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June 12, 2009

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Sent via email to Rowan.Carol@bls.gov

RE: Comments on National Longitudinal Survey of Youth 1979 (OMB Number: 1220–0109)

The Kauffman Foundation, as the nation's largest foundation devoted to furthering understanding entrepreneurship, has a strong interest in high-quality social science research relating to the conditions under which entrepreneurs are most likely to develop and succeed. For this purpose, expanded data on how entrepreneurship is a part of the overall individual's lifecycle is essential. The Bureau of Labor Statistics appears to have put a great deal of thought into the proposed entrepreneurship questions that are proposed for the round 24 interviews of the National Longitudinal Survey of Youth 1979 (NLSY79). In talking with researchers who the Foundation is engaged with and reviewing ourselves, reaction has been very positive to the questions in terms of content and appropriateness to the survey population. As such, we are pleased to endorse the proposed NLSY79 direction.

With this endorsement, we turn to some areas for additional thought and clarification on specific survey questions:

- *Work activities in the business:* In the current questionnaire design, business ownership is the main focus with only one question asking for each individual business owned the following question regarding workers: "At its largest, how many people worked for this business, including you? Please include part-time and temporary workers, and exclude outside contractors." While it may be difficult to determine what time period to reference, we would recommend strongly gathering additional detail on the hours worked of the respondent in the firm which they report having owned. Previous literature in this area tends to distinguish owner/operator vs. just being an owner.

- *Active involvement in start-up process:* Following the above concept, it would be very helpful to add a yes/no question for each owner that focused on their

involvement in the start-up process. The question we have used in similar surveys is, "Were you actively involved in the creation of [NAME BUSINESS]?"

- *Time period references:* While good attempts are made to get consistent framing of each question with a reference period, an additional review would seem warranted. Questions 14, 15, and 16, as an example, would look to be related and likely used by many researchers together but 14 and 15 reference "at its largest" while 16 asks "during a typical year".

- *Entrepreneur:* "Do you consider yourself to be an entrepreneur?" Currently, this question will be asked only of a subsample of the whole NLSY79 population. It'd be more useful to the overall literature if this was asked of all respondents or at least those which had also reported an incidence of self-employment in the past. We know from previous survey work that the term "entrepreneur" isn't always well recognized by the general public. A similar term "angel investor" also comes to mind here as many of the questions BLS proposes are only about business ownership, but this is a term we think is even less recognized by the general public. As the question currently stands, asking of all respondents would allow comparisons to future work activities and might provide insight into people working for others who view themselves as entrepreneurs. Additionally, being prepared with a definition of an entrepreneur is nontrivial but should be added to the survey instrument for possible clarifications. And lastly, perhaps the more useful question would be to ask about their intentions towards starting a business in the next five years. We've done some survey work with Gallup on this question or similar questions and could provide these examples if of interest. Roughly half the adult population of the U.S. reports an interest in starting a business at some point in their lifetime.

- *Patents:* While patents are of most interest in trying to get at innovation activities, they are likely to only be applicable to a small set of people and business owners. Also realize that the questions go back and forth between asking about patent applications and patents obtained as currently written.

In addition to these comments, we asked Mathematica Policy Research, a respected survey research firm with whom we currently work to collect data on the Kauffman Firm Survey, to prepare detailed comments on the proposed survey questionnaire. These comments, which we entirely endorse, are included here as Attachment 1. Additionally, we are attaching as a convenience, a summary article from Professor Robert Fairlie on the NLSY79 and its use in research on entrepreneurship as Attachment 2.

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Entrepreneurship, as defined by business ownership or self-employment, is more common in middle-age individuals with many years work experience. As such, the sample for the NLSY79 is in the prime period of their life to be starting a business but this activity would be expected to continue significantly in the sample over the next decade. As such, we would recommend that the questions in round 24 be phrased in such a way that they could be implemented with only small modifications in future rounds. In order to avoid recall bias, it is important that BLS is implementing the questions now, but realizing that future iterations of similar questions would likely have even higher incidence rates is important.

Please feel free to contact us to clarify any of these comments or request additional information.

Sincerely,

E.J. Reedy
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Attachments

Atttachment 1

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MEMORANDUM

TO: E. J. Reedy, Ewing Marion Kauffman Foundation

FROM: David DesRoches

DATE: 6/5/2009
KFS – 143

SUBJECT: Review of proposed business ownership questions on National Longitudinal Survey of Youth (NLSY)

The upcoming round of the NLSY contains a new module of questions on business ownership that will provide valuable information on self-employment, entrepreneurship, and innovation. Based on MPR's experience conducting the Kauffman Firm Survey (KFS), and with survey methodology in general, the Foundation requested we review the new module and provide comments. Overall, we found the content of the new module to be comprehensive, and we think the questions will provide a detailed look at business ownership within the NLSY cohort. Below we provide some suggestions about particular questions in the new module. These suggestions include clarifying potentially ambiguous terms, standardizing text that is read to respondents, and modifying the question order to facilitate the retrieval of information. For some questions, cognitive testing or pretesting are suggested prior to using the module for full-scale data collection.

BUSOWN-1 - Ever Owned a Business

As currently worded, this question includes introductory text that specifies the kinds of activities that should be included and excluded from "business ownership." Because this introductory paragraph is lengthy, it may be difficult for respondents to recall all of the inclusion and exclusion criteria as they think about their response. One possible improvement would be to ask this as a series of "yes/no" questions with a list of acceptable business types. This way the question would collect incidence of these types of businesses, and each type would be considered separately by respondents.

Also, terms such as "highly sporadic" and "purely as a hobby" are somewhat ambiguous and may be interpreted differently by different respondents. To ensure more consistent interpretation, we suggest the following revision:

BUSOWN-1 (Continued)

The next few questions are about business ownership. By business, we mean any activity operated regularly for the purpose of generating ***income or profit***.

NOTE: Do NOT count businesses where you were merely a shareholder or investor with no role in the operation of the company.

Since turning age 18, have you ever had an ownership share in an:

	YES	NO
1. ***Incorporated*** company or partnership?		
2. ***Unincorporated*** businesses where you were the sole proprietor, an independent contractor, or a consultant, or free-lancer?		
3. ***Informal businesses*** such as cleaning services, gardening services, or selling of goods out of your home?		

Later in the module, the question on legal status (BUSOWN-12) lists "nonprofit organization" as a response category. Should this be included in BUSOWN-1 to ensure those establishing these organizations are asked this module?

BUSOWN-5 – Year Business Established

The concept of year of business establishment is one that can be interpreted in different ways by respondents. Cognitive testing conducted during design of the KFS showed that some business owners respond with the year in which they first thought of a business idea, whereas others respond with the year in which the doors to the business actually opened, or when the business' first sale was made. One suggestion is to more clearly define business start in a way that will be meaningful for all business owners, such as when the business actively began operations or offering products and/or services.

For respondents purchasing existing businesses, would they be expected to report the year in which the business was originally established, or when it was purchased (and potentially re-named or re-organized)? An instruction could be added here to make that clearer.

BUSOWN-7 – How Acquired Ownership in Business

Some respondents may have a difficult time distinguishing between receiving ownership as a gift versus inheriting a business (similarly, some respondents who inherited a business from an in-law may not be able to distinguish inheritance from receiving ownership through marriage). It is also possible that a business owner could use more than one of these methods over time (such as inheriting a share of a business and purchasing another share). A possible solution to both of these potential sources of confusion is to begin the question: "How did you first acquire an ownership share…" Also, adding an instruction for marking one response only would be helpful.

BUSOWN-8 – Reason for Establishing or Acquiring Business

People may have multiple reasons for establishing a business. The current wording implies that you are interested in their main reason for starting a business. If this is the case, then adding this to the question text will make that clearer to respondents. If you are interested in all the reasons someone may have for establishing a business, you may want to include an interviewer instruction that directs the interviewer to probe "Were there any other reasons?" until the respondent has provided an exhaustive list. In addition to the verbatim, you might want to include some common codes for the interviewer to field code during the data collection. This would save a lot of post-data collection coding effort. Cognitive testing and pretesting could help to provide a list of common reasons business owners give for establishing or acquiring an ownership share in a business.

It appears that this question is asked of respondents who said that they acquired the business as a gift, through an inheritance, or through marriage. It may be difficult for respondents to answer this question beyond what they already provided in BUSOWN-7. You may want to consider skipping this question for respondents who did not actively establish a business.

BUSOWN-10 – Sources of Funds for Establishment or Acquisition of Business

This question is currently set up as a "mark all that apply," and an alternative is to ask these as a series of "yes/no" items. The "yes/no" format asks respondents to consider each item individually and provide a response, which reduces cognitive burden because respondents do not need to remember all of the items on a list. This format also reduces the risk that interviewers may accidentally stop reading all of the response options if a respondent interrupts with a "yes" response.

The instruction included with this question seems important for all respondents to know, so including it in the question stem would be worth considering. For example:

Not counting any financing you might have received from the previous owner or any co-owners you might have, which of the following sources of money did you use to ***establish or acquire*** this business?

There are some other financing vehicles not included on the list, including venture capital, angel investors, and existing companies. Currently these would be collected in the "Other-specify," but these categories of financing are often of analytical interest to entrepreneurship researchers, and having them broken out separately may make the data collected at this question more useful.

BUSOWN-11 – Amount of Funds Used to Establish or Acquire Business

It isn't clear whether respondents should only include equity that the respondent provided, whether equity provided by other owners should be included, or whether debt obtained to establish or acquire the business should be reported. Including additional definition in the question stem is worth considering to clarify the question.

Also, given that some business owners spend years developing a business, some additional definition as to what to include in this figure would be helpful. One possible improvement would be to indicate that funds used in all years to establish the business should be included in the response.

BUSOWN-13 – Primary Industry

When asked what type of business this is, respondents may think of legal status, size, or how it is organized, rather than the industry the business competes in. The probe "What does this business make or do?" has been used successfully as the main industry question on business surveys in the past and would be easier for respondents to answer.

BUSOWN-14 - Employment

This question asks employment in terms of when the business was at its largest, which could be before the respondent obtained an ownership share of the business. As a result, respondents who purchased an established business may have difficulty responding. One possible solution would be to tie the measure more closely to the time they had an ownership share in the business. For example, respondents owning existing businesses that were received as a gift, purchased, inherited, or received through marriage, the question could begin, "At its largest during the time you owned this business…"

BUSOWN-16 - Revenue

A concern with this question is that some respondents will use the last year of ownership as opposed to the last calendar year or a typical year, and which time frame the respondent used will not be measurable. If BUSOWN17 were earlier in the module, the proper fill (last calendar year or last year of ownership) could be provided at this question.

The question could also be improved by placing the frame of reference first in the question, so that it would read "In the last calendar year, how much did this business generate in sales or revenue?"

BUSOWN-17 – Current Ownership of Business

As mentioned above, moving this closer to the start of the module would allow proper fills for BUSOWN-12 and BUSOWN-16. Moving this and the follow-up questions (BUSOWN-18 and BUSOWN-19) to after the current BUSOWN-7 is a possible solution, it would follow BUSOWN-5 (Year established), BUSOWN-6 (Year acquired ownership share), and BUSOWN-7 (How acquired). Under the revised series, the timeline of the respondent's relationship to the business would be captured early in the questionnaire, with the rest of the module drilling down to issues dealing with the business' operations.

BUSOWN-19 – Reason for End of Ownership

This question assumes that all businesses will be wholly owned by respondents, rather than having an ownership share. Selling one's share in the business is a common business exit for entrepreneurs, and adding this as a response category would improve the precision of this question.

BUSOWN-22 – Family Ownership

Since the ownership team of a business can change over time, specifying the time frame for respondents would provide more consistent data. One solution is to ask this about current ownership if the respondent still has an ownership share at BUSOWN-17, and to ask about it at the time he or she left the business if the respondent no longer has an ownership share.

The "please include" instruction might be clearer if changed to "Please include spouses, domestic partners, parents or guardians, brothers or sisters, or other close relatives." The same comment applies to BUSOWN-23A, 23B, 24A, and 24B.

BUSOWN-25 & BUSOWN-27 – Intellectual Property

Data on intellectual property are vital to most entrepreneurship and innovation research, and it is not clear whether the focus of this question is on patents or more general innovation work. The question could be made clearer by focusing on the whether the respondent has ever been named on an application for a U.S. patent, similar to questions asked on the National Science Foundation SESTAT surveys. For example:

"Have you ever been named as an inventor on any application for a U.S. patent?"

Questions could then be asked about the number of patent applications the respondent was ever named on, and how many of these patents were associated with work done at the business.

A "no" response at this question takes you to BUSOWN-29, skipping over BUSOWN-27, which asks if any of the work done at a business that the respondent own(s/ed) has led to a patent application. The response to BUSOWN-27 can be "yes" even if the response to BUSOWN-25 is "no," given that BUSOWN-27 doesn't specify that the patent application be one that the respondent significantly contributed to (unlike BUSOWN-25). Possible solutions are to change the focus of BUSOWN-27 to be about only patent application(s) the respondent contributed to in BUSOWN-25 (and leaving the same skip pattern), or changing the skip pattern so that all respondents are asked BUSOWN-27, and making the question be about any work at the business that contributed to a patent application, whether or not the respondent contributed to the application.

In conclusion, the proposed module contains the key measures needed to understand business ownership among the NLSY cohort. We recommend pretesting the module with a group of respondents that are similar to the NLSY population, to ensure that the terminology used will be familiar to respondents, and to provide an opportunity to add response options that may provide additional specificity to the data.

Self-employment, entrepreneurship, and the NLSY79

Researchers have used the rich data from the 1979 cohort of the National Longitudinal Survey of Youth to investigate the relationship between self-employment and various job and earnings outcomes; future inquiry may afford valuable insights into other interesting consequences of self-employment

Robert W. Fairlie

A relatively small, but growing, body of literature uses microdata from the 1979 National Longitudinal Survey of Youth (NLSY79) to study self-employment and entrepreneurship among young adults. The topics covered in these studies include, but are not limited to, the determinants of entrepreneurship, earnings growth among entrepreneurs, the returns to self-employment, the relationship between criminal activities and self-employment, and job satisfaction among the self-employed.

The NLSY79 is a nationally representative sample of 12,686 men and women who were between the ages of 14 and 22 when they were first interviewed in 1979.[1] Survey respondents were interviewed annually from 1979 to 1994 and biannually starting in 1996. Most previous studies using this survey exclude the sample of 1,280 youths designed to represent the population 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 nonblack, non-Hispanic youth. The NLSY79 contains a wealth of information on the demographic, economic, family background, educational, and psychological characteristics of respondents. Detailed measures of the group's labor market and life experiences from early adulthood to the mid-forties can also be created for survey respondents.

The NLSY79 is an excellent source of data for conducting research on self-employment and entrepreneurship. The wealth of information available in the survey allows one to build rich empirical models of the entrepreneurial process. Measures of previous wage and salary, self-employment, and unemployment experience can be created, and the NLSY79 contains several uncommon variables, such as those associated with detailed asset categories, family background information, data on criminal activities, Armed Forces Qualification Test (AFQT) scores, and psychological characteristics. Furthermore, a plethora of measures of the dynamics of self-employment may be extracted from the longitudinal data in the survey. For example, measures of transitions to and from self-employment, number of years of self-employment, and whether an individual ever tries self-employment can easily be created. Finally, the returns to self-employment, measured as earnings, job satisfaction, net worth, or other outcomes, can be estimated. Changes over time in labor market status can be used to identify the effects of self-employment, potentially removing biases created by unobserved heterogeneity across individuals. Given these advantages, it is somewhat surprising that more researchers have not used the NLSY79 to study self-employment. In the sections that follow, this article presents estimates of self-employment from the NLSY79, reviews findings from previous studies that used the survey, and discusses some of the merits of the data sets making up the survey.

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Self-employment in the NLSY79

In most previous studies using the NLSY79, self-employed workers are defined as those individuals who identify themselves as self-employed in their own business, professional practice, or farm in response to the class-of-worker question relating to the current or most recent job. Unpaid family workers are not counted as self-employed. Individuals who report being enrolled in school and workers who report working fewer than 300 hours in the previous calendar year are often excluded. The hours restriction rules out very small scale business activities.

Self-employment rates increase rapidly as the NLSY79 cohort ages. (See chart 1.) The self-employment rate is defined as the fraction of workers that is self-employed. At age 22, only 5.1 percent of men and 2.6 percent of women are self-employed. By age 42, however, 12.1 percent of men and 9.8 percent of women are self-employed.

The following tabulation shows that self-employment rates also differ substantially by race and its ethnicity:

NLSY79 data

	Men		*Women*	
Race or ethnicity	*Self-employment rate (percent)*	*Sample size*	*Self-employment rate (percent)*	*Sample size*
Black	5.3	14,448	3.2	13,469
Hispanic	7.4	10,153	4.9	8,404
White	10.1	31,803	6.9	29,006

As in previous studies, blacks and Hispanics are much less likely to be self-employed than are whites.[2] Only 5.3 percent of black men are self-employed, compared with 10.1 percent of white men. The Hispanic male rate of 7.4 percent is also lower than the white rate, but higher than the black rate. Among women, the black-white and Hispanic-white self-employment rate ratios are similar to those for men. The main difference is that women's self-employment rates are lower than men's for all three racial and ethnic groups.

The determinants of self-employment. 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, more assets, and more education increase self-employment. In contrast, theoretical models of self-employment posit that attitudes toward risk, entrepreneurial ability, and preferences for autonomy are central to the individual's decision to become self-employed or engage in wage and salary work.[3] Perhaps not surprisingly, there is very little empirical evidence on the importance of these unobservable characteristics in the self-employment decision. One article that uses the NLSY79 offers indirect evidence by examining the relationship between drug dealing and legitimate self-employment:[4] a review of ethnographic studies in the criminology literature indicates that drug dealing may serve as a useful proxy for a low aversion to risk, entrepreneurial ability, and a preference for autonomy.

The 1980 wave of the NLSY contains a special section on participation in illegal activities, including questions on selling marijuana and other "hard" drugs. The answers to these questions, together with data from subsequent years of the survey, are used 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, the survey finds drug dealers to be 11 percent to 21 percent more likely than those who are not drug dealers to choose self-employment, all else being equal. After ruling out a few alternative explanations, this article interprets these results as providing indirect evidence that aversion to risk, entrepreneurial ability, and preferences for autonomy are important determinants of self-employment.

In addition to offering detailed information on criminal activities in the 1980 wave, the NLSY79 includes information on whether respondents were interviewed in jail or prison in each year. This information is useful because convictions and incarcerations may have different effects on current and future wage and salary and self-employment earnings. In particular, ex-offenders who choose self-employment do not face discrimination, either pure or statistical, by employers in the labor market, but may face other forms of discrimination, such as that by consumers or lending institutions. Using the NLSY79, the aforementioned study by Robert Fairlie provides evidence on the relationship between incarceration and self-employment.[5] Estimates from probit regressions indicate that having a previous incarceration increases the probability of self-employment by 0.36 percentage point to 0.39 percentage point, or 5.2 percent to 5.9 percent. Thus, self-employment may provide an important alternative to wage and salary work for at least some ex-convicts.

Another finding reported in Fairlie is that AFQT scores have a small and insignificant effect in probit regressions for the probability of self-employment.[6]

Interestingly, previous research using the NLSY79 finds that AFQT scores have a *large positive* effect on earnings. The general argument is that the scores represent a measure of basic skills that help predict job performance. Although youths who have low levels of these basic skills may have limited opportunities in the wage and salary sector, that barrier does not translate into higher probabilities of self-employment.

Chart 1. Self-employment rates by age, NLSY (1979–2002)

The longitudinal nature of the NLSY79 also allows one to explore the effects of previous labor market experience on current self-employment. Ellen Rissman analyzes one aspect of the dynamic relationship between unemployment and self-employment among men.[7] She finds that the probability of being self-employed in the current year increases significantly if the person was unemployed in the previous year. Stratifying her sample by race, she also finds a positive and significant effect for whites, but not for nonwhites.

The dynamics of self-employment. Previous research on self-employment generally takes a point-in-time focus; longitudinal data in the NLSY79, however, allow for numerous dynamic measures of the concept. For example, Rissman finds that 3.4 percent of wage and salary workers in any given year become self-employed the following year and, conversely, 36.9 percent of the self-employed during a given year make the transition to wage and salary work the next year.[8] Also, Marianne A. Ferber and Jane Waldfogel find that 24.8 percent of men and 16.5 percent of women in their sample from the NLSY79 report ever being self-employed.[9] By contrast, they find *current* self-employment rates of 8.8 percent and 5.5 percent for men and women, respectively. Finally, Donald Williams finds that, by 1987, just 3.1 percent of NLSY79 respondents had 2 or more years of self-employment experience and only 1.2 percent of respondents had 3 or more years of self-employment experience.[10]

Although numerous possibilities exist for measuring self-employment dynamics, most previous research has focused on annual transitions to and from self-employment. Estimates for transition matrices that include wage and salary employment, self-employment, and nonemployment are reported in table 1.[11] One-year transition matrices are reported for the 1979–94 period, and 2-year transitions are reported for the 1994–2002 period. Estimates from 1979–94 indicate that 3.4 percent of young men who were wage and salary workers became self-employed the following year. The entry rate for the nonemployed is 2.2 percent. Estimates for 2-year transitions from 1994–2002 indicate a lower self-employment rate from wage and salary work and a higher entry rate from nonemployment. For men, the exit rates from self-employment are 31.6 percent and 24.9 percent for the earlier and later periods, respectively. Self-employment entry rates are generally lower, and exit rates higher, for young women. Overall, the estimates indicate that substantial mobility exists between sectors and into and out of employment among young workers.

The importance of assets has taken center stage in the literature on the determinants of self-employment. Several

Table 1. Labor market transition matrices, National Longitudinal Survey of Youth, 1979–2002

[In percent]

Gender, category, and year *t*	Nonemployment,[1,2] *t* + 1/*t* + 2	Wage and salary employment,[2] *t* + 1/*t* + 2	Self-employment,[2] *t* + 1/*t* + 2	Share of total, year *t*	*N*
Men					
1979–94, year *t*:					
Nonemployment	72.1	25.7	2.3	7.0	3,675
Wage and salary employment	1.0	95.5	3.4	85.1	33,917
Self-employment	.7	30.8	68.4	7.9	2,661
1994–2002, year *t*:					
Nonemployment	65.6	29.1%	5.3	6.9	1,284
Wage and salary employment	2.8	94.0	3.1	83.6	11,249
Self-employment	2.0	22.8	75.1	9.5	1,112
Women					
1979–94, year *t*:					
Nonemployment	75.4	21.4	3.3	19.1	9,584
Wage and salary employment	3.7	94.1	2.2	76.1	31,452
Self-employment	4.6	29.0	66.5	4.8	1,641
1994–2002, year *t*:					
Nonemployment	68.7	28.1	3.2	18.8%	2,844
Wage and salary employment	6.1	91.5	2.4	75.0%	10,585
Self-employment	10.2	28.6	61.2	6.2%	727

[1] Those unemployed and not in the labor force.
[2] Measured in year *t* + 1 for 1979–94 and year *t* + 2 for 1994–2002.
NOTE: The sample consists of youths aged 22 to 45 years who are not enrolled in school. All estimates are calculated with the use of annual sample weights provided by the National Longitudinal Survey of Youth.

recent studies explore this issue by modeling the decision of wage and salary workers or other nonbusiness owners to switch into self-employment over a fixed period.[12] The focus on transitions to self-employment attempts to avoid the endogeneity problem of including assets in a static model of self-employment. The problem is that a positive relationship found in a cross-sectional analysis may simply reflect the possibility that business owners accumulate more wealth instead of wealth increasing the likelihood of owning a business. Although individuals may save in anticipation of becoming self-employed, a measure of assets in year $t - 1$ should be more exogenous to the entrepreneurial decision than a contemporaneous measure of assets.

Fairlie follows this approach, using net worth data from the NLSY79.[13] Specifically, he estimates probit regressions for the probability of entry into self-employment from wage and salary work that include a measure of net worth. The NLSY did not collect infomation on assets prior to 1985 and in 1991. For other years, a measure of net worth can be created from the detailed NLSY questions on assets.[14] The coefficients on net worth and its square are statistically significant and indicate a concave relationship. Evaluated at the mean level of net worth (which equals $36,900), the coefficients imply that increasing net worth by $10,000 raises the probability of a transition into self-employment by 0.00044. This percentage represents only 1.5 percent of the sample's entry rate into self-employment. Thus, the estimates of the coefficients provide some evidence that young men face liquidity constraints, but these constraints do not appear to be overly restrictive.

Creating detailed measures of previous work experience to include in her regressions, Hiromi Taniguchi examines the determinants of transitions from nonemployment to self-employment and to wage and salary employment among women in the NLSY79.[15] Her results indicate that both cumulative work experience and the number of jobs ever held increase the rate of entry into self-employment and wage/salary employment. She also finds that previous self-employment increases the rate of entry into self-employment and has a negative effect on entry into wage and salary employment.

Self-employment earnings in the NLSY79

Although self-employment income can be identified in the NLSY79, earnings among self-employed business owners are typically measured as total annual earnings, which are calculated by summing the responses to questions on military income, wage and salary income, and business or farm income (after expenses) in the previous calendar year. The income from all three sources is added because more than half of the self-employed with positive earnings in the NLSY79 report wage and salary income, but do not report business income.[16]

This is partly due to incorporated business owners reporting their income as wage and salary income, as roughly 50 percent of unincorporated business owners with positive total earnings report zero business income. As suggested by Zagorsky, it may also be due to the ordering of questions on the questionnaire.[17] Respondents were asked, (1) "How much money did you get from the military?"; (2) "Excluding military pay, how much money did you get from wages, salary, commissions, or tips?"; and (3) "Excluding anything you already mentioned, did you receive any business income?" Thus, some of the self-employed may have reported their income in the second question and did not correct their mistake. Another possibility is that the self-employed report only their *labor* income from the business under wage and salary income.

The following tabulation shows the mean, median, and standard deviation of total annual earnings for self-employed and wage and salary workers:

	Men		*Women*	
	Self-employed	*Wage and salary*	*Self-employed*	*Wage and salary*
Mean	$52,300	$38,258	$28,217	$27,131
Median	38,000	33,021	20,029	23,407
Standard deviation	48,159	25,769	30,040	17,794
Sample size	3,725	43,852	1,570	35,367

Only full-time workers, defined here as those working at least 1,400 hours in the previous calendar year, are included, in order to control for differences in hours worked. Earnings observations in all years are inflated to 2002 dollars. The responses for each of the three sources of income (the self-employed, wage and salary workers, and the military) are top coded at $75,000 from 1979 to 1984, $100,000 from 1985 to 1994, and the top 2 percent for more recent years. Instead of these top codes, however, the 1994 top code, in 2002 dollars, which equals $121,390, is used for all years in what follows.[18] As is customary, all top-coded values are set to $150,000.

For men, the self-employed earn substantially more, on average, than do wage and salary workers. Men's average earnings are $14,042 higher among the self-employed, and median earnings are $4,979 higher. For women, average earnings among the self-employed are slightly higher than average earnings among wage and salary workers, but median earnings are lower. For both men and women, the standard deviation of self-employment income is substantially greater than that of wage and salary income.

Returns to capital. One issue that arises in comparing self-employment earnings with wage and salary earnings from survey data is the treatment of returns to capital. In the NLSY, the question regarding self-employment income asks, "How much did you receive after expenses?" from your farm or business in the past calendar year. Although some uncertainty is involved in answering this question, respondents are likely to interpret the question to include both the returns to labor and the returns to capital. As noted earlier, however, most of the self-employed report their earnings as wage and salary income and not business income. In the case of the respondent who does report self-employment income as business income, it would be preferable to remove the returns to capital before making comparisons with the earnings of wage and salary workers.

Unlike most other data sets, the NLSY79 contains detailed-enough information on assets to enable researchers to conduct a careful analysis of the issue of how returns to capital are treated. The NLSY79 contains data on the market value of the individual's farm, business, and other real estate and the total amount of debt owed on those assets. This information can be used to calculate the opportunity cost of capital and remove it from business income. With Standard & Poor's 500 as the alternative investment, adjusted self-employment earnings are 5.2 percent lower than unadjusted self-employment earnings for white men and 4.0 percent lower for white women.[19] Simple adjustments for the opportunity cost of capital also have a small effect on self-employment earnings for blacks and Latinos. Overall, estimates from the NLSY79 suggest that unadjusted self-employment earnings from survey data may provide reasonably accurate measures of the returns to labor.

Earnings regressions. As mentioned earlier, the NLSY79 contains detailed information on individual characteristics such as age, race, education, AFQT scores, and various measures of previous work experience. Earnings regressions that include these observable controls can be used to estimate the between self-employment earnings and wage and salary earnings. Unobserved differences, however, such as entrepreneurial ability and aversion to risk, may also exist between self-employed business owners and wage and salary workers. To address this issue, fixed-effects earnings regressions can be estimated with the longitudinal data in the NLSY79. The individual-level fixed effects control for all observable and unobservable characteristics that do not change over time. Because, over time, individuals make transitions between self-employment, on the one hand, and wage and salary work, on the other, comparisons of self-employment earnings with wage and salary earnings for the same individual in different years contribute to identifying the associated coefficients.

Estimating fixed-effects earnings regressions for young men from disadvantaged families yields some evidence that self-employed business owners earn more than do wage and salary workers.[20] Estimates for young women, however,

provide some evidence of lower earnings among self-employed business owners than among wage and salary workers. The results from these earnings comparisons are somewhat sensitive to the use of different measures of income and different econometric models.

In a related study, Justin van der Sluis, Mirjam van Praag and Arjen van Witteloostuijn (2004) estimate the returns to education for entrepreneurs and for wage and salary workers.[21] Using instrumental-variable regressions, they find that the returns to education are 14 percent for the self-employed, much higher than the 10-percent estimated return for wage and salary workers. The detailed data available in the NLSY79 allow these researchers to control for ability and to use family background characteristics, including the mother's and father's education, the presence of library cards in the household at age 14, and magazines present in the household at age 14, as instrumental variables for education.

Earnings profiles. The longitudinal nature of the NLSY79 enables one to compare earnings profiles for self-employed workers and wage and salary workers. Charts 2 and 3 display earnings-age profiles for full-time self-employed and wage and salary workers. For men (chart 2), average self-employment earnings are always higher and appear to grow at a rate similar to that of wage and salary earnings. For women, average self-employment earnings start out lower than wage and salary earnings, but then grow at a faster rate.

To investigate the question of whether the self-employed experience faster earnings growth than do wage and salary workers, the NLSY79 allows fixed-effects regressions that include interactions between self-employment, on the one hand, and experience, potential experience, or tenure, on the other, to be estimated. Estimating fixed-effects regressions for hourly earnings for a sample of white, non-Hispanic men, Daiji Kawaguchi finds flatter earnings-experience/tenure profiles for self-employed workers than for wage and salary workers.[22] At 10 years of experience and job tenure, self-employed business owners earn 18 percent less than wage and salary workers. An earlier work by Fairlie compares men's and women's earnings profiles for whites, blacks, and Hispanics.[23] For white men, the point estimates from these earnings regressions indicate that the self-employed initially experience slower earnings growth than do wage and salary workers. After several years, the trend reverses, and self-employed persons experience faster earnings growth and higher earnings. For Hispanic men, the relative self-employment earnings coefficients suggest that the self-employed start at much lower earnings levels than do wage and salary workers, but experience faster growth rates. For white women, relative self-employment earnings start out positive and then become negative. Relative self-employment earnings coefficients are not statistically significant for black men, black women, or Hispanic women, possibly due to small sample sizes.

Self-employment and other outcomes. The detailed information available in the NLSY79 also allows for the analysis of the relationship between self-employment and other outcomes, such as future wage and salary income, job satisfaction, and net worth. One possibility is to examine the relationship between early-career self-employment experience and future labor market outcomes. The NLSY79 is an excellent instrument for this type of analysis because it follows individuals from ages 14 to 22 in 1979 to 37 to 45 in 2002.

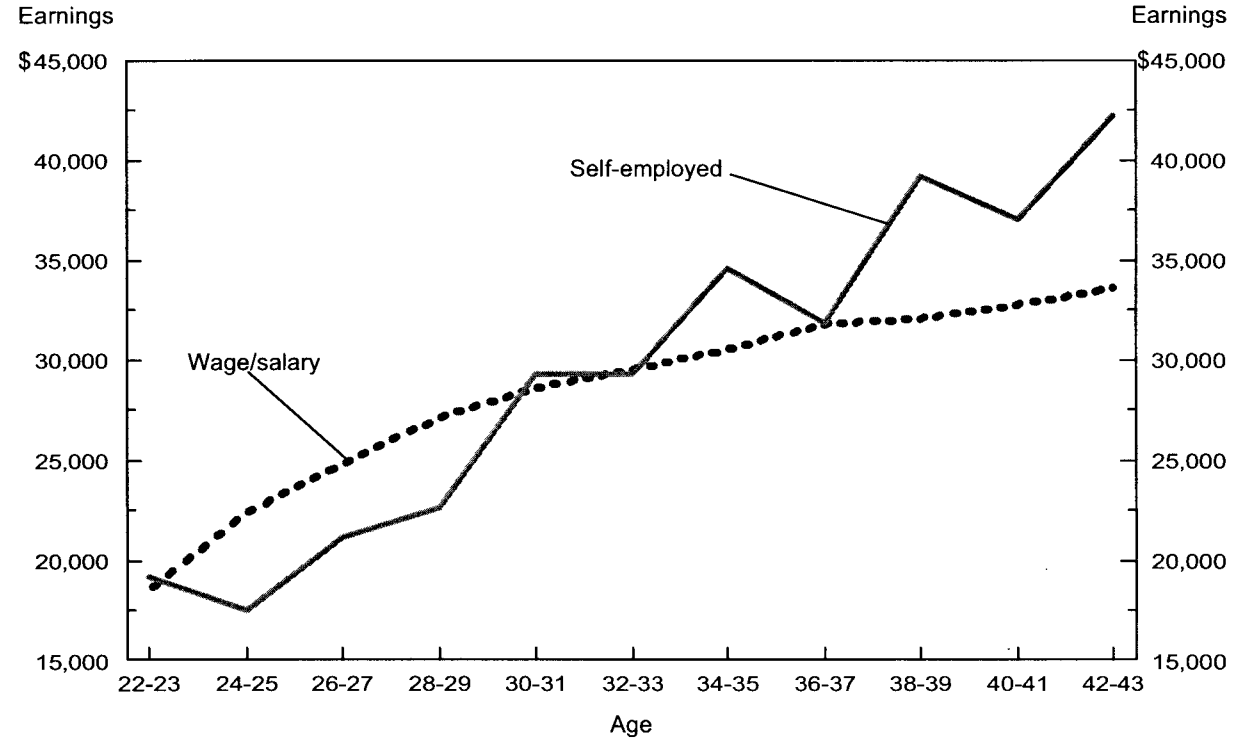
A previously mentioned work by Fairlie examines the earnings patterns of less educated individuals who are self-employed early in their careers and makes comparisons with young, less educated wage and salary workers.[24] Self-employment status is determined between ages 22 and 26, and earnings are measured starting at age 27. Estimates from fixed-effects regressions indicate that the self-employed experience faster earnings growth, on average, than do wage and salary workers after a few initial years of slower growth. In a similar vein, Williams examines the relationship between self-employment at ages 16 to 20 and outcomes at ages 25 and 27.[25] He finds that self-employment as a youth is associated with a substantially higher probability of being self-employed in early adulthood (age 27), but also is associated with lower earnings at that age.

Another interesting question that can be answered with the NLSY79 is whether self-employment experience is rewarded in the wage and salary sector. Do self-employment spells limit opportunities for acquiring valuable labor market experience, especially firm- and sector-specific human capital, or do they provide workers with skills that are rewarded in the wage and salary sector? Again using data from the NLSY79, as well as data from the National Longitudinal Survey (NLS) of Young Women, Williams examines the effects of self-employment experience on future wage and salary earnings of men and women.[26] His estimates indicate a negative return for women and little or no return for men.

Most of the focus in the self-employment literature is on earnings, but other outcomes also are of interest. In particular, lower hourly earnings among the self-employed with high levels of tenure may be explained by nonpecuniary factors of the job, such as being one's own boss. Kawaguchi uses the NLSY79 to investigate whether self-employment is associated with higher levels of job satisfaction.[27] He finds that 65 percent of the self-employed report liking their job "very much," whereas only 45 percent of wage and salary workers report that level of job satisfaction. Estimates from regression models which control for individual heterogeneity confirm that the self-employed have higher levels of job satisfaction than wage and salary workers have.

Chart 2. **Average annual earnings by age for men, NLSY (1979–2002)**

Chart 3. **Average annual earnings by age for women, NLSY (1979–2002)**



RESEARCH USING THE NLSY79 has undoubtedly improved our understanding of the determinants of entrepreneurship, the dynamic process of self-employment, and self-employent earnings patterns. Although the relationship between self-employment and a few outcomes, such as future wage and salary earnings and job satisfaction, has been explored with the exceptionally rich data available in the NLSY79, more research may provide valuable insights into the consequences of self-employment. For example, the detailed data available in the survey allow one to explore the causal relationship between self-employment and several outcomes of interest, such as net worth, business net worth, health insurance and other fringe benefits, and public assistance programs. □

Notes

[1] See Center for Human Resource Research, *NLSY79 Users' Guide* (Columbus, OH, The Ohio State University, 1999), for a detailed description of the NLSY79.

[2] Estimates from the NLSY79 are comparable to those from 1990 census microdata using a similar age group. See Robert W. Fairlie, "Does Business Ownership Provide a Source of Upward Mobility for Blacks and Hispanics?" in Douglas Holtz-Eakin, ed., *Entrepreneurship and Public Policy* (Cambridge, MA, MIT Press, 2004), pp. 634–59. The census shows slightly lower rates, but the relative differences between the races are similar.

[3] See, for example, Richard Kihlstrom and Jean-Jacques Laffont, "A General Equilibrium Entrepreneurial Theory of Firm Formation Based on Risk Aversion," *Journal of Political Economy*, vol. 87, no. 4, 1979, pp. 719–48; Robert E. Lucas,"On the Size Distribution of Firms," *Bell Journal of Economics*, vol. 9, no. 2, 1978, pp. 508–23; Boyan Jovanovic, "Selection and the Evolution of Industry," *Econometrica*, vol. 50, no. 3, 1982, pp. 649–70; and David Evans and Boyan Jovanovic, "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints," *Journal of Political Economy*, vol. 97, no. 4, 1989, pp. 808–27.

[4] Robert W. Fairlie, "Drug Dealing and Legitimate Self-Employment,"*Journal of Labor Economics*, vol. 20, no. 3, 2002, pp. 538–67.

[5] *Ibid.*

[6] *Ibid.*

[7] Ellen R. Rissman, "Self-Employment as an Alternative to Unemployment," working paper no. 2003–34 (Chicago, Federal Reserve Bank of Chicago, 2003).

[8] *Ibid.*

[9] Marianne A. Ferber and Jane Waldfogel, "The long-term consequences of nontraditional employment," *Monthly Labor Review*, May 1998, pp. 3–12.

[10] Donald R. Williams, "Youth Self-Employment: Its Nature and Consequences," *Small Business Economics*, vol. 23, no. 4, 2004, pp. 323–36.

[11] All estimates are calculated with annual sample weights provided by the NLSY. "Nonemplyment" denotes those not in the labor force.

[12] See, for example, Evans and Jovanovic, "Estimated Model of Entrepreneurial Choice"; David Evans and Linda Leighton, "Some Empirical Aspects of Entrepreneurship," *American Economic Review*, vol. 79, no. 3, 1989, pp. 519–35; Douglas Holtz-Eakin, David Joulfaian, and Harvey Rosen, "Entrepreneurial Decisions and Liquidity Constraints," *Rand Journal of Economics*, vol. 23, no. 2,1994 pp. 334-47; Thomas A. Dunn and Douglas J. Holtz-Eakin, "Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links," *Journal of Labor Economics*, vol. 18, no. 2, 2000, pp. 82–305; Robert W. Fairlie,"The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment," *Journal of Labor Economics*, vol. 17, no. 1, 1999, pp. 80-108; and Erik Hurst and Annamaria Lusardi, "Liquidity Constraints, Household Wealth, and Entrepreneurship," *Journal of Political Economy*, vol. 112, no. 2, 2004, pp. 319–47.

[13] Fairlie, "Drug Dealing."

[14] The variable having to do with assets is not available in the public-use data, but can be obtained from Jay L. Zagorsky at the Center for Human Resource Research. See Jay L. Zagorsky, "Young Baby Boomers' Wealth," working paper (Columbus, OH, Center for Human Resource Research, 1998), for more details on the construction of this variable.

[15] Hiromi Taniguchi, "Determinants of Women's Entry into Self-Employment, "*Social Science Quarterly*, vol. 83, no. 3, 2002, pp. 875–93.

[16] Fairlie, "Does Business Ownership Provide a Source of Upward Mobility for Blacks and Hispanics?"

[17] Telephone conversation, August 1999.

[18] Especially problematic is the fact that 36 individuals have top-coded wage and salary income of more than $4 million each in 1996.

[19] Fairlie, "Earnings Growth."

[20] Robert W. Fairlie, "Entrepreneurship and Earnings among Young Adults from Disadvantaged Families," *Small Business Economics*, forthcoming.

[21] Justin Van der Sluis, Mirjam van Praag, and Arjen van Witteloostuijn, "Comparing the Returns to Education for Entrepreneurs and Employees," working paper (Amsterdam, University of Amsterdam, 2004).

[22] Daiji Kawaguchi, "Positive, Non-Earnings Aspects of Self-Employment: Evidence from Job Satisfaction Scores," working paper (Tsukuba City, University of Tsukuba, Institute of Policy and Planning Sciences, 2004).

[23] Fairlie, "Does Business Ownership Provide a Source of Upward Mobility for Blacks and Hispanics?"

[24] Fairlie, "Earnings Growth."

[25] Williams, "Youth Self-Employment."

[26] Donald R. Williams, "Consequences of Self-Employment for Women and Men in the United States," *Labour Economics*, vol. 7, no. 5, 2000, pp. 665–87.

[27] Kawaguchi, "Aspects of Self-Employment."