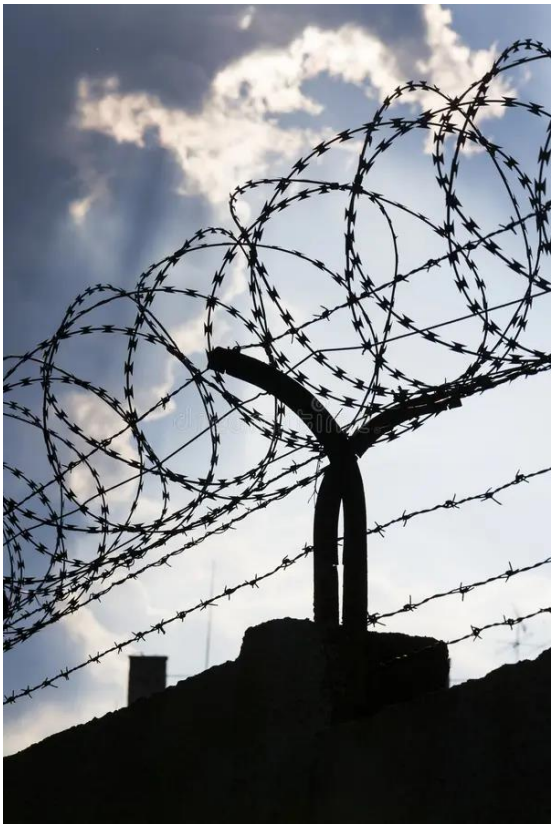

THE MACROECONOMIC AND POLITICAL FACTORS AFFECTING AVAILABILITY OF REHABILITATION PROGRAMS IN AMERICAN PRISONS

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The central focus of this econometric research project is to explore whether the macroeconomic factors and political leadership of a state have a significant impact on the availability of rehabilitation programs within that state's prison facilities. The urgency of this question is derived from the adverse outcomes linked to facilities that fail to provide sufficient opportunities for prisoners to prepare themselves for life after release. In the United States, over 600,000 prisoners are released annually, with more than seventy percent of them re-arrested within five years of release. Each new recidivist represents a new victim of crime and adds a financial burden on taxpayers for re-incarceration, diverting resources away from essential government services like early education and social services that help prevent crime. Examining the factors that cause facilities to offer less rehabilitation programs is an essential step towards improving our criminal justice system.

It is essential to acknowledge that most prisons prefer to offer rehabilitation programs to their residents, but they lack the necessary funding. Running prisons has become increasingly expensive, with the United States spending approximately $50 billion annually on corrections. Over the past twenty years, the growth of these expenditures has outpaced budget increases for other essential government services such as transportation, higher education, and public assistance (Petersillia 2011). The social and economic costs of prisons failing to achieve the rehabilitation goals of our justice system are even more daunting. The U.S. economy loses an estimated $60 billion annually from the lack of labor due to the high numbers of incarcerated individuals.

Several studies have shown that prison rehabilitation programs are cost-effective as they decrease the recidivism rate, ultimately decreasing the total tax dollars spent on incarceration. For example, Ohio inmates who enroll in college classes have a re-offending rate of 18 percent, while prisoners who do not take college courses have a re-incarceration rate of 40 percent. Similarly, New York prisoners who earn a college degree while incarcerated are almost half as likely to get arrested after release compared to inmates who do not earn a degree (Vacca 2004). Job training programs have also proven to be cost-effective. Minnesota's work-release program saved the state $1.25 million between 2007 and 2011 due to the decrease in the prison population. For each inmate who participates in a work-release program, the state saves $700 on average (Duwe 2015).

The question remains as to why some states are more prone to implement these programs than others. Previous research has shown significant differences in states' allocation of criminal justice spending, with states spending roughly half of their criminal justice budgets on policing,

another third on corrections, and a fifth on judicial and legal expenses (Schanzenback 2016). However, the specific allocation of criminal justice funding varies among states and reflects varying community needs and policy priorities.

While there have been state-wide studies on the impacts of rehabilitation programs and differences in funding allocation, little research has been done to unveil a large-scale pattern of what makes states more likely to incorporate rehabilitation programs into their prisons. This study posits that there is a positive correlation between a state's GDP per-capita and the availability of rehabilitation programs, while a negative correlation exists between the state's unemployment rate and the availability of rehabilitation programs. Finally, this study postulates that democratic governor leadership yields a higher probability of rehabilitation programs being offered within the state.

The first two hypotheses derive from the belief that states with healthy economies are more likely to invest in rehabilitation ventures as they are better positioned to take risks to continue building the labor force and implementing measures against crime. The belief that democratic governors would be more likely to support rehabilitation programs stems from their historical support for comprehensive healthcare and social programs, as well as free college tuition.

Data

The present study is primarily based on data collected from the 2005 Census of State and Federal Adult Correctional Facilities, a survey conducted every five to seven years that includes responses from prisoners. This survey comprises a comprehensive collection of 235 variables, of which those relating to correctional programs within the prisons are of utmost relevance for the current investigation. The first step in collecting the data was to extract data from all 50 states indicating the availability of rehabilitation programs in their facilities. Specifically, ten different kinds of rehabilitation program variables were identified and subsequently used as indicator variables in the analysis.

The next step involved the acquisition of pertinent state-level economic indicators, specifically, Gross Domestic Product (GDP) per capita, unemployment rates, and the political affiliation of the respective governor. The GDP per capita for each state during 2005 was obtained from the Department of Numbers website. Unemployment rates for each state were sourced from the Bureau of Labor Statistics website, with the average rate for each state during 2005 being

computed from the "Economy at a Glance" tables. The political affiliation of each state's governor during 2005 was reported using a report published by the National Governor's Association. In total, the dataset contains 1,821 observations, with all the variables appropriately compiled and processed for subsequent econometric analysis.

Upon examining the summary statistics (which can be found in the Appendix), it is notable that the average availability of medical treatment was significantly lower than the average availability of other programs, particularly when compared to literacy and life-skills training. Although the survey did not provide a specific definition for medical treatment, it is possible that the program only covers on-site treatment, whereas off-site treatment is available only on an as-needed basis. Given that medical treatment is a costly program with limited potential for return on investment, it is conceivable that prisons may exclude it in order to reduce expenses. Notwithstanding these concerns, I will proceed with utilizing this variable for my research, relying on its accuracy.

One issue discussed with Professor Yang pertains to the unbalanced data among states, where certain states have more observations than others. For instance, Texas has forty-three surveyed prisoners, while Nevada has only twenty-one. We have concluded that limiting the data to states with the smallest number of observations would not be beneficial since this could eliminate observations that might impact the results. No other shortcomings have been observed in the data.

Model Specification

In testing my hypotheses, I will employ the probit model, which is a non-linear model that controls for situations where the expected probability exceeds the [0,1] range. This is particularly important because I am predicting a negative correlation with one of the variables. To test all my hypotheses simultaneously, I will generate an indicator-dependent variable called "any_program" to assess whether GDP per-capita, unemployment rate, and democratic governor leadership influence the availability of any rehabilitation programs.

However, one caveat of this model is the risk of collinearity between GDP per-capita and unemployment rate, where one variable may influence the other. To provide comprehensive results, I will conduct a regression analysis with all dependent variables, then isolate each variable to assess its individual impact on the outcome.

Results

The empirical analysis reveals intriguing insights into the factors that shape the availability of rehabilitation programs in state prisons in the United States. First, the results demonstrate a positive and statistically significant relationship between GDP per-capita and the probability of offering alcohol, medical, mental health, education, and drug treatment programs, confirming our hypothesis. Specifically, for every increase of $1,000 in GDP per-capita, the probability that these programs are offered increases by 0.0159%, 0.0274%, 0.0996%, 0.0872%, and 0.019%, respectively. These findings suggest that states with stronger economic performance are more likely to invest in rehabilitation programs, possibly due to increased resources and political support for social welfare programs.

Second, the study finds a counterintuitive relationship between the unemployment rate and the probability of offering alcohol, medical, and drug treatment programs, which runs contrary to our hypothesis. Specifically, an increase of 1% in the unemployment rate increases the likelihood of offering alcohol and drug treatment programs by 13.5% and 14.6%, respectively, while decreasing the probability of offering medical programs by 4.3%. This finding may reflect the political economy of crime control, whereby higher levels of unemployment lead to increased demands for law-and-order policies and, consequently, greater resources allocated to criminal justice programs.

Third, we observe that Democratic leadership is positively associated with the probability of offering alcohol, medical, and drug treatment programs, while having no effect on the availability of mental health, education, life-skills, and counseling programs. Specifically, if the sitting governor is a Democrat, the probability of offering alcohol, medical, and drug treatment programs increases by 31.1%, 0%, and 31.9%, respectively. The result for alcohol treatment programs is in line with previous studies, which suggest that Democratic leaders are more likely to support social welfare programs, while the lack of effect on medical and drug treatment programs may reflect the competing demands for resources between healthcare and criminal justice policies.

Fourth, the results show that vocational training programs are only affected by GDP per-capita, with every increase of $1,000 in GDP per-capita resulting in a 0.0125% increase in the probability of offering vocational training opportunities. This finding underscores the importance

of vocational training in reducing recidivism rates, as it increases the likelihood of prisoners finding employment after release.

Finally, the study finds that the availability of college programs is exclusively impacted by the political affiliation of the governor, with a 19.3% increase in the probability of offering college programs if the governor is a Democrat. This finding suggests that Democratic leaders are more likely to invest in costly initiatives that improve human capital, such as college programs, despite the potential fiscal constraints.

Overall, the findings reveal that macroeconomic factors, such as GDP per-capita and unemployment rates, as well as political leadership, significantly shape the availability of rehabilitation programs in state prisons. While the limitations of the model must be acknowledged, including state-specific factors that affect the provision of rehabilitation programs, this study provides a comprehensive analysis of the broader patterns of rehabilitation program provision across the United States. These results have important implications for policymakers and advocates seeking to improve the effectiveness of prison rehabilitation programs in reducing recidivism rates and promoting successful reentry into society.

Conclusion

After analyzing the data using probit regression, several significant outcomes were observed. The collinearity issue between GDP per-capita and unemployment rates was resolved by performing isolated regressions on each variable, which facilitated a better understanding of the relationship between the two. Notably, the negative coefficient of GDP per-capita in the initial regression was a clear indication that using variables for GDP per-capita and unemployment rates together could lead to unreliable results. Moreover, the model was refined by separating the programs for each regression and had the mean averages of occurrences of all the programs been more closely related, the variable "any_program" might have been more trustworthy.

Upon considering all significant outcomes, GDP per-capita was found to have the most significant impact on the availability of rehabilitation programs. GDP per-capita was an influencing factor for all but two of the ten types of programs researched: mental health programs and college programs. All other program-specific dbregressions confirmed the hypothesis that GDP per-capita is positively correlated with the availability of rehabilitation programs. In general, the impact of unemployment rates on the availability of rehabilitation programs followed the

results of GDP per-capita. However, in two cases, unemployment rates were positively correlated with the availability of programs, suggesting that unemployment rates may not be an excellent indicator of the probability that rehabilitation programs are offered.

Notably, the political affiliation of the state's governor had the most unreliable effect on the availability of rehabilitation programs. Only three programs yielded a positive relationship with democratic leadership: alcohol/drug treatments, and the availability of college courses. This, coupled with the tendency of many states to flip-flop between democratic and republican leadership, suggests that a sitting democratic governor does not have consistent implications for whether the state offers more or fewer rehabilitation programs.

The findings indicate that high GDP per-capita results in more rehabilitation programs, which should serve as a motivation for states to take steps to boost overall wealth and production. As rehabilitation has been shown to lessen the likelihood of offenders to recidivate, those individuals have a greater chance to contribute to the job market and overall economy upon release. In conclusion, this study has highlighted the importance of GDP per-capita as a crucial determinant of the availability of rehabilitation programs in states.

Sources

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Appendix

Dependent Variable Descriptions Table

PROGRAM TYPE	Description	Unit of Measure
ALCOHOL	An indicator variable that tells us whether alcohol treatment is offered within the prison	0 or 1
MEDICAL	An indicator variable that tells us whether medical treatment is offered within the prison	0 or 1
MENTAL	An indicator variable that tells us whether mental health treatment is offered within the prison	0 or 1
COUNSEL	An indicator variable that tells us whether counseling is offered within the prison	0 or 1
EDUCATION	An indicator variable that tells us whether any education is offered within the prisons	0 or 1
COLLEGE	An indicator variable that tells us whether college courses are offered within the prison	0 or 1
LITERACY	An indicator variable that tells us whether literacy training is offered within the prison	0 or 1
VOCATION	An indicator variable that tells us whether vocational training is offered within the prison	0 or 1
LIFESKILLS	An indicator variable that tells us whether life-skills training is offered within the prison	0 or 1
DRUG	An indicator variable that tells us whether drug treatment is offered within the prison	0 or 1

Independent Variable Table

Variable	Description	Unit of Measure
GDPCAPITA	A state-wide measure of GDP divided by the population	Dollars
UNMPLYMNTRT	A state-wide measure of the number of unemployed individuals divided by the labor force	A percentage expressed as a decimal
DEMGOV	An indicator variable that tells us whether the sitting governor is a democrat	0 or 1

Summary Statistics

Variable	Mean	Std. Dev	Min.	Max.	Obs.
ALCOHOL	0.72307	0.44760	0	1	1,821
MEDICAL	0.12417	0.32987	0	1	1,821
MENTAL	0.04945	0.21686	0	1	1,821
COUNSEL	0.02307	0.15018	0	1	1,821
EDUCATION	0.35659	0.47912	0	1	1,821
LITERACY	0.65714	0.47479	0	1	1,821
VOCATION	0.51703	0.49984	0	1	1,821
LIFESKILLS	0.77523	0.41751	0	1	1,821
DRUG	0.72143	0.44841	0	1	1,821
COLLEGE	0.03131	0.17422	0	1	1,821
GDPCAPITA	$46,774	$7,473.32	$30,813	$67,525	1,821
UNMPLYMNTRT	5.07681	0.91186	2.9	7.5	1,821
DEMGOV	0.38187	0.48597	0	1	1,821

Significant Hypothesis Testing Results

Alcohol Treatment Programs

$P(ALCOHOL) = \Phi (\beta_1 + \beta_2(GDPCAPITA))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
GDPCAPITA	.0000159	.000	7.46e-06 to .000024

$P(ALCOHOL) = \Phi (\beta_1 + \beta_2(UNMPLYMNTRT))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
UNMPLYMNTRT	.1353572	.000	.0672009 to .203513

$P(ALCOHOL) = \Phi (\beta_1 + \beta_2(DEMGOV))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
DEMGOV	.3111227	.000	.181602 to .440643

Medical Treatment Programs

$P(MEDICAL) = \Phi (\beta_1 + \beta_2(GDPCAPITA))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
GDPCAPITA	.0000274	.000	.000011 to .000037

$P(MEDICAL) = \Phi (\beta_1 + \beta_2(UNMPLYMNTRT))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
UNMPLYMNTRT	-.042663	.000	-.243897 to -.076661

Mental Treatment Programs

$P(MENTAL) = \Phi (\beta_1 + \beta_2(GDPCAPITA))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
GDPCAPITA	.0000996	.000	.000083 to .0001157

$$P(MENTAL) = \Phi\ (\beta_1 + \beta_2(UNMPLYMNTRT))$$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
UNMPLYMNTRT	-.194159	.001	-.313320 to -.074971

Education Programs

$$P(EDUCATION) = \Phi\ (\beta_1 + \beta_2(GDPCAPITA))$$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
GDPCAPITA	.0000872	.000	.000069 to .000105

$$P(EDUCATION) = \Phi\ (\beta_1 + \beta_2(UNMPLYMNTRT))$$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
UNMPLYMNTRT	-.18851	.008	-.326794 to -.050241

Vocational Programs

$$P(VOCATION) = \Phi\ (\beta_1 + \beta_2(GDPCAPITA))$$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
GDPCAPITA	.0000125	.001	4.79e-06 to .0000202

Life-Skills Programs

$$P(LIFESKILLS) = \Phi\ (\beta_1 + \beta_2(GDPCAPITA))$$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
GDPCAPITA	.0000113	.009	2.79e-06 to .000019

$$P(LIFESKILLS) = \Phi\ (\beta_1 + \beta_2(UNMPLYMNTRT))$$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
UNMPLYMNTRT	-.1306604	.000	-.201177 to -.060143

College Programs

$P(COLLEGE) = \Phi (\beta_1 + \beta_2(DEMGOV))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
DEMGOV	.1933588	.002	.072347 to .314369

Drug Treatment Programs

$P(DRUG) = \Phi (\beta_1 + \beta_2(GDPCAPITA))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
GDPCAPITA	.000019	.000	.000011 to .0000284

$P(DRUG) = \Phi (\beta_1 + \beta_2(UNMPLYMNTRT))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
UNMPLYMNTRT	.1459618	.000	.077951 to .213971

$P(DRUG) = \Phi (\beta_1 + \beta_2(DEMGOV))$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
DEMGOV	.318610	.000	.189148 to .448072

Insignificant Hypothesis Testing Results

$P(ANY\_PROGRAM) = \Phi (\beta_1 + \beta_2(GDPCAPITA) + \beta_3(UNMPLYMNTRT) + \beta_4(DEMGOV))$

Dep. Variables	Coefficient	P>|z|	95% Confid. Int.
GDPCAPITA	-6.66e-07	.908	-.000012 to .000010
UNMPLYMNTRT	-.085022	.080	-.180306 to .010261
DEMGOV	.313758	.721	-.140933 to .203685

$$P(ANY\_PROGRAM) = \Phi\ (\beta_1 + \beta_2(GDPCAPITA))$$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
GDPCAPITA	1.83e-06	.743	-9.12e-06 to .000012

$$P(ANY\_PROGRAM) = \Phi\ (\beta_1 + \beta_2(UNMPLYMNTRT))$$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
UNMPLYMNTRT	-.0838672	.073	-.17558 to .007855

$$P(ANY\_PROGRAM) = \Phi\ (\beta_1 + \beta_2(UNMPLYMNTRT))$$

Dep. Variable	Coefficient	P>|z|	95% Confid. Int.
DEMGOV	.0351196	.689	-.136743 to .206982