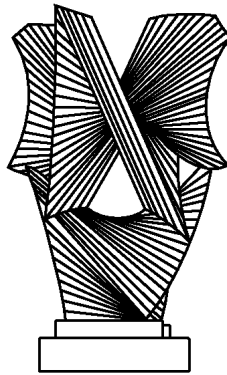


CHICAGO

LAW & ECONOMICS WORKING PAPER NO. 56
(2D SERIES)



Does a Helping Hand Put Others At Risk?:
Affirmative Action, Police Departments, and Crime

John R. Lott, Jr.

THE LAW SCHOOL
THE UNIVERSITY OF CHICAGO

Does a Helping Hand Put Others At Risk?: Affirmative Action, Police Departments, and Crime

*John R. Lott, Jr.**

Abstract

Will increasing the number of minority and women police officers make law enforcement more effective by drawing on abilities that have gone untapped and creating better contact with communities and victims? Or will standards have to be lowered too far before large numbers of minorities and women can be hired? Using cross-sectional time-series data for U.S. cities for 1987, 1990, and 1993, I find that more black and minority police officers increase crime rates. This arises because lower hiring standards involved in recruiting more minority officers reduces the quality of both new minority and new nonminority officers. The most adverse effects of these hiring policies have occurred in the most heavily black populated areas. The annual victim costs for all categories of crimes was at least \$5.4 billion. Other issues addressed are: the impact that this changing composition of police departments has on their organization as well as the murder of and assaults against police officers.

* University of Chicago Law School. I would like to thank Stephen Bronars, Tom Collingwood, Richard Epstein, Gertrud Fremling, Ed Glaeser, Linda Gottfredson, Robert Hansen, Dan Kahan, Larry Kenny, Dan Klerman, Bill Landes, Stan Liebowitz, Sam Peltzman, Paul Rubin, and the participants in seminars at UCLA, the University of Chicago, Heritage Foundation, the NBER Law and Economics Summer Institute, University of Michigan, Michigan State University, SUNY Binghamton, University of Washington, the Western Economic Association Meetings, the Southern Economic Association meetings, and my students at the University of Chicago for their helpful comments. Stephen Bronars also deserves more than normal thanks for the tremendous amount of work that he has put in helping me put this data set together. John Whitley also provided valuable research assistance.

I. Does a Helping Hand Put Others At Risk?:
Affirmative Action, Police Departments, and Crime

Using preferential standards to aid minority groups is frequently justified as rectifying past wrongs. Yet, since *Richmond v. Croson Co.* 1989,¹ the U.S. Supreme Court has held that these preferences must pass the difficult “strict scrutiny test” and will be invalidated unless they promote a “compelling” governmental interest. Correcting “societal discrimination” was not viewed as a compelling interest. Remedial efforts to rectify past discrimination will only be approved if narrowly tailored to correct specific instances of discrimination. The question of what goals constitute a sufficiently “compelling” interest has never been clearly specified by the Supreme Court, though in a very closely decided case it reversed its own past decision that FCC allocation of licenses by race is acceptable to promote diversity in entertainment and news programming and applied these high standards of strict-scrutiny and “compelling” interest to federal building projects.²

The standards set by the Supreme Court in *Richmond* and *Adarand* were motivated by the desire that “The [strict scrutiny] test also ensures that the means chosen ‘fit’ this compelling goal so closely that there is little or no possibility that the motive for the classification was illegitimate racial prejudice or stereotype.”³ One can hypothesize what compelling goals would meet these standards where there is “little or no possibility” that an ulterior race-based

¹ *Richmond v. J.A. Croson Co.*, 488 U.S. 469, 109 S.Ct. 706, 102 L.Ed.2d 854 (1989). See also Epstein (1992, pp. 429-433). Coate and Loury (1993) provide an important discussion on the costs and benefits of affirmative action policies. They rigorously list out conditions under which these policies will breakdown negative stereotypes and those cases where they will make them even worse.

² *ADARAND CONSTRUCTORS, INC., PETITIONER v. FEDERICO PENA, SECRETARY OF TRANSPORTATION, ET AL.* 515 U.S. 200; 115 S. Ct. 2097; 1995 U.S. LEXIS 4037; 132 L.Ed. 2d 158; 63 U.S.L.W. 4523; 67 Fair Empl. Prac. Cas. (BNA). This overturned the decision in *Metro Broadcasting, Inc. v. Federal Communications Commission* 497 U.S. 547, 110 S.Ct. 2997, 111 L.Ed.2d 445 (1990).

³ *ADARAND CONSTRUCTORS, INC., PETITIONER v. FEDERICO PENA, SECRETARY OF TRANSPORTATION, ET AL.* 515 U.S. 200; 115 S. Ct. 2097.

motive might be the true motivation behind an affirmative action rule, but the most obvious case would be when the racial preferences actually help to further the central purpose of the governmental agency.⁴ In the case of police, that means that minority police officers are being employed not because diversity is intrinsically valued, but because it is believed to help lower the crime rate.

The potential law enforcement advantages from multiracial or female officers seem obvious. Minority police officers may be more effective in minority areas simply because residents could be more forthcoming about information that will lead to arrests and convictions or because of the officers' ability to serve as undercover agents. Trust is also important for other reasons: as reports of riots erupting after white police officers have shot a black man may attest.⁵ Officers from a community may also be better at understanding the behavior of criminals in those areas or even

⁴ A distinction must be drawn between two different types of affirmative action programs: quotas and preferential treatment. While preferential treatment already must meet a very high threshold to be approved, the requirements are if anything even more difficult for quotas. "It is doubtful that even a federal law establishing an affirmative action racial classification would be upheld if the law used a racial quota system" (Nowak and Rotunda, 1995, p. 695).

⁵ For example, in 1996 riots erupted in St. Petersburg Florida after a white police officer shot and killed an 18-year-old black man driving a stolen car and in Leland, Mississippi after a white police officer fatally shot a black businessman named Aaron White ("Kissimmee chief wants riot gear for police: The city should learn from St. Petersburg's riots, John Sutphin said," *The Orlando Sentinel*, Saturday, April 26, 1997, p. 1 and Bartholomew Sullivan, "Shooting death prior to Leland riot ruled accidental," *The Commercial Appeal* (Memphis, TN), FRIDAY, April 18, 1997, p. A15). Further back "In 1980, one of the worst recent U.S. race riots erupted in Liberty City and spread through Miami after an all-white jury acquitted white police officers accused of killing a black man" (Angus MacSwan, "Drug gangs rule, children suffer in Miami's Liberty City," *Reuters World Service*, Friday, February 14, 1997). Of course, probably the worst recent riots occurred in 1992 after white police officers were found not guilty in the Rodney King beating.

On the other hand, having a racially diverse police department does not guarantee that these riots will be prevented. The Los Angeles Police Department's share of blacks very closely matched blacks share of the city's population in 1991 when the city had its most recent riots.

something as basic as understanding the language of immigrants.⁶ In any event, police efforts to reduce crime are surely dependent upon the help that they receive from the community (Wilson, 1983).

Rape victims or women abused by their spouses plausibly find it easier to discuss the traumatic events with women officers. Without female officers, many attacks against women may go undetected—thus lowering the cost of attacking women and resulting in even more attacks. Policing is a rare case where the government output is likely to be advanced by race or sex based preferences. Indeed, reducing reliance on cognitive tests for police entrance examinations has been justified with the motivation that “police departments cannot function effectively in minority neighborhoods when virtually all police officers are white males” (Dunnette et. al., 1996).

Another case might be education, where a frequently made claim is that a diverse student body better prepares students for a “diverse world.”⁷ These goals have also been used to justify weighting applicants by race or sex rather than their test scores. By contrast, how people use roads or machines seems likely to be unrelated to the race of those who built them. Even the case of fire departments obtaining racial diversity seems tangential to the ultimate goal of extinguishing a fire.

While the foregoing benefits are clear, there are countervailing factors that must be taken into account. Most important is whether explicit race or sex preferences result in less capable individuals being hired. For women, this might result because of less stringent physical requirements.⁸ Slower running speed might make it more difficult

⁶ Community leaders frequently claim that “We want police who know the community. We want them to spend time and become part of the community.” (Quote from Dennis L. Chinn, founder of the Asian Plaza Youth Foundation, as reported by Phat X. Chiem (1995, p. B1). The same article reports on the importance of having bilingual officers.

⁷ For example, see Katyal (1995) and Keohane (1995).

⁸ Testing of the physical strengths of men and women public safety employees consistently finds large differences. These studies indicate that “women’s strength rang[es] from 44 to 68% of men’s in the upper body and 55 to 82% in the lower body” (Landy, 1992, p. 4-56). The norming adopted by most police departments for physical fitness tests creates equal probabilities for passing by

for women to catch criminals.⁹ Weaker physical strength might cause police departments to substitute away from single officer patrol units (either foot or car) and into units with two officers. If criminals believe that they have a greater chance of resisting arrest when officers are weaker, more assaults may be committed by criminals against women officers. In compensating for their weaker strength, women may substitute into other ways of controlling criminals—the most obvious method being guns. While guns are a “great equalizer,” they may not completely offset differences in strength.¹⁰ Being less able to fall back on their physical strength to

men and women (Flannery, 1995, p. 2). The same types of rules are adopted by the military where “women recruits must run two miles in 18 minutes, 54 seconds, which is three minutes slower than the required time for men. [Women] must do 18 push-ups in two minutes and 50 sit-ups in two minutes, while men must do 42 push-ups and 52 sit-ups in the same time.”

Tom Collingwood, a consultant on physical testing standards in Dallas, estimates that between 70 and 80 percent of police departments explicitly use norming of physical standards in their hiring practices. However, he believes that most of the departments which have use objective standards do not enforce these rules. Women who fail to meet the absolute standards during academy training are unlikely to be failed out of the program. This belief was confirmed by conversations with other experts in this area (e.g., Mike Bahrke at Fitforce in Champaign, Illinois). This creates a difficult problem for testing the impact of norming physical standards because it implies that all cities really have the same standards whether they explicitly claim so or not. (See also Bahrke and Hoffman, 1997.)

Courts have also disallowed other types of tests which produce differential pass rates between men and women. For example, in a 1980 case involving the Philadelphia Police Department, the district court that it was unlawful to discharge women who “failed to achieve a passing score on the firearms qualify test” (499 F. Supp. 1196; 1980 U.S. Dist. LEXIS 16108).

⁹ The New York City Police Department is said to illustrate this point. “The department abandoned all physical screening of applicants in the ‘80’s out of fear of lawsuits by minority applicants and women. Some officers hired under relaxed testing lack the strength to pull the trigger on a gun, said Michael Julian, former NYPD chief of personnel. “There are hundreds, if not thousands, of police officers on the streets today who, when a suspect runs from them, have no other option than to call another cop, because they do not have the physical ability to pursue them,’ Julian said” (Marzulli and Lewis, 1997, p. 7).

¹⁰ A gun might not be as much of an equalizer for female officers as it is for women who use a gun defensively. Officers are frequently called upon to have

protect themselves when they are faced with a possible attack, women may have to determine whether they will fire their gun before the possible attacker gets into physical contact with them. If true, shorter reaction times risk resulting in more accidental shootings.

While the U.S. Department of Justice states that the appropriate testing procedures nearly eliminate disparate impact while improving merit hiring (Gottfredson, May 20, 1997),¹¹ critics of affirmative action in policing argue that these tests lower reliance on important cognitive skills. According to a 1993 survey of twenty-three large police and sheriff departments (conducted for the Department of Justice and Nassau County, New York), the cognitive portion of police tests have been completely removed in three cases in an attempt to increase minority recruitment. Even the remaining twenty had reduced their emphasis on cognitive skills, with all the respondents indicating “that adverse impact was considered when determining the selection process” (Dunnette et. al., April, 1993, p. 18). Using this survey to help justify its decision, Nassau County removed all cognitive tests except for a reading comprehension test, which is graded pass-fail and requires that “applicants had to score only as well as the bottom 1% of current police officers.” The Louisiana State Police replaced a cognitive exam with a test that initially contained six parts: three personality, one biographical, and two cognitive, but later threw out one of the cognitive sections to

physical contact with the criminals that they are pursuing, while women who use a gun defensively merely use the gun to keep a threatening person at bay.

¹¹ Some testing consultants back up the Department of Justice’s position, and note the different ways that questions can be worded which will hurt minority applicants. In particular, the use of double-negatives, homonyms, questions reflecting middle-class experiences, or “complex sentence structures toward the end of an exam” all work to lower minority scores (Wilson, 1996, A1).

President Clinton’s recent nominee as assistant attorney general for civil rights (Bill Lann Lee) argues that “admission standards for schooling “may not disproportionately exclude members of any race, ethnicity, or gender” unless “justified by an educational necessity and no less discriminatory but equally effective alternatives to the practice exist.” Lee argued that “[University of California] cannot demonstrate any educational necessity” for standardized tests. Clint Bolick, “A Vote for Lee Is a Vote for Preferences,” Wall Street Journal October 27, 1997, p. A23.

further reduce the impact on minorities (Price, June 13, 1997).¹² After spending “\$5.1 million to have consultants develop unbiased exams, only to have minorities fare poorly again,” Chicago moved to a heavily weighted seniority system for promoting police officers and a lottery system for hiring firefighters (Spielman, 1996, p. 16).¹³

Some academics have charged that the new tests are consciously designed “to work little better than simply picking applicants at random” so that the pass rate is the same across different racial groups (Gottfredson, May 20, 1997 and October 24, 1996). If minority applicants with low cognitive skills are hired and if these skills predict how good of a police officer a candidate would be, preferential treatment adversely affects the effectiveness of police departments. Indeed, some extreme claims have been made about the importance of cognitive skills. Expressing concerns about the poor English skills of new police recruits, a Washington Post editorial (1993, p. C8) claimed that: “Between 1986 and 1990, 311 of the 938 murder cases the D.C. police brought to the U.S. attorney’s office—roughly a third—were dismissed. . . . One local prosecutor says many D.C. cases were thrown out because prosecutors couldn’t read or understand the arrest reports [written by the police].”¹⁴ Still, some designers of the new tests defend the

¹² The Louisiana case provides a good example of how these cases work. As part of an agreement with the Department of Justice, the Louisiana State Police agreed “to set aside \$1 million to pay African Americans who failed the test and hire new troopers from among qualified African Americans who failed the test” (Shinkle, 1996, pp. B1-B2). The test that was developed by the Cooperative Personnel Services, Inc. had been used in other jurisdictions where it had been upheld as not discriminating against minority applicants by a federal judge in a Torrance, California case. The Louisiana State Police “denied the allegations of discrimination, but agreed to settle the case with the federal government ‘to avoid the burdens of contested litigation.’ “ The Department of Justice pointed to the “disparate impact” that the test was having on blacks and that the test was not job-related. From August 1991 to May 1996, “Of the 2,721 white applicants who took the test, 66 percent passed; of the 1,293 African Americans who took the test, just 25 percent passed.”

¹³ The number of people participating in the lottery is to be adjusted so as to ensure that enough minorities are found in the pool from which the new hires will be chosen (Kass and O’Connor, 1995, A1).

¹⁴ The Washington Post editorial went on to claim that: “Of the murder suspects who are indicted, many end up being acquitted because of weak cases

changes: “the validity of the cognitive ability test was not high” (Dunnette et. al., 1996).

Even more controversial are accusations that in increasing minority hires police departments have lowered standards in screening out those who might be predisposed towards corruption.¹⁵ For instance, in Chicago, while black officers make up 26 percent of the sworn police force, the African-American Police League claims that they accounted for “85 percent of the [corruption related] suspensions and firings by Internal Affairs during the last two years” (Martin, June 20, 1997, Pg. 4). The league attributes this high rate to blacks being singled out by a “racist” police department.

Affirmative action rules for student admissions and for hiring police are quite different. In education, affirmative action rules based upon race “norming” that may allow entry by lower scoring minority individuals, but they increase competition for the fewer nonminority slots. On the other hand, if the new hiring procedures in policing no longer do a good job of screening out low-quality applicants, altering hiring procedures to ensure equal pass rates among different groups could lower the quality of all new entrants. However, this does not mean that the quality of all types of new hires will fall equally, that depends upon the distribution of skills of applicants and this can change with the changing hiring procedures. If possible nonminority applicants have relatively high opportunity costs, the number of nonminorities applying for these jobs will experience a

prepared by police. Washington's Pretrial Services Agency reports that only 44 percent of the murder cases filed in 1990 and closed by the first part of 1992 resulted in convictions.”

¹⁵ Cities, such as Chicago, have faced a concerted effort by gang members to infiltrate local police forces. While “not a new phenomenon,” gang members appear to be having some success recently (Oclander, 1995, p. 22).

Chicago was forbidden by a 1976 court ruling from conducting background investigations into future applicants' past arrest records because such information disproportionately disqualified black applicants by a two-to-one ratio. The District court in the Chicago case wrote: “When requirements for employment have such a disproportionate impact, they must be defined so that their validity can be determined.” The court found that the city had failed to meet this requirement with regard to past arrest records and thus ordered a permanent injunction with respect to these and other background investigations. (411 F. Supp. 218; 1976 U.S. Dist.)

relatively smaller increase, and there will likely be a smaller change in the average quality of nonminority applicants.

The existing human resource literature attempts to relate different test scores to performance. This paper asks a similar question, but tries to directly measure the relationship between the changing racial and gender composition of police departments and the crime rate. As mentioned above, there are possibly opposing forces, and the net effect is not obvious and they may not be the same for all crime categories. For example, it is possible that women police officers deter rapists better than they deter armed robbers. In addition, this paper seeks to provide a comprehensive picture for why the changing demographic characteristics of police departments impact crime rates in the way that they do. Alternative explanations for the results are examined, such as whether any observed higher crime rates merely reflect higher reporting rates and whether police experience levels is affected by the altered hiring policies. I also examine how changing gender and racial compositions alter how police departments operate and other measures of effectiveness such as arrest rates.

II. The Changing Composition of Police Departments

During 1987, 1990, and 1993, the U.S. Department of Justice conducted a comprehensive national survey of state and local law enforcement agencies with 100 or more officers (known as the "Law Enforcement Management and Administrative Statistics" (LEMAS)). My study focuses on city police department data as it allows a more precise study of the relationship between how police departments were organized and the crime rate. By contrast, state and county departments are more difficult to investigate as they have jurisdiction over larger but overlapping areas.

I separated the data into two sets: 1) the entire Justice Department Survey and 2) a subset where demographic data are also available. The results that we report are considerably more statistically significant and empirically important when using the entire Department of Justice survey, yet I will focus on the subset with the demographic data as changing demographics are related to both the changing hiring patterns by police departments and crime.

Two characteristics stand out from the survey: city police departments vary greatly in their racial and gender make-up, and there have been large increases in the percent of black and women officers. Tables 1 and 2 illustrate these two points, with Table 1 illustrating the distribution of the racial and gender composition of police departments and Table 2 examining the distribution of the change in the composition. The first table shows that while most departments have no blacks, Hispanics, and Asians, the range is large with the 10th and 90th percentile departments respectively employing 0 and 18 percent blacks. The diversity for women officers is not quite as large, ranging from 0 percent at the 10th percentile to 14 percent at the 90th.

It is possible to subdivide these categories even further, but some of racial and sex categories have very small changes in the total number of officers. In my restricted sample, 189 cities had detailed employment data within each race category by sex for both 1987 and 1990. These cities employed 155,071 (or 40 percent) of the 387,534 sworn full time officers employed by local governments in 1990. As examples of the small number of officers in some of these subgroups, the number of male American Indian officers between 1987 and 1990 grew from 280 to 378 officers; for female American Indians the change was from 47 to 91; and for female Asian Americans, 83 to 203. Even Hispanic females, the next largest category, saw an increase of only 378 officers. The number of male white officers, the only category to decline, fell by 6,912.

The second table illustrates the different rates of changes over time as well as the impact of the consent decrees which the Department of Justice entered into with city police departments regarding a city's hiring and promotion practices.¹⁶ Past work has studied the effect of these decrees on hiring of black men, and found that indeed they do have an impact (Lewis, 1989). The Department of Justice's Civil Rights Division provided information on both racial and/or gender based consent decrees over the period from 1972 to 1994: 19 of these 189 cities were covered by consent decrees during

¹⁶ These decrees are contracts that the Department of Justice and cities have signed that have been approved by a court, which obligate the city to act in certain ways in the future.

Table 1: The Race and Gender Composition of Police Departments

| The Distribution of Race and Gender Characteristics for Police Departments (The entire sample has 4158 city/year observations for 1987, 1990, and 1993. The sample for which yearly demographic estimates are available from the Current Population Survey contains 664 city/year observations: 204 Police Departments in 1987, 240 in 1990, and 220 in 1993.) | | | | | | |
|---|---|---------------|---|-----------------|---|--|
| 10th Percentile | | Median | | 90th Percentile | | |
| | Sample for which Yearly Demographic Estimates are available | | Sample for which Yearly Demographic Estimates are available | | Sample for which Yearly Demographic Estimates are available | |
| | Entire Sample | Entire Sample | Entire Sample | Entire Sample | Entire Sample | |
| % of the Police Force that is Asian Pacific | 0% | 0% | 0% | .63% | 1.5% | |
| % of the Police Force that is Black | 0% | 1.3% | 0% | 18.3% | 26% | |
| % of the Police Force that is Hispanic | 0% | 0% | 0% | 8% | 14.5% | |
| % of the Police Force that is White | 72% | 65% | 98.5% | 100% | 96.5% | |
| % of the Police Force that is Male | 86% | 86% | 97% | 100% | 96.6% | |

Table 2: The Changing Racial Composition of Police Departments

The table illustrates the distribution of the changes in the racial composition of police departments with and without consent decrees that occurred from 1987 to 1993. (This table again breaks down the sample on the basis of the complete Law Enforcement Management and Administrative Statistics Survey and those cities for which information on changing city demographics are available. The table shows the change in the racial and gender compositions of police departments. The entire sample contains 333 cities without consent decrees for which information is available for the same city for all three years. 21 cities with consent decrees meet this criteria. By contrast, the restricted sample that is used for the regressions contains 163 and 19 cities in these two categories, though it produces very similar results.)

| | Change at the 10th Percentile | | Change at the Median | | Change at the 90th Percentile | |
|--|-------------------------------|----------------|----------------------|----------------|-------------------------------|----------------|
| | No Consent Decree | Consent Decree | No Consent Decree | Consent Decree | No Consent Decree | Consent Decree |
| Percentage Point Change in the % of the Police Force that is Asian Pacific | -6 | -.23 | 0 | .2 | 1.0 | 1.8 |
| Percentage Point Change in the % of the Police Force that is Black | -6.8 | -.2 | .73 | 3.2 | 6.0 | 18.2 |
| Percentage Point Change in the % of the Police Force that is Hispanic | -.14 | -.12 | .7 | 1.1 | 5.4 | 7.0 |
| Percentage Point Change in the % of the Police Force that is White | -11.5 | -21 | -2.3 | -5.9 | .98 | -.7 |
| Percentage Point Change in the % of the Police Force that is Male | -5.3 | -6.3 | -1.1 | -2.8 | 6.4 | 0 |

the 1987 to 1993 period, though only 3 of these cities had consent decrees imposed during the course of 1987. The 19 cities were Birmingham, Ala.; Montgomery, Ala.; Los Angeles, Ca.; San Francisco, Ca.; Ft. Lauderdale, Fl.; Pompano Beach, Fl.; Miami, Fl.; Tallahassee, Fl.; Macon, Ga.; Chicago, Illinois; Indianapolis, IN.; Jackson, Miss.; Omaha, NE.; Las Vegas, NV.; Syracuse, NY; Cincinnati, OH.; Philadelphia, PA.; Memphis, TN.; and Milwaukee, WI.¹⁷

The clearest impact appears for both blacks and women. The median change in the percent of black police officers was 2.5 percentage points more in cities with consent decrees than those without them, and for women the median increase was 1.7 percentage points more. These may seem like small changes in the share of police employment going to these groups, but compared to the median percent of black and women officers over this seven year period, these changes represent at least a 57 percent increase over past employment practices.

Finally, despite the large difference in sample sizes between the entire sample and the restricted one, both sets experienced remarkably similar changes in types of officers employed during this seven year period. This similarity occurs despite the cities in the smaller sample averaging about 40 percent more people.

III. Explaining Changing Crime Rates as a Function of The Racial and Gender Composition of Police Departments

The FBI's Uniform Crime Report allows us to study violent and property crimes, with 7 primary crime categories (murder, rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft), and 10 other subcategories (manslaughter, forcible rape, attempted rape, gun robbery, knife robbery, other robbery, strong arm robbery, assault with a gun, assault with a knife, and other

¹⁷ I tried a regression that predicted which cities would have consent decrees imposed upon them. The most important factors were city size, whether the city was the largest city in a state, and Republican presidential administrations tended to impose consent decrees on Democratic states while Democrat presidential administrations tended to impose consent decrees on Republican states.

assault). The results from most of these subcategories will not be reported because they differ little from the results shown for the primary categories. Data on arrest rates for 10 of these broader categories as well as the city populations were obtained directly from the FBI.

The Current Population Survey was used to determine the changing demographic make-up of cities over the 1987 to 1993 period. The percent of the population in different demographic categories was broken down by age (less than 30 years of age, 30 to 54 years of age, and 55 and older), race (black, white, and other), and sex (male and female) so that this information was available for eighteen categories. This survey also provided information on the average weekly wage and the unemployment rate. The National Conference of Black Mayors provided me with copies of their entire national roster by year so that the race of a city's mayor could be identified. Finally, the LEMAS survey provides information on the racial and gender composition of police departments as well as on the per capita number of sworn police officers as well as other departmental characteristics. The means and standard deviations for these variables are shown in the Appendix.

Table 3 shows simple regressions that use a simple time trend for the number of years after a consent decree has been imposed and a similar time trend for the years before the decree to pick up changes in before and after trends in crime rates. To do this, I used yearly violent and property crime data for 1985 to 1994 for 495 cities, a longer period than is available for the LEMAS survey. Two sets of fixed effects were used for these simple regressions: city and year fixed effects and city fixed effects along with separate year fixed effects for each state to control for any individual state trends. These regressions use ordinary least squares weighted by city population. The results for both violent and property crime rates imply that crime rates were declining in cities before consent decrees were imposed and were rising thereafter. Violent crimes were rising after the consent decrees by at least 3.3 percent per year and for property crimes it was at least 2.1 percent per year. The differences in trends are all statistically significant at the .01 level.

Table 3: Changes in Crime Rates for Cities With and Without Consent Decrees for the Period 1985 to 1994: Using Only Fixed Effects

(The first number is the annual change in crimes per 100,000 people, while the second number is the change as a percent of the mean crime rate. Absolute t-statistics are shown in parentheses. The regressions use weighted least squares.)

| Crime Rates Per 100,000 People | Time trend for years before the consent decree went into effect (negative values imply that crime was falling until the decree went into effect) | Time trend for years after the consent decree went into effect (positive values imply that crime was falling until the decree went into effect) | F-test (Prob > F) that before and after time trends are different | Adj-R ² | Number of Observations |
|---|--|---|---|--------------------|------------------------|
| Controlling for City and Year Fixed Effects | | | | | |
| Violent Crime Rate | -138.6 -5.3% (4.204) | 126.1 4.8% (11.433) | 36.35 (.0000) | .7939 | 4947 |
| Property Crime Rate | -593.4 -9.4% (6.257) | 172.2 2.7% (9.346) | 57.37 (.0000) | .7719 | 4947 |
| Controlling for City Fixed Effects and Separate Year Fixed Effects for Each State | | | | | |
| Violent Crime Rate | -60.85 -2.3% (1.195) | 86.05 3.3% (7.901) | 7.10 (.0078) | .8738 | 4947 |
| Property Crime Rate | -464.0 -7.4% (5.998) | 133.76 2.1% (8.085) | 50.94 (.0000) | .8845 | 4947 |

Using the smaller sample that matches the LEMAS survey and just the time trend for years after the imposition of the consent decree produces similar, though smaller and less statistically significant increases in crime. Controlling for changing city level demographics as well as the average weekly wage, unemployment, per capita number of police officers, city population and population squared, and city and year fixed effects can be controlled for, implies: violent crime rises by 1.9 percent (t-statistic = 2.16) and property crime by 2.1 percent (t-statistic = 2.99) for each additional year the consent decree is in effect.

One difficulty with assessing the impact of changing police departments' race and gender compositions on crime is to judge whether certain types of officers are being hired to deal with particularly difficult crime situations. For example, despite the legal prohibitions against giving officers assignments based upon their race, Fyfe (1981) claims that black police officers in New York City are disproportionately assigned to heavily black populated areas of the city which also happen to be the most dangerous. If departments hired minorities because of growing crime problems in minority areas or hired women because of greater crimes against women, simple ordinary least squares estimates risk improperly blaming some of the higher crime rates on the new police who were hired to help solve the problem. To explain this problem differently, crime rates may have risen even though a city hired black officers, but if they had hired white officers who were less capable of policing minority areas, the crime rate could have risen by even more. On a less positive note, higher crime rates may signal less concern about crime, and thus a greater willingness to indulge other objectives in hiring police officers.¹⁸

The opposite relationship between crime rates and hiring practices is also possible. Additional law enforcement efforts have a greater effect on crime in high crime areas (Lott and Mustard, 1997, pp. 28 and 29). If affirmative action actually increases crime, high crime areas would find it more costly to engage in affirmative action and thus, everything else equal, one suspects that they would engage

¹⁸ There are also questions about whether some officers have stronger preferences for policing certain types of communities based upon their level of crime.

in less such hiring. Failure to control for why the particular composition of police officers was chosen would underestimate the negative impact from this policy.

To guard against this problem, I employ two-stage least squares where the first stage regression attempts to explain the percent of black, minority (black, Hispanic, and American Indian), or male officers employed by a city. As discussed in Section II, I expect that the imposition of a consent decree and the length of time that the decree has been in effect to help explain the levels of minority or female employment depending upon type of employment the consent decree deals with. The effect of various crime rates on the type of police officer hired was controlled for by including the natural log of the one year lagged violent and property crime rates as well as the lagged specific crime rate explained in the second stage regression. I also account for the demographic composition of the city's population; whether its mayor was black; the city's population and population squared; and the per capita number of sworn police officers. The second stage regression which explains each one of the individual crime rates then included all the variables except for whether there was a the consent decree, the mayor's race, and the crime rates. Weighted least squares, where the estimates were weighted by city population, were used to deal with heteroskedasticity.¹⁹

The coefficients on the percent of the police force that are black, minority, or male in the second stage regressions are thus adding the impact of the consent decree together with that particular group being studied on the crime rate. I will disaggregate these two effects later when I report the reduced from regressions in Table 8 and the appendix.

Admittedly, there are many location-specific and year-specific differences in crime rates that are not captured by the variables controlling for demographic, income, and population differences. One simple way of dealing with this is the use of location and time fixed effects, where a separate dummy variable is used for each city and year. However, this approach also has its drawbacks: while it

¹⁹ Similar estimates are produced if unweighted estimates are reported, but this data exhibits definite heteroskedasticity with the smaller cities reporting a much greater variation in crime rates over time.

may correctly measure left-out variables, it may also cause us to falsely attribute some of the impact of changes in our other variables (for example, the impact of changing racial or gender composition of police departments) to these fixed effects. To deal with this concern, all the regressions report time and location fixed effects. However, while I report only city and year fixed effects or county fixed effects with separate year fixed effects for each state, I tried three different types of location fixed effects: city, county, and state. Generally, using the broader measures of location produced estimates that agreed in sign with the city fixed effects, but the estimates were larger and more statistically significant. To deal with possible state level trends in laws, I also tried allowing a separate fixed effect for each state for each year, though when combined with county or city fixed effects this dramatically reduces the degrees of freedom in each regression. Only the time varying state fixed effects are reported with the county fixed effects because none of the estimates on any of the focus or control coefficients were statistically significant with city fixed effects.

As an example, the two-stage least squares estimates examining the percentage of the police force that is black with city and year fixed effects thus take the following form:

$$\% \text{ Police Force that is Black} = g(\text{Consent Decree in Effect, Number of Years Decree in Effect, Dummy for Whether Mayor is Black, Crime Rates Lagged by One Year, Per Capita Number of Sworn Officers, City's Demographic Composition, Population and Population Squared, Fixed Year and City Effects})$$

(First stage)

$$\ln(\text{crime rate}) = f(\% \text{ Police Force that is Black, Per Capita Number of Sworn Officers, City's Demographic Composition, Population and Population Squared, Fixed Year and City Effects})$$

(Second stage)

The results from the second stage are reported in Table 4, separated out by the type of fixed effects employed. All crime rates are in natural logs, where .1 is added to zero values before the natural log is taken. With the exception of motor vehicle theft, an increase in the percentage of a police force that is black is consistently

associated with significant increases in crime. The effect is so large that eighteen of the specifications imply that a one standard deviation change in the percent of the police force that is black increases the corresponding crime rates by at least 10 percent of its mean value (see the percentages listed next to the coefficients). The effects are dramatic no matter how one examines these estimates. For example, increasing black officers' share by one percentage point increases property crimes by eight percent, and the same increase raises the murder rate by 4 percent and overall violent crime by 7 percent. As the median increase in black officer's share of police departments during this seven year period was 3.9 percentage points, I conclude that if nothing else had changed, the average city's murder rate would have risen by 16.4 percent.²⁰

One point should be made very clear at this point. We are talking about the impact on crime of hiring "additional" blacks, many of whom would not have been hired without the consent

²⁰ One concern raised to me by Ed Glaeser is whether the results are being driven solely by time series changes in the data and whether these results are consistent across the years being studied. To test this, I reran the regressions shown in Table 4 with fixed state effects separately on the data for each of the three different years. The pattern for blacks is very similar to those already reported, and, with the exception of manslaughter the results are very consistent across years. The results for 1987 are as follows: for violent crimes the coefficient is 5.7 (t-stat=2.139); property crimes, 8.5 (t-stat= 3.68); murder, 14.12 (t-stat=3.308); manslaughter, 13.41 (t-stat=2.572); rape, 8.88 (t-stat=3.017); robbery, 12.3 (t-stat=3.564); assault, 2.422 (t-stat=.784); burglary, 10.58 (t-stat=3.80); larceny, 5.24 (t-stat=3.166); and motor vehicle theft, 9.599 (t-stat=3.178).

The results for 1990 are as follows: for violent crimes the coefficient is 2.814 (t-stat=1.22); property crimes, 5.6 (t-stat= 3.269); murder, 10.05 (t-stat=2.65); manslaughter, 8.46 (t-stat=1.77); rape, 1.39 (t-stat=.764); robbery, 5.16 (t-stat=2.020); assault, 1.897 (t-stat= 0.685); burglary, 6.55 (t-stat=3.327); larceny, 4.71 (t-stat=2.881); and motor vehicle theft, 5.14 (t-stat=1.941).

The results for 1993 are as follows: for violent crimes the coefficient is 4.22 (t-stat=2.412); property crimes, 3.53 (t-stat= 3.541); murder, 2.33 (t-stat=1.00); manslaughter, -7.1 (t-stat=-1.40); rape, 5.95 (t-stat= 2.542); robbery, 4.26 (t-stat=2.236); assault, 4.7 (t-stat= 2.147); burglary, 4.37 (t-stat=3.346); larceny, 3.20 (t-stat=2.983); and motor vehicle theft, 2.42 (t-stat=1.191).

Similar results are also produced for the percent male and the percent minority specifications.

Table 4: Using Two-stage Least Squares to Take into Account the Impact that Consent Decrees and the Presence of a Black Mayor Have on the Composition of Police Departments

(The second stage regression estimates that are reported below account for the same variables controlled for in the first stage regression except for the consent decree, the number of years since the consent decree went into effect, and whether the city's mayor is black, which were instead included in the first stage regression. The other variables controlled for were the percent of the population in different demographic categories that were broken down by age (less than 30 years of age, 30 to 54 years of age, and 55 and older), race (black, white, and other), and sex (male and female) so that this information was available for eighteen categories, the average weekly wage, the unemployment rate, and city population and population squared. The absolute t-statistics are shown in the parentheses below the coefficient estimate, with the percent of the endogenous variable's mean that can be explained by a one standard deviation change in the exogenous variable shown in the adjacent column. All regressions use weighted least squares where the variables are weighted by the city population. For the percent of officers that are black or minority, the sample size is 591 and covers the years 1987, 1990, and 1993. For the percent of officers that are male over that period, the sample size is 598.)

| | % of the Police Force that is Black | | | | % of the Police Force that is Minority (Black, Hispanic, and American Indian) | | | | % of the Police Force that is Male | | | |
|----------------|-------------------------------------|---------------------|---|---------------------|---|---------------------|---|---------------------|------------------------------------|---------------------|---|---------------------|
| | City and Year Fixed Effects | | County Fixed Effects and Separate Year Fixed Effects for each State | | City and Year Fixed Effects | | County Fixed Effects and Separate Year Fixed Effects for each State | | City and Year Fixed Effects | | County Fixed Effects and Separate Year Fixed Effects for each State | |
| Crime Rates | Coef & t-stat | % of mean explained | Coef & t-stat | % of mean explained | Coef & t-stat | % of mean explained | Coef & t-stat | % of mean explained | Coef & t-stat | % of mean explained | Coef & t-stat | % of mean explained |
| Violent Crime | 7.20 (2.80) | 12% | 9.594 (3.90) | 16% | 3.32 (2.39) | 7% | 7.66 (4.29) | 15% | -3.08 (1.21) | 3% | -4.01 (1.66) | 5% |
| Property Crime | 8.101 (3.31) | 11% | 4.217 (2.94) | 6% | 2.95 (2.50) | 5% | 8.06 (3.37) | 13% | .354 (.169) | 0.2% | -5.99 (1.79) | 6% |

| | | | | | | | | | | | | |
|---------------------------------------|-----------------|-----|-----------------|-----|-----------------|------|-----------------|-----|------------------|------|------------------|------|
| Murder | 4.26 (1.64) | 25% | 10.70 (3.04) | 60% | 1.647 (.800) | 12% | 10.25 (2.18) | 73% | -.827 (.232) | 2% | -2.31 (.521) | 9% |
| Man-slaughter | 21.11 (2.12) | 82% | 13.3 (2.09) | 51% | 4.39 (.752) | 22% | 4.58 (2.62) | 22% | -18.67 (1.40) | 37% | -8.16 (.796) | 22% |
| Rape | 18.42 (2.01) | 55% | 5.77 (2.42) | 17% | 6.803 (1.36) | 26% | 8.19 (4.36) | 30% | -8.87 (1.01) | 14% | -2.55 (.731) | 5% |
| Forcible Rape | 15.93 (1.62) | 51% | 7.40 (1.72) | 24% | 6.70 (1.20) | 28% | 5.60 (1.81) | 22% | -6.84 (.754) | 11% | -2.22 (.353) | 5% |
| Attempted Rape | 17.50 (1.89) | 82% | 1.40 (.253) | 6% | 9.55 (1.79) | 57% | 3.14 (.780) | 18% | -6.89 (.792) | 16% | -8.3 (.935) | 27% |
| Total Robbery | 11.55 (3.54) | 23% | 11.71 (4.15) | 23% | 4.942 (2.89) | 13% | 8.19 (4.36) | 20% | -1.39 (.448) | 1% | -8.78 (1.74) | 12% |
| Total Assault | 5.41 (2.09) | 10% | 8.12 (3.26) | 14% | 2.941 (1.74) | 7% | 7.26 (3.92) | 16% | -2.94 (.766) | 3% | -.265 (.076) | 0.3% |
| Burglary | 9.43 (3.32) | 14% | 8.21 (4.47) | 12% | 5.275 (3.44) | 10% | 5.30 (4.22) | 9% | -4.83 (1.21) | 4% | -11.42 (2.10) | 12% |
| Larceny | 8.83 (2.54) | 1% | .589 (.588) | 0% | 3.013 (2.61) | 0.5% | .606 (.776) | 0% | -4.65 (1.52) | 0.3% | -5.81 (1.78) | 0.5% |
| Motor Vehicle Theft | 2.044 (0.78) | 4% | 3.10 (1.54) | 7% | -2.28 (1.39) | 5% | 1.08 (.776) | 2% | 8.61 (1.26) | 8% | -2.61 (.806) | 3% |
| Felonious Killings of Police Officers | -4.26 (1.22) | 20% | 5.82 (2.23) | 28% | -4.39 (1.99) | 27% | 3.846 (2.14) | 22% | 11.96 (1.31) | 29% | -10.31 (1.58) | 35% |
| Assaults on Police Officers | 48.14 (3.49) | 78% | .823 (.095) | 1% | 61.84 (4.47) | 131% | 6.35 (1.00) | 13% | -18.7 (1.89) | 16% | -15.31 (1.69) | 18% |
| Accidental Deaths of Police Officers | -.543 (0.29) | 3% | .315 (.242) | 1% | -.097 (.083) | 1% | -.179 (.190) | 1% | -2.00 (.742) | 5% | -4.80 (1.60) | 16% |

decree. As mentioned in the introduction, changes in testing that are used to encourage hiring more minorities can explain why these blacks are not of the same quality as previously blacks hired. It can still be true that qualified black officers are more effective, but that the new less qualified officers are associated with more crime. The large impact suggests that more than just the quality of new minority recruits or new minority promotions are affected. Changing tests to employ a greater percentage of blacks can make it more difficult to screen out lower quality candidates generally, including whites and other racial groups. Independently of the consent decree, the size of the change in black employment may thus proxy for changes in the level of standards used to hire employees in general. Similarly, changing promotion rules which favor seniority over achievement can affect morale and incentives across all categories of police officers.

For the next set of regressions, blacks, Hispanics, and American Indians were combined together to represent the share of minorities in a department. The groups included in the minority classification was decided by using a series of reduced form equations where I tested to see whether the predicted impact of the different racial groups were statistically different from each other. Generally, the coefficients for blacks, Hispanics and American Indians were not statistically different from each other, and the whites and Asians usually fit together in a separate group.²¹ More precisely, whites and

²¹ More precisely, the one group in the reduced form regression that was represented by the intercept was Hispanics. The probability that the coefficients for whites and Asians are statistically significantly different from each other at the following levels: for violent crimes it is 34 percent; property crimes, 73 percent; murder, 39 percent; manslaughter, 41 percent; rape, 78 percent; forcible rape, 79 percent; attempted rape, 5.6 percent; robbery, 31 percent; gun robbery, 15 percent; knife robbery, 4.9 percent; other robbery, 0 percent; strong arm robbery, 79 percent; assault, 66 percent; burglary, 77 percent; larceny, 68 percent; and motor vehicle theft, 98 percent. The probability that the coefficients for blacks and Hispanics are statistically significantly different from each other at the following levels: for violent crimes it is 36 percent; property crimes, 51 percent; murder, 14 percent; manslaughter, .37 percent; rape, 77 percent; forcible rape, 56 percent; attempted rape, 73 percent; robbery, 1.6 percent; gun robbery, 1.5 percent; knife robbery, 46 percent; other robbery, 56 percent; strong arm robbery, 74 percent; assault, 99 percent; burglary, 3 percent; larceny, 60 percent; and motor vehicle theft, 22 percent. The

Asians had different effects on crime in only 3 of the 19 crime categories, while blacks and Hispanics were statistically different in 5 cases. In the three cases where whites and Asians differed in their impact on crime (attempted rape, knife robbery, and other robbery), Asians had a greater deterrent impact on crime. More Hispanics and American Indians did not tend to increase crime by the magnitude shown by hiring additional black officers.

The two-stage least square estimates continue to confirm this pattern. Putting together blacks, Hispanics, and American Indians continued to produce very similar, though less significant, results compared to what we found for blacks alone. The minority portion of a police force explains less than half as much of the variation in violent and property crimes as did the percent of the police force that is black. Twenty-three of the twenty-four crime regressions imply that increasing the percentage share of minorities in a department increases crime, and the relationship is statistically significant for two-thirds of the estimates.

The last two columns in Table 4 imply that increasing the share of males in the police force decreases crime in twenty-two of the twenty-four specifications shown, though the aggregate violent and property crime categories imply a statistically significant relationship only for the time varying state fixed effects which include the county fixed effects. The specifications for murder and rape provide no significant evidence that increasing women's share of the police force increases these crimes. Using either simple county or state and year fixed effects produces a much more consistent negative

probability that the coefficients for blacks and whites are statistically significantly different from each other at the following levels: for violent crimes it is 5 percent; property crimes, 4.5 percent; murder, .12 percent; manslaughter, .01 percent; rape, 43 percent; forcible rape, 39 percent; attempted rape, 57 percent; robbery, .16 percent; gun robbery, .37 percent; knife robbery, 58 percent; other robbery, 8 percent; strong arm robbery, 62 percent; assault, 3 percent; burglary, 6 percent; larceny, 34 percent; and motor vehicle theft, .17 percent. State fixed effects were used for these estimates.

A related set of regressions is reported in Section VII, though these regressions do not have all these categories included at the same time.

relationship between higher males shares of the police force and crime.²²

Table 5 reports some of the first stage regressions that explain the percent of the police force that is black, minority, or male in the regressions analyzing violent crime with city fixed effects. The results imply that for the racial components, the number of years that a consent decree has been in effect dramatically increases the percentage of minorities in police forces. Every 10 years after the consent decree goes into effect increases the number of blacks by another 3.2 percentage points and minorities by 3.7 percentage points. These results are comparable in magnitude with those shown in Table 2. I also tried these estimates with a squared term for the number of years that the consent decree had been in effect, but including this did not noticeably alter the results. One city in the sample had consent decrees as long as 21 years (with both the sample median and the mean being about 10 years), and the estimates indicate the percentage of the police force that is black is still rising at that time. Interestingly, the election of a black mayor does not appear to significantly change the number of minority police officers and the coefficient is even negative for minorities. There is also surprisingly little relationship between past crime rates and the composition of the police force, and the t-statistics are quite small. Only past property crimes imply more blacks on a police force with a t-statistic even greater than 1.

²² Limits on the number of variables that could be handled using two-stage least-squares with STATA restricted the regressions on the larger data set to the state fixed effects specifications. (This is the data set which was not restricted to those cities for which demographic data was available.) For the regressions explaining the percent of the police force that is black and the percent that is minority, the t-statistics are usually two to four times larger than those shown in Table 4 and the effect of these groups on the crime is positive even in the rare cases where the coefficients were previously negative (e.g., the impact of minority officers on rape). For the regressions analyzing the percent of the police force that is male, the coefficients are larger but the t-statistics remain very similar in size to those already reported in Table 4. The sample size for this larger data set is 1015 observations for the regressions explaining the percent of the police force that is black or minority and 1026 for the percent of the police force that is male.

Table 5: Explaining the Percent of the Police Force that is Black, Minority, or Male:
The First Stage Regressions for the City and Year Fixed Effects Regressions in Table 4

(The regressions listed below represent just three of the different first stage regressions. In addition to the lagged violent and property crime rates, the first stage regressions also included all the other variables listed for the weighted least squares estimates. The fixed effects used in the different first stage regressions corresponded with those used in the second stage. The estimates reported below use city and year fixed effects.)

| | Consent Decree Dummy* | Number of Years that Consent Decree is in effect** | City has a Black Mayor | ln(Lagged Violent Crime Rate per 100,000 people) | ln(Lagged Property Crime Rate per 100,000 people) | F-Statistic | Adj-R ² |
|---|-----------------------|--|------------------------|--|---|-------------|--------------------|
| % of the Police Force that is Black | .020 (1.173) | .0032 (2.640) | .0002 (.034) | -.0013 (0.219) | .0124 (1.240) | 64.73 | .9642 |
| % of the Police Force that is Minority*** | .0585 (2.416) | .0037 (2.319) | -.0011 (.152) | -.00028 (0.036) | -.00012 (0.009) | 49.20 | .9531 |
| % of the Police Force that is Male | -.031 (0.696) | -.0016 (0.469) | -.0033 (.237) | -.0061 (.395) | .0148 (.570) | 2.27 | .3463 |

*A different dummy is used for whether the consent decree involves sex or race cases and is matched with the appropriate regression listed.

**Consent decrees involving race and sex are separated out and are matched with the appropriate regression listed.

***Black, Hispanic, and/or American Indian.

A possible concern with these results is that the consent decree not only directly affects the number of minorities or women who are hired, but it may also implicitly signal concerns about future crime rates. If one expects that higher crime rates can be best combated with more minority police officers, there is also the concern that this motivated the adoption of the consent decree. While this is possible, it is not clear why the Department of Justice has better information on a particular city's future crime rate than the city itself. In any case, as a check, I reestimated the regressions in Table 4 by including the consent decree dummy variable directly into the second stage regression that estimates the crime rate. However, this change has virtually no effect on the results reported previously. As a further test of the sensitivity of the results, I also tried reestimating the results in Table 4 by removing the crime rate variables from the first stage regression and the pattern of results remained similar to those already reported.²³

The question of whether more black police officers had a differential impact in more heavily black areas can be examined by interacting the percent of the police force that is black with the percent of the population that is black. The violent and property crime estimates corresponding to the regressions in Table 4 and the estimates which did not include the crime rates in the first stage regression all imply that the increase in crime from hiring black

²³ For example, in excluding the crime rates from the first stage regression, the city fixed effects regressions produced estimates for the percent of the police force that is black of 2.43 (t-statistic = 1.641) for violent crimes and 2.25 (t-statistic = 1.864) for property crimes. For the percent of the police force that is minority, the city fixed effect results were: 1.98 (t-statistic=1.810) for violent crimes and 1.86 (t-statistic = 2.055) for property crimes. For the percent of the police force that is male, the city fixed effect results were: -7.73 (t-statistic=1.012) for violent crimes and -7.9 (t-statistic = 1.042) for property crimes. As was true in Table 4, the level of significance tended to be higher for county fixed effect regressions.

The first stage regression results also remain similar to those already reported. For the regression estimating the percent of the police force that is black, the consent decree coefficient is .017 (t-statistics = .899) and the number of years that it is in effect is .0042 (t-statistic = 3.376). For the regression for minorities, the consent decree coefficient is .059 (t-statistics = 2.274) and the number of years that it is in effect is .0049 (t-statistic = 2.962). For the regression for males, the coefficients are again statistically insignificant.

officers is greatest in communities with the most blacks. For example, the violent and property crime estimates that correspond to city fixed effects estimates in Table 4 are positive and have t-statistics of 4.8 and 4.2 respectively.²⁴ Without the crime rates in the first stage, the same t-statistics are 2.2 and 2.3.

Finally, data on whether a police department was unionized and the gross salary paid per sworn officer were available, though for only 1987 and 1990. Using these two variables and the smaller data set, I reestimated the results reported in Table 4 and found very little change in the results. Neither of these variables were usually significant in explaining changes in the crime rate.

IV. Are Higher Crime Rates a Result of Less Effective Police or Greater Reporting Rates?

Unfortunately, the FBI's Uniform Crime Report Data relies on reported, not actual, crimes. The problem is potentially critical for this study, as the racial or gender characteristics of the police officers could either be altering the behavior of criminals and/or the rate at which victims report crimes. The problem is made even worse by the fact that both sides of the debate can provide explanations for the preceding results. Those favoring affirmative action can argue that the higher reported crime rates when more minorities are hired implies that the community feels more comfortable about reporting crimes. In contrast, those who believe that lower standards mainly result in less qualified officers can say that the results confirm the poor performance of the less qualified officers.

There are several ways of investigating whether the results are being driven by higher reporting rates. The simplest approach is to look at murder and manslaughter, where the under reporting is essentially nonexistent. Thus the race or sex of the police officer does not produce additional reporting. For both murder and manslaughter the results are very consistent. More minority, black, or female officers are associated with higher murder and

²⁴ The coefficients were 40.9 for violent crimes and 18.5 for property crimes. The coefficients for the same regressions without crime rates in the first stage are 13.3 and 11.9. In comparing these coefficients to those reported in the table it is important to realize that the average value of the percent of the population that is black is .139.

manslaughter rates, while more white and male officers imply lower fewer deaths. These two crimes are also the most accurately reported for another reason: if multiple offenses are perpetrated at the same time, only the most serious offense is reported. Thus if an armed robbery resulted in murder, only the murder and not the robbery is recorded.

Further, the importance of the reporting problem should vary systematically across crime categories as the loss from the crime varies. For example, suppose that a black person is making a decision on whether to report a theft to a predominantly white police department. His decision to report the crime depends upon the value of the item stolen, the probability that the item will be recovered, and the cost involved in going to the police station, including whatever difficulties might arise in how the black man might be treated by white police officers. The victim would only report crimes where either the value of the item stolen and/or the probability of recovery are relatively high. Lowering the cost of the black person reporting the crime by introducing more black officers would result in more reporting of relatively low value, low probability of detection crimes. Since the cost of making the complaint constitutes a much bigger percentage of the return to acting on relatively small harms, actions which reduce those costs have a much bigger effect on reporting minor crimes.

For at least broad categories of property crimes it is possible to make this comparison. Miller et. al. (1996) claimed that in 1992 the average larceny involved property loss of \$270, burglary \$970, and auto theft \$3,300. By comparison, the differences in the arrest rates are small: larceny 30%, burglary 21%, and auto theft 25%. These figures would imply that the biggest increase in reporting from changing the racial mix of police should occur for larceny, next for burglary, and least for auto theft. Auto theft and burglary should also tend to have relatively high reporting rates compared to larceny simply because these crimes must be reported as a condition of obtaining reimbursement from insurance companies. Yet, all of the two-stage least squares estimates in Table 4 indicate that the racial or gender compositions of the police department have the least impacts on larceny rates. Race tends to be positive and statistically significant more frequently in explaining burglary rates than in explaining larceny.

Rape is a crime where reporting creates particularly difficult complications. The two-stage least square results in Table 4 strongly imply that increasing the share of male police officers reduces the rape rate. Yet, it is conceivable that increasing the number of women police officers makes women feel more comfortable in bringing rape charges, thus making it appear that increasing the share of women police officers results in more rapes when in fact it may merely be associated with increases in the number of complaints. While we have two different categories of rape (forcible and attempted), it is not clear that the same types of distinctions can be made between these categories as were raised for the different types of property crimes. It is probably safe to say that forcible rape represents more of a loss to the victim than does attempted rape and thus, based upon the discussion involving property crimes, increasing the number of female officers would appear to increase attempted rape charges relative to forcible rape ones. On the other hand, the stigma from reporting might be greater for forcible rape than attempted rape, making it more difficult for women to come forward for forcible rape. Without some estimates on the relative returns to women coming forward, it is not possible to rank which type of reported rape is most sensitive to women changing the rates at which they report these crimes.

V. Disaggregating Further by Race and Sex

For 1987 and 1990, the Department of Justice survey determined the percent *of each racial group* that was male or female. The two-stage least squares regressions reported earlier were therefore reestimated with two changes: the previous racial or sex breakdowns were replaced one at a time with the eight new race and sex categories and all the first stage regressions included both sets of variables for whether a consent decree dealt with race or sex.

Table 6 reports the fixed county effects regressions, though the other specifications are generally similar. In an attempt to measure changes that might occur at the state level, these regressions also allow for separate state fixed effects for each year. Despite the sample size being about one-third smaller, the results are similar to those

Table 6: Using Two-Stage Least Squares to Further Examine the Differences by Race and Sex:
Controlling for County Fixed Effects and State Fixed Effects that Vary by Year

(The second stage regression estimates that are reported below account for the same variables controlled for in the first stage regression except for the consent decree, the number of years since the consent decree went into effect, and whether the city's mayor is black. County fixed effects are used, with additional separate fixed effects for each state by year to pick up any changes at the state level that might explain changes in crime rates over time. All regressions use weighted least squares where the variables are weighted by the city population. The absolute t-statistics are shown in the parentheses below the coefficient estimate, with the percent of the endogenous variable's mean that can be explained by a one standard deviation change in the exogenous variable shown in the adjacent column. Sample size is 391 and covers the years 1987 and 1990.)

| Category of Crime Being Explained | % of Police Force Black Male | | % of Police Force Black Female | | % of Police Force Hispanic Male | | % of Police Force Hispanic Female | | % of Police Force White Male | | % of Police Force White Female | | % of Police Force Asian Pacific Male | | % of Police Force Asian Pacific Female | |
|-----------------------------------|------------------------------|----------------|--------------------------------|----------------|---------------------------------|----------------|-----------------------------------|----------------|------------------------------|----------------|--------------------------------|----------------|--------------------------------------|----------------|--|----------------|
| | Coefficient | R ² | Coefficient | R ² | Coefficient | R ² | Coefficient | R ² | Coefficient | R ² | Coefficient | R ² | Coefficient | R ² | Coefficient | R ² |
| Violent Crime | 15.2 (2.582) | 22% | 54.11 (2.627) | 16% | 18.98 (2.05) | 13% | -14.90 (0.489) | 1% | -8.60 (2.553) | 35% | -55.23 (1.637) | 46% | -48.05 (1.115) | 3% | 129.1 (1.458) | 1% |
| Property Crime | 5.46 (1.759) | 7% | 25.77 (2.206) | 6% | 7.068 (1.492) | 4% | 44.80 (1.670) | 2% | -3.697 (1.925) | 12% | -23.29 (1.480) | 16% | 2.46 (.099) | 0% | 72.09 (1.276) | 0% |
| Murder | 25.75 (2.534) | 135% | 92.82 (2.77) | 97% | 24.16 (1.931) | 61% | 36.63 (0.755) | 8% | -14.187 (2.559) | 104% | -20.05 (1.777) | 79% | -89.40 (1.253) | 23% | 211.1 (1.513) | 4% |
| Man-slaughter | 30.68 (2.583) | 108% | 128.9 (2.45) | 90% | 30.44 (1.449) | 52% | 74.24 (0.777) | 11% | -22.43 (2.441) | 116% | -39.39 (1.250) | 78% | -236.33 (1.57) | 4% | 484.6 (1.653) | 6% |
| Rape | 8.84 (1.959) | 24% | 26.96 (1.864) | 15% | 11.25 (1.509) | 15% | -27.67 (0.927) | 3% | -4.746 (1.757) | 35% | -38.40 (1.547) | 59% | -34.39 (.890) | 5% | 88.36 (1.059) | 1% |
| Total Robbery | 18.30 (2.58) | 33% | 70.21 (2.727) | 25% | 17.90 (1.967) | 16% | 25.45 (0.746) | 2% | -10.07 (2.555) | 50% | -57.85 (1.629) | 59% | -90.35 (1.913) | 8% | 110.23 (1.201) | 1% |

| | | | | | | | | | | | | | | | | |
|---------------------------------------|-------------------|------|-------------------|------|------------------|-----|-------------------|----|-------------------|-----|-------------------|-----|-------------------|----|--------------------|----|
| Total Assault | 7.41 (1.79) | 12% | 22.89 (1.70) | 7% | 6.884 (1.252) | 5% | -33.27 (0.942) | 2% | -2.411 (1.194) | 11% | -55.9 (1.709) | 51% | -36.65 (.903) | 3% | 43.40 (0.496) | 0% |
| Burglary | 9.78 (2.845) | 13% | 44.2 (2.884) | 12% | 5.349 (1.140) | 3% | 56.99 (1.713) | 3% | -6.58 (2.915) | 24% | 5.63 (0.921) | 4% | -34.59 (1.07) | 2% | 171.9 (2.502) | 1% |
| Larceny | -1.03 (0.576) | 1.2% | 19.90 (1.927) | 4.6% | 9.996 (1.928) | 6% | 51.11 (1.928) | 3% | -1.251 (.911) | 4% | -17.19 (1.534) | 11% | 27.35 (1.05) | 2% | 75.53 (1.402) | 0% |
| Motor Vehicle Theft | 8.581 (1.798) | 13% | 2.817 (0.248) | 1% | -.887 (0.150) | 1% | 4.88 (.163) | 0% | -1.557 (.653) | 7% | -57.35 (1.667) | 50% | -28.43 (0.724) | 2% | -136.85 (1.581) | 1% |
| Felonious Killings of Police Officers | 3.506 (1.07) | 15% | 9.372 (0.847) | 8% | -3.15 (.618) | 7% | 23.54 (.882) | 4% | -1.125 (0.576) | 13% | 3.441 (0.298) | 8% | -28.52 (0.903) | 6% | -11.24 (.162) | 0% |
| Assaults on Police Officers | -24.16 (1.292) | 36% | 24.21 (0.418) | 7% | -38.05 (1.28) | 27% | 133.06 (0.905) | 8% | -3.05 (2.295) | 12% | 16.68 (.280) | 14% | -35.32 (1.671) | 3% | 334.5 (0.905) | 2% |
| Accidental deaths of Police Officers | -2.06 (0.818) | 9% | -7.467 (0.858) | 6% | -2.395 (.634) | 5% | -6.84 (0.372) | 1% | 1.406 (0.913) | 16% | -.3319 (.040) | 1% | 5.11 (.214) | 1% | -34.67 (0.646) | 1% |

already reported. In striking contrast with earlier results, gender plays very little role. The effectiveness of different types of police officers lies more along racial than gender lines, though there are notable exceptions for Asians where males are associated with fewer crimes and females more. Murder divides along racial lines, with more whites (both males and females) coinciding with lower death rates, but the reverse being true for blacks and Hispanics. In all but a few of cases, more blacks and Hispanics are associated with higher crime rates.

The variables explaining rape provide very little evidence that the gender of the police officer affects this crime differently. For whites and blacks, the different gender racial groups have the same coefficient signs and are statistically indistinguishable. While differences do exist for Hispanics and Asians, even here the effects do not suggest a consistent pattern with the relative impacts of male and female officers having the opposite impacts in the two cases. The strength of these results make it very difficult to believe that male and female officers have much of a differential impact on deterring rapes. While it is still quite likely that male and female officers have different skills in dealing with rape (e.g. female officers may be better able at getting rape victims to reveal details), the tests do not allow us to differentiate what the skill differences are for each gender. Victims or potential victims may also value more than simply deterrence. For example, they may value how they feel going through the process, and that is another dimension that we are unable to measure. However, even if these other attributes are significantly valued, the results presented here allow us to discuss the trade-off between the number of rapes and these other possible dimensions.

As another attempt to control for differences in law enforcement across states, I also reestimated the regressions shown in Table 6 by including variables for both the per capita state employment in corrections and the judicial system.²⁵ However, including these variables had no discernible impact on the results reported. While the impact of hiring more people in these areas in the judicial system usually reduced crime, the effect was never statistically significant. Variables to account for concealed handgun

²⁵ See Lott and Mustard (1997) for a discussion of this data.

laws, waiting periods and the length of those waiting periods in buying a gun, penalties for using guns in commissions of crimes, and cocaine prices were also included,²⁶ but only the variable for the presence of concealed handgun laws reduced crime and none of these variables appreciably altered the other findings. Passage of concealed handgun laws reduced murder rates by about 10.5 percent.²⁷ Controlling for the use of Lojack anti-automobile theft devices tended to make the results for black and minority officers more positive and statistically significant.²⁸

VI. Felonious Killing of Police, Accidental Police Deaths, Assaults on Police, and Shooting Civilians

The 174 cities that were in the sample every year averaged a felonious killing of an on-duty police officer at the rate of one every ten years, while accidental deaths (from all sources such as traffic

²⁶ *ibid.*

²⁷ Given the possible relationship between drug prices and crime, I reran the regressions in Table 3 by including an additional variable for cocaine prices. One argument linking drug prices and crime is that if the demand for drugs is inelastic and if people commit crimes in order to finance their habits, higher drug prices might lead to increased levels of crime. Using the Drug Enforcement Administration's STRIDE data set from 1977 to 1992 (with the exceptions of 1988 and 1989), Michael Grossman, Frank J. Chaloupka, and Charles C. Brown estimate the price of cocaine as a function of its purity, weight, year dummies, year dummies interacted with eight regional dummies, and individual city dummies. *The Demand for Cocaine by Young Adults: A Rational Addiction Approach*, (Working Paper, NBER July 1996). However, this data is not perfect. Because of the lack of observations for 1993, I used the drug prices for 1992. While the drug price variable was positive it was not statistically significant and its inclusion had very little impact on the relationship between the type of police officer and the crime rate. I would like to thank Michael Grossman for providing us with the original regressions on drug prices from his paper.

²⁸ I followed Ayres and Levitt's (1997) paper which identifies when Lojack was adopted so that I could control for both a dummy variable for the presence of the law and a time trend for the number of years that the law was in effect. While both variables implied that auto theft fell when Lojack was adopted, neither coefficient was statistically significant. Unfortunately, I have not yet been able to obtain the information used by Ayres and Levitt on the number of Lojack devices sold.

accidents and accidental shootings) averaged about one every twenty-seven years. Three cities New York City in 1987 and Chicago and Philadelphia in 1990 had three felonious killings of police officers in a year. Between 1987 and 1993, the number of felonious police killings per full-time sworn officer rose from .010 to .018 percent, and the number of accidental deaths per officer increased even faster from .0005 to .0028 percent. While these are large percentage increases, the amount of variation from one year to another does not imply an overall trend. With twelve observations having more than a thousand assaults in a year, a much more frequent occurrence is an officer being assaulted—though the probability fell from 26 to 22 percent.²⁹

Many studies of police shootings have focused on whether blacks and other minorities have been shot at disproportionately higher rates (Matulia, 1985, p.7). The standard view is that the higher rates at which blacks are shot by police can easily be explained by blacks being involved in crimes at higher rates, and the observation that black and Hispanic officers are more likely to engage in shootings can result from minority officers patrolling minority areas where the crime rate is highest (Fyfe, 1989, p. 478).³⁰ Indeed, if one believes that police officers are more likely to accidentally shoot civilians when their own lives are at greater risk, the issues of whether police shoot citizens and whether the police are likely to be shot or assaulted are closely related. Previous work has not examined the differences between male and female officers, and there has been an absence of evidence on which types of officers are most likely to be shot or assaulted.

To examine the issue of risks facing different police officers, the last three sets of regressions in Tables 4 and 6 use the same two-

²⁹ The cities with more than a thousand assaults against police in a year are Baltimore (all three years), Chicago (one year), Houston (one year), Los Angeles (three years), Pheonix (one year), Philadelphia (two years), and New York (one year).

³⁰ It is important to note that there are legal difficulties in assigning minority officers to specifically patrol minority areas. Such a policy would generate charges of discrimination (e.g., 411 F. Supp. 218; 1976 U.S. Dist. which writes that police department can not “segregate its personnel along black neighborhood lines any more than the City’s housing authority can foster racially segregated public housing”).

stage least squares specifications to explain the rate at which felonious killings of police officers occur, the accidental death rate for police officers, and the rate at which police officers are assaulted. Neither table provides consistent evidence that additional black, minority, or male officers are more likely to die from felonious police killings, and the estimates for accidental deaths are never statistically significant.

In contrast, a much more consistent difference between men and women is evident for assaults. In Table 4, increasing the number of women officers is consistently and significantly related to more assaults on police officers. Increasing the number of female officers by one percentage point appears to increase the number of assaults on police by 15 to 19 percent. The breakdown in Table 6 is similar, with the number of assaults on police officers being statistically significantly different between men and women for all races. Clearly, if a physical attack takes place, it is much more likely to be directed against a female officer. When weapons are involved, as is much more typically the case with felonious killings, criminals do not appear to be making as much of a distinction over whether the officer is male or female.³¹ The evidence from Table 4 weakly also suggests that black and minority are more likely to be assaulted.

While the regressions that explain attacks on police officers have controlled for the same variables used to explain all the different crime rates, the use of protective body armor could make a significant difference in the number of felonious killings of police. Unfortunately, data on body armor are not available for 1987, and thus there is only one year overlap between this data and the data that breaks down police personnel by sex for each racial group. Rerunning the felonious killing regressions shown in Table 4 with this smaller data set produces very similar results for the racial and sex

³¹ An alternative explanation for the high assault rates on women officers is that the changes in assaults are being driven by a lack of respect for women that just happens to be correlated with the changes in the number of female officers. It is difficult to measure this changing respect for women, but I attempted to do this by including the rape rate in the regressions that use the percent of the police that is male to explain the assault rate. In none of the regressions was the rape rate statistically significant, and its inclusion did not alter the coefficient on the percent male. I would like to thank Bill Landes for raising this possibility to me.

groupings and, surprisingly, in all the cases the body armor variable is very statistically insignificant with a t-statistic that is never greater than .4. One possible explanation for these results is that police officers are offsetting the greater security offered them by these protective devices through taking greater risks (Peltzman, 1975).

Finally, it is possible to match evidence on police shootings of civilians with our data on the racial and sex composition of police departments. Geller and Scott (1992) compiled data police shooting of civilians for twelve cities: Atlanta, Chicago, Dallas, Houston, Indianapolis, Kansas City (MO.), Los Angeles, New York, Philadelphia, Santa Ana (Ca.), St. Louis, and San Diego. While they provide as many as twenty years of data for Chicago and New York, our tests here are limited by the Law Enforcement Management and Administrative Statistics to 1987 and 1990, thus leaving us with only 24 observations, so any results must be viewed as very preliminary. The central concern is well summarized by Los Angeles Police Commissioner Bert Boeckmann during a debate before the city's decision to remove the 5 foot height requirement:

“Commissioner Bert Boeckmann expressed concern that small-statured officers might rely too much on their guns or partners to compensate for a lack of size and strength in dealing with uncooperative suspects. ‘Would there be more of a tendency to reach for a gun as opposed to using some other form for quieting a person she may be having an altercation with?’ he asked.” (McGreevy, 1997, p. N4)

This argument not only applies to height requirements, but raises the broader question of whether women are more likely to resort to substitute methods like guns to control criminals. To test this, I regressed the per capita number of police shootings of civilians on the percent of the police force that were black or white males as well as on: the per capita number of felonious killings of police and assaults on police; the per capita number of sworn full-time police officers; the city population; and city and year fixed effects. Felonious killings and assaults on police are used to measure the risks facing officers, with more killings and assaults implying that officers face higher costs to delaying a decision on the appropriate response to

possible threats. A similar regression was run using the percentage of the police forces that were black and white females.³²

The results reported in Table 7 imply that more black or white male officers lower the number of civilians shot, while increasing the number of white females (but not black females) implies an increase. The effects are also quite large with a one standard deviation increase in the black male share of the police force reduces civilian shootings by 1.4 per 100,000 citizens and for white males the reduction is .58 per 100,000 citizens. By contrast, a one standard deviation increase in white females increases shootings by .87. Both regressions also imply that increasing the number of felonious police killings increases the number of accidental shootings of civilians. The other results are more mixed. In the specification that includes the male share of the police force, only the coefficients for assaults and population are statistically significant.

In conclusion, the results for assaults on officers are consistent with women being physically weaker than men. Criminals are more likely to attack if they believe that an attack will successfully allow them to escape. Consistent with the hypothesis, mentioned in the introduction, that female officers have a shorter time to react to perceived threats because they must make a decision before they come into physical contact with the criminal, there is some preliminary evidence that male officers are more likely to avoid shooting civilians. Interestingly, the reduction appears to be greatest for black male police officers. More information is required to draw definitive conclusions for the deaths by police, but, compared to other officers, blacks are the more likely to die from accidents than from a criminal's attack. One test that I have not been able to

³² While the existing evidence by Fyfe and others on which types of police officers are more likely to engage in shootings is very interesting (e.g., Fyfe, 1989), there are several unresolved questions. The primary issues are that the work is purely cross-sectional, uses even smaller samples than I use here from just the largest cities, and only attempts to control for other variables through the use of conditional means. Tests comparing the percentage of police officers by race in different specialties that have engaged in a shooting find statistically significant differences between the races by assignment, but the claim is that the differences are likely to be explained away by such factors such as the different tasks being performed within each type of category (Fyfe, 1981).

Table 7: Explaining the Rate at Which Police Shoot Civilians
 (Using fixed year and city effects. Absolute t-statistics are shown in parentheses and the level of statistical significant for a two-tailed t-test are shown below that. Regressions are run using ordinary least squares.)

| Endogenous Variable | Exogenous Variables | | | | | | | | | |
|---|------------------------------|--------------------------------|------------------------------|--------------------------------|--|--|-------------------------------|----------------------------|-------------------------|-------------|
| | % of Police Force Black Male | % of Police Force Black Female | % of Police Force White Male | % of Police Force White Female | Per Capita Number of Felonious Killings of Police Officers | Per Capita Number of Assaults on Police Officers | City Population | Sworn Officers Per Capita | Adjusted R ² | F-statistic |
| Per Capita Number of Civilian Shootings | -.000135 (3.671) 1.4% | ... | -.0000543 (2.164) 8.3% | ... | .000142 (2.843) 3.6% | 2.31 e-7 (3.093) 2.7% | 7.30 e-11 (2.331) 6.7% | .0175 (1.788) 13.4% | .9379 | 20.29 |
| Per Capita Number of Civilian Shootings | ... | -.00005 (.988) 36.9% | ... | .000085 (2.072) 9.3% | .0000704 (2.109) 8.7% | -2.64 e-8 (.285) 78.7% | -2.57 e-11 (.697) 51.7% | -.00362 (.428) 68.6% | .8420 | 7.81 |

perform but which would help in evaluating affirmative action programs is additional information on police violence. We may be willing to put up with a less effective police departments if they deal with suspects in less violent ways.

VII. Might the Higher Crime Rates be Due to Changing Rules Lowering the Quality of All New Employees?

The changing crime rates may be due to additional minorities being hired, but it is also possible that increasing the minority share of police forces may be correlated with a lowering of standards for all new police officers. Thus, it might not be a greater share of police officers who are minorities that are related to higher crime, but the causation may run from lowering standards for all officers to more crime. Thus an increasing minority share is merely correlated with higher crime. Rules which base promotion less on merit may also reduce the efforts by all existing officers. This seems most plausible, if only because of the very large impacts that hiring minorities appear to have on crime.

If indeed it is the lowering of overall quality that explains the higher crime rate, the simplest way of detecting it is by examining the relationship between each group's absolute effect on a crime rate and the change in its share of the police force. If the change in a group's share of the police force was merely proxying for the overall change in the entire police force's quality, the largest coefficients would be observed for those groups with the smallest number of new police officers, while those with the largest changes would have the smallest coefficients. However, the Pearson correlation coefficient between each group's effect on murder and the change in their share of the police force is only $-.17$ and not statistically significant. The corresponding correlations for the other violent crime categories are similar: rape is $-.19$; robbery, $-.24$; and aggravated assault, $-.22$. While this evidence does not reject the spillover hypothesis, it also does not provide much support. Spillovers may explain a portion, but not all of the differences in coefficients.

Another test is to separately control for both race, gender, and the presence as well as duration of consent decrees using the reduced forms with these additional variables for the two-stage least square regressions already employed in Table 4. Given that the percent

share of blacks and whites in a police force is correlated with the presence of consent decrees and the length of time that they have been in effect, this represents a fairly conservative test for distinguishing whether rules might have an impact over and above the changing racial composition of police departments. This test is also imperfect because cities with consent decrees were not the only ones changing their hiring and promotion rules. Other cities have changed their rules either voluntarily or under the threat of being faced with a consent decree will also be changing their hiring practices. Thus, even evidence that only the racial composition variables matter and that consent decrees have no effect does not allow us to reject the hypothesis that higher crime rates is due to both.

The two different consent decree variables may also help us distinguish a couple of issues. If the variable for the number of years that the decree has been in effect proxies for the percentage of the department that has been hired under the new hiring standards, a positive impact from the number of years provides evidence that general hiring practices are important. The consent decree dummy variable is less clear in either the county or state fixed effects specifications because it could be picking either the type of city upon which consent decrees are imposed and/or the immediate impact of the new rules. If the consent decree dummy variable is measuring the immediate effect, any large changes in crime would presumably be attributed to changing the behavior of the existing police force and not simply new hires.

Table 8 reports the results for violent and property crime rates using city or county fixed effects.³³ A more detailed breakdown of the county fixed effects when the gender and racial groups are simultaneously included with the consent decree information are reported in the appendix. Despite the collinearity between the composition of the police forces and the number of years that the

³³ By comparison, the violent crime estimates using county as well as different state fixed effects for each year result in a coefficient for the percent of the police force that is black of 1.721 (t-statistic = 3.172) and for the consent decree of .3592 (t-statistic = 2.230). Similarly for the percent of the police force that is a minority the coefficient is 1.495 (t-statistic = 3.658) and the coefficient for the consent decree is .3092 (t-statistic = 1.921).

consent decrees have been in effect, certain patterns are evident in Table 8. Overall, the results imply that consent decrees raise crime rates independently of the changing racial or gender composition of the police force. For both violent and property crimes, there is evidence that consent decrees matter because they alter the behavior of the existing police force. For property crimes, the quality of the new hires produced by consent decrees also appears to matter, with each additional year that the decree is in effect raising property crimes by another 1.7 to 1.9 percent. Increasing the number of black officers on a police force independently of the length of time that the consent decree has been in effect is associated with increased violent crimes, though the inclusion of Hispanics and American Indians together with blacks to examine minorities as group produces a much smaller and not statistically significant effect.

The evidence in the appendix from the reduced form regressions when all the additional different racial and gender measures are simultaneously controlled for is mixed. While the correlation between consent decrees and race and gender does not allow us to distinguish between the different effects for the regressions using city fixed effects, the county and state fixed effects are not completely consistent with each other. In terms of consistent results, the race measures shown in the appendix generally imply that a greater share of the police force that is black, the higher the violent crime, murder, manslaughter, robbery, or aggravated assault rates. More Hispanics imply higher violent crime rates, though the effect is less consistent than for blacks. Higher shares of whites or Asians are usually associated with lower violent crime, murder, manslaughter, robbery, or aggravated assault rates. The two tables indicate that the racial share coefficients for the state fixed effects regressions tend to be larger and more frequently statistically significant. In all but two cases, when the consent decree dummies are statistically significant they are positive, though the interpretation of these results varies for the different fixed effect specifications.

In terms of consistent results, the race measures shown in county fixed effects specifications generally imply that a greater share of the police force that is black, the higher the violent crime, murder, manslaughter, robbery, or aggravated assault rates. More Hispanics imply higher violent crime rates, though, as shown in previous tables, the effect is less consistent than for blacks. Higher shares that

Table 8: Attempting to Disentangle Whether Higher Crime Rates are Due to Lower Quality of All New Employees: Using City or County and Year Fixed Effects

(While not all the coefficients are reported, these regressions are based upon the reduced forms of the regressions used in Table 4. Absolute t-statistics are shown in parentheses.)

City Fixed Effects

| Endogenous Variable | Exogenous Variables | | | | | | Adj-R ² | F-statistic |
|---------------------|---|--|--|----------------------|--|------------------------|--------------------|-------------|
| | Percent of the Police Force that is Black | Percent of the Police Force that is a Minority | Percent of the Police Force that is Male | Consent Decree Dummy | Number of Years that Consent Decree is in effect | City has a Black Mayor | | |
| Violent Crime Rate | .7873 (1.647) | ... | ... | .3286 (1.996) | .0077 (0.685) | .0737 (1.407) | .8945 | 20.51 |
| Violent Crime Rate | ... | .3816 (1.071) | ... | .3148 (1.896) | .010 (.912) | .077 (1.455) | .8940 | 20.42 |
| Violent Crime Rate | ... | ... | -.038 (.195) | .3412 (2.091) | .011 (1.096) | .078 (1.498) | .8951 | 20.86 |
| Property Crime Rate | .195 (.513) | ... | ... | .1961 (1.514) | .018 (2.054) | .054 (1.321) | .6832 | 5.96 |
| Property Crime Rate | ... | .356 (1.275) | ... | .214 (1.644) | .019 (2.214) | .055 (1.334) | .6844 | 5.99 |
| Property Crime Rate | ... | ... | .0712 (.466) | .191 (1.491) | .0175 (2.098) | .0534 (1.307) | .6884 | 6.14 |

County Fixed Effects

| | Exogenous Variables | | | | | | | | |
|---------------------|---|--|--|----------------------|--|------------------------|--------------------|-------------|--|
| | Percent of the Police Force that is Black | Percent of the Police Force that is a Minority | Percent of the Police Force that is Male | Consent Decree Dummy | Number of Years that Consent Decree is in effect | City has a Black Mayor | Adj-R ² | F-statistic | |
| Violent Crime Rate | 1.425 (3.196) | ... | ... | .4631 (3.517) | .009 (0.732) | .1532 (3.079) | .8510 | 15.68 | |
| Violent Crime Rate | ... | 1.253 (3.518) | ... | .4038 (3.044) | .0104 (.862) | .1545 (3.116) | .8518 | 15.77 | |
| Violent Crime Rate | ... | ... | -.003 (.014) | .4775 (3.607) | .0173 (1.467) | .166 (3.336) | .8486 | 15.57 | |
| Property Crime Rate | .132 (.393) | ... | ... | .1279 (1.34) | .0293 (3.406) | .082 (2.352) | .6489 | 5.75 | |
| Property Crime Rate | ... | .1286 (.504) | ... | .1325 (1.430) | .0293 (3.462) | .082 (2.359) | .6490 | 5.75 | |
| Property Crime Rate | ... | ... | .0504 (.316) | .1260 (1.385) | .029 (3.617) | .081 (2.373) | .6550 | 5.93 | |

are white or Asian are usually associated with lower violent crime, murder, manslaughter, robbery, or aggravated assault rates. The racial share coefficients for the state fixed effects regressions tend to be largest and the most frequently statistically significant of the three sets of estimates. The estimates of the impact of more male police officers varies a great deal across the three sets of estimates, with the fixed county effects and some of the fixed city effects implying a positive relationship between more male police officers and the various crime rates.

Perhaps these different results are not so surprising when different highly correlated variables are included together in one specification, but the consent decree results provide only strong support for the notion that the new rules are causing crime to rise over and above the increase that is arising from changing racial and gender composition of the police force in the county fixed effects specifications. Where the number of years that the consent decree has been in effect is significant in state fixed effect regressions, it is the opposite sign and statistically significant in 4 of the 19 crime categories. While the racial control variables produce a consistent effect, they do not allow us to differentiate whether it is really race or changing hiring rules which are driving the different crime rates.

One other result should be mentioned. Having a black mayor is associated with more felonious shootings of police officers and fewer assaults against officers in the appendix. The impact of having a black mayor on crime rates is more mixed, with the county fixed effects regressions implying that the election of a black mayor is associated with more crime for violent and property crimes generally, murder, manslaughter, most types of robbery, burglary, and motor vehicle theft. The state fixed effects regressions indicate that forcible rapes and burglaries rise, but that one category of robberies and manslaughter fall. Why the presence of a black mayor is correlated with crime is beyond the scope of this paper, but obvious questions arise over whether these mayors have less control over the police departments than did previous administrations.

These specifications were also used to examine whether more black police officers had a differential impact in more heavily black areas by interacting the percent of the police force that is black with the percent of the population that is black. The specification corresponding to the first row in Table 8 implied that hiring more

black officers produces more violent crime in more heavily black areas (the coefficient is 1.864, t-statistic = 1.922). Including the interaction has little effect on the other coefficients. These interactions imply that black officers are particularly ineffective at dealing with crime in black communities.

An important question is whether the size of the police force alters the impact of the hiring programs. For example, a large department might be able to reallocate new affirmative action hires to specific jobs where their impact on the functioning of the police force might be relatively small. This effect would presumably be most noticeable if the regressions measured the number rather than the percentage share of minority officers. However, it is not clear why increasing the share of minority officers should be easier for large departments to accommodate, and the reverse could even be true if decisions in large departments are driven more by fixed rules and race based decisions are harder to hide. To test this, I added a new variable that interacted the percent of the police force that is black with the number of full-time sworn police officers and included this variable in a version of the regressions shown in Table 8 that only included the percent of the police force that is black. I also tried similar specifications for White, Hispanic, and Asian. In none of these cases was the new interaction statistically significant.³⁴

We are thus left with a mixed conclusion. The weight of the evidence indicates that at least a portion of the crime-increasing effects of hiring minorities is picking up more general changes in the

³⁴ I also used the reduced form regressions to answer whether the impact of the consent decrees differed by either the percent of the police force that was black or the gap between the percent that was black and the percentage of the over 16 year old population that was black. To do this, I ran the reduced form regressions with the percent of the police force that is black as well as with one of two new sets of variables: either the percent of the police force that is black interacted with the presence of the consent decree and the length of time that the decree has been in effect or the gap between the percent of the population and the police force that are black interacted with these two variables. The results for the percent black that were previously statistically significant remain so, but the other variables for the consent decree and the various interactions are usually insignificant.

way all hiring and promotions are conducted, but the evidence for this is not overwhelming and cannot explain most of the impact that hiring minorities has on crime.

VIII. Measuring the Cost to Victims from the Changing Racial and Gender Compositions of Police Departments

A recent National Institute of Justice study estimates the victim costs of different types of crime based upon lost productivity; out-of-pocket expenses such as medical bills and property losses; and losses for fear, pain, suffering, and lost quality of life (Miller et. al., 1996). While there are questions about using jury awards to measure losses such as fear, pain, suffering, and lost quality of life, the estimates provide us one method of comparing the changes in different types of violent and property crimes that arise from the changing composition of police departments and allows us to estimate the total cost of these changes.

To provide a conservative estimate of these changes and provide a simple way of separating out the differential effects of the consent decree from the changing racial composition, I reestimated the regressions shown in the appendix using county fixed effects by replacing the racial and gender breakdowns with the data available for 1987 and 1990 that provided information on the percentage of officers for each race by sex (see also Table 6). Despite the reduced sample size, the results used to produce Table 9 were consistent with those shown in the appendix.

Because some of the categories involve such a small number of police officers, Table 9 examines the changes for only those race and sex groupings that accounted for at least 1 percent of all police officers in 1990. The top portion of the table lists out the predicted change in crimes from an additional police officer and compares these changes with the average number of crimes per officer for the sample. Holding constant such variables as the size of the police force and the presence of a consent decree, reducing the number of white male police officers by 6,912 people appears to have increased the number of murders by 1,145 and rapes by over 100. This however assumes that the white officers would have been replaced by the average new minority officer. In fact, the actual smaller increase in white female officers more than offset the pernicious effect of losing these white

male officers. The actual changes among white officers implies that the number of rapes should have declined by over 280.

The bottom portion of the table multiplies these estimated changes in crime by the Miller et al. estimates of victim costs from crime in 1996 dollars. The increase in violent crimes represents a loss of \$5 billion (\$4.4 billion loss from murder, \$176 million from robbery, \$453 million from aggravated assault, but a gain of \$51 million from fewer rapes), while the increase in property crimes represents a loss of \$442 million (\$333 from motor vehicle theft, \$87 million from burglary, and \$22 million from larceny). However, while \$5.4 billion is substantial, to put it in perspective, it equals only about 1.1 percent of the total aggregate losses from these crime categories. These estimates are probably most sensitive to the value of life used (in the Miller et al. study this was set at about \$3.2 million in 1996 dollars). Higher estimated values of life will increase the net costs from changing the racial and gender composition of police departments, while lower values will reduce the gains. To the extent that people are engaging in additional private actions to prevent this increased crime (Philipson and Posner, 1996), these numbers will underestimate the total savings from these changing compositions.

IX. The Impact on Arrest Rates

The effectiveness of police officers can take several different forms, but surely one of the most measurable is the arrest rate. If certain types of police officers are more productive than others, it may reveal itself in terms of higher arrest rates, though all arrests might not be equally valuable. However, a couple of issues about the arrest rate data should be addressed first. Frequently, because of the low crime rates in some of the smaller cities, it is quite common to find huge variations in the arrest rate both across cities and over years. In this sample, the arrest rate for murder ranges from a low of 5 percent to a high of 14 times the offense rate. The arrest rates for violent crimes range from 10 percent to 3.6 times the offense rate. This seeming anomaly arises for a couple of reasons. First, the year in which the offense occurs frequently differs from the year in which the arrest occurs. Second, an offense may involve more than one offender. Unfortunately, the FBI data set allows us neither to link the years in which offenses and arrests occurred nor to link offenders

Table 9: Calculating the Total Victim Costs that Arose from the Changing Composition of Police Departments

(Using the estimates that analogous to the county fixed effect regressions in the appendix, though these use breakdown the each racial category by gender and sex with the control variables that we have used through out the paper. The National Institute of Justice Estimated Victim Costs by type of crime are used to calculate these estimates. All values are in millions of 1993 dollars.) (The regressions were only able to use data for 1987 and 1990 because the breakdown by sex within each racial group was only available for those years.)*

| | | The Total Change in the Number of Crimes Due to the Changing Composition of Police Departments | | | | | | |
|---|--|--|------|---------|--------------------|---------------------|----------|---------|
| Categories of Police Officers that Constituted at least 1 percent of the Police Force in 1990 | Change in Number of Officers Between 1987 and 1990 for the 189 cities for which population numbers are available for both years (% change from 1987) | Murder | Rape | Robbery | Aggravated Assault | Motor Vehicle Theft | Burglary | Larceny |
| Black Males | 950 (5%) | 97 | 300 | 548 | 4,699 | 1,711 | -729 | -6,571 |
| Black Females | 1,135 (23%) | 483 | 96 | 6,868 | 13,149 | -8,131 | 34,618 | 64,160 |
| White Males | -6,912 (-6%) | 1,145 | 111 | 15,579 | 37,256 | -10,857 | 28,184 | -4,034 |

* Ted R. Miller, Mark A. Cohen, and Brian Wiersema, "Victim Costs and Consequences: A New Look," National Institute of Justice (February 1996).

| | | | | | | | | |
|---|-----------------|-------|------|--------|---------|---------|---------|---------|
| White Females | 1,067 (12%) | -176 | -496 | -8,588 | -11,639 | -1,759 | -15,315 | -23,024 |
| Hispanic Males | 1,283 (13%) | 180 | -365 | 8,705 | 6,119 | 98 | 8,130 | 7,670 |
| Asian Pacific Males | 1,542 (171%) | -366 | -220 | -2,877 | -5,672 | 3,474 | 2,767 | 18,164 |
| Totals | | 1363 | -575 | 20,235 | 43,912 | -15,464 | 57,655 | 56,364 |
| Crimes Per Police Officer for All Police Officers | | 0.067 | 0.34 | 2.03 | 3.23 | 4.82 | 9.6 | 24.7 |

| | The Total Cost of the Changing Composition of Police Forces from 1987 to 1990 in millions of 1996 dollars | | | | | | | Total Cost of Change by Type of Officer |
|---------------------|---|---------|---------|----------|---------|---------|--------|---|
| Black Males | \$343.8 | \$31.3 | \$5.2 | \$52.9 | \$7.6 | -\$1.1 | -\$2.9 | \$436.7 |
| Black Females | \$1,540.8 | \$9.0 | \$59.6 | \$134.2 | -\$32.6 | \$52.1 | \$25.7 | \$1,788.9 |
| White Males | \$3,654.8 | \$10.4 | \$135.3 | \$380.3 | -\$43.4 | \$42.9 | -\$1.6 | \$4,178.6 |
| White Females | -\$561.4 | -\$46.8 | -\$74.6 | -\$118.8 | -\$7.1 | -\$23.2 | -\$9.2 | -\$841.1 |
| Hispanic Males | \$576.6 | -\$34.4 | \$75.6 | \$62.4 | \$394.2 | \$12.4 | \$3.0 | \$1,089.7 |
| Asian Pacific Males | -\$1,169.4 | -\$20.7 | -\$25.0 | -\$57.9 | \$14.0 | \$4.2 | \$7.3 | -\$1,247.5 |
| Totals | \$4,385.2 | -\$51.3 | \$176.1 | \$453.1 | \$332.7 | \$87.3 | \$22.3 | \$5,405.4 |

with a particular crime. These problems create significantly more variation in the arrest rate than in the crime rate.

Tables 10 and 11 rerun the regressions shown in Tables 4 and 6 after replacing the natural logs of the crime rates with their corresponding arrest rates. While the coefficients for the percent of the police force that is either black or minority are consistently negative, Table 10 indicates that only the arrest rate for robbery is significantly reduced by black and minority police officers. A similar pattern holds for Table 11. More white officers are generally associated with higher arrest rates, while more black, Hispanic, and Asian female officers are associated with lower arrest rates, but coefficients are usually not statistically significant at the 10 percent level for a two-tailed t-test. As the share of black male officers increases, there are statistically significant drops in arrest rates for violent crime, rape, robbery, and assault. More white male officers produce a statistically significant increase in arrests for murder, and more white females significantly increase arrests for robbery. Increasing the share of Hispanic male officers consistently lowers arrest rates, but the one case where the impact of more Hispanic males approaches statistical significance is for rapes—also the one instance in Table 6 where they significantly lowered the crime rate. Overall, however, just 8 of the 72 specifications in Table 11 are statistically significant at the 10 percent level for a two-tailed t-test, and another 14 coefficients are significant at the 15 percent level.

Under the assumption that each dependent variable represents an independent test of the hypothesis (which would be appropriate for subcategories that are mutually exclusive), there is a test for significance over all regressions. The inverse chi-square test, known also as the Fisher test, can be used to assess overall significance (e.g., Maddala (1977, pp. 47-48) and Hedges and Olkin (1985)). For the seven subcrime categories shown in Table 11, this test implies that increasing the share of black male police officers significantly reduces arrest rates at the .5 percent level. For Asian-Pacific males officers, that is true at the 10 percent level. Black female officers are associated with fewer arrests for violent crime at the 1 percent level. The results for white male and female officers show that as their shares rise, so do arrest rates (these results are statistically significant at the 10 percent level).

A different approach is to ask whether the different racial and gender groupings are statistically different from each other. By this weaker standard, most of the violent crime arrest rates for blacks and whites in Tables 10 and 11 are significantly different from each other, and Table 10 shows that for murder white male officers' arrest rates are significantly higher than those for all other racial groups.

These results are certainly not as strong as those for the crime rates, but they do indicate significant differences in arrest rates between racial and gender groups. They also provide additional evidence to rule out the possibility that the higher reported crime rates shown earlier are a result of victims responding to higher expected payoffs due to higher arrest rates. Further work still needs to be done in evaluating the relative quality of different arrests.

X. How Does the Changing Racial and Gender Composition of Police Departments Alter How Police Departments are Organized?

The Department of Justice's Law Enforcement Management and Administrative Statistics survey provides a wealth of other information about police departments that can give us some insight into how changing the demographic composition of police officers alters how police departments operate. Among the information available is the percent of police patrol units (both car and walking patrols) with only one officer, the percent of police walking patrol units with only one officer, and the number of motorcycles and cars per officer. The most obvious predictions stem from the differences in physical strength of female and male officers. If there are significant differences in strength, it effectively raises the cost of having single officer patrol units. As long as the percentage of women officers is small relative compared to the number of pre-existing two officer patrol units, it is possible that women may be substituted into one of the "men's slots" in an existing two officer unit. Yet, even here substitutability might not be perfect because the two officer unit may have been set up precisely because the physical strength of two male officers was desired. Even though data on the race and sex composition of each single and two officer patrol unit is not available, it is still possible to examine how the use of these

Table 10: Explaining Changes in the Arrest Rate Using the Specifications From Table 4:
Using Two-Stage Least Squares to Take into Account the Impact that Consent Decrees
and the Presence of a Black Mayor Have on the Composition of Police Departments

(The second stage regression estimates that are reported below account for the same variables controlled for in the preceding tables except for the consent decree, the number of years since the consent decree went into effect, and whether the city's mayor is black, which were instead included in the first stage regression. The absolute t-statistics are shown in the parentheses below, with the percent of a one standard deviation change in the endogenous variable that can be explained by a one standard deviation change in the exogenous variable. All regressions use weighted least squares where the variables are weighted by the city population. Sample size is 634 and covers the years 1987, 1990, and 1993.)

| | % of the Police Force that is Black | | | % of the Police Force that is Minority (Black, Hispanic, and American Indian) | | | % of the Police Force that is Male | | |
|----------------|-------------------------------------|------------------|------------------|---|-------------------|------------------|------------------------------------|------------------|------------------|
| | Type of Fixed Effects | | | Type of Fixed Effects | | | Type of Fixed Effects | | |
| Arrest Rates | City | County | State | City | County | State | City | County | State |
| Violent Crime | -2.48 (.729) | -2.72 (1.168) | -4.15 (2.04) | -1.71 (.777) | -1.94 (1.137) | -1.56 (1.472) | 6.37 (.942) | 7.30 (.995) | 1.09 (.409) |
| Property Crime | -7.68 (.584) | -12.33 (.981) | .899 (.094) | -9.268 (1.053) | -7.186 (.847) | 3.547 (.769) | 33.54 (1.084) | 31.42 (.962) | 6.77 (.510) |
| Murder | -4.21 (1.028) | -4.58 (1.355) | -4.33 (1.875) | -5.355 (1.943) | -3.801 (1.597) | -1.21 (.922) | 9.489 (1.116) | 11.07 (1.135) | -1.037 (.301) |

| | | | | | | | | | |
|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|------------------|-------------------|-------------------|
| Rape | -5.074 (1.196) | -3.00 (.941) | -3.82 (1.64) | -1.328 (.468) | -1.46 (.681) | -1.76 (1.635) | 9.085 (1.170) | 7.0265 (1.199) | 5.679 (1.781) |
| Total Robbery | -3.98 (1.651) | -3.796 (1.901) | -5.578 (3.287) | -4.382 (2.654) | -3.985 (2.897) | -1.5875 (2.019) | 3.077 (.713) | 8.681 (1.406) | 8.3185 (2.710) |
| Total Assault | -3.176 (.896) | -5.622 (1.724) | -7.66 (3.22) | -2.31 (.995) | -.419 (.225) | -2.077 (1.874) | .77 (.125) | 9.568 (1.152) | 1.399 (.440) |
| Burglary | -.735 (.520) | -1.54 (1.151) | -.6945 (.598) | -.3095 (.325) | -.1716 (1.305) | .478 (1.070) | .562 (.225) | 4.015 (1.104) | 5.252 (2.564) |
| Larceny | 2.22 (1.146) | .0299 (.017) | -2.024 (1.341) | 1.231 (.955) | .03115 (.026) | -.6659 (.921) | -2.435 (.642) | .9277 (.228) | 9.709 (3.141) |
| Motor Vehicle Theft | 6.26 (2.132) | 2.57 (1.153) | 0.400 (.189) | 4.01 (1.945) | 1.93 (1.176) | 1.37 (1.201) | 11.38 (1.288) | 6.69 (.901) | .73 (.255) |

Table 11: Explaining Changes in the Arrest Rate Using the Specification from Table 6 to Further Examine the Differences by Race and Sex: Using Two-stage Least Squares to Take into Account the Impact that Consent Decrees and the Presence of a Black Mayor have on the Composition of Police Departments

(The second stage regression estimates that are reported below account for the same variables controlled for in the first stage regression except for the consent decree, the number of years since the consent decree went into effect, and whether the city's mayor is black. Current rather than lagged crime rates are used in the first stage regression. County fixed effects are used, with additional separate fixed effects for each state by year to pick up any changes at the state level that might explain changes in crime rates over time. All regressions use weighted least squares where the variables are weighted by the city population. Sample size is 439 and covers the years 1987 and 1990.)

| Category of Arrest Rate Being Explained | % of Police Force Black Male | % of Police Force Black Female | % of Police Force Hispanic Male | % of Police Force Hispanic Female | % of Police Force White Male | % of Police Force White Female | % of Police Force Asian Pacific Male | % of Police Force Asian Pacific Female |
|---|------------------------------|--------------------------------|---------------------------------|-----------------------------------|------------------------------|--------------------------------|--------------------------------------|--|
| Violent Crime | -8.28 (1.919) | -17.5 (1.01) | -7.10 (.529) | 58.7 (1.466) | 4.04 (1.38) | 32.6 (1.244) | -348.7 (1.295) | 197.3 (1.10) |
| Property Crime | -4.04 (0.849) | -10.3 (0.54) | -14.61 (.890) | 32.9 (0.74) | 15.22 (1.02) | 89.7 (.851) | -335.3 (1.284) | -3648.6 (1.08) |
| Murder | -10.78 (1.524) | -40.5 (1.534) | -26.44 (1.091) | -51.7 (.777) | 9.10 (1.89) | -5.94 (0.244) | -144.3 (.699) | -539.6 (1.781) |
| Rape | -16.14 (2.301) | -46.0 (1.597) | 25.01 (1.546) | 106.8 (1.471) | 6.26 (1.311) | 22.82 (0.704) | -616.2 (1.610) | 205.1 (0.695) |

| | | | | | | | | |
|---------------------|------------------|------------------|------------------|------------------|-----------------|------------------|-------------------|-------------------|
| Total Robbery | -5.42 (1.732) | -24.6 (1.53) | -22.5 (1.552) | 26.27 (0.795) | 3.35 (1.395) | 22.07 (1.681) | -34.1 (0.603) | 62.64 (.447) |
| Total Assault | -8.54 (1.98) | -21.28 (1.16) | -8.05 (0.598) | -69.44 (1.78) | 4.11 (1.45) | 12.00 (.871) | -137.5 (1.567) | 195.63 (1.156) |
| Burglary | -3.32 (1.45) | -10.65 (1.09) | -10.60 (1.16) | 5.74 (0.26) | 2.09 (1.36) | 12.88 (1.17) | -186.3 (1.269) | -.190 (0.002) |
| Larceny | -.201 (0.064) | .77 (0.06) | -6.77 (0.64) | 99.55 (0.35) | .57 (.261) | 7.19 (0.479) | -147.4 (1.497) | 35.4 (0.271) |
| Motor Vehicle Theft | 2.54 (0.804) | 19.4 (1.54) | 8.87 (0.847) | 33.69 (1.19) | -2.86 (.394) | 22.46 (0.099) | 56.85 (0.863) | 204.1 (1.690) |

different patrols differs over time in a city as the composition of the racial and sex composition of the police department changes.

While not a systematic analysis, the data confirms certain regularities. For example, the police departments with the most two-officer patrols tend to be those in the largest cities. For the cities for which data were available, the top ten cities with the most two officer patrol units includes Detroit, Los Angeles, Chicago, and Buffalo. Only two city police departments had no women who were full-time sworn officers (Schenetady, New York and Reno, Nevada), and those departments averaged 58 percent fewer two-officer units (only 5 percent compared to the average for the rest of the departments of 12 percent). Those departments with more than the median percent of male officers were also less likely to have two-officer patrols (10 percent) than departments with fewer than the median number of male officers (14 percent).

Table 12 uses the same regression specifications employed in the appendix to explain the organization of departments. Because the data for the percent of police patrols and the percent of walking patrols with only one officer are only available for one year, it is not possible to run these regressions using fixed city or county effects, though there are enough observations here to use state fixed effects. In addition, since the data are only available for 1993, we can not break down the race categories by sex.

The first two regressions reported in Table 12 imply that increasing the female officers' share of the police force dramatically increases the number of two-officer patrol units. The average police department has 88 percent of all police patrols as one-officer units, but the coefficient on the first regression implies that a one percentage point increase in the share of officers who are female increases the number of two officer patrol units by 1.1 to 1.3 percentage points. The effect is quite important in explaining the behavior of police departments, with about 46 to 55 percent of a one standard deviation change in the percent of patrols with one officer being explained by a one standard deviation change in the percent of a department that is female. I also tried reestimating these results using two-stage least squares along the lines shown in Table 4 (but with the crime rate variable in the second stage regressions replaced with a variable measuring single officer patrols). These estimates are similar to those already shown: a greater share of black and minority

officers reduce the number of single officer units, while a higher share of male officers increases the proportion of single officer units.³⁵

Another concern about the changing composition of police departments involves foot patrols. Possibly because women are relatively less well suited for foot patrols and because it is difficult to exclude women officers from this task once they are on the police force, the presence of women police officers has an even greater upward effect on the number of walking patrols with two officers. The second regression in Table 12 indicates that each one percentage point increase in the percent of police who are women increases the share of two officer foot patrols by 2 percentage points.

The third regressions examines the percentage of all patrols that are foot patrols. If women officers are relatively less desirable as foot patrol officers, more women officers might result in police departments not only increasing the number of police officers assigned to each patrol, but also switching from foot patrols to car patrols. The evidence however does not support this hypothesis, with changes in the number of officers per patrol apparently offsetting the weaknesses produced by increasing the number of women officers. While the male share coefficient is indeed positive, it is very small (a one percentage point increase in the female share reduces the foot patrols by only 8 hundredths of a percent) and is statistically insignificant.

³⁵ A seminal article by Wilson and Boland (1978) pointed out that it is not simply the total number of police or the size of their budget that matters but also how the police are allocated that determines their effectiveness. They argued that a more “aggressive patrol strategy,” one that was associated with more single officer patrol units, was effective in reducing crime rates. If they are correct and consent decrees make it more difficult for police departments to deploy police officers in single officer patrol units, this might help identify one of the mechanisms for the increase in crime. However, including the variable measuring the percent of patrols that are done by single officers in the regressions shown in Table 3 does not appear to be statistically significant, and it does not alter the significance of the racial or gender composition variables.

Table 12: How Does the Changing Racial and Gender Composition of Police Departments Alter How Police Departments Fight Crime?

(Controlling for a City's Changing Demographic Characteristics, the Per Capita Number of Police Officers, the Unemployment Rate, the Average Weekly Wage, Year and County Fixed Effects, and City Population and Population Squared. The absolute t-statistics are shown in the parentheses below, with the percent of a one standard deviation change in the endogenous variable that can be explained by a one standard deviation change in the exogenous variable. All regressions use weighted least squares where the variables are weighted by the city population. Data for the first three regressions are only available for 1987, the data for the number of motorcycles and cars per officer as well as information on body armor requirements are available for 1987 and 1993, and the data for the number of sworn officers are for 1987, 1990, and 1993.)

| | % of Police Force Male | % of Police Force Black | % of Police Force Hispanic | % of Police Force American Indian | Consent Decree Dummy | Number of Years that Consent Decree is in effect | City has a Black Mayor | Adj-R ² & No. of obs. |
|--|------------------------|-------------------------|----------------------------|-----------------------------------|----------------------|--|------------------------|----------------------------------|
| % of Police Patrol Units with only One Officer | 1.09 (2.08) | -.80 (2.09) | -.377 (2.11) | -5.07 (1.481) | -.357 (2.95) | .014 (1.471) | .037 (.619) | .55 202 |
| % of Police Walking Patrol Units with only One Officer | 2.19 (1.93) | 1.734 (1.04) | .169 (.368) | -11.98 (1.623) | .44 (2.49) | -.077 (3.386) | -.033 (.311) | .77 103 |
| Ratio of Walking Patrols to All Patrols | .082 (0.52) | -.214 (2.13) | .065 (1.230) | -.637 (.554) | -.052 (2.72) | .0036 (1.570) | .004 (.224) | .63 203 |
| Number of Cars per Officer | .105 (1.64) | -1.833 (1.12) | -.078 (.877) | -1.347 (.750) | -.040 (.915) | -.005 (1.205) | -.0185 (.844) | .72 639 |

| | | | | | | | | |
|--|-----------------|-----------------|-------------------|-------------------|-------------------|--------------------|-------------------|------------|
| Number of Motorcycles per Officer | .076 (1.89) | .036 (1.40) | .0061 (.444) | .0296 (.106) | .00026 (.037) | -.00043 (.672) | -.003 (.883) | .51 439 |
| Special Operations Officers required to wear body armor, Yes=3, sometimes=2, no =1 | -1.97 (1.50) | -2.44 (2.70) | .236 (.518) | -16.55 (1.931) | -.187 (.595) | -.0068 (.285) | .0897 (.654) | .46 438 |
| Patrol Officers required to wear body armor, Yes=3, sometimes=2, no =1 | -1.87 (1.44) | -1.52 (1.70) | -.5399 (1.196) | -3.025 (.357) | -.0002 (.001) | -.0374 (1.587) | -.1375 (1.013) | .53 438 |
| Number of Sworn Officers per capita | .0002 (.224) | .0012 (2.36) | -.0011 (2.005) | .0023 (.607) | .00072 (2.251) | -.00003 (3.142) | -3.1e-6 (.071) | .95 641 |

Table 12 (cont'd): How Does the Changing Racial and Gender Composition of Police Departments Alter How Police Departments Fight Crime?

| | % of Police Force Male | % of Police Force White | % of Police Force Asian | Consent Decree Dummy | Number of Years that Consent Decree is in effect | City has a Black Mayor | Adj-R ² & No. of obs. |
|--|------------------------|-------------------------|-------------------------|----------------------|--|------------------------|----------------------------------|
| % of Police Patrol Units with only One Officer | 1.36 (2.65) | .482 (3.06) | 4.24 (1.90) | -.305 (2.54) | .001 (1.04) | .03 (.525) | .56 202 |
| % of Police Walking Patrol Units with only One Officer | 1.95 (1.92) | -.327 (.935) | 1.49 (.537) | .383 (2.319) | -.07 (3.171) | .002 (.024) | .77 103 |
| Ratio of Walking Patrols to All Patrols | .006 (.039) | .003 (.066) | .471 (.903) | -.039 (2.05) | .0023 (1.008) | -.007 (.458) | .62 203 |
| Number of Cars per Officer | .144 (1.83) | .111 (1.44) | .025 (.158) | -.035 (.806) | -.0056 (1.669) | -.021 (.964) | .72 439 |
| Number of Motorcycles per Officer | .064 (1.68) | -.0149 (1.25) | .0093 (.382) | -.0008 (.121) | -.00031 (.495) | -.002 (.703) | .51 439 |

| | | | | | | | |
|--|-------------------|------------------|------------------|-------------------|--------------------|------------------|------------------|
| Special Operations Officers required to wear body armor, Yes=3, sometimes=2, no =1 | -1.07 (.847) | .311 (.787) | -7.88 (1.69) | -.0203 (.065) | -.0206 (.875) | .0002 (.001) | .45 438 |
| Patrol Officers required to wear body armor, Yes=3, sometimes=2, no =1 | -1.62 (1.31) | .7245 (1.88) | -7.073 (1.55) | .042 (.139) | -.041 (1.779) | -.1718 (1.32) | .5356 438 |
| Number of Sworn Officers per capita | -1.2e-5 (.014) | -.0002 (.515) | -8 e-5 (.195) | .00079 (2.465) | -.00003 (2.853) | 6 e-6 (.143) | .95 641 |

The Law Enforcement Management survey also provided information on the number of cars, motorcycles, bicycles, boats, helicopters, and airplanes used by police departments. As a rough second check on the results supporting the hypothesis that more women officers will reduce the number of single officer patrol units, the number of police cars per officer provides an independent measure of whether officers patrol together. Presumably the more cars per officer, the less likely that multiple officers will be patrolling together in the same car. Consistent with the already reported results, more female officers do reduce the number of cars per officer.

While not related to testing whether female officers are more likely to be paired up with other officers in patrols, the other methods of transportation at least provide a measure of whether the changing demographic composition of police departments alters how they operate. However, with the sole exception of motorcycles, none of the other modes of transportation appear related to any of the race or gender measures. The estimates for motorcycles imply that the increased presence of women officers reduces police departments' reliance on motorcycles, and that the size of the effect is about two-thirds to three-quarters the size of women's impact on the number of cars. Undoubtedly, automobiles are the most important portion of police department expenditures on transportation, though except for the number of cars and motorcycles there is no real evidence that altering the race or gender composition of police departments changes how police departments allocate their money for transportation.

Before finishing this discussion of the size of patrol units and modes of transportation, a couple of comments should be made about the other coefficients. The racial composition of police departments only seems to help explain the percent of police patrols with one unit and the percent of walking patrols. More black and Hispanic officers increase the number of two officer patrols, while more whites reduce them. This finding is consistent with minority officers operating in more dangerous areas, but it is also consistent with the desire to pair the officers together to compensate for other deficiencies. In an attempt to separate out these two explanations, I tried including violent and property crime rates as well as the per capita number of felonious police killings and police assaults in all these regressions as measures of greater risks, but these variables had

very little effect on the results. Combined with the earlier results on police killings and assaults, it doesn't appear that the increased reliance on two officer units when more minorities are present can be explained by reference to minority officers operating in more dangerous areas.

Given that we have state level fixed effects for these regressions, the consent decree variables imply that these decrees are imposed upon cities with relatively high reliance on single officer and walking patrols, but that the longer these decrees are in effect, the more these cities switch away from these types of patrols. The estimates further support the hypothesis that changing the racial and gender composition of police departments enforced by these consent decrees resulted in lower quality officers, which was compensated for by doubling up officers.

We next examine variables for whether police officers or special operations officers are required to wear body armor. However, these variables have the potential to provide additional information on whether certain officers face more dangerous tasks, though it also runs into possible difficulties in separating out the question of dangerous risks from issues involving discrimination. The results imply that black officers (both for patrol and special operations) are less likely to be in police departments that require body armor, while the reverse is true for white patrol officers. In an attempt to separate out the discrimination story from the lower risk explanation, I added a variable to the regression that interacted the percent of the police force that is black with the dummy variable for whether the mayor is black. If the lack of a requirement for body armor arises because of discrimination, one would expect such an effect to disappear when a black mayor is elected, thus the interaction term would have to be positive. In the specification for patrol officers this new interaction is negative and statistically significant, while for Special Operations Officers, the effect is positive but quite insignificant (the t-statistic is .257). The probability that a police department will be require police officers to wear protective body armor also increases as there are more women officers on the police force, though the coefficients are not statistically significant at the 10 percent level for a two-tailed t-test.

XI. Accounting for Changes in Police Department Size and Changes in Levels of Police Experience

Finally, there is the question of what these consent decrees do to the size of the police department.³⁶ The last set of regressions in Table 12 use fixed city effects and imply that the imposition of a consent decree is associated with a large increase in the number of officers of about a third, and it takes about 20 to 25 years before the city's police force returns to its pre-decree levels.³⁷ Including a squared term for the years after the imposition of the consent decree did not appreciably alter this basic relationship. Since I controlled for the presence of the consent decree and the length of time that it had been in effect in both the two-stage least square and the reduced form estimates, this finding does not alter any of the earlier regressions, though it does make us ask whether the significant effects of the consent decrees are due to changes that result from testing and/or whether they arise from the lower quality associated with a rapid increase in the size of the police force. A rapidly growing police force with new recruits might face an increase in crime simply because of having police officers with less experience.

Unfortunately, I do not have a measure of police officer experience. One substitute method of measuring this change is to reestimate the regressions shown in Tables 4 and 6 by including a variable for the percentage change in the size of a police force.³⁸ While this reduces our sample size to 386 observations for blacks and minorities and 393 for males, the percentage measures of the composition of police departments remain similar to those already reported and the percentage change in a police force's size is almost always negative, though it is statistically significant about a third of the time. Thus, if anything, there is weak evidence that large percentage increases in the size of police departments appear to

³⁶ On average there are about 2.2 police officers per 1,000 residents in a city.

³⁷ This pattern of growth is consistent with what is mandated by consent decrees which can require an usually large number of officers to be hired immediately (e.g., 411 F. Supp. 218; 1976 U.S. Dist.).

³⁸ The percentage change is defined as the change in the number of sworn police officers between two years divided by the average of those two year's number of police officers.

reduce crime even after the per capita number of police officers is already controlled for.³⁹

Another way to differentiate between these two theories is to examine the changing impact that the consent decree has on crime over time. If the lower initial quality were due to the large sudden increase in the number of officers, the quality of new officers hired after that initial binge should be relatively high. Just as the initial hiring binge would have brought in lower quality officers, the long period of time over which hiring was below normal, as the city tries to return to its original sized police force, would result in above-average quality hires. The coefficient on the variable for the number of years that the consent decree has been in effect should thus be negative in the reduced form regressions. In fact, almost all these coefficients in the preceding tables are either significantly positive or insignificantly different from zero.⁴⁰

³⁹ I also tried replacing the variables for the percent of the police force that is black with that variable interacted with the percent change in a police force's size. The results were again implied that increasing the percent of a police force that is black increases the crime rate. The t-statistics for this new variable in the violent and property crime regressions with city fixed effects are 3.092 and 2.919.

⁴⁰ Landy (1992) argues that the increased productivity police officers acquire from experience are essentially produced during their first three years of service. Another method of testing the impact of lack of experience is rerun the regressions in Table 4 with a dummy variable equalling one for the first three or four years after a consent decree has gone into effect. While this variable is sometimes positive and significant, the coefficients for the percent of the police force that is black, minority, or male remain essentially unaltered. Finally, in an attempt to measure the actual change in the number of new officers, I contacted the largest 60 police departments and obtained the number of police officers leaving employment by year for Chicago, Cincinnati, Colorado Springs, Columbus, Dallas, Denver, El Paso, Honolulu, Houston, Indianapolis, Memphis, Nashville, New York, Oklahoma City, Philadelphia, Sacramento, San Antonio, San Jose, and Syracuse. For most cities, the data implies a fairly consistent retirement rate for departments across years. For example, New York experienced 506 retirements in 1987, 568 in 1990, and 528 in 1993. Adjusting my estimates of the number of new police officers using these retirement rates leaves those already reported results essentially unchanged.

XI. Conclusion

A massive experiment has been conducted with law enforcement during the last couple of decades, with more minority and women officers being hired. But does increasing the number of minority and women police officers raise effectiveness by drawing on new untapped abilities, or are standards lowered too far in order to hire large numbers of minorities and women? I have argued here that the effect depends upon the type of crime. The evidence for rape is mixed, with most results implying essentially no difference between male and female officers, though some estimates indicate that the actual changes in the composition of police departments helped reduce the number of rapes. However, for all other crimes, more black officers lead to more crime, not less. This does not say that there are not large potential benefits from minority and women police officers, but only that the particular new officers that have been hired have costs that outweigh the benefits. On net, the current policies appear to be costing American cities at least \$5.4 billion per year in additional victimization costs.

These changes in the composition of police departments have been accompanied by changes in the organization of police departments. Some of these changes—such as an increasing movement away from single officer patrol units—is likely due to the presence of more female officers with less physical strength. Women officers are more likely to be assaulted than men, though their overall probability of death on the job is the same. Some preliminary evidence indicates that white women officers are more likely to shoot civilians, and that black male officers are the least likely. The evidence is not consistent with the hypothesis that black officers are more effective at dealing with crime in predominately black areas. Instead, surprisingly, the results suggest that it is the most heavily black communities that are the most at risk from the increased crime produced by affirmative action policies.

The evidence contradicts that recent claims concerning the differential dangers facing minority and white police officers. While black officers are most likely to die from accidental deaths, black and white male officers face the same probability of being killed by criminals.

As a warning for anyone doing future research: the evidence suggests that a great deal of caution needs to be done in aggregating together different racial and/or gender groups. Not all nonwhite racial groups are the same and not all men and women in a particular group are the same. Blacks, Hispanics, and Asians do not have the same impact on crime. Many differences between men and women on crime also disappear once different racial groups are subdivided by sex. The different results obtained from aggregated and disaggregated classifications strongly suggest that the most disaggregated classifications should be used whenever possible.

This paper was initially motivated by the Supreme Court's recent rulings on affirmative action. Prior to consent decrees the "best" police officers might not always have been hired, but the imposition of consent decrees unambiguously increased crime and the longer the decree was in effect the greater was the increase in crime. There is no way that the hiring of minority officers can meet the difficult strict scrutiny standard set forth by the Supreme Court. There is no "compelling" justification to hire minority or women police officers based the desire to lower overall crime. There may be strong moral arguments for affirmative action, but crime reduction is not one of them.

Appendix 1: Explaining Crime Rates as a Function of the Racial and Sex Composition of Police Departments: Using County Fixed Effects

(Each crime category listed in the first column represents a separate regression. The regressions also controlled for a City's Changing Demographic Characteristics, the Per Capita Number of Police Officers, the Unemployment Rate, the Average Weekly Wage, Year and County Fixed Effects, and City Population and Population Squared. The absolute t-statistics are shown in the parentheses below, with the percent of a one standard deviation change in the endogenous variable that can be explained by a one standard deviation change in the exogenous variable. All regressions use weighted least squares where the variables are weighted by the city population.)

| | % of Police Force Male | % of Police Force Black | % of Police Force Hispanic | % of Police Force American Indian | Consent Decree Dummy | Number of Years that Consent Decree is in effect | City has a Black Mayor | Adj-R ² |
|----------------|------------------------|-------------------------|----------------------------|-----------------------------------|------------------------|--|------------------------|--------------------|
| Violent Crime | 2.46 (2.73) 21% | 1.65 (3.64) 21% | 0.98 (1.842) 12% | -1.04 (.256) 1% | 0.43 (3.17) 25% | 0.02 (1.389) 5% | 0.15 (3.00) 5% | .85 |
| Property Crime | 0.79 (1.25) 12% | 0.01 (.027) 0% | -0.13 (.279) 3% | -0.93 (.323) 1% | 0.14 (1.449) 14% | 0.03 (3.586) 18% | 0.08 (2.30) 4% | .65 |
| Murder | 0.59 (.403) 3% | 1.39 (1.89) 10% | 2.59 (2.42) 19% | 3.59 (.541) 1% | 0.54 (2.49) 18% | 0.01 (.311) 1% | 0.30 (3.72) 5% | .78 |
| Man-slaughter | -5.23 (1.59) 37% | 3.16 (1.91) 33% | -0.39 (.164) 4% | 3.65 (.245) 2% | 0.09 (.188) 4% | 0.03 (.756) 9% | 0.53 (2.96) 13% | .44 |
| Rape | 3.78 (1.88) 17% | 0.62 (1.61) 4% | -1.36 (.926) 9% | 3.72 (.409) 1% | 0.09 (.295) 3% | 0.05 (1.798) 8% | 0.12 (1.06) 2% | .89 |

| | | | | | | | | |
|--------------------------------|------------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|-----|
| Total Robbery | 1.77 (1.75) 4% | 1.14 (2.25) 2% | 1.46 (1.98) 9% | 1.12 (.245) 0% | 0.41 (2.76) 15% | 0.04 (2.61) 19% | 0.24 (4.33) 7% | .89 |
| Total Assault | 2.73 (2.52) 10% | 2.21 (4.05) 3% | 1.67 (1.98) 9% | -4.04 (.822) 2% | 0.49 (3.06) 20% | 0.01 (.481) 12% | 0.08 (1.32) 1% | .81 |
| Burglary | 0.33 (.434) 4% | 0.09 (.228) 2% | 0.48 (.859) 9% | 0.04 (.012) 0% | 0.17 (1.46) 15% | 0.04 (3.79) 19% | 0.15 (3.64) 7% | .69 |
| Larceny | 0.71 (1.16) 10% | 0.12 (.391) 3% | 0.43 (.948) 9% | 1.83 (.658) 2% | 0.22 (2.354) 20% | 0.02 (2.73) 12% | 0.01 (.311) 1% | .72 |
| Motor Vehicle Theft | 2.85 (2.59) 23% | 0.83 (1.50) 10% | 0.68 (.841) 8% | 1.87 (.375) 1% | 0.13 (.80) 7% | 0.04 (2.881) 13% | 0.26 (4.33) 7% | .81 |
| Felonious Killings by Police | 0.30 (.243) 7% | -0.25 (.406) 9% | 1.54 (1.73) 56% | 0.79 (.143) 2% | 0.18 (.966) 30% | 0.009 (.224) 3% | 0.31 (4.62) 27% | .39 |
| Assaults on Police | -4.12 (.789) 13% | 2.49 (.950) 11% | 4.20 (1.11) 19% | -9.75 (.413) 2% | 2.36 (3.043) 49% | -0.05 (.642) 5% | -2.00 (7.00) 22% | .44 |
| Accidental Shootings by Police | -0.55 (.84) 30% | 0.11 (.336) 9% | 0.07 (.148) 5% | 2.11 (.707) 9% | -0.09 (.947) 33% | 0.01 (.552) 10% | -0.04 (1.16) 8% | .63 |

Appendix 1 (cont'd): Explaining Crime Rates as a Function of the Racial and Sex Composition of Police Departments: Using County Fixed Effects

| | % of Police Force Male | % of Police Force White | % of Police Force Asian | Consent Decree Dummy | Number of Years that Consent Decree is in effect | City has a Black Mayor | Adj-R ² |
|----------------|------------------------|-------------------------|-------------------------|------------------------|--|------------------------|--------------------|
| Violent Crime | 2.332 (2.61) 20% | -1.435 (3.77) 25% | -1.358 (3.57) 7% | 0.403 (3.05) 23% | 0.019 (1.64) 6% | 0.151 (3.07) 5% | .85 |
| Property Crime | 0.78 (1.24) 12% | 0.01 (.033) 0% | 0.09 (.324) 1% | 0.13 (1.401) 14% | 0.03 (3.68) 18% | 0.08 (2.33) 4% | .64 |
| Murder | 0.80 (.553) 4% | -1.78 (2.88) 18% | -1.85 (2.99) 6% | 0.58 (2.704) 19% | 0.004 (.187) 1% | 0.29 (3.67) 5% | .77 |
| Man-slaughter | -5.65 (1.74) 40% | -2.36 (1.70) 33% | -1.62 (1.16) 7% | -0.04 (.092) 2% | 0.04 (.944) 11% | 0.54 (3.03) 14% | .45 |
| Rape | 3.48 (1.75) 16% | 0.04 (.052) 0% | -0.03 (.04) 0% | 0.03 (.100) 1% | 0.05 (1.91) 9% | 0.12 (1.102) 2% | .89 |
| Total Robbery | 1.82 (1.83) 13% | -1.24 (2.92) 17% | -1.25 (2.94) 5% | 0.42 (2.87) 20% | 0.04 (2.59) 9% | 0.24 (4.33) 6% | .89 |
| Total Assault | 2.47 (2.30) 20% | -1.79 (3.90) 29% | -1.53 (3.33) 8% | 0.44 (2.78) 24% | 0.003 (.211) 1% | 0.09 (1.44) 2% | .81 |

| | | | | | | | |
|--------------------------------|------------------------|------------------------|-----------------------|------------------------|-------------------------|------------------------|------|
| Burglary | 0.45 (.596) 6% | -0.34 (1.06) 9% | -0.09 (.286) 1% | 0.17 (1.52) 15% | 0.04 (3.83) 19% | 0.15 (3.64) 7% | .70 |
| Larceny | 0.65 (1.07) 9% | 0.22 (.867) 6% | 0.26 (.994) 2% | 0.21 (2.28) 19% | 0.02 (2.85) 12% | 0.01 (.361) 1% | .72 |
| Motor Vehicle Theft | 2.56 (2.35) 21% | -0.28 (.606) 5% | -0.32 (.689) 2% | 0.09 (.538) 5% | 0.05 (3.07) 14% | 0.27 (4.42) 8% | .81 |
| Felonious Killings by Police | 0.54 (.443) 13% | -0.19 (.376) 10% | -0.52 (1.00) 8% | 0.24 (1.351) 41% | -0.0004 (.026) 0% | 0.30 () 27% | .39 |
| Assaults on Police | -3.54 (.687) 11% | -3.96 (1.80) 24% | -1.88 (.858) 4% | 2.34 (3.08) 49% | 0.04 (.58) 5% | -1.99 (7.02) 22% | .63 |
| Accidental Shootings by Police | -0.54 (.821) 29% | -0.12 (.432) 13% | -0.12 (.434) 4% | 0.09 (.982) 34% | 0.005 (.535) 9% | 0.04 (1.184) 8% | .075 |

Appendix 2: Explaining Crime Rates as a Function of the Racial and Sex Composition of Police Departments: Using State Fixed Effects

(Each crime category listed in the first column represents a separate regression. The regressions also control for a City's Changing Demographic Characteristics, the Per Capita Number of Police Officers, the Unemployment Rate, the Average Weekly Wage, Year and County Fixed Effects, and City Population and Population Squared The absolute t-statistics are shown in the parentheses below, with the percent of a one standard deviation change in the endogenous variable that can be explained by a one standard deviation change in the exogenous variable. All regressions use weighted least squares where the variables are weighted by the city population. Sample size is 641 and covers the years 1987, 1990, and 1993.)

| | % of Police Force Male | % of Police Force Black | % of Police Force Hispanic | % of Police Force American Indian | Consent Decree Dummy | Number of Years that Consent Decree is in effect | City has a Black Mayor | Adj-R ² |
|----------------|------------------------|-------------------------|----------------------------|-----------------------------------|------------------------|--|------------------------|--------------------|
| Violent Crime | -1.07 (1.79) 9% | .869 (2.25) 11% | .315 (1.48) 4% | 4.566 (1.13) 3% | .256 (2.400) 7% | -.03 (2.262) 11% | -.033 (.666) 1% | .70 |
| Property Crime | -1.43 (4.15) 22% | .496 (2.22) 12% | .2585 (2.104) 6% | -.4895 (.210) 1% | -.095 (1.542) 5% | .0002 (.038) 0% | .02 (.651) 1% | .51 |
| Murder | 1.173 (1.38) 6% | 1.845 (3.37) 14% | .2271 (.753) 2% | 7.814 (1.367) 3% | .037 (.244) 1% | -.006 (.435) 1% | .008 (.112) 0% | .65 |
| Man-slaughter | 3.548 (.033) 25% | 3.939 (3.67) 42% | .7574 (1.279) 8% | 3.374 (.301) 2% | -.029 (.098) 1% | .005 (.200) 2% | -.27 (1.956) 6% | .33 |
| Rape | -1.63 (1.38) 8% | -.488 (.641) 3% | -.3659 (.872) 2% | 5.613 (.706) 2% | .092 (.437) 1% | -.014 (.761) 3% | .122 (1.251) 2% | .83 |

| | | | | | | | | |
|--------------------------------|------------------------|------------------------|--------------------------|--------------------------|------------------------|-------------------------|------------------------|-----|
| Total Robbery | -1.32 (2.02) 9% | 1.408 (3.34) 14% | .16154 (.695) 2% | 7.8199 (1.776) 4% | .053 (.456) 1% | -.013 (1.347) 4% | -.051 (.947) 1% | .78 |
| Total Assault | -1.09 (1.45) 9% | .6513 (1.35) 8% | .47418 (1.782) 6% | 1.6106 (.319) 1% | .484 (3.63) 12% | -.052 (4.54) 18% | -.048 (.770) 1% | .58 |
| Burglary | -1.37 (3.17) 18% | .5810 (2.09) 11% | -.18606 (1.213) 4% | -1.14433 (.394) 1% | -.05 (.664) 2% | -.002 (.337) 1% | .062 (1.739) 3% | .55 |
| Larceny | -1.30 (3.6) 18% | .320 (1.38) 7% | .331 (2.587) 7% | -1.92 (.79) 2% | -.014 (.221) 1% | -.002 (.296) 1% | -.011 (.383) 0% | .56 |
| Motor Vehicle Theft | -1.90 (2.75) 16% | 1.297 (2.91) 16% | .827 (3.368) 10% | 9.306 (1.999) 6% | -.378 (3.078) 9% | .004 (0.404) 1% | -.05 (.794) 1% | .65 |
| Felonious Killings by Police | -.674 (1.17) 17% | -.292 (.786) 11% | .237 (1.160) 9% | 5.91 (1.524) 12% | -.401 (3.92) 31% | .04 (4.452) 42% | .26 (5.49) 20% | .37 |
| Assaults on Police | -5.55 (2.06) 17% | .911 (.524) 4% | .5227 (.546) 2% | -29.29 (1.613) 7% | .64 (1.335) 6% | -.06 (1.436) 8% | -1.58 (7.08) 15% | .54 |
| Accidental Shootings by Police | -.744 (2.42) 40% | .211 (1.06) 17% | .0302 (.276) 2% | .904 (.437) 4% | .11 (2.205) 18% | -.005 (1.043) 11% | -.04 (1.577) 7% | .06 |

Appendix 2 (cont'd): Explaining Crime Rates as a Function of the Racial and Sex Composition of Police Departments: Using State Fixed Effects

| | % of Police Force Male | % of Police Force White | % of Police Force Asian | Consent Decree Dummy | Number of Years that Consent Decree is in effect | City has a Black Mayor | Adj-R ² |
|----------------|------------------------|-------------------------|-------------------------|-----------------------|--|------------------------|--------------------|
| Violent Crime | -1.27 (2.21) 11% | -.428 (2.35) 7% | -.796 (2.17) 4% | .23 (2.18) 6% | -.03 (2.079) 11% | -.25 (.520) 7% | .70 |
| Property Crime | -1.53 (4.64) 24% | -.322 (3.07) 10% | -.259 (1.23) 2% | -.103 (1.71) 5% | .0009 (.183) 1% | .024 (.85) 1% | .51 |
| Murder | .57 (.706) 3% | -.588 (2.27) 6% | -1.19 (2.27) 4% | -.04 (.247) 1% | .0003 (.023) 0% | .034 (.495) 1% | .65 |
| Man-slaughter | 2.30 (1.44) 16% | -1.57 (3.09) 22% | -1.19 (1.16) 5% | -.16 (.547) 3% | .016 (.656) 5% | -.21 (1.518) 5% | .33 |
| Rape | -1.56 (1.38) 7% | .409 (1.14) 4% | .24 (.333) 1% | .0899 (.431) 1% | -.013 (.757) 3% | .12 (1.208) 2% | .83 |
| Total Robbery | -1.77 (2.83) 12% | -.436 (2.19) 6% | -.951 (2.36) 4% | -.006 (.055) 0% | -.009 (.876) 3% | -.032 (.598) 1% | .78 |
| Total Assault | -1.15 (1.61) 9% | -.507 (2.23) 8% | -.679 (1.48) 3% | .48 (3.63) 12% | -.05 (4.57) 17% | -.05 (.744) 1% | .58 |

| | | | | | | | |
|--------------------------------|------------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|-----|
| Burglary | -1.67 (4.05) 22% | -.006 (.044) 0% | .011 (.040) 0% | -.08 (1.06) 3% | .0002 (.033) 0% | .078 (2.22) 3% | .54 |
| Larceny | -1.30 (3.79) 18% | -.337 (3.08) 9% | -.213 (.967) 2% | -.01 (.172) 0% | -.002 (.35) 1% | -.01 (.34) 0% | .56 |
| Motor Vehicle Theft | -2.05 (3.11) 17% | -.936 (4.45) 15% | -1.03 (2.43) 5% | -.41 (3.37) 10% | .007 (.67) 2% | -.04 (.73) 1% | .65 |
| Felonious Killings by Police | -.44 (.801) 11% | -.079 (.451) 4% | -.475 (1.35) 7% | -.39 (3.84) 30% | .04 (4.37) 42% | .25 (5.26) 19% | .37 |
| Assaults on Police | -5.82 (2.26) 18% | -.713 (.871) 4% | .632 (.383) 1% | .66 (1.40) 6% | -.06 (1.50) 8% | -1.55 (7.05) 15% | .54 |
| Accidental Shootings by Police | -.812 (2.77) 43% | -.075 (.803) 8% | -.074 (.393) 2% | .102 (1.903) 17% | -.004 (.902) 9% | -.037 (1.48) 6% | .06 |

Bibliography

- Ayres, Ian and Steven Levitt, "Measuring Positive Externalities from Unobservable Victim Precaution: An Empirical Analysis of Lojack," *Quarterly Journal of Economics* (1998): forthcoming.
- Bahrke, Mike, and Bob Hoffman, "Identifying the Fitness Needs of Law Enforcement Officers," unpublished working paper FitForce (1997).
- Coate, Stephen, and Glenn Loury, "Will Affirmative-Action Policies Eliminate Negative Stereotypes?" *American Economic Review* Vol. 83 no. 5 (December 1993): 1220-1240.
- Chiem, Phat X., "The Ethnic Gap: City Short on Asian Cops," *The Seattle Times* (August 18, 1995): B1.
- Dunnetted, Marvin; Joan G. Haworth, Leaetta Hough, James L. Outtz; Erich P. Prien; Neal Schmitt; Bernard Siskin; and Sheldon Zedeck, "Police Selection and Promotion Practices Survey Results," HRStrategies (April 1993).
- Dunnetted, Marvin; Joan G. Haworth, Leaetta Hough, James L. Outtz; Erich P. Prien; Neal Schmitt; Bernard Siskin; and Sheldon Zedeck, "Response to Criticisms of Nassau County Test Construction and Validation Project," University of Minnesota (1996).
- Epstein, Richard, *Forbidden Grounds*, Harvard University Press: Cambridge, Mass (1992).
- Flannery, Mary, "Fitness Standards Set Up Through 'Gender Norming,'" *Houston Chronicle* (September 11, 1995): 2.
- Fyfe, James J., "Who Shoots?: A Look at Officer Race and Police Shooting," *Journal of Police Science and Administration* Vol.9, no.4 (1981): 367-382.
- Fyfe, James J., "The Split-second Syndrome and other Determinants of Police Violence." In Roger G. Dunham and Geoffrey P. Alpert (eds.), *Critical Issues in Policing: Contemporary Readings*. Prospect Heights, Il: Waveland Press (1989).
- Gottfredson, Linda S., "Racially Gerrymandered Police Tests," *Wall Street J.*, Oct. 24, 1996.
- Gottfredson, Linda S., "The Department of Justice's Involvement with the 1994 Nassau County Police Entrance Examination,"

- testimony before the Constitution Subcommittee Judiciary Committee House of Representatives (May 20, 1997).
- Hedges, Larry V. and Ingram Olkin., *Statistical Methods for Meta-Analysis*. Orlando: Academic Press, 1985.
- Kass, John and Matt O'Connor, "U.S. Judge OKS Exam for Firefighting Hiring; Ruling Ends 2 Decades of Federal Oversight," *Chicago Tribune* (July 25, 1995): A1.
- Katyal, Neal Kumar, "Why Affirmative Action in Higher Education is Safe in the Courts," *The Journal of Blacks in Higher Education* (Autumn 1995): 83-89
- Keohane, Nan, "Return to the Good Ol' Days?" *The Journal of Blacks in Higher Education*, (Winter 1994/1995): p. 90.
- Landy, Frank J., Principal Investigator, *Alternatives to Chronological Age in Determining Standards of Suitability for Public Safety Jobs, Volume 1: Technical Report*, January 31, 1992.
- Lewis, William G., "Toward Representative Bureaucracy: Blacks in City Police Organizations, 1975-1985," *Public Administration Review* (May/June 1989): 257-267.
- Lott, John R., Jr., and David B. Mustard, "Crime Deterrence, and Right-to-Carry Concealed Handguns," *Journal of Legal Studies* Vol. 26, no. 1 (January 1997): 1-69.
- Maddala, G.S., *Econometrics*. New York: McGraw-Hill, 1977.
- Martin, Andrew, "Bias Alleged in Probes of Black Cops," *The Chicago Tribune* (June 20, 1997): 4.
- Matulia, Kenneth J., *A Balance of Forces: Model Deadly force Policy and Procedure*, Second Edition, International Association of Chiefs of Police: Gaithersburg, Maryland (1985).
- Marzulli, John and David L. Lewis, "Cop Hopefuls Face Chase Test to Mimic Run After Suspect," *New York Daily News* (March 12, 1997): 7.
- McGreevy, Patrick, "Police Height Plan Advances: Commission OKS Ending LAPD Requirement," *The Daily News* (Los Angeles) (February 19, 1997): N4.
- Miller, Ted R., and Mark A. Cohen, and Brian Wiersema, *Victim Costs and Consequences: A New Look*, National Institute of Justice: Washington, D.C. (February, 1996).
- Oclander, Jorge, "Tactics Put Police Brass to the Test," *Chicago Sun-Times* (Sunday, October 22, 1995): 22.

- Peltzman, Sam, "The Effects of Automobile Safety Regulation," *Journal of Political Economy*, Vol. 83 (Aug. 1975): 677-725.
- Philipson, Tomas J. and Richard A. Posner, "The Economic Epidemiology of Crime," *Journal of Law and Economics*, Vol. 34 (October 1996): 405-434.
- Price, David A., "Dumbing Down the Police Force," *Investor's Business Daily* (June 13, 1997): A1.
- Shinkle, Peter, "Test Officials Question State's Move," *The Advocate* (Baton Rouge, La.) (August 31, 1996): B1-B2.
- Spielman, Fran, "Mayor Defends Hiring Promotion Decisions on Police and Firefighters," *Chicago Sun-Times* (January 31, 1996): 16.
- Washington Post Editorial, "D.C.'s Finest, at Their Worst; It's all uphill for the new chief, but here's where his climb should start." *Washington Post* (January 17, 1993): C8.
- Wilson, James Q., *Thinking About Crime*, Basic Books: New York (1983).
- Wilson, James Q. and Barbara Boland, "The Effect of the Police on Crime," *Law & Society Review* (Spring 1978): 367-390.
- Wilson, Terry, "Atlanta Fire, Police Exams Win Plaudits; City's Test Process Viewed As Unbiased," *Chicago Tribune* (March 4, 1996): A1.

List of Cities used in Study

ANCHORAGE, ALASKA; BIRMINGHAM, ALA; MOBILE, ALA;
MONTGOMERY, ALA; GADSDEN, ALA; FLORENCE, ALA;
HUNTSVILLE, ALA; TUSCALOOSA, ALA; LITTLE ROCK, ARK;
NORTH LITTLE ROCK, ARK; FORT SMITH, ARK;
FAYETTEVILLE, ARK; SPRINGDALE, ARK; MESA, ARIZ;
PHOENIX, ARIZ; TUCSON, ARIZ; OAKLAND, CALIF; CHICO,
CALIF; FRESNO, CALIF; BAKERSFIELD, CALIF; LONG BEACH,
CALIF; LOS ANGELES, CALIF; PASADENA, CALIF; MONTEREY,
CALIF; SALINAS, CALIF; SEASIDE, CALIF; NAPA, CALIF;
ANAHEIM, CALIF; SANTA ANA, CALIF; RIVERSIDE, CALIF;
SACRAMENTO, CALIF; SAN BERNARDINO, CALIF; SAN DIEGO,
CALIF; SAN FRANCISCO, CALIF; STOCKTON, CALIF; LOMPOC,
CALIF; SANTA BARBARA, CALIF; SANTA MARIA, CALIF; SAN
JOSE, CALIF; SANTA CRUZ, CALIF; FAIRFIELD, CALIF;
VALLEJO, CALIF; SANTA ROSA, CALIF; PETALUMA, CALIF;
MODESTO, CALIF; YUBA CITY, CALIF; PORTERVILLE, CALIF;
TULARE, CALIF; VISALIA, CALIF; OXNARD, CALIF; VENTURA,
CALIF; BOULDER, COLO; LONGMONT, COLO; COLORADO
SPRINGS, COLO; FORT COLLINS, COLO; LOVELAND, COLO;
PUEBLO, COLO; DENVER, COLO; BRIDGEPORT, CONN;
DANBURY, CONN; HARTFORD, CONN; MERIDEN, CONN;
MIDDLETOWN, CONN; MILFORD, CONN; NEW BRITAIN,
CONN; NEW HAVEN, CONN; NEW LONDON, CONN;
NORWALK, CONN; NORWICH, CONN; STAMFORD, CONN;
WATERBURY, CONN; WASHINGTON, D C; WILMINGTON, DEL;
GAINESVILLE, FLA; MELBOURNE, FLA; TITUSVILLE, FLA;
PALMBAY, FLA; FORT LAUDERDALE, FLA; HOLLYWOOD, FLA;
POMPANO BEACH, FLA; HIALEAH, FLA; MIAMI, FLA;
JACKSONVILLE, FLA; PENSACOLA, FLA; TAMPA, FLA; FORT
MYERS, FLA; TALLAHASSEE, FLA; BRADENTON, FLA; OCALA,
FLA; FORT WALTON BEACH, FLA; ORLANDO, FLA; BOCA
RATON, FLA; DELRAY BEACH, FLA; WEST PALM BEACH, FLA;
CLEAR WATER, FLA; SAINT PETERSBURG, FLA; LAKELAND,
FLA; WINTER HAVEN, FLA; SARASOTA, FLA; DAYTONA
BEACH, FLA; MACON, GA; SAVANNAH, GA; WARNER ROBINS,
GA; COLUMBUS, GA; AUGUSTA, GA; ATLANTA, GA;
HONOLULU, HAWAII; CEDAR FALLS, IOWA; WATERLOO,
IOWA; CEDAR RAPIDS, IOWA; DES MOINES, IOWA;
DAVENPORT, IOWA; SIOUX CITY, IOWA; BOISE, IDAHO;
CHAMPAIGN, ILL; RANTOUL, ILL; URBANA, ILL; AURORA,
ILL; ELGIN, ILL; KANKAKEE, ILL; BLOOMINGTON, ILL;

NORMAL, ILL; PEORIA, ILL; MOLINE, ILL; ROCKISLAND, ILL; SPRINGFIELD, ILL; ; JOLIET, ILL; ROCKFORD, ILL; CHICAGO, ILL; FORT WAYNE, IND; GARY, IND; HAMMOND, IND; ANDERSON, IND; MISHAWAKA, IND; SOUTHBEND, IND; EVANSVILLE, IND; TERREHAUTE, IND; INDIANAPOLIS, IND; WICHITA, KANS; TOPEKA, KANS; KANSAS CITY, KANS; ASHLAND, KY; LEXINGTON, KY; LOUISVILLE, KY; SHREVEPORT, LA; SHREVEPORT, LA; SHREVEPORT, LA; LAKECHARLES, LA; BATONROUGE, LA; LAFAYETTE, LA; MONROE, LA; HOUMA, LA; NEWORLEANS, LA; ATTLEBORO, MASS; NEWBEDFORD, MASS; GLOUCESTER, MASS; HAVERHILL, MASS; LAWRENCE, MASS; SALEM, MASS; SPRINGFIELD, MASS; MALDEN, MASS; BROCKTON, MASS; BOSTON, MASS; BALTIMORE, MD; PORTLAND, MAINE; BAY CITY, MICH; BENTON HARBOR, MICH; BATTLE CREEK, MICH; FLINT, MICH; EAST LANSING, MICH; LANSING, MICH; LANSING TOWNSHIP, MICH; JACKSON, MICH; KALAMAZOO, MICH; KALAMAZOO TOWNSHIP, MICH; GRAND RAPIDS, MICH; MIDLAND, MICH; MUSKEGON, MICH; SAGINAW, MICH; ANN ARBOR, MICH; DETROIT, MICH; MINNEAPOLIS, MINN; SAINT PAUL, MINN; DULUTH, MINN; COLUMBIA, MO; SPRINGFIELD, MO; JOPLIN, MO; KANSAS CITY, MO; SAINT LOUIS, MO; BILOXI, MISS; GULFPORT, MISS; JACKSON, MISS; OMAHA, NEBR; LINCOLN, NEBR; ASHEVILLE, N C; HICKORY, N C; FAYETTEVILLE, N C; DURHAM, N C; WINSTON-SALEM, N C; GASTONIA, N C; GREENSBORO, N C; HIGHPOINT, N C; CHARLOTTE, N C; RALEIGH, N C; MANCHESTER, N H; PORTSMOUTH, N H; DOVER, N H; ROCHESTER, N H; JERSEYCITY, N J; NORTHBERGEN TOWNSHIP, N J; TRENTON, N J; MIDDLESEX, N J; PASSAIC, N J; ELIZABETH, N J; NEWARK, N J; ALBUQUERQUE, N MEX; LAS VEGAS, NEV; RENO, NEV; ALBANY, N Y; BINGHAMTON, N Y; POUGHKEEPSIE, N Y; BUFFALO, N Y; ROCHESTER, N Y; NEWYORK, N Y; NIAGARAFALLS, N Y; ROME, N Y; UTICA, N Y; SYRACUSE, N Y; TROY, N Y; SCHENECTADY, N Y; LIMA, OHIO; HAMILTON, OHIO; MIDDLETOWN, OHIO; SPRINGFIELD, OHIO; SPRINGFIELD TOWNSHIP, OHIO; ELYRIA, OHIO; LORAIN, OHIO; TOLEDO, OHIO; YOUNGSTOWN, OHIO; DAYTON, OHIO; MANSFIELD, OHIO; CANTON, OHIO; AKRON, OHIO; WARREN, OHIO; CINCINNATI, OHIO; CLEVELAND, OHIO; COLUMBUS, OHIO; LAWTON, OKLA; OKLAHOMACITY, OKLA; TULSA, OKLA; MEDFORD, OREG; EUGENE, OREG; SPRINGFIELD, OREG; SALEM, OREG; PORTLAND, OREG; READING, PA; ALTOONA, PA; JOHNSTOWN, PA; CARLISLE, PA; HARRISBURG, PA; ERIE, PA; SCRANTON, PA; LANCASTER, PA; LEBANON, PA; WILKES-BARRE, PA; WILLIAMSPORT, PA;

SHARON, PA; BETHLEHEM, PA; YORK, PA; PHILADELPHIA, PA;
PITTSBURGH, PA; PAWTUCKET, R I; PROVIDENCE, R I;
WOONSOCKET, R I; ANDERSON, S C; CHARLESTON, S C;
FLORENCE, S C; GREENVILLE, S C; COLUMBIA, S C;
SPARTANBURG, S C; ROCKHILL, S C; SIOUX FALLS, S DAK;
NASHVILLE, TN; CHATTANOOGA, TN; KNOXVILLE, TN;
KINGSPORT, TN; JOHNSONCITY, TN; MEMPHIS, TN; KILLEEN,
TEXAS; TEMPLE, TEXAS; BROWNSVILLE, TEXAS; HARLINGEN,
TEXAS; ELPASO, TEXAS; GALVESTON, TEXAS; TEXAS CITY,
TEXAS; EDINBURG, TEXAS; MCALLEN, TEXAS; MISSION,
TEXAS; BEAUMONT, TEXAS; LUBBOCK, TEXAS; WACO, TEXAS;
CORPUS CHRISTI, TEXAS; ARLINGTON, TEXAS; FORT WORTH,
TEXAS; AUSTIN, TEXAS; DALLAS, TEXAS; HOUSTON, TEXAS;
SAN ANTONIO, TEXAS; SALT LAKE CITY, UTAH; OREM, UTAH;
PROVO, UTAH; OGDEN, UTAH; BRISTOL, VA; HAMPTON, VA;
NEWPORTNEWS, VA; NORFOLK, VA; RICHMOND, VA;
ROANOKE, VA; VIRGINIA BEACH, VA; BURLINGTON, VT;
VANCOUVER, WASH; TACOMA, WASH; SPOKANE, WASH;
OLYMPIA, WASH; BELLINGHAM, WASH; SEATTLE, WASH;
MADISON, WIS; APPLETON, WIS; RACINE, WIS; NEENAH, WIS;
OSHKOSH, WIS; MILWAUKEE, WIS; HUNTINGTON, W VA;
CHARLESTON, W VA; WHEELING, W VA;

Readers with comments should address them to:

John R. Lott, Jr.
University of Chicago Law School
1111 East 60th Street
Chicago, IL 60637

Chicago Working Papers in Law and Economics
(Second Series)

1. William M. Landes, Copyright Protection of Letters, Diaries and Other Unpublished Works: An Economic Approach (July 1991).
2. Richard A. Epstein, The Path to *The T.J. Hooper*: The Theory and History of Custom in the Law of Tort (August 1991).
3. Cass R. Sunstein, On Property and Constitutionalism (September 1991).
4. Richard A. Posner, Blackmail, Privacy, and Freedom of Contract (February 1992).
5. Randal C. Picker, Security Interests, Misbehavior, and Common Pools (February 1992).
6. Tomas J. Philipson & Richard A. Posner, Optimal Regulation of AIDS (April 1992).
7. Douglas G. Baird, Revisiting Auctions in Chapter 11 (April 1992).
8. William M. Landes, Sequential versus Unitary Trials: An Economic Analysis (July 1992).
9. William M. Landes & Richard A. Posner, The Influence of Economics on Law: A Quantitative Study (August 1992).
10. Alan O. Sykes, The Welfare Economics of Immigration Law: A Theoretical Survey With An Analysis of U.S. Policy (September 1992).
11. Douglas G. Baird, 1992 Katz Lecture: Reconstructing Contracts (November 1992).
12. Gary S. Becker, The Economic Way of Looking at Life (January 1993).
13. J. Mark Ramseyer, Credibly Committing to Efficiency Wages: Cotton Spinning Cartels in Imperial Japan (March 1993).
14. Cass R. Sunstein, Endogenous Preferences, Environmental Law (April 1993).
15. Richard A. Posner, What Do Judges and Justices Maximize? (The Same Thing Everyone Else Does) (April 1993).
16. Lucian Arye Bebchuk and Randal C. Picker, Bankruptcy Rules, Managerial Entrenchment, and Firm-Specific Human Capital (August 1993).

17. J. Mark Ramseyer, Explicit Reasons for Implicit Contracts: The Legal Logic to the Japanese Main Bank System (August 1993).
18. William M. Landes and Richard A. Posner, The Economics of Anticipatory Adjudication (September 1993).
19. Kenneth W. Dam, The Economic Underpinnings of Patent Law (September 1993).
20. Alan O. Sykes, An Introduction to Regression Analysis (October 1993).
21. Richard A. Epstein, The Ubiquity of the Benefit Principle (March 1994).
22. Randal C. Picker, An Introduction to Game Theory and the Law (June 1994).
23. William M. Landes, Counterclaims: An Economic Analysis (June 1994).
24. J. Mark Ramseyer, The Market for Children: Evidence from Early Modern Japan (August 1994).
25. Robert H. Gertner and Geoffrey P. Miller, Settlement Escrows (August 1994).
26. Kenneth W. Dam, Some Economic Considerations in the Intellectual Property Protection of Software (August 1994).
27. Cass R. Sunstein, Rules and Rulelessness, (October 1994).
28. David Friedman, More Justice for Less Money: A Step Beyond *Cimino* (December 1994).
29. Daniel Shaviro, Budget Deficits and the Intergenerational Distribution of Lifetime Consumption (January 1995).
30. Douglas G. Baird, The Law and Economics of Contract Damages (February 1995).
31. Daniel Kessler, Thomas Meites, and Geoffrey P. Miller, Explaining Deviations from the Fifty Percent Rule: A Multimodal Approach to the Selection of Cases for Litigation (March 1995).
32. Geoffrey P. Miller, Das Kapital: Solvency Regulation of the American Business Enterprise (April 1995).
33. Richard Craswell, Freedom of Contract (August 1995).
34. J. Mark Ramseyer, Public Choice (November 1995).
35. Kenneth W. Dam, Intellectual Property in an Age of Software and Biotechnology (November 1995).
36. Cass R. Sunstein, Social Norms and Social Roles (January 1996).

37. J. Mark Ramseyer and Eric B. Rasmusen, *Judicial Independence in Civil Law Regimes: Econometrics from Japan* (January 1996).
38. Richard A. Epstein, *Transaction Costs and Property Rights: Or Do Good Fences Make Good Neighbors?* (March 1996).
39. Cass R. Sunstein, *The Cost-Benefit State* (May 1996).
40. William M. Landes and Richard A. Posner, *The Economics of Legal Disputes Over the Ownership of Works of Art and Other Collectibles* (July 1996).
41. John R. Lott, Jr. and David B. Mustard, *Crime, Deterrence, and Right-to-Carry Concealed Handguns* (August 1996).
42. Cass R. Sunstein, *Health-Health Tradeoffs* (September 1996).
43. Douglas G. Baird, *The Hidden Virtues of Chapter 11: An Overview of the 1a and Economics of Financially Distressed Firms* (March 1997).
44. Richard A. Posner, *Community, Wealth, and Equality* (March 1997).
45. William M. Landes, *The Art of Law and Economics: An Autobiographical Essay* (March 1997).
46. Cass R. Sunstein, *Behavioral Analysis of Law* (April 1997).
47. John R. Lott, Jr. and Kermit Daniel, *Term Limits and Electoral Competitiveness: Evidence from California's State Legislative Races* (May 1997).
48. Randal C. Picker, *Simple Games in a Complex World: A Generative Approach to the Adoption of Norms* (June 1997).
49. Richard A. Epstein, *Contracts Small and Contracts Large: Contract Law through the Lens of Laissez-Faire* (August 1997).
50. Cass R. Sunstein, Daniel Kahneman, and David Schkade, *Assessing Punitive Damages (with Notes on Cognition and Valuation in Law)* (December 1997)
51. William M. Landes, Lawrence Lessig, and Michael E. Solimine, *Judicial Influence: A Citation Analysis of Federal Courts of Appeals Judges* (January 1998)
52. John R. Lott, Jr., *A Simple Explanation for Why Campaign Expenditures are Increasing: The Government is Getting Bigger* (February 1998)
53. Richard A. Posner, *Values and Consequences: An Introduction to Economic Analysis of Law* (March 1998)

54. Denise DiPasquale and Edward L. Glaeser, Incentives and Social Capital: Are Homeowners Better Citizens? (April 1998)
55. Christine Jolls, Cass R. Sunstein, and Richard Thaler, A Behavioral Approach to Law and Economics (May 1998)
56. Andrew Guzman, Portable Reciprocity: Rethinking the International Reach of Securities Regulation (May 1998)
57. John R. Lott, Jr., Does a Helping Hand Put Others At Risk?: Affirmative Action, Police Departments, and Crime (June 1988)