

## Drug Dealing and Legitimate Self-Employment

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April 1999

This research was funded by National Science Foundation Grant SBR-9809266. I would like to thank Tom Dunn, Lori Kletzer, and seminar participants at the Federal Reserve Bank of New York, the Russell Sage Foundation, the University of California at Davis, and Yale University for their comments. Steve Anderson provided excellent research assistance.

## **Abstract**

Theoretical models of self-employment posit that attitudes toward risk, entrepreneurial ability, and preferences for autonomy are central to the individual's decision between self-employment and wage/salary work. None of the studies in the rapidly growing empirical literature on self-employment, however, have been able to test whether these factors are important determinants of self-employment. I explore this hypothesis by examining the relationship between drug dealing and legitimate self-employment. A review of ethnographic studies in the criminology literature indicates that drug dealing represents a good proxy for low risk aversion, entrepreneurial ability, and a preference for autonomy.

The 1980 wave of the National Longitudinal Survey of Youth (NLSY) contained a special section on participation in illegal activities, including questions on selling marijuana and other "hard" drugs. I use the answers to these questions and data from subsequent years of the NLSY to examine the relationship between drug dealing as a youth and legitimate self-employment in later years. Using various definitions of drug dealing and specifications of the econometric model, I find that drug dealers are 11 to 21 percent more likely to choose self-employment than non drug dealers, all else equal. I also find that drug dealers who sold more frequently, used drugs less frequently, or reported receiving income from drug dealing are more likely to choose self-employment than other drug dealers. I interpret these results as providing evidence that low risk aversion, entrepreneurial ability, and a preference for autonomy are important determinants of self-employment. I also provide evidence against a few alternative explanations of the positive relationship between drug dealing and self-employment.

## 1. Introduction

The literature on self-employment has grown rapidly in the past few years. Prior to this recent interest, research in labor economics has focused almost exclusively on wage and salary workers. The omission of the self-employed in these studies, however, has become less innocuous over time. After a long period of decline earlier this century the percent of the workforce that is self-employed has risen dramatically in recent decades, especially among women.<sup>1</sup> Data from the 1997 Current Population Survey (CPS) indicate that 11.5 percent of all working men and 6.5 percent of all working women are self-employed.

Interest in self-employment has also been spurred by arguments that small businesses create a disproportionate share of new jobs in the economy, represent an important source of innovation, and have a notable effect on political decisions in the United States.<sup>2</sup> In addition, many academicians and policymakers view self-employment as a route out of poverty and as an alternative to unemployment or discrimination in the labor market.<sup>3</sup> Several states and the federal government are currently promoting self-employment as a way to leave the welfare and unemployment insurance rolls.<sup>4</sup> There also exist a plethora of governmental and private programs promoting self-employment among minorities, women, the disabled, and other disadvantaged groups.<sup>5</sup>

A few patterns are beginning to emerge in the young and expanding literature on self-employment. The empirical studies in this literature generally find that being male, white, older, married and an immigrant, and having a self-employed parent, higher asset levels and more education increase self-employment.<sup>6</sup> In contrast, most theoretical research emphasizes the importance of unobservable

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<sup>1</sup> The white male self-employment rate declined from 16.0 percent in 1910 to 10.0 percent in 1970 before rising to 11.4 percent by 1990 (Fairlie and Meyer 1998). The female self-employment rate rose by 68 percent from 1975 to 1990 (Devine 1994).

<sup>2</sup> For example, see Birch (1979), Glazer and Moynihan (1970), and Brown, Hamilton, and Medoff (1990).

<sup>3</sup> See Glazer and Moynihan (1970), Light (1972, 1979), Sowell (1981), and Moore (1983).

<sup>4</sup> See Guy, Doolittle, and Fink (1991) and Raheim (1997) for descriptions of the welfare program, and see U.S. Department of Labor (1992), Benus et al. (1995) and Vroman (1997) for descriptions of the UI program.

<sup>5</sup> See Balkin (1989) for a description of many of the programs promoting self-employment among low-income people and Bates (1993) for a description of programs promoting self-employment among minorities.

<sup>6</sup> See Aaronson (1991) for an earlier review of this literature, and Hout and Rosen (1997), Blanchflower and Oswald

factors, such as attitudes toward risk, entrepreneurial ability, and preferences for autonomy, in the decision between self-employment and wage/salary work. Partly drawing on Frank Knight's (1921) classic work, Kihlstrom and Laffont (1978) and Rees and Shah (1986) posit that less risk averse individuals are more likely to choose self-employment, whereas Lucas (1978), Jovanovic (1982), Blau (1987), Evans and Jovanovic (1989), Holtz-Eakin, Joulfaian and Rosen (1994b), and Dunn and Holtz-Eakin (1999) create theoretical models in which entrepreneurial or managerial ability is a key determinant of self-employment. In addition, models by Rees and Shah (1986), and Blanchflower and Oswald (1998) take into account "the flexibility associated with hours worked and the independence entailed," and "the nonpecuniary utility from being independent and one's own boss" from self-employment, respectively.

Perhaps not surprisingly, there exists very little empirical evidence on the importance of these unobservable characteristics in the self-employment decision. In particular, we do not know whether attitudes toward risk, entrepreneurial ability, and preferences for autonomy play a major role, or only a minor role, relative to those of human capital, assets, and opportunities in the wage/salary sector in determining who is self-employed. The answer to this question will not only improve our understanding of the determinants of self-employment, but may provide insights into the design of government policies to promote small business formation and growth. Currently, the focus of most governmental programs is on providing financial, technical and management assistance. These policies generally attempt to remove the barriers to entry and survival associated with lack of access to capital, markets, and business knowledge for certain groups of the population. It may be equally important, however, for governmental programs promoting small business to specifically target individuals or groups of the population that are likely to possess these unobserved certain entrepreneurial characteristics.<sup>7</sup>

In this paper, I take an alternative approach to explore whether attitudes toward risk, entrepreneurial ability, and preferences for autonomy are important determinants of self-employment as

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(1998), Dunn and Holtz-Eakin (1999), and Fairlie (1999) for a few recent examples.

<sup>7</sup> For example, programs to promote self-employment among disadvantaged youths and ex-convicts may be

posited by the theoretical models. Based on findings from the criminology literature, I use past drug dealing as a proxy for these entrepreneurial characteristics. The nature of drug dealing makes it likely to be attractive to individuals who are less risk averse, have more entrepreneurial ability and have a preference for autonomy, all else equal. A review of past ethnographic studies provides evidence that drug dealers possess especially high levels of these characteristics. This group is also unlikely to possess other unmeasurable characteristics that are positively associated with self-employment suggesting that drug dealing represents a good proxy for entrepreneurial characteristics. The relationship between drug dealing and legitimate self-employment, however, has not been examined in the literature.<sup>8</sup>

To examine this relationship, I use data from the National Longitudinal Survey of Youth (NLSY). The 1980 wave of the NLSY contained a special section on participation in illegal activities, including questions on selling marijuana and other "hard" drugs. The answers to these questions and data from subsequent years of the NLSY allow me to examine the relationship between drug dealing as a youth and legitimate self-employment in later years. I find that drug dealing has a large, positive, and statistically significant effect on the probability of self-employment. I also find that drug dealers who sold more frequently, used drugs less frequently, or reported receiving income from drug dealing are more likely to choose self-employment than other drug dealers. After ruling out a few alternative explanations, I interpret these results as providing evidence that low risk aversion, entrepreneurial ability, and a preference for autonomy are important determinants of self-employment.

Before proceeding it is important to note that although drug dealing may provide a useful proxy for attitudes toward risk, entrepreneurial ability and preferences for autonomy, it does not provide a method of identifying the independent contributions of these three factors to the self-employment decision.<sup>9</sup> At best, this study should be viewed as the first attempt in the literature to determine whether

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successful (Myers 1989 and Light and Rosenstein 1996).

<sup>8</sup> I use the term self-employment to refer to only legitimate forms of self-employment in the remainder of the paper.

<sup>9</sup> Another potential criticism is that the measure of drug dealing used in this analysis only represents a proxy for the permanent components of these entrepreneurial characteristics.

these entrepreneurial characteristics have a combined effect on self-employment after controlling for the effects of human and financial capital, and other measurable characteristics. More research, possibly using data from new survey designs, is needed before we can fully test the theory.

## **2. The Nature of Drug Dealing: A Review of the Criminology Literature**

I first need to establish that drug dealing represents a good proxy for low risk aversion, entrepreneurial ability, and a preference for autonomy. The criminology literature may provide help on this issue. In particular, a review of the findings from ethnographic studies of drug dealing may shed light on the nature of this illegal activity and on the characteristics of the individuals who are attracted to it. As noted above, the measure of drug dealing used in this study is only available in 1980. Therefore, I focus on the findings from studies conducted prior to the advent of the crack epidemic in the mid-1980s.

Ethnographic studies of drug dealers indicate that it is an extremely risky activity. In his study of young marijuana sellers in San Francisco, Fields (1986) provides evidence of several types of risks faced by these dealers, including risks associated with criminal prosecution and physical harm from being robbed. These dealers also faced substantial risks in terms of lost profits from having their merchandise confiscated by the police (sometimes due to community informants) or stolen by muggers, "sneak thieves" and potential customers who "burn" them. A reading of other ethnographic studies from roughly the same period of time indicates that these risks were common to drug dealers in other cities, at higher levels of distribution, and for those who sold harder drugs (see Moore, 1977, Adler, 1985, Sullivan 1989, and Jankowski 1991 for example).<sup>10</sup> Studies using more recent data point to similar legal, financial and physical risks of drug dealing.<sup>11</sup> The risks associated with drug dealing are great and, thus we expect that

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<sup>10</sup> Adler (1985) notes extensive drug use as another risk faced by cocaine dealers (p. 89).

<sup>11</sup> For example, in their study of drug dealing in Washington, D.C. Reuter, MacCoun, and Murphy (1990) list as risks: "arrest, possibly leading to conviction and incarceration; loss of the gains from their criminal activity, as a result of law-enforcement actions or theft by competitors, suppliers, customers, or deceptive collaborators; and injury or death caused by these other market participants" (p. 20). They note that attitudes toward risk are very important in determining who participates in drug dealing.

individuals who have low levels of risk aversion will be drawn to it, all else equal.

Another characteristic that is likely to be an important determinant of drug dealing is the individual's level of entrepreneurial ability or business acumen. Success or failure among the upper-level drug dealers and smugglers studied by Adler (1985) was partly determined by their "entrepreneurial business skills." The skills needed included "business sense," which she states "more closely resembles common sense, especially the instinct which fosters a good eye for profit and the capacity to wheel and deal" (p. 105). Entrepreneurial ability is also important for the marijuana-selling youths studied in Fields (1986) and Sullivan (1989). For example, one youth in Sullivan's (1989) study had a marketing strategy in which he sold at different locations during different times of the day designed to "maximize his clientele while minimizing his exposure to arrest and competition" (p. 169).

It may be useful to think of entrepreneurial ability as a vector of different types of ability, which includes marketing, managerial and technical ability, along with others. Successful drug dealers may not possess all possible types of entrepreneurial ability, but are likely to possess many of them.

The independent nature of drug dealing suggests that it also attracts individuals who have a preference for autonomy. For example, in comparing legitimate work to drug dealing Adler (1985) notes that "dealing was accomplished during discretionary, or recreational, hours and settings" (p. 126). Although corresponding to a period after the beginning of the crack crisis (1988), the study of drug dealers on probation in Washington, D.C. by Reuter, MacCoun, and Murphy (1990) provides additional evidence. They find that only 6 percent of their sample of drug dealers who sold marijuana were employed by someone else.<sup>12</sup>

To conclude, the ethnographic literature provides evidence that drug dealing is a very risky activity, requires entrepreneurial ability, and offers much autonomy. Therefore, it is likely to attract individuals who possess especially high levels of these entrepreneurial characteristics and provides a

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<sup>12</sup> They also report that the percentages of dealers who sold crack, cocaine, PCP, and heroin were 21, 24, 17, and 38 percent, respectively. This is consistent with drug selling organizations being mainly temporary and decentralized

useful proxy for these characteristics in the following empirical analyses.

### 3. Data

I use data from the National Longitudinal Survey of Youth (NLSY), a nationally representative sample of 12,686 men and women who were between the ages of 14 to 22 when they were first interviewed in 1979.<sup>13</sup> Survey members were interviewed annually from 1979 to 1994 and in 1996. I exclude the sample of 1,280 youth designed to represent the population who were enlisted in the four branches of the military as of September 30, 1978, but retain the supplemental sample of 5,295 civilian black, Hispanic, and economically disadvantaged non-black, non-Hispanic youth.

The 1980 wave of the NLSY includes a special set of questions on participation in delinquent or criminal activities. Along with other questions on illegal activities, respondents were asked how many times they sold marijuana or hashish and how many times they sold hard drugs, such as heroin, cocaine or LSD in the previous year. Prior to being asked to answer these questions, respondents were told "I want to remind you that all of your answers are confidential. Your answers will not be seen by anyone but our trained survey staff (National Opinion Research Center 1980, p. 154)." They were given a special form on which to answer the questions on illegal activities and were told to place this form in an envelope also provided by the interviewer. They were then asked to seal the envelopes and return them to the interviewer. Respondents were also told that this process was to insure that "no one who knows you will see any of your answers," and that they were "doing this so that everyone in the study can answer these questions honestly." Finally, they were told that the sealed envelope "will not be opened until it gets back to the staff in Chicago."

Partly due to these assurances of confidentiality, response rates for the two drug selling questions were very high. Only 3.3 and 3.1 percent of respondents failed to provide an answer to the questions on

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economic arrangements (Fagan, 1992).

<sup>13</sup> See Center for Human Resource Research (1997) for additional details on the NLSY sample.

selling marijuana and selling hard drugs, respectively. Although response rates were high, some underreporting of selling activity may have occurred. Previous research, however, finds that self-reports of criminal activity are generally reliable. Hindelang, Hirshi and Weiss (1981) compare police records on arrests to self-reports for a sample of individuals and find these to be similar, with the exception of self-reports for young black men, which appear to understate the amount of crime committed.

Self-employed workers are defined as those individuals who identify themselves as self-employed in own business, professional practice, or farm on the class of worker question for the current or most recent job.<sup>14</sup> In most of the analyses below, I remove individuals who report being enrolled in high school or college and workers who report working fewer than 300 hours in the previous calendar year. The hours restriction is imposed to rule out very small-scale business activities. I also exclude women and observations from 1979 and 1980. As shown below, drug dealing is not common among young women. These restrictions and the removal of missing observations for key analysis variables create a sample of 4,924 employed young men who have an average of 9.5 years of data.

#### **4. Who Sells Drugs?**

Estimates from the NLSY indicate that a large number of youths sold drugs in 1980. Table 1 reports the percent of young adults who sold marijuana and hard drugs by number of times in 1980. The reported categories for the number of times sold drugs are those available on the NLSY questionnaire. In 1980, 15.9 percent of young men and 7.3 percent of young women sold marijuana or hashish at least once in 1980. Fewer young men and women reported selling marijuana more frequently, but at least for men, a substantial number of young men reported selling drugs on a regular basis. For example, 6.7 percent of young men sold marijuana at least 6 times in 1980.

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<sup>14</sup> Unpaid family workers are not counted as self-employed. The current or most recent job or "Current Population Survey (CPS) employer" is defined as the job with the most hours for those who worked during the survey week and as the most recent job for those who did not work during the survey week. More details are provided in Center for Human Resource Research (1997).

As expected, young men and women were much less likely to report selling hard drugs, such as heroin, cocaine, and LSD. The estimates indicate that 3.4 percent of young men and 1.5 percent of young women sold hard drugs at least once in 1980. In addition, 1.4 percent of young men and 0.5 percent of young women sold hard drugs 6 or more times. Individuals who sold hard drugs were also very likely to sell marijuana. Of those selling hard drugs, more than 75 percent also sold marijuana.

In the following analyses, I define drug dealers as those individuals who reported selling marijuana or hard drugs at least 6 times in 1980.<sup>15</sup> Perhaps it would be preferable to define drug dealers as those who sold more frequently, however, this restriction would result in a substantial loss in the sample size of drug dealers. For example, defining drug dealers as individuals who sell drugs 11 or more times reduces the sample of dealers by nearly 40 percent. Nevertheless, in the next section I estimate regression models using alternative definitions of drug dealing and compare results.

Using selling 6 or more times as my definition of drug dealing, I examine the characteristics of drug dealers and compare these characteristics to those of non drug dealers. Here and in the remainder of the paper, I exclude young women from the analysis due to their low rates of drug dealing. Table 2 reports average values and distributions for various demographic characteristics of young male drug dealers and non drug dealers. Drug dealers were primarily white, non-Hispanic. Only 2.8 and 10.1 percent of male drug dealers were Hispanic and black, respectively. In comparison, Hispanics and blacks represented 6.5 and 13.5 percent of male non drug dealers.

The average age of drug dealers was similar to that of non drug dealers. Although not reported, I also find very similar age distributions for the two groups.<sup>16</sup> A major difference between the two groups, however, was their school enrollment and educational attainment status. Drug dealers were more likely to have dropped out of high school and were less likely to be currently enrolled in high school or college

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<sup>15</sup> This definition also includes individuals who sold one type of drug (marijuana or hard drugs) 3-5 times and the other type of drug 2 or 3-5 times.

<sup>16</sup> The one exception is that only 5.1 percent of drug dealers were 15 years of age, compared to 10.1 percent of non drug dealers. This is the youngest possible age for the NLSY cohort in 1980.

than non drug dealers. Apparently, drug dealing was much more prevalent among young men not enrolled in school than among young men enrolled in school. Finally, drug dealers had a similar regional distribution, but were somewhat more likely to live in urban areas than non drug dealers.

## 5. Estimating the Relationship between Drug Dealing and Self-Employment

Are young drug dealers more likely to be self-employed in later years? The answer to this question may shed light on whether attitudes toward risk, entrepreneurial ability, and preferences for autonomy are important determinants of self-employment. To examine this question, I specify and estimate a reduced form equation for self-employment. The underlying equation determining self-employment in time  $t$  for individual  $i$  is

$$(5.1) \quad S_{it}^* = Z_{it}'\mathbf{g} + \mathbf{D}_i + I_t + e_{it},$$

where  $S_{it}^*$  is an unobservable latent variable,  $Z_{it}$  is a vector of time-varying and static individual-level characteristics,  $D_i$  is a dummy variable for whether the individual sold drugs in 1980,  $I_t$  is a fixed effect for survey year  $t$ , and  $e_{it}$  is the disturbance term.<sup>17</sup> Only the dichotomous variable,  $S_{it}$ , is observed, however. It equals 1 if  $S_{it}^* \geq 0$  (denoting self-employment) and equals 0 otherwise (denoting wage/salary work), implying the use of a discrete choice model.

The use of the NLSY panel implies that the disturbance term,  $e_{it}$ , has two components,  $\mathbf{m}$  and  $v_{it}$ . In this two-component error term,  $\mathbf{m}$  represents the individual-specific component and is included to capture unobservable characteristics of the individual that affect the self-employment probability. Making the assumption that  $\mathbf{m}$  and  $v_{it}$  are normally distributed i.i.d. random variables and  $\text{Corr}[\mathbf{e}_{it}, \mathbf{e}_{is}] = \sigma_{\mu}^2 / (1 + \sigma_{\mu}^2)$ , the appropriate model for estimation is the random effects probit model. Although the normality assumption should only be taken as an approximation, the probit model provides a useful descriptive model for the binary event that a person is self-employed.

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<sup>17</sup> The  $I_t$  are included to capture the effects of macroeconomic fluctuations and the interest rate.

The likelihood function for this problem is

$$(5.2) \quad L = \prod_{i=1}^N \text{Pr ob}(S_{i1}, \dots, S_{iT}).$$

The error term is not independent across time for the same individual implying that the contribution to the likelihood function from each individual is

$$(5.3) \quad \text{Pr ob}(S_{i1}, \dots, S_{iT}) = \int_{l_{i1}}^{u_{i1}} \dots \int_{l_{iT}}^{u_{iT}} f(e_{i1}, \dots, e_{iT}) de_{iT} \dots de_{i1},$$

where  $f$  is the normal density function, and  $l_{it} = -X_{it}'\beta$  and  $u_{it} = \infty$  if  $S_{it} = 1$  or  $l_{it} = -\infty$  and  $u_{it} = -X_{it}'\beta$  if  $S_{it} = 0$ . The evaluation of this  $T$ -fold integral, however, is impractical. Instead, I take advantage of the simple form of the error term and integrate  $\mathbf{m}$  out of the joint density:

$$(5.4) \quad f(\mathbf{e}_{i1}, \dots, \mathbf{e}_{iT}) = \int_{-\infty}^{\infty} f(\mathbf{e}_{i1}, \dots, \mathbf{e}_{iT} | \mathbf{m}_i) f(\mathbf{m}_i) d\mathbf{m}_i. \text{ }^{18}$$

Conditioning on  $\mu_i$ , the error terms are independent, and thus (5.4) can be rewritten as

$$(5.5) \quad \text{Pr ob}(S_{i1}, \dots, S_{iT}) = \int_{-\infty}^{\infty} \prod_{t=1}^T \int_{l_{it}}^{u_{it}} f(e_{it} | \mu_i) de_{it} f(\mu_i) d\mu_i,$$

A further simplification of this expression is

$$(5.6) \quad \text{Pr ob}(S_{i1}, \dots, S_{iT}) = \int_{-\infty}^{\infty} \prod_{t=1}^T [F(u_{it} | \mu_i) - F(l_{it} | \mu_i)] d\mu_i,$$

where  $F$  is the normal cumulative distribution function. The problem is thus reduced to a single integral.

As suggested in Butler and Moffitt (1982), I use Gaussian quadrature to evaluate the integrals in the likelihood function. The number of evaluation points in the Hermite integration formula is set to 20.

The results presented below are not sensitive to using fewer evaluation points.

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<sup>18</sup> See Butler and Moffitt (1982) for more details on the following derivations.

Table 3 reports results from several random effects probit regressions for a sample of young male workers for the years 1981 to 1996. In all probit regressions the dependent variable equals one if the individual is self-employed and equals zero if the individual is a wage/salary worker. All reported specifications include controls for age, race, years of education, marital status, number of children, urbanicity, region, local unemployment rates, and year of survey (means are reported for most variables in the Appendix). These independent variables have been included in most previous empirical studies of self-employment and should remove a substantial amount of the heterogeneity in the sample.

In Specification 1, I do not include a measure of drug dealing. Most of the coefficients on the independent variables have the expected sign. Similar to previous studies I find that being black or Hispanic has a large negative effect on the probability of self-employment.<sup>19</sup> The coefficient for the supplemental low-income white sample (actually non-black, non-Hispanic) is negative, but statistically insignificant. The left out category is the representative sample of non-black, non-Hispanic young men. The coefficient on having been born outside the United States is positive, but statistically insignificant. One surprising result is the estimated negative relationship between self-employment and educational attainment, although most of it is due to the lower probability for high school graduates relative to high school dropouts.<sup>20</sup> Previous studies generally find a positive relationship between self-employment and educational attainment.

In Specification 2, I include my standard measure of drug dealing, defined as selling marijuana and/or hard drugs 6 or more times in 1980. The inclusion of this variable does not notably affect the coefficients on the controls. The coefficient on drug dealing is large, positive and statistically significant at conventional levels. The coefficient estimate of 0.4169 implies that drug dealing increases the future probability of self-employment by 0.0083.<sup>21</sup> The effect is substantial as the average probability of self-

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<sup>19</sup> See Fairlie and Meyer (1996) for example.

<sup>20</sup> In a specification in which I include the number of years of school, I also find a negative and statistically significant coefficient estimate.

<sup>21</sup> This derivative estimate is calculated by multiplying the coefficient estimate by the average derivative adjustment

employment in the sample is 0.0694. Young drug dealers appear to be more likely to choose self-employment in later years than non drug dealers, all else equal.

The potential risks and returns to selling Marijuana and hashish versus selling hard drugs, such as cocaine, heroin and LSD, are likely to differ markedly. In Specification 3, I investigate whether selling marijuana and selling hard drugs have different effects on the probability of self-employment.

Specifically, I include dummy variables indicating whether the individual sold marijuana 6 or more times, but did not sell hard drugs, whether the individual sold hard drugs 6 or more times, and whether the individual sold both types of drugs, but neither type 6 or more times. The first two types of drug dealers are more likely to be self-employed than non drug dealers. The coefficient estimate on the third type is statistically insignificant (this group, however, represents less than 4 percent of all drug dealers).

Furthermore, there is some suggestive evidence that drug dealers who did not sell hard drugs are less likely to choose self-employment than drug dealers who frequently sold hard drugs. The difference, however, is not large, and thus I continue to not distinguish between the two types of drugs sold.

I also check whether the estimated effect of drug dealing on the probability of self-employment is sensitive to the number of drugs sold. In Specification 4, I define drug dealing as selling marijuana and/or hard drugs 11 or more times. This alternative definition of drug dealing may exclude some young men who were selling drugs only casually. This group of casual sellers may be less likely to possess the entrepreneurial characteristics that are hypothesized to increase the probability of self-employment.

Using the stricter definition of drug dealing, the coefficient estimate is 0.4793, which is slightly larger than the original coefficient estimate. Although the standard error has risen, the coefficient estimate remains highly significant. Using an even stricter definition of drug dealing results in a further rise in the coefficient estimate. In Specification 5, I define drug dealing as selling drugs 51 or more times in 1980.

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factor reported at the bottom of Table 3. The average derivative adjustment factor is  $\mathbf{S}b_kj(X_{it}'\mathbf{b})/NT$ , where  $b_k$  is the coefficient on drug dealing,  $f$  is the normal probability density function,  $X_{it}$  includes all independent variables, and  $NT$  is the total number of observations. The effect of a one unit increase in any of the independent variables can be estimated by multiplying the coefficient on that variable by the average derivative adjustment factor.

The coefficient estimate is highly significant and now implies that being a young drug dealer increases the future probability of self-employment by 0.0143, representing 20.6 percent of the sample mean.

The coefficient estimates reported in Specifications 2-5 provide evidence that drug dealers are more likely to be self-employed in later years than non drug dealers. Not to be overlooked, however, is that the increase in coefficient estimates using stricter definitions of drug dealing is also consistent with the hypothesis that attitudes toward risk, entrepreneurial ability, and preferences for autonomy are important determinants of self-employment. It is likely that young men who sold drugs on a very regular basis, such as 51 or more times in a year, are likely to possess higher levels of these entrepreneurial characteristics than young men who sold less frequently.

## DRUG USE

Although drug use was prevalent among young men, it was ubiquitous among young male drug dealers. Data from the NLSY indicate that 99.5 percent of drug dealers used marijuana or hard drugs at least once in 1980 compared to 48.9 percent of non drug dealers. Furthermore, drug dealers are not simply occasional users as nearly 87.6 percent used drugs 51 or more times. These results are consistent with the findings of previous studies. For example, Reuter, MacCoun, and Murphy (1990) find that their sample of drug dealers in Washington, D.C. spent an average of one-fourth of their earnings on drugs.

The drug use variables available in the NLSY may provide additional evidence on whether the finding of a positive coefficient on drug dealing is consistent with the story that entrepreneurial characteristics are important determinants of self-employment. In particular, we expect that some drug dealers who used drugs frequently were originally attracted to drug dealing because it provided access to less expensive and possibly higher-quality drugs. This group of drug dealers may not possess the same level of entrepreneurial characteristics as that of drug dealers who only occasionally used drugs. Therefore, we should find a lower future probability of self-employment among drug dealers who were heavy users than among drug dealers who were only occasional users.

To test this hypothesis, I create a dummy variable for drug dealers who used drugs less than 51 times in 1980 and include it in the main probit regression. Estimates are reported in Specification 1 of Table 4. The coefficient on the "infrequent-user" drug dealing variable is positive, although not statistically significant at conventional levels. Thus, there is only suggestive evidence that drug dealers who did not use drugs frequently are more likely to choose self-employment than drug dealers who used drugs frequently. This group of drug dealers, however, is much more likely than non drug dealers to choose self-employment. The sum of the two drug dealing coefficients implies that they are 0.0117 percentage points, or 16.8 percent, more likely to be self-employed than non drug dealers.

One problem with this measure of infrequent drug use is that it is independent of the number of times the individual reported selling drugs. An alternative measure of infrequent use is to identify drug dealers who reported using drugs the same or fewer times than the number of times they reported selling drugs. Estimates for this measure are reported in Specification 2. The coefficient on this variable is positive and statistically significant, suggesting that drug dealers who used drugs infrequently are more likely to be self-employed than are other drug dealers. To conclude, the results from these two probit regressions provide further evidence that the positive coefficient on drug dealing is capturing the effect of entrepreneurial characteristics on self-employment and is not due to a spurious correlation.

## ILLEGAL INCOME

Another method of measuring the seriousness of drug dealers is to examine whether they reported receiving income from selling drugs. Drug dealers who sold drugs to support, or at least partly support, themselves may possess higher levels of entrepreneurial characteristics than more casual drug dealers. Although the NLSY does not include a measure of drug dealing income, respondents were asked how much of their total income or support in 1980 came from all illegal activities.

In Table 4, I report estimates from two specifications that include interactions between the responses to this variable and the drug dealing variable. In Specification 3, I include a dummy variable

indicating whether the drug dealer reported receiving any income from illegal activities. Slightly more than 75 percent of the sample of drug dealers reported receiving at least some income from illegal activities. Interestingly, the coefficient on drug dealing is no longer positive and statistically significant, suggesting that drug dealers who reported receiving no illegal income are not more likely to choose self-employment than non drug dealers. The large positive coefficient on the interaction variable implies that drug dealers who reported illegal income have a higher probability of choosing self-employment than drug dealers who did not report illegal income. Furthermore, the sum of the two coefficients implies that these drug dealers are also more likely to be self-employed than non drug dealers. In Specification 4, I include an additional dummy variable indicating whether the drug dealer reported receiving at least one quarter of his total support from illegal activities. The coefficient estimate is positive, but statistically insignificant. Overall, these regressions provide some additional evidence suggesting that entrepreneurial characteristics are important determinants of self-employment.

## SMOKING

Although the ethnographic literature on crime provides evidence that drug dealing is a risky activity, it is useful to examine another possible measure of attitudes toward risk, smoking. The health risks of smoking are clearly well known. In addition, previous research finds that smoking is associated with other health-related high-risk activities, such as not using seat belts and choosing jobs with high accident rates (see Hersch and Viscusi 1998 for a recent example). Using measures of smoking available in the 1984 and 1992 waves of the NLSY, I explore the relationship between drug dealing and smoking. I find that smoking is much more prevalent among drug dealers than among non drug dealers. Depending on the measure, drug dealers are from 50 to 60 percent more likely to smoke on a regular basis than non drug dealers. This finding is consistent with the assumption that drug dealing captures low risk aversion, however, it may also simply be due to other characteristics of the individual that are positively correlated with both drug dealing and smoking.

I estimate probit regressions that include two different measures of cigarette use. I first estimate a specification that includes a dummy variable indicating whether the individual smoked one or more cigarettes per day in the 30 days prior to the 1984 interview date (reported in Specification 1 of Table 5). The coefficient estimate is negative and statistically significant. In Specification 2, I include a dummy variable indicating whether the individual smoked at least 100 cigarettes in his life by 1992.<sup>22</sup> The coefficient estimate on this variable is positive although not statistically significant. The results are not consistent using the two measures, and thus are difficult to interpret. In both cases, however, the implied effects of smoking on the probability of self-employment are very small, and the coefficient on the drug dealing variable is not sensitive to the inclusion of these variables. Drug dealing may provide a better proxy for low risk aversion than smoking in this analysis as it captures financial and legal risks as well as health risks.<sup>23</sup>

#### ADDITIONAL ESTIMATES

Although the probit regressions discussed above include a large number of individual characteristics that effect the probability of self-employment, they do not include two potentially important characteristics of the individual's parents. Several recent studies have shown that the probability of self-employment is substantially higher among the children of the self-employed (see Lentz and Laband 1990, Dunn and Holtz-Eakin 1999, Hout and Rosen 1997, and Fairlie 1999). In addition, Dunn and Holtz-Eakin (1999) find that parental wealth has a weak positive effect on the probability of a transition into self-employment, possibly due to parental wealth improving the individual's access to start-up capital. Unfortunately, the NLSY does not provide information on whether the individual's parents are

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<sup>22</sup> Unfortunately, a measure of smoking is not available in each year. The main advantage of the 1992 variable relative to the 1984 variable is that it captures lifetime use. However, there is a substantial loss in the number of observations primarily due to the removal of the supplemental low-income white sample after 1990.

<sup>23</sup> The results for including the smoking variables without the drug dealing variable are also mixed. Using the 1984 measure, I find a negative coefficient, whereas using the 1992 measure I find a positive coefficient. Both coefficient estimates are similar in magnitude to those reported in Table 5.

self-employed nor does it provide a measure of parental wealth. Instead, I use dummy variables for parental occupations and education levels as proxies for parental self-employment and wealth. I report coefficient estimates from a probit regression that includes these dummies in Specification 3 of Table 5. The coefficient estimate on drug dealing is 0.5057. The inclusion of parental variables, however, results in a substantial loss in sample size. Using the same sample of individuals, but not including the parental variables, results in a coefficient estimate on drug dealing of 0.3638. I also try a specification in which I create dummy variables for missing values for parental education to restore the sample to its original size. The coefficient estimate on drug dealing is 0.4397. To conclude, these results indicate that the estimate of the effect of drug dealing on the probability of self-employment is not sensitive to the inclusion of parental controls.

Previous studies find that Armed Forces Qualification Test (AFQT) scores have a large positive effect on earnings (see Neal and Johnson 1996 for a recent example). The general argument is that AFQT scores represent a measure of basic skills that help predict job performance. Youths who have low levels of these basic skills may have limited opportunities in the wage/salary sector possibly leading to higher probabilities of both drug dealing as a youth and self-employment in later years. To examine this issue further, I estimate a probit regression in which the AFQT score is included as an additional independent variable (reported in Specification 4 of Table 5).<sup>24</sup> The coefficient on the AFQT score is positive, but not statistically significant. The point estimate implies a relatively small effect as a one standard deviation increase in the AFQT score increases the probability of self-employment by only 0.0007 percentage points. More importantly, the coefficient on drug dealing remains positive and statistically significant. The coefficient is now smaller (0.3577), but this appears to mainly be a result of the smaller sample size. Using the same sample, but not including the AFQT score, I find a coefficient estimate of 0.3670. In addition to these results, drug dealers and non drug dealers have very similar average AFQT scores (see

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<sup>24</sup> The included AFQT score is the residual in a linear regression of actual AFQT scores on dummy variables for each possible birth year.

the Appendix). These results suggest that the positive correlation between drug dealing as a youth and future probabilities of self-employment is not due to drug dealers possessing lower levels of basic job skills (as measured by AFQT scores).

I estimate three additional specifications to check the sensitivity of results. First, I estimate a probit regression using a sample of full-time, full-year workers (defined as 1400 hours in the past year). This sample restriction results in a loss of slightly more than 15 percent of the total sample size, but has little effect on the drug dealing coefficient. The coefficient estimate is 0.4355 with a standard error of 0.0922. Second, I exclude all observations for individuals when they are younger than 25 years old. The drug dealing coefficient becomes slightly larger (0.4873) and remains highly statistically significant. Finally, I estimate a specification that removes all NLSY respondents who were 15 years of age in 1980. As noted above this group had a substantially lower probability of drug dealing than the other age groups. The coefficient estimate is 0.3648 with a standard error of 0.0848. Overall, these results indicate that the positive coefficient estimate on drug dealing is robust to several alternative specifications of the regression equation.

## **6. Alternative Explanations**

An important question remains: Does the large, positive and statistically significant coefficient estimate on drug dealing provide evidence that entrepreneurial characteristics, which may include risk aversion, entrepreneurial ability, and a preference for autonomy, are important determinants of self-employment? The findings presented above are certainly consistent with this hypothesis, however, there may exist other explanations for the positive relationship. I investigate a few possibilities below.

### **ARE DRUG DEALERS REPORTING SELLING DRUGS AS A SELF-EMPLOYED JOB ACTIVITY?**

The simplest explanation for the positive coefficient estimate is that individuals who reported selling drugs in 1980 continue to sell drugs in later years and report this activity as a self-employed job. I

argue that this is unlikely. A careful inspection of the questionnaire and interviewer's instruction guide reveals that it would be difficult to report an income-producing illegal activity as a job activity. NLSY sample members are asked a large number of detailed questions, such as industry, occupation, class of worker, hours, and earnings, for each job held during the survey year. Respondents are also asked to report on whether they held each of their current jobs in the previous survey year and are asked the reason they left any job during the survey year. Finally, they are asked to report their employer's name if employed by someone else or the name of their business if self-employed. Given the large number of detailed questions for each job activity and the difficulty of inventing a consistent and reasonable set of job characteristics for drug dealing, respondents are likely to avoid reporting this activity to the interviewer.

An examination of reported job activities in 1980, the year of reference for the illegal activity questions, provides additional evidence that respondents do not report drug dealing as a job activity. In Table 6, I report responses to the class of worker question for young male drug dealers and non drug dealers in 1980. As discussed in Section 3, the class of worker question is used to identify whether the respondent is self-employed. Only 4 out of the 186 young male drug dealers who responded to the class of worker question reported themselves as being self-employed. In fact, a higher percentage of non drug dealers reported self-employment on the class of worker question than non drug dealers (3.3 percent compared to 2.2 percent). Finally, none of the drug dealers or non drug dealers refused to answer or provided a don't know response to the question in 1980.

In Table 6, I also report the frequency distribution of drug dealers and non drug dealers across school enrollment/employment statuses. Many of the individuals who provided responses to the class of worker question may have been enrolled in school or may not have met the hours restrictions used in this analysis. After removing school enrollees and imposing hours restrictions, only 1 out of the 109 working drug dealers reported being self-employed. Again, the self-employment rate for drug dealers was lower

than that for non drug dealers. Drug dealers were also less likely to report being enrolled in school and were more likely to report wage/salary work or not working.

These results indicate that almost none of the individuals who reported selling drugs frequently in 1980 also reported being self-employed in 1980. There is always the possibility, however, that some individuals continued to sell drugs and changed their reporting behavior in subsequent years. Therefore, as a final check, I examine the industry distributions of drug dealers and non drug dealers who report being self-employed in 1981 to 1996.<sup>25</sup> As shown in Table 7, the top four industries for self-employed drug dealers are Construction (37.8 percent), Business and Repair Services (21.3 percent), Horticultural Services and Agriculture (12.5 percent), and Trade (9.2 percent). These are also the top four industries for non drug dealers, although a much smaller fraction are in Construction (25.3 percent). At a more detailed level, the most common industries for self-employed drug dealers are Special Trade Contractors (26.7 percent), Automobile Repair and Related Services (12.1 percent), Horticultural Services (8.8 percent), and General Building Contractors (8.4 percent). Overall, self-employed drug dealers appear to report similar industries as those reported by non drug dealers, suggesting that they are not simply reporting drug dealing as a self-employed job activity.<sup>26</sup>

## INCARCERATION AND LIMITED WAGE/SALARY OPPORTUNITIES

The estimated positive relationship between drug dealing and self-employment may be the result of limited employment opportunities or reduced potential wages in the wage/salary sector for this group. This may occur if drug dealers are more likely than non drug dealers to experience current or future encounters with the criminal justice system, such as arrests, convictions, or incarceration, and if these encounters result in reduced opportunities in the wage/salary sector. Past research indicates that

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<sup>25</sup> Only 5 self-employed workers had missing values for industry. These observations were all for non drug dealers.

<sup>26</sup> I also find that self-employed drug dealers report a similar average level of earnings as self-employed non drug dealers.

incarceration and probation have large and long-term negative effects on employment probabilities.<sup>27</sup> In addition, several recent studies generally find that convictions and incarcerations have a negative effect on current and future earnings (see Lott 1990, Waldfogel 1994, Nagin and Waldfogel 1993, and Grogger 1995 for example). In contrast to these findings, an ex-offender who chooses self-employment does not face discrimination, either pure or statistical, by employers in the labor market. The resulting signal of low worker quality (Grogger 1992), loss of trust wage premia (Waldfogel 1994), signal of lack of honesty (Lott 1992), or shunning by employers (Freeman 1987) from criminal activity does not affect the self-employed.

Estimates from the NLSY indicate that drug dealers are much more likely than non drug dealers to be incarcerated during the sample period. The average annual probability of being interviewed in jail or prison for the sample of non drug dealers is 0.0197. The average probability for drug dealers is nearly 3 times higher (0.0535). Evidently, drug dealing in 1980 and future incarceration are highly correlated.

The findings from the literature on the earnings costs of incarceration and this comparison of incarceration probabilities suggest that the coefficient on drug dealing may capture the effect of incarceration on self-employment instead of the effects of entrepreneurial characteristics. To explore this issue, I estimate a probit regression for the probability of self-employment that includes a dummy variable indicating whether the individual had been previously incarcerated. I create this variable by first examining the responses to a question asked in 1980 on whether the respondent had ever been sentenced to spend time in a correctional institution, such as a jail, prison, or youth institution. I then use responses to the type of residence question from 1980 to 1994 to identify those individuals who were interviewed in jail or prison in each year. Of course, this measure will miss many short-term jail and prison sentences. Nevertheless, this variable provides a fairly accurate measure of whether the respondent had experienced a long-term incarceration prior to the current survey year.

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<sup>27</sup> See Freeman (1994) for a review.

In Table 8, I report estimates from a probit regression that includes the previously incarcerated variable. Unfortunately, this measure includes a large number of missing values due to years in which respondents were not interviewed. Therefore, I first estimate a probit regression that does not include the incarceration variable, but uses the same sample (reported in Specification 1). The "benchmark" coefficient estimate for drug dealing is 0.3929. Estimates from the probit regression that includes the incarceration variable are reported in Specification 2. The drug dealing coefficient estimate is 0.3822 and remains highly significant after including the dummy variable for a previous incarceration. The coefficient on previous incarceration is positive and statistically significant. The coefficient estimate implies that having a previous incarceration increases the probability of self-employment by 0.0039 or 5.9 percent. To my knowledge, this result has not been previously documented. It suggests that self-employment provides an important alternative to wage/salary work for at least some ex-convicts.

These results indicate that the inclusion of the previously incarcerated variable has little effect on the drug dealing coefficient. There is always the possibility, however, that drug dealing is correlated with other contacts with the criminal justice system, such as being charged, convicted, or placed on probation for a crime, and that these activities are responsible for the positive coefficient on drug dealing. Unfortunately, measures of these criminal activities are not available from 1981 to 1996. Instead, I use measures from 1980. In Specifications 3-5, I report estimates from probit regressions that include these variables. In each specification, the coefficient on the criminal activity variable is positive and statistically significant. Furthermore, the coefficient on drug dealing remains large, positive and statistically significant. Therefore, the positive relationship between drug dealing and the probability of self-employment does not appear to be due to limited opportunities in the wage/salary sector from subsequent periods of incarceration or past contacts with the criminal justice system.<sup>28</sup>

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<sup>28</sup> Another approach to exploring whether drug dealers experience limited opportunities in the wage/salary sector is to compare the wages of drug dealers to those of non drug dealers. Estimates from the NLSY indicate that drug dealers who choose wage/salary work earn only 1.4 percent less than non drug dealers who choose wage/salary work. Of course, this comparison does not control for individual characteristics and self-selection into wage/salary

## ARE DRUG DEALERS ACCUMULATING ASSETS TO START LEGITIMATE BUSINESSES?

Another potential explanation for the positive relationship is that drug dealing may provide the means for accumulating capital to start legal businesses for some individuals. Profits obtained by drug dealers may be saved and eventually used as startup capital for legitimate businesses. One method of testing this hypothesis is to examine whether the coefficient on drug dealing is sensitive to the inclusion of the individual's net worth in the probit regression.<sup>29</sup> If drug dealers are accumulating assets and liquidity constraints exist then the coefficient on drug dealing should drop sharply. A serious problem arises, however, if net worth is included in an equation determining the probability of self-employment. This variable may be endogenous as we might expect that the self-employed are more likely to accumulate assets than wage/salary workers through operating and owning their own businesses.

To address this problem, I follow the approach taken in several recent studies of analyzing the determinants of transitions into self-employment.<sup>30</sup> Specifically, I condition on the individual being a wage/salary worker in year  $t-1$  and examine whether the individual becomes self-employed by year  $t$ . The results from three probit regressions for the probability of entry into self-employment are reported in Table 9. The dependent variable equals 1 if the individual is self-employed in year  $t$  or equals 0 if the individual remains a wage/salary worker. All of the independent variables, including net worth, are measured in year  $t-1$ , which is prior to when the work sector decision is made.<sup>31</sup> Although individuals

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work. In log wage regressions, I find a coefficient of 0.0211 on drug dealing when I do not control for selection and a coefficient of 0.0258 when I control for selection.

<sup>29</sup> Data from the NLSY indicate that the average net worth of drug dealers is 11 percent lower than the average net worth of non drug dealers.

<sup>30</sup> See Evans and Jovanovic (1989), Evans and Leighton (1989), Meyer (1990), Holtz-Eakin, Joulfaian, and Rosen (1994a), Dunn and Holtz-Eakin (1999) and Fairlie (1999) for a few recent examples.

<sup>31</sup> This is the main advantage to analyzing transitions into self-employment. The main disadvantage, however, is that a large amount of information is lost by removing all observations in which individuals are self-employed in two or more consecutive years. Furthermore, drug dealing is measured prior to the first survey year included in the preceding analyses, and is thus unlikely to be endogenous.

may save in anticipation of becoming self-employed, a measure of net worth in year t-1 should be more exogenous than a contemporaneous measure.

I first estimate the effect of drug dealing on the probability of entering self-employment without controlling for asset levels (reported in Specification 1).<sup>32</sup> The coefficient on drug dealing is large, positive and statistically significant. The finding of a positive coefficient on drug dealing is consistent with the positive coefficient reported in Specification 2 of Table 3. The coefficient estimate implies that drug dealing increases the probability of entering self-employment by 0.0066 or 22.1 percent of the sample mean.

The NLSY only collected asset information for the survey years, 1985 to 1990, 1992, 1993, 1994 and 1996. For those years, I use a measure of net worth that was created from the detailed asset questions available in the NLSY.<sup>33</sup> Due to the large reduction in sample size from including this variable, I estimate a probit regression for the probability of entry into self-employment that does not include net worth, but uses the same sample (reported in Specification 2). This "benchmark" drug dealing coefficient is 0.3394. In Specification 3, I include net worth and net worth squared. The coefficient on net worth is positive and statistically significant indicating a concave relationship. Evaluated at the mean level of net worth (which equals \$36,900), the coefficient estimates imply that increasing net worth by \$10,000 increases the probability of a transition into self-employment by 0.00044. This represents only 1.5 percent of the sample entry rate into self-employment. Thus, the estimates provide some evidence that young men face liquidity constraints, but these constraints do not appear to be overly restrictive. More importantly, the inclusion of net worth essentially has no effect on the drug dealing coefficient. The coefficient estimate is 0.3341 and remains statistically significant.

These results suggest that the large positive coefficient on drug dealing is not due to drug dealers accumulating assets to start businesses. Some drug dealers may save their profits to start legitimate

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<sup>32</sup> I exclude observations for the two-year transition from 1994 to 1996.

businesses, but the fact that they were drug dealers remains an important determinant of entry into self-employment. Furthermore, studies from the criminology literature provide examples of the lavish consumption patterns among many drug dealers suggesting these dealers are not saving a high percentage of their profits (see Alder 1986 for example).

## **6. Conclusions**

Using data from the NLSY, I find that drug dealing in 1980 has a large, positive, and statistically significant effect on the future probability of self-employment. Using various definitions of drug dealing and specifications of the econometric model, I find that young drug dealers are 11 to 21 percent more likely to choose self-employment in later years than are young non drug dealers, all else equal. I also find that drug dealers who sold more frequently, used drugs less frequently, or reported receiving income from drug dealing are more likely to choose self-employment than other drug dealers. I interpret these results as providing evidence that low risk aversion, entrepreneurial ability, and a preference for autonomy are important determinants of self-employment. Alternative explanations of the positive coefficient estimate, such as respondents reporting drug dealing as a self-employed job activity, drug dealing leading to blocked wage/salary opportunities, and drug dealers accumulating assets to start businesses are less likely.

The findings from this study provide support for the emphasis placed on attitudes toward risk, entrepreneurial ability, and preferences for autonomy in previous theoretical models of self-employment. Although it is difficult to find a common metric, the effect of being a drug dealer dwarfs the effects of measurable human and financial capital on the probability of self-employment. For example, the estimates indicate that the effect of drug dealing on the probability of entering self-employment is more than four times the effect of doubling an individual's net worth. I find that basic skills (measured by AFQT scores) and education have even smaller or negative effects on the probability of self-employment.

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<sup>33</sup> This variable is not available in the public use data, but can be obtained from Jay L. Zagorsky at the Center for Human Resource Research. See Zagorsky (1998) for more details on the construction of this variable.

Thus, the self-employed appear to have at least some of the characteristics associated with the popular notion of what it takes to be an entrepreneur, and are not simply those individuals who possess high levels of human and financial capital or who face limited opportunities in the wage/salary sector.

The results presented above also have important policy implications. In his 1989 Presidential Address to the National Economic Association, Samuel Myers, Jr. criticized policymakers for not exploiting "the entrepreneurial talents of street-wise hustlers and dope-dealers in the inner city to enable them to become managers and owners of legitimate inner-city businesses" (Myers, 1989, p. 6). He noted that instead, government expenditures were directed towards training programs in the wage/salary sector, such as CETA and JTPA. Although certainly not widespread, there do exist a number of small local programs promoting entrepreneurship among disadvantaged youths, ex-convicts, and other low-income groups (see Balkin, 1989, 1993). The findings from this research suggest that an expansion in the number and scope of services provided by entrepreneurial training programs targeted towards these groups may be successful. Many disadvantaged youths and ex-convicts, especially those who are former drug dealers, may possess the entrepreneurial characteristics needed for self-employment, but ultimately do not create small businesses due to a lack of knowledge of business opportunities, sector-specific human capital, and financial capital.<sup>34</sup>

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<sup>34</sup> Interestingly, at-risk youth and prisoners demonstrate a keen interest in business ownership and show disdain for available wage/salary jobs (Balkin 1993 and Light and Rosenstein 1995). Balkin (1993) reports that depending on the institution from 10 to 75 percent of prison inmates expressed an interest in self-employment. Light and Rosenstein (1995) make the additional point that entrepreneurial education and training may serve as a useful intervention program for at-risk youth redirecting them from becoming drug dealers and other criminals into becoming owners of legitimate businesses.

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Table 1  
 Number of Times Sold Marijuana and Hard Drugs in 1980  
 NLSY

Times Sold	Percent of Young Adults	
	Men	Women
<b>Marijuana or Hashish</b>		
0	84.1%	92.7%
1	3.3%	2.4%
2	2.5%	1.2%
3-5	3.4%	1.6%
6-10	2.5%	1.0%
11-50	2.1%	0.8%
51 or more	2.0%	0.5%
Sample Size	5124	5460
<b>Hard Drugs (Heroin, Cocaine, or LSD)</b>		
0	96.6%	98.5%
1	0.8%	0.6%
2	0.8%	0.3%
3-5	0.5%	0.1%
6-10	0.6%	0.2%
11-50	0.2%	0.3%
51 or more	0.6%	0.0%
Sample Size	5138	5468

Notes: (1) The sample consists of young men and women who were interviewed in 1980.  
 (2) All percentages are calculated using sample weights provided by the NLSY.

Table 2  
 Characteristics of Male Drug Dealers in 1980  
 NLSY

	Percent or Mean Value for Young Men	
	Drug Dealers	Non Drug Dealers
Age (mean)	18.84	18.66
Race		
White	87.1%	80.0%
Black	10.1%	13.5%
Hispanic	2.8%	6.5%
Education		
Not Enrolled, High School Dropout	25.7%	12.1%
Enrolled in High School	29.8%	39.7%
Enrolled in College	11.3%	18.2%
Not Enrolled, High School Graduate	33.2%	30.0%
Region		
North	16.0%	17.8%
Midwest	30.0%	30.0%
South	31.0%	34.6%
West	23.0%	17.6%
Urban	83.7%	77.2%

Notes: (1) The sample consists of young men who were interviewed in 1980.

(2) Drug dealers are individuals who report selling drugs 6 or more times in 1980.

(3) All percentages are calculated using sample weights provided by the NLSY.

Table 3  
 Probit Regressions for Probability of Self-Employment  
 NLSY (1981-1996)

	Specification				
	(1)	(2)	(3)	(4)	(5)
Age	0.0659 (0.0097)	0.0556 (0.0100)	0.0527 (0.0101)	0.0596 (0.0100)	0.0601 (0.0099)
Black	-0.5386 (0.0628)	-0.4856 (0.0629)	-0.4732 (0.0633)	-0.5378 (0.0630)	-0.5404 (0.0635)
Hispanic	-0.5207 (0.0723)	-0.4609 (0.0745)	-0.4520 (0.0746)	-0.4739 (0.0735)	-0.4676 (0.0731)
Low-Income White Sample	-0.0760 (0.0814)	-0.0517 (0.0831)	-0.0395 (0.0835)	-0.0880 (0.0830)	-0.0898 (0.0830)
Born Abroad	0.0977 (0.0905)	0.1312 (0.0929)	0.1371 (0.0931)	0.0937 (0.0925)	0.0708 (0.0930)
12 Years of School	-0.2864 (0.0474)	-0.3111 (0.0486)	-0.3173 (0.0487)	-0.2839 (0.0481)	-0.2712 (0.0481)
13-15 Years of School	-0.3308 (0.0619)	-0.3125 (0.0628)	-0.3067 (0.0630)	-0.3417 (0.0633)	-0.2979 (0.0629)
16+ Years of School	-0.4748 (0.0684)	-0.4478 (0.0704)	-0.4445 (0.0708)	-0.4749 (0.0697)	-0.4413 (0.0692)
Drug Dealer (sold drugs 6+ times)		0.4169 (0.0802)			
Drug Dealer (sold drugs 11+ times)				0.4793 (0.0973)	
Drug Dealer (sold drugs 51+ times)					0.7127 (0.1359)
Drug Dealer (sold only marijuana 6+ times)			0.4446 (0.0871)		
Drug Dealer (sold hard drugs 6+ times)			0.5340 (0.2072)		
Drug Dealer (sold both 2-5 times)			-1.2950 (1.0869)		
Mean of Dependent Var.	0.0694	0.0694	0.0695	0.0694	0.0694
Avg. Derivative Adj. Factor	0.0200	0.0200	0.0199	0.0203	0.0201
Sample Size	46894	46894	46881	46885	46885
Log Likelihood	-8343.08	-8336.28	-8332.58	-8335.80	-8332.42

Notes: (1) The sample consists of young men who worked at least 300 hours in the survey year. (2) All specifications are estimated using a random effects probit. See text for more details. (3) Standard errors are reported in parentheses. (4) All specifications include a constant, number of children, and dummy variables for marital status, region, urbanicity, county unemployment rates, and year of survey. (5) The average derivative is equal to the adjustment factor multiplied by the coefficient. See text for more details.

Table 4  
 Probit Regressions for Probability of Self-Employment with Drug Use and Illegal Income  
 NLSY (1981-1996)

	Specification			
	(1)	(2)	(3)	(4)
Age	0.0579 (0.0100)	0.0482 (0.0105)	0.0578 (0.0103)	0.0547 (0.0103)
Black	-0.4897 (0.0629)	-0.4892 (0.0655)	-0.4361 (0.0639)	-0.4148 (0.0643)
Hispanic	-0.4784 (0.0758)	-0.4332 (0.0758)	-0.4894 (0.0770)	-0.4600 (0.0762)
Low-Income White (sample)	-0.0564 (0.0828)	-0.0021 (0.0931)	-0.0176 (0.0834)	-0.0002 (0.0836)
Born Abroad	0.1414 (0.0929)	0.1472 (0.0962)	0.1432 (0.0953)	0.1298 (0.0957)
12 Years of School	-0.3194 (0.0486)	-0.2839 (0.0500)	-0.3087 (0.0499)	-0.2910 (0.0498)
13-15 Years of School	-0.3166 (0.0628)	-0.2497 (0.0645)	-0.3167 (0.0638)	-0.2892 (0.0640)
16+ Years of School	-0.4519 (0.0700)	-0.3726 (0.0720)	-0.4489 (0.0719)	-0.4199 (0.0722)
Drug Dealer (sold drugs 6+ times)	0.3559 (0.0900)	0.2049 (0.1073)	-0.2324 (0.2233)	-0.2229 (0.2240)
Drug Dealer who uses less than 51 times	0.2294 (0.1851)			
Drug Dealer who does not use more than sells		0.5935 (0.1730)		
Drug Dealer who Reports Illegal Income			0.6674 (0.2395)	0.6382 (0.2508)
Drug Dealer who Reports 1/4 or more Illegal Income				0.1962 (0.1774)
Mean of Dependent Var.	0.0695	0.0699	0.0693	0.0693
Avg. Derivative Adj. Factor	0.0200	0.0196	0.0199	0.0198
Sample Size	46876	45107	45485	45485
Log Likelihood	-8334.72	-8039.47	-8098.24	-8098.01

Notes: (1) The sample consists of young men who worked at least 300 hours in the survey year. (2) All specifications are estimated using a random effects probit. See text for more details. (3) Standard errors are reported in parentheses. (4) All specifications include a constant, number of children and dummy variables for marital status, region, urbanicity, county unemployment rates, and year of survey. (5) The average derivative is equal to the adjustment factor multiplied by the coefficient. See text for more details.

Table 5  
 Probit Regressions for Probability of Self-Employment with Smoking and Additional Variables  
 NLSY (1981-1996)

	Specification			
	(1)	(2)	(3)	(4)
Age	0.0680 (0.0098)	0.0355 (0.0109)	0.0472 (0.0114)	0.0628 (0.0101)
Black	-0.5551 (0.0626)	-0.4534 (0.0650)	-0.5215 (0.0784)	-0.4710 (0.0689)
Hispanic	-0.5319 (0.0743)	-0.4114 (0.0777)	-0.4660 (0.0860)	-0.4563 (0.0763)
Low-Income White (sample)	-0.1485 (0.0849)		-0.0920 (0.0916)	-0.0840 (0.0846)
Born Abroad	0.1244 (0.0902)	0.1250 (0.1044)	0.1852 (0.1102)	0.1119 (0.0976)
12 Years of School	-0.3504 (0.0488)	-0.3374 (0.0518)	-0.1915 (0.0610)	-0.3209 (0.0509)
13-15 Years of School	-0.4105 (0.0636)	-0.2547 (0.0669)	-0.2580 (0.0742)	-0.3628 (0.0683)
16+ Years of School	-0.5785 (0.0715)	-0.4322 (0.0789)	-0.5543 (0.0913)	-0.5499 (0.0881)
Drug Dealer (sold drugs 6+ times)	0.4005 (0.0815)	0.4166 (0.0856)	0.5057 (0.0865)	0.3577 (0.0836)
Smoked on average 1 or more Cigarettes per Day in 1984	-0.1188 (0.0461)			
Smoked at least 100 Cigarettes in Life by 1992		0.0522 (0.0492)		
Age-Adjusted AFQT Score				0.0011 (0.0011)
Mean of Dependent Var.	0.0697	0.0683	0.0726	0.0687
Avg. Derivative Adj. Factor	0.0199	0.0197	0.0236	0.0202
Sample Size	45892	41228	39158	45368
Log Likelihood	-8130.39	-7230.66	-7065.79	-8033.20

Notes: (1) The sample consists of young men who worked at least 300 hours in the survey year. (2) All specifications are estimated using a random effects probit. See text for more details. (3) Standard errors are reported in parentheses. (4) All specifications include a constant, number of children and dummy variables for marital status, region, urbanicity, county unemployment rates, and year of survey. In addition to these variables, Specification 3 includes dummy variables for parental education and occupation. (5) The average derivative is equal to the adjustment factor multiplied by the coefficient. See text for more details.

Table 6  
 Employment Status and Class of Worker Responses of Young Men in 1980  
 NLSY

Class of Worker Question	Drug Dealers		Non Drug Dealers	
	Percentage	N	Percentage	N
Employee of Private Company	84.4%	157	84.7%	2203
Government Employee	12.9%	24	10.7%	278
Self-Employed in Own Business, Professional Practice, or Farm	2.2%	4	3.3%	86
Working w/o Pay in Family Business or Farm	0.5%	1	1.3%	33
Employment Status Question				
Enrolled in School	47.6%	130	63.2%	2729
Not Enrolled in School				
Not Working	12.5%	34	7.5%	324
Working				
Self-Employed	0.4%	1	0.9%	41
Wage/Salary	39.6%	108	28.4%	1226

Notes: The sample consists of young men who were interviewed in 1980.

Table 7  
 Industry Distribution of Self-Employed Male Drug Dealers and Non Drug Dealers  
 NLSY (1981-1996)

Industry	Percent of Self-Employed Young Men	
	Drug Dealers	Non Drug Dealers
Horticulture Services and Agriculture	12.5%	14.3%
Construction	37.7%	25.4%
Manufacturing	3.3%	5.9%
Transportation, Comm. and Public Utilities	4.8%	5.2%
Wholesale and Retail Trade	9.2%	11.9%
Finance, Insurance and Real Estate	1.5%	2.7%
Business and Repair Services	21.3%	17.7%
Personal Services	5.5%	5.9%
Entertainment and Recreation Services	1.5%	3.6%
Professional and Related Services	2.9%	6.8%
Other	0.0%	0.6%
Sample Size	273	3103

Note: The sample consists of young men who were self-employed and worked at least 300 hours in the survey year.

Table 8  
 Probit Regressions for Probability of Self-Employment with Criminal Activity  
 NLSY (1981-1996)

	Specification				
	(1)	(2)	(3)	(4)	(5)
Age	0.0640 (0.0047)	0.0625 (0.0047)	0.0454 (0.0100)	0.0452 (0.0100)	0.0370 (0.0103)
Black	-0.6056 (0.0696)	-0.6238 (0.0693)	-0.5374 (0.0630)	-0.4810 (0.0635)	-0.4777 (0.0640)
Hispanic	-0.4445 (0.0828)	-0.4694 (0.0823)	-0.5216 (0.0765)	-0.4586 (0.0760)	-0.4278 (0.0760)
Low-Income White (sample)	-0.0600 (0.0868)	-0.0959 (0.0875)	-0.0896 (0.0828)	-0.0516 (0.0837)	-0.0604 (0.0848)
Born Abroad	-0.0091 (0.1087)	-0.0097 (0.1075)	0.1744 (0.0954)	0.1414 (0.0957)	0.1690 (0.0956)
12 Years of School	-0.2127 (0.0522)	-0.1986 (0.0523)	-0.2917 (0.0489)	-0.3147 (0.0488)	-0.2978 (0.0489)
13-15 Years of School	-0.2881 (0.0691)	-0.2690 (0.0689)	-0.2888 (0.0628)	-0.2605 (0.0623)	-0.2134 (0.0635)
16+ Years of School	-0.3542 (0.0738)	-0.3202 (0.0737)	-0.4258 (0.0709)	-0.3964 (0.0705)	-0.3804 (0.0722)
Drug Dealer (sold drugs 6+ times)	0.3929 (0.0914)	0.3822 (0.0900)	0.2912 (0.0807)	0.4011 (0.0827)	0.4251 (0.0835)
Previous Incarceration		0.2081 (0.0761)			
Ever Charged with Illegal Activity by 1980			0.2659 (0.0550)		
Ever Convicted of Illegal Activity by 1980				0.1675 (0.0694)	
Ever Placed on Probation by 1980					0.2159 (0.0728)
Mean of Dependent Var.	0.0658	0.0658	0.0693	0.0693	0.0689
Avg. Derivative Adj. Factor	0.0185	0.0186	0.0199	0.0194	0.0196
Sample Size	41337	41337	46872	46878	45927
Log Likelihood	-7106.16	-7103.69	-8315.32	-8319.44	-8141.46

Notes: (1) The sample consists of young men who worked at least 300 hours in the survey year. (2) All specifications are estimated using a random effects probit. See text for more details. (3) Standard errors are reported in parentheses. (4) All specifications include a constant, number of children and dummy variables for marital status, region, urbanicity, county unemployment rates, and year of survey. (5) The average derivative is equal to the adjustment factor multiplied by the coefficient. See text for more details.

Table 9  
 Probit Regressions for Transitions into Self-Employment  
 NLSY (1981-1996)

	Specification		
	(1)	(2)	(3)
Age	0.0353 (0.0110)	0.0232 (0.0127)	0.0159 (0.0125)
Black	-0.3550 (0.0649)	-0.3160 (0.0760)	-0.2774 (0.0754)
Hispanic	-0.3002 (0.0818)	-0.3052 (0.0958)	-0.2730 (0.0945)
Low-Income White Sample	-0.0240 (0.0805)	-0.0206 (0.0999)	-0.0061 (0.0989)
Born Abroad	0.1437 (0.1021)	0.2083 (0.1186)	0.1953 (0.1159)
12 Years of School	-0.1724 (0.0592)	-0.2191 (0.0716)	-0.2381 (0.0704)
13-15 Years of School	-0.1668 (0.0754)	-0.2258 (0.0914)	-0.2702 (0.0904)
16+ Years of School	-0.3085 (0.0806)	-0.3519 (0.0947)	-0.4405 (0.0959)
Drug Dealing	0.2556 (0.0922)	0.3394 (0.1079)	0.3341 (0.1060)
Net Worth/100,000			0.1999 (0.0435)
Net Worth/100,000 Squared			-0.0076 (0.0025)
Mean of Dependent Var.	0.0299	0.0300	0.0300
Avg. Derivative Adj. Factor	0.0259	0.0211	0.0228
Sample Size	33366	22346	22346
Log Likelihood	-4219.72	-2844.77	-2823.57

Notes: (1) The sample consists of young men who worked at least 300 hours in the survey year. (2) The dependent variable equals 1 if the individual switches from wage/salary work to self-employment. (3) All specifications are estimated using a random effects probit. See text for more details. (4) Standard errors are reported in parentheses. (5) All specifications include a constant, number of children, and dummy variables for marital status, region, urbanicity, county unemployment rates, and year of survey. (6) The average derivative is equal to the adjustment factor multiplied by the coefficient. See text for more details.

Appendix  
Sample Means and Standard Deviations of Analysis Variables  
NLSY (1981-1996)

Variable	Drug Dealers			Non Drug Dealers		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Self Employed	0.0868	0.2815	3054	0.0682	0.2521	43840
Age	26.9967	4.6194	3054	27.1883	4.4830	43840
Black	0.2004	0.4004	3054	0.2521	0.4342	43840
Hispanic	0.1025	0.3033	3054	0.1820	0.3858	43840
Low-Income White Sample	0.1103	0.3134	3054	0.0906	0.2871	43840
Born Abroad	0.0108	0.1034	3054	0.0743	0.2622	43840
12 Years of School	0.5065	0.5000	3054	0.4693	0.4991	43840
13-15 Years of School	0.1467	0.3539	3054	0.1702	0.3758	43840
16+ Years of School	0.0711	0.2570	3054	0.1638	0.3701	43840
Drug Dealer (sold drugs 6+ times)	1.0000	0.0000	3054	0.0000	0.0000	43840
Drug Dealer (sold drugs 11+ times)	0.6243	0.4844	3045	0.0000	0.0000	43840
Drug Dealer (sold drugs 51+ times)	0.3149	0.4646	3045	0.0000	0.0000	43840
Drug Dealer (sold only marijuana 6+ times)	0.8016	0.3989	3054	0.0000	0.0000	43840
Drug Dealer (sold hard drugs 6+ times)	0.1615	0.3680	3041	0.0000	0.0000	43840
Drug Dealer (sold both 6+ times)	0.0378	0.1908	3041	0.0000	0.0000	43840
Drug Dealer who uses less than 51 times	0.1604	0.3670	3036	0.0000	0.0000	43840
Drug Dealer who uses less than sells	0.3182	0.4659	3023	0.0000	0.0000	43840
Drug Dealer who Reports Illegal Income	0.7511	0.4325	2981	0.0000	0.0000	42504
Drug Dealer who Reports 1/4 or more Ill. Inc.	0.2918	0.4547	2981	0.0000	0.0000	42504
Smoked avg. 1 or more Cigs./Day in 1984	0.6043	0.4891	2962	0.3756	0.4843	42930
Smoked at least 100 Cigs./Life by 1992	0.7481	0.4342	2600	0.5010	0.5000	38628
Age-Adjusted AFQT Score	0.9129	26.6349	3003	0.4095	29.0571	42365
Previous Incarceration	0.1975	0.3982	2729	0.0562	0.2303	38608
Ever Charged with Illegal Activity by 1980	0.3883	0.4875	3054	0.1353	0.3421	43818
Ever Convicted of Illegal Activity by 1980	0.2603	0.4389	3054	0.0748	0.2631	43824
Ever Placed on Probation by 1980	0.2922	0.4548	2995	0.0766	0.2660	42932

Note: The sample consists of young men who worked at least 300 hours in survey year.

