Summer 1998

Understanding the Time Path of Crime

John J. Donohue

UNDERSTANDING THE TIME PATH OF CRIME

JOHN J. DONOHUE*

With all of the random factors that influence the amount of criminal conduct, it is virtually impossible to fully explain or precisely predict the crime rate at any point in time. If the World Trade Center bombers had succeeded in their goal of toppling the massive towers, tens of thousands could have died in New York that one day in 1993. The nation's annual murder rate would have doubled or tripled from one incident. Fortunately, such extreme catastrophes are rare—the comparatively minor but still horrific killing of 168 residents of Oklahoma City in 1995 was too small against the background of 21,600 murders across the nation to have a pronounced effect on the U.S. murder rate in that year.[1] There will always be random events that escalate the rate of crime, such as innovations in illegal drug markets, and, similarly, random events that tend to depress it, such as bad weather (it keeps the criminals at home), charismatic religious leaders, or widespread reductions in enthusiasm for illegal drugs.

The primary goal then, in understanding the long-run trends in crime and what is likely to happen in the future, is to take one's focus off the short-term fluctuations so one can identify the stable long-run patterns. Distinguishing stable trends from temporary fluctuations is essential to understanding how crime is affected by changes in criminal justice policy, as well as by varying social, economic, and demographic influences. If we confuse fluctuations with trends, our predictions of where crime

[1] BUREAU OF JUSTICE STATISTICS, U.S. DEP'T JUSTICE, SOURCEBOOK OF CRIMINAL JUSTICE STATISTICS, at 106 tbl. 3 (1996) [hereinafter SOURCEBOOK].

is headed can be wildly inaccurate, and our search for causal explanations of recent patterns can be very misleading. For example, as we reflect upon the exciting and salutary recent sharp drops in crime, it makes a huge difference whether these are just temporary improvements varying around a long-term unchanged trend or the signal of a precipitous and sustained improvement from the previous pattern of slow decline that has been operating for two decades. Similarly, in trying to explain the very recent sharp drops in crime, one must exercise care in attributing causal significance to forces, such as the sharply rising rate of incarceration, that have been operating relentlessly for a quarter of a century.

This paper, then, will attempt to sort out the long-term trends in crime over the last fifty years from the short-term fluctuations around those trends. As we will see, there have been two clear long-run trends in crime over the last half century: one involving sharply rising crime until the late 1970s, followed by the second, a period of slow decline over the next two decades. As one might expect, there have been considerable short-term fluctuations around the two long-run trends, and indeed, the later period has experienced greater variability in crime around the long-term declining trend than had been the case during the initial period of the rising secular, or long-term, trend in crime.[2] Part I documents these broad patterns, and discusses how they illuminate the issues of why crime has fallen and where it is likely to be headed in the future. Part II builds upon this discussion to show that increased levels of incarceration and favorable demographic shifts contributed to the slow decline in crime over the last two decades, but cannot explain the sudden drop in crime in the mid-1990s after the abrupt increases in crime of the late 1980s. The reasons for the short-term fluctuations are probed and various positions that were advocated during the conference are evaluated. Part III concludes

---

[2] No one appears to have commented on the increase in the variability of crime over the last twenty years. Conceivably, the policy of massive incarceration could have been a destabilizing influence that leaves a community more vulnerable to pernicious influences such as the crack epidemic. Perhaps, too, there is some factor that makes crime *less* variable when it is rising rapidly, as it did prior to 1977.

by noting that the growing cost of incarceration suggests that, at some point, the public will call for an end to further *increases* in the number of prison inmates. Since increasing incarceration, more police, and favorable demographics have been modestly offsetting the influences pushing towards higher crime, when the increases stop and the demographic trends turn unfriendly (as they now have), crime will begin a slow secular rise for the first time in two decades, unless some other force (better policing strategies, effective social programs) controls crime or the unknown long-term criminogenic forces in society (the breakdown in the family, pernicious media influences, declining schools, growing drug use and drug markets) abate.

I. THE PATTERN OF HOMICIDES OVER THE LAST HALF CENTURY

A. DISTINGUISHING LONG-TERM TRENDS AND SHORT-TERM FLUCTUATIONS

Because of the poor quality of the data published by the FBI over the last half century, it is very hard to provide a comprehensive and accurate assessment of the long-run patterns of all aspects of crime. It is possible, though, to focus on the one crime—murder—that is well measured, and for which a reliable long-term time series can be created. While homicide data may not be perfectly reflective of the time trend in all crimes, it does seem to follow the pattern of most other street crimes fairly well during the recent periods when more accurate data is available for these other crimes.[3] Thus, while murder may not be a perfect proxy for crime, it is simply the best we have. For the rest of this paper, then, I will rely on murder data to define and ex-

---

[3] Blumstein and Rosenfeld show that murder and robbery rates (as measured by the Uniform Crime Reports (UCR)) track each other quite closely over the last two decades. Alfred Blumstein & Richard Rosenfeld, *Explaining Recent Trends in U.S. Homicide Rates*, 88 J. CRIM. L. & CRIMINOLOGY 1175, 1176 fig. 1 (1998). Gary LaFree also finds that the recent decline in murder rates has also been replicated for other crimes. He concludes that "data from the UCR and the National Crime Violence Statistics (NCVS) strongly support the conclusion that there have been substantial, broad-based declines in street crime rates during the 1990's." Gary LaFree, *Social Institutions and the Crime "Bust" of the 1990s*, 88 J. CRIM. L. & CRIMINOLOGY 1325, 1330 (1998).

plain the broad patterns in crime over the last five decades. Figure 1 plots the national homicide rates from 1950 through 1997.

National crime patterns can be thought of as being composed of long-term trends and short-term fluctuations around these long-term trends. Figure 1 also plots two trend lines (the predicted murder rates), which reveal that from 1950 to 1977 the murder rate rose at an annual rate of 4.4%, and from 1977 through 1997 it fell at a rate of roughly 0.6%.[4] At the same time, there has been substantial deviation around the trend. Over this forty-eight year period, the two predicted homicide trend lines explain almost two-thirds of the variation around the mean national murder rate of 7.32 per 100,000. Thus, analysts need to find explanations for both the two long-term trends— one strongly adverse for the period before 1977, and one mildly benign for the subsequent period—as well as for the variations above and below these trends.

This descriptive scheme aids in the process of explanation since it clarifies the need to find long-term explanations for the steady long-term trends in crime, and more episodic and variable explanations for the short-term variations about the long-term trends. For example, if one is trying to explain the post-1977 downward trend in crime, the sustained increase in incarceration rates over this period is certainly part of the explanation. At the same time, this steady increase in incarceration is not a reasonable explanation for the sharp drop in crime that has

---

[4] The two trend lines, or predicted murder rate lines, were calculated by regressing the natural logarithm of the murder rate on two time trends. The highest adjusted R-squared value was obtained when the break in the time series came in 1977. The regressions were performed using the Hildreth-Lu correction for serial correlation. (When ordinary least squares regression was used, the break in the series came in 1978.)

Figure 1

Actual vs. Predicted Murder Rate (National): 1950-1997
Estimated Using the Hildreth-Lu Correction for Serial Correlation
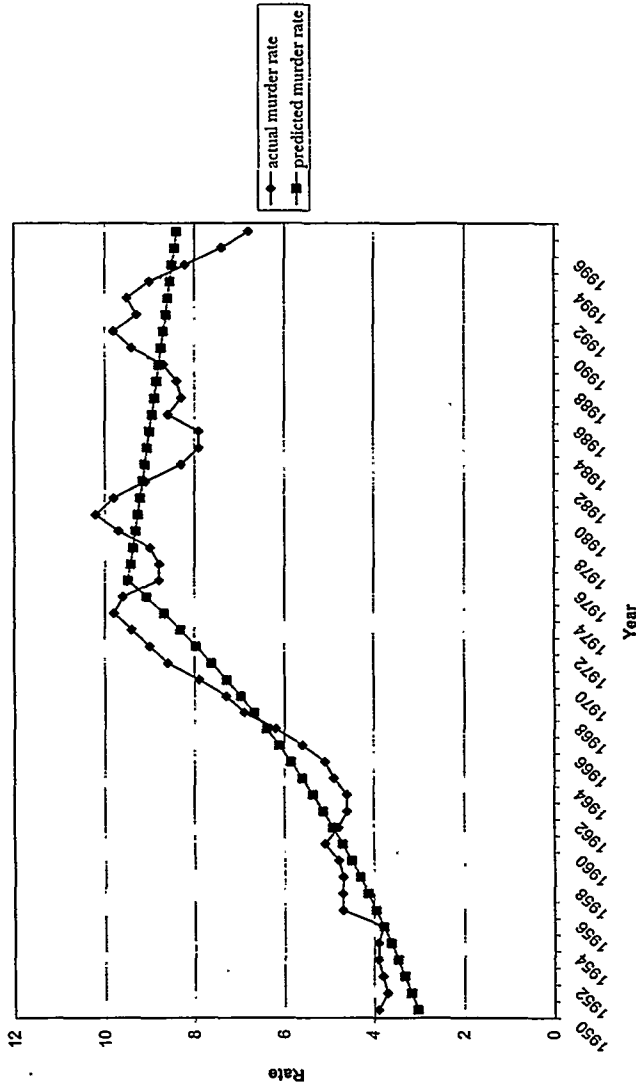
NOTE: Predicted murder rate: ln(murder rate)=1.07+.04*year[1950=1, 1951=2, etc.],.05*year2[1977=1, 1978=2, etc.] (Adjusted R-squared=.62), 1997 murders estimated using information from January - June, 1997.

occurred since 1993.[5]

B. WE CAN'T KNOW WHERE CRIME IS HEADING WITHOUT KNOWING WHY IT HAS FALLEN

Perhaps the most important lesson from Figure 1, though, is that the excitement over the prospect of a sustained sharply lower crime rate may be premature. Posit, for a moment, that the post-1977 linear predicted homicide rate truly represents the current long-run trend in crime. In this event, we can obviously be happy that crime is headed downward, but the euphoria of the last few years must be tempered by the realization that the slope of the long-term downward trend is obviously much more gradual than that of the recent drop. We would achieve an enormous public policy victory if we could engineer a return to the low crime rates of the 1950s and early 1960s. But if the post-1977 linear time trend shown in Figure 1 accurately reflects the long-run trend in homicide, then it will be a very long time before that goal will be reached.[6]

I do not mean to be pessimistic, and I would love to think that we have entered a third phase in the post-World War II pattern of homicide, in which homicide rates will now be falling more sharply into the future. There are certainly reasons why *any* trend in crime tends to gain momentum.[7] But as I look at

---

[5] Of course, one could tell a tipping story in which the relentless pressure on criminals imposed by the steadily climbing rates of incarceration finally led to a shift away from criminal behavior. The evidence seems to suggest, however, that most effects on crime from more punitive forms of criminal justice come relatively quickly (although one must also concede that it is more difficult to tease out more delayed effects of policy from the imperfect data). *See* Steve Levitt, *Juvenile Crime and Punishment*, 106 J. POL. ECON. 609 (1998) (showing that a drop in crime comes immediately at the age of majority, in response to the greater severity of punishment).

[6] The murder rate in 1965 was 5.1 per 100,000. If the post-1977 linear trend were to continue, the murder rate would not fall to this level until the year 2084.

[7] If crime is decreasing, one would expect, at least over some period of time, there would be an increasing rate of police presence per unit of crime, which would increase the likelihood that criminals would be caught. Moreover, those criminals who are convicted might well face a greater likelihood of receiving a long prison sentence, since the prison cells are already built and might as well be used. Moreover, many individuals decide what practices to engage in by observing the behavior of others. If fewer people are committing crimes, there will be fewer negative role models and perhaps a greater social disapproval of crime in general. *See* Dan Kahan, *Social Meaning and the Economic Analysis of Crime*, 27 J. LEGAL STUD. 1156 (1998).

Figure 1, I cannot rule out the possibility that the last five years are similar to the first five years of the 1980s. If so, then we might expect that the present period of rapidly declining murder rates will be followed by an increase, as the national homicide rate returns to its more gradual long-run pattern of decline. In a few years, of course, we will have a better answer to this question: if the crime rate continues to fall at its current rate, then it will likely mean that there has been some shift in the fundamentals of homicide, instead of a benign short-term variation about the unchanged post-1977 long-run trend.[8]

1. Alternative Time Paths of Crime

Of course, there is nothing set in stone about the way that I have modeled the last half century of homicide rates as having an upward trend before 1977 and a downward trend thereafter. I simply allowed the data to have one break in the series, and then found the line of best fit across all possible years in which the break could occur. Thus, the statistical data indicate that if there is to be only a single break in the time trend, this break occurred in 1977. But two qualifications should be mentioned. First, it is conceivable—as some commented at the conference—that homicide rates over the last fifty years are better explained by a single curvilinear trend rather than by the two linear trends shown in Figure 1. Figure 2 graphs just such a quadratic equation.

If Figure 2 depicts the true core pattern of homicides, then it is apparent that homicide rates will be restored to the low levels of the early 1960s fairly quickly. In fact, Figure 2 predicted the homicide rate would fall to the 1965 level within five years.[9] The reason for this sharply different prediction is that the predicted homicide-rate curve in Figure 2 gives far greater weight to the observed sharply downward trend in crime over the last

---

[8] Note, also, that our estimate of the post-1977 trend itself would be affected by additional drops in the crime rate. In other words, if crime drops for another few years, the estimated long-run decline would be steeper than we believe today.

[9] This equation predicts that in the year 2002, the murder rate would fall to 5.1 per 100,000, which was the level in 1965.

Figure 2

Actual vs. Predicted Murder Rate (National): 1950-1997
Estimated Using the Hildreth-Lu Correction for Serial Correlation Without Time Trends
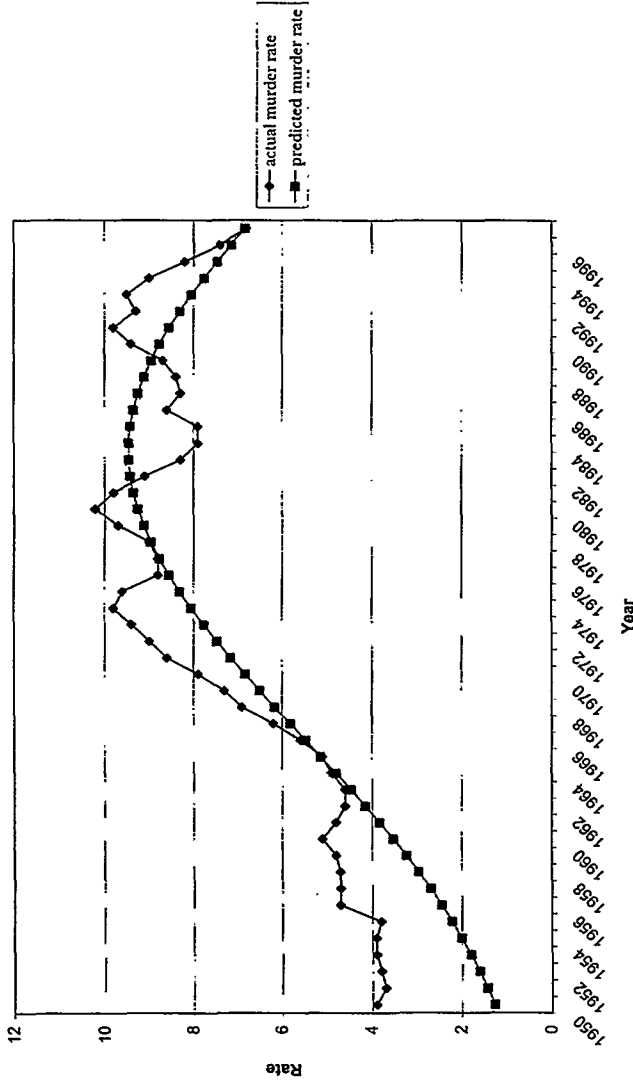
NOTE: Predicted murder rate: ln(murder rate)=.123+(.123)*year[1950=1, 1951=2, etc.]-.002*year-squared[1950=1, 1951=4, etc.]. (Adjusted R-squared=.30). 1997 murders estimated using information from January - June, 1997.

few years. But visual inspection suggests that the predicted homicide-rate curve in Figure 2 does not conform to the data nearly as well as the predicted homicide-rate curve in Figure 1. In fact, the adjusted R-squared value of the Figure 2 curve is less than half the value of the predicted homicide-rate curve in Figure 1, which suggests that the Figure 1 curve is preferable.

2. *Has a Third Linear Trend in Crime Emerged?*

I have just concluded on the basis of statistical grounds that the pattern of homicides over the last half century is better explained by two linear time trends than by a single quadratic equation. But two other options should also be considered. The Figure 1 analysis implicitly assumes that there is a fundamental trend in crime and then some random variation about that long-term trend. In this view, the recent drop in crime is simply a benign movement around the long-term trend, which means that one should expect a return to the long-term path of crime in the next few years. Nonetheless, it is also possible that the fundamental trend in crime itself has been altered (as it was once before in the last fifty years—in the late 1970s). In this event, an additional break in the post-1977 linear trend reflecting a much faster downward movement in crime would have recently emerged. The explanation for any such fundamental shift must then come from some *recent* change in the circumstances that influence crime. Accordingly, any explanation based on a factor that has operated for decades—such as increasing incarceration or gradual long-term changes in major social institutions—cannot be the source of such a recent shift (barring some tipping model story that the sustained pressure "broke the back of crime"). One candidate that conceivably could explain the benign fundamental shift is that the police have recently discovered and implemented a more effective approach to law enforcement. This is frequently offered as an explanation behind the dramatic recent drops in crime in New York.[10] If such an improvement has occurred, the spreading of

---

[10] *See, e.g.* George L. Kelling & William J. Bratton, *Declining Crime Rates: Insiders' views of the New York City Story*, 88 J. CRIM. L. & CRIMINOLOGY 1217(1998).

these crime-fighting approaches to other jurisdictions could enable further sharp drops in crime to be achieved.

But even if a third more sharply declining long-term trend has begun, it would not "confirm widely reported evidence of a dramatic reversal in the nation's long-term trends in crime."[11] Rather, it would show that the two-decade-long slow reduction in crime had been replaced by a faster decline at the same time that a short-term spike in crime was being reversed.

3. A Discontinuous Drop in Crime?

Another possibility, however, is that the slope of the long-term trend in homicide has *not* changed but that crime has suddenly dropped down to a lower level by virtue of some one-time but continuing benign influence. In this event, the homicide rate would continue to decline at the roughly 0.6% rate per year shown in Figure 1, but this slow decline would start from the actual 1997 below-previous-trend level of 6.7 per 100,000 (rather than the predicted level of 8.4 per 100,000). This discontinuous drop in crime that starts around 1993 conceivably could be caused by a sudden event such as a sharp increase in the number of police. Such an increase could induce a drop in crime, but would probably not cause crime to continue falling at the same unusually precipitous rate of the last few years. This is of course a more optimistic story than the one suggesting that regression to the long-term trend will lead to crime increases in the next few years, but it still implies that we are a long way off from the lower-crime days of the 1950s and early 1960s. Indeed, if this were the true path of crime, then the homicide rate would still not reach the 1965 level of 5.1 per 100,000 for 48 years.

While it is possible that we have just experienced a discontinuous drop in crime, it is not clear that an increase in the number of police is what caused the drop. The annual increases in the number of police do not seem to be large enough to generate a sharp drop after 1993. At least as far as one can tell from the FBI data, the rate of officers per 1000 residents in

---

[11] James Risen, *U.S. Violent Crime Drops Record 7%*, L.A. TIMES, June 2, 1997, at A1.

American cities was 2.2 in 1990, did not reach 2.3 until 1995, and was at 2.4 per 1000 as of Oct. 31, 1997 (the last date for which data are available).[12] These increases in the national counts of police seem too small to spur an abrupt recent drop in crime, although perhaps more recent data will better elucidate this issue. Conversely, in New York City, the increase in police in recent years was substantial enough and linked closely enough to the drop in crime to encourage the view that the increased number of police really did play a substantial role in New York City's dramatic crime reduction.[13]

C. SUMMARY

Based on this broad, initial assessment of Figure 1, the three most likely predictions about crime over the next decade, which I order from most pessimistic to most optimistic, are:

The Post-1977 Trend Continues. This is the most parsimonious story to emerge from Figure 1. If, in fact, nothing fundamental has changed, the long-run rate of homicides will continue to be dictated by the post-1977 linear trend line. In this scenario, crime is currently below its long-term trend rate, so one would expect that it will rise to return to the original trend line, with continuing oscillations around the slow downward trend. Consequently, the best estimate is that crime in ten years will be *higher* than it is today. The Figure 1 regression would predict that the homicide rate in 2007 would equal 7.9 per 100,000 inhabitants, while the actual value in 1997 was 6.7. Although the long-run trend in crime would be downward, it would continue

---

[12] These data, which come from the Uniform Crime Reports, are problematic in that they are not recent enough to fully document the latest trend and they count full-time police department officers for only those cities that report, which is not a constant sample over time.

[13] Over the period from 1992 though 1996, the number of New York City police officers grew from roughly 28,000 to 37,000. This 31% increase in its police force was sizeable enough to be expected to have played a major role in the 51% decline in homicides over this same period. FBI UNIFORM CRIME REPORTS (1991-1996). *See* note 34, *infra.*

falling at such a slow pace that the prospect of a return to the low crime rates of the early 1960s would be very distant.[14]

The Post-1997 Trend Continues Following the Discontinuous Drop in Crime: In this scenario, there has been a recent one-time jolt to the system that has dropped crime down to a lower-but-parallel trend path to that shown for the post-1977 period in Figure 1. In this event, the best estimate of the murder rate in ten years is 6.4 per 100,000 (down from the 1997 value of 6.7), but without further change in the trend, the country would not be restored to the 1965 level of 5.1 per 100,000 until the year 2037.

A New Long-Term Trend: In this final scenario, the crime reductions of the last few years have signaled a new benign trend, and crime will continue falling. Presumably, the drop would level off in the next five to ten years at about the level of four to five per 100,000 that we saw in the 1950s and early 1960s, which would imply that further substantial drops in crime await us in the next few years.

As we will see in Part II (A) below, there may be reasons to add to this list of plausible outcomes another, more pessimistic scenario, in which the future long-term trend will change, but for the worse.

II. APPLYING THE FRAMEWORK TO EVALUATE CAUSAL EXPLANATIONS FOR THE DROP IN CRIME

The framework developed in Part I can be usefully applied in evaluating some of the competing explanations that have been offered for the run up in crime in the late 1980s and the recent sharp drops in crime. The excellent papers by Alfred Blumstein and Richard Rosenfeld, and by Jeffrey Fagan, Frank Zimring, and June Kim document two important findings that correspond closely with the Figure 1 story of a long-term post-1977 decline in homicide with substantial short-term fluctua-

---

[14] The projected return to the 1965 level would be in the year 2084, which is so far off that the likelihood that the trend would continued unchanged for that long seems extremely remote. *See supra* note 6 and accompanying text.

tions around this trend.[15] First, there has been a steady drop in non-gun homicides and homicides by adults.[16] Second, beginning in the mid-1980s, gun homicides by juveniles skyrocketed, and after about 1993, they fell sharply.[17] The first of these findings corresponds with the long-term post-1977 decline in homicides depicted in Figure 1, and the second of these findings explains the sharp run up in homicides in the late 1980s and then the sharp run down in the mid to late 1990s.

A. THE EFFECTS OF INCARCERATION AND DEMOGRAPHICS ON THE LONG-TERM TRENDS IN HOMICIDE

These facts can guide our understanding of the causal patterns of the post-1977 trend and the short-term fluctuations in homicides. As we saw in Figure 1, crime was rising at a robust level starting in the mid-1950s, but for almost two decades there was virtually no increase in incarceration in response to this higher level of crime.

Indeed, as Figure 3 reveals, from 1967 through 1973 the rates of incarceration were below 100 per 100,000 for the only time in the last half century. The strong anti-incarceration sentiment in the late 1960s and early 1970s succeeded for a time in reducing the prison population at a time of enormous growth in crime.[18] Beginning in 1974, however, a sharp and unrelenting upturn in incarceration began, and we are now at a historically unprecedented level of roughly 450 inmates for every 100,000 individuals in the country.

Within a few years after 1977, the aging of the baby boom cohort also contributed to the slow long-term decline in homicides.[19] Today, the cohort aged thirty-six to forty is the most

---

[15] Blumstein & Rosenfeld, *supra* note 3; Jeffrey Fagan et al., *Declining Homicide in New York City: A Tale of Two Trends*, 88 J. CRIM. L. & CRIMINOLOGY 1277 (1998).

[16] Blumstein & Rosenfeld, *supra* note 3.

[17] *Id.*

[18] Figure 3 documents the reduced reliance on incarceration at a time when Figure 1 shows crime was rising sharply.

[19] Steve Levitt, *The Limited Role of Changing Age Structure in Explaining Aggregate Crime Changes*, CRIMINOLOGY (forthcoming 1999).

Figure 3

Rate of Incarceration in State and Federal Institutions: 1950-1995
(Number of Inmates per 100,000 Population)
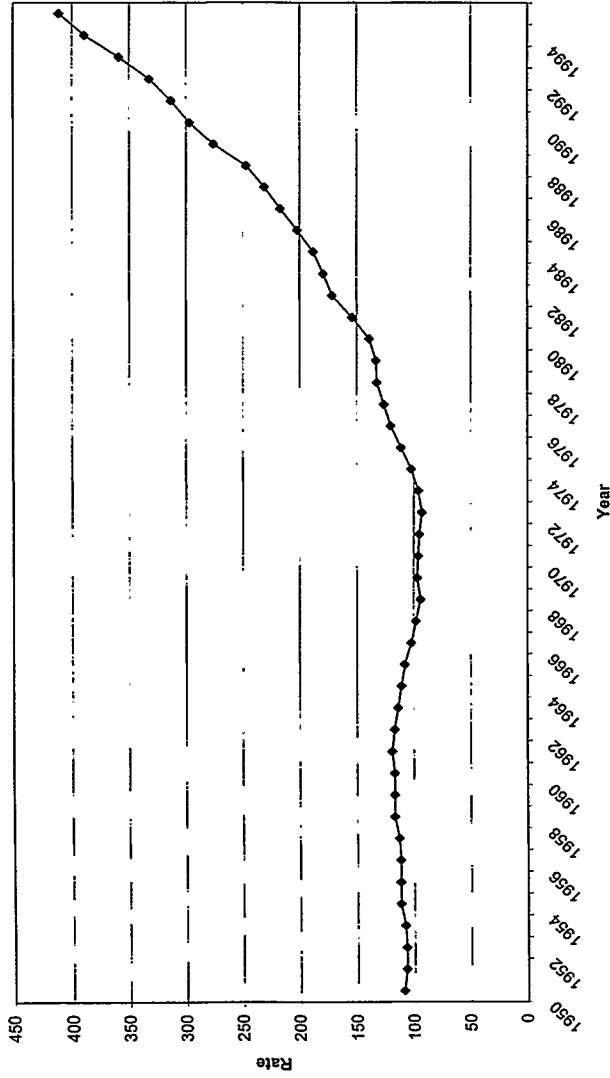
SOURCE: Sourcebook for Criminal Justice Statistics. Graph does not include prisoners in local jails.

plentiful five-year age span in America.[20] If one thinks of the five-year span from age eighteen to twenty-two as the peak years of crime, then it was eighteen years ago that demographics started to operate in favor of crime reduction. Steve Levitt notes that after twenty years of adverse demographic influences, murder rates between 1980 and 1995 fell 8% due to the changing age structure of the U.S. population (when the total decline in murder rates was 20%).[21] But the benefit of a roughly 0.5% per year drop in murder rates owing to demographic shifts has now ended. From 1995 through 2010, demographics should play little role in aggregate U.S. homicide rates.[22]

The basic story then is that sharply increasing incarceration rates that lagged the sharp growth in crime succeeded by the late 1970s in altering the trend path of crime, and that the resulting new slow downward trend was sustained by continuing sharp increases in incarceration and benign demographic shifts. With the prison population rising at roughly 6.6% per year since 1974, crime might be expected to fall by roughly 1% per year.[23] These facts suggest that the prediction that the slow post-1977 downward trend will continue may be somewhat optimistic. Given the high expense and diminishing marginal returns of increased incarceration at this point, it is hard to imagine that the prison population will grow much further in the future.

---

[20] *Id.*

[21] From 1960 through 1980, the murder rate grew by 20% owing to the changing age structure (when the total increase in murder rates was 101%). *Id.*

[22] The reason for this result is that while the proportion of Americans aged 15-24 will be rising, the proportion aged 25-39 will be declining and the proportion of elderly Americans will grow. The net effect of these conflicting influences on crime will be roughly zero. *Id.* at 10. It is possible that the effect of the changing age structure could be modestly worse than Levitt suspects since he does not separately analyze the influence of race. At present, the increase in the size of the highest-crime age cohort is roughly 1% per year for whites, but almost double that for African-Americans (who have far higher murder rates than whites). *See* Blumstein & Rosenfeld, *supra* note 3, at 1184 fig. 3.

[23] I estimated the growth of the prison population in the same fashion that I estimated the growth in the homicide rate. *See supra* note 4. The prediction that the increasing incarceration reduced crime by about 1% per year assumes that the elasticity of crime with respect to incarceration is roughly 15%. *See* John J. Donohue III & Peter Siegelman, *Allocating Resources Among Prisons and Social Programs in the Battle against Crime,* 27 J. LEGAL STUD. 1, 13 (1998).

Moreover, the roughly 0.5% per year downward pressure on crime from the baby bust is now over. Certainly, if the two major long-term influences acting to depress crime over the last two decades are removed without the introduction of other crime-reducing influences to replace them, then even the modest long-term downward trend is threatened. Recall that this post-1977 downward long-term trend has been roughly 0.6% per year.[24] When increasing incarceration was dampening crime by roughly 1% per year and demographics were dampening crime by another 0.5% per year, crime was only falling at 0.6%.[25] If the *increase* in incarceration were to stop during a period in which demographics are no longer diminishing crime (and possibly increasing it), it would not be surprising that even the slow, post-1977, downward trend in crime would be imperiled.

B. EXPLAINING THE FLUCTUATIONS OF THE LATE 1980S AND 1990S

1. The Rise of the Late 1980s

Part II(A) above showed how increasing levels of incarceration and favorable demographic trends contributed to the slow, post-1977, secular decline in crime. These fairly steady influ-

---

[24] *See supra* text accompanying note 4.

[25] Note that in the post-1977 period, increasing incarceration, increasing police forces, and favorable demographic shifts all operated to reduce crime. The first of these three effects *alone* is predicted to have reduced crime by roughly 1% per year, while overall crime fell at only 0.6%. This implies that other long-term factors must have been operating to *increase* crime. It is also worth speculating whether the estimated effectiveness of incarceration as a crime control strategy has been diminishing over time as the percentage of the prison population made up of drug offenders and older prisoners (as a result of longer sentences) has risen.

Recently released data for the first half of 1998 indicates that the murder rate dropped to 6.3 per 100,000. The post-1977 trend line estimated in Figure 1 might be artificially elevated because of what I argue is the crack-influenced crime spike of the late 1980s. If one were just to compute the annual percentage decline in crime from the Figure 1 predicted peak of 9.5 in 1976 to the early 1998 value of 6.3, the figure would be 1.86%, which is slightly greater than the estimated annual 1.5 percent decline attributable to increased incarceration and the changing demographics in the post-1977 period. In other words, it is possible that we are now where we would have been in the absence of the crack epidemic, and that the true post-1977 trend showed even a greater decline than predicted by the rising incarceration rate and favorable demographic trends (presumably augmented by increasing numbers—and effectiveness?—of public and private police and other private security measures).

ences cannot explain the sharp run up in crime that begins in the second half of the 1980s or the equally sharp decline that begins around 1993. It seems fairly likely that the introduction of crack cocaine and the ensuing battle for control over its distribution during a period of strong anti-drug law enforcement explain the crime increase starting in 1986. Indeed, in retrospect, it seems clear that the pattern of increasing juvenile crime and gun violence was the direct result of these factors. The introduction of a highly lucrative illegal product required the development of a vast distribution network involving hundreds of thousands of sales workers. At a time when intense incarcerative pressure was being applied to adult offenders and a booming economy was creating a relative labor shortage, it was not surprising that the group with the fewest options in the legitimate economy and the least to lose from the criminal justice system—young, inner-city African-American males—would be drawn into the drug trade. Moreover, the recruitment of vast numbers of young drug sellers, coupled with a great need for continuing replacement as the prisons swelled with those convicted on drug charges, together contributed to an environment where the growth of gun violence was entirely predictable. Young boys carrying large sums of illegally obtained cash need to find some way to protect themselves from older predators (and each other), and handguns are simply the logical answer.

In the late 1980s, the magnitude of the cocaine market was estimated to be as high as $60 billion per year.[26] Reasonable assumptions about the relative sizes of the shares of capital and labor in this industry suggest that the need for workers in such a large industry would be substantial.[27] Between 1987 and 1991,

---

[26] *See infra*, Figure 4.

[27] A reasonable estimate of the labor share of output for a legitimate business might be 75%, which, if applicable to an illegal industry, would mean that roughly $45 billion could be labor's share of the drug market. Even if the illegal nature of the industry would lead to highly skewed earnings and only half of this amount was paid to workers, the total number of drug workers would still be very high. To get a crude sense of how many workers this might entail, one might estimate the average earnings of a full-time drug worker to be about $24,000 per year. (The best study on this issue estimates that full-time drug dealers earn about $2,000 per month, on average. PETER REUTER, ET AL., MONEY FROM CRIME; A STUDY OF THE ECONOMICS OF DRUG DEALING IN WASHINGTON, D.C., 49 (1990). This would imply that the number of full-time workers

the number of adults in jail or prison grew by roughly 400,000, of which approximately 220,000 were African-American and 150,000 were white.[28] Moreover, from 1985-1990, the booming economy led to a shrinkage of almost 500,000 in the number of whites aged sixteen to twenty-four who did not have legitimate jobs.[29] With the growing crack trade needing literally hundreds of thousands of workers, almost 400,000 adult drug dealers or possible recruits hauled off to prison or jail, and 500,000 previously unemployed young whites now employed in legitimate activities, it is not surprising that a significant percentage of the roughly 1.3 million African-American males aged fifteen to nineteen were pulled into the crack trade.[30] Once juveniles had a strong need for guns, the guns came, and the rest of the story is quite predictable—juvenile gun deaths soared, particularly among African-Americans.[31]

2. The Recent Fall in Crime

While we can tell a plausible story about why crime rose in the late 1980s, it is much more difficult to explain why it suddenly started back down. We have already seen that incarceration, demographics, and greater numbers of police are not likely to be important elements of the story. This leaves us with the following array of explanations for the crime reduction of the 1990s: a shrinking drug trade; increased police effectiveness; declining alcohol use; or improving social/economic forces, such as the booming economy (since 1992), increased trust in

---

in the cocaine trade would be close to one million workers. Of course, some of these workers were involved in the production phase of the cocaine trade outside the United States, and some were involved with the existing powder cocaine trade prior to the introduction of crack. But since many of the workers involved in crack distribution did not work full time, it is apparent that there was a huge increase in demand for low-skilled labor in urban areas to work in the illegal crack trade. *Id.* at xii.

[28] SOURCEBOOK, *supra* note 1, at tbl. 6.12.

[29] U.S. BUREAU OF THE CENSUS, STATISTICAL ABSTRACT OF THE UNITED STATES: 1997, at tbl. 652 (117th ed. 1997).

[30] In 1990, the number of African American males aged 15-19 was 1.326 million. *Id.* Crack was the great inner-city jobs program of the late 1980's.

[31] Alfred Blumstein, *Youth Violence, Guns, and the Illicit-Drug Industry,* 86 J. CRIM. L. & CRIMINOLOGY 10, 26-32 (1995).

government, or strengthened community institutions. I will discuss these issues in turn.

a.   Shrinking Illegal Markets for Drugs

Figure 4 shows that the size of the cocaine and heroin markets, as measured by total expenditures on these drugs, has fallen sharply since the peak years of the late 1980s.

This suggests a neat story in which the burgeoning crack trade increased crime in the late 1980s and the subsequent decline in this trade led to the subsequent drop in crime. But there are two problems with the story. First, the drop in total expenditures on cocaine started too early for this factor to explain the sharp downturn in crime that started in 1993. Most of the decline in the crack trade came before 1993. Second, while total expenditures on cocaine have fallen, Figure 5 shows that the actual volume of cocaine used has been steady from 1990 through 1995.

The declining price at a time when total consumption is steady suggests that the supply and demand curves have both shifted in the direction of lowered price (*i.e.*, they both shifted down) with the offsetting effect being that the quantity consumed remained steady. The outward shift in the supply curve seems most plausibly to have resulted from the rationalization of the distribution system. Perhaps the gangs were able to divide the territory in a way that reduced warfare and facilitated lower
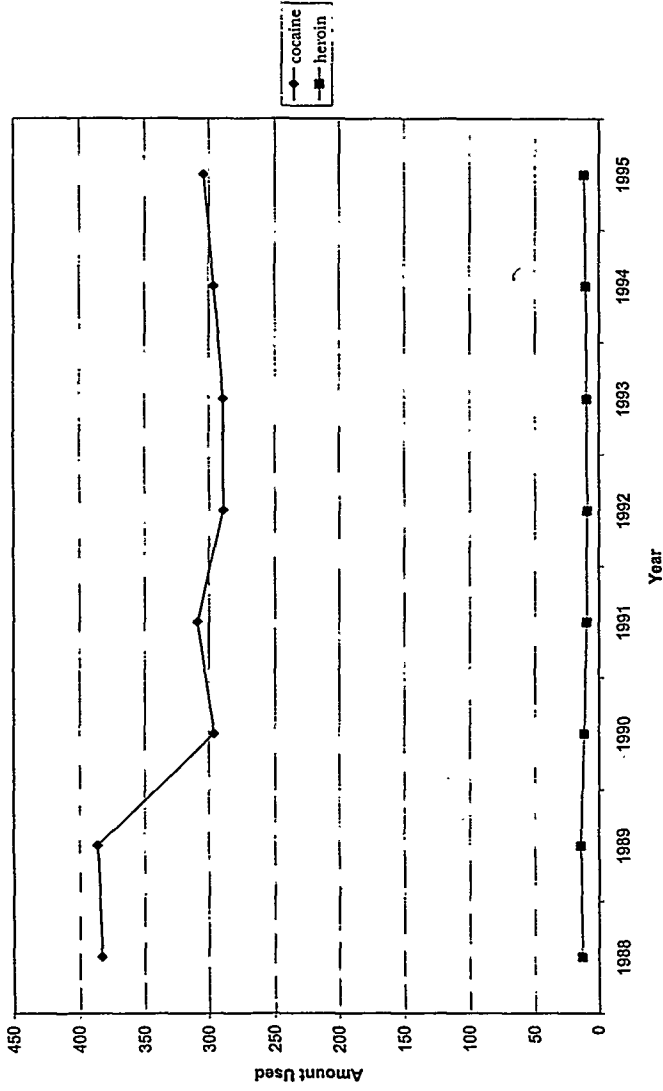
Figure 4

Total U.S. Expenditures on Cocaine and Heroin, 1988-1995 ($ in billions, 1996 dollars)
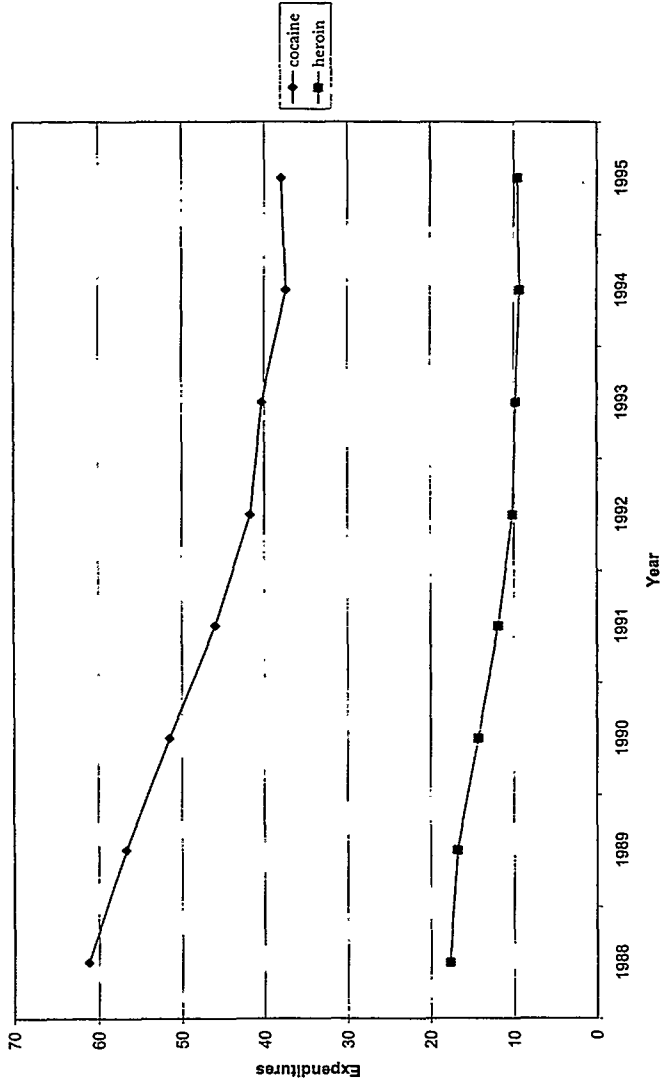
Figure 5

Total Amount of Cocaine and Heroin Used, 1988-1995 *(in metric tons)*

costs of production.[32] The reduced demand would likely be the product of learning about the harmful effects of the drug, as well as various policy measures designed to discourage consumption. While admittedly the data about the drug trade may be too inaccurate to rely upon, it doesn't provide a simple story that coincides nicely with the *drop* in crime (even though the expanding drug trade and the consequent arming of urban juveniles does explain the initial increase in the second half of the 1980s).[33]

Note, too, that if the drug data are to be believed, the drop in violence is not the result of police pressure driving up the price of crack. If this were the case, consumption would fall and prices would rise. But, at least since 1990, prices have fallen and consumption has stayed constant. Thus, as we think about the possible influence of more or more effective police, it appears that any such effects were not more effectively focused in the 1990s on drug *dealers*, since *supply* seems to have *increased* (although police actions directed at drug *users* may have cut *demand*).

---

[32] Richard Curtis states that "The configuration of the drug markets in the mid-1990s appreciably reduced the level of neighborhood violence. As distribution retired indoors, turf battles were eliminated, and since organizers of drug businesses hired a few trusted friends rather than easily replaceable workers, there was less conflict between them. Distributors were robbed by users less frequently because they were more protected selling indoors to known customers." Richard Curtis, *The Improbable Transformation of Inner-City Neighborhoods: Crime, Violence, Drugs and Youth in the 1990s*, 88 J. CRIM. L. & CRIMINOLOGY 1233, 1268 (1998). One factor that could have allowed these cheaper modes of operation for drug dealers was the declining number of occasional users of cocaine. The Office of National Drug Control Policy reports that from 1988-1995, the number of estimated occasional users of cocaine (including crack) fell from six million to three million. WILLIAM RHODES ET AL., OFFICE OF NATIONAL DRUG CONTROL POLICY, WHAT AMERICA'S USERS SPEND ON ILLEGAL DRUGS, 1988-1995 8 tbl. 1 (1997). This means that the crack distribution networks could retrench with this decline in the number of occasional users, who are less known to the dealers, and therefore more costly to service.

[33] The reason for the stabilization of the drug market is unclear, especially since frequent arrests (and ultimate release) of major drug dealers would continue to provoke new battles over turf. Perhaps the stabilization merely reflects the time it takes a newly created illegal market to mature. Or perhaps the falling price of cocaine reduced the vigor of turf battles and diminished the amount of robbery and burglary to which users were forced to resort.

b. More and Better Police?

I have previously expressed some doubt (based on limited data) concerning the argument that increasing numbers of police can explain the drop in crime, but there is much discussion of the improved quality of policing. Temporally, the story that the New York police made a breakthrough in police strategy and that others have emulated these practices does have some support. William Bratton, who is widely regarded as having introduced the new police strategies first as the head of the Transit Police and then more broadly upon becoming Commissioner, assumed full command beginning in 1994, about the time of the sharpest crime reductions in New York City.[34] The ideas that he embraced were certainly in the air at the time, and perhaps the other cities that have experienced similar reductions in crime, such as Houston, were implementing them as well.[35] On the other hand, the cities of Los Angeles and Washington, D.C. did not change policing strategies and crime fell considerably in both cities as well—buttressing the view that a decline in crack-associated violence has caused the crime decline.[36]

---

[34] The story in New York is confounded by the fact that the *number* of police was growing sharply at the time crime fell, so it is unclear whether the increased police presence or the different policing strategy caused the crime reduction. *See supra* notes 10 and 13.

[35] Between 1991 and 1996, the number of murders in Houston dropped by 59%, while between 1992 and 1996, murders in New York City fell by 51%. Fagan et al., *supra* note 15, at 1282 fig. 1.3.

[36] *See* Fox Butterfield, *Drop in Homicide Rate Linked to Crack's Decline*, N.Y. TIMES, Oct. 27, 1997, at A12 (noting that a Justice Department study found that "the close link between crack and homicide may be a fundamental dynamic that explains why homicide rates have declined not only in cities like New York, which have instituted aggressive police strategies, but also in cities like Los Angeles, where the police have been demoralized or have not adopted new methods"); Risen, *supra* note 11, at A1 ("Violent crime in the United States dropped 7% in 1996, the fifth straight annual decline . . . . Los Angeles reflected the national trend . . . . All categories of serious crime, as measured by the FBI's overall crime index, fell by 11.6% in Los Angeles last year [1996]"). *See also Defeating the Bad Guys*, ECONOMIST, Oct. 3, 1998, at 35 (noting that "crime in Washington, D.C., has fallen as fast as anywhere, although the police department has been corrupt and hopeless").

c. Declining Alcohol Use

Robert Parker and Randi Cartmill have compiled a large set of findings in support of the view that decreasing alcohol use is one of the factors contributing to the recent drop in crime.[37] There is certainly enough suggestive evidence of a link between alcohol and violence to make this inquiry worth pursuing in detail, and Parker and Cartmill have done an excellent job in canvassing the work in this area to which they have contributed significantly. Figure 1 of their paper suggests that per capita alcohol consumption began declining at roughly the time that crime peaked, which may suggest that the decline in drinking was part of the long-term decline in crime that we have referred to as the post-1977 trend. Of course, the difficult question that must always be confronted in exploring such issues is whether the observed link between alcohol consumption and crime is causal or purely correlational. For example, Parker and Cartmill cite a finding that the density of liquor stores in a city was a significant predictor of the change in homicide rates.[38] But one could imagine that the liquor stores are an indicator of the degree of social decay, and that when random malign events strike, such as the emergence of the crack trade, the degree of social decay predicts the magnitude of the increase in homicide. If liquor stores are just serving as a proxy for social decay, then other measures of social decay might show a similar correlation with murder, even though no causal link would be apparent. For example, the number of potholes on the street, the presence of a methadone clinic, or the number of check-cashing stores might all correlate with homicides without causing crime. The possibility of such a problem is reflected in Parker and Cartmill's finding that wine consumption is associated with *less* crime, which they note "probably reflects the social class position of wine drinkers rather than any preventive effect of wine consumption for white homicide."[39] While I agree with their

---

[37] Robert Nash Parker & Randi S. Cartmill, *Alcohol and Homicide in the United States: 1934-1995—Or One Reason Why U.S. Rates of Violence May Be Going Down*, 88 J. CRIM. L. & CRIMINOLOGY 1369 (1998).

[38] *Id.* at 1366.

[39] *Id.* at 1383.

specific conclusion, it could also be the case that other findings of a positive link between alcohol and homicide are similarly the product of the social class of the drinkers.

While teasing out the causal influence of alcohol on crime is quite difficult, Parker and Cartmill note that a growing array of different studies across time and in different geographic areas buttress their conclusion that there is such a causal link.[40] My own sense is that the social costs of alcohol consumption are enormous—indeed the social costs of the deaths caused by drunk driving may outweigh the social costs of murder.[41] Therefore, steps to reduce alcohol consumption are likely to be very worthwhile, even if the link between street crime and alcohol is not definitively established. In light of the framework that I have advanced in this paper, it is also worth noting that while the post-1977 secular decline in crime was highly variable, the decline in alcohol consumption has been steady.[42] This suggests that any influence of the decline in alcohol consumption on crime reduction is more likely to contribute to the slow secular decline in crime rather than to the sharp decline in crime of the last few years.

---

[40] One potentially significant counterexample to their contention is that when Prohibition was repealed, consumption of alcohol soared according to their Figure 1, but crime dropped sharply. This finding may not be fatal to their case, however. First, it is possible that, when Prohibition ended, the *measured* consumption of alcohol rose more sharply than did *actual* consumption. Sales of illegal spirits could well have been widely undercounted. Second, one lesson of the late 1980s is that illegal drug markets can contribute mightily to increased crime, and it is possible that the end of Prohibition reduced crime greatly by virtue of the elimination of the illegal market even as it stimulated crime to a lesser degree through the increase in alcohol consumption.

Perhaps a useful technique for isolating the effect of alcohol consumption on crime would be to explore the effect of sharp increases in alcohol taxes, which might generate exogenous decreases in alcohol consumption, thereby making the causal link between alcohol consumption and crime more direct.

[41] In 1995, the last year for which we have data, the number of deaths caused by drunk driving was 17,596 while the number of murders equaled 21,600. SOURCEBOOK, *supra* note 1, at tbl. 3.95. If many of the murder victims are themselves criminals/drug dealers, then it is conceivable that society loses more from the potentially random deaths inflicted by drunk drivers than from murders, which might be disproportionately targeted at criminals.

[42] *See* Parker & Cartmill, supra note 37, at 1361 fig 1.

d. Social and Economic Forces

The improved economy is another possible explanation that corresponds at least roughly with the post-1993 downturn in crime.[43] This factor has probably played somewhat of a positive role, but it seems unlikely that a shift of the magnitude that we have experienced could result from this source alone.

In his interesting paper for this conference, Gary LaFree advances the broad thesis that

> [T]he postwar American crime boom occurred as a result of an institutional legitimacy crisis characterized by (1) growing distrust of political institutions, (2) rising economic stress and (3) increasing disintegration of the family. . . . If these same arguments hold for the 1990s, then the crime bust should be accompanied by evidence of increasing trust in political institutions, declining economic stress, and growing stability of families, as well as increasing support for criminal justice, education, and welfare institutions.[44]

While I found LaFree's hypothesis quite intriguing, I have argued above that the recent run up in crime in the second half of the 1980s, and possibly the subsequent fall during the 1990s, is closely related to changes in illegal drug markets—a topic that LaFree does not mention. Indeed, many of the factors that LaFree focuses on as possible explanations for the recent drop of the 1990s are probably much more plausible factors for the slow secular decline since 1977 that we see in the predicted crime line of Figure 1. The long-term social trends that LaFree focuses on are unlikely to explain the post-1993 sharp drop in crime anymore than they can explain the roughly similar drop in crime in the early 1980s (or the subsequent *increase* in crime in the late 1980s).[45] Finally, the greater trust of institutions that LaFree mentions as a cause *of* the recent drops in crime is probably at least as much caused *by* the reduction in crime— consider the benefits accruing to Mayor Rudolf Guiliani from

---

[43] The unemployment rate fell from 6.9% in 1993 to 5.4% in 1997. U.S. BUREAU OF THE CENSUS, *supra* note 29, at tbl. 652.

[44] LaFree, *supra* note 3, at 1343.

[45] Again, factors that change gradually over 30 years would not seem to be likely candidates for explaining a recent abrupt change in crime over the last five or six years.

sider the benefits accruing to Mayor Rudolf Guiliani from the good news about crime in New York City.

III. CONCLUSION

This paper has argued that over the last half century there have been two long term trends in homicide rates: an increase of roughly 4.4% per year from the mid-1950s through the late 1970s, and a modest downward trend of about 0.6% per year since then. If long-term trends told the whole story about crime, then the big story about crime occurred in the late 1970s when the sharp increase in crime was brought to a halt. Since then the slow long-term decline in homicides has been pleasant but not dramatically good news.[46] But long-term trends are only part of the story. There are also large short-term variations around the long-term trends. In fact, because the short-term run up in crime owing to the consequences of the rise of the crack trade and the arming of juvenile drug dealers and their confederates was so large, the retreat from that run up has been great. Furthermore, with the memory of the high-crime period so fresh in our minds, the recent continuing drop in crime that has taken us below the level predicted by the long-term trend seems even more dramatic. It is really this last drop below trend which is the surprise, and we must watch during the next few years to see whether it merely represents some short-term favorable phenomenon or the start of a new trend.

Even though one can tell a story that increased police effectiveness of the kind alleged in New York City[47] or a general shift away from lawlessness has improved our long-term prospects (perhaps because the unyielding pressure of increasing incarceration has finally taken its toll), at this moment there is not enough information to refute the view that we are currently experiencing a benign short-term fluctuation around the long-term trend in crime. In fact, since some of the most important factors that led to the long-term post-1977 downward trend—in-

---

[46] The slow downward trend in homicide rates is dramatically good relative to the previous upward trend, but since the reversal came two decades ago, it is no longer *news*.

[47] *See, e.g.,* Kelling & Bratton, *supra* note 10.

creased incarceration and favorable demographic changes—are likely not to be present in the future, there may be as much reason to believe that the trend in crime over the next ten years will be upward (perhaps at the rate of 1 to 1.5% per year) as there is reason to believe that more and better policing have ushered in a new era of lower crime.[48]

In any event, it should be clear that, while massive increases in incarceration undoubtedly contributed to the reversal in the late 1970s of two decades of sharply rising crime, they have had only a small effect on homicide relative to the magnitude of the short-term fluctuations we have experienced over the last two decades. Our policy tools are weak relative to the influences on crime that can operate very powerfully in the short term, as the experience of the sudden emergence of crack in the late 1980s showed. Even a substantial 50% increase in the total prison population is likely to induce only a roughly 7.5% decrease in homicides—which is almost certainly below the public's threshold of perception.[49] Furthermore, while the gains from incarceration when aggregated over many years can be large, the attendant costs are constantly rising. Doubling the prison population from 250,000 to 500,000 cost roughly $9 billion extra per year to generate a roughly 15% drop in crime.[50] The next doubling of the prison population from 500,000 to one million has

---

[48] In the post-1977 period when crime was dropping at 0.6% per year, incarceration and demographics combined would have generated a 1.5% per year drop. This implies that some other long-term phenomena were causing crime to rise by 0.9% per year (and perhaps more if the growth of public and private police were factored in). Therefore, if nothing else changed and the effect of incarceration and demographics were removed, one would expect crime to rise by 0.9% per year. If the effect of demographics proves to be somewhat pernicious in the future and if increases in the numbers of police come to an end, crime might rise by 1 to 1.5% per year. Moreover, as *The Economist* recently observed, "by 1999 the first generation of babies born when their mothers were addicted to crack will start to reach puberty. By 2000, three-fifths of black youths turning 15 will have been born to single mothers." ECONOMIST, *supra* note 36, at 35.

[49] It has frequently been true that in years of declining or stable crime, the public has been convinced that crime is rising. Marc Miller, *Cells vs. Cops vs. Classrooms, in* THE CRIME CONUNDRUM 127, 134-35 (Lawrence Friedman & George Fisher, eds., 1997). The public's inability to sense modest declines in crime, coupled with the presence of large short-term variations in crime, can make the policy of incarceration look utterly feckless, even when it provides modest benefits.

[50] Donohue & Siegelman, *supra* note 23, at 18.

cost us an extra $18 billion per year to generate another 15% drop in crime. Importantly, that second doubling cost twice as much as the first, with no sign of greater benefit! We are now incarcerating over 1.5 million prisoners, and a further doubling would cost about $55 billion. My concern is that either we will continue to rely on increasing levels of incarceration as the primary policy instrument to control crime, in which case the costs will soon rise to untenable levels, or we will desist without seeking alternative crime control strategies and crime will start rising. In the late 1960s, the country turned away from reliance on incarceration, without providing effective crime control strategies to replace it (although many ineffectual social programs were pursued). The results were disastrous, especially in light of the unprecedented difficulties posed by the growth in illegal drug markets and the movement of the baby boom generation into their high-crime years. As the children of the baby boom are about to provide a smaller dose of increased crime, we must recognize that the long-term upward influences on crime that have been restrained by increasing incarceration and greater numbers of police and security measures (both public and private) may not have abated. While one hopes that new police strategies can more successfully control crime in the future, if the recent sharp drops in crime prove to be evanescent, other avenues of crime reduction that have not played a role in the recent drop, and therefore have largely been overlooked in the current discussion, should be explored further.[51]

---

[51] *See* Donohue & Siegelman, *supra* note 23, at 27-56 (discussing the feasibility and effectiveness of producing crime reduction through promising social programs, such as pre-school enrichment programs for three-year-olds, and Job Corps training for teens. Drug legalization could probably reduce crime significantly (as it did when Prohibition ended in 1933), but the social costs of greater drug use might be very high. A social scientist might like to see if legalizing marijuana in selected states (coupled with a ban on advertising and an educational campaign designed to discourage use) could achieve some partial crime reduction without generating large offsetting social costs).