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Economic Issues in Crime Policy: Dissertation Summary

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"Economic Issues in Crime Policy"

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From 1980 to 1993, the number of inmates in state and federal prisons tripled. Throughout this expansion, the poorly-educated continued to be overrepresented among the nation's prisoners. While there is renewed interest in training programs for displaced workers, welfare recipients, and school dropouts, the criminal justice community still reverberates the "nothing works" judgment about rehabilitation from the 1970's. (See Martinson (1974).) While rapidly expanding prison populations have led to the development of "alternative sanctions" to divert inmates to less expensive modes of supervision, basic education is being overlooked as a promising training program to reduce prison populations.

The economic theory of criminal behavior provides some predictions about the relationship between education and criminality. Becker's (1968) model of maximizing utility by choosing between legal and illegal activities was extended by Ehrlich (1975) to explicitly consider education. In Ehrlich's model, education affects the incentive to participate in illegal activity to the extent that it affects the relative opportunities available to potential offenders. If the returns to education are higher in legitimate activities, an increase in education increases the direct payoff to legal-sector activities and increases the

opportunity cost of incarceration, thereby reducing the incentive to commit crime. However, the value of education as a crime prevention program must ultimately be settled empirically.[1]

The first two chapters of this dissertation offer several pieces of evidence on the relationship between criminal behavior and education received both inside and outside prison.[2] The analysis in chapter one utilizes a new data set from the Wisconsin Department of Corrections covering all commitments to the state prison system over the 1980's. In that data set, higher

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[1]Recent research on individual criminal behavior has focused on young men, as they are responsible for the majority of criminal acts. While no recent econometric studies of crime have education as their primary focus, several include education as part of the analysis. Freeman (1992) documents the involvement of disadvantaged young men in illegal activities, which is particularly pronounced among those with the lowest educational attainment. Grogger (1994) includes education in his structural model of legal and illegal labor supply, concluding that education matters in criminality only to the extent that it affects wages. Viscusi (1986) finds that participation in crime is not statistically significantly related to years of education but is strongly related to enrollment status in a sample of young black males in three cities. The literature on rehabilitation of convicted offenders is mixed, often does not provide much discussion of possible selection effects, and often considers counseling rather than educational programs.

[2]Note that educational programs are common in prison systems.

educational achievement[3] is associated with lower recidivism rates.[4] In addition, people are learning in these prison-based programs. Men who appear in the Wisconsin data more than once were substantially better educated when they arrived for their second prison term than they had been the first time they were observed. They gain 1.3 years of schooling and 0.6 grade levels of tested achievement over an average of four years between admissions. It is likely that these gains are the result of the broad array of prison education offerings. Ehrlich's theory

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[3]Achievement is measured by an adult basic education standardized test administered to all inmates upon entry to the state prison system.

[4]In the analysis of future criminal activity, both the probability of recidivism and the time to recidivism are of substantive interest. Specifically, the expected costs of future incarceration for a newly-released group of prisoners depends on the probability they return to prison. A small reduction in that likelihood could result in substantial savings, as the average term served is about 17 months. The recidivism savings also have a "multiplier" effect, as that individual who does not return to prison not only does not serve a second term, but does not return for a third term either. The differential effects of any variable on the probability of recidivism and the length of time until return may help in understanding the determinants of recidivism. In this dissertation, accelerated failure-time models are used where right censoring of the data is substantial. In other settings, the probability of failure and the time to failure (conditional upon failure) are estimated separately.

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would predict that those who returned gained less from the education programs, on average, than those who did not return.

The focus of chapter one is an evaluation of the impact on recidivism of completing an adult basic or high school education program while in prison. I find that education in prison is associated with statistically significant reductions in the probability of recidivism and significant increases in the time until recidivism. Since only inmates in Wisconsin prisons late in the decade have indicators of participation in prison education programs included in the data, here I analyze a subsample of the administrative data. In this subsample, 39 percent were returned to prison within four years of release. However, those inmates who completed education program were nine percentage points less likely to be reincarcerated over that period. Thus, not only do those who enter prison with higher educational attainment have lower recidivism rates, but it appears possible to reduce recidivism by providing education in prison.

One is always concerned about endogenous determination of a variable of interest, particularly in program evaluation, and it is these concerns that motivate much of chapter one. Specifically, it is possible that inmates do not learn anything useful in prison education classes and completing a program merely indicates something about the motivation of the inmate. In that case, it would be wrong to attribute the lower recidivism

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rates to the program, since all the program does is sort the offenders by their level of interest in the program, which happens to be correlated with the probability of returning to prison.

I employ two primary methods to address possible selection bias. First, I explore the impact of adding covariates to explain recidivism. Here, I benefit from the rich set of controls available in the administrative data, including indicators of offense type, prior criminality, security classification, and test score. These controls should be good proxies for inmate heterogeneity, yet none of these attenuate the effect of education programs on recidivism.

In the second approach to accounting for possible selection bias, I develop a flexible hazard model which allows for the possibility that the unobservables influencing recidivism are correlated with those influencing selection into the education programs. This estimation strategy accommodates endogenous selection into the education program without requiring assumptions on the form of the baseline hazard (as in a parametric tobit model). In addition, this approach does not rely on exclusion restrictions to identify the selection effect.

There are two equations in this maximum likelihood model of discrete choice. The flexible hazard equation,

$$P(T=k \mid E, X, \theta_H, T > k\text{-}1) = 1 - \exp(-\exp(\alpha_k + \gamma E + \beta_H^{/} X)\, \theta_H), \qquad (1)$$

specifies the conditional probability of recidivism in period K given it hasn't occurred before K as a function of educational program status E; a set of regressors X, including age at admission, race, test score, prior educational attainment, whether or not the inmate had served other terms in prison, and sentence length; and an unobserved random variable θ_H uncorrelated with E and X. The baseline hazard parameter, α, takes on a different value in each period. The parameter of interest here is γ, which measures the impact of completing an educational program in prison on the conditional recidivism hazard.

To account for potential endogeneity of the educational program status dummy, a second equation is included:

$$P(E = 1 \mid X) = 1 - \exp(-\exp(\beta_S' X) \, \theta_s) , \qquad (2)$$

where θ_S is an unobserved random variable uncorrelated with X. Correlation between θ_H and θ_S is allowed, however, and this correlation is where the selection behavior is captured. Heterogeneity in this model can be specified as a number of "types" of individuals, with each type described by a distinct pairing (θ_H, θ_S). The estimation identifies clusterings of unobserved components of individual behavior, interpreted as "types" of actors.

In estimates of the selection equation, the important determinants of whether an inmate completes an education

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program are test score (measured upon entry to prison), whether he has already graduated from high school, whether he has served time in prison before, the sentence length and sentence status.[5] Inmates who have served time in the past are less likely to complete a program in the current term. This result is likely the sum of two effects operating in the same direction. First, inmates who have squandered an opportunity in the past are less likely to be recommended to a program. Second, inmates who had the opportunity for prison education in the past and who "failed" on the outside are less likely to succeed if given access to an education program a second time. Note that the latter effect serves as a control for inmate heterogeneity. Inmates with longer sentences are more likely to complete programs, which makes sense since programs may take several months to complete.

In the hazard equation, the coefficient on educational program completion is negative and significant, meaning that those who complete programs are less likely to return to prison. The pattern of sign and significance of the coefficients is similar to those of the earlier models. Conditional on the other included covariates, those who have served time in the past and those

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[5]Based on personal observation and interviews at Dodge Correctional Institution in the spring of 1992, these are exactly the factors that the Assessment and Evaluation committee used in determining assignments to prison education programs.

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released from higher-security facilities have statistically significantly higher hazard rates.

In sum, selection bias does not seem to be driving the finding that inmates who complete education programs have lower rates of recidivism: the semiparametric flexible hazard formulation to allow for heterogeneity yields estimates similar to those from probits and tobits which do not control for endogenous selection. The richness of the data and the structure of educational assignment seem to account for the usual endogeneity concerns.

The final piece of evidence on the relationship between criminality and education comes from the analysis of a sample of non-incarcerated young men in chapter two. The Boston Youth Survey (BYS) interviewed youths 17-24 years old in low income areas of Boston in 1989 about a wide range of socioeconomic topics. In the BYS, I find that more schooling is associated with lower probabilities of committing illegal activities and, for those who report involvement in criminal activity, more schooling is associated with lower conviction rates. In this sample, 23 percent have committed crime in the past year. An additional year of education is associated with a 2.8 percentage point decrease in the predicted probability of committing crime. Among those who have committed crime, 32 percent have been convicted. An additional year of education is associated with a 6.2 point drop in

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that predicted probability. In contrast to the strong effect of education, other background characteristics do not predict conviction.

If those individuals with the greatest likelihood of detection desist from illegal activity, the errors in the crime equation and the conviction equation will be negatively correlated, leading to attenuation bias in the estimated coefficients on education. To account for this, I propose and estimate a simultaneous model, finding no significant correlation between the errors in the two equations. Education remains a strongly significant (negative) predictor of criminality while the statistical significance of education as a covariate of conviction drops below conventional levels. The results in chapter two imply that while the over-representation in prison of those with low educational attainment may result from both a higher probability of committing crime and a higher probability of conviction, the former effect is more important. The conviction effect is both smaller quantitatively and fragile to specification.

Together, the first two chapters of the dissertation complement existing evidence that there are high social returns to educating people with limited access to education. For young men in the central city, more education is associated with lower levels of criminal behavior and, for those who are not diverted,

education in prison reduces recidivism.[6] While one should be cautious in interpreting results from very different samples of the population,[7] the results of chapter two suggest that the effect of education is to reduce criminality, not to make criminals "smarter" (e.g., better at avoiding detection).

The estimated reduction in recidivism due to prison education programs represents substantial social savings. These can accrue from lower corrections expenditures, fewer crimes, lower security costs, lower levels of crime, and higher employment of releasees. Although the results of this research suggest that states should be expanding their education programs in correctional facilities, *Corrections Compendium* reports that many states have cut their budgets for prison education in the past five years, even as prison populations increased rapidly (Lillis, (1994)).

While the implications of this research for criminal justice policy are clear, that training programs in prisons should be expanded, the implications for employment policy are less direct.

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[6]Across data sources and specifications, white men gain more from education than do blacks. This is consistent with the finding of Viscusi (1986).

[7]That is, the experience of convicted offenders in Wisconsin may be different from the population of disadvantaged youth in Boston.

One implication is that consideration of criminal justice outcomes will tilt the balance in favor of general training and employment programs.[8] The economic model motivating this research suggests that the recidivism reductions come from employment effects. Further research is necessary to establish evidence for that link and to determine the extent to which increasing earnings inequality in the legal sector contributes to participation in illegal activities. It is possible that other types of employment policies, in addition to traditional training, could have large impacts on crime rates and criminal justice expenditure.

In chapter three, the dissertation turns to another subject relevant to current criminal justice policy debates: immigration. This issue has figured prominently in gubernatorial races, most notably California, and in suits by several states to recoup, from the federal government, public expenditures on immigrants. Though there is much hyperbole as to whether immigration increases the crime rate, there is no credible empirical evidence. This chapter, written jointly with Kristin Butcher, fills this gap.

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[8]The evaluations of the Job Corps program provide an example of the potential importance of crime reductions as a benefit of training programs. (See Levitan and Gallo (1988), Long et al. (1981), and Mallar et al. (1982).) Donohue and Siegelman (1995, p. 61) report that 40 percent of the social benefits of the Job Corps program came from reduced crime.

Rather than joining the debate about public expenditures, chapter three investigates two of the possible avenues through which immigrants might affect the criminal justice system: immigrants may be more likely to commit crimes than natives and/or immigrants may have an adverse impact on crime by crowding natives out of the legal sector and into the illegal sector. These effects both imply that crime rates would be higher in areas with heavy immigrant concentrations, ceteris paribus. We exploit the fact that immigration is a geographically concentrated phenomenon and use data from the Current Population Survey (CPS) and the Uniform Crime Reports (UCR) to compare the levels of crime in immigrant intensive cities to the levels of crime in other cities over the period 1980-1990.[9] We find that cities with large numbers of immigrants tend to have high crime rates in the cross-section, but there is no evidence that areas with high levels of immigration have experienced disproportionate growth in criminal activity over the last decade. Therefore, either immigrants are no more likely to commit crimes and do not crowd natives into crime or these two effects are offsetting.

There are several alternative explanations for this estimated zero effect, which we examine in turn. The first

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[9]Our research strategy is similar to that used by others to analyze the effect of immigration on the employment and wages of the native-born.

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interpretation, that demographic changes are not reflected in city crime rates, may not be surprising given the consensus in the crime literature that it is very difficult to explain levels of crime. A second explanation is that immigration, other migration, legal labor market activity, and criminal activity are simultaneously determined.[10] Following Altonji and Card (1991), we control for potential correlations between immigrant inflows and local economic conditions by using an instrumental variables procedure, using the initial fraction foreign-born as a predictor of immigrant inflows over the decade. The instrumental variables procedure does not change our estimate that increases in immigration have no impact on growth in crime rates. These results suggest that simultaneity is not responsible for the zero coefficient on immigration in the first differences.

The third explanation for our results is that our data are simply too noisy. In particular, the fraction of the population comprised by new immigrants may be too small in most cities to be accurately sampled by the CPS. To investigate this hypothesis, we analyze the fraction of the population that is Hispanic rather

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[10]Evidence on this issue is mixed. For example, Filer (1992) reports that immigration into a city increases native outflows and reduces the number of natives moving in. In contrast, Butcher and Card (1991) report that except for the three most immigrant intensive cities (Miami, Los Angeles, New York), immigrants and natives appear to be moving to the same cities during the 1980's.

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than the fraction of new immigrants since the two are highly correlated and the former should be measured with less error. We find that although some cities show a dramatic increase in the fraction of the population that is Hispanic, these cities do not experience higher than average increases in crime over the decade. A second potential source of measurement error comes from changes in definitions of metropolitan areas and central cities during the 1980's. In order to test for this problem, we re-ran our regressions using only data from after 1983. Changing the sample in this way does not change the estimated zero impact of fraction recent immigrant on changes in the crime rate.

A final source of misspecification may be that we do not have the timing right; perhaps it takes a certain amount of time for an immigrant to either assimilate into the legal labor market or enter the criminal sector. Our measure of recent immigrant, capturing only those who immigrated in the past year, would not pick up these effects. We attempt to address this in several ways: by looking at the change in crime rate over the 10 year period, and by allowing one, two and three year lags of fraction recent immigrant to enter regressions. None of these specification checks alter inference.

Since the direct and indirect effects of immigration cannot be separately identified in the city-level analysis, we also use data on individuals from the 1980 National Longitudinal Survey of

Youth (NLSY) to see whether immigrants are more likely to report having committed criminal acts than natives. In the individual data, immigrants are significantly less likely to commit crime whether or not one controls for other demographic characteristics.

The findings from the metropolitan area analysis are consistent with the literature on immigration's effect on local labor markets, which finds little or no adverse effect of immigration on the wages of natives. They are also consistent with the crime literature, which has been quite unsuccessful at explaining variation in crime rates across cities. (See Land, McCall and Cohen (1990) for a review.) Given the absence of any relationship between immigration rates and changes in crime rates, we conclude that it is inappropriate, as well as pointless, to use immigration policy to achieve criminal justice goals. We find no support for the idea that cities receiving large immigrant inflows require a different employment policy than do cities receiving large inflows of native migrants.

The evidence reported in this dissertation provides strong testimony about several aspects of criminal justice policy and highly suggestive testimony about employment policy. Moving the public debate to reflect empirical realities, however, requires much more.

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