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Rates of Crime and Unemployment: An Analysis of Aggregate Research Evidence*

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The unemployment/crime rate relationship (U-C) has been described recently as "inconsistent," "insignificant," and "weak." Prior assessments of the U-C relationship have used no more than 18 U-C studies, and no more than 7 with 1970s data. In this paper, I review the findings of 63 U-C studies, 40 of which involve data from the 1970s when unemployment rose dramatically. My analysis shows the conditional nature of the U-C relationship. Property crimes, 1970s data, and sub-national levels of aggregation produce consistently positive and frequently significant U-C results. I discuss the implications of these results and argue that it is premature to abandon "this now well-plowed terrain" and suggest potentially fruitful paths for future studies of the U-C relationship.

In 1969, civilian unemployment reached a fifteen year low of 3.5 percent. Then, three consecutive recessions pushed unemployment to progressively higher levels in 1971 (5.9 percent), 1975 (8.5 percent) and 1982 (9.7 percent).[1] By the spring of 1982, unemployment topped 11 percent in six states.[2] Hardest hit were teenagers, young adults, minorities, and blue-collar workers. For example, unemployment during 1982 reached 14 percent for 20–24 year old adults, 18 percent for construction workers, 28 percent for auto workers, and 42 percent for black teenagers. By the spring of 1982, fears of economic depression were openly discussed in the national media (*Newsweek*, 1982; *New York Times*, 1982; *Time*, 1982).

Even as unemployment climbed to levels unmatched in 40 years, the significance of this trend was being discounted in a variety of ways. For example, government economists periodically redefined the concept of "full employment" to include progressively higher levels of unemployment (Harrington, 1980). Some argued that the "new unemployment" was less harmful because it increasingly involved women, teenagers, and voluntary job leavers (Bulkeley, 1977; Feldstein, 1973; Guzzardi, 1976). Others argued that high unemployment was unavoidable and necessary to combat inflation (Friedman, 1979; Safire, 1982), or would soon be diminished by the growth of jobs in service industries (*Business Week*, 1981). Still others claimed that rising unemployment had little or no impact on rates of crime (Wilson and Cook, 1985 Wilson and Herrnstein, 1985).

In this paper, I address the claim that discounts or dismisses the relationship between rates of unemployment and rates of crime (U-C, hereafter). I show that those claims have come to constitute a "consensus of doubt" about the U-C relationship that presumes both empirical and theoretical grounding. I review the findings from 63 studies that report some

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1. *Official* rates of unemployment considerably understate the true numbers of people who are without work by counting only those who had looked for work in the past month. Others who had stopped looking, or had never looked for work are considered "not in the labor force," and are not counted as unemployed. For a good discussions of problems in the measurement of unemployment, see Sorrentino (1979), and *Time* (1982).

2. By February of 1982, these states had official unemployment rates above 11 percent: Michigan (14.1), Indiana (12.4), Alabama (12.1), Oregon (11.7), Ohio (11.3); Washington (11.1).

measure of the U-C relationship. On that basis, I argue that the "consensus of doubt" is both premature and has failed to recognize the conditional nature of the link between unemployment and crime. In the next section, I describe the "consensus of doubt" and the bases for its emergence. I then analyze the findings from U-C research to show the conditional nature of the U-C relationship, and its implications.

A Consensus of Doubt

Since the late 1970s, many social scientists have concluded that the U-C relationship, measured at the aggregate level, is both inconsistent and insignificant. For example:

> The absence of an impact of the unemployment rate on the rate of crime appears at this time to be unequivocal (Fox, 1978:29).

> The findings of the studies using aggregate data imply that there is a positive, although generally insignificant relationship between the level of unemployment and criminal activity (Long and Witte, 1981:126).

> Unemployment may effect the crime rate; but even if it does, its general effect is too slight to be measured. Therefore, the proper inference is that the effect of unemployment is minimal at best (Orsagh, 1980:183).

> The very pervasiveness and persistence of this finding of a weak and often negative U-C relationship, suggests that this fact itself should be an important object of explanation (Cantor and Land, 1985:318).

> All we might know is that a connection between unemployment and crime that might once have been observed is no longer observed. . . . Whatever may have been true in the past, . . . we are struck by the difficulty in recent decades of finding a clear correlation between changing rates of unemployment and crime (Wilson and Herrnstein, 1985:328).

This "consensus of doubt" calls into question the strength, the significance, and even the *direction* of the U-C relationship (i.e., whether it is positive or negative).

As Cantor and Land (1985) suggest above, the important question may not be *whether* such a relationship exists, but *why* it appears *not* to exist. Social scientists have proposed several explanations for the presumed nullity of U-C findings that emphasize either the theoretical complexity of the U-C link or the methodological difficulties involved in trying to measure it.

Sviridoff and Thompson (1983) were among the first to describe the complex nature of the relationship between unemployment and crime. Their interviews with offenders released from prison showed that a simple "unemployment leads to crime" thesis was inconsistent with the releasees' experiences. Wilson (1983b) also notes that the complexity of the U-C relationship makes it difficult to interpret even a positive correlation between the two:

> One's natural instinct would be to interpret this [positive relationship] as meaning that rising unemployment causes rising crime. But rising crime might as easily cause rising unemployment. If young men examining the world about them conclude that crime pays more than work . . . they may leave their jobs in favor of crime (1983b:80).

More recently, Cantor and Land (1985) have argued that unemployment could have both a positive and negative impact on crime rates, by simultaneously *increasing* the *motivation* and *decreasing* the *opportunity* for criminal activity. The increased motivation would be predicted by a variety of theoretical perspectives, including neo-classical models of economic choice (Becker, 1968; Block and Heineke, 1975), neo-Marxist models of economic constraint (Gordon,

1973; Quinney, 1977), and traditional theories of strain (Cloward and Ohlin, 1960; Merton, 1938) and reduced controls (Hirschi, 1969).

The expectation that rising unemployment may reduce the opportunity for crime, builds on the work of Land and Felson (1976), and Cohen et al. (1980, 1981), among others. It suggests that when unemployment rises, there are fewer economic goods (crime targets) in circulation, and those that exist are better protected (Cantor and Land, 1985; Cook and Zarkin, 1985; Wilson and Cook, 1985). The interaction of these contradictory forces—increased motivation and decreased opportunity—is used by the "consensus of doubt" to help explain why the U-C relationship has been either "hard to detect" (Wilson and Cook, 1985) or "weak and very often negative" (Cantor and Land, 1985).

Other explanations of presumed null or inconsistent findings have focused on methodological weaknesses in U-C research. Wilson (1983b) cites traditional difficulties in the measurement of both crime and unemployment. These difficulties are, indeed, estimable and they underscore the inadequacy of empirical proxies for these important concepts. Orsagh (1979:298) suggests that there have been so many different empirical proxies for unemployment used by researchers, that "the difficult task of comparative analysis [is] well-nigh impossible." Finally, Orsagh and Witte (1981) have described the problems of using *aggregate* data to specify models of "economic choice" that presume "micro-foundations." They conclude that because these problems:

> often find an *ad hoc*, essentially arbitrary resolution . . . it is not surprising that empiricists have neither discovered a consistent, reasonably precise relationship between economic status [including unemployment] and crime, nor reached a consensus that such a relation does not exist (Orsagh and Witte, 1981:1062).

Thus, although a consensus has yet to form that a U-C relationship "does not exist," it does seem reasonable to conclude that a "consensus of doubt" about the relationship certainly has.

Previous Reviews of U-C Research

Three major reviews of U-C research published to date have served as an important resource for "consensus of doubt" arguments.[3] Despite their varying merits, none has focused exclusively on the aggregate measures of the U-C relationship examined in this paper, and none has systematically described the conditional nature of the U-C relationship. Yet, each has contributed to the "consensus of doubt" described above.

Gillespie (1978) reviewed research published between 1959 and 1975. Because eight of his 21 unemployment studies involved criminal justice outcomes (arrest, imprisonment, etc.) as opposed to crime rates, only 13 of his studies are comparable to those examined here, and only four of the crime rate studies use data as recent as the 1970s. Gillespie organized his discussion around the distinction between time-series and cross-sectional research, and between levels of aggregation (intra-city, city, SMSA, state, nation). Thus, his conclusions offer tentative impressions of a *conditional* U-C relationship:

> The strength of the relationship . . . can best be characterized as neither trivial nor substantial, but modest. When specific crime rates were used rather than total rates, property crimes tended more frequently to show the predicted relationship with unemployment than did crimes of violence . . . (1978:602–3).

> Only in the use of state cross-section data was there a complete absence of a significant statistical relationship, and only among studies using city time series data was a consistently significant posi-

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3. Thompson, et al. (1981) is sometimes mentioned as an important review of U-C research. However, that work is intentionally "selective" and does not attempt a comprehensive review of the evidence.

tive relationship reported. In a numerical sense, there is a dominance of findings of a significant positive relationship . . . (1978:615–16).

Even though Gillespie reported a predominance (11/21) of "significant positive relation-ships" for unemployment (6/13 using crime rates), his results have been erroneously inte-grated into the "consensus of doubt" by several observers:

> Gillespie has examined the pre-1975 literature. He reports three studies which assert the existence of a statistically significant relationship between the unemployment rate and crime, but seven studies in which no significant relation could be found (Orsagh and Witte, 1981:1059).[4]

> Gillespie . . . reviewed studies available as of 1975 and found that of ten looking for evidence of the existence of a significant relationship between unemployment and crime, only three were successful (Wilson, 1983b:81).

The most thorough review of U-C research to date was published by Long and Witte (1981). They studied the impact of eight variables (including employment/unemployment) on crime. Sixteen of their studies involved unemployment and crime *rates*, only six of which involved data from the 1970s. Their results were reported in crime-specific tables that de-scribed the methodology and findings of each study reviewed. Their conclusions, like Gilles-pie's, begin to specify the conditional nature of the U-C relationship:

> The findings of the studies using aggregate data imply that there is a positive, generally insignificant relationship between the level of unemployment and criminal activity . . . . [which] tends to be most strongly supported with respect to property crimes . . . (Long and Witte, 1981:126).

> . . . the literature using aggregate data suggests that increased unemployment, particularly youth unemployment, will lead to moderately higher overall crime rates (Long and Witte, 1981:132).

The most recent review was published by Freeman as part of Wilson's *Crime and Public Policy* (1983a). Freeman included 18 studies of unemployment and crime *rates* in his review, seven of which involved data from the 1970s. Concerning time-series results, Freeman char-acterized 9/10 studies (6/7 using crime *rates*) as "YES" in a column headed: "Unemployment Effects." Yet, with no other information reported, and with no attempt to specify the meaning of "YES," Freeman concluded that:

> . . . rises in unemployment and/or declines in labor participation rates are connected with rises in the crime rate, but that the effect tends to be modest and insufficient to explain the general upward trend of crime in the period studied (1983:96).

With regard to cross-sectional U-C research, Freeman described the results of *four* studies as "strong/correct direction" (statistically significant and positive), *seven* as "weak/correct di-rection," and *four* as "weak/incorrect direction." There was no mention of how any particular study was classified, no indication of which actually involved crime *rates*,[5] and no discussion of how a single result was inferred from studies with more than one crime or estimation of the U-C relationship. From this, Freeman generated a seemingly unaccountable conclusion:

> The majority of studies show significant relationships between unemployment and crime. Of those that do show significant results, all are in the expected direction and the majority show a positive

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4. It appears that these authors have chosen to represent Gillespie's results entirely on the basis of his summary of the "Income and Crime" research (1978:616–21) that is separate from his earlier summary of the "Unemployment and Crime" research (1978:608–16). The later section on "Income and Crime" includes Table 3, which lists ten "theoretically informed" studies that have employed a variety of income measures as well as unemployment in relation to crime. For *that subset* of studies, a three-out-of-ten description is correct. But the results for unemployment with that subset are neither discussed by Gillespie in the "Income" summary, nor consistent with his summary of results from the full review of unemployment studies.

5. It is not possible to determine which results are attributed to which studies in the cross-sectional portion of Freeman's review.

relation. Whether this is to be taken as strong or weak evidence for the effect of unemployment on crime is not entirely clear. The preponderance of evidence is more favorable to a positive linkage than not, but if one were anticipating an overwhelmingly strong relation, one would be severely disappointed (1983:98).

These previous reviews have played an important part in shaping the "consensus of doubt" about the U-C relationship. They describe a relationship that is more consistently positive than some recent accounts have allowed (e.g., Cantor and Land, 1985; Wilson and Cook, 1985; Wilson and Herrnstein, 1985). Still, their reports of the inconsistent strength and statistical significance of the U-C relationship are easily integrated with that consensus. While these reviews have begun to recognize the conditional nature of the U-C relationship—suggesting it may be more readily observed for property crimes and lower levels of aggregation—they share several limitations which the present research attempts to overcome. They are:

(1) None has dealt exclusively with crime *rates*, and their conclusions generally ignore the distinction between crime rates and other dependent variables such as arrest, etc.

(2) None has examined more than 18 studies of unemployment and crime rates.

(3) None has examined more than seven U-C studies with data from the 1970s—a period of rapidly increasing unemployment.

(4) None has done systematic secondary analysis with the results of U-C research to show *which* crimes are most closely linked to unemployment, and *which* methodological strategies produce which types of results.

Review of Aggregate Research

I examine the findings of 63 studies published since 1960 (59 since 1970) that report some measure of the relationship between rates of crime and unemployment. Forty of these studies present at least some data from the 1970s, when unemployment rose more sharply and to higher levels than at any time since the 1930s. I have not examined studies involving individual-level data, or rates of arrest, court appearance, or imprisonment.

I selected the studies by means of examining the major journals in economics, sociology, and criminology, as well as abstracts of the literature in criminology, and the previous reviews of U-C research discussed above.[6] Many of the studies were not primarily concerned with unemployment, but included some measure of it in a larger study of crime rates or deterrence. I do not claim that this selection is exhaustive, but it does include a substantially larger and more recent selection of studies than do any of the previous assessments of U-C research.

Appendix A summarizes the methods and principal findings of 42 studies that use *cross-sectional* data, which measures variation in the U-C relationship across geographical units at the same point in time. The first seven columns describe: (1) data year(s); (2) place studied; (3) unit of analysis (e.g., city, state, nation); (4) operational definition of unemployment; (5) number of independent variables, including unemployment, involved in the equation for which results are reported; and (6) the estimation technique used in generating the empirical measure of the U-C relationship.

The remaining columns in Appendix A are organized by specific crime categories. For each study, I indicate whether the net relationship between unemployment and specific crime rates is positive (+) or negative (−), and whether the relationship between the two is

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6. This was essentially a "snowball" technique, but it included a systematic use of *Sociological Abstracts* and the *Criminal Justice Periodical Index*.

statistically significant after the effects of other variables in the equation have been controlled.[7] Multiple results are reported for studies involving more than one year, more than one measure of unemployment, more than one unit of analysis, or more than one estimation technique. From studies otherwise reporting more than one result for a particular crime (e.g., with different combinations of independent variables), I report the result that the author(s) indicate(s) is derived from the "best fitting" equation, or, if not so identified, by the equation with the largest number of independent variables.[8]

Appendix B reports essentially the same information for 21 studies using *time-series* data— those in which place is held constant and variations in crime and unemployment are measured over time. All of these studies have been published since 1975. Findings are reported in the same crime-specific format as in Appendix A.

The theoretical complexity of U-C relationships described above (Cantor and Land, 1985; Cook and Zarkin, 1985; Wilson and Cook, 1985) dispels any expectation of simple or unequivocal results from such a large set of studies. Further, such complexity raises the important questions of *whether* and *when* the U-C relationship might be positive or negative, and under what circumstances it is most likely to be significant. The number and diversity of studies considered here make it possible to assess the *conditional* nature of the U-C relationship. The remainder of this paper attempts to specify the conditions which most influence the direction and statistical significance of the U-C findings.

The Conditional Nature of U-C: Specific Crimes

Based on the crime-specific results reported in Appendices A and B, Table 1 allows us to assess the direction and statistical significance of relationships between unemployment and each of the Index crimes. Table 1 shows the percentage of positive and negative relationships reported by the 63 studies for each type of crime, as well as the percentages of significant/positive and significant/negative relationships for the same crimes. The percentages are based on the number of *estimates*—not the number of studies. Overall, the 63 studies contain 288 estimates of the U-C relationship, with 125 for property crimes, 138 for violent crimes, and 25 for an undifferentiated "general crime rate".

Table 1 shows that for all crimes combined, the U-C relationship is three times more likely to be positive than negative (75/25 percent) and more than 15 times as likely to be significant/positive as significant/negative (31/2 percent). More meaningful, of course, are comparisons of U-C findings for specific types of crime. Table 1 reveals that *property* crimes are more likely than *violent* crimes to produce positive results (85/64 percent) and significant/positive results (40/22 percent).

Among specific property crimes, the percentage of positive findings ranges from a low of 79 percent for auto theft to a high of 89 percent for general property. More importantly, while significant/negative results are 7 percent for auto theft, 0 percent for general property, and only 2 percent for burglary and 3 percent for larceny, significant/positive results range from 21 percent for auto theft to 47 percent for larceny and 52 percent for burglary.

Because burglary and larceny account for more than 80 percent of the *Uniform Crime Report* crime rate in any given year, it is important that these crimes produce the most positive and significant U-C results.[9] That auto theft is the least likely to produce positive and signifi-

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7. Statistical significance is a controversial issue (See Morrison and Henkel, 1970), but it has been consistently mentioned in the "consensus of doubt." For studies that do not report significance levels, I used t-values to compute them. Because recent theoretical work hypothesizes both a positive and negative U-C relationship, I used a two-tailed test (p. < .05).

8. The choice of models with the largest number of independent variables was intended to *reduce* the chances that the net effect of unemployment would be statistically significant.

9. In 1985, burglary accounted for 24.7 percent and larceny 55.7 percent of the total "Crimes Known to the Police" that comprise the Federal Bureau of Investigation's (1986) "crime rate."

Table 1 • *Summary of Direction and Statistical Significance for Unemployment and Crime Rate Relationships by Type of Crime*

	(N)	All Studies % Positive / Negative	% Pos & % Neg & Sig. / Sig.
All Crimes	(288)	75 / 25	31 / 02
Property Crimes[1]	(125)	85 / 15	40 / 03
Violent Crimes[2]	(138)	64 / 36	22 / 02
General Crime	(25)	84 / 16	32 / 00
Burglary	(42)	86 / 14	52 / 02
Larceny	(32)	84 / 16	47 / 03
Auto Theft	(28)	79 / 21	21 / 07
General Property	(18)	89 / 11	33 / 00
Other Property	(05)	100 / 00	20 / 00
Murder	(38)	66 / 34	16 / 05
Robbery	(41)	66 / 34	22 / 02
Rape	(17)	71 / 29	35 / 00
Assault	(25)	52 / 48	12 / 00
General Violent	(17)	76 / 24	41 / 00

[1] Includes Burglary, Larceny, Auto Theft, General & Other Property

[2] Includes Murder, Robbery, Rape, Assault, General Violent

cant results is not surprising given the findings of both Cantor and Land (1985) and Cook and Zarkin (1985). Their results suggest a relationship for auto theft that may be *negative*, while these results show a relationship that is consistently *positive*, but less often significant than other property offenses.

Among violent crimes, the U-C link is most likely to be positive for general violent (76 percent) and least likely to be positive for assault (52 percent), with intermediate results for murder (66 percent), robbery (66 percent) and rape (71 percent). The significant/positive results for rape (35 percent) and general violent (41 percent) are paired with no significant/ negative results, and actually exceed the significant/positive results for three of the five property crimes. The weakest ratios of significant/positive to significant/negative results are found for murder (16/5 percent) and robbery (22/2 percent). Assault, with almost as many negative as positive results, and with a *total* of 12 percent significant results in *either* direction, is the only crime that approaches the nullity of U-C relationships generally described in the "consensus of doubt."

In short, Table 1 describes a U-C relationship that is essentially positive, except for assault, and a relationship that produces substantially more significant/positive results than significant/negative. In general, the relative frequency of positive and significant findings is highest for property crimes, particularly burglary and larceny. It is lowest for assault and murder.

The Conditional Nature of U-C: Different Methodologies

Specifying differences between particular crimes which have disparate motivational and opportunity structures is a necessary first step in describing the conditional nature of the U-C relationship. The next involves specification of the methodological conditions of U-C research that may affect the reported results. Table 2 shows the percentage of positive and negative U-C findings for property and violent crimes within varying methodological approaches. This will help to determine whether the more positive and significant results for property crimes

Table 2 • Summary of Direction and Statistical Significance for Unemployment and Crime Rate Relationships by Methodological Characteristics of Studies

	Property Crime			Violent Crime		
	(N)	% Positive / Negative	% Pos & Sig. / % Neg & Sig.	(N)	% Positive / Negative	% Pos & Sig. / % Neg & Sig.
Intra-City	(15)	93 / 07	67 / 00	(13)	100 / 00	69 / 00
City & County	(36)	89 / 11	47 / 00	(33)	76 / 24	21 / 03
SMSA	(16)	81 / 19	31 / 00	(27)	56 / 44	19 / 04
State & Province	(30)	90 / 10	44 / 00	(28)	64 / 36	11 / 00
Nation	(28)	71 / 29	21 / 14	(37)	49 / 51	19 / 03
Youth Unemployment	(22)	86 / 14	32 / 00	(27)	70 / 30	22 / 00
Other Unemployment	(103)	84 / 16	42 / 00	(111)	63 / 37	23 / 01
Male Unemployment	(27)	70 / 30	26 / 00	(36)	53 / 47	25 / 03
Other Unemployment	(98)	89 / 11	44 / 04	(102)	69 / 31	22 / 02
Cross-Sectional	(97)	88 / 12	41 / 00	(98)	70 / 30	20 / 02
Time-Series	(28)	75 / 25	36 / 14	(40)	53 / 47	28 / 03
OLS	(44)	93 / 07	43 / 00	(49)	82 / 18	31 / 02
2SLS	(39)	87 / 13	38 / 00	(35)	51 / 49	00 / 00
Bi-Variate	(14)	71 / 29	36 / 00	(14)	71 / 29	36 / 07
Contemporaneous	(105)	88 / 12	41 / 02	(107)	66 / 34	23 / 02
Lagged	(20)	80 / 20	35 / 00	(31)	58 / 42	20 / 03

are consistent across methodologies, or an artifact of particular methodological choices that can be as debatable as they are arbitrary.[10] I emphasize the conditional results involving property crimes because those crimes appear to be most consistently and significantly linked to unemployment.

First I examine the *level of aggregation* of the data employed in U-C estimates. These range from intra-city estimates using data for police precincts or census tracts, to estimates using national-level data. The results for property crimes are consistent and pronounced for each level of aggregation below the national level. The percentage of positive U-C relationships at the sub-national level ranges from 81 percent (SMSA) to 93 percent (intra-city). In fact, there are no significant/negative U-C relationships for property crimes at levels of aggregation lower than the nation. For national-level data, the rate of positive associations drops to 71 percent, and the rate of significant/positive associations drops to 21 percent. Moreover, the 14 percent rate of significant/negative results using national data is the highest for property crimes in this review. For violent crimes, the pattern of results is not so pronounced, but again, the greatest likelihood of positive/significant relationships (69 percent) is found at the lowest level of aggregation (intra-city), while at the national level the U-C link is just as often negative as positive. Looking more closely at the property crime results, it would appear that, with the exception of SMSAs, the likelihood of positive/significant associations *decreases* with *increases* in the level of aggregation.

Why should the U-C relationship for property crimes be most consistently significant at the intra-city level and least consistently significant at the national level? One possibility is that there is less aggregation bias at the lower levels of aggregation. That is, the lower and smaller units of analysis are more likely to be homogeneous, thereby reducing variation *within* each unit, and allowing for more meaningful variation *between* units, which is what U-C research is trying to measure.[11] Thus, national-level data may literally cancel out the substantial differences in unemployment and crime that characterize different sections of cities or cities themselves. Given these important areal variations at lower levels of analysis, national data can only serve to "wash out" otherwise rich sources of between-unit variation essential to assessing the U-C relationship.

Another explanation for the more positive and significant results at lower levels of aggregation could be that researchers using more local data are better able to capture what can be termed the "milieu effects" of unemployment on a particular area. That is, high unemployment may have a demoralizing impact on a particular neighborhood or section of a city or county that creates a climate of hopelessness or anomie with crimogenic consequences even for those not directly unemployed (e.g., teenagers or others not in the labor force). Obviously, such effects are less likely to be experienced or measured at higher levels of aggregation. In short, intra-city data may be the *most* sensitive and national data the *least* sensitive to variation between units, and the indirect impact that unemployment may have on criminal motivation. In other words, neighborhoods (e.g., police precincts and census tracts) will vary in unemployment and crime much more than a nation will from year to year, and, as neighborhoods, will more likely experience any "milieu" effects from unemployment.[12]

The second methodological issue that may affect the estimate of the U-C relationship is

10. The objective here is similar to that accomplished by "Meta-Analysis" (Glass et al., 1981; Hunter et al., 1982). This technique is not used at this time because most of the studies reviewed involve use of regression, and Hunter et al., caution that: . . . slopes and covariances are comparable across studies only if exactly the same instruments are used to measure the independent and dependent variables in each study. It is a rare set of studies in which this is true (1982:33–34).

11. Gillespie makes a similar point concerning lower levels of aggregation: Census tracts or groupings may be thought of as neighborhoods or communities in that a conscious effort is made to make them homogeneous on a variety of socio-economic factors. To the extent that the groupings are successful, more meaningful comparisons are possible, since the intra-tract variation in these characteristics will be small relative to the variation across tracts (1978:609).

12. Almost all (60/70) of the national-level estimates are from time-series analyses.

the measure of unemployment used by U-C researchers. Given strong links between crime and both age and gender, it is not unreasonable to expect that motivational effects from unemployment could be stronger for those who are young or male (Gillespie, 1978; Long and Witte, 1981).

The results for "youth" (24 or younger) and "other" unemployment in Table 2 suggest that the expected impact of youth-specific measures of unemployment on property crime fails to obtain. Unfortunately, these results are inconclusive due to the small number of available estimates based on "youth" unemployment (N=22), and the fact that "other" categories of unemployment usually include persons under 24.[13] Before the question of age-specific unemployment can be adequately addressed, we will need *discrete* age-grouped crime data. At present, it is impossible to obtain these data for "crimes known to the police." Without age-specific crime rates, we are limited to measuring the relationship between age-specific unemployment and an undifferentiated rate of crime. The same problem applies to gender-specific outcomes.

Male-specific unemployment rates are *less likely* than undifferentiated rates to generate significant/positive results for property crime, and seem to make little difference for violent crimes. The same factors which influence "youth" unemployment—small sample size and overlap with the measurement of "other" unemployment—may account for the low rates of significant and positive relationships for male unemployment. But these low rates may also reflect the importance of *when* crime and unemployment are measured, an issue addressed later in Table 3. Studies using 1970s data produce substantially greater frequencies of significant/positive relationships for both violent and property crimes than studies using pre-1970 data. It may be worth noting that among cross-sectional studies, *all* of the negative associations involving male unemployment and both property and violent crimes use pre-1970 data. This suggests that the less positive and significant results for male unemployment may be due less to the aggregation by sex than to the aggregation by time period.

The outcomes of cross-sectional versus time-series research are not markedly different. For property crimes, the U-C link is significant/positive 41 percent of the time in cross-sectional studies, and 36 percent of the time in time-series research. For violent crime, the pattern is slightly reversed; significant/positive results are more likely for time-series (28 percent) than for cross-sectional (20 percent) studies.

Do cross-sectional, or time-series studies produce more valid results? Perhaps each has its own unique advantages and disadvantages that preclude *a priori* selection of one method over another.[14] Time-series studies may include too few estimates of the U-C relationship (N=28) to be definitive. More important, changes through the years in the ways crime and unemployment have been measured, may prevent time-series research from providing reliable inferences. Cantor and Land contend that substantive changes in U.C.R. measures of crime in 1958, "make pre- and post-1958 data incompatible" (1985:323). Since almost all of the time-series studies done in the United States use pre- and post-1958 data, Cantor and Land's assessment makes interpretation of these time-series results particularly troublesome. Finally, it may be that the lower rates of significant/positive relationships are due to the considerable overlap between time-series studies and studies using national level data. As argued above, national-level data may be the *least* appropriate for assessing the U-C relationship, and it so happens that 25 of the 29 time-series, property-crime studies involve data aggregated at the national level. In short, there is probably as strong a rationale for accepting the cross-sectional results as there is for arguing the superiority of time-series findings.

The final comparison from Table 2 discussed here, involves the estimation techniques

13. Only Maggadino and Medoff (1982) specifically exclude youth from their measure of unemployment which includes unemployed urban males, ages 35–39.

14. See Gillespie (1978) for a discussion of the relative merits of cross-sectional and time-series approaches to measuring the U-C relationship.

used in cross-sectional research (*lagged and contemporaneous findings are discussed in the conclusion section*). The results from ordinary least squares regression (OLS), two-stage least squares regression (2SLS), and simple bivariate techniques, suggest that studies using the bivariate techniques are least likely to produce significant/positive findings (36 percent). The OLS estimates are only slightly more likely to produce positive (93 percent) and significant/positive results (43 percent) than 2SLS estimates (87 percent and 38 percent). It may be that the most appropriate model for the U-C relationship would include reciprocal effects between unemployment and crime that are estimated with simultaneous equations. However, that is generally *not* the nature of the 2SLS estimates reported in the U-C literature.[15] Thus, the small differences between OLS and 2SLS results underscore the finding of essentially positive, frequently significant U-C relationships for property crimes.

In sum, Table 2 shows that *significant/positive* U-C results are consistently more likely than *significant/negative* results—with this pattern being clearest for property crimes and for levels of aggregation smaller than the nation as a whole (intra-city, city, county, SMSA, state). In fact, for property crimes, the *only* significant/negative results are produced by three studies that use national-level time-series data.

The Conditional Nature of U-C: Different Time Periods

Finally, the time period that the data cover has an important effect on the U-C relationship. Table 3 compares cross-sectional results from pre-1970 data with those based on data from the 1970s. As I noted earlier, the 1970s witnessed the largest increase in unemployment (3.5 percent to 8.5 percent) since the Great Depression of the 1930s. By contrast, the 1960s (which provide 84/94 of these pre-1970s estimates) was a decade of strong economic growth and declining unemployment (6.7 percent to 3.5 percent). Cantor and Land (1985) suggest that *change* in the level of unemployment may be an important element in criminal motivation. The 1960s saw a *drop* of 48 percent in unemployment, compared to an *increase* of 143 percent in the 1970s. Thus, a greater frequency of positive and significant/positive U-C results might be expected for the 1970s.

Table 3 shows that the U-C relationship does differ substantially across time periods. For every crime category, the percentage of positive and significant/positive results is higher for 1970s data than for pre-1970s data. For property crimes, a positive rate of 74 percent and a significant/positive rate of 17 percent for *pre-1970* data, becomes 98 percent and 60 percent for *1970s* data. Even for violent crime, the increase is from 55 percent to 85 percent positive and 12 percent to 30 percent significant/positive. The 113 estimates of the U-C relationship with 1970s data generate only *one significant/negative* result—for murder.

Comparisons for specific crimes are tempered by small samples, but the trends are consistent with the general trends noted above. For burglary, larceny, and auto theft, 1970s data produce *100 percent positive* relationships that are significant 78 percent, 75 percent, and 40 percent of the time, respectively. These three offenses, which generate almost 90 percent of the volume and 96 percent of the dollar loss for UCR Index crimes, had pre-1970s significant/positive rates of 15 percent (burglary), 9 percent (larceny) and 10 percent (auto theft). Even violent crimes show a pronounced increase in the likelihood of positive relationships from the 40–60 percent level in the 1960s, to a low of 75 percent (murder) and a high of 100 percent (rape and assault) in the 1970s.

These considerable changes from one decade to the next suggest that something substantial happened to the U-C relationship in the 1970s. What may have been an "inconsistent" relationship in the 1960s, became overwhelmingly positive, and frequently significant, in the 1970s.

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15. Most of the 2SLS estimates reported here are concerned with the reciprocity of *punishment* and crime, rather than the reciprocity of *unemployment* and crime and it is the former link that is modelled with simultaneous equations.

Table 3 • *Summary of Direction and Statistical Significance for Unemployment and Crime Rate Relationships with Pre-1970 and 1970s Cross-Sectional Data*

	Pre-1970 Data*			1970s Data		
	(N)	% Positive / Negative	% Pos & Sig. / % Neg & Sig.	(N)	% Positive / Negative	% Pos & Sig. / % Neg & Sig.
All Crimes	(107)	65 / 35	14 / 01	(113)	92 / 08	48 / 01
Property Crimes	(42)	74 / 26	17 / 00	(55)	98 / 02	60 / 00
Violent Crime	(51)	55 / 45	12 / 02	(47)	85 / 15	30 / 02
General Crime	(14)	79 / 21	14 / 00	(09)	89 / 11	56 / 00
Burglary	(13)	62 / 38	15 / 00	(18)	100 / 00	78 / 00
Larceny	(11)	64 / 36	09 / 00	(16)	100 / 00	75 / 00
Auto Theft	(10)	80 / 20	10 / 00	(10)	100 / 00	40 / 00
Rape	(08)	63 / 37	00 / 00	(07)	100 / 00	86 / 00
Robbery	(15)	60 / 40	13 / 00	(20)	80 / 20	20 / 00
Murder	(13)	54 / 46	00 / 13	(08)	75 / 25	00 / 00
Assault	(12)	42 / 58	08 / 00	(07)	100 / 00	14 / 00

* Includes 97 Relationships with 1960s data and 10 with 1950s data.

Discussion

This paper demonstrates the conditional nature of the U-C relationship. It shows that estimates for *property crimes* using data from the *1970s* are essentially positive and very often significant.[16] While the U-C relationship under *these* conditions contradicts the "consensus of doubt," there are *other* conditions that do produce the "inconsistent" and "insignificant" U-C relationships described by that consensus.

Table 4 • Summary of Conditional Relationships Between Unemployment and Crime Rates

Panel A: Most Positive and Significant/Positive U-C Conditions

Crime/Condition	% Positive	% Sig/Positive
Burglary/1970s	100	78
Larceny/1970s	100	75
Violent/Intra-city	100	69
Property/1970s	98	60
Property/Intra-city	93	67
All Crime/1970s	92	48
Property/State & Prov	90	44

Panel B: Most Negative and Significant/Negative U-C Conditions

Crime/Condition	% Negative	% Sig/Negative
Assault/Pre-1970s	58	00
Violent/National	51	03
Violent/2SLS	49	00
Assault/All	48	00
Violent/Time-Series	47	03
Violent/Male Unempl	47	03
Murder/Pre-1970s	46	13

The conditions described in Table 4 are those for which the U-C relationship is most likely positive (Panel A), and most likely negative (Panel B). The most positive conditions range from 90–100 percent positive and 44–78 percent significant/positive. For six of the seven most positive conditions, the frequency of significant/negative U-C findings is *zero* (the exception—all crimes/1970—is 1 percent). These conditions, which support the premise of a *motivational* effect of unemployment on crime, involve some combination of: (1) the most voluminous crimes (property); (2) the most recent data (1970s); and (3) the most meaningful levels of aggregation (sub-national).

The most negative conditions range from 46–58 percent negative and 0–13 percent signifi-

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16. A common problem with statistical significance is the relative ease with which "significant" results are generated by large samples. The samples used in the studies reviewed are relatively small, with only seven of the 63 exceeding $N = 100$ and the largest being $N = 222$. Dividing the studies into those with $N < 50$ and those with $N > 50$ shows percent positive and percent significant/positive as 91 percent and 43 percent for the former compared with 88 percent and 44 percent for the latter.

cant/negative.[17] For only two conditions is there a majority of negative estimates, and for only one condition (murder/pre-1970s) is the percent significant/negative greater than the corresponding percent significant/positive. In short, there is little evidence of a negative U-C relationship, which would be supportive of an *opportunity* effect of unemployment on crime. In fact, these "most negative" conditions more accurately reflect the null and inconsistent U-C results described by the "consensus of doubt."

The consistently positive and frequently significant findings for property crimes in the 1970s raise more questions than they answer. What can be said about the *magnitude* of unemployment's effect on crime? Given these positive relationships, what can be said about the "opportunity" hypothesis? What in the 1970s might account for the increased consistency and significance of U-C results? I cannot resolve these questions here, but I can offer some suggestions about where we might look for answers.

The "magnitude of effects" question asks whether even consistently positive and statistically significant results are worth bothering about. A complete answer, even for the 1970s property crime estimates is made difficult by the diversity of methods used to produce and report results. However, six of the 16 property/1970s studies report comparable coefficients of *elasticity*, which show the percent change in crime rates attributable to a 1 percent change in unemployment. These six studies are listed in Table 5, in descending order of aggregation level, with smallest units at the bottom.

Table 5 • *Elasticities for 1970s Unemployment and Property Crime Relationships Using Cross-Sectional Research*

	Aggregation Legel	Data Year	Unemploy. Measure	Burglary	Larceny	Auto Theft	Robbery
Avio & Clark (1976)	Provinces	1971	UCVLF	.40	.17	.16	.08
	Provinces	1971	U14-24	.38	.19	.17	.25
Holtman & Yap (1978)	States	1970	U14-24	.39	.59		−.29
Chiricos & Norton (1982)	Counties	1973	UCVLF	.17	.33	.35	.58
	Counties	1975	UCVLF	.55	.57	.55	.68
Mathur (1978)	Cities 100,000	1970	NSPEC	.04	.14	.09	−.01
Avio & Clark (1978)	Census Tracts	1971	NSPEC	.76	.67		.86
Furlong & Mehay (1981)	Police Dist.	1973	UURBM	1.57	1.53		1.46
	Median Elasticity			.39	.33	.17	.25

Table 5 shows elasticities for specific property crimes, including robbery, which was treated as a violent crime in Tables 1–4. The six studies represent six different sub-national levels of aggregation. They over-represent Canadian findings (Avio and Clark, 1976, 1978; Furlong and Mehay, 1981) and are more likely (76 percent) than the remaining 10 studies (56 percent) to produce significant/positive results. Given these limitations, the data are suggestive more than conclusive. For burglary, elasticities range from .04 to 1.57, with a median of .39; for larceny, the range is .14 to 1.53, with a median of .33. Coefficients for auto theft are weaker (median = .17) and for robbery they are inconsistent (median = .25).

Are the magnitudes of these elasticities worth taking note of? They are, relative to the impact of *deterrence* variables in the same studies. Within each study, it is possible to compare the strength of elasticities for unemployment with those for either the certainty or severity of legal punishment. The six studies provide a total of 59 such comparisons and the effect of

17. Property/time series and property/nation both generate 14 percent significant/negative results. They are not listed in Table 4 because their percent negative was no higher than 25 percent.

unemployment is stronger than the effect of deterrence variables in 34 (58 percent) of them. In short, for these studies of 1970s property crime, *unemployment probably has as strong an impact as the certainty and severity of punishment*.[18]

A second question raised by the consistency and significance of positive U-C findings concerns the "opportunity" thesis that has recently been used to explain presumably inconsistent U-C results (Cantor and Land, 1985; Cook and Zarkin, 1985; Wilson and Cook, 1985). Cantor and Land have suggested that the previous *"indeterminateness* of the algebraic signs of the empirical U-C relationships" (1985:321, emphasis in original) may be due to the cancelling of motivation (+) and opportunity (–) effects. To repeat, the latter are presumed to result from reduced economic activity (fewer crime targets) and better protected property that attends periods of high unemployment.[19] Cantor and Land have also hypothesized that the strongest opportunity effects are more likely to be *contemporaneous*, and the strongest motivation effects, *lagged* (1985:322).

There are no conditions examined here where decreased opportunity effects predominate. Even the most "negative" conditions (Table 4) scarcely produce a simple majority of negative U-C estimates, and significant/negative results never exceed 14 percent. If decreasing opportunity actually *cancels* increased motivation from high or rising unemployment, that effect is apparently greatest—unaccountably—for violent crimes and pre-1970 or national-level data. The consistently positive and significant results for property crimes in the 1970s suggest that, for these conditions, motivation effects greatly outweigh opportunity effects.

The possibility that opportunity effects are *contemporaneous* and motivation effects *lagged*, were addressed in the bottom two rows of Table 2, which compare results from 12 studies using lagged U-C estimates with 51 using contemporaneous estimates.[20] If anything, contemporaneous studies are *more likely* than studies with lagged measures of unemployment to produce positive and significant/positive results. In fact, contemporaneous measures of U-C generate significant/negative results no more than 2 percent of the time.

It makes good theoretical sense to argue that unemployment both decreases opportunity and increases motivation for crime. To the extent that it does, the evidence presented here suggests that, even allowing for decreasing opportunity, motivation effects for the most voluminous crimes (property) and the most recent data (1970s) are especially robust.

Why should the motivation effects of unemployment be more pronounced during the 1970s? Clearly, this decade represents a watershed in the post-war economic history of the United States, when its unchallenged domination of world markets came to a close. The effects of competition from European and Asian companies helped to cut the after-tax rate of profit for U.S. companies by more than half (Bowles, et al., 1984). Eight nations surpassed the United States in *per capita* GNP (OECD, 1981). Inflation which normally slows during periods

18. Another measure of how strongly U-C are related is provided by the percentage of the change in crime rates that is attributable to the change in unemployment. I used the median elasticity level of unemployment for each crime in Table 5 to predict the change in specific crime rates between 1973 and 1975, when unemployment rose substantially. The *predicted/actual* increase in rates per 100,000 for each crime is: 291/310 (burglary); 410/747 (larceny); 43/28 (auto theft); 27/36 (robbery). By this method, the change in unemployment between 1973 (4.9) and 1975 (8.5) can account for much of the crime rate change over the same period. It must be remembered that while unemployment may be increasing the level of crime, other factors are also affecting that level, both positively and negatively. The data here indicate the independent effect of unemployment on the crime rate.

19. Cantor and Land (1985) term the former a "system effect," which involves the circulation of fewer economic goods, while the latter is termed a "guardianship effect," which involves better protection of available goods (crime targets) because goods are relatively more valuable, more people are at home, fewer cars are left unattended at workplaces, etc.

20. The cross-sectional studies that use a lagged measure of unemployment include: Bahl et al. (1978); Carroll and Jackson (1981); Danziger and Wheeler (1975a); Furlong and Mehay (1981); Gylys (1970); Singh et al. (1980). Time-series studies that employ lagged unemployment include: Brenner (1976); Cantor and Land (1985); Center for Econometric Studies of the Justice System (1979); Leveson (1976); Norton (1982); Phillips and Ray (1982).

of decline more than doubled during the 1970s, which added higher prices to the cost of fewer jobs. The loss of jobs accrued from major structural shifts in the U.S. economy as companies dealt with declining profits. Capital was shifted out of traditional "smokestack" industries in the northeast and midwest into: (1) foreign markets with cheaper labor; (2) "sunbelt" states with cheaper labor; (3) retail and service industries; (4) mergers and acquisitions; and (5) more fully automated plants (Bluestone and Harrison, 1982; *Business Week*, 1981).

These changes produced a rapid increase in the unemployment rate to the highest levels experienced since the Great Depression of the 1930s. This increase in unemployment, when combined with increasing prices and declining tax revenues to fund social services, may have been responsible for the consistently positive and significant U-C estimates for property crimes in the 1970s. It is not immediately clear whether the increases in the motivational effects of unemployment are due to the *higher levels* of unemployment or to the *rapid change* in those levels. Cantor and Land suggest that motivational effects may be more responsive to *changes* than to *levels* of unemployment.

I cannot directly resolve this issue here, but a comparison of estimates for 1960 with those for 1970 may provide indirect support for Cantor and Land's position.[21] The *level* of unemployment in 1960 was higher (5.5 percent) than in 1970 (4.9 percent), but in 1960 unemployment was *down* 19 percent from 1958 levels, whereas in 1970 it had *increased* 40 percent from 1969 levels. For 1960 with a *higher*, but *declining* level of unemployment, the rates of positive and significant/positive U-C estimates for property crimes were 80 percent and 20 percent. For 1970 with a *lower*, but *increasing* level of unemployment those rates were 100 percent and 60 percent. This suggests that crime rates may be more responsive to *changes* than to absolute *levels* of unemployment, but this is a question that requires more careful analysis.

Conclusions

The present study settles few issues, but it argues strongly that ". . . this now well-plowed terrain" (Wilson and Herrnstein 1985:313) of unemployment and crime, should not be abandoned to the "consensus of doubt." That consensus has taken insufficient note of the conditional nature of U-C; it relies too heavily on national-level data for violent crimes; and it fails to capture the important changes in the U-C relationship during the 1970s.

Indeed, the "consensus of doubt" has done such a good job of explaining why there should *not* be much of a U-C relationship, that it adds further credence to the present findings. Notwithstanding the contradictory effects of declining opportunity, and notwithstanding the formidable problems of model specification and measurement, the U-C relationship for property crimes in the 1970s remains essentially positive, frequently significant, and not inconsequential. In fact, given all of the theoretical and methodological reasons to expect little or no relationship, these results are all the more remarkable.

By demonstrating the conditional nature of the U-C relationship, this paper underscores how little we really know about this issue. It remains to be seen if additional research will uncover the opportunity effects that were not evident here. It also remains to be seen if levels or changes in unemployment have the greater motivational impact, and whether they are contemporaneous or lagged. It seems important to know how motivation and opportunity interact for particular crimes. What is happening to the U-C relationship in the 1980s, with even higher levels of unemployment than the 1970s? Do public-assistance benefits moderate the U-C relationship, and, if so, what effects will the Reagan budget cuts have? What can be learned about unemployment and crime rates in other countries, particularly those with more

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21. I selected the years of 1960 and 1970 because they have the largest number of U-C relationships for a single year.

extensive public assistance and that have only recently reached levels of unemployment that approach or exceed U.S. rates?

For the present, it is appropriate to argue that evidence favors the existence of a positive, frequently significant U-C relationship. This is especially true since 1970 for those property crimes making up about 90 percent of the UCR Index total. This suggests that rational policy addressing the problem of "street crime" should recognize that work and crime are the principal alternatives for most people to generate an income. While the value of work and the value of crime are independently affected by a variety of factors, their relative interdependence as alternative choices has clear policy implications. That is, efforts to increase the availability and value of work can be expected to have some depressing effect on the value of property crime as an alternative. And, while the relationship between unemployment and crime rates is far from perfect, it is sufficient to put jobs back on the agenda for dealing with crime.[22]

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22. Concerning the relative value of work, it is worth noting that while unemployment has ratcheted upward since 1970, its average duration has increased from 10 to 15 weeks since 1973. During that same time period (1973–1986), average gross weekly earnings in constant (1977) dollars dropped from $198 to $171 (President's Council of Economic Advisors, 1987).

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Appendix A • Summary of Cross-Sectional Aggregate Studies Involving Unemployment and Crime Rates

Author(s)	Data Year	Place	Unit of Analysis	Unemploy.* Measure	# of Vars.	Estimation** Technique	General Crime	General Violent Crime	Murder	Rape	Assault	Robbery	General Property Crime	Larceny	Burglary	Auto Theft	Other Property Crime
Schmid (1960)	1950[1]	Seattle	93 Census T.	UMLF	1	PM (r)						(+)[a]			(+)[a]	(+)[a]	(+)[a]
Schuessler & Slatin (1964)	1950	U.S.A.	101 Cities	UMPOP	1	PM (r)			(-)[a]	(-)	(-)	(+)		(-)	(-)	(-)	
	1960	U.S.A.	133 Cities	UMPOP	1	PM (r)			(-)	(+)	(+)	(+)[a]		(-)	(+)	(+)	
Fleisher (1966)	1960	U.S.A.	101 Cities	UMCV	7	OLS	(-)										
Gylys (1970)	1960[2]	U.S.A.	57 Cities	UCVLF	14	OLS	(+)		(+)	(+)	(+)	(+)		(+)	(+)	(+)	
Allison (1972)	1960	U.S.A.	NS Cities	UMCVLF14+	14	SMR	(+)[a]										
Ehrlich (1973)	1960	U.S.A.	47 States	UMCVLF14-24	8	OLS	(+)		(-)	(+)	(-)	(+)		(+)	(-)	(+)	
	1960	U.S.A.	47 States	UMCVLF14-24	8	2SLS	(-)		(-)	(+)	(-)	(-)		(+)	(-)	(+)	
Sjoquist (1973)	1968	U.S.A.	53 Cities	UCVLF	10	OLS							(+)[a]				
Hemley & McPheeters (1974)	1970	U.S.A.	32 States	STU	4	OLS			(-)			(-)		(+)	(+)		
	1970	U.S.A.	32 States	METU	4	OLS			(-)			(-)		(+)[a]	(+)[a]		
Hoch (1974)	1960[3]	U.S.A.	136 SMSA's	NSPEC	33	OLS			(-)[a]		(+)[a]	(+)		(+)[a]	(+)[a]		
	1970[4]	U.S.A.	137 SMSA's	NSPEC	33	OLS					(+)[a]	(+)		(+)	(+)	(+)	
Swimmer (1974a)	1960	U.S.A.	119 Cities	NSPEC	10	2SLS			(+)	(-)	(+)	(+)		(+)	(+)	(+)	
Swimmer (1974b)	1960	U.S.A.	119 Cities	NSPEC	10	2SLS		(+)					(+)				
Bechdolt (1975)	1960	L.A.	222 Census T.	UMLF	4	OLS		(+)[a]					(+)[a]				
	1970	Chicago	21 Police D.	UMLF	3	OLS		(+)[a]					(+)				
Danziger & Wheeler (1975a)	1960[5]	U.S.A.	57 SMSA's	UM	11	OLS					(-)	(-)			(-)		
Pogue (1975)	1968	U.S.A.	66 SMSA's	UPOP	13	2SLS	(+)		(-)	(-)	(-)	(-)		(+)	(+)	(+)	
	1968	U.S.A.	66 SMSA's	UPOP	13	2SLS	(-)		(-)	(+)	(-)	(-)		(-)	(+)	(-)	
Spector (1975)	1970	U.S.A.	103 SMSA's	NSPEC	5	OLS	(-)	(-)									
Avio & Clark (1976)	1971[6]	Canada	8 Provinces	UCVLF	9	2SLS						(+)		(+)[a]	(+)[a]	(+)[a]	(+)
	1971	Canada	8 Provinces	ULF14-24	9	2SLS						(+)		(+)[a]	(+)[a]	(+)[a]	(+)
Forst (1976)	1970	U.S.A.	51 States[7]	ULF16+orNLF	13	2SLS	(+)										
Krohn (1976)	1967	World	38 Nations	NSPEC	1	PM (r)	(+)		(+)				(+)				
	1967	World	24 Nations	NSPEC	4	SMR	(+)		(+)				(+)				
McDonald (1976)	1963	World	40 Nations	UWKAGE	3	OLS	(+)		(+)				(+)	(-)			
Kvalseth (1977)	N.S.	Atlanta	79 Census T.	UM	6	OLS				(+)[a]		(+)[a]					
Nagel J. (1977)	1975	U.S.A.	50 States	NSPEC	5	OLS	(+)[a]										

Appendix A (Continued) • *Summary of Cross-Sectional Aggregate Studies Involving Unemployment and Crime Rates*

Author(s)	Data Year	Place	Unit of Analysis	Unemploy.* Measure	# of Vars.	Estimation** Technique	General Crime	General Violent Crime	Murder	Rape	Assault	Robbery	General Property Crime	Larceny	Burglary	Auto Theft	Other Property Crime
Nagel, W. (1977)	1974	U.S.A.	50 States	NSPEC	1	PM (r)	(+)[a]										
Ross (1977)	1972	Toronto	203 Police P.	UCVLF	1	PM (r)		(+)[a]									
	1972	Toronto	203 Police P.	UCVLF	5	SMR		(+)[a]							(+)[a]		
	1972	Toronto	203 Police P.	USM15-24	1	PM (r)		(+)[a]									
Thaler (1977)	1972	Rochester	87 Census T.	NSPEC	16	2SLS							(−)				
Avio & Clark (1978)	1971	Toronto	39 Census T.	NSPEC	8	2SLS						(+)		(+)[a]	(+)[a]		(+)
Bahl et al. (1978)	1970[8]	U.S.A.	79 Cities	NSPEC	6	2SLS	(+)										
Holtman & Yap (1978)	1970	U.S.A.	43 States	U14-24	7	2SLS						(−)		(+)[a]	(+)		
Mathur (1978)	1960	U.S.A.	NS Cities[9]	NSPEC	10	2SLS			(+)	(−)	(+)	(−)		(+)[a]	(+)[a]	(+)	
	1970	U.S.A.	NS Cities	NSPEC	10	2SLS			(+)	(+)	(+)	(−)		(+)[a]	(+)	(+)	
Vandaele (1978a)	1960	U.S.A.	47 States	UURBM14-24	8	2SLS	(−)		(+)	(+)	(−)	(−)		(+)	(−)	(+)	
Carr-Hill & Stern (1979)	1961	England	116 Police D.	NSPEC	1	NSPEC	(+)										
	1966	England	110 Police D.	NSPEC	1	NSPEC	(+)[a]										
	1971	England	41 Police D.	NSPEC	1	NSPEC	(+)[a]										
Jacobs (1979)	1960	U.S.A.	91 SMSA's	NSPEC	1	PM (r)	(+)										
Wadycki & Balkin (1979)	1970	U.S.A.	51 States[7]	ULF16+orNLF	13	2SLS	(−)										
Singh et al. (1980)	1971[10]	Ottawa	62 Census T.	UM	6-8[11]	SMR	(+)[a]	(+)				(+)[a]	(+)				
	1971	Ottawa	62 Census T.	UF	6-9	SMR	(+)	(+)					(+)				
Sommers (1980)	1977	U.S.A.	49 States[13]	TEENUPL	7-8[11]	OLS			(+)	(+)[a]	(+)	(+)		(+)	(+)[a]	(+)	
Williams & Drake (1980)	1977[12]	U.S.A.	69 SMSA's	NSPEC	1	PM (r)			(−)	(+)[a]	(+)	(+)		(+)	(+)[a]	(+)	
Caroll & Jackson (1981)	1970[13]	U.S.A.	91 Cities	UCVLF	10	OLS		(+)[a]				(+)	(+)[a]	(+)[a]	(+)[a]		
Furlong & Mehay (1981)	1971[14]	Montreal	Police D. # Unspec.	UURBM	7	2SLS	(+)[a]					(+)		(+)[a]	(+)[a]		
Nagin (1981)	1960	U.S.A.	47 States	UMCV14-20	11	2SLS	(+)										

Appendix A (Continued) • *Summary of Cross-Sectional Aggregate Studies Involving Unemployment and Crime Rates*

Author(s)	Data Year	Place	Unit of Analysis	Unemploy.* Measure	# of Vars.	Estimation** Technique	General Crime	General Violent Crime	Murder	Rape	Assault	Robbery	General Property Crime	Larceny	Burglary	Auto Theft	Other Property Crime
Chiricos & Norton (1982)	1973	Florida	67 Counties	UCVLF	5	OLS						(+)[a]	(+)[a]	(+)[a]	(+)	(+)[a]	
	1975	Florida	67 Counties	UCVLF	5	OLS						(+)[a]	(+)[a]	(+)[a]	(+)[a]	(+)[a]	
	1977	Florida	67 Counties	UCVLF	5	OLS						(+)	(+)	(+)[a]	(+)[a]	(+)	
Magaddino & Medoff (1982)	1970	U.S.A.	NS States[15]	UURBM35-39	16	2SLS		(+)									
Sommers (1982)	1977	U.S.A.	49 States[15]	TEENUPL	12	OLS			(+)	(+)[a]	(+)	(+)		(+)	(+)[a]	(+)	
Defronso (1983)	1970	U.S.A.	39 SMSA's	UCVLF	8	OLS			(+)	(+)[a]	(+)	(+)		(+)[a]	(+)[a]	(+)	
	1970	U.S.A.	39 SMSA's	UCVLF	9	OLS			(+)	(+)[a]	(+)	(+)					

*U = % Unemployed
**PM (r) = Product Moment Correlation
OLS = Ordinary Least Squares Regression
2SLS = Two Stage Least Squares Regression
SMR = Stepwise Multiple Regression
[a] p < .05

*U = % Unemployed
M = Males
LF = Labor Force
CV = Civilian
S = Single
POP = Population
WKAGE = Working Age Population
NSPEC = Not Specified
14 + = 14 Years and Older
16 + = 16 Years and Older
14 – 24 = 14 – 24 Years Old
15 – 24 = 15 – 24 Years Old
EMPLR = Employment Rate (NSPEC)
TEEN = Teenage
MET = Metropolitan
ST = State
URB = Urban

1. Average of 1949–1951
2. UNPL. = 1960; Crime = 1962
3. UNPL. = 1959 for assault
4. UNPL. = 1969 for homicide
5. UNPL. = 1960; Crime = 1961
6. Average of 1970–1972
7. Includes District of Columbia
8. UNPL. = 1970; Crime = 1972
9. All cities over 100,000
10. UNPL. = 1971; Crime = 1972
11. Varied by crime
12. UNPL. = 1977; Crime = ave. of 75–77
13. UNPL. = 1970; Crime = 1971
14. UNPL. = 1971; Crime = 1973
15. Ranged from 41–49 states

Appendix B • Summary of Time-Series Aggregate Studies Involving Unemployment and Crime Rates

Author(s)	Data Years	Place	Unemployment* Measure	# Ind. Variables	General Crime	General Violent Crime	Murder	Rape	Assault	Robbery	General Property Crime	Larceny	Burglary	Auto Theft	Other Property Crime
Danziger & Wheeler (1975a)	1949–1970	U.S.A.	UM16+	7					(−)	(−)			(+)		
Danziger & Wheeler (1975b)	1949–1970	U.S.A.	UM	6					(−)	(−)			(+)		
Ehrlich (1975)	1935–1969	U.S.A.	UCVLF	8			(+)[a]								
Brenner (1976)	1940–1973[1]	U.S.A.	U16+	5			(+)[a]								
Land & Felson (1976)	1947–1972	U.S.A.	UCVLF	6		(−)					(+)				
Leveson (1976)	1947–1974[2]	U.S.A.	U16–19	2		(+)[a]	(+)[a]				(+)[a]				
	1947–1974	U.S.A.	U20+	2		(+)	(−)				(+)				
McDonald (1976)	1948–1968	England & Wales	UWKAGE	5		(+)	(−)					(+)	(+)[a]		(+)
Fox (1978)	1950–1975	U.S.A.	UCVLF	4		(+)					(−)				
Vandaele (1978b)	1935–1969	U.S.A.	UCVLF	2										(+)	
Wolpin (1978a)	1894–1967	England & Wales	NSPEC	15	(+)[a]	(−)			(−)	(+)		(+)	(+)[a]		
Wolpin (1978b)	1929–1968	England & Wales	NSPEC	14			(+)[a]								
Yeager (1978)	1967–1976	Los Angeles	NSPEC	1			(+)[a]		(+)[a]	(+)[a]		(+)[a]	(+)[a]	(+)[a]	
Center (1979)[4]	1940–1973[1]	U.S.A.	UCVLF	6			(+)								
	1933–1976	U.S.A.	UCVLF	6			(+)								
Cohen, Felson & Land (1980)	1947–1972	U.S.A.	NSPEC	4			(−)			(−)					
Hoenack & Weiler (1980)	1935–1969	U.S.A.	UCVLF	8			(+)						(+)		
Fisher & Mason (1981)	1961–1973	Detroit	UCVLF	5			(+)								
Orsagh (1981)	1951–1977	U.S.A.	UMTEEN	6	(+)										
Norton (1982)	1976–1979[5]	Louisiana	UCVLF	1									(+)[a]		
Phillips & Ray (1982)	1950–1978	California	U16+	3			(+)								
	1950–1978	California	UM18-19	3			(+)[a]								
Cook & Zarkin (1985)	1935–1979[6]	U.S.A.	UCVLF	1			(+)			(+)[a]			(+)[a]	(−)[a]	
	1949–1979	U.S.A.	UCVLF	1			(−)			(+)[a]			(+)[a]	(−)[a]	

Appendix B (Continued) • *Summary of Time-Series Aggregate Studies Involving Unemployment and Crime Rates*

Author(s)	Data Years	Place	Unemployment Measure	# Ind. Variables	General Crime	General Violent Crime	Murder	Rape	Assault	Robbery	General Property Crime	Larceny	Burglary	Auto Theft	Other Property Crime
Cantor & Land (1985)	1946–1982	U.S.A.	UCVLF	2			(−)	(−)	(−)	(−)[a]		(−)[a]	(−)[a]	(−)	
	1946–1982	U.S.A.	UCVLF	2			(−)	(−)	(−)	(+)		(+)[a]	(+)	(+)	

[a] $p < .05$

1. UNPL. lagged 0–5 years
2. Youth UNPL. lagged 2 years
3. Does not include war years: 1914–1919; 1939–1945
4. Dependent variable = Homicide Rate 25–34 years old
5. 48 monthly data points
6. Uses 3 year moving averages

*U = % unemployed
LF = Labor Force
CV = Civilian
TEEN = Teenage
NSPEC = Not Specified
= Year to year difference
16+ = 16 years and older
16–19 = 16–19 years old
18–19 = 18–19 years old
20+ = 20 years and older