

The Impact of Local Labor Market Conditions on the Likelihood that Parolees are Returned to Custody

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Abstract

In this paper, we assess whether the availability of employment opportunities impacts the likelihood that a paroled ex-offender is returned to custody. Using administrative data from the California State Department of Corrections, we assess whether the likelihood that a paroled offender is returned to prison depends on the local labor market conditions in the county where the offender is released at the time of release. We find moderate effects of county unemployment rates at the time of release on the likelihood that a paroled offender is returned to custody. When we stratify by offender characteristics, the impact of employment conditions on the likelihood of re-incarceration is larger for offenders that are relatively less likely to violate the imposed parole terms. Combined with findings from research on the impact of local unemployment rates on the employment probabilities of low-skilled workers, our results imply that the impact of being employed on the probability of being returned to custody is small for the average parolee, on the order of one to two percentage points. However, our results also indicate that the employment effects for parolees that are at relatively low-risk of violating parole are fairly large. For the lowest-risk parolees, our results suggest that having a job reduces the likelihood of being returned to custody on a parole violation by 6 to 12 percentage points. This amounts to 13 to 26 percent of the overall return rate for low-risk parolees.

1. Introduction

The post-release employment experience of a paroled ex-offender is frequently offered as an important determinant of whether the individual successfully completes his or her term of community supervision. Support for this proposition comes from (1) research demonstrating a positive relationship between labor market conditions and crime rates, and (2) evaluations of parolee employment programs showing significant associations between program participation, employment, and recidivism. However, drawing inferences from this empirical evidence about the effect of employment interventions on recidivism and parole violations is problematic for several reasons. Concerning the aggregate unemployment-crime research, demonstrating an aggregate impact of unemployment on crime does not demonstrate that the criminal behavior of released prison inmates is sensitive to available employment opportunities. One might argue that such offenders are a particularly hardened group, and that the supply of ex-offenders to both the legitimate labor market as well as to criminal activity is likely to be inelastic.

Concerning the evaluation evidence of targeted program interventions, very little of this research is based on careful experimental or quasi-experimental research methods. Program participation is rarely determined by random assignment and hence it is impossible to distinguish programmatic effects from unobserved differences in motivation or determination. In light of these weak methodological designs, two recent reviews of this research have concluded that while suggestive, one cannot infer much of an impact from the available research on targeted intervention (Bushway and Reuter 2002, Wilson et. al. 2000).

In this paper, we assess whether the availability of employment opportunities impacts the likelihood that a paroled ex-offenders is returned to custody. We use a source of variation in employment conditions, however, that is unlikely to be related to unobserved differences in

motivation. Using administrative data from the California State Department of Corrections, we assess whether the likelihood that a paroled offender is returned to prison depends on the local labor market conditions in the county where the offender is released at the time of release. We test for overall effects of local labor market conditions on all individuals paroled during the 1990s and for groups of parolees stratified by variables that are highly correlated with the likelihood of being returned to custody.

We find moderate effects of county unemployment rates at the time of release on the likelihood that a paroled offender is returned to custody. The difference in return rates between those paroled to low-unemployment counties and those paroled to high-unemployment counties widens as the period analyzed increases – i.e., there is little impact on the likelihood of returning within six months, a larger impact on returning within twelve months, and a larger effect on returning within twenty-four months. When we stratify by offender characteristics, we find that the impact of employment conditions on the likelihood of re-incarceration is larger for offenders that are relatively less likely to violate the imposed parole terms. Hence, the post-release criminal activity of the most problematic parolees is least impacted by local labor market conditions.

Combined with findings from research on the impact of local unemployment rates on the employment probabilities of low-skilled workers (Sabol this volume and Holzer and Offner (2002)), our results imply that the impact of being employed on the probability of being returned to custody is small for the average parolee, on the order of one to two percentage points. However, our results also indicate that the employment effects for parolees that are at relatively low-risk of violating parole are fairly large. For the lowest-risk parolees, our results suggest that having a job reduces the likelihood of being returned to custody on a parole violation by 6 to 12

percentage points (13 to 26 percent of the three-year recidivism rate for low-risk releases). Thus, targeted workforce development efforts may be quite effective at reducing the return to custody rates among sub-groups of former inmates.

2. Parole in the U.S. and California and the Impact of Employment Opportunities

Parole is technically defined as a period of conditional supervision following release from prison. An inmate can be paroled either at the discretion of state parole boards (referred to as discretionary parole) or via statutory requirements (referred to as mandatory parole). Over the last two decades, the proportion of parolees released at the discretion of state parole boards has declined considerably, from roughly 55 percent in 1980 to 25 percent in 1999. Comparable figures for mandatory parole are 20 percent in 1980 and 42 percent in 1999. Roughly 70 percent of released prison inmates enter state parole systems. Of the remaining 30 percent, approximately 20 percent are released due to the expiration of their sentence (and thus receive no post-release supervision), while 10 percent are released for other reasons, such as commutations or release to probation (Hughes et. al. 2001).

The conditions of parole often vary with the offender. At a minimum, parolees are required to maintain contact with a supervising parole agent, not to abuse drugs, and not to engage in criminal activity of any kind. However, additional conditions may be placed on certain offenders, such as prohibitions against alcohol consumption, requirements that the ex-offender stay away from victims, and requirements that the parolee make restitution to victims. Parole violations can result in a number of alternative sanctions. For example, a parolee that fails a drug test may be fined, required to attend a substance abuse program, or in some instances be

returned to prison (Legislative Analyst's Office of California 1998). In general, length of time on parole does not exceed three years¹ and the average parole term is slightly over a year.²

California's parole system differs from that of many other states along several dimensions. To start, practically all offenders released from California prisons are subject to parole supervision. This is not the case in other states. For example, Sabol (2005) reports that roughly 60 percent of releases in Ohio during the late 1990s were conditionally released. Nationwide, roughly 70 percent of released inmates are conditionally released. This relatively intensive use of parole is due to several factors. First, determinate sentencing legislation passed in 1977 increased the proportion of convicted offenders sentenced to prison terms while reducing the discretion of the Board of Prison Terms (BPT), the California state parole board, over who is or isn't paroled. Second, during the early 1990s, the BPT dropped the practice of reviewing the files of soon-to-be released prison inmates for possible unconditional discharge (Legislative Analyst's Office of California 1998). Given this intensive use of parole and the size of the state, nearly one in five parolees in the United States reside in California (Travis and Lawrence 2002).

California punishes parole violators more harshly than other states. This can be seen in higher parole failure rates, differences in the composition of parole violators currently in state prison custody, and an increasing proportion of state prison admissions comprised of parole violators. For instance, only 20 percent of California's ex-offenders released to parole in 1999 successfully completed their terms of community supervision, compared to 42 percent nationally. Among parole violators incarcerated in state prisons, 23 percent of California's inmates were returned to custody for public-order violations (--i.e., a technical violation such as

¹ A small proportion of offenders, however, are subjected to longer parole terms. In some cases such as ex-offenders paroled from a life sentence, parole terms may be indefinite.

missing an appointment with a probation officer) compared to 13 percent nationally. The comparable California and national figures were 27 and 23 percent for drug violations, 25 and 30 percent for property crimes, and 24 and 34 percent for violent crimes (Hughes et. al. 2001). These patterns indicate that parole violators in California prisons are incarcerated for less serious infractions than parole violators returned to custody in other states.

Finally, parole violators account for an unusually large proportion of prison admission in California. In 1999, nearly 70 percent of new admissions to California state prisons were attributable to parole violations (see Figure 4 below). In addition to exceeding the national average of 35 percent, the California figure exceeds that of every other state in the nation, with Utah a distant second at 55 percent (Hughes et. al. 2001).³

The potential impact of local labor market conditions on the likelihood that parolees violate the terms of their supervised release depends on both the demand side of the market for ex-offenders as well as the supply side behavior of ex-offenders themselves. Concerning the supply side, to the extent that paroled ex-offenders are responsive to changes in incentives, one would predict that better labor market conditions would reduce the likelihood of being returned to custody. Lower unemployment rates coincide with higher wages (Blanchflower and Oswald 1995) and a higher likelihood of finding gainful employment in legitimate activities. In this regard, a tighter labor market increases the expected value of the return to playing it straight and

² Of course, parole and probation are different statuses of community supervision. Probation is generally an alternative to incarceration and hence, probationers are rarely ex-offenders discharged from state prisons. The probation population in 2001 was more than five times the parole population (Glaze 2002).

³ The Legislative Analyst's Office of California attributes the harsher punishment of parole violators and the relatively high return-to-custody rates to policy choices of the state Board of Prison Terms (BPT). During the 1990s, the BPT increased the number of parole infractions that must be reported to the BPT by parole officers, thus reducing the discretion of parole officers to fashion alternative sanctions to new prison terms. In addition, among those parole violations reviewed by the BPT, the proportion of reviews where parole was revoked and the parolee returned to prison increased. Specifically, in 1993 65 percent of parole violators reviewed by the BPT were returned to custody while 35 percent were continued on parole. By contrast, in 1997 90 percent of parole violators were returned to custody while 10 percent were continued on parole (Legislative Analyst's Office of California 1998).

decreases the relative attractiveness of engaging in criminal activity. As long as the labor supply elasticity of ex-offenders is greater than zero,⁴ an ex-offender released under favorable labor market conditions should be more likely to seek legitimate employment and less likely to engage in crime for personal gain than an otherwise similar ex-offender released under less favorable conditions. Any factor that reduces the likelihood of committing a crime is likely to reduce the likelihood of a parole violation.

In addition to the economic incentives that may deter a parole violation, gainful employment occupies a parolee's time, keeping the parolee off the streets and probabilistically reducing the likelihood that the ex-offender encounters high-risk situations. A job may also provide daily structure and regimentation, factors that may be particularly important for ex-offenders whose social contacts to those outside of prison deteriorated during the recently served prison term.

To be sure, whether parolees are more likely to be employed post-release when labor market conditions are favorable will depend crucially on the demand side of the labor market. Surveys of employers of low-skilled workers consistently show that employers are quite averse to hiring ex-offenders and quite frequently check the criminal history records of job applicants (Holzer et. al. 2002a, 2005). While there is little research assessing how employer demand for ex-offenders varies with the business cycle, the one study that does attempt to investigate this question (Holzer et. al. 2002a) finds little evidence of increased hiring of ex-offenders when labor markets are tight. This may be due in part to the fact that a fairly large proportion of employers who indicate that they are unlikely to hire ex-offenders are prohibited by law from doing so (Holzer et. al. 2005).

⁴ An equivalent condition for responsiveness is that the supply of ex-offenders to criminal activity not be perfectly inelastic. For a thorough discussion of this economic model of crime see Freeman (1996).

However, there is evidence that employer willingness to hire applicants with criminal history records depends to a certain extent on the severity of the offense committed (Holzer et. al. 2005). Specifically, employers are least willing to hire ex-offenders who have committed violent crimes and property crimes (in that order). In contrast, employers are more willing to hire applicants who have served time for a drug offense. Hence, the extent to which employer demand for ex-offenders varies with labor market conditions is likely to depend on the characteristics of the ex-offender.

There is aggregate evidence that tight labor markets coincide with lower crime levels. Raphael and Winter-Ebmer (2001) as well as Gould et. al. (2002) show that state and county-level property crime rates are lower when unemployment is lower. Moreover, the magnitude of the unemployment effect is sufficiently large to explain a fair portion of the decline in property crime rates occurring during the 1990s. Such evidence is consistent with an impact of labor market conditions on the criminal activity of parolees and, by extension, the likelihood that ex-offenders violate the terms of parole.

Whether these unemployment effects are being driven in part by lower offending by parolees, however, will depend in part on the extent to which parolees are on the margin between offending and not offending (or less restrictively, that the amount of offending is sensitive to relative returns). The studies cited above cannot assess this question since data on crime attributable to parolees is not separately available. Hence, the aggregate evidence is also consistent with the behavior of hardened offenders (e.g., those on parole) being completely insensitive to labor market conditions. In this instance, the aggregate relationship between unemployment and crime would be driven entirely by the responsiveness of less serious offenders to variation in legitimate economic opportunities.

Evaluations of state employment programs tailored at paroled ex-offenders provides more direct evidence of the impact of employment on the likelihood that an ex-offender violates parole. Evaluations of earlier state interventions reviewed in Bushway and Reuter (2002) arrived at quite pessimistic conclusions regarding the ability of training and job search assistance to lower the recidivism of parolees. Evaluations of more recent state programs, however, are uniformly more positive. In a review of recent research, Petersilia (2002) cites several evaluations finding program effects on the likelihood that parolees find employment on the order of 20 percentage points, and effects on the likelihood of re-arrest and being returned to prison custody on the order of 10 percentage points. A review of 19 studies by Wilson et. al. (2000) finds similar program effects.⁵

The difference between the results from earlier and later research may be driven by several factors. For one, the large increase in incarceration rates since the early 1970s (the period corresponding to the earlier wave of research) likely implies that, on the margin, the U.S. is incarcerating people for less serious offenses, and that such individuals are more responsive to the services offered by state programs. That is to say, with a low incarceration rate (e.g., that of the 1970s) the average prisoner may be more difficult to serve than the average prisoner when incarceration rates are high. Alternatively, the larger impacts of more recent evaluations may be due to flaws in the methodological design of these more recent evaluations. Bushway and Reuter (2002) as well as Wilson et. al. (2000) note that few of the program evaluations are based on randomized designs where program participation is determined by random assignment rather than self-selection. Moreover, many of the evaluation do not control for differences in offender characteristics that may simultaneously explain program participation and recidivism/parole

⁵ For detailed descriptions of three state level job training and placement programs, see Finn (1998a, 1998b, and 1998c).

violation rates. Hence, while this research is suggestive, the estimated program effects are likely to be upper bound estimates of the potential for policy intervention to increase employment and reduce recidivism among paroled ex-offenders.

3. Description of the California Data and the Empirical Strategy

The research on the relationship between unemployment and criminal activity discussed above only partially informs the question of whether employment prospects are related to the likelihood that parolees are returned to custody. The aggregate research fails to directly test for a relationship between economic conditions and the behavior of paroled ex-offenders. While the program evaluations directly analyze the outcomes for parolees, program participation is likely to be determined by unobserved factors such as motivation or determination not to be sent back to prison. Such factors are also likely to influence the probability that an ex-offender successfully completes his or her parole term, and thus, the estimates from this research are likely to be biased upwards.

In this project, we assess the impact of employment conditions on the likelihood that paroled inmates in California are returned to custody using a source of variation in labor market conditions that is unlikely to be correlated with unobserved offender characteristics. Specifically, we assess whether the labor market conditions in the county of release at the time that the offender is released influences the likelihood of a parole violation. Our empirical strategy requires that we construct a parole violation measure as well as characterize the local labor market conditions that an individual parolee is exposed to upon release. Before discussing our estimation strategy, a discussion of the structure of the data used to create the dependent and independent variables of analysis is needed.

A. Constructing Parole Violation Measures

Our principal data source comes from administrative records maintained by the California Department of Corrections (CDC). We use these records to construct four parole violations measures that serve as our dependent variables. We requested data on all commitments with prison terms beginning during the period from January 1, 1990 to December 31, 1999. A prison term corresponds to a specific spell served in a California state prison, while a prison commitment refers to a specific prison sentence associate with the commission of and conviction for a felony offense. An individual offender can (and often does) serve multiple terms for a single commitment. Ex-offenders are returned to prison for subsequent terms on the same commitment when they violate the terms of their parole. An ex-offender that commits a new felony while on parole is prosecuted and (if found guilty) sent to prison on a new commitment.⁶

In the data provided to us, each record corresponds to an individual term. Included in each record is a term counter that increases within a given commitment (first term, second term, third term etc.), a unique commitment identification variable, unique identifiers for individual offenders,⁷ basic demographic information, information on the offense committed, the county of commitment, and most importantly, the start and end dates for each term. Over 95 percent of the terms beginning during the 1990s end during the 1990s, with a median term length of roughly 12 months. For all terms ending during the decade, the inmate is discharged to parole status.

Figures 1 through 4 summarize several aspects of the California prison term data. Collectively, these figures document the extremely high incidence of parole violations that result

⁶ In the review of California's parole system, the California State Legislative Analyst's Office (1998) reports that local prosecutors often forego prosecuting new offenses when the prison sanction associated with the parole violation is likely to exceed the sentence length of a newly committed felony. Hence, among the population of ex-offenders sent back to prison for subsequent terms based on parole violations, many will have committed new felony offenses. Nonetheless, surveys of incarcerated parole offenders in California indicate that a large fraction of such offenders are paroles for "public order offenses" – i.e., technical violations of the conditions of parole – while nearly half of incarcerated parole violators are sent back to prison for a drug violations (Hughes et. al. 2001).

in the ex-offenders being returned to custody, as well as the high contribution of parole violations to prison admissions in California. Figure 1 shows the number of terms (the number of records in our data set), the number of unique court commitments, and the number of individual offenders. The fact that the number of commitments is only slightly greater than the number of offenders indicates that a relatively small proportion of offenders are prosecuted and sentenced more than once during the decade. Conversely, the fact that the number of terms is more than double the number of commitments indicates that the lion's share of repeat spells in California prisons is due to parole violations rather than new felony offenses.

Figures 2 and 3 reinforce this interpretation. Figure 2 presents the relative frequency distribution for the 471,877 individual commitments by the number of terms served, while Figure 3 presents the relative frequency distribution for the 418,199 offenders by the number of commitments incurred during the decade. As can be seen, multiple terms are served on over half of the commitments. On the other hand, 90 percent of offenders accumulate only one commitment during the time period observed.

Finally, Figure 4 summarizes the number of new admissions to the state prison system by whether the new admission is the first term of a new commitment or the second or higher term on an existing commitment.⁸ First term admissions give the number of new commitments to the state prison system, while the number of second or higher term admissions provide the number of admissions due to parole violations. Over the decade, the proportion of admissions accounted for by parole violators increased from approximately 60 percent to 70 percent of all admissions. These figures are high for California (relative to past years) and relative to other states.

⁷ We were provided with a unique CDC offender identification code, social security numbers, and names.

⁸ These figures are tabulated by summing records within year by the beginning date of the term served.

We use the administrative records to construct our parole-violation measures in the following manner. We first restrict the term records to those terms that end during the 1990s. This ensures that all base terms correspond to a subsequent period on parole. We then sort the term records by the unique commitment identification number and the term counter variable (the variable that counts terms within commitment). For each commitment, we identify the total number of terms served on the commitment⁹ and attach this figure to each term record within a given commitment. If the term counter code is less than the total number of terms served on the commitment, then we know that the current term is followed by a subsequent prison spell resulting from a parole violation. For such observations, we merge the in dates for the subsequent terms and calculate the time (in months) between the release date from the base term and the in date for the new term. On the other hand, if the term counter identification for a given term record equals the value of the total terms served, then the term is the last term served. For such observations, we set the variable measuring the time between terms to an arbitrarily large number.¹⁰

Using this variable, we construct four dependent variables that are indicative of a parole violation resulting in a return to custody: dummy variables that indicate that the offender is returned to custody within six, twelve, 24, and 36 months of release from the previous term.¹¹ For the six and twelve month return-to-custody variable, we restrict the sample to terms ending prior to 1999. This restriction ensures that we have at least one year post-release to observe whether the parolee is returned to custody. Similarly, for the 24-month variable, we restrict the

⁹ Given that the term counter identifies the term number served within the commitment, we can identify the maximum number of terms served for commitments with first terms beginning prior to the 1990s as well.

¹⁰ Below, our key dependent variables are whether the parolee is returned to custody within set time periods, the largest being 36 months. Thus, for releases that do not receive a subsequent term, we set the time between terms variables to value greater than 36. This ensures a value of zero for all returned-to-custody dummy variables.

¹¹ Parole terms can last no longer than three years. Hence, if an offender has not been sent back within three years, he, in all likelihood, has successfully completed the parole term.

sample to those terms with end dates prior to 1998, while for the 36-month variable we restrict the sample to those terms ending prior to 1997.

Figure 5 presents average values for the return-to-custody dummies by year for the period 1990 to 1998. The proportion of parolees returning within six months varies between 30 and 40 percent while the proportion returning within one year varies from a low of 48 percent to a high of 61 percent. Between one and two years post-release, the proportion returning to prison on a parole violation increases by roughly 10 percentage points, with 60 to 70 percent returning within two years. Finally, between two and three years, there are small increases in the proportion returning to custody on a parole violation. These return-to-custody rates are exceptionally when compared to those of other states. For example, Kling and Tyler (2005) report that roughly 16 percent of Florida prison releases recidivate within one year while 26 percent recidivate within two years (numbers that are less than half of the estimates presented in Figure 5).

The return-to-custody rates exhibit clear time trends. Between 1990 and 1993, all return rates decline by roughly ten percentage points. The Legislative Analyst's Office (1998) attributes this decrease to a standardization of parolee monitoring procedures and standards for parole revocation across the four geographic divisions of the Department of Corrections Parole Services Division. Furthermore, between 1993 and 1998 all return rates trend upwards with increases on the order of five percentage points. This second trend is often attributed to the increased influence of the California Board of Prison Terms in determining whether to revoke the parole of violators.

Table 1 presents average values for the parole violations measures for the entire period when the sample of terms is stratified by offender characteristics. There are several notable differences

across the groups defined in the table. Male parolees are more likely to violate parole and be returned to prison than are female parolees. White and black offenders have considerably higher return rates than Hispanic and Asia offenders. Concerning difference by offense committed, the lowest return rates are observed for convicted murderers, sex offenders, and inmates serving time for driving under the influence. The highest return rates occur for those convicted of robbery, burglary, theft/fraud/or some other property crimes, escapees, and those convicted on a weapons possession charge.

Particularly large differences in return rates are observed for those released from their first term relative to those released from a second or higher term. For example, the proportion of offenders that are returned within three years increases from 0.52 for first time releases to 0.67 for second time releases, to 0.73 for parolees being releases from their third or higher term.

Another notable characteristic in Table 1 is the absence of a consistent relationship between age at time of release and the likelihood of returning to prison on a parole violation. Previous research on the relationship between age and criminal activity would predict that the likelihood of successfully completing one's term of parole should increase with age, and thus the likelihood of being returned to custody should decrease (Greenberg 1985, Grogger 1998). While there is some evidence of such a relationship in Table 1, the impact of age is not monotonic and the differences between younger and older parolees are small.

The figures reported in the first column can be used to characterize the average person released from prison during the 1990s in California.¹² While these numbers do not provide averages for the state's incarcerated population at a point in time, these numbers do reveal some of the differences between California and other states. For example, California releases are

roughly evenly split between Hispanics, African-Americans, and White offenders. This stands in stark contrast to the tabulations for Washington in Petit and Lyons (2005) that reveal a predominantly white prison population and Sabol (2005) for Ohio that reveal a predominantly black population. Furthermore, only 36 percent of releases in California are being released from the first term on a commitment, compared with roughly 95 percent for Ohio (Sabol 2005).

B. Characterizing local labor market conditions

Upon release from prison, the overwhelming majority of California parolees are returned to the controlling county –i.e., the county that prosecuted the parolee for the initial offense.¹³ Paroled ex-offenders are required to remain in the county of commitment and to maintain contact with parole authorities. During the 1990s, local labor market conditions varied considerably both within and between the state's 58 counties. We use this variation to identify the impact of local labor market conditions on the likelihood that the offender's parole status is revoked.

Specifically, for each offender we attach the average monthly unemployment rate for the offender's controlling county for the six-month period beginning with the month that the offender is paroled into the community. We do so using county monthly unemployment rate data from the California Employment Development Department Labor Market Information Division. This average monthly unemployment rate, anchored to a county and a specific time period defined by the offender's date of release, is our key explanatory variables.

Figure 6 presents the average local unemployment rate in the county of release by year of release. Labor market prospects diminish between 1990 and 1993 as the state economy slipped into a particularly deep recession and then improve between 1993 and 1998 with improvements

¹² Note, given that many offenders serve multiple terms and that the unit of observation in the data set used to calculate the figures in Table 1 is a prison term, the figures in the proportion-of-terms column should be interpreted as the distribution of offender characteristics across terms rather than across offenders.

in the national economy. The time path of average unemployment rates is such that local unemployment rates are increasing when parole violation rates are decreasing, and are decreasing when parole violation rates are increasing. We have already noted that the changes over time in return-to-custody rates are being driven in large part by institutional forces internal to California corrections. Thus, the patterns in Figures 5 and 6 may lead to the false conclusion that ex-offenders are more likely to fail on parole when the unemployment rate is low. To adjust for potentially confounding institutional influences, we include year effects in all models estimated below.

C. Empirical Strategy

We assess the impact of local labor market conditions on the likelihood that an offender violates the conditions of parole and is returned to custody by regressing each of our four measures of parole failure on our measure of local unemployment rates. To the extent that local labor market conditions impact the likelihood that an ex-offender finds a job, and to the extent that having job impacts the likelihood of violating parole, local unemployment rates should impact the likelihood of a parole violation. Technically, the coefficient on the local unemployment rate in our models will equal the effect of local unemployment rates on the probability that a parolee finds employment times the effect of being employed on the probability of violating parole and being returned to custody.¹⁴ We hypothesize a priori that both

¹³ Approximately 10 percent of parolees are returned to alternative counties. We do not have information on the county of release for this group.

¹⁴ This can best be illustrated with a simple two-equation empirical model. Suppose that the likelihood of being returned to custody is determined according to the equation $RTC_i = \alpha_0 + \alpha_1 E_i + \alpha_2 X_i + \varepsilon_i$, where RTC_i is a dummy variable indicating being returned to custody, E_i is a dummy variable indicating whether one is employed, X_i is a vector of control variables, α_0 through α_2 are parameters, and ε_i is a mean zero random disturbance. Furthermore, assume that whether one is employed is determined by the equation $E_i = \beta_0 + \beta_1 U_i + \beta_2 X_i + \eta_i$, where U_i is the local area unemployment rate, β_0 through β_2 are parameters, and η_i is a mean-zero random disturbance. Substituting the equation for employment determination into the return-to-custody equation gives the reduced form, $RTC_i = (\alpha_0 + \alpha_1 \beta_0) + \alpha_1 \beta_1 U_i + (\alpha_2 + \alpha_1 \beta_2) X_i + (\varepsilon_i + \alpha_1 \eta_i)$. As can be seen, the

effects are negative, and thus, that the reduced form unemployment rate effect should be positive.

Concerning the magnitude of the empirical relationships that we estimate, a small unemployment effect is consistent with either a small effect of labor market conditions on ex-offender employment prospects, a small effect of being employed on the likelihood of violating parole, or both. Absent offender specific information on post-release employment status, we cannot disentangle these two structural parameters. However, in summarizing our results, we will draw on estimates from existing labor market research concerning the impact of local labor market conditions on the employment rate of relatively marginalized workers to provide ballpark estimates of the impact of employment on the likelihood of being returned to custody that is implied by our reduced form results.

To be sure, the population of paroled ex-offenders is heterogeneous, and as a result, one might suspect that the impact of local labor market conditions on the likelihood of successfully completing one's parole term is heterogeneous as well. For instance, Holzer et. al. (2005) show that the demand for low-risk, non-violent offenders is greater than employer demand for violent offenders. In terms of the impact of labor market conditions, one might suspect that in tight labor markets employers would be more likely to take a chance with such low-risk offenders. If this were the case, the effect of local conditions on the likelihood of finding a job would be greater for such offenders. Holding all else constant, this would translate into a larger reduced form impact of local unemployment rates on the likelihood of violating parole. Moreover, one might also argue that the impact of employment on the likelihood that one commits a parole

coefficient on the local unemployment rate is equal to the effect of the unemployment rate on the likelihood of being employed times the effect of being employed on the likelihood of being returned to custody.

violation may be larger for certain offenders, thus also contributing to heterogeneity in the effect of labor market conditions.

We explore such heterogeneity in the following manner. Our first strategy is based on the proposition that parolees at the highest risk of violating parole will be returned to custody relatively soon. Thus, as the time since release increases, the pool of remaining parolees is likely to be increasingly positively selected with respect to such characteristics as employability and adaptability to non-institutional life. By estimating separate models for the likelihood of returning within a short period of time versus returning within a longer period of time, we can assess whether local labor market conditions matter more or less for relatively high-risk offenders. For example, if the short-period unemployment effect is less than the long-period unemployment effect, one might infer that employment conditions have little impact on those who are quickly returned to custody, yet have larger impacts on those who are likely to survive the first few months of parole.

An alternative manner for testing whether the impact of labor market conditions is heterogeneous would be to stratify the sample along dimensions correlated with the likelihood of being returned to custody and to estimate separate models for the sub-samples. Below, we do this by estimating separate models for offenders released from their first terms and offenders released from second or higher terms. We also use a simple imputation procedure to classify offenders into risk-of-subsequent-term quartiles and estimate separate models for each group. We discuss this imputation in detail below with the presentation of the results.

4. Estimation Results

In this section, we present our principal estimates of the impact of local labor market conditions on the likelihood that paroled offenders are returned to custody in California. We begin with base estimates using the entire population of paroled ex-offenders. We then explore whether the effect of labor market conditions varies with the term from which the parolee was released. Finally, we employ a more general method to impute the risk of return among parolees and then estimate separate models for parolees in alternative risk quartiles.

A. Base Estimates Using the Entire Population of Parolees

Table 2 presents parameter estimates from linear probability regression models of the likelihood that a paroled ex-offender is returned to prison. The first column presents estimation results where the dependent variable is a dummy indicating a return to custody within six months, the next column presents the results for the twelve month dependent variable, while the third and fourth columns present the results for the 24 and 36 months dependent variables, respectively.

In addition to the explanatory variables shown in the table, each regression model includes a 390 fixed effects for all possible combinations of the thirteen possible offenses committed listed in Table 1, the six age categories (also list in Table 1), and five term group possibilities (released from the first, second, third, fourth, or fifth or higher term). The models also include a set of dummy variables for year of release, dummy variables for which state parole division the offender is released into,¹⁵ and a complete set of interaction terms between the year dummies and the parole division dummies. Finally each model includes controls for a third-order polynomial of the length of the most recent term served. Again, the unemployment rate variable equals the

¹⁵ The state is divided into four parole divisions. Two are for Southern California, one the county of Los Angeles and the other encompassing the remaining counties to the east and south of Los Angeles, and two for central and northern California, one including all counties along the coast to the north of Los Angeles and one including all remaining inland counties.

average monthly unemployment rate in the county of release for the six-month period beginning with the month in which the offender is paroled into the community.

Beginning with the impact of local labor market conditions, there is no measurable effect of local unemployment rates on the likelihood of returning within six months, a small marginally-significant effect on the likelihood of returning within 12 months, and larger and highly significant (at the one percent level of confidence) effects on the likelihood of returning to custody within 24 and 36 months. These effects, while significant, are extremely small. Converting these estimates to elasticities indicates that a one percent increase in the local unemployment rate would cause an increase in the likelihood of being returned to custody on a parole violation of between 0.004 and 0.008 percent, depending on the length of time analyzed. An alternative manner of characterizing the magnitudes is to calculate the change in the likelihood of returning to prison caused by a one-percentage point increase in the local unemployment rate. The estimated effects suggest that a one percentage point increase in the unemployment rate results in a 0.00017 to 0.00059 increase in the likelihood of returning to custody. Again, these relatively small effects may be attributable to either a small impact of labor market conditions on the employment prospects of ex-offenders, a small effect of employment on parole violations, or both.

Nonetheless, the effects are significant and suggest that employment policy may contribute to combating parole violations among ex-offenders. Moreover, the generally larger effects for longer time periods indicate that employment conditions at time of release are more important for offenders that survive the first few months on parole relative to offenders that are returned to custody within a short time of release.

Concerning the patterns observed for the other explanatory variables listed in Table 2, women are consistently less likely than men to be returned to custody, although the gender difference narrows as the time period analyzed increases. Blacks and whites (the omitted race category) are the most likely to be returned to custody while Hispanics, Asians, and others are the least likely to return. The racial/ethnic differences in return rates tend to increase markedly after 6 months on parole.

B. Separate Estimates by Term of Release and Age

To reiterate, the impact of employment conditions is likely to vary by offender characteristics. Employers prefer less serious offenders, and thus the demand for such offenders should be particularly sensitive to labor market conditions. Moreover, less serious offenders may be easier to divert from activity that results in parole violations and subsequent re-incarceration. Hence, for low-risk parolees, having a job may have a larger marginal effect on the likelihood of violating parole. Both factors would increase the reduced-form estimates of the impact of labor market conditions that we are investigating here.

To explore heterogeneity in the impact of local unemployment rates, we first test for differential effects by term of release and by age. Regarding term of release, we begin by stratifying the sample into two groups: offenders paroled from their first term and all other offenders. We then estimate separate models for each group. As the average patterns in Table 1 and the regression-adjusted differentials in Table 2 indicate, offenders paroled from their first terms are much less likely to be returned to custody than offenders paroled from higher terms. This difference may be due to several factors. Serving a second term may have a particularly large stigmatizing effect on ex-offenders. To the extent that this is the case, successful reentry following parole from a second or higher term may be particularly difficult as a result.

Alternatively, the pool of offenders released from their first terms are likely to differ criminogenically from the pool of offenders released from second or higher terms. Regardless of the reason, this stratification clearly segregates releases along a dimension that strongly predicts risk of return.

We next explore whether the effects of local labor market conditions vary by age group. The patterns presented in Table 1 reveal little systematic relationship between age and the likelihood of being returned to custody. Nonetheless, a large literature on the age profile of criminal activity suggests that the criminally active tend to age out of crime (Greenberg 1985). To the extent that older releases are more predictable and less volatile, such offenders may be more responsive to positive incentives.

Tables 3 present the results from regressions of the return-to-custody variables on the local unemployment rate at time of release and all of the variables used in the models in Table 2 where the sample has been stratified first by term group then by age group. The table only reports the coefficients on the unemployment variable to conserve space. Beginning with the results for those released from their first term, there is no significant effect of local unemployment rates on the likelihood of returning to custody within six months. However, we find relatively large and highly significant effects on the likelihood of returning in 12, 24, and 36 months after release. These effects increase monotonically with the length of the time period that is analyzed. Relative to the marginal effects estimated for parolees overall (Table 2), the impact of labor market conditions for offenders paroled from their first term are three to four times larger. In contrast, the unemployment effect estimates for parolees released from second or higher terms (Table 4) are all insignificant, with the exception of the estimate for the 36-month model, which is negative and marginally significant. Hence, we find considerably larger effects of local

unemployment rates for those released from their first terms and no impact of local labor market conditions for offenders released from second or higher terms.

The results by age do not yield a consistent relationship between the effect of local labor market conditions and the age of the offender. For very young releases, the effects of local unemployment rate are quite imprecisely measured, and insignificant. The largest effects are observed for releases between the ages of 21 and 30. We find very weak and generally insignificant effects for older releases.

C. A More General Stratification by Risk of Return

The results in Table 3 suggest that return-to-custody rates for offenders with a relatively high risk of returning are less sensitive to local labor market conditions than are the rates for low-risk offenders. The simple stratifications, however, do not make full use of the information in the administrative records that could be used to explore heterogeneity in this relationship. Race, gender, age, offense, as well as length of time served all exert independent and significant effects on the likelihood of being returned to custody. Hence, in addition to using term of release to identify high and low risk offenders, one might also wish to incorporate the predictive power of these other explanatory variables in identifying risk groups.

Here, we impute the risk of returning to prison on a parole violation for each prison discharge taking into account the relationship between all of the observed explanatory variables and the likelihood of being returned to custody. We then use this imputed risk measure to stratify the population of paroled offenders into risk quartiles and estimate separate models accordingly. Our imputation procedure is similar to that used in an alternative context by Card (1996) and Raphael (2000). First, we estimate a flexibly specified linear probability model where the dependent variable is a dummy variable indicating a return to custody within twelve

months and the explanatory variables include all those employed in the specifications in Table 2 (with the exception of the unemployment rate which is omitted from this first stage regression). Next, we use the coefficient estimates from this model to calculate a predicted probability of returning within one year of release. We then stratify the sample into the quartiles of the empirical distribution of this imputed probability. We refer to parolees in the bottom quartile as low-risk parolees, those in the second quartile as low-medium risk, those in the third quartile as high-medium risk, and those in the top quartile as high-risk parolees.

Table 4 presents average return rates as well as average values for all of the variables listed in Table 1 for each of the four risk groups. As can be seen, there are pronounced differences in return-to-custody rates across risk groups. For example, 16 percent of low-risk parolees are returned to custody for a parole violation within six months of release while the comparable figure for high-risk parolees is 50 percent. The corresponding figures for returning within three years are 46 and 79 percent. Concerning offender characteristics, while there is no uniform patterns concerning age (other than the oldest offender are most represented in the low-risk group), there are pronounced patterns for gender, race/ethnicity, offense, and term served. Female parolees are disproportionately represented in the low-risk group while male parolees are disproportionately represented in the high-risk group. Blacks and whites are disproportionately high-risk parolees, while Hispanics and Asians are disproportionately low risk. Finally, parolees released from their first term are concentrated in the low-risk quartiles while offenders released from second or higher terms are concentrated in the high-risk quartiles.

We use these risk groupings to assess more generally whether the effect of local labor market conditions on the likelihood of being returned to prison on a parole violation varies across offender types. Table 5 presents the results of this exercise. The rows of Table 5

correspond to risk groups while the columns correspond to the four different dependent variables. Each figure in the table is the coefficient on the local unemployment rate from a separate regression for each risk group and for each dependent variable. The results clearly indicate that the impact of local labor market conditions varies by risk group. For low-risk offenders, the coefficients on local unemployment rates are positive and statistically significant at the one percent level in all models. Moreover, the point estimates are anywhere from 5 to 6 times the average effects that we estimate for the population of paroled ex-offenders overall (the estimates in Table 2). For low-medium risk offenders, the effects are positive for all models, but are significant only for the 24-month and 36-month equations. The magnitudes of the effects for the two significant estimates are much smaller than those observed for low-risk offenders. Local labor conditions exert significant effects for the 6-month and 12-month outcome variables for high-medium risk parolees, but not for the longer periods analyzed. Finally, there is no evidence of an impact of local labor market conditions for high-risk offenders. In fact, for this group the coefficients are the wrong sign and statistically significant.

5. Putting These Results Into Perspective

The results of this study are several. To start, we find that the likelihood of being returned to custody on a parole violation is sensitive to variation in the local labor market conditions into which a paroled offender is released. This result indicates that criminal behavior even among the most serious offenders in society (i.e., those who have been incarcerated in state prisons for their offenses) is responsive to economic incentives. Thus, there is clearly a role for employment policy interventions in smoothing the reentry of ex-offenders into the community.

Moreover, our findings indicate that local labor market conditions are particularly important for offenders that are at lower overall risk of being returned to custody. This suggests that the marginal product of employment interventions in terms of reducing the inflow into prison of parole violators would be greatest if such intervention were targeted at certain offenders. Such targeting may free up the time and effort of parole officers who would then be able to concentrate their monitoring efforts on more high-risk parolees. Such efficiency gains are clearly needed in the state under study in light of the unusually high incidence of parole violations and subsequent re-incarceration documented here.

One shortcoming of our research design is that we are unable to generate estimates of the impact of being employed on the likelihood of violating parole and being returned to prison. This follows from the fact that we are unable to observe the employment status of paroled ex-offenders. Thus, our reduced-form estimates of the local area unemployment effect represent the product of two structural effects: (1) the effect of local unemployment rates on the probability that the parolee finds a job, and (2) the effect of having a job on the likelihood of violating parole. Moreover, having reliable estimates of the second effect is particularly important, since a number of public sector demand side interventions, such as public-service employment, wage subsidies, or indemnifying employers against negligent hiring lawsuits, could be tapped to augment employment among parolees.

While we cannot estimate the impact of being employed on the likelihood of being returned to prison with our data alone, in combination with the findings from research on the effect of unemployment on employment rates, we can present ballpark estimates of the employment-parole violation effects that our estimates imply. For example, if we were to divide our reduced-form estimate of the unemployment effect by an external estimate of the effect of

unemployment on the likelihood that an ex-offender is employed, the result would be an estimate of the structural effect of employment on parole violation and incarceration based on variation in employment associated with local labor market conditions.¹⁶

To make this imputation, we employ the empirical estimates of the effect of local unemployment rates on employment probabilities from two studies. First, Sabol (2005) estimates the effect of local unemployment rates and the likelihood that recently released offenders in the state of Ohio show up in state Unemployment Insurance records as having earned income during a given calendar quarter. Sabol finds that a one percentage point increase in the unemployment rate increases the likelihood of being employed among released offenders by 5 percentage points.

The second estimate comes from Holzer and Offner (2002). Using cross-sectional and longitudinal variation in regional unemployment rates, the authors estimate that every one percentage point increase in the local area unemployment rate decreases the probability that less-educated black males are employed by 2.7 percentage points. Given that less-educated black males are disproportionately represented among prison parolees, this parameter serves as an alternative.

Note, since the effect of employment on the likelihood of going to prison is imputed by dividing our reduced form estimates by the estimated effect of local unemployment rates on the likelihood of having a job, the larger the employment/unemployment effect, the smaller the imputed employment/returned to custody effect. Thus, the parameter estimate from Sabol serves to provide our lower bound estimate of the effect of having a job on the likelihood of being

¹⁶ This is theoretically equivalent to split-sample two stage least squares estimate of the employment-parole violation effect using local unemployment rates as an instrument for whether the offender is employed. For a discussion of such estimators, see Raphael and Riker (1999).

returned to prison, while the parameter estimate from Holzer and Offner is used to calculate the upper bound.

Table 6 presents estimates of the effect of being employed on the likelihood of being returned to prison on a parole violation that are based on the reduced form unemployment effects that we present here and on the employment/unemployment rate effects borrowed from the literature. The table presents employment effect estimates for all parolees overall, parolees released from their first term, and low-risk parolees.

For the average parolee, finding a job reduces the likelihood that the parolee is returned to custody within three years by only one to two percentage points. This amounts to at most three percent of the average probability of being returned within three years. This is a much smaller effect than the 10 percentage point estimate that is commonly reported in non-experimental evaluations of job programs reviewed above. Hence, our study suggests that the findings from existing evaluation research are biased upwards by the unobserved differences between program participants and non-participants.

However, for parolees that are at a lower risk of being returned to custody, the implied effects are quite substantial. For offenders being released from their first terms, our estimates imply that those with jobs are five to nine percentage points less likely to be returned to custody within three years. For parolees that are in the bottom quartile of the risk distribution, our estimates imply that employed parolees are 6 to 12 percentage points less likely to be returned to custody within three years. For these two low risk groups, the implied reduction in the three-year return probability associated with having a job amounts to 10 to 17 percent of the proportion of first term parolees that are returned on average and 12 to 26 percent of the proportion of low-risk parolees that are returned on average. These are clearly sizable effects.

Whether employment intervention are cost effective will depend on the social saving associated with diverting parolees from future terms of incarceration as well as the cost saving associated with reduced criminal behavior. While we have not attempted to quantify the relative costs and benefits of such interventions, the large implied effects for low-risk offender suggests that focusing public resources on employment aspects of prisoner reentry may very well be a cost effective strategy.

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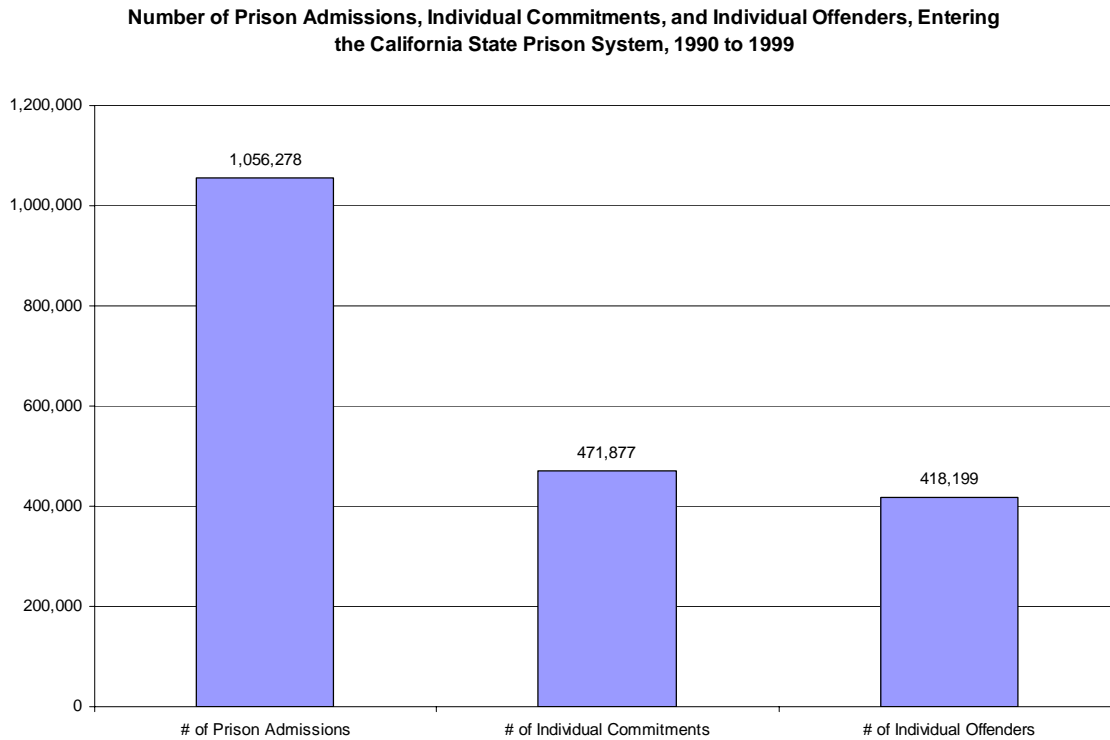
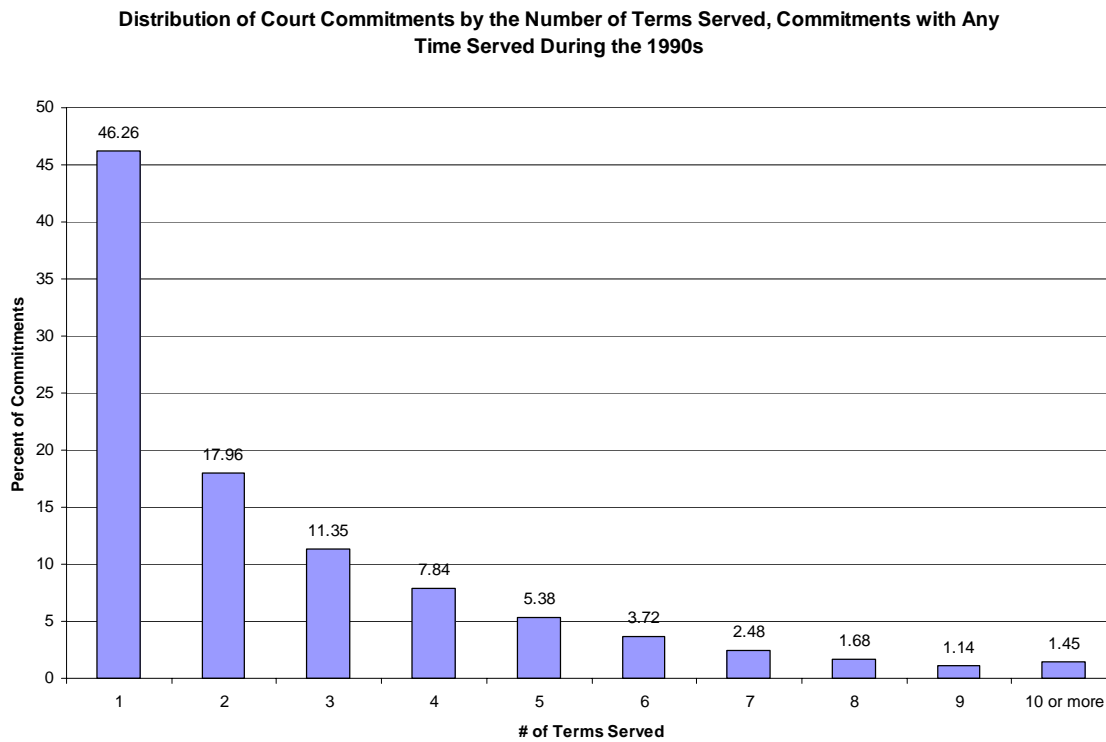
Figure 1**Figure 2**

Figure 3

Distribution of Offenders Entering the California State Prison System by the Number of Individual Commitments, 1990 to 1999

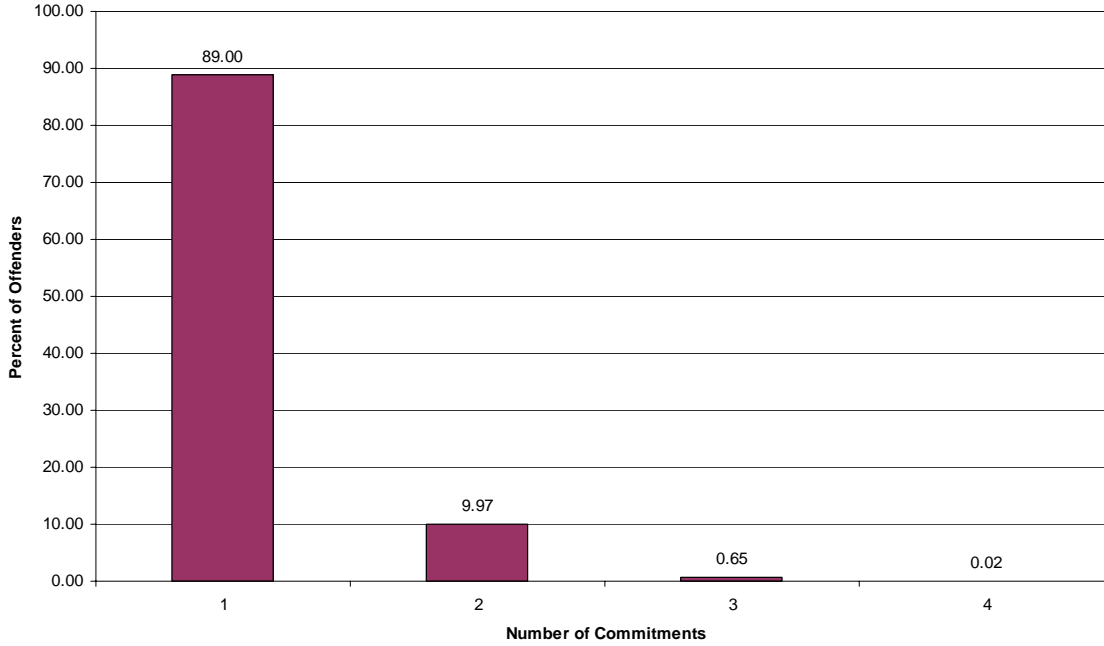


Figure 4

Total New Admissions, Admission due to Parole Violations, Admission Due to New Commitments, 1990 to 1999

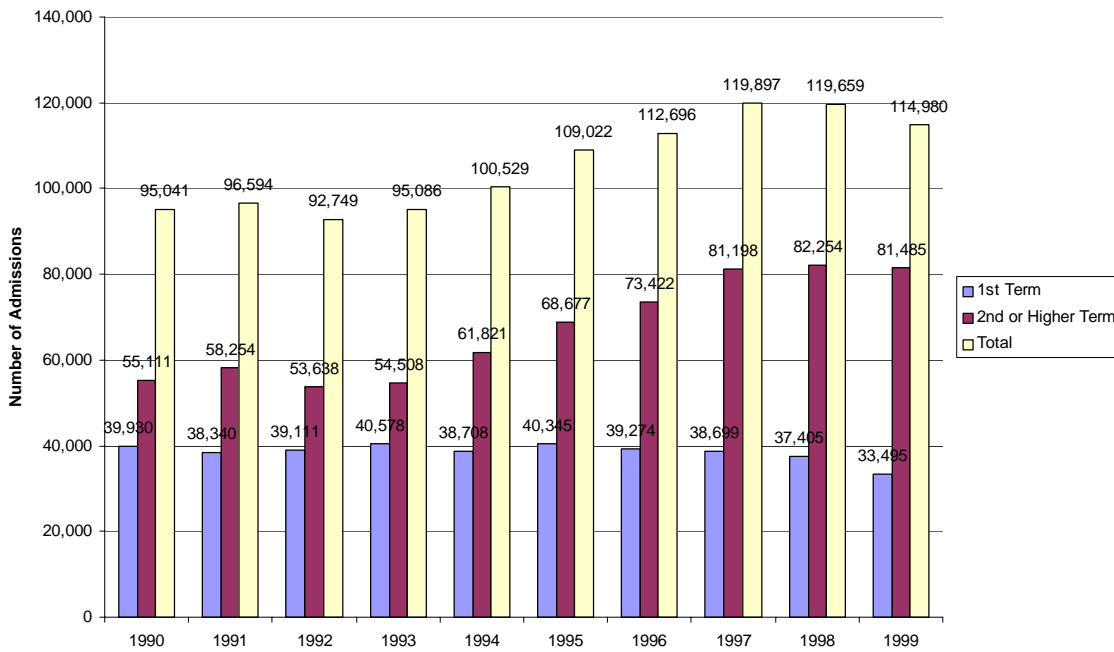


Figure 5

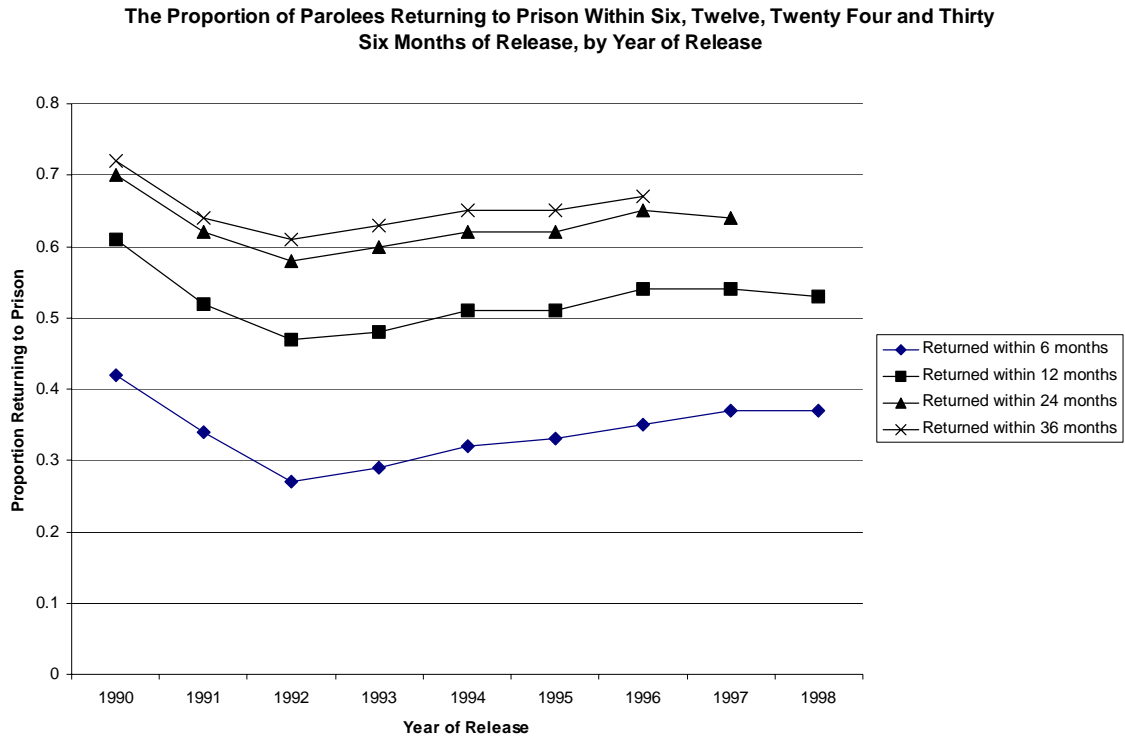


Figure 6

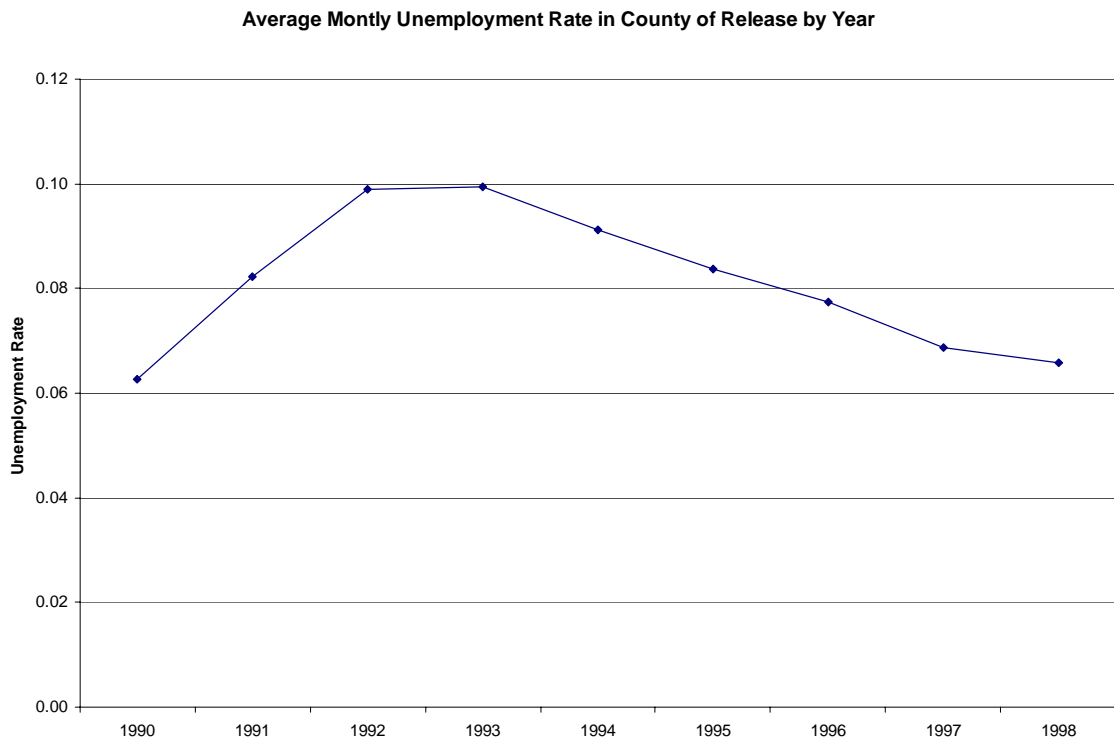


Table 1
Proportion of Terms Where the Parolee is Returned to Custody Within Six, Twelve, Twenty Four, and Thirty Six Months of Release by Offender Characteristics

	Proportion of Terms	Returns to Prison Within			
		6 months	12 months	24 months ^a	36 months ^b
All terms	1.00	0.34	0.52	0.62	0.64
Age at time of release					
18 to 20	0.02	0.30	0.50	0.61	0.64
21 to 25	0.16	0.32	0.51	0.62	0.64
26 to 30	0.23	0.34	0.52	0.63	0.65
31 to 35	0.23	0.35	0.54	0.64	0.66
36 to 40	0.18	0.35	0.54	0.63	0.65
41 plus	0.18	0.32	0.58	0.58	0.60
Male	0.90	0.34	0.53	0.63	0.65
Female	0.10	0.27	0.45	0.56	0.59
White	0.33	0.35	0.54	0.64	0.66
Black	0.34	0.38	0.57	0.68	0.70
Hispanic	0.30	0.28	0.45	0.54	0.57
Asian	0.01	0.20	0.33	0.43	0.46
Other	0.02	0.29	0.45	0.54	0.56
Offense Committed					
Murder/manslaughter	0.01	0.20	0.33	0.44	0.47
Robbery	0.08	0.31	0.49	0.59	0.61
Assault	0.07	0.31	0.49	0.60	0.63
Sex crimes	0.03	0.28	0.41	0.50	0.53
Kidnap	0.00	0.26	0.39	0.49	0.52
Burglary	0.14	0.38	0.56	0.66	0.68
Theft/Fraud/other prop.	0.22	0.38	0.58	0.68	0.70
Drug crimes	0.36	0.33	0.51	0.61	0.63
Escape	0.00	0.50	0.66	0.74	0.76
DUI	0.04	0.20	0.34	0.44	0.46
Arson	0.00	0.31	0.46	0.55	0.58
Weapons possession	0.04	0.34	0.54	0.66	0.69
Other	0.01	0.32	0.48	0.59	0.62
Term Group					
First	0.36	0.21	0.37	0.49	0.52
Second	0.21	0.34	0.54	0.65	0.67
Third or Higher	0.44	0.44	0.63	0.72	0.73

Data refer to all terms served in California beginning during the 1990s and with an outdate occurring prior to 1999.

a. For this column, the sample is restricted to those commitments with first terms ending prior to 1998.

b. For this column, the sample is restricted to those commitments with first terms ending prior to 1998.

Table 2
Linear Probability Models of the Likelihood of Returning to Prison Within Six, Twelve, Twenty Four, and Thirty Six Months of Release, All Terms

	Returns to Prison Within			
	6 months	12 months	24 months	36 months
Unemployment Rate	0.017 (0.018)	0.025 (0.019)	0.059 (0.020)	0.055 (0.022)
Female	-0.067 (0.002)	-0.077 (0.001)	-0.066 (0.002)	-0.057 (0.002)
Black	0.025 (0.001)	0.035 (0.001)	0.042 (0.001)	0.044 (0.002)
Hispanic	-0.043 (0.001)	-0.064 (0.001)	-0.072 (0.001)	-0.068 (0.002)
Asian	-0.114 (0.007)	-0.171 (0.007)	-0.174 (0.008)	-0.158 (0.008)
Other	-0.038 (0.003)	-0.060 (0.003)	-0.072 (0.003)	-0.070 (0.004)
N	831,216	831,216	708,913	592,351

Standard errors are in parentheses. Each regression includes 390 fixed effects defined by the 13 offense categories, 6 age categories, and five categories describing the terms of release (terms one through four and fifth or higher). The regressions also include a third order polynomial of the spell length of the most recent term served, a complete set of year dummies, dummy variables for parole regions, and complete interactions between the parole regions and year dummies. For the 24-month model, the sample is restricted to terms ending prior to 1998. For the 36-month model, the sample is restricted to terms ending prior to 1997.

Table 3
Estimates of the Effect of Local Unemployment Rates on the Likelihood of Returning to Custody Within Six, Twelve, Twenty Four, and Thirty Six Months of Release by Term Group and Age

Predicted Risk of Violating Parole	Returns to Custody Within			
	6 months	12 months	24 months	36 months
Term Group				
First Term	0.039 (0.027)	0.074 (0.032)	0.180 (0.035)	0.238 (0.039)
Second or Higher term	-0.005 (0.023)	-0.006 (0.024)	-0.009 (0.024)	-0.049 (0.027)
Age				
18 to 20	-0.173 (0.144)	-0.155 (0.156)	0.059 (0.167)	0.030 (0.204)
21 to 25	-0.065 (0.045)	0.031 (0.048)	0.118 (0.050)	0.179 (0.060)
26 to 30	0.078 (0.037)	0.072 (0.039)	0.100 (0.041)	0.061 (0.050)
31 to 35	-0.041 (0.037)	-0.052 (0.039)	-0.037 (0.041)	-0.098 (0.051)
36 to 40	0.044 (0.043)	0.032 (0.044)	0.048 (0.048)	0.027 (0.060)
41 plus	0.056 (0.043)	0.042 (0.045)	0.057 (0.050)	-0.029 (0.067)

Standard errors are in parentheses. Each figures is the coefficient on the average monthly unemployment rate for the six-month period following release in the county of release. Each regression includes 390 fixed effects defined by the 13 offense categories, 6 age categories, and five categories describing the terms of release (terms one through four and fifth or higher). The regressions also include a third order polynomial of the spell length of the most recent term served, a complete set of year dummies, dummy variables for parole regions, and complete interactions between the parole regions and year dummies. For the 24-month model, the sample is restricted to terms ending prior to 1998. For the 36-month model, the sample is restricted to terms ending prior to 1997.

Table 4
Average Characteristics of Released Prisoners by Predicted Risk of a Parole Violation and Subsequent Return to Custody

	Low Risk	Low-Medium Risk	High-Medium Risk	High Risk
Returns within				
6 months	0.163	0.288	0.391	0.504
12 months	0.308	0.484	0.597	0.690
24 months	0.420	0.610	0.705	0.773
36 months	0.457	0.644	0.727	0.786
Age at end of term				
18 to 20	0.017	0.029	0.016	0.009
21 to 25	0.170	0.198	0.148	0.138
26 to 30	0.222	0.230	0.232	0.239
30 to 35	0.200	0.224	0.241	0.269
36 to 40	0.155	0.165	0.187	0.202
41 plus	0.236	0.154	0.176	0.143
Male	0.840	0.887	0.909	0.965
Female	0.160	0.113	0.091	0.035
White	0.271	0.328	0.339	0.373
Black	0.195	0.301	0.364	0.510
Hispanic	0.480	0.337	0.273	0.108
Asian	0.015	0.006	0.001	0.000
Other	0.039	0.028	0.023	0.009
Offense committed				
Murder/Man.	0.030	0.012	0.003	0.000
Robbery	0.083	0.103	0.085	0.032
Assault	0.086	0.089	0.082	0.039
Sex Crimes	0.057	0.035	0.018	0.003
Kidnap	0.005	0.003	0.001	0.000
Burglary	0.065	0.152	0.162	0.175
Theft/Fraud/other	0.095	0.207	0.241	0.334
Drug Crime	0.432	0.306	0.322	0.358
Escape	0.000	0.002	0.004	0.008
DUI	0.101	0.029	0.018	0.004
Arson	0.005	0.003	0.003	0.001
Weapons possession	0.019	0.046	0.046	0.034
Other	0.022	0.013	0.015	0.012
Term Group				
First	0.895	0.458	0.066	0.004
Second	0.080	0.306	0.333	0.113
Third or higher	0.025	0.236	0.601	0.883

Risk categories are defined by the quartiles of a predicted probability of returning to custody within twelve months. See the text for a description of the model used to estimate the probability of returning to custody.

Table 5
Estimates of the Effect of Local Unemployment Rates on the Likelihood of Returning to Custody Within Six, Twelve, Twenty Four, and Thirty Six Months of Release by Predicted Probability of Violating Parole

Predicted Risk of Violating Parole	Returns to Custody Within			
	6 months	12 months	24 months	36 months
Low Risk	0.102 (0.033)	0.156 (0.041)	0.270 (0.047)	0.321 (0.052)
Low-Medium Risk	0.024 (0.037)	0.052 (0.040)	0.128 (0.044)	0.113 (0.047)
High-Medium Risk	0.080 (0.037)	0.073 (0.037)	0.053 (0.038)	0.032 (0.041)
High Risk	-0.109 (0.037)	-0.141 (0.034)	-0.154 (0.034)	-0.195 (0.039)

Standard errors are in parentheses. Each figures is the coefficient on the average monthly unemployment rate for the six-month period following release in the county of release. Each regression includes 390 fixed effects defined by the 13 offense categories, 6 age categories, and five categories describing the terms of release (terms one through four and fifth or higher). The regressions also include a third order polynomial of the spell length of the most recent term served, a complete set of year dummies, dummy variables for parole regions, and complete interactions between the parole regions and year dummies. For the 24-month model, the sample is restricted to terms ending prior to 1998. For the 36-month model, the sample is restricted to terms ending prior to 1997.

Table 6
Predicted Effect of Being Employed on the Likelihood of Being Returned to Custody based on the Local Labor Market Conditions Effect Estimates in Tables 2 through 5

Unemployment effect estimates Used	The effect of having a job on the likelihood of returning to prison within			
	6 months	12 months	24 months	36 months
Overall effects (Table 2)				
Lower Bound	-0.003	-0.005	-0.012	-0.011
Upper Bound	-0.006	-0.009	-0.022	-0.020
Effects for first-term parolees (Table 3)				
Lower Bound	-0.008	-0.015	-0.036	-0.048
Upper Bound	-0.014	-0.027	-0.067	-0.088
Effects for low-risk parolees (Table 6)				
Lower Bound	-0.020	-0.031	-0.054	-0.064
Upper Bound	-0.038	-0.058	-0.100	-0.119

The figures in the table are calculated as follows. The coefficient on local unemployment rates in the linear probability model is theoretically equal to the product of the effect of local unemployment rates on the probability of being employed times the effect of being employed on the probability of being returned to custody. To isolate the employment effect on parole violations, one needs to divide the point estimates in Tables 2 through 5 by an estimate of the effect of unemployment rates on the probability of being employed. In linear probability models where the dependent variable is a dummy variable equal to one if a person is employed, Holzer and Offner (2002) find that coefficient on unemployment for a regression restricted to less-educated black males is equal to -2.7. Sabol (2005) finds a marginal effect of a one percentage point change in the unemployment rate on the employment probabilities for recently released prisoners of 5 percentage points. We use this point estimate to calculate the figures in the table. We use the Holzer and Offner estimate to calculate the upper bound employment effect estimate and the Sabol parameter to compute the lower bound estimates. The figures in the table should be interpreted as estimates of the effect of having a job on the likelihood of being returned to custody within the given time frame.