Taxes and Entrepreneurial Endurance: Evidence from the Self–Employed

Abstract - *Do taxes drive entrepreneurs out of business? This paper uses panel data on self–employed workers to examine whether differential income and payroll taxes affect their decisions to continue operating or to close their doors and take wage–and–salary jobs. I exploit statutory variations in the tax treatment of wage and self–employment income using data from the Panel Study of Income Dynamics. Taking into account the endogeneity of individual–level tax rates, I find that higher relative marginal tax rates on self–employment income do not necessarily increase the probability of exit.*

INTRODUCTION

The United States Small Business Administration provides over $15 billion annually in the form of start–up loans for new enterprises. Despite this apparent generosity on the expenditure side of the federal budget, the U.S. tax system has become less favorable toward small business owners—particularly the self–employed—over the past 15 years. Statutory payroll tax rates have increased for the self–employed relative to wage workers, and tax preferences for small businesses have generally been scaled back. This has resulted in a continued call for small business tax relief, as exhibited most recently in the effort to speed up the transition toward full deductibility of health insurance costs for the self–employed.

Other than occasional anecdotal evidence, surprisingly little is known about the effects of taxes on decisions to start or close small businesses. If these firms are truly the engines for economic growth and job creation that they are often portrayed to be, we ought to be concerned about the effects of taxes on their development and survival. At the very least, the extent to which small business endurance is a function of taxation merits further investigation in light of recent relief efforts.

The current study extends earlier research (Bruce, 2000) by taking a closer look at how the U.S. income and payroll tax systems affect decisions among the self–employed to close their businesses. Specifically, I examine individual transitions out of self–employment into wage employment, controlling for any difference in tax treatment that may exist for each entrepreneur if he were to exit. I also take account of the

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endogeneity of taxes in the self–employment exit decision with an instrumental variables approach that uses time variation in the tax code for identification purposes.

Results indicate that taxes have small but somewhat surprising effects on the decision to close a small business. In the absence of a control for endogeneity, I find that changing marginal tax rates to make self–employment more tax–advantaged relative to wage employment has the intuitive effect of reducing the probability of a transition out of self–employment into wage employment. Conversely, the instrumental variables approach yields very different results: higher self–employment tax rates (or lower wage–and–salary tax rates) do not raise—and might actually *reduce*—the probability of closing the business.

The remainder of the paper is organized as follows: the second section presents an overview of the differential tax treatment of wage and self–employment incomes, and also summarizes the existing literature on taxes and self–employment. Theoretical motivation for the empirical work is presented in the third section, and the econometric strategy is outlined in the fourth section. The fifth section presents the baseline results, and the sixth section describes a number of robustness checks. The final section concludes.

THE DIFFERENTIAL TAX TREATMENT OF THE SELF–EMPLOYED

The U.S. income and payroll tax systems have treated income from wage employment and self–employment differently since their inception. This distinction has been necessary due to the lack of a third party (the firm) in the tax collection process for the self–employed. While wage workers have both income and payroll taxes withheld by their employers, the self–employed must assume this responsibility individually. As wage income and (net) self–employment income are taxed uniformly under the personal income tax, the most obvious differential tax treatment occurs through the payroll tax.

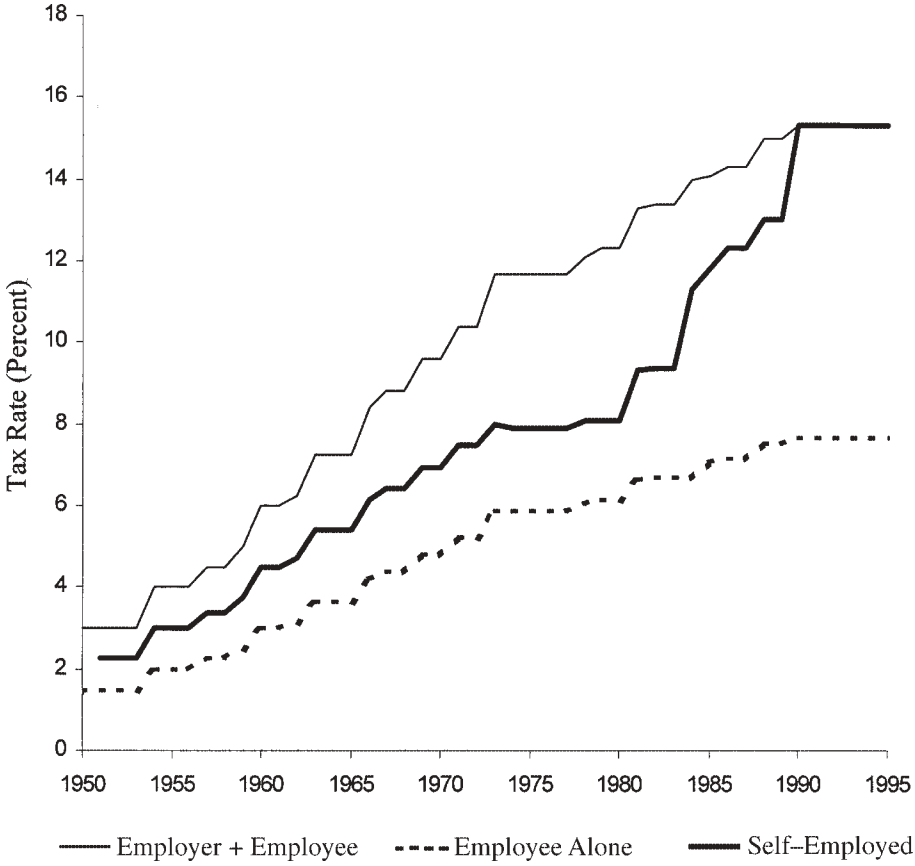
Income from wage employment has been subject to a payroll tax since 1937, but self–employment income was not subject to a payroll tax until 1951. From 1951 through the early 1960s, the statutory payroll tax rate on self–employment income was one–and–a–half times the employee's rate on wage income. From the early 1960s through 1984, however, self–employment income was subject to a tax that was less than one–and–a–half times the wage rate. Figure 1 shows the net statutory payroll tax rates for wage–and–salary (combined and employer alone) and self–employed individuals.[1]

Beginning in 1984, in an effort to equalize the treatment of wage and self–employment income, the gross statutory self–employment payroll tax rate was set equal to two times the wage–and–salary rate. Essentially, self–employed individuals were made liable for payroll taxes equal to the employer and employee shares for wage–and–salary individuals. While tax credits were used to phase in the change from 1984 to 1990, this series of events represents a dramatic change in the relative tax treatment of self–employment income.

Coupled with these payroll tax changes during the 1980s was a significant, although perhaps less dramatic, change in the relative income tax treatment of wage–and–salary and self–employed individu-

[1] By "net" statutory payroll tax rates, I mean inclusive of the phase–in credits and exclusion amounts mentioned later in the text. In a further effort to equalize the treatment of wage–and–salary and self–employment income, as of 1990 the self–employment payroll tax applies to only 92.35 (or, 100 minus 7.65) percent of self–employment earnings, and half of the self–employment taxes due may be deducted in computing adjusted gross income (AGI). The gross, pre–credit, statutory social security tax rates for wage–and–salary (employer plus employee contribution) and self–employment have been identical since 1984.

Figure 1. Payroll Tax Rates, 1950–1995



als. For both categories of workers, tax rates were reduced and the tax base was increased. A number of limitations on deductible business expenses were passed, however, changing the calculation of net self–employment income. Other fringe benefits, often paid for in wage jobs out of pre–tax dollars, are still not deductible in self–employment. Further, before 1987, the self–employed could not deduct health insurance costs on their income tax returns.

In short, the payroll and income tax changes during the 1980s significantly reduced the relative tax benefits of being self–employed. To be sure, these changes were implemented primarily in an attempt to level the playing field between both types of workers. The important side effect is that these collective changes in the tax code provide ample exogenous variation that can be used in analyzing entrepreneurial sensitivity to taxes. Despite a growing literature on the economic effects of taxes on entrepreneurship generally and self–employment specifically, surprisingly little consensus has arisen. Most of the empirical studies are restricted by cross–section or time series rather than panel data, and most use aggregate tax information (e.g., statewide average tax rates) to avoid issues of endogeneity.

The time series studies by Long (1982a), Blau (1987), and Parker (1996) conclude

almost universally that higher economy–wide tax rates increase self–employment rates. This supports the popular notion that individuals become self–employed in order to avoid paying higher wage–and–salary taxes. However, the most recent time–series evidence presented by Fairlie and Meyer (2000), finds no significant effect of taxes on self–employment rates. They report that the overall relationship between tax rates and self–employment is, at best, weak.

Cross–sectional evidence generally supports the earlier time–series results. Long (1982b) and Moore (1983) find a substantial degree of sensitivity to taxes, both using individual tax information but without a control for endogeneity. Schuetze (2000) controls for endogeneity by using aggregate "tax climate" variables, and concludes that a 10 percent increase in the U.S. average marginal tax rate in one year causes a 2.1 percent increase in the probability of being self–employed in the following year.[2]

These studies reveal a certain degree of responsiveness to taxes, but they do not actually estimate individual–level sensitivity to the relative tax treatment of the self–employed. Further, most focus on the cross–sectional probability of being self–employed rather than the equally interesting start–up and shut down processes. A few studies have used panel data to investigate these broad questions.

Bruce (2000) uses data from the Panel Study of Income Dynamics to show that the differential tax treatment of the self–employed has statistically significant, although somewhat counter–intuitive effects on the probability of making a transition into self–employment. Decreasing an individual's expected *marginal* tax rate on self–employment income (holding the wage tax rate constant) actually reduces the probability of entry, while a similar decrease in the *average* self–employment income tax rate increases this probability.

This seemingly counterintuitive result is partially rationalized by realizing that, while changes in differential tax treatment have the primary effect of altering net–of–tax returns to various forms of labor, they also affect the incentive to evade or avoid taxation altogether. Joulfaian and Rider (1998) have found a positive relationship between marginal tax rates and tax evasion among the self–employed, and Blumenthal, Christian, and Slemrod (1998) have shown that Schedule C filers (for self–employment income) are significantly more likely to evade taxes. If some entrepreneurs are actually creative tax–evaders, then reducing their marginal tax rates could encourage them to close their "businesses."

This general finding was not substantiated in later work by Gentry and Hubbard (2000), who use similar data but focus instead on tax progressivity. They find that the probability of entry into self–employment increases as tax rates become less progressive. Perhaps due to the relatively new literature on taxes and entrepreneurial activity, no clear consensus has arisen.

Carroll, Holtz–Eakin, Rider, and Rosen (2000a, 2000b, and 2001) provide what are perhaps the most relevant studies to this analysis. These authors use panel taxpayer data to examine the effect of taxes on the growth of small firms' receipts and on decisions by existing entrepreneurs to hire additional workers or to make capital investments. Relying on exogenous variation provided by the Tax Reform Act of 1986, they suggest that the self–employed are indeed cognizant of their own personal tax situations. Specifically, marginal tax rate increases reduce overall firm growth (as measured by receipts), mean investment expenditures, and the probability of hiring employees.

The current paper follows the general methodology in Bruce (2000), but focuses instead on the decision to leave self–em-

[2] Even stronger effects were found in a parallel analysis of Canadian data.

ployment. A number of studies have examined this process empirically in a multivariate context (e.g., Bates, 1990; Holtz–Eakin, Joulfaian, and Rosen, 1994a; and Taylor, 1999), but none have considered the effects of taxes.

THEORETICAL FRAMEWORK

The general lack of consensus regarding the empirical effects of taxes on self–employment is not as surprising when one considers the fundamental theoretical ambiguity that exists. In a world with perfect information, the rational worker will simply maximize utility by choosing the sector with the highest after–tax return. Self–employment typically offers an uncertain return, however, making the effect of a higher relative tax on self–employment income less obvious. Such a tax could have the intuitive effect of reducing self–employment rates, but it might also act as insurance against this greater risk and therefore increase self–employment rates.

This section presents a simple portfolio choice model of time allocation in the spirit of Tobin (1958), which yields such an ambiguity. To begin, consider an individual who has some fixed amount of labor (normalized to 1 unit) to allocate between wage employment and self–employment. For simplicity, wage employment is assumed to provide a certain return of w and self–employment provides an uncertain return of s.

Ignoring taxes for the moment and denoting the portion of time allocated to self–employment as θ, the return on a labor supply portfolio (r_P) is as follows:

$$[1] \quad r_P = \theta s + (1 - \theta)w.$$

Assuming that $E(s) = \mu_S$ and that $E(s - \mu_S)^2 = \sigma_S^2$, the expected return ($\mu_P$) and risk ($\sigma_P$) of the labor supply returns are:

$$[2] \quad \mu_P = \theta\mu_s + (1 - \theta)w,$$

$$[3] \quad \sigma_P^2 = E(r_P - \mu_P)^2 = \theta^2 E(s - \mu_S)^2 = \theta^2\sigma_S^2,$$

$$(\sigma_P = \theta\sigma_S).$$

Thus, choosing an optimal value of θ effectively allows the individual to select the optimum combination of return and risk in his labor supply portfolio. Using the expression for σ_P in [3] to substitute for θ in [2], the set of feasible risk–return combinations is expressed as:

$$[4] \quad \mu_P = w + \left[\frac{\mu_S - w}{\sigma_S}\right]\sigma_P,$$

which can be interpreted as the worker's budget constraint.

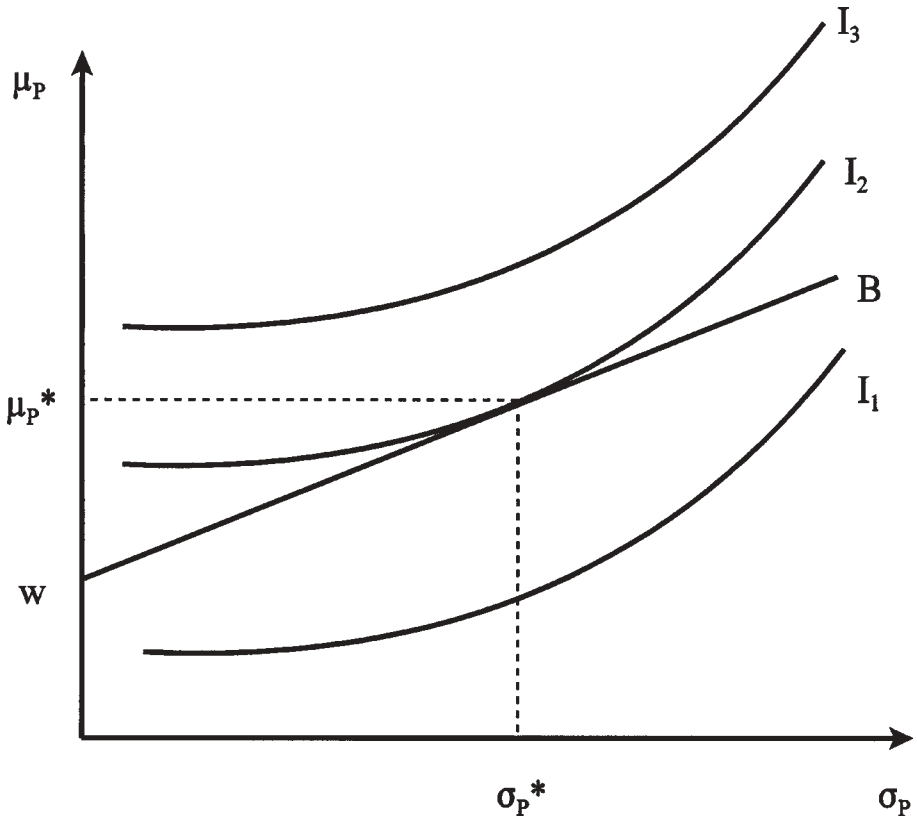
Assuming well–defined preferences over risk and return, the consumer's problem is to choose that combination which provides the highest utility level subject to the budget constraint in [4]. Figure 2 shows this process graphically for a risk–averse individual with convex indifference curves (denoted by I_n) and a typical budget constraint (B). In this example, an interior optimum is obtained where some of the fixed amount of labor supply is allocated to each sector (i.e., $0 < \theta < 1$).

Of course, it should be noted that the individual might also maximize utility at one of the two boundary solutions: 1) where *no* labor is supplied to self–employment ($\theta = 0$) and the return is the riskless w, or 2) where *all* labor is supplied to self–employment ($\theta = 1$) and the risk and expected return are σ_S and μ_S, respectively.

The pertinent question for the present study is whether a changing system of differential taxes on the two types of work might provide an incentive for an individual to leave self–employment. Augmenting [4] to allow for such a tax system (where τ_W is the wage–and–salary tax rate and τ_S is the self–employment tax rate) and assuming no evasion or avoidance behavior reveals the new budget constraint:

$$[5] \quad \mu_P = (1 - \tau_W)w + \left[\frac{(1 - \tau_S)\mu_S - (1 - \tau_W)w}{(1 - \tau_S)\sigma_S}\right]\sigma_P.$$

Figure 2. Portfolio Choice Equilibrium without Taxes

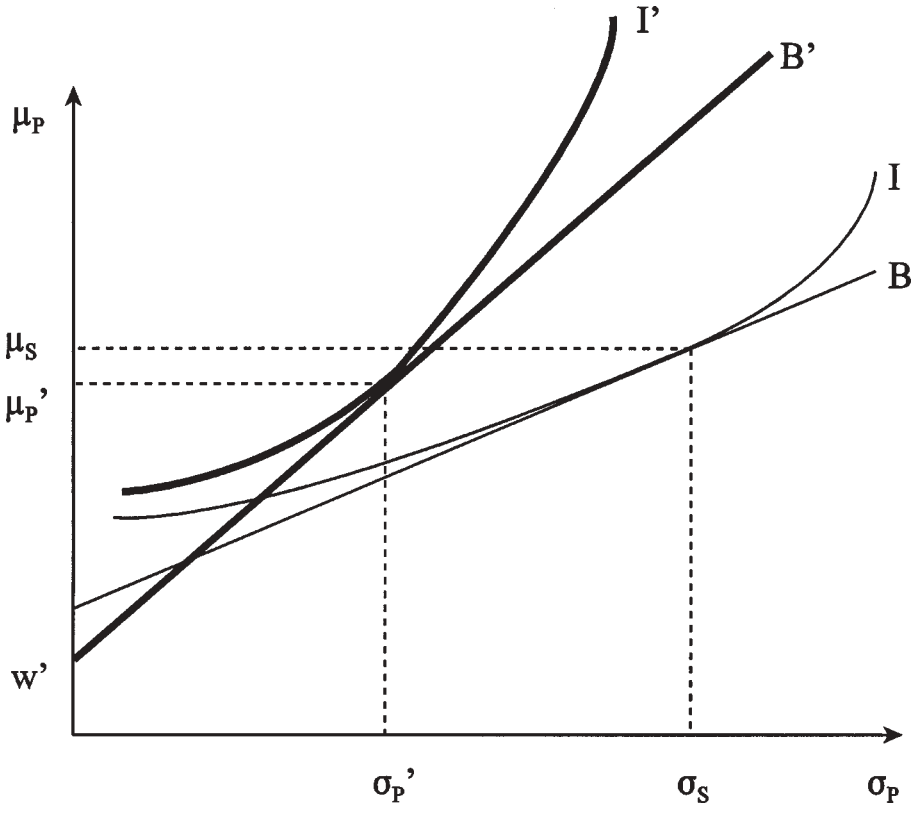


Graphically, the differential taxes shift the budget line downward, while also changing its slope. Depending on the relation between τ_W and τ_S, the slope could either increase or decrease. If the self–employed are tax–advantaged (i.e., if $\tau_W > \tau_S$), then the slope of the new budget line will be steeper. It is important to note that evasion and avoidance activity would only exaggerate this increase in slope by increasing the relative effective net–of–tax return to self–employment.

Figure 3 presents an example for a worker who initially devotes all of his time to self–employment. Here, *w'* represents the after–tax return to wage work ($w' = (1 - \tau_W)w$), *B* is the original budget line, and *B'* is the new budget line. Given that the slope of the indifference curve must be no larger than the slope of the budget constraint in the initial equilibrium (where $\theta = 1$, $\mu_P = \mu_S$, and $\sigma_P = \sigma_S$), the change in the slope of the budget constraint might be large enough to cause some individuals to reduce labor supply in self–employment or leave that sector altogether (i.e., to diversify their portfolios by relocating to a new optimum at (σ_P', μ_P')). In fact, as shown in the figure, it is possible that such a change could be utility–enhancing.

It is also useful to consider the case in which a differential tax system exists, but where a tax reform increases the relative tax rate on self–employment income. It can be shown that such a reform would

Figure 3. An Example of the Effect of Differential Taxes on Portfolio Choice



cause the budget line to pivot downward, requiring the individual to re–optimize. Again, the effect of such a tax change on self–employment is ambiguous, regardless of the extent of evasion or avoidance activity. The actual effects will be individual–specific, depending on individual tax rates and preferences over return and risk.

DATA AND EMPIRICAL SPECIFICATION

To investigate the possible relationship between taxes and transitions out of self–employment, I employ an empirical strategy similar to that of Holtz–Eakin, Joulfaian, and Rosen (1994a). Specifically, I estimate equations of the following type:

$$[6] \quad D_{i,\,t+1} = \beta' X_{i,\,t} + \gamma\, T_{i,\,t+1} + \mu_i + \nu_{i,\,t+1},$$

where $D_{i,\,t+1}$ is a dummy variable that equals one if individual *i* moves from self–employment at time *t* to wage employment at time *t* + 1, and zero if he remains self–employed in both periods. The $X_{i,t}$ vector includes a constant term and a set of time *t* exogenous variables. It is assumed that the decision of whether or not to continue in self–employment is influenced by expectations of taxes at time *t* + 1. With this, $T_{i,\,t+1}$ represents the set of individual–specific tax rates in wage–and–salary and self–employment at time *t* + 1. The error term in this equation includes an individual–specific time–invariant random effect (μ_i) to capture unobserved in-

dividual heterogeneity, and an independently and identically distributed residual component ($v_{i,\,t+1}$) with zero mean and finite variance. A convenient empirical specification for equation [6] is a random effects probit.

Because of the two–period design of the statistical analysis, panel data are required. My initial sample consists of data from the 1970 through 1991 waves of the Panel Study of Income Dynamics (PSID). These rich data provide ample information on individual, household, and occupational characteristics. Further, sample sizes for self–employed individuals are large enough to permit longitudinal analysis of the exit decision. Yearly self–employed sample sizes are often small enough, however, that some form of pooled data analysis is preferred.

Following much of the existing empirical literature, I confine the analysis to male heads of household who are between the ages of 25 and 54. The dynamics of self–employment are likely to be quite different among younger and older individuals and among females.[3] The head–of–household restriction is a direct result of the fact that the PSID only provides self–employment status for household heads and their spouses.

For the purposes of this study, an individual is considered to be self–employed if he reports working for himself, or for himself and someone else, at the time of the survey.[4] Self–employed workers are followed until they either leave self–employment for a wage job or reach the end of the panel period. In order to avoid the simultaneous decision of whether or not to work at all, transitions that end in unemployment or withdrawal from the labor force are not included.[5] Further, I focus on each individual's first observable exit from self–employment, omitting repeat entry and exit decisions from the baseline analysis.

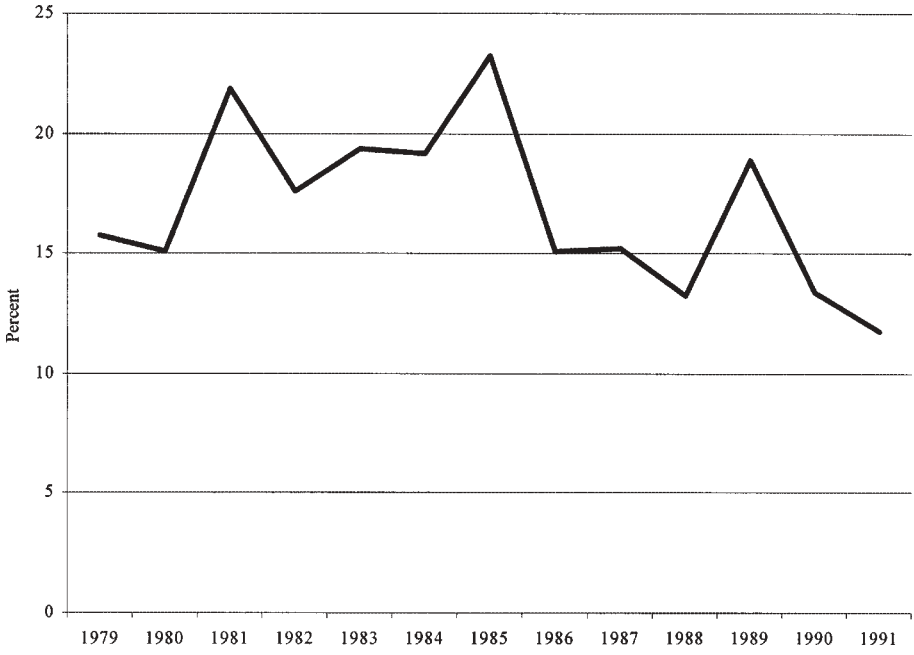
Figure 4 provides a first glance at the transition rate from self–employment to wage employment for this sample. If the eroding tax advantages to self–employment are a primary factor in the decision to continue operations, we might expect to see an overall upward trend in exit rates. The data do not exhibit this tendency, however. Instead, after a brief climb in the early 1980s, the exit rate shows a general trend downward during the economic expansion of the late 1980s. As the economy does better, then, the self–employed are apparently more likely to remain in business.

[3] Fuchs (1982) and Bruce, Holtz–Eakin, and Quinn (2000) examine self–employment among older individuals, Dunn and Holtz–Eakin (2000) and Blanchflower and Meyer (1994) consider younger individuals, and Devine (1994), MacPherson (1988), and Bruce (1999) look at female self–employment.

[4] The latter of these two categories is minimal—usually less than one percent of the working sample in each year. These individuals are kept in order to increase sample sizes and to capture all experiences in self–employment. Concerns have been raised in many studies about the appropriateness of screening a self–employed sample on the basis of earnings or hours worked. Such a procedure would supposedly eliminate the "partially self–employed" or those claiming to be fully self–employed but who in fact are not really working or in the labor force on a full–time basis. Holtz–Eakin, Joulfaian, and Rosen (1994b) note that such screening has virtually no effect on empirical results, however. Also, it should be noted that the PSID does not distinguish between incorporated and unincorporated self–employment.

[5] I rely on each year's survey to determine whether or not workers are self–employed. Individuals that make a transition out of self–employment are those who work for themselves (or for themselves and someone else) in one year and not in the subsequent year. The vast majority of all transitions out of self–employment—74 percent in this sample—are transitions into wage employment. Of the remaining 26 percent, 19 percent are transitions out of the labor force entirely and 7 percent are transitions into unemployment. Omitting these last two options simplifies the econometric analysis dramatically, but it also potentially biases the overall results. If higher tax rates tend to induce early retirement, for example, I am potentially understating the overall effect of taxes on exit rates. Caution should be exercised in generalizing the findings in this paper to all transitions out of self–employment.

Figure 4. Exit Rates from Self–Employment to Wage Employment, PSID Male Household Heads, Ages 25–54



I follow prior literature in selecting control variables to include in $X_{i,t}$. Individual characteristics consist of age (in quadratic form), a set of indicators for educational attainment of less than high school (11 or fewer years), some college (13 to15 years), college (16 years), and post–college (more than 16 years), and an indicator for non-white race. Household–level controls include marital status entered as a dummy variable for married with spouse present, and a series of variables for the number of children in the household in various age groups.

As a transition out of self–employment carries certain opportunity costs, I also include a set of job–specific controls. These consist of dummies for part–time employment and union membership in the pre–transition year. Regional and macroeconomic effects are controlled for via a set of indicators for residence in the north–central, south, and west regions, a dummy for whether or not the individual lives in a metropolitan statistical area (MSA), the local area (county) unemployment rate, and a series of year dummies.[6]

A number of studies have shown the importance of greater wealth holdings in self–employment start–up and survival, consistent with the notion that liquidity constraints are present.[7] While the PSID does not include a yearly wealth variable, it does have the household's yearly in-

[6] The reference categories for non–continuous education, region, and children variables are high school graduate, northeast, and the number of children less than one year of age.

[7] Evans and Leighton (1989), Evans and Jovanovic (1989), and Meyer (1990) are among the pioneering studies of liquidity constraints and self–employment. Blanchflower and Oswald (1998) and Holtz–Eakin, Joulfaian, and Rosen (1994a and 1994b) also reveal the importance of financial capital to self–employment entry and duration. While I do not include spouse's income as a control, it is included in the calculation of all (household) tax rates in this analysis.

come from capital. This will presumably be positively correlated with the household's (unobserved) total wealth holdings, so it is used here as a proxy.

While a complete empirical analysis of entrepreneurial endurance would consider the extent of tax evasion or avoidance, I do not explicitly incorporate these issues into the econometric analysis for a number of reasons. This choice is primarily a result of the fact that the PSID provides no information on either evasion or avoidance and a number of potentially questionable assumptions would have to be made in order to adjust the tax rates for these types of behavior. Nonetheless, the effects of the actual tax rates on exit probabilities can be interpreted as signals of the importance of evasion or avoidance.

Of course, I can only calculate one actual tax rate—either in wage–and–salary or in self–employment—for each individual in each year depending on which sector is actually chosen. Consequently, I estimate each individual's labor earnings in the alternative sector for each time period using regressions of the following form for each sector in each year:

$$[7] \quad Y_{i,t}^{WS} = \alpha Z_{i,t} + e_{i,t},$$

$$[8] \quad Y_{i,t}^{SE} = \phi Z_{i,t} + f_{i,t},$$

where Y is gross labor income, i indexes individuals, and t indexes time. Z_{it} consists of measures for age and educational attainment, and the error terms ($e_{i,t}$ and $f_{i,t}$) are normally distributed with zero mean and finite variance.[8] The coefficients from these regressions are then used to predict wage earnings for self–employed individuals, and vice versa.

I use these predicted income figures together with the National Bureau of Economic Research (NBER) TAXSIM model to calculate predicted alternate–sector federal and state income tax rates in each year. Similarly, I rely on reported income from the PSID to calculate actual–sector tax rates using TAXSIM. TAXSIM can only be used to estimate tax rates beginning in 1979, however, so I confine the analysis to transitions beginning in the years 1979 through 1990. I also calculate payroll tax liability and include it in all tax rate calculations.[9]

Consider, for illustration, the case of a self–employed individual who becomes a wage worker in the next survey year. His observed post–transition earnings (in the wage job) can be used to obtain the best possible prediction of his actual tax rate using the TAXSIM program. In order to investigate differential taxation, however, his hypothetical earnings and taxes if he had continued in self–employment must be estimated. After this prediction procedure is complete, I have two sets of earnings and tax data for this and all other individuals that are then used in the probits.[10]

[8] Survey responses regarding self–employment earnings are potentially measured with error. The problems of measurement error are minimized in this analysis, however, as I only use reported earnings to generate estimates of each individual's marginal tax rate. I use a simple specification for the earnings equations in order to avoid a reduction in sample size due to missing data. Specifically, the regressions include age in quadratic form and a series of dummies for educational attainment that are identical to those used in later stages of this analysis. Results from these regressions can be found in Appendix Table A.1.

[9] Payroll taxes might be expected to have smaller effects on transition probabilities, primarily because the payment of Social Security and Medicare taxes is associated with clearly defined benefits. It should be noted, however, that the time period in this analysis is characterized by rate increases for the self–employed relative to wage–and–salary workers without equivalent relative benefit increases. In computing payroll tax rates for wage employment, I assume that workers are responsible for both employer and employee contributions. Itemized deduction amounts, which are not reported in the PSID and are not estimated by TAXSIM, are imputed using Tobit regressions on the Ernst & Young Tax Research Database at the University of Michigan. The TAXSIM model is accessible at http://www.nber.org/taxsim. For more detail, see Feenberg and Coutts (1993).

[10] An in–depth discussion of the tax rate calculation process is provided in the Appendix to Bruce (2000).

Whether or not an individual moves from self–employment to wage employment will certainly have some effect on his calculated tax rates. To control for this endogeneity, I use the instrumental variables approach suggested in the study of tax reform and investment by Cummins, Hassett, and Hubbard (1994) and later used by Carroll, Holtz–Eakin, Rider, and Rosen (2001, 2000a, and 2000b) and Bruce (2000).

Specifically, I compute two separate sector–specific tax rates for each t to $t + 1$ transition. The first, discussed above, uses $t + 1$ incomes and tax rules and represents the closest approximation to the actual tax rate. Each individual's post–transition tax rate is a function of all observable and unobservable individual behavior, however, which makes it potentially endogenous. With this in mind, the second, hypothetical rate uses time $t + 1$ income under the time t tax rules. This rate represents the rate that would have existed had the tax rules remained constant. The instrumental variable is then equal to the difference in these two tax rates, and represents the part of the actual rate that is caused by the change in the tax code only; the part that is a result of individual behavior is subtracted out of the actual rate.

The data pooling procedure results in a sample of 731 individuals who contribute 2,615 person–years of usable data for the transition analysis. Table 1 provides definitions of the relevant variables, and Table 2 presents descriptive statistics for the regression sample. To focus on statistically different characteristics prior to a transition, individuals who leave self–employment tend to be about three years younger than those who do not leave, and are more likely to be a high school dropout, not married, earning less income from capital, working part time, having fewer kids aged 14 to 17, a member of a labor union, and living in a county with a higher unemployment rate than those who do not leave self–employment.

The last four rows of Table 2 provide a preliminary look at the actual and hypothetical post–transition tax situations for the regression sample. Note that these rates represent combined federal and state income tax and federal payroll tax rates.

TABLE 1
VARIABLE DEFINITIONS

Variable	Definition
Self-Employment Exit*	= 1 if self–employed in year t and wage–and–salary in year $t + 1$
Age	Age in years
Age Squared	Age*Age
Dropout*	=1 if less than 12 years of education
Some College*	=1 if 13 to 15 years of education
College Graduate*	=1 if 16 years of education
Post–College*	=1 if more than 16 years of education
Nonwhite*	=1 if black or other non–white race
North Central*	=1 if living in North Central region
South*	=1 if living in South region
West*	=1 if living in West region
Married*	=1 if married, with spouse present
Income from Capital	Household's income from capital ($1,000s)
Part–Time*	=1 if worked between 52 and 1,820 annual hours in year t
Kids 1 to 2	Number of children in the household between the ages of 1 and 2
Kids 3 to 5	Number of children in the household between the ages of 3 and 5
Kids 6 to 13	Number of children in the household between the ages of 6 and 13
Kids 14 to 17	Number of children in the household between the ages of 14 and 17
Union*	=1 for membership in a labor union
Unemployment Rate	County unemployment rate
MSA*	=1 if living in a metropolitan statistical area

Note: When not otherwise indicated, all variables represent information at year t.
* = Dummy variable.

TABLE 2
SUMMARY STATISTICS FOR REGRESSION VARIABLES—POOLED DATA

Variable	All	Those remaining in self–employment	Those switching into wage employment
Self–Employment Exit	0.146 (0.353)	0	1
Age	37.76 (7.59)	38.20 (7.50)	35.21 (7.62)*
Age Squared	1483.5 (593.8)	1515.3 (591.1)	1297.9 (576.4)*
Dropout	0.087 (0.282)	0.079 (0.270)	0.136 (0.343)*
Some College	0.221 (0.415)	0.219 (0.414)	0.230 (0.422)
College Graduate	0.193 (0.395)	0.202 (0.401)	0.141 (0.349)
Post–College Education	0.188 (0.391)	0.190 (0.392)	0.178 (0.383)
Nonwhite	0.031 (0.172)	0.028 (0.166)	0.045 (0.206)
North Central	0.305 (0.461)	0.307 (0.461)	0.293 (0.456)
South	0.294 (0.456)	0.289 (0.454)	0.322 (0.468)
West	0.178 (0.382)	0.179 (0.383)	0.173 (0.379)
Married	0.920 (0.271)	0.931 (0.253)	0.859 (0.349)*
Income from Capital	4.703 (19.694)	5.258 (21.166)	1.453 (4.915)*
Part–Time	0.122 (0.327)	0.110 (0.313)	0.191 (0.394)*
Kids 1 to 2	0.225 (0.461)	0.225 (0.460)	0.228 (0.473)
Kids 3 to 5	0.248 (0.486)	0.249 (0.487)	0.243 (0.482)
Kids 6 to 13	0.636 (0.872)	0.631 (0.868)	0.660 (0.893)
Kids 14 to 17	0.279 (0.571)	0.294 (0.583)	0.191 (0.489)*
Union	0.027 (0.163)	0.017 (0.128)	0.089 (0.285)*
Unemployment Rate	6.255 (2.788)	6.194 (2.756)	6.609 (2.947)*
MSA	0.486 (0.500)	0.485 (0.500)	0.495 (0.501)
Actual ATR	–	29.08 (20.27)	27.76 (14.29)
Predicted ATR	–	33.00 (17.38)	26.79 (15.57)
Actual MTR	–	42.33 (11.43)	42.12 (9.53)
Predicted MTR	–	48.46 (9.98)	39.14 (9.69)
N	2615	2233	382

Note: Entries are means, with standard deviations in parentheses. Observations are person–years.
* = A two–tailed *t* test rejects the null hypothesis of equal means (for columns 2 and 3) at the 5% significance level.
ATR = Average Tax Rate, MTR = Marginal Tax Rate

It is not clear whether the relevant tax effects should operate through average tax rates (ATRs) or marginal tax rates (MTRs). If the decision to continue in self–employment is primarily an all–or–nothing decision, ATRs are most appropriate. However, if individuals typically approach this by deciding where to allocate their next hour of labor supply, MTRs are preferred. To investigate this, both ATRs and MTRs will be used in the ensuing analysis.

Those who remain self–employed (Column 2) benefit from an ATR that is approximately 4 percentage points lower than their predicted ATR in wage employment (29.08 versus 33.00). The difference in MTRs is more than 6 percentage points (42.33 versus 48.46), indicating a substantial tax advantage to self–employment on average. To be sure, this apparent advantage could partially be the result of differential returns, or earnings, in the two sectors. Those who leave self–employment for wage employment (Column 3) would also have had lower tax rates had they remained in self–employment, but the differences are much smaller. The ATR difference is only about 1 percentage point (26.79 versus 27.76), while the MTR difference is about 3 percentage points (39.14 versus 42.12). As the tax advantage erodes, then, the self–employed are evidently more likely to move into a wage job.

It is also interesting to note that all actual and predicted tax rates are lower for those who choose to exit self–employment. To the extent that the tax rates are picking up income differences, these results suggest that lower–income workers are more likely to move from self–employment to wage employment.

RESULTS AND DISCUSSION

Turning now to the multivariate analysis in Table 3, the effect of controlling for

TABLE 3
POOLED TRANSITION PROBIT RESULTS: USING AVERAGE TAX RATES

Variable	No Endogeneity Control	IV
Age	–0.126 (0.113)	–0.040 (0.127)
Age Squared / 100	0.123 (0.145)	0.014 (0.161)
Dropout	0.745 (0.305)**	0.584 (0.314)*
Some College	0.192 (0.307)	0.332 (0.310)
College Graduate	–0.278 (0.327)	–0.152 (0.323)
Post–College Education	0.175 (0.261)	0.398 (0.280)
Nonwhite	0.173 (0.583)	0.244 (0.644)
North Central	0.070 (0.277)	0.137 (0.280)
South	0.402 (0.299)	0.382 (0.308)
West	–0.123 (0.335)	–0.103 (0.350)
Married	–0.539 (0.265)**	–0.534 (0.258)**
Income from Capital	–0.025 (0.010)**	–0.012 (0.013)
Part–Time	0.225 (0.178)	0.074 (0.202)
Kids 1 to 2	–0.017 (0.150)	–0.176 (0.162)
Kids 3 to 5	–0.129 (0.141)	–0.296 (0.157)*
Kids 6 to 13	0.205 (0.093)**	0.181 (0.100)*
Kids 14 to 17	–0.033 (0.134)	–0.143 (0.145)
Union	1.740 (0.366)**	1.838 (0.385)**
Unemployment Rate	0.020 (0.027)	0.010 (0.027)
MSA	0.045 (0.185)	–0.004 (0.197)
Wage Employment ATR	–0.026 (0.005)**	0.029 (0.021)
Self–Employment ATR	0.017 (0.004)**	–0.086 (0.039)**
N	2615	2615
ρ	0.786	0.794
First–stage R^2 estimates		0.128 (Wage) 0.099 (Self–Employment)
Sample Transition Probability	0.146	0.146

Notes: Entries are random–effects probit coefficients with standard errors in parentheses. Regressions also include indicators for the year of the observation and a constant term. The first–stage instrumenting equation includes an identical set of variables in addition to the instrument. The estimates of ρ indicate the share of the total variation in the model that is explained by the random effects.
* = Statistically significant at the 10% level
** = Statistically significant at the 5% level.

differential tax treatment on the self–employment exit decision is observed. This table presents results from random effects transition probits that include the individual–specific average tax rates in wage–and–salary and self–employment. As noted above, the use of ATRs is intended to capture large–scale effects of choosing one sector over another in an all–or–nothing fashion.

The first column contains coefficients and standard errors without instrumenting for the tax rates. The tax rate variables have straightforward effects. Higher ATRs in wage employment reduce the probability of exiting self–employment, and higher ATRs in self–employment increase exit probabilities. These effects are quite small, however, relative to the other statistically significant coefficients.

The question of endogeneity remains, and column 2 presents results from a two–stage instrumental variables estimation process as described above.[11] To determine the extent to which endogeneity is an actual problem in this situation, I performed the test suggested by Rivers and Vuong (1988). This test involves inserting the potentially endogenous variables along with the estimated residual vectors from the proposed first–stage instrumenting equations into the transition probit. Sta-

[11] Results from first–stage instrumenting equations can be found in Appendix Table A.2. It is important to note that all of the instrumental variables are very highly statistically significant, allaying fears of the weak instruments problem.

tistically significant coefficients on the residuals indicate that endogeneity is a serious problem. Indeed, the Rivers–Vuong test for this random effects probit rejects the null hypothesis of exogeneity–the coefficients on the residual terms are highly significant.

Turning to the more appropriate results in Column 2, then, the IV procedure washes away some of the statistically significant effects in Column 1. One example is that the average tax rate on wage income—which was negative and statistically different from zero in Column 1—is not statistically different from zero at conventional significance levels in Column 2. However, the self–employment ATR reverses in sign and maintains its statistical significance. Entrepreneurs with higher expected ATRs in self–employment are less likely to exit. This is either evidence that taxes play an insurance role and reduce the risk of self–employment, or that those who are most successful (and least likely to exit) have higher ATRs. In terms of policy implications, it seems that tax relief efforts aimed at small businesses may not necessarily reduce exit rates.

The most statistically significant effects among the other control variables—from being a dropout, married, or in a union—remain in the presence of the endogeneity control. Specifically, the results very closely mirror the effects indicated by the means in Table 2. High school dropouts, unmarried workers, and union members are more likely to exit. Having more income from capital reduces the rate of exit, echoing the results of Bates (1990) and Holtz–Eakin, Joulfaian, and Rosen (1994a), but the effect is not measured precisely.[12]

To be sure, the effects of differential taxation might be more important on the margin as workers decide where to allocate their next unit of labor supply. Table 4 addresses this possibility by using MTRs instead of ATRs. Again, Column 1 contains probit results without an IV procedure while Column 2 contains the IV results. MTRs have very similar effects to ATRs in the absence of endogeneity controls, as do most of the other variables in the model. A higher MTR in wage employment deters exit from self–employment, while a higher self–employment MTR hastens exit.

A Rivers–Vuong test indicates that endogeneity is also a problem with the MTRs. Turning to the IV results in Column 2, then, the effects of marginal tax rates reverse in sign and become larger and even more statistically significant. These results also indicate that increasing the relative tax benefits to being self–employed (e.g., by reducing the self–employment MTR or increasing the wage employment MTR) could actually increase the probability of exit. Taken differently, the tax changes during the 1980s, which made self–employment relatively less tax–advantaged, might actually have helped stem the outflow of small businesses in the economy.

Many of the results of the non–tax variables in this specification resemble those in Table 3, but there are some key differences. Union members are still more likely to exit. More education now has a positive impact on exit probabilities. Having more children reduces the probability of exit, and the effect is largest when more young children are present.

Some simple simulations can help put the magnitudes of the tax effects from Tables 3 and 4 into perspective. Beginning with the ATR specification, the statistically significant point estimate on the self–employment ATR (–0.086) translates into an elasticity of –4.25, suggesting that a 1 per-

[12] The rather high estimates of the ρ parameter (0.786 and 0.794 in Table 3) indicate that the random effects explain a large share of the total variation in the model. These values raise the possibility that the results may be sensitive to the number of quadrature points used to obtain the estimates. Experimentation with more or fewer quadrature points yielded virtually identical results, however.

TABLE 4
POOLED TRANSITION PROBIT RESULTS: USING MARGINAL TAX RATES

Variable	No Endogeneity Control	IV
Age	–0.086 (0.100)	0.822 (0.152)**
Age Squared / 100	0.073 (0.129)	–0.984 (0.188)**
Dropout	0.542 (0.304)*	0.148 (0.267)
Some College	0.264 (0.226)	1.174 (0.288)**
College Graduate	–0.107 (0.247)	1.919 (0.381)**
Post–College Education	0.107 (0.233)	3.465 (0.418)**
Nonwhite	0.056 (0.406)	0.460 (0.397)
North Central	0.147 (0.227)	–0.603 (0.247)**
South	0.228 (0.228)	–0.904 (0.257)**
West	–0.039 (0.256)	–1.420 (0.289)**
Married	–0.494 (0.233)**	–0.751 (0.238)**
Income from Capital	–0.018 (0.009)**	–0.001 (0.012)
Part–Time	0.181 (0.167)	0.272 (0.176)
Kids 1 to 2	–0.201 (0.134)	–1.164 (0.204)**
Kids 3 to 5	–0.267 (0.131)**	–1.092 (0.191)**
Kids 6 to 13	0.103 (0.085)	–0.273 (0.114)**
Kids 14 to 17	–0.073 (0.126)	–0.585 (0.148)**
Union	1.575 (0.347)**	1.951 (0.345)**
Unemployment Rate	–0.004 (0.025)	–0.073 (0.028)**
MSA	0.106 (0.151)	0.255 (0.164)
Wage Employment MTR	–0.079 (0.008)**	0.250 (0.031)**
Self–Employment MTR	0.012 (0.007)*	–0.697 (0.062)**
N	2615	2615
ρ	0.701	0.715
First–stage R^2 estimates		0.335 (Wage) 0.211 (Self–Employment)
Sample Transition Probability	0.146	0.146

Notes: Entries are random–effects probit coefficients with bootstrapped robust standard errors in parentheses. Regressions also include indicators for the year of the observation and a constant term. The first–stage instrumenting equation includes an identical set of variables in addition to the instrument. The estimates of ρ indicate the share of the total variation in the model that is explained by the random effects.
* = Statistically significant at the 10% level
** = Statistically significant at the 5% level.

cent increase in the self–employment ATR would reduce the average probability of exiting from 0.146 to 0.140. Turning to MTR effects, the point estimates of 0.250 (wage) and –0.697 (self–employment) translate into elasticities of 23.77 and –59.86. Increasing the wage MTR by 1 percent would increase the average exit probability from 0.146 to 0.181, while increasing the self–employment MTR by 1 percent would reduce it from 0.146 to 0.059.

ROBUSTNESS CHECKS

The baseline results in Tables 3 and 4 reveal that, after controlling for endogeneity, tax rates have important impacts on the probability that an individual will leave self–employment for a wage job. However, the estimates are potentially counterintuitive in sign and, at least for the MTRs, rather large in magnitude. This section presents a number of alternative specifications that are intended to assess the robustness of the baseline results.

While the baseline specification in Tables 3 and 4 is rather exhaustive, the possibility remains that important explanatory variables have been omitted from the probits. Sections B, C, and D of Table 5 present results from additional random effects probits that include measures of the self–employed individual's tenure on his current job in months, his occupation, or his industry, respectively. For convenience, Section A of Table 5 reproduces the key tax rate coefficients and standard errors from the baseline specifications.

TABLE 5
IV POOLED TRANSITION PROBIT RESULTS: ROBUSTNESS CHECKS

Variable	Average Tax Rates	Marginal Tax Rates
A. Baseline		
Wage Employment TR	0.029 (0.021)	0.250 (0.031)**
Self–Employment TR	–0.086 (0.039)**	–0.697 (0.062)**
N	2615	2615
First–stage R^2 (Wage, Self)	(0.128, 0.099)	(0.335, 0.211)
B. Include TENURE		
Wage Employment TR	0.028 (0.021)	0.245 (0.031)**
Self–Employment TR	–0.089 (0.039)**	–0.655 (0.059)**
N	2612	2612
First–stage R^2 (Wage, Self)	(0.129, 0.100)	(0.336, 0.213)
C. Include OCCUPATION		
Wage Employment TR	0.031 (0.022)	0.246 (0.031)**
Self–Employment TR	–0.099 (0.038)**	–0.700 (0.062)**
N	2615	2615
First–stage R^2 (Wage, Self)	(0.132, 0.108)	(0.342, 0.220)
D. Include INDUSTRY		
Wage Employment TR	0.031 (0.022)	0.233 (0.030)**
Self–Employment TR	–0.088 (0.039)**	–0.678 (0.061)**
N	2615	2615
First–stage R^2 (Wage, Self)	(0.134, 0.104)	(0.339, 0.212)
E. Omit FARMERS		
Wage Employment TR	0.030 (0.021)	0.230 (0.031)**
Self–Employment TR	–0.063 (0.033)*	–0.673 (0.062)**
N	2301	2301
First–stage R^2 (Wage, Self)	(0.129, 0.120)	(0.324, 0.219)
F. Include MULTIPLE EXITS		
Wage Employment TR	0.020 (0.019)	0.874 (0.089)**
Self–Employment TR	–0.076 (0.031)**	–0.688 (0.049)**
N	3343	3343
First–stage R^2 (Wage, Self)	(0.187, 0.141)	(0.335, 0.269)

Notes: Entries are random–effects probit coefficients with standard errors in parentheses. Regressions also include indicators for the year of the observation and a constant term, all variables in Tables 3 and 4, and additional variables as noted in the text.
* = Statistically significant at the 10% level
** = Statistically significant at the 5% level.

With regard to tenure, it is certainly conceivable that self–employed workers who have been in business for longer periods of time are less likely to exit. However, results indicate that more tenure actually increases the probability of exit.[13] The longer one is in a particular enterprise, then, the more likely he is to exit in a given year. The important conclusion from this exercise, as shown in Table 5, is that the effects of average and marginal tax rates are nearly identical to those presented in the baseline specification.

A more longstanding debate in the self–employment literature concerns the use of occupation and industry indicators in the empirical analysis. As the choice of industry or occupation often involves a simultaneous choice of self–employment status, such indicators are typically left out on the basis of endogeneity concerns. Nonetheless, it is interesting to gauge their impact

[13] General magnitudes and patterns of significance for all other control variables in the robustness checks are very similar to those in the baseline specification and are suppressed for brevity. Full results of all robustness checks are available from the author upon request.

on the baseline results. Including a series of occupation (Section C) or industry (Section D) identifiers has similar effects on the baseline results as when tenure is included. While a number of the occupation or industry identifiers are individually statistically significant, including them has very little effect on the tax rate coefficients.

Beyond the question of omitted variables bias is the issue of sample construction. An equally longstanding debate in this literature concerns the treatment of self–employed farmers. Specifically, while some researchers view farmers as exceedingly entrepreneurial in spirit (and thereby worthy of inclusion in these sorts of empirical studies), others look at them as "different" and call for their removal. Section E of Table 5 presents probit results for the sample of non–agricultural self–employed workers, and reveals that the inclusion of farmers does not bias the baseline findings. Again, the tax rate coefficients are nearly identical to the baseline results.

As a final robustness check, I consider the fact that a number of PSID respondents experience multiple entries into and exits from self–employment. The baseline specification examines only the first observable exit for each worker. Section F of Table 5 relaxes this constraint, allowing all observable exits (along with intermediate decisions to remain in self–employment) to enter the probit analysis. While the general flavor of the tax rate results is preserved, the wage MTR effect is much larger in magnitude. This suggests that the expected wage MTR is even more of an issue for those with previous exits from self–employment.

CONCLUSIONS

This paper provides evidence that the differential tax treatment of wage–and–salary and self–employment income has statistically and economically significant effects on the probability of leaving self–employment for a wage job. However, despite intuitive signs of tax effects on the surface, accounting for tax rate endogeneity yields the unexpected result that higher tax rates on income from self–employment do not increase, and might actually reduce, the probability that an individual will exit self–employment. A number of robustness checks confirm this general finding with only minor exceptions.

While at first this result may be somewhat confusing, it is consistent with the notion that higher taxes—accompanied by lump–sum transfers—could serve as insurance against the greater risk in self–employment (see, for example, Parker, 1996). Further, Bruce (2000) finds similar empirical effects on the self–employment startup decision—higher relative tax rates in self–employment were found to increase the rate of entry.

An alternative explanation that has been left empirically unexplored in this study is that motives for tax avoidance and evasion are at the heart of both effects. As noted above, higher tax rates on self–employment income translate into greater rewards from avoidance and evasion. Despite the apparent empirical difficulties in formally considering tax evasion and avoidance, future research may be able to shed some light on this possibility.

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APPENDIX TABLE A.1
EARNINGS REGRESSIONS RESULTS

Panel A—Wage–and–Salary

Variable	1980	1981	1982	1983	1984	1985
Age	889.27*	1592.01*	1290.02*	1705.97*	1524.42*	2394.51*
Age Squared	–6.91	–15.40*	–11.41*	–16.60*	–13.20*	–24.45*
Dropout	–3559.66*	–5020.86*	–5125.29*	–4122.11*	–4749.21*	–5615.76*
Some College	3226.96*	3911.67*	3784.66*	2648.05*	2958.97*	3560.44*
College Graduate	7973.10*	8916.98*	10706.29*	8937.25*	11595.03*	10387.91*
Post–College	8856.38*	9150.73*	12946.27*	11825.43*	12756.87*	13571.03*
N	1341	1381	1368	1370	1403	1448
R^2	0.19	0.20	0.21	0.18	0.20	0.19

Variable	1986	1987	1988	1989	1990	1991
Age	1933.74*	2376.97*	1764.93*	1267.09	1449.30	2298.25*
Age Squared	–17.97*	–23.19*	–15.18	–8.48	–10.43	–22.52
Dropout	–6036.67*	–5060.52*	–5665.47*	–6765.12*	–5636.81*	–5186.47
Some College	5093.06*	5488.82*	4929.59*	4695.14*	4622.51*	5364.25*
College Graduate	12226.74*	14761.83*	13460.71*	13754.43*	14976.37*	16836.97*
Post–College	15980.23*	19233.98*	21367.32*	24603.75*	25878.29*	29834*
N	1493	1548	1553	1593	1601	1600
R^2	0.22	0.22	0.20	0.20	0.19	0.13

APPENDIX TABLE A.1 *(continued)*
EARNINGS REGRESSIONS RESULTS

Panel B—Self–Employed

Variable	1980	1981	1982	1983	1984	1985
Age	951.28	–265.09	3581.27	3489.7	5564.08	6284.93
Age Squared	0.88	14.16	–38.87	–36.75	–64.28	–70.77
Dropout	–9440.33	–4725.58	–8314.44	–3076.38	–2595.45	–4367.88
Some College	3782.40	4534.92	1768.52	4982.5	3449.65	965.74
College	24980.55*	17415.52*	20264.44*	16037.15*	17660.95*	20980.68*
Post–College	11753.99	20830.66*	10544.74*	20952.87*	36264.58*	33268.97*
N	301	297	304	299	318	312
R^2	0.10	0.15	0.12	0.13	0.13	0.13

Variable	1986	1987	1988	1989	1990	1991
Age	1654.50	–2341.10	–9530.83	–1503.45	8337.04*	6137.39
Age Squared	–10.78	45.64	137.97	30.59	–99.46*	–69.94
Dropout	–10159.8	–9889.13	–8158.59	–3684.45	–6017.81	–7499.61
Some College	556.09	5559.45	10011.71	3745.37	9567.65	6991.68
College	20221.81*	39409.85*	44846.52*	32118.31*	18350.6*	18357.24
Post–College	36609.22*	31747.14*	33295.13*	47134.93*	55825.86*	67923.81*
N	305	313	322	329	320	327
R^2	0.16	0.06	0.07	0.09	0.18	0.15

Notes: Entries are OLS regression coefficients. Regressions also include a constant term. The dependent variable is the head's labor earnings in dollars.
*= Statistically significant at the 5% level.

APPENDIX TABLE A.2
INSTRUMENTAL VARIABLES REGRESSION RESULTS

Variable	Wage ATR	Self–Emp. ATR	Wage MTR	Self–Emp. MTR
Instrumental Variable	–3.182 (0.274)**	–1.585 (0.271)**	0.596 (0.031)**	0.271 (0.044)**
Age	1.393 (0.468)**	1.771 (0.547)**	1.460 (0.275)**	1.916 (0.328)**
Age Squared	–0.015 (0.006)**	–0.021 (0.007)**	–0.017 (0.004)**	–0.022 (0.004)**
Dropout	–0.342 (1.213)	–1.798 (1.421)	–1.799 (0.999)	–1.274 (1.044)
Some College	3.170 (0.900)**	1.870 (1.054)*	3.364 (0.791)**	2.854 (0.814)**
College Graduate	3.713 (0.941)**	2.285 (1.105)**	4.239 (0.864)**	5.222 (0.881)**
Post–College Education	6.794 (0.954)**	4.691 (1.115)**	4.051 (0.875)**	6.542 (0.885)**
Nonwhite	–2.679 (1.891)	–0.409 (2.215)	–3.576 (1.440)**	–0.404 (1.553)
North Central	0.958 (0.897)	0.709 (1.051)	1.438 (0.802)*	–0.255 (0.826)
South	0.970 (0.916)	0.113 (1.073)	–0.152 (0.810)	–1.644 (0.837)**
West	0.759 (1.017)	–0.106 (1.192)	0.933 (0.878)	–1.389 (0.912)
Married	–0.222 (1.247)	–0.254 (1.461)	0.076 (0.667)	–0.414 (0.823)
Income from Capital	–0.015 (0.016)	0.159 (0.019)**	0.041 (0.008)**	0.049 (0.010)**
Part–Time	–2.158 (0.980)**	–2.948 (1.148)**	–1.269 (0.480)**	–0.518 (0.609)
Kids 1 to 2	–1.238 (0.760)	–2.065 (0.890)**	–1.969 (0.357)**	–2.147 (0.457)**
Kids 3 to 5	–1.208 (0.691)*	–1.911 (0.810)**	–1.883 (0.335)**	–2.063 (0.423)**
Kids 6 to 13	–1.802 (0.406)**	–1.173 (0.475)**	–1.371 (0.228)**	–1.134 (0.278)**
Kids 14 to 17	–1.940 (0.606)**	–2.061 (0.710)**	–0.660 (0.305)**	–1.096 (0.387)**
Union	–1.212 (1.980)	0.975 (2.319)	–1.444 (1.080)	0.190 (1.275)
Unemployment Rate	–0.263 (0.126)**	–0.237 (0.148)	–0.231 (0.072)**	–0.233 (0.089)**
MSA	–0.406 (0.663)	0.314 (0.776)	0.767 (0.477)	0.510 (0.541)
N	2615	2615	2615	2615
R^2 (overall)	0.128	0.099	0.335	0.211

Notes: Entries are GLS random–effects regression coefficients with standard errors in parentheses. Regressions also include indicators for the year of the observation and a constant term.
* = Statistically significant at the 10% level
** = Statistically significant at the 5% level.