediction; the effects of economic deprivation on the rate of crime were weakest in those metropolitan areas with responsive (strong) local political structures.

Most recently, Schoepfer and Piquero (2006) provided another test of the mediating effects of non-eco-

nomic social institutions and the relationship between the economy and crime. Like most of the studies that preceded them, Schoepfer and Piquero (2006) restricted their analyses to the data for the United States. However, rather than testing the efficacy of IAT to predict rates of street crimes, these authors tested IAT against state-level data on embezzlement rates. They found that the effect of economic conditions (percentage unemployed) on the rate of embezzlement was conditioned or moderated by the strength of the polity (percent voting in 1990 state and local contests). However, the strength of the family (divorce/marriage ratio) and the strength of education (percent not graduated from high school) both failed to moderate the effect of economic conditions on the rate of embezzlement (Schoepfer and Piquero, 2006).

Unlike all of the studies discussed above which observed interactive or moderating effects of non-economic social institutions, Maume and Lee (2003) assessed the institutional dynamics of IAT by also examining the mediating effects of the strength of non-economic institutions. Again using sub-national (i.e., county-level) data, they observed more support for the conclusion that non-economic social institutions (the polity, the family, and religion) mediate, rather than moderate, the relationship between the economy and crime rates (Maume and Lee, 2003).

While these indirect tests provide important support for IAT, they do not provide the most powerful tests of the theory. First, only Messner and Rosenfeld (1997), Savolainen (1998) and Batton and Jensen (2002) utilized cross-national data, a requisite for testing IAT. However, each of these studies was restricted to examinations of homicide rates only. Conversely, those studies which examined both violent and property crime rates failed to employ cross-national data (Chamlin and Cochran, 1995; Hannon and DeFronzo, 1997; Piquero and Piquero, 1998; Stucky, 2003; Schoepfer and Piquero, 2006). As Savolainen (2000:1024) compellingly argued, "nation-states constitute more compelling units of analysis than do the states of the Union." Further, different studies have examined the impact of different sets of non-economic institutions and the moderating effects of the strength of these non-economic social institutions are very sensitive to alternative operationalizations (Piquero and Piquero, 1998). Finally, it is unclear whether the role of non-economic institutions in IAT is to mediate or to moderate the effects of the economy on crime. While nearly every study finds evidence of moderation by at least one non-economic social institution, Maume and Lee (2003) have made a strong case that their influence is to mediate rather than moderate. Moreover, Messner and Rosenfeld's original presentation of IAT asserts that the dominance of the economy "fosters weak social controls" implying an indirect or mediated effect. Likewise, they also stated that "the American Dream contributes to high levels of crime in two important ways, one direct the other indirect" (Messner and Rosenfeld, 1999:148).

The Present Study

The current study proposes to draw on the strengths of the above research and to improve upon its limitations by providing another partial test of IAT utilizing cross-national data to explain both violent and utilitarian offenses. In addition, it attempts to clarify the causal mechanisms through which economic dominance influences these crime rates. This study contributes to the small but growing research literature testing IAT in a number of very important ways: (1) utilizing cross-national data to examine both violent and property crime; (2) employing alternative operationalizations for the key concept of economic dominance; and (3) determining whether mediation or moderation best describe the causal relationship between the strength of the economy, the effectiveness of non-economic social institutions, and crime cross-nationally.

Data

Since IAT proposes relationships at the macro-social level unique to certain societies, these propositions require cross-national data for proper testing. The data for this research were collected for 49 nations from a variety of sources including the International Criminal Police Organization (INTERPOL), the World Health Organization (WHO), the United Nations (UN), the World Bank, and other international sources identified in Appendix A. The data for the independent variables were taken from 1997 where possible, and from 1996 if 1997 data were not available[5]. In several instances, variables were combined both to eliminate problems of multicollinearity and to preserve degrees of freedom. Principal components factor analyses were performed and variables were created from these analyses. The results of these analyses are reported in Appendix B.

Measures

Crime Rates

Two measures of crime are utilized to examine the efficacy of IAT. Since anomie theory was originally designed to explain rates of utilitarian crimes, a measure

of all theft crimes is utilized. These data were obtained from the International Crime Statistics published by INTERPOL (1997). Numerous concerns regarding the use of official statistics to measure cross-national crime have been raised (e.g., Newman, 1999). One of the primary issues is the possibility of systematic bias in the reporting practices of various nations[6]. Kick and LaFree (1985), however, concluded that offenses such as homicide and theft, which have ancient origins, exhibit a fairly high degree of definitional consistency and are more comparable. Likewise, Krohn and Wellford (1977) and Krohn (1978) also suggested that problems of systematic bias may not be particularly serious. This was also concluded by Bennett and Lynch (1990) who examined the reliability of four cross-national crime data sets, including Archer and Gartner's CCDF, INTERPOL, UN, and WHO data[7]. They concluded that for analytical purposes, all four data sets afforded substantively similar results (Bennett and Lynch, 1990). They also concluded that analytic studies were "more robust than descriptive studies with respect to error" and that such error did not necessarily affect the substantive findings unless correlated with the independent variables (Bennett and Lynch, 1990:157). They also suggested that aggregating these indicators helps to mitigate some of these issues. Therefore, our measure of cross-national theft rates, while not limited to the most serious offenses, provides a more reliable and accurate measure. That is, while definitions of serious and minor theft offenses surely differ cross-nationally, an inclusive measure such as the all theft crimes that we utilize minimizes the impact of these differential recording practices.

In addition, Messner and Rosenfeld (1994) proposed that their theory also explains cross-national differences in the rate of serious crimes. Therefore, cross-national homicide rates are utilized as our second measure of crime. This measure offers the additional advantage of being considered the most reliable and accurate estimate of crime available for cross-national comparisons. Homicide rate data were derived from both the World Health Organization (1997-1999) and the International Crime Statistics, published by INTERPOL (1997). The primary source of data is the World Health Organization (WHO). If data were missing from this source, INTERPOL data were utilized. While WHO data are considered by some to be the most reliable estimates of international crime rates (Avison and Loring, 1986; Savolainen, 2000; Messner, Raffalovich, and Schrock, 2002, Krahn, Hartnagel, and Gartrell, 1986; Nalla and Newman, 1994; Chamlin and Cochran, 2007), both the WHO and INTERPOL measures correlate very highly for the sub-sample of nations for which complete data are available.

To control for yearly fluctuations, multi-year averages were computed. Logged transformations of these crime rate measures were utilized as they were highly positively skewed. Initial analyses also indicated potential problems with heteroscadasticity which were greatly reduced once the measures were logged.

The Economy

Messner and Rosenfeld (2001:68) stressed that the core values expressed in the American Dream are supported by the economy and that the most important characteristic of the American economy is its capitalistic nature which is defined by "both private ownership and control of property and free-market mechanisms for the production and distribution of goods and services." However, they also stressed that a free-market economy, if unregulated by other non-economic social institutions, would adversely impact crime rates. When the economy is unchecked by non-economic social institutions, the principles of the free-market economy dominate and infiltrate the functions of these other institutions. The degree to which economic conditions influence non-economic institutions is associated with both the amount of control or political restraint the state exerts over the economy and the extent to which it attempts to mediate the effects of these economic conditions (Batton and Jensen, 2002). These conditions should have more of an impact when state regulation and control are reduced. This suggests that the impact of the economy of crime at a cross-national level of analysis involves at least two elements: (1) the degree of economic freedom/regulation within a nation, and (2) the nature of economic conditions. The present study is unique in that it includes measures of both of these elements.

The prominence of a free-market economy, unrestrained and unregulated by social or political constraints, is measured first by an index of economic freedom developed by the Heritage Foundation (O'Driscoll, Holmes, and O'Grady, 2003). Economic freedom is defined as "the absence of government coercion or constraint on the production, distribution, or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself" (Beach and O'Driscoll, 2003:2). Each country is rated by examining fifty economic variables classified into ten broad categories including: trade policy, fiscal burden of government, government intervention in the economy, monetary policy, capital flows and foreign investment, banking

and finance, wages and prices, property rights, regulation and black market activity (Beach and O'Driscoll, 2003). High scores on this variable are indicative of institutional policies that are most conducive to economic freedom[8].

In countries where the economy is dominant, the welfare of its citizens is contingent upon market forces. Conversely, when governments have social welfare policies in place, these policies can act as a buffer against these market forces. These policies also have the effect of potentially strengthening non-economic social institutions such as the family (Jensen, 2002). Therefore, one would expect that low social welfare allocations signify economic dominance (Jensen, 2002). The current study employs a measure of social welfare by the annual total social security expenditures as a percentage of the gross domestic product (International Labour Office, 2000). This measure of economic dominance is conceptually similar to the decommodification of labor index proposed by Esping-Andersen (1990) and employed by Messner and Rosenfeld (1997) and Savolainen (2000) in their tests of IAT[9].

Finally, in a free market economy one would expect changes in the economy to have a direct impact on crime rates. In the present study, economic conditions are operationalized by a measure of relative deprivation or economic inequality. Nearly every test of IAT has also employed a measure of economic inequality as an indicator of the strength of the economy. Chamlin and Cochran (1995) and Piquero and Piquero (1998) both used a measure of the percent of families living in poverty. Messner and Rosenfeld (1997), Savolainen (2000), and Maume and Lee (2003) each used the Gini coefficient as their measure of economic inequality. Messner and Rosenfeld (1997) and Savolainen (2000) also utilized an index of economic discrimination. Schoepfer and Piquero (2006) employed the percent unemployed as their measure of the strength of the economy. Finally, Messner and Rosenfeld (1997), Hannon and DeFronzo (1998), and Stucky (2003) each employed an index economic deprivation consisting of several of the indicators employed by the other studies. The present study employs the Gini coefficient of household income to measure economic inequality or relative deprivation. This coefficient ranges in value from 0 to 100 with a score of 0 representing perfect income equality and a score of 100 representing a perfectly unequal distribution of income[10].

The Family

Messner and Rosenfeld (2001) described several situations to illustrate both the devaluation and accommodation of the family where the economy is dominant. They suggested that single-parent families, as well as families where both parents work, are less able to effectively supervise their children. In previous tests of IAT, family disruption has been measured by divorce rates (Chamlin and Cochran, 1995; Piquero and Piquero, 1998; Maume and Lee, 2003; Schoepfer and Piquero, 2006). However, Messner and Rosenfeld (2007:83) also suggested that the intrusion of economic norms into the family is illustrated by the fact that "contributions to family life tend to be measured against the all-important breadwinner role, which has been extended to include women who work in the paid labor force." While this has been traditionally measured by examining the percentage of female-headed households, this measure is not uniformly available cross-nationally. However, Messner and Rosenfeld (2007:8) noted that one indication that economic norms have permeated the family is that the devotion of a parent is now frequently measured by his/her capacity to "provide a better life" for his/her children. Traditionally, women's status has been assessed by their role in the family (see Lehmann, 1990). Women in the workforce signal a breakdown in this traditional perspective and the effectiveness of families to socialize their children. Females in the labor force primarily mean that childcare is outsourced and that the traditional female role as caregiver is severely compromised putting stress on family bonds (Gartner, 1990; Neumayer, 2003). Consequently, traditional family socialization is jeopardized as parents will have "difficulty providing children with the emotional support and nurturance to deal with everyday misfortunes" and will have to farm out those roles to other institutions such as schools (Messner and Rosenfeld, 2007:86)[11].

A measure of family disruption that includes both the breakdown of the traditional nuclear family as well as a measure of the permeation of economic norms is a more complete measure of extent to which the family has been devalued as economic values have been accommodated[12]. Therefore, family disruption, as a measure of the effectiveness of the family, was created in the current study as a factor variable which combines divorce rates and the percentage of females in the labor force. Therefore, high scores on this measure represent family disruption or the ineffectiveness of the family.

Education

Messner and Rosenfeld (2001) pointed to the importance of the educational system as a socializing agent. They stressed that the educational system is also respon-

sible for preparing youth for their occupational roles. They also noted how this emphasis on preparing youth for the labor force, rather than the pursuit of knowledge, is evidence of the extent to which the educational system is accommodating a dominant economy. The current study employs two measures of the strength of the educational system: illiteracy rates and pupil-to-teacher ratios. Both of these variables were combined to create a single factor variable with high scores representing a weak educational system.

The Polity

As a social institution, the political system is utilized to promote and attain collective goals, unless co-opted by the economy (Messner and Rosenfeld, 2001). Messner and Rosenfeld (2001) further maintained that involvement in the political process can promote a sense of community and lead to a reduction in anomie. They also pointed to low voter turnout as an indicator that the polity is devalued (Messner and Rosenfeld, 2001). Accordingly, the ineffectiveness of the polity was measured by the lack of voter turnout at the latest election. That is, this measure was created by subtracting the percentage of the population that voted at the last election from 100.

Control Variables

Previous researchers, including Messner and Rosenfeld (2001), emphasized the importance of demographic controls in the analysis of crime rates. Specifically, they highlighted the importance of gender and race, claiming that societies that are both racially homogeneous and with a larger proportion of females have lower crime rates (Messner and Rosenfeld, 2001). To control for the impact of these demographic forces, the current study includes measures of the sex ratio and the index of racial heterogeneity for each country. Further, the percentage of the population aged 15-29 was also included as a control measure. Due to collinearity problems, these demographic characteristics of the countries were combined to create a single factor variable. Therefore, countries that score high on this have a more crime prone population.

The degree of economic development, in particular economic affluence, is also important to control for. Nations with an abundance of resources may be better able to keep non-economic social institutions strong, to buttress the anomic effects of economic imbalance of power, and/or to otherwise reduce crime rates. In contrast, nations with a paucity of resources may have populations that tend to "resolve interpersonal conflicts on their own" thus increasing crimes rates (Jensen, 2002:65). Moreover, Messner and Rosenfeld (1997) have noted the importance of the general affluence of a nation on its rate of crime. The present study controls for the influence of economic affluence with a single factor variable which combines the gross domestic product per capita in U.S. dollars with the life expectancy and annual health expenditures to measure the general well-being of the country. High values on the economic affluence variable represent more affluence. Table 1 presents the minimum and maximum values and means and standard deviations for the variables used in this study. The bivariate correlations between these variables are presented in Appendix C.

Table 1. Descriptive Statistics

	Minimum	Maximum	Mean	Standard deviation
Dependent variables				
Homicide rate (log)	-.63	4.80	1.258	1.321
Theft rate (log)	2.52	9.03	6.915	1.477
Economic variables				
Economic freedom	.00	3.50	2.206	.751
Social Security $	2.50	34.70	16.621	9.195
Gini coefficient	23.10	59.30	35.024	9.516
Social institution variables				
Family disruption	-1.09	1.57	.130	.736
Education	-1.22	3.38	-.474	.741
Polity	5.00	64.00	29.184	13.422
Control variables				
Demographics	-1.64	1.31	-.566	.713
Affluence	-.89	2.86	.436	1.052

Findings

Tables 2 and 3 present the results of linear regression analyses predicting cross-national homicide and theft rates, respectively. Each table presents five sets of three models. The first set of three models examines the direct effects of each of the three measures of the economy [i.e., (a) the Gini coefficient, (b) social security expenditures, and (c) economic freedom] on these rates of crime. The second set of three models adds measures of the ineffectiveness or weakness of the three non-economic social institutions (i.e., the family, education, and the polity) to test the mediating hypothesis of Maume and Lee (2003).[13] The next three sets of three models (nine models) include cross-product terms for each of the three indicators of the economy (centered) by each of the three measures of the strength of non-economic institutions (also centered) to examine the potential moderating effects of each of the three non-economic institutions on each of the relationships between three indicators of the economy and the rate of crime cross-nationally. All analyses included the control variables in order to ensure that any observed

Table 2. OLS Regression Analysis of the Mediating and Moderating Hypotheses from IAT–log Homicide Rates

(n = 49)

	Direct effects models			Mediated effects models			Moderated effects models								
	a	b	c	a	b	c	a1	b1	c1	a2	b2	c2	a3	b3	c3
Economic variables															
a) Gini coefficient	.045 *			.037			.036			.044			.035		
b) Social Security $		.003			.016			-.007			-.012			.020	
c) Economic freedom			-.098			-.246			-.178			-.233			-.245
Social institutions															
Family disruption				.112	.065	.577 *	.135	.100	.536 *	.148	.057	.601 *	.111	.065	.576 *
Education				-.232	-.208	-.191	-.214	-.309	-.207	.083	-.525	-.114	-.216	-.189	-.185
Polity				.018	.027 *	.019	.019	.024 *	.019	.027 *	.027 *	.019	.019	.030 *	.021
Cross-product terms															
1) Economy *family							-.017	.056 *	.188						
2) Economy *education										.050 *	-.035	.184			
3) Economy *polity													.001	-.001	-.002
R^2	.386	.457	.422	.475	.513	.579	.541	.519	.584	.482	.561	.580	.479	.522	.579

Note: Values reported are unstandardized regression coefficients. All models control for affluence and demographic factor-score variables. Model intercepts and other results are available upon request.

* $p < .05$

Table 3. OLS Regression Analysis of the Mediating and Moderating Hypotheses from IAT–log Theft Rates

(n = 46)

	Direct effects models			Mediated effects models			Moderated effects models								
	a	b	c	a	b	c	a1	b1	c1	a2	b2	c2	a3	b3	c3
Economic variables															
a) Gini coefficient	-.026			-.018			-.020			-.004			-.012		
b) Social Security $		.091 *			.061 *			.049			.043			.060	
c) Economic freedom			.484			.451			.622 *			.396			.460
Social institutions															
Family disruption				.383 *	.325	.549 *	.430 *	.355 *	.447	.461 *	.324	.438	.384 *	.325	.546 *
Education				-.748 *	-.531 *	-.745 *	-.709 *	-.576 *	-.784 *	.146	-.724	-1.091 *	-.788 *	-.534 *	.673 *
Polity				-.011	-.005	-.018	-.009	-.007	-.019	.006	-.005	-.017	-.014	-.006	-.006
Cross-product terms															
1) Economy *family							-.035	.026	.470						
2) Economy *education										.095 *	-.021	-.817			
3) Economy *polity													-.002 *	.000	-.022
R^2	.432	.529	.445	.596	.612	.624	.615	.623	.650	.743	.614	.649	.639	.612	.642

Note: Values reported are unstandardized regression coefficients. All models control for affluence and demographic factor-score variables. Model intercepts and other results are available upon request.

* $p < .05$

findings were not spurious in nature. Overall, the models explained between 38.6 and 58.4 percent of the variation in cross-national homicide rates and between 43.2 and 65 percent of the variation in international rates of theft[14].

In Table 2, we first note that of the three indicators of the economy, only the Gini coefficient, as a measure of economic inequality, has a direct effect on cross-national homicide rates (b = 0.045). Thus, as predicted by IAT (and other macro-social theories of crime), economic conditions are associated with increased levels of homicide cross-nationally.

Most prior studies of IAT that have utilized cross-national data have failed to incorporate a measure of the economic structure or its characteristics. The index of economic freedom compiled by the Heritage Foundation was used in the current study to measure the prominence of a free market economy. The hypothesis was that countries with a free market economy would be more likely to experience economic dominance and anomie and therefore would have higher rates of crime. Also, because of the difficulties inherent in directly measuring the presence of anomie, previous studies have relied on indirect measures. The most common approach is to examine either absolute (Chamlin and Cochran, 1995; Piquero and Piquero, 1998) or relative deprivation (Savolainen, 2000; Maume and Lee, 2003). An alternative approach is to examine restraints on the economy by examining such items as decommodification or welfare policies (Messner and Rosenfeld, 1997; Maume and Lee, 2003). The present study used total annual expenditures of social security as a buffer against economic conditions. Neither annual expenditures on social security nor the index of economic freedom are significantly related to cross-national homicide rates.

Consistent with the argument of Maume and Lee (2003), the effects of the economy on homicide are mediated by the influence of the non-economic social institutions. Specifically, the effects of the Gini coefficient are reduced by 18 percent (b = 0.045 vs. 0.037) and become non-significant. However, a test for the equality of the direct and mediated effects revealed that they were statistically equivalent (difference = -0.008, Z = 0.27, $\underline{p}$ = 0.39). Of the non-economic social institutions, family disruption is positively associated with cross-national homicide rates when IAT is modeled by the economic freedom index. Likewise, poor voter turnout (a measure of the ineffectiveness of the polity) is also significantly associated with cross-national homicide, but only when IAT is modeled by annual expenditures on social security. Thus, cross-nationally low voter turnout is associated with greater rates of homicide.

Despite no evidence of any remaining direct effect of the economy on cross-national homicide rates once the weaknesses of non-economic social institutions are controlled, the analyses reported in Table 2 still show limited support for the moderating effects hypothesis, though not always in a manner consistent with the argument tendered by Chamlin and Cochran (1995). For instance, high levels of family disruption are associated with increased levels of homicide when coupled with high levels of social security expenditures (b = 0.056). Perhaps nations employ such expenditures in an attempt to mute the consequences of family disruption as a form of prophylactic social control. Conversely, high levels of economic inequality are related to high levels of homicide cross-nationally, especially among nations with an ineffective education system (b = 0.050).

Support for IAT is equally mixed with regard to cross-national rates of theft (see Table 3). Unlike what one might expect from the effect of social security expenditures on the cross-national crime rate, we found that high levels of these expenditures are associated with higher levels of theft (b = 0.091). This direct effect is partially mediated by the ineffectiveness of the other non-economic social institutions (b = 0.061), though it remains statistically significant. Again, however, a test for the equality of the direct versus mediated effect revealed that the two were statistically equivalent (difference = 0.03, Z = 0.75, $\underline{p}$ = 0.23). Rather than blunting the effects of criminogenic conditions of an institutional imbalance of power, these governmental expenditures are associated with increased cross-national levels of theft independent of the ineffectiveness of non-economic social institutions. While high levels of family disruption are associated with high levels of theft as one might expect, a weak educational system is associated with lower rates of theft.

While the results in Table 3 provide some very limited evidence for the mediating influence of non-economic institutions (Maume and Lee, 2003), there is stronger evidence of their moderating influence. Consistent with the argument of Chamlin and Cochran (1995) the effect of economic inequality of the cross-national rate of theft is significantly enhanced under conditions of high family disruption (b = 0.095). Conversely, the results in Table 3 also reveal that low levels of voter turnout significantly *reduce* the criminogenic effects of economic inequality (b = -0.002)[15].

Discussion

In 1994, Messner and Rosenfeld presented to the criminological community what is today the structural

version of anomie theory with the greatest currency: institutional anomie theory (IAT). Their theory, drawing on Merton (1938), emphasizes both the unique anomic and criminogenic influence of a predominant cultural focus on the attainment of monetary success and affluence in the United States (i.e., the American Dream) and the institutional imbalance of power between the economy and the other non-economic social institutions. That is, according to Messner and Rosenfeld, the emphasis on monetary success promoted in a capitalistic society coupled with the devalued goals of and weakened controls from non-economic social institutions – an imbalance of institutional power skewed toward the economy (i.e., institutional anomie) – ultimately results in the comparatively high rates of crime in the United States. While a valuable and intriguing macro-social theory of cross-national variation in the rates of crime, Messner and Rosenfeld's theory has proven to be a daunting challenge to assess empirically. To date, all tests have been partial and indirect and tended to focus on the extent to which the ineffectiveness of non-economic social institutions are able to buffer the criminogenic influences of the economy. While this literature consistently supports specific propositions derived from Messner and Rosenfeld's theory, this support is consistently inconsistent. By that, we mean the level of support for IAT varies according to how its key explanatory concepts (i.e., the economy and the strength of non-economic social institutions) are measured (see Piquero and Piquero, 1998) and whether the model tested supports the claim by some (Chamlin and Cochran, 1995) that the strength of non-economic social institutions condition the effects of the economy on the rate of crime or whether the models support the claims by others (Maume and Lee, 2003) that the influence of non-economic institutions mediates the effects of the economy.

The current study also employed a partial and indirect test. However, it enhances the existing research in a number of important ways. First, this research utilized cross-national data to examine both violent and utilitarian offenses. Many of the earlier studies used data for the United States alone (Chamlin and Cochran, 1995; Hannon and DeFronzo, 1998; Piquero and Piquero, 1998; Stucky, 2003; Maume and Lee, 2003; Schoepfer and Piquero, 2006). Studies that focus solely on a single culture are unable to measure, even indirectly, variation in cultural values. While examinations of data from the United States have the perceived advantage of holding constant the cultural values of the society, they do not allow the researcher to compare the unique aspects of this culture (e.g., the American Dream) to other cultures. Since it is the culture that is thought to induce anomic pressures, it is critical to allow for this variation. Further, it is clear that Messner and Rosenfeld (2001:44) intended their theory to explain "variation across societies in rates of serious crime." Therefore, the present study has critically advanced the testing of IAT by examining cross-national data for the rates of two serious crimes.

Second, because Piquero and Piquero (1998) found that support for IAT was highly sensitive to the measures employed, this study utilized new measures to examine the role of the economy in influencing cross-national crime rates. Finally, it tested whether the strength of non-economic social institutions mediate or moderate the influence of the economy of crime rates, an issue unresolved in the extant research (see Chamlin and Cochran, 1995; Maume and Lee, 2003).

Lastly, it is important that we controlled for a variety of relevant factors that might confound the relationships between the economy, non-economic social institutions, and crime rates. Specifically, we controlled for several demographic factors highlighted by Messner and Rosenfeld (2001) to influence crime rates cross-nationally, and for the relative affluence of each country. This was critical for examining the impact of the economy on crime.

Our findings from multivariate analyses of cross-national data, like those of others before us, yielded mixed and rather limited support for IAT. Moreover, like the extant research literature, our support for IAT was consistently inconsistent. First, the efficacy of our models varied by type of crime examined (cross-national homicide rates versus rates of theft). For instance, the explanatory power of the models testing IAT with cross-national data for the rate of theft was considerably stronger than that for the rate of homicide models. However, the nature of the relationships observed (i.e., the direction, statistical significance, and functional form of these associations) were somewhat more supportive of IAT propositions for the homicide data than for the theft data. For instance, with the homicide data, we observed a significant, direct effect of relative economic deprivation (the Gini coefficient) on the rate of homicide, such that countries with higher levels of economic inequality also, as expected, had higher rates of homicide. More importantly, the ineffectiveness of non-economic social institutions both mediated (though not appreciably) the influence of economic deprivation as predicted by Maume and Lee (2003) and moderated its influence as predicted by Chamlin and Cochran (1995). However, we also observed that the positive relationship between levels of family disruption and cross-national rates of homicide was significantly

enhanced among those countries reporting high levels of social security spending.

For the theft models, higher levels of social security expenditures were associated with *higher* rather than lower rates of theft. This unexpected relationship was mediated somewhat, albeit only marginally, by the ineffectiveness of the non-economic social institutions. We also observed moderating influences from the non-economic social institutions, though not always consistent with expectations derived from IAT. While high levels of family disruption do enhance the criminogenic influence of the economy on cross-national rates of theft, poor voter turnout *diminished* the effect of economic deprivation.

Second, as observed by Piquero and Piquero (1998), support for IAT varies according to how its key concepts have been operationalized. That is, the effect of the economy on cross-national rates of crime is very sensitive to how the economy is measured. In particular, support for IAT was more consistently observed when the economy is operationalized as a measure of the level of economic deprivation (i.e., the Gini coefficient), than by either annual levels of social security spending (a measure conceptually similar to Messner and Rosenfeld's use of the index of the decommodification of labor) or the Heritage Foundation's measure of economic freedom (an indicator conceptually consistent with Messner and Rosenfeld's conceptualization of economic dominance)[16]. In addition, support for IAT also varies by how the strength of the non-economic social institutions is measured. In particular, the anticipated mediating and moderating effects of these non-economic institutions were most pronounced and most consistent with IAT for our measures of the ineffectiveness of the family (family disruption) and the educational system (high illiteracy and pupil-to-teacher ratios) and were least so for our measure of the ineffectiveness of the polity (low voter turnout).

Third, the primary research question of the present study involves the dispute among IAT researchers as to whether the predicted influence of the strength of non-economic social institutions moderates (Chamlin and Cochran, 1995) or mediates (Maume and Lee, 2003) the effect of the economy on cross-national rates of crime. Again, our findings were consistently inconsistent. That is, we observed that the economy's effect on the rate of crime was sometimes mediated and sometimes moderated. In fact, it was both mediated and moderated. But, this all depends on which measure of the economy was examined and the effectiveness of which non-economic social institution was being examined. The cleanest picture indicative of support for IAT to emerge from our analyses showed that the effect of economic deprivation (i.e., the Gini coefficient) on the cross-national rate of homicide and/or theft was both mediated and moderated by the ineffectiveness of the family and the educational system. Importantly, the economy may interact differently with different non-economic institutions so that both mediation and moderation may be at work.

In sum, the research literature is consistently inconsistent with its support of IAT and our study is no different. As others before us have found, support for IAT varies across units of analysis (cross-national versus sub-national) and across types of crime (rates of homicide versus instrumental crime). Tests of IAT are also very sensitive to the operationalization of key explanatory concepts (both the economy and the strength/weakness of non-economic social institutions). Curiously, we observed confounding effects for total annual social security expenditures, directly with theft and conditioned by family disruption for homicide. Such confounding effects need to be resolved. Conversely, we found the measure of economic inequality (i.e., the Gini coefficient) to be the indicator of the economy most consistently related to cross-national rates of crime in a manner predicted by IAT. It was directly related to cross-national homicide rates as predicted and was involved in three of the four moderated effects observed. IAT theorists and researchers must work to resolve the highly sensitive nature of the theory to its operationalizations.

Finally, it remains unclear, both theoretically and empirically, whether non-economic institutions moderate or mediate the effects of the economy on the rate of crime. This state of affairs may be due, at least in part, to the challenging and complex nature of this theory and the lack of systematically collected cross-national data that properly operationalize its key concepts. This is especially the case with Messner and Rosenfeld's (1994) conceptualizations of anomie and culture (i.e., the extent to which the American Dream has permeated the cultures of other countries and the extent to which the economy dominates other social institutions). Until the theory is better specified and until such data become available, tests of IAT will remain both partial and indirect. Moreover, the findings from these partial and indirect tests are likely to remain consistently inconsistent in their support for the theory. That is, the theory will likely receive consistent support, but this support will differ across measures of crime, across measures of the economy, across measures of the non-economic social institutions, and across the various functional forms suggested by theory for the relationships among these measures.

Endnotes

1. The authors would like to acknowledge Richard Rosenfeld for his helpful comments provided to an earlier draft of this manuscript.

2. This is very similar to the early concept of social disorganization which emphasizes the ability of communities to generate social control and to assist residents in achieving common goals. For further elaboration, see Kornhauser (1978).

3. While many have tested Messner and Rosenfeld's institutional anomie theory by examining the direct, indirect, and/or conditioned effect of the economy on rates of crime, others have addressed the issue of "American exceptionalism" asserted within the theory (see Jensen 2002; Cao, 2004; Chamlin and Cochran, 2007; Messner and Rosenfeld, 2006). Others have addressed cultural dynamics associated with IAT (see Chamlin and Cochran, 1997; Pratt and Godsey, 2003; Cullen, Williams, and Wright, 1997). Finally others have examined the direct or conditioning effect of the decommodification of labor index (Messner and Rosenfeld, 1997; Jensen, 2002; Batton and Jensen, 2002). For perhaps the best and most current review of research testing IAT, see Messner and Rosenfeld, 2006.

4. Although Jensen (1996) disputes that these findings support Messner and Rosenfeld's theory, Chamlin and Cochran (1996) responded by reiterating that their findings are consistent with Messner and Rosenfeld's proposition that economic conditions (poverty) should be strongly and positively related to crime only when non-economic social institutions are ineffective.

5. The 49 nations examined are Albania, Austria, Azerbaijan, Bahamas, Bangladesh, Bulgaria, Canada, Columbia, Costa Rica, Croatia, Czech Republic, Denmark, Dominican Republic, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Israel, Italy, Jamaica, Japan, Republic of Korea, Kyrgyzstan, Latvia, Lithuania, Luxemburg, Maldives, Moldova, Netherlands, New Zealand, Norway, Panama, Poland, Portugal, Romania, Singapore, Slovenia, South Africa, Spain, Sweden, Switzerland, Trinidad, Tunisia, Turkey, Ukraine, and United States.

6. It should be noted that these same concerns have been raised concerning crime estimates across the United States (see Wiersema, Loftin, and McDowall, 2000).

7. In fact, Bennett and Lynch (1990) suggest that the selection of a data set should be based on coverage or logistical considerations. In our data, the homicide rates reported by INTERPOL and the WHO were found to correlate at 0.80, lending credence to the idea that they are substantially measuring the same phenomenon.

8. The variable was originally measured on a scale from 1 to 5, with high scores representing policies that were least conducive to economic freedom. In the current analyses, the variable was re-scaled from 0 to 4 and then reverse coded so that higher scores represent greater economic freedom. For further information see http://www.heritage.org/research/features/index.

9. In a sub-sample of 18 nations for which both measures are available, these two measures are significantly correlated at 0.80.

10. For countries with missing data on either the Gini coefficient or the annual social security expenditures measure, aggregated mean substitution was utilized by region and the United Nations human development code.

11. Rosenfeld and Messner (2006) point out that families accommodate economic requirements in a variety of ways. They emphasize that "work hours determine household meal and vacation schedules, how an employer's permission is needed to tend to a sick child, how having a family above all requires having a job" (Rosenfeld and Messner, 2006:165).

12. As pointed out by an anonymous reviewer, this may be perceived as an androcentric view of how to measure family. However, we believe that this view is consistent with the proposition advanced by the theoretical perspective that the devaluation of the family has resulted in a de-emphasis on traditional family roles including the role of the female as the primacy caretaker.

13. Readers will note that while others may refer to these variables as measures of the strength of non-economic social institutions, in the current study, each indicator is actually a measure of the weakness or ineffectiveness of these non-economic social institutions.

14. The Variance Inflation Factors (VIF) for the direct effects models and mediated effects models were all less than 4.5. However, a maximum VIF of 10.5 was observed in the moderating effects models, suggestive of a problematic level of multicollinearity due to the inclusion of the various cross-product terms. To adjust for this problem, variables were centered prior to analysis (see Aiken and West, 1982). In addition, residual statistics and casewise diagnostics revealed no outliers past three standard deviations.

15. In supplementary analyses not reported here, we re-ran all the analyses reported in Tables 2 and 3 by excluding the U.S. Almost all of the results were the same except the following: (1) in the homicide analyses when testing for the mediated effects of the polity on the social security spending-homicide relationship, the direct effect of the polity measure became non-significant; and (2) in the theft analyses (a) the direct effect of economic freedom attained statistical significance, (b) the direct effect of family disruption attained statistical significance in the moderated effects model for economic freedom, and (c) the direct effects of family disruption also attained significance in the model testing moderating effects of the polity on the social security spending-theft relationship.

16. In a personal communication to the lead author, Rosenfeld (2003) stated that he thought our Heritage Foundation's measure of economic freedom "matches closely our notion of economic action unfettered by social or political constraint."

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Appendix A. Measures and Data Sources

Measures	Data Source
Crime	
Homicide and theft rates	International Crime Statistics. International Criminal Police Organization. 1997.
	World Health Statistics Annual, 1997-1999 Online Edition. World Health Organization.
Economic conditions	
Economic freedom	Heritage Foundation. http://www.heritage.org/research/features/index.htm. Accessed 01-23-03.
Social Security expenditures	Cost of Social Security - World Labour Report. 2000. International Labour Organization.
Gini coefficient	World Inequality Database. World Institute for Economic Research. http://www.undp.org/poverty/initiatives/wider/wid_download.htm. Accessed 09-09-02.
	World Resources Institute Facts and Figures: Environmental Data Tables. World Resources Institute. http://www.wri.org/facts/data-tables-population.html. Accessed 09-08-02.
Family	
Divorce rates	International Marketing Data and Statistics, 2001.
participation	World Development Indicators 2001. CD-ROM. World Bank.
Education	
Illiteracy rates	International Marketing Data and Statistics, 2001.
Pupil/teacher ratio	World Development Indicators 2001. CD-ROM. World Bank.
	UNESCO Statistical Yearbook. 1999. UNESCO. http://www.vis.unesco.org/en/stats/statso.htm. Accessed 09-08-02.
Polity	
Voter turnout	Human Development Report, 2000. United Nations.
Demographics	
Racial heterogeneity	Illustrated Book of World Rankings. 1997. George T. Kurian.
Population 15-29	Krug, Dahlberg, Mercy, Zwi, & Lozano. World Report on Violence and Health, 2002. World Health Organization. http://www.who.int/violence_injury_prevention/violence/world_report/en/full_en.pdf. Accessed 05-19-06.
Sex ratio	Social Indicators: Indicators on Population. 2001. United Nations Statistical Division. United Nations.
Affluence	
Life expectancy	World Development Indicators 2001. CD-ROM. World Bank.
Gross Domestic Product	World Development Indicators 2001. CD-ROM. World Bank.
Health expenditures	World Development Indicators 2001. CD-ROM. World Bank.

Appendix B. Principle Components Factor Analyses

	Factor loadings	Eigenvalues	Percent of variance
Family			
Divorce rates	.82	1.35	67.50
Percent of labor force female	.82		
Education			
Illiteracy rates	.92	1.68	84.11
Pupil/teacher ratio	.92		
Demographics			
Racial heterogeneity	.82	1.45	48.25
Percent age 15–59	.59		
Sex ratio	.66		
Affluence			
Life expectancy at birth	.77	2.40	80.14
GDP per capita in U.S. dollars	.96		
Health expenditures	.95		

Appendix C. Bivariate Correlations

Homicide rate (logged)	1.000									
Theft rate (logged)	-.314 *	1.000								
Economic freedom	-.414 **	.568 **	1.000							
Social security	-.515 **	.659 **	.403 **	1.000						
Gini coefficient	.564 **	-.381 **	-.253	-.612 **	1.000					
Family disruption	.033	.421 **	.233	.443 **	-.432 **	1.000				
Education	.246	-.583 **	-.262	-.642 **	.345 *	-.381 **	1.000			
Polity	.254	-.063	.078	-.213	.221	.155	-.073	1.000		
Demographic controls	.571 **	-.429 **	-.347 *	-.761 **	.675 **	-.471 **	.569 **	.031	1.000	
Affluence controls	-.583 **	.639 **	.697 **	.656 **	-.397 **	.219	-.467 **	.028	-.585 **	1.000

* $p < .05$; ** $p < .01$