THE FEASIBILITY AND IMPORTANCE OF ADDING MEASURES OF ACTUAL EXPERIENCE TO CROSS-SECTIONAL DATA COLLECTION*

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I. Introduction

Beginning with the work of Becker (1962) and Mincer (1962), economists have recognized the importance of work experience in analyzing the returns to post-school investments in human capital. Early research on human capital emphasized that on-the-job training can be as important a source of labor market skills as formal schooling. These skills can be learned through formal company-sponsored training programs or informally as workers learn by doing. Thus, any event that interrupts one's career, such as childrearing, prolonged unemployment or labor force withdrawal due to discouragement, illness or injury, reduces one's potential to acquire on-the-job skills.

The issue of workforce disruptions is likely to be particularly important for women because, under a traditional division of labor in the family, they are more likely to have taken time out of the labor force to bear and raise children. These choices can lead to gender differences in the extent of on-the-job training and thus contribute to the gender pay gap (Mincer and Polachek 1974). Moreover, perhaps anticipating intermittent labor market attachment, women may choose careers with fewer opportunities for on-the-job training and investment (Polachek 1981). Alternatively, or in addition, firms may anticipate such decisions by women and place them in jobs offering less training. And, through feedback effects, gender differences in treatment by firms (i.e., discrimination) can help to cause the traditional gender division of labor itself as well as to influence gender differences in the extent of on-the-job training and career choice (Weiss and Gronau 1981). In addition, since there is considerable variation in women's work histories, in addition to contributing to the gender pay gap, work force disruptions are likely to be important in analyzing female wage determination, particularly as female immigrants, who have lower labor force participation than native-born women (Blau, Kahn and Papps 2008), comprise a rising share of the female population. While workforce disruptions are likely to be a particular issue in analyzing women's labor market outcomes, some subgroups of men, for example blacks and the less educated, may experience disruptions to a greater extent

than others. Declining relative labor force participation and employment rates for these groups relative to whites and the more educated suggests that variance in the work histories of men may be increasing.

In addition to the importance of on-the-job experience for understanding gender differences in labor market outcomes, and wage determination for women and a number of other groups, it also plays a role in the study of wage inequality generally. Specifically, economists studying increasing wage dispersion in the United States and many other countries have focused on rising prices of human capital, including formal schooling as well as skills acquired on the job, as important causes of rising wage inequality Katz and Murphy 1992; Juhn, Murphy and Pierce 1993). However, to correctly estimate the return to labor market experience requires accurate measures of labor market experience itself.[1] And, moreover, differences across individuals in the extent of labor market experience are an example of the kind of population heterogeneity than can also affect observed wage inequality (Katz and Murphy 1992; Juhn, Murphy and Pierce 1993).

To analyze these issues, one needs data on individuals' work histories. Yet the most representative and largest national data bases in the United States—the Census and the Current Population Survey (CPS) do not collect information on actual work experience. This omission does not present a serious problem in measuring work experience for those who are continuously employed full time throughout their adult lives, as is the case for many groups of men. However for those with interruptions of full-time work experience, these data sources will lead to potentially serious measurement errors and thus biased estimates of the returns to experience as well as the quantity of post-school human capital investment. In addition, the lack of information on actual experience in these data bases also has serious consequences for analyzing

[1] For example, when labor market experience is measured by an experience proxy, like potential experience (i.e., an estimate of the time elapsed since the individual left school), increasing actual experience for a given amount of potential experience for a group, say due to rising labor force attachment, can manifest as an increasing "return" to potential experience. O'Neill and Polachek (1993) describe such findings for women in the 1980s using the Current Population Survey.

differences in pay across groups, most notably, perhaps, the gender pay gap. For example, to the extent that women have substantial interruptions of their careers, using proxies for experience such as the estimated time since one left school (potential experience) will understate gender differences in labor market qualifications. Insights into inter-group differences in occupational choice and educational attainment will also be less complete than otherwise. Moreover, virtually all of the literature on wage inequality has used data such as the CPS and thus does not control for actual work experience. This may lead to biased estimates of the return to experience for some groups, and changes in the dispersion of work experience will be treated as a source of changing "residual" wage inequality—i.e., wage inequality that cannot be explained by observed skills or by the prices of observed skills. Therefore, in addition to helping us understand group differences in wages, data on actual work histories can lead to a more accurate accounting of the reasons for changes or differences in wage inequality.[2]

There are two national sources of data in which work history information is collected: the National Longitudinal Surveys (NLS) and the Michigan Panel Study of Income Dynamics (PSID). The NLS is focused on specific age cohorts and was never intended to be representative of the full US population.[3] In contrast, the PSID was intended to be a representative sample of the US population in 1968, with a sample of 5000 families. However, work history data have been collected in the PSID only among heads of households and wives, and the sample changes over time due to attrition and the addition of new members of the original households or their descendants. Thus, while the PSID does cover the entire working age range, its representativeness of the US population at any point in time depends on the characteristics of the attriters and the new members of the panel, as well as on whether heads and wives are representative of the total adult population. For example, the PSID does not collect detailed

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[2] As pointed out by Lemieux (2006), residual inequality itself can be affected by the distribution of observed worker attributes. Having data on actual work experience can inform analyses of the impact of observed skills on residual inequality as well as overall wage inequality.

[3] For example, the original cohorts included men age 45-59 or 14-24 in 1966, and women age 14-24 or 30-44 in 1968.

work history for adult children living with their parents, if the parents are at the head of the PSID-defined family unit. In addition, the PSID allows for sample sizes of roughly 4,000-6,000 employed workers with wage observations in any given year. In contrast, the CPS is a random cross section each year, assuring representativeness, and is much larger than the PSID, admitting wage analysis samples of at least 30,000 in recent years.[4]

In this paper, we use data from the PSID and from the Princeton Data Improvement Initiative (PDII) survey conducted by Westat and described at : http://irs.princeton.edu/PDIIMAIN.htm to investigate the importance of measuring actual labor market experience and the feasibility of including a measure of actual experience in cross-sectional data sets such as the CPS. We first use the PSID to analyze earnings for various groups, focusing on the impact of actual (compared to potential experience). The work history variables in the PSID are found to be important in explaining both the gender pay gap as well as the wage determination process for women. In addition, we find that some of what appear to be changes in women's residual wage inequality are in fact explained by actual work experience. We also use the PSID to compare results using experience measures based on respondents' memories of their work histories (i.e., retroactive experience measures) with measures based on regular, annual interviews in which the past year's activities are catalogued. Since only the former can be used to collect experience data in a cross-sectional survey, it is important to determine whether retrospective experience measures yield significant valid information. And we indeed find that the retrospective experience data in the PSID match up well with the data based on annual surveys within the PSID panel, suggesting that much can be learned from retrospective work history survey data.

We next analyze data from the PDII survey, which was designed to mimic the CPS in its survey methodology. The survey includes two questions on retrospective work experience, similar to those in the PSID. (See the Appendix for the text of the questions used in each

[4] In previous work on gender (Blau and Kahn 1997 and 2006), we confirmed that the PSID and CPS yielded roughly similar conclusions about gender wage differentials and wage inequality over the 1979-1998 period.

survey). We find that tabulations and analyses using the PDII data are quite similar to those employing the PSID. The PDII data on actual work histories add considerable explanatory power to wage regressions for women, even if they control for potential experience (defined as age minus years of schooling minus 6, or roughly the number of years that have elapsed since leaving school) and current job tenure. (The former variable may be calculated in virtually all CPS data sets and the latter variable is additionally available in the CPS Tenure Supplement surveys, which are conducted every two years; see, http://www.bls.gov/news.release/pdf/tenure.pdf). Therefore having data on actual work histories would represent a noticeable improvement over the CPS even when it conducts its Tenure Supplement survey.

In addition, for a small subset of respondents, Westat asked adults to provide information on a randomly-selected other adult in the household, much as the CPS asks for proxy responses from the person contacted by the Census during its data collection. We find that the work history information given for proxy adults is similar to that given by respondents of the same gender and marital status about their own work histories. These findings from the PDII survey suggest that it would indeed be feasible to add two retrospective work experience questions to the CPS annual March supplement and that this addition would yield valuable information for those analyzing labor market outcomes. The inclusion of these retrospective experience questions in the CPS would ensure that we have a representative sample of the adult population with data on actual experience. In addition, since the March CPS has much larger sample sizes than the PSID, it would allow for much more detailed analyses of experience and labor market outcomes than does the PSID.

II. The PSID Data

To illustrate the value of measuring actual work experience, we focus on women and the gender wage gap, analyzing extracts from the PSID referring to the 1980, 1990 and 1999 survey

years. We thus not only study the role of experience at a point in time, but we also provide analyses of changing levels of experience, which were indeed dramatic for women, especially in the 1980s (O'Neill and Polachek 1993; Blau and Kahn 1997 and 2006). Whenever people join the PSID panel for the first time as a head or wife, they are asked how many years they worked since they were 18 years old, and, of these years, how many involved full-time work. In addition, in 1976 and 1985, the PSID asked all heads and wives these two questions, regardless of when they joined the panel. The answers to these questions form the base we use to calculate actual total experience, full-time experience, and part-time experience (defined as total experience minus full-time experience). Once we have these initial values for the experience variables, we fill in the period between the date these questions were asked and the focal survey year (e.g., 1980, 1990 or 1999) by using the longitudinal work history data collected for all heads and wives in the years after they join the panel or in the years after 1976 or 1985, whichever came last.

For example, suppose one joined the panel in 1987 and we want to compute total, full-time and part-time experience as of the 1990 survey. This information was collected as of 1987. We then add 1 to total labor market experience for each year between 1987 and 1990 in which the person worked positive hours and 1 for full-time experience for each year the person worked at least 1500 hours. Part-time experience is increased by 1 for each year in which annual hours are positive but less than 1500. The collection of retrospective experience data in 1976 and 1985, in conjunction with the annual questions about the previous year's activity, will allow us to compare (i) the retrospective 1985 value of experience with (ii) one constructed over the 1976-1985 period based on the 1976 value of experience and the annual increments the respondent reports during the interim.

These procedures allow us to fill in the experience history of all respondents for all years of the survey with one exception: the PSID began skipping alternate years with the 1999 survey, meaning that there was no 1998 survey. We therefore have no information on annual work hours between 1997 and 1998. To fill in this missing year of experience, we use the 1999 male and

female samples and estimate, separately by gender, logit models for having positive work hours and for working at least 1500 hours in the previous year and in the year preceding the 1997 survey [5] The explanatory variables include race, a set of schooling variables including years of schooling and dummies for college degree (no advanced degree) and advanced degree, full-time and part-time experience as of 1997 and their squares, a marital status indicator and the number of children living with the respondent. To estimate total, part-time and full-time experience for the missing year (i.e., the year between 1997 and 1999), we average the two predicted values for these variables from the 1999 and the 1997 logits.

III. Using the PSID to Study the Importance of Actual Experience in Understanding Earnings

We use the 1980, 1990 and 1999 waves of the PSID to compute average hourly earnings for 1979, 1989 and 1998. We restrict our analysis of wages to respondents who were, as of the survey date, employed wage and salary workers age 18-65. To maximize sample size, we use both the PSID's random sample and its poverty oversample populations and, in all analyses, employ the sampling weights supplied in the PSID files. The wage measure is average real hourly earnings during the previous calendar year expressed in 1983 dollars using the Personal Consumption Expenditures deflator from the National Product Accounts. We exclude individuals earning less than $1 or more than $250 per hour in 1983 dollars.

Table 1 shows mean values for the key variables in our analysis separately by gender for 1980, 1990 and 1999. For men, potential experience, actual experience, and full-time experience are all very similar, suggesting that using potential experience in wage analyses for men is likely

[5] Those who joined the panel in 1999 are excluded from this analysis since we do not observe them in the 1997 survey. Note that we already have complete work experience data for them since they were asked the retrospective experience questions when they joined the panel.

to yield fairly good estimates of the return to actual work experience.[6] This does not, however, rule out the possibility that an actual experience measure could be more important for some subgroups of men. Women have considerably lower levels of actual and full-time experience and slightly more part-time experience than men. The gender gap in experience closes in both decades, with a larger fall in the 1980s: the gender gap in total experience was 5.6 years in 1980, 3.5, years in 1990, and 2.3 years in 1999. For women, potential experience overstates actual experience by fully 5.5 years in 1980, although with women's increasing commitment to the labor market, the overstatement falls to 2.5 years by 1999. Of course, potential experience does an even worse job of proxying for women's full-time experience, overstating it by 8.7 years in 1980, 7.1 years in 1990 and. 6.4 years in 1999.

Tables 2 and 3 show alternative specifications of the experience variable in human capital wage regressions. In each case for women, the returns to actual or full-time experience are considerably larger than the returns to potential experience, likely reflecting the impact of labor force interruptions. The 1999 function using potential experience comes closer to the specifications using actual or full-time experience than do the 1980 or 1990 functions, reflecting women's increasing labor force commitment over the period. Figures 1-3 show the implications of these wage functions for women's experience-earnings profiles. In each case, using actual or full-time experience yields a considerably steeper profile than using potential experience. For example, in 1999, female wages are predicted to rise by 0.14-0.15 log points more after 20 years of actual or full-time experience than after 20 years of potential experience. Given that the raw gender pay gap was 0.275 log points in 1999 (Table 1), this is a substantial difference. In contrast, not surprisingly, men receive a similar return to 20 years of potential, actual or full-time experience. An additional finding worth noting is that the gender gap in the return to actual or full-time experience was lower in 1999 than in 1980. This change likely reflects an increase in

[6] Note that for men, actual experience is slightly higher in 1990 and 1999 than potential experience. This is the case because potential experience is defined as (age-years of schooling-6), while actual experience starts at age 18. As expected, however, (age minus 18) always has a higher mean than actual experience.

the relative quality of women's work experience, as women were investing in careers to an increasing extent (see also O'Neill and Polachek 1993).

Table 4 shows the consequences of using the various measures of experience for the unexplained gender pay gap. It shows the average female residual from the male wage regression for each year and specification. In each case, the unexplained gender pay gap is smaller using actual than potential experience and smaller still using the disaggregated part-time and full-time experience variables. For example, in 1980, replacing potential with actual experience lowers the unexplained pay gap from .466 to .389, for a reduction of .077 log points. Replacing actual experience with the full-time and part-time experience variables results in an additional reduction to .341, or a fall of .048 log points. By 1999, the effects in each case were smaller, but, interestingly, we add as much information by disaggregating actual experience into its full- and part-time components as we do by replacing potential with actual experience. In each case the unexplained gap falls by .028 log points. Thus, for estimating *ceteris paribus* gender pay gaps, it is clearly better to use actual rather than potential experience, but it is also advantageous to be able to decompose work histories into part-time or full-time experience.

Finally, Table 5 compares the overall performance of regressions of women's wages on potential experience, aggregated total experience, or disaggregated full-time and part-time work experience. In addition, the Table shows results for residual wage inequality for each specification. Table 5 shows that R^2 rises noticeably in each year when we replace potential experience with aggregated total work experience. For example, in 1999, the R^2 adjusted for degrees of freedom rises from 0.213 to 0.249, and then again to 0.270 as we move from the potential experience specification to the full-time and part-time work experience specification. The rising uncorrected R^2 of course implies falling residual inequality as we replace potential experience with actual work history data. Moreover, the last column shows the changes in R^2 and residual variance over the 1980-1999 period. In the potential experience specification, which would be the only one available in the March CPS, residual inequality rises by 0.068 log points between 1980 and 1999; however, in the full-time and part-time work experience

specification, it rises by 0.056 log points, or about 18% less. While this is not a dramatic difference, it does suggest that the previous literature may have overestimated the level and increase in women's residual inequality and therefore the extent to which rising prices of unmeasured skills have contributed to rising wage inequality among women, on the assumption that changes in residual inequality reflect changing prices of unmeasured skills (Juhn, Murphy and Pierce 1993).[7] Finally, the last specification in Table 5 shows a model with both potential experience and disaggregated full-time and part-time experience included. Its R^2 and residual inequality are very similar to the model just using the disaggregated full-time and part-time experience measures.[8]

IV. Long vs. Short Recall in the PSID's Retrospective Measures of Work Experience

As mentioned earlier, the PSID collected retrospective experience information for all heads and wives as of 1976 and 1985. For those who were in the panel continuously between these years, it is possible to compute 1985 experience in two ways: (i) using the 1985 survey response to the experience questions; and (ii) using the 1976 survey response augmented by the annual responses to the work activity questions between 1976 and 1985. Method (ii) should in principle yield the more accurate experience measure, since it is based in part on annual reports requiring only one year's recall. These annual reports are used to compute the increments to the

[7] Of course, rising returns to experience could have contributed to women's rising experience levels. Nonetheless, it is still of interest to ask what happened to wage inequality among women who have the same human capital levels (including schooling and actual experience), a question that can only be answered with work history data.

[8] Including potential experience (in addition to actual experience) in effect tests the impact of both aging and time out of work (the latter perhaps leading to a deterioration of skills as discussed in Mincer and Polachek 1974). The two effects will go in opposite directions if aging contributes positively to earnings through greater general knowledge. The results for the potential experience variables in these specifications were somewhat ambiguous. In 1980, the coefficient on the linear term is positive and on the squared term is negative; however, for both 1990 and 1999, the linear term has a negative coefficient, while the squared term is positive in 1990 and negative in 1999. At the mean potential experience level, the derivative of wages with respect to potential experience was negative in all three years (as expected under the time out hypothesis), and only for 1980 was the level of the potential experience profile still positive at the mean potential experience level.

1976 experience measure (which of course must be based on one's memory as of 1976 of each year since age 18). In contrast, method (i) merely uses answers to the 1985 survey, which requires that one remember each year since age 18, as of 1985. One might speculate that the 1976 report is more accurate than the 1985 report because a shorter time had elapsed since age 18 in 1976 and one's memory may deteriorate with age and/or the pattern that one is trying to recall becomes longer and more complex with age.

Table 6 shows mean values for these alternative measures of labor market experience among women who were employed wage and salary workers in 1985 and who were in the panel continuously from 1976 to 1985. The mean constructed 1985 experience level (17.97 years) is only slightly different from the mean 1985 experience tabulated from the 1985 survey question (18.41). There is a slightly larger gap for 1985 full-time experience (12.95 years constructed vs. 14.78 years from the survey question), which may be due to differences between our interpretation and the way in which survey respondents have interpreted the notion of full-time experience.[9] There is, moreover, an average absolute difference between survey and constructed 1985 experience of 2.81 years in absolute value, which is slightly larger (3.63) for full-time experience.

Table 7 explores the determinants of the absolute value of the difference between the constructed and survey values for 1985 work experience. It shows that, generally, white, younger and more educated[10] respondents have smaller differences between the two measures. If younger individuals have better memories (and/or a shorter, less complex time period to recall) and whites have higher quality schooling than nonwhites, then the regression results in Table 7 support the idea that the difference between the two experience measures represents greater recall errors in the 1985 survey compared to the annual reports of work activity between 1976

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[9] Recall that in the survey, respondents are asked only whether they worked full time (for most or all of the year), whereas we have used a 1500 annual work hour cutoff.

[10] In the first and third specifications (omitting controls for college and advanced degree), the coefficient on years of schooling is negative and significant. The addition of controls for college and advanced degree in the second and fourth specifications does not appear to provide any additional information.

and 1985. The Table suggests that we do gain something by using annual reports of experience during the previous year compared to one-time retrospective questions.

Tables 8 and 9 provide some indirect evidence on the size of the gain in information from utilizing the annual reports of work activity between 1976 and 1985 relative to the retrospective 1985 report of experience. If the constructed experience variable is indeed more accurate than the survey variable, then we should expect to see a larger effect of the former on wages. Table 8 indeed shows a slightly higher main effect of constructed (0.049) vs. survey (0.044) experience, with identical quadratic terms (-0.0008). And using the constructed measures as instruments for the survey measures boosts the main effect to 0.054 with a slight rise in absolute value for the quadratic term, reflecting the common signal in the two measures of experience. But overall, Table 8 shows that we do not gain very much by using the annual reports between 1976 and 1985 versus the 1985 retrospective data. In either case, the main effect of estimated actual experience is well above the main effect of potential experience, which is only 0.002 and is not even statistically significant (the quadratic term for potential experience is very small and also insignificant)[11]. Finally, Table 9 shows similar results for full-time experience. We obtain a small increase in its coefficient when we use the constructed, as opposed to the survey, values and a further slight increase when we use instrumental variables.[12]

The overall message from the analyses in Tables 8 and 9 is that collecting retrospective experience data is likely to be adequate for many purposes, although the PSID does demonstrate that disaggregating this into full-time and part-time components would be useful. This conclusion is based of course on the nine year period 1976-85. It is possible that larger differences in results between models based on retrospective versus concurrent measures of experience would have emerged if annual interviews had begun when each respondent was 18 years old.

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[11] Recall that the results in Tables 8 and 9 are based on a subsample of respondents who were in the panel continuously between 1976 and 1985.

[12] The effect of part-time experience does increase markedly using the instrumental variables estimation, however.

V. Analyzing Experience Data in a Telephone Survey: Results from the PDII Survey

As part of the Princeton Data Improvement Initiative, in 2008, Westat surveyed 2513 adults by telephone and collected a variety of labor market and demographic information from the respondents. We used these data to study the feasibility of adding two retrospective experience questions to a cross-sectional survey like the March CPS. Part B of the Appendix shows the experience questions asked in the survey; they are quite similar to the retrospective experience questions in the PSID (shown in Part A of the Appendix).[13] Specifically, respondents were asked the number of years since age 18 in which they did any work for pay (counting all years in which they worked either all or part of the year) and, of those years, how many involved full-time work for at least half of the year.

We first consider the results of a consistency check of these questions. If one answered the experience questions correctly, actual work experience or full-time work experience can be no greater than age-16 (age minus 16) years.[14] For 124 respondents (about 5% of the sample), measured experience was greater than (age-16), although in 79 cases (64% of the 124), the excess was three years or less. Westat resurveyed 38 of these individuals, with the heaviest coverage for those with an excess of reported experience over (age-16) of at least four years, and obtained corrected answers to the experience question. In most cases, the respondent forgot that only years since age 18 should be counted. After the resurvey, in 91 cases of 2513 (3.6% of the sample), the experience data were inconsistent with the age 18 directive (principally individuals who were not resurveyed), and about 2/3 of those had excess reported experience of one or two years. As shown below, the manner in which one treats these inconsistencies has virtually no

[13] We made some small changes in the PSID wording of these questions either for consistency with other CPS questions or in the interest of clarity based on the results of pre-tests of the questions by Westat.

[14] For example, suppose one was born in November 1980, and had worked continuously since turning 18 in November 1998. Since the survey took place before November 2008, this respondent would be 27 years old as of the survey date and would have worked in a total of 11 years.

effect on one's conclusions from analyzing the data. This suggests that asking respondents to compute their experience levels in a phone survey is indeed useful and does not yield serious enough errors in consistency to bias the results.

Tables 10-13 provide some descriptive statistics for the PDII sample.[15] We have restricted the age range to 18-65 in all cases. Tables 10 and 11 show data from the full set of adults (Table 10) and married adults (Table 11), while Tables 12 and 13 show the corresponding data for wage earners. First, note that we have provided three definitions of total experience, full-time experience, and part-time experience: (i) the unedited survey responses; (ii) the survey responses after Westat re-surveyed 38 of the respondents with inconsistent data; (iii) the post-re-survey responses edited so that experience is truncated so as never to be greater than age-18 (the Michigan Survey Research Center performs a similar edit of reported experience greater than age-18 in the PSID). In each case, the mean and standard deviation of the experience variables are hardly affected by the different definitions. For example, among women in the full sample (Table 10, Panel B), total experience under these definitions averages between 20.5 and 20.9 years, a very tight range. While this agreement across these different measures does not eliminate the possibility of recall errors, it is reassuring.

If the PDII data are indeed representative of the US population, then the experience gap between men and women has fallen slightly between the PSID's 1999 data (Table 1) and 2008, when Westat conducted its survey. For example, under each of the three experience measures, among the full adult population, men have 2.9 years more full-time experience and 1.5 years less part-time experience than women, for a total experience gap of 1.4 years favoring men. Among wage earners (Table 12), the gaps are 2.8-2.9 years more full-time and 1.4 years less part-time experience for men than women. These are somewhat smaller in magnitude than the gaps shown for wage earners in the PSID as of 1999: 4.6 years more full-time and 2.3 years less part-time experience for men, adding up to a 2.3 year male advantage in total experience. For men, the

[15] Westat supplied a set of sampling weights which we used in all analyses.

average level of total experience (21.2 years) in the 1999 PSID is very similar to the level for wage earners in the PDII data as shown in Table 12 (21.7-22.0 years); women's experience appears to be slightly higher in the PDII data (20.3-20.6 years as shown in Table 12 vs. 18.9 years in the PSID data as shown in Table 1). Table 12 shows that female wage earners had higher schooling levels than males by about .30 years, a slight widening from 1999's female advantage of .16 years. Thus, the PDII data appear to show that women continued to improve their human capital relative to men between 1999 and 2008, a trend that began in the 1980s.

Tables 11 and 13 show means for married adults (Table 11) and married adult wage earners (Table 13). In both cases, the gender gap in experience is larger than for the adult population as a whole or adult wage earners, as would be expected under a traditional division of labor in the family. For example, among married wage earners, men have 4.8 years more full-time and 1.9-2.0 years less part-time experience than women (compared to a full-time gap of 2.9 years favoring men and a part-time gap of 1.4 years favoring women among adult wage earners). The larger gender experience gaps (and, as shown below, gender wage gaps) for married people vs. all adults provide further evidence for the credibility of the PDII survey, and by implication, a similarly designed experience module in the CPS.

Table 14 shows the results of computing the unexplained gender pay gap under various specifications of the (male) wage equation (regression results are shown in Appendix Table A1). The dependent variable is the log of average hourly earnings, and its computation takes into account the time period for which one is paid (i.e., hourly, weekly, etc.).[16] . The raw pay gap for all women is .29 log points on average, similar to its level in the 1999 PSID (.28). Using a wage equation with controls for education, potential experience (and its square) and race, the unexplained gender pay gap rises to .32 log points.[17] This increase occurs because women have

[16] We are indebted to Alan Krueger for his careful construction of the hourly earnings variable from the raw earnings, pay period and work hours responses in the PDII survey.

[17] As may be seen in Table A1, in terms of the education variable, the wage equations control only for years of schooling, while our analyses using the PSID added dummies for college degree and advanced degree to the specification. When we included these additional variables in analyzing the PDII data, the results for the gender pay gap and the impact of various experience measures on wages were very similar.

roughly the same number of years of potential experience as men do but, as noted, about 0.3 years more schooling. Replacing potential experience with total actual experience lowers the unexplained gender pay gap to .303-.304 log points, or a .015-.016 log point reduction. Further disaggregating the experience variable into full-time and part-time components lowers the unexplained gap by another .014-.017 log points. These changes in the unexplained gap are qualitatively similar, although smaller in magnitude, to those from the 1999 PSID; this decrease in magnitude is likely due to the fall in the gender gap in experience between the 1999 PSID and the 2008 PDII survey. The PDII experience data thus are able to explain about 3 percentage points of the unexplained pay gap, or about 10% of it. The results for married workers (the second column of Table 14) are similar, although the raw gap and the unexplained gaps are 8-10 percentage points higher than for all women, as one might expect.

The wage regressions themselves are shown in Appendix Table A1 (further results are shown in Table A2, and these are discussed below). The returns to education are about 8-10%, a range that is consistent with earlier research on the returns to schooling in the United States (see, for example, Card 1999). For men, the returns to actual experience are slightly higher than the returns to potential experience, as one might expect. However, among women, the returns appear to be about the same. For example, after 20 years, the potential experience equation yields a wage increase of 0.56 log points (relative to new workers), while the aggregated actual experience equations yield an increase of 0.50 log points. The effect of 20 years of full-time experience is slightly smaller, at 0.44 log points.

One might have expected a slightly higher return to actual than to potential experience for women, and the fact that we do not observe this may indicate the presence of measurement errors in the PDII experience data. We studied the issue of measurement error in the experience variable by instrumenting for actual experience and its square by potential experience and its square.[18] Because there are only two instruments, we were not able to disaggregate the actual

[18] Of course, there may be other reasons to instrument experience, since it is likely to be affected by labor market outcomes.

experience variable into its full- and part-time components. We indeed found a steeper profile using instrumental variables (IV) than ordinary least squares (OLS): the IV results imply that after 20 years of actual experience, women's wages rise 0.79 log points relative to new workers, in contrast to the 0.49 level for the OLS estimates. For men, the differences between the profiles using OLS and IV are much smaller. In particular, after 20 years of actual experience, men's wages rise by 0.57 in the OLS model using actual experience, and by 0.60 in the IV actual experience model. These IV analyses are consistent with the idea that measurement errors may be more severe for women than men and that, once corrected, women actually now have steeper experience-wage profiles than men.[19]

These IV models are only suggestive, however, since as discussed earlier, it is possible that both potential and actual experience belong in wage equations, and we now explore the issue of whether the PDII actual experience measures add value relative to the potential experience variables. Tables 15 and 16 show goodness of fit and residual inequality results for alternative specifications of the female wage equation in the PDII data. Appendix Table A2 shows additional regressions upon which some of these findings are based. The experience measures in Table A2 are based on post-resurvey data in which experience is constrained to start at age 18. The first three specifications in Table 15 show very similar R^2 and residual inequality for the potential experience, aggregated total actual experience, and disaggregated full-time and part-time experience specifications. However, when we include both the potential experience and disaggregated actual experience variables, we obtain a somewhat higher R^2 and lower residual inequality. Moreover, Table A2 shows that the actual experience variables are highly significant

[19] The endogeneity of experience could also help explain why the IV estimates are different from the OLS estimates. However we would expect the endogeneity bias to be positive—the unmeasured factors that lead to higher wage offers are likely to be positively correlated with commitment to the labor market and thus accumulated work experience. In contrast, measurement error produces a downward bias in the OLS estimates. The fact that we observe larger IV than OLS effects of experience suggests the measurement error interpretation. In the PSID data, instrumented experience models produce a slightly less steep profile than OLS experience models, suggesting that in 1999, the endogeneity biases dominated any measurement error biases. Perhaps the endogeneity biases are less severe today, to the extent that women's labor supply is less sensitive to earnings opportunities than it used to be (Blau and Kahn 2007).

as a group in this specification. In particular, even controlling for potential experience, a woman with 20 years of full-time experience outearns one with no full-time experience by 0.32 log points, all else equal. In other words, the actual experience variable coefficients imply considerable variability in wages among women with the same potential experience.[20]

The PDII survey also asked workers how long they had been with their employer, a question that the CPS asks every two years in its Tenure Supplement (see above). The PDII data thus allow us to determine whether the CPS tenure data, in conjunction with potential experience, are sufficient to summarize women's work histories. If so, then the Tenure Supplement would be sufficient for analyzing the gender pay gap and women's wage determination in general. Table 16 shows that adding the disaggregated actual experience variables to a model that already includes tenure and potential experience leads to a higher R^2 (raising it from 0.323 to 0.351) and a slightly lower residual variance. More importantly, Table A2 shows that we reject the hypothesis at the 0.0000 to 0.0002 significance level that the actual experience variables add no explanatory power. And, controlling for tenure and potential experience, a woman with 20 years of full-time experience outearns one with zero years of full-time experience by 0.33 log points. Therefore adding work history variables even to the CPS Tenure Supplements would noticeably improve our understanding of women's wage determination.

Finally, as mentioned, the CPS conducts a telephone survey, with the responding adult providing data for the related adults in the household. To test the feasibility of such proxy reporting for the experience questions, we asked a random subset of the respondents in the Westat survey to provide data on a randomly chosen other adult in their household. This allows us to study the effects of proxy reporting on the quality of the experience data collected. Specifically, to gauge the quality of these data, we compared the proxy responses for spouses

[20] As was the case with the PSID, the results for potential experience in this specification are somewhat mixed. On the one hand, women with the average potential experience earn more than women with zero potential experience; on the other hand, at the average level of potential experience, the derivative of wages with respect to potential experience is negative.

with the sample averages of self-reports for married respondents. Table 17 shows the results of these comparisons. Although the number of spouses for whom proxy responses were obtained is relatively small (48 husbands and 51 wives), the data match up well with that of married respondents. The education and experience data for proxy husbands are similar to those of married men in the survey, and so are the data for proxy wives and married women. This correspondence gives us some confidence that the CPS could profitably collect proxy data on work experience from its March Supplement respondents.

VI. Conclusions

In this paper, we have used PSID data and data from a 2008 telephone survey of adults conducted by Westat for the PDII to explore the importance and feasibility of adding retrospective questions about actual work experience to a cross-sectional data set like the March CPS annual supplement. We demonstrated that having such actual experience data is important for analyzing the gender pay gap, since women continue to have less labor market experience than men, and on-the-job training and learning have been shown to be important components of post-school human capital accumulation. Moreover, inclusion of information on actual experience is helpful in understanding wage determination of women as well as analyzing female wage inequality. In terms of the retrospective experience data itself, we show that while annual recall appears to be slightly more accurate than long recall, the difference in the quality of experience measures based on each is small. This result has important implications for annual independent cross-section data such as the CPS, since the experience questions could be asked only at most twice of each respondent (once in their first four months in the CPS and once in the second fourth month period).[21] Finally, we showed that a telephone survey of respondents produces credible data on work experience, both for actual respondents and for proxy

[21] The short panel of the CPS could in fact be used to address possible measurement errors in recall by using, say, the first estimate of experience as an instrument for the second.

respondents in the household. Again, the CPS operates in a similar way, suggesting that the CPS could also collect proxy experience data that would be useful. We thus conclude that adding retrospective experience questions to the March CPS would help us understand not only the gender pay gap and female wage determination but likely also gaps along other dimensions such as race, education, or nativity status. In addition, with more accurate data on actual work experience, we can better understand the wage determination process through wage regressions that correspond to original notions of human capital.

Appendix

A. Experience Questions from the Panel Study of Income Dynamics[22]

I. Retropective Experience Questions

The following questions were asked of heads (as illustrated below), both those who were currently employed and those who were not currently employed; they were also asked of wives, both currently employed and currently not employed.

1. How many years altogether have you (HEAD) worked for money since you were 18?

The values for this variable represent in whole years the actual amount of time the Head had worked since the age of 18 until the time of the interview.

2. How many of these years did you work full-time for most or all of the year?

The values for this variable represent in whole years the actual amount of time the Head had worked full time since the age of 18 until the time of the interview.

3. During the years that you were not working full-time, how much of the time did you work?-PERCENT

II. Annual Experience Questions

The following questions refer to work during the past year. They refer to heads of families below, but they were also asked for wives**.** These questions are asked of both the currently employed and those not currently employed.

4. Then, how many weeks did you actually work on your main job in 1984?

The values for this variable represent the actual number of weeks (01-52) Head worked on his/her main job.

5. And, on the average, how many hours a week did you work on your main job in 1984?

Similar questions are asked about multiple jobs:

6. And, how many weeks did you work on this job in 1984?-ALL EXTRA JOBS EXCEPT FIRST

[22] The text of these questions is drawn from the 1985 questionnaire.

The values for this variable represent the actual number of weeks (01-52) Head worked on all of his/her extra jobs except the first one.

7. On the average, how many hours a week did you work on this job?-ALL EXTRA JOBS EXCEPT FIRST

The PSID staff combines these weeks and hours answers and computes an annual work hours variable. This is what we use to compute actual (>0 hours) and fulltime (>=1500 hours) experience for each year.

B. Experience Questions from the Westat Survey

Q36a. Since age 18, in how many years altogether have you worked for pay or profit? Please count all years in which you worked either all or part of the year.

(IF NECESSARY: Your best estimate is fine)

_____ YEARS

ZERO YEARS / NEVER WORKED.....0 (Q37)
REF 97 (Q37)
DK.....98 (Q37)

Q36b. You told me that you have worked in a total of [fill] years since age 18. In how many of these years did you work full-time for more than half the year?

(IF NECESSARY: Your best estimate is fine)

_____ YEARS

REF 97
DK.....98

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Figure 1: Predicted Log Wages, Women, Relative to New Entrants, 1980 (PSID)

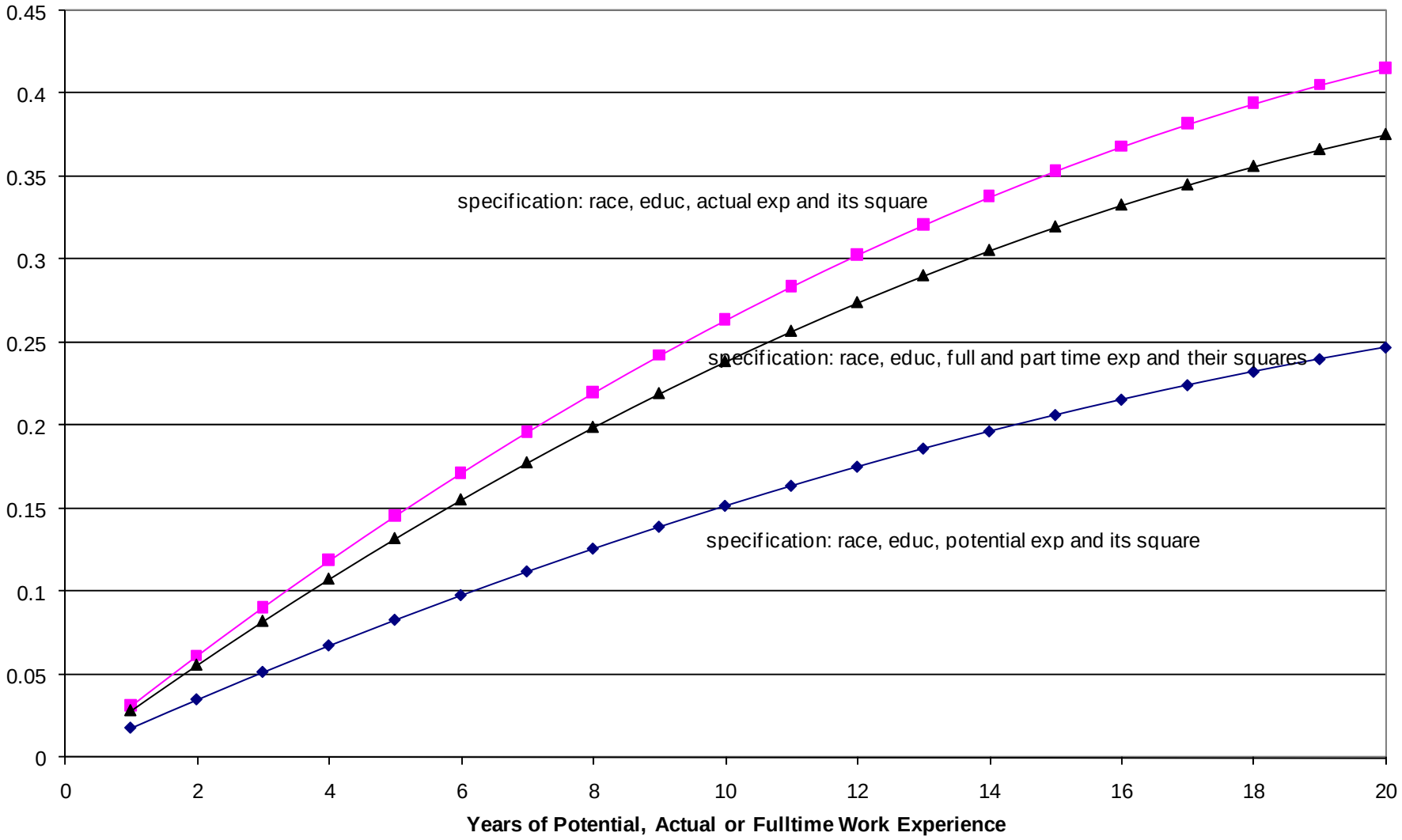

Figure 2: Predicted Log Wages, Women, Relative to New Entrants, 1990 (PSID)

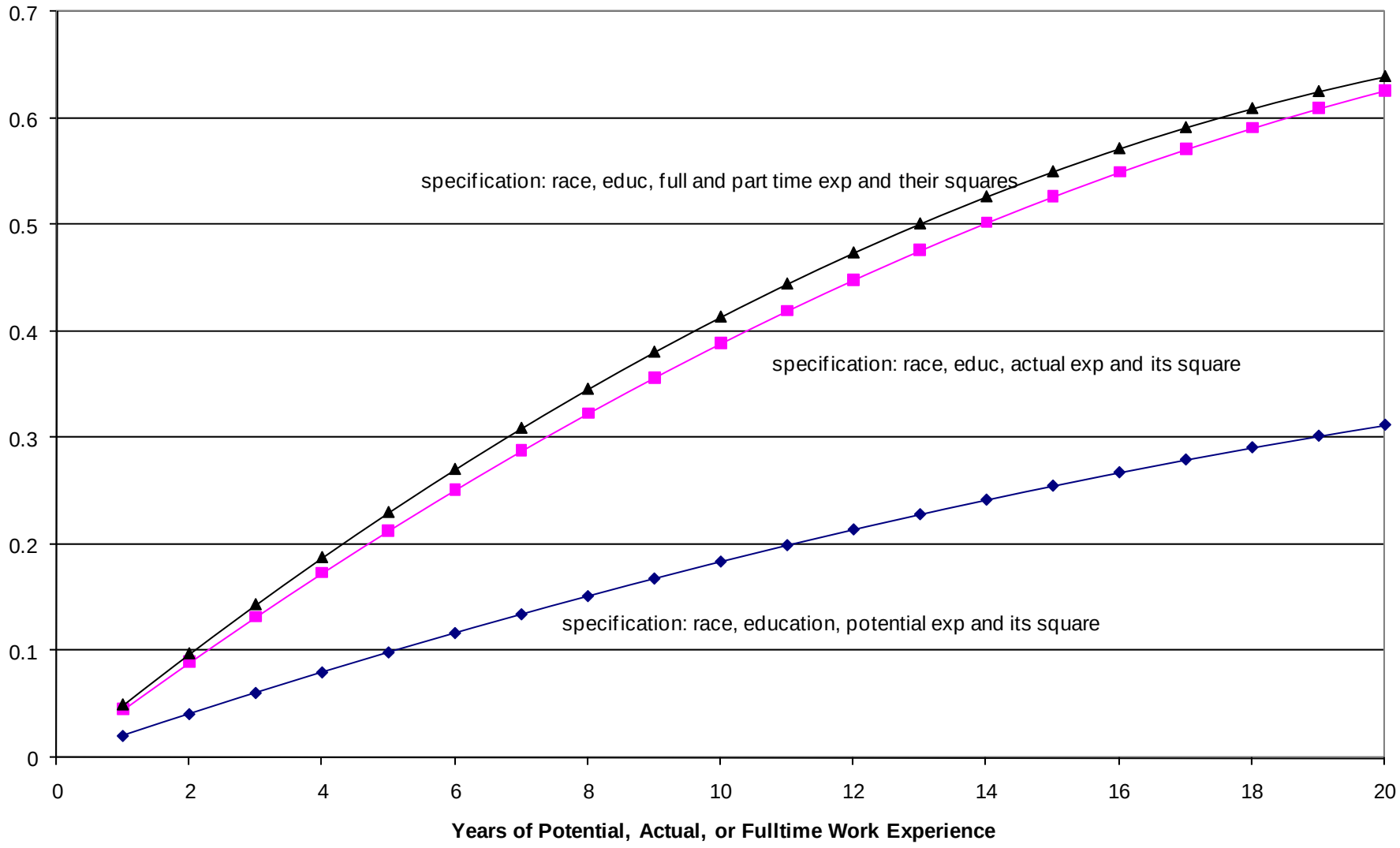

Figure 3: Predicted Log Wages, Women, Relative to New Entrants, 1999 (PSID)

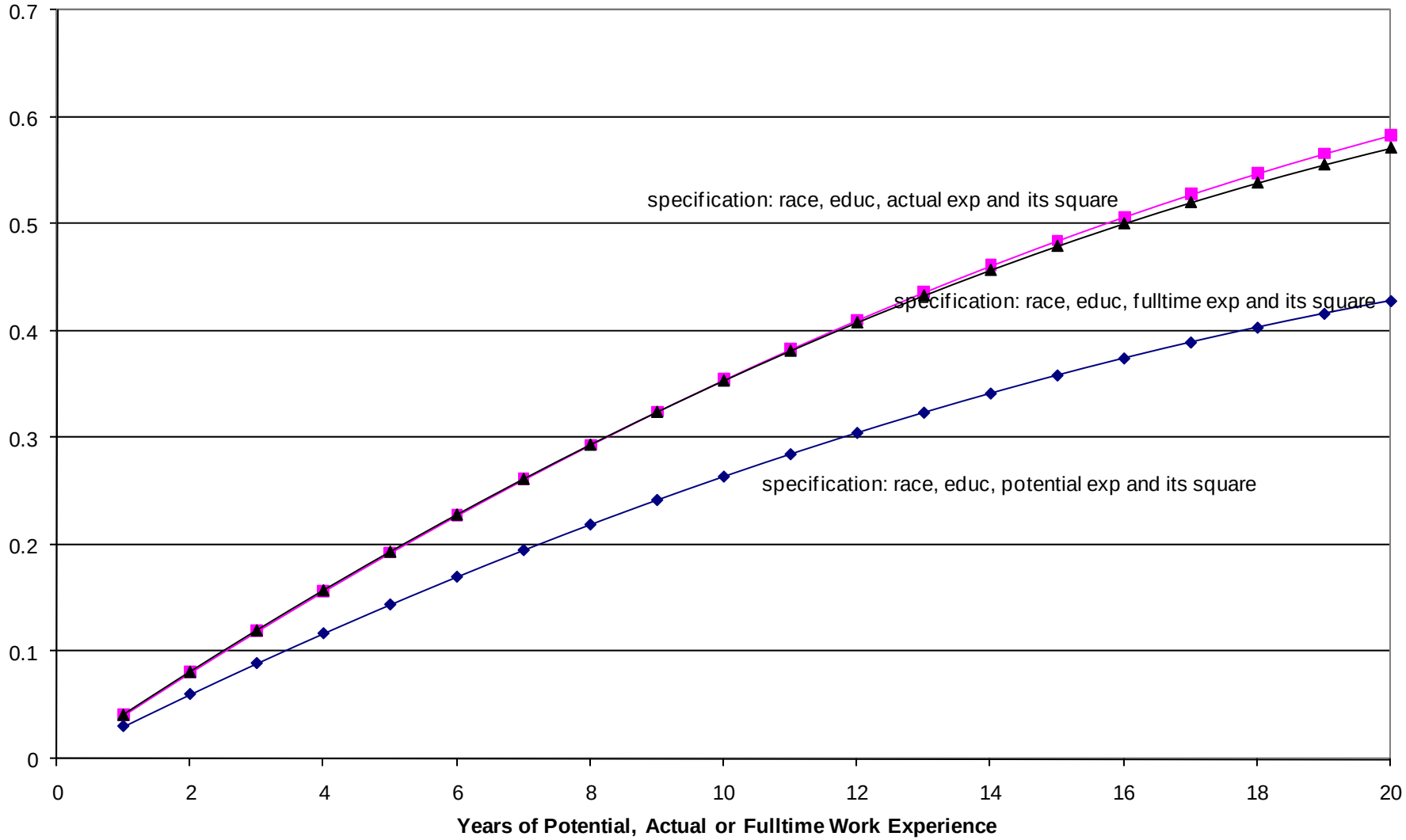

Table 1: Selected Mean Values, Nonfarm, Wage and Salary Workers, Age 18-65, PSID 1980, 1990, and 1999

	1980		1990		1999	
	Men	Women	Men	Women	Men	Women
log real hourly earnings	2.375	1.891	2.321	1.966	2.350	2.075
white	0.872	0.846	0.884	0.841	0.867	0.834
years of schooling	12.717	12.664	13.303	13.220	13.464	13.619
college degree (no advanced degree)	0.160	0.140	0.200	0.170	0.220	0.218
advanced degree	0.070	0.046	0.084	0.065	0.066	0.068
years of full-time work experience since age 18	18.117	10.568	18.135	12.813	19.623	15.009
years of part-time work experience since age 18	1.276	3.198	1.756	3.603	1.552	3.863
total years of work experience since age 18	19.392	13.766	19.892	16.416	21.175	18.871
potential experience (age-educ-6)	19.772	19.223	19.300	19.872	20.775	21.380
age-18	20.487	19.884	20.602	21.092	22.239	22.997
Sample Size	2938	2461	3021	2940	2439	2284

Note: Means are weighted using PSID sampling weights.

Table 2: Actual vs. Potential Experience in Wage Regressions (PSID)

	1980		1990		1999	
	Coef	SE	Coef	SE	Coef	SE
A. Actual Experience Specification: Women						
white	0.093	0.026	0.118	0.025	-0.031	0.029
years of schooling	0.075	0.006	0.096	0.007	0.086	0.009
college degree (no advanced degree)	0.028	0.037	0.098	0.035	0.118	0.040
advanced degree	0.280	0.055	0.252	0.050	0.237	0.058
years of actual experience	0.032	0.003	0.047	0.003	0.042	0.004
actual experience squared	-0.0006	0.0001	-0.0008	0.0001	-0.0006	0.0001
constant	0.564	0.081	0.064	0.093	0.376	0.115
B. Potential Experience Specification: Women						
white	0.082	0.026	0.099	0.025	-0.025	0.030
years of schooling	0.080	0.007	0.111	0.008	0.100	0.009
college degree (no advanced degree)	0.055	0.038	0.102	0.037	0.105	0.041
advanced degree	0.303	0.056	0.272	0.052	0.225	0.059
years of potential experience	0.018	0.003	0.021	0.003	0.031	0.004
potential experience squared	-0.0003	0.0001	-0.0003	0.0001	-0.0005	0.0001
constant	0.589	0.088	0.105	0.102	0.311	0.122
C. Actual Experience Specification: Men						
white	0.109	0.026	0.155	0.028	0.181	0.032
years of schooling	0.053	0.005	0.076	0.006	0.067	0.008
college degree (no advanced degree)	0.038	0.030	0.092	0.032	0.152	0.038
advanced degree	0.059	0.042	0.141	0.044	0.303	0.056
years of actual experience	0.049	0.003	0.053	0.003	0.051	0.004
actual experience squared	-0.0008	0.0001	-0.0008	0.0001	-0.0008	0.0001
constant	1.045	0.064	0.477	0.083	0.628	0.102
D. Potential Experience Specification: Men						
white	0.112	0.026	0.159	0.028	0.190	0.032
years of schooling	0.058	0.005	0.086	0.007	0.078	0.008
college degree (no advanced degree)	0.087	0.031	0.133	0.033	0.163	0.038
advanced degree	0.090	0.042	0.141	0.045	0.279	0.057
years of potential experience	0.044	0.003	0.049	0.003	0.045	0.004
potential experience squared	-0.0007	0.0001	-0.0007	0.0001	-0.0007	0.0001
constant	1.014	0.065	0.392	0.087	0.541	0.104

Table 3: Actual Full-Time and Part-Time Experience in Wage Regressions (PSID)

	1980		1990		1999	
	Coef	SE	Coef	SE	Coef	SE
A. Women						
white	0.100	0.026	0.133	0.024	-0.006	0.029
years of schooling	0.075	0.006	0.096	0.007	0.087	0.009
college degree (no advanced degree)	0.045	0.037	0.141	0.035	0.149	0.039
advanced degree	0.299	0.055	0.274	0.048	0.249	0.057
years of full-time work experience since age 18	0.029	0.003	0.051	0.003	0.042	0.004
full-time experience squared	-0.0005	0.0001	-0.0009	0.0001	-0.0007	0.0001
years of part-time work experience since age 18	0.001	0.004	-0.008	0.004	-0.003	0.005
part-time experience squared	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002
constant	0.622	0.080	0.128	0.089	0.438	0.112
B. Men						
white	0.102	0.026	0.151	0.028	0.179	0.032
years of schooling	0.055	0.005	0.080	0.006	0.072	0.008
college degree (no advanced degree)	0.067	0.031	0.148	0.033	0.168	0.038
advanced degree	0.085	0.042	0.171	0.045	0.292	0.057
years of full-time work experience since age 18	0.047	0.003	0.049	0.003	0.049	0.004
full-time experience squared	-0.0008	0.0001	-0.0007	0.0001	-0.0008	0.0001
years of part-time work experience since age 18	0.002	0.007	-0.009	0.006	-0.006	0.010
part-time experience squared	0.0000	0.0004	0.0007	0.0003	0.0012	0.0009
constant	1.083	0.063	0.524	0.082	0.631	0.101

Table 4: Average Female Residual from Male Wage Regression (PSID)

Specification	1980	1990	1999
Potential Experience	-0.466	-0.344	-0.288
Actual Experience	-0.389	-0.274	-0.260
Actual Full-time and Part-time Experience	-0.341	-0.223	-0.232

Table 5: Goodness of Fit and Residual Inequality, Alternative Specifications for Women (PSID) data

Specification	1980	1990	1999	Change: 1999-1980
Potential Experience				
R Squared	0.196	0.264	0.213	0.017
Adj. R squared	0.194	0.263	0.211	0.017
Residual Variance	0.212	0.252	0.280	0.068
Actual Total Experience				
R Squared	0.224	0.318	0.249	0.025
Adj. R squared	0.222	0.317	0.247	0.025
Residual Variance	0.204	0.233	0.267	0.063
Actual Full-Time and Part-Time Experience Disaggregated				
R Squared	0.227	0.351	0.270	0.043
Adj. R squared	0.224	0.349	0.267	0.043
Residual Variance	0.204	0.222	0.260	0.056
Potential Experience, Actual Full-Time and Part-Time Experience Disaggregated				
R Squared	0.229	0.357	0.277	0.048
Adj. R squared	0.226	0.355	0.274	0.048
Residual Variance	0.203	0.220	0.257	0.054

Controls include: race, years of schooling, and dummies for college and advanced degrees.

Table 6: Alternate Measures of Work Experience, 1976 and 1985 PSID, Women Employed as Wage and Salary Workers in 1985 Who Were in the Panel from 1976-1985

	Mean	Source
Actual Labor Market Experience as 1976	9.90	Direct Question in 1976 Survey
Actual Full-time Labor Market Experience as of 1976	7.83	Direct Question in 1976 Survey
Actual Labor Market Experience as of 1985	18.41	Direct Question in 1985 Survey
Actual Full-time Labor Market Experience as of 1985	14.78	Direct Question in 1985 Survey
Constructed Labor Market Experience as of 1985	17.97	Actual 1976 Experience plus annual increments 1976-85
Constructed Full-time Labor Market Experience as of 1985	12.95	Actual 1976 Fulltime Experience plus annual increments 1976-85
Absolute Value of Difference: Actual vs. Constructed 1985 Experience	2.81	
Absolute Value of Difference: Actual vs. Constructed 1985 Full-time Experience	3.63	

Note: Sample size is 1643.

Table 7: Determinants of the Absolute Value of the Difference Between Actual and Constructed 1985 Work Experience for Women (PSID)

	COEF	SE	COEF	SE	COEF	SE	COEF	SE
white	-0.587	0.247	-0.585	0.247	-0.586	0.247	-0.585	0.247
age 1985	0.115	0.009	0.115	0.009	0.121	0.090	0.120	0.090
age 1985 squared					-0.0001	0.0010	-0.0001	0.0010
yrs of schooling	-0.074	0.037	-0.084	0.059	-0.074	0.037	-0.085	0.059
college degree			0.043	0.345			0.043	0.346
advanced degree			0.122	0.439			0.121	0.440
constant	-0.745	0.680	-0.615	0.881	-0.877	1.991	-0.729	2.078
Sample size	1643		1643		1643		1643	

Notes: Includes women employed as wage and salary workers as of 1985 who are in the panel 1976-85.

Table 8: Wage Effects of Alternative Experience Measures for Women (PSID)

	A. Ordinary Least Squares						B. Instrumental Variables	
	COEF	SE	COEF	SE	COEF	SE	COEF	ASE
white	0.076	0.036	0.098	0.035	0.094	0.035	0.107	0.035
yrs of schooling	0.081	0.009	0.075	0.008	0.078	0.008	0.077	0.008
college degree	0.067	0.051	0.070	0.049	0.052	0.048	0.061	0.049
advanced degree	0.370	0.064	0.342	0.062	0.322	0.061	0.320	0.062
potential experience	0.002	0.007						
potential experience squared	0.00002	0.0001						
1985 survey experience			0.044	0.005			0.054	0.007
1985 survey experience squared			-0.0008	0.0001			-0.0009	0.0002
1985 constructed experience					0.049	0.006		
1985 constructed experience squared					-0.0008	0.0001		
constant	0.715	0.136	0.355	0.111	0.245	0.113	0.188	0.117
Sample size	1643		1643		1643		1643	

Notes: Constructed Experience is computed by adding annual 1976-85 increments to the 1976 value. In the instrumental variables model, 1985 constructed experience and its square are used as instruments for the 1985 survey experience and 1985 survey experience squared variables. Includes women employed as wage and salary workers as of 1985 who are in the panel 1976-85.

Table 9: Further Results--Wage Effects of Alternative Experience Measures for Women (PSID)

	A. Ordinary Least Squares				B. Instrumental Variables	
	COEF	SE	COEF	SE	COEF	ASE
white	0.118	0.035	0.113	0.034	0.147	0.038
yrs of schooling	0.074	0.008	0.073	0.008	0.084	0.010
college degree	0.105	0.049	0.125	0.048	0.123	0.054
advanced degree	0.353	0.062	0.389	0.061	0.354	0.067
1985 survey full-time experience	0.033	0.004			0.038	0.007
1985 survey full-time experience squared	-0.0006	0.0001			-0.0007	0.0002
1985 survey part-time experience	-0.005	0.005			-0.072	0.022
1985 survey part-time experience squared	0.0004	0.0002			0.0034	0.0010
1985 constructed full-time experience			0.037	0.004		
1985 constructed full-time experience squared			-0.0007	0.0001		
1985 constructed part-time experience			-0.018	0.006		
1985 constructed part-time experience squared			0.0010	0.0003		
constant	0.503	0.108	0.563	0.109	0.416	0.121
Sample size	1643		1643		1643	

Notes: Constructed Experience is computed by adding annual 1976-85 increments to the 1976 value. In the instrumental variables model, 1985 full-time and part-time constructed experience and their squares are used as instruments for the corresponding 1985 survey experience variables. Includes women employed as wage and salary workers as of 1985 who are in the panel 1976-85.

Table 10: Descriptive Statistics, Full PDII Sample, August 2008

A. Men (n=1015)	Mean	Std. Dev	Min	Max
age	41.178	11.751	18	65
educ (years)	13.840	3.044	0	20
potential experience	21.343	11.808	0	56
black	0.074	0.262	0	1
hispanic	0.170	0.376	0	1
asian	0.028	0.165	0	1
otherrace	0.042	0.201	0	1
actual experience, after resurvey	22.171	11.802	1	50
actual experience, before resurvey	22.320	11.883	1	50
actual experience, after resurvey, constrained to start at age 18	21.919	11.747	0	47
actual full-time experience, after resurvey	20.087	11.972	0	48
actual part-time experience, after resurvey	2.083	3.457	0	36
actual full-time experience, before resurvey	20.157	12.014	0	48
actual part-time experience, before resurvey	2.164	3.648	0	36
actual full-time experience, after resurvey, constrained to start at age 18	19.919	11.945	0	47
actual part-time experience, after resurvey, constrained to start at age 18	2.001	3.371	0	36
B. Women (n=1213)	Mean	Std. Dev	Min	Max
age	41.739	11.674	20	65
educ (years)	14.081	2.623	0	20
potential experience	21.658	11.854	0	56
black	0.104	0.305	0	1
hispanic	0.125	0.331	0	1
asian	0.038	0.192	0	1
otherrace	0.037	0.190	0	1
actual experience, after resurvey	20.813	11.197	1	50
actual experience, before resurvey	20.900	11.251	1	50
actual experience, after resurvey, constrained to start at age 18	20.477	11.042	1	47
actual full-time experience, after resurvey	17.206	11.236	0	50
actual part-time experience, after resurvey	3.606	4.838	0	48
actual full-time experience, before resurvey	17.254	11.267	0	50
actual part-time experience, before resurvey	3.646	4.905	0	48
actual full-time experience, after resurvey, constrained to start at age 18	17.005	11.122	0	47
actual part-time experience, after resurvey, constrained to start at age 18	3.472	4.751	0	43

Table 11: Descriptive Statistics, Married PDII Sample, August 2008

A. Men (n=687)	Mean	Std. Dev	Min	Max
age	44.011	10.090	23	65
educ (years)	14.161	3.318	0	20
potential experience	23.856	10.621	0	56
black	0.054	0.226	0	1
hispanic	0.156	0.363	0	1
asian	0.031	0.173	0	1
otherrace	0.036	0.186	0	1
actual experience, after resurvey	25.083	10.300	1	50
actual experience, before resurvey	25.220	10.381	1	50
actual experience, after resurvey, constrained to start at age 18	24.874	10.175	1	47
actual full-time experience, after resurvey	22.945	10.547	0	48
actual part-time experience, after resurvey	2.139	3.438	0	36
actual full-time experience, before resurvey	22.991	10.635	0	48
actual part-time experience, before resurvey	2.229	3.634	0	36
actual full-time experience, after resurvey, constrained to start at age 18	22.826	10.478	0	47
actual part-time experience, after resurvey, constrained to start at age 18	2.048	3.330	0	36

B. Women (n=679)	Mean	Std. Dev	Min	Max
age	43.557	10.198	20	65
educ (years)	14.452	2.601	0	20
potential experience	23.105	10.702	0	51
black	0.070	0.256	0	1
hispanic	0.094	0.292	0	1
asian	0.045	0.207	0	1
otherrace	0.019	0.136	0	1
actual experience, after resurvey	22.181	10.091	2	50
actual experience, before resurvey	22.204	10.089	2	50
actual experience, after resurvey, constrained to start at age 18	21.912	9.966	2	47
actual full-time experience, after resurvey	17.982	10.461	0	47
actual part-time experience, after resurvey	4.198	5.241	0	48
actual full-time experience, before resurvey	17.994	10.457	0	47
actual part-time experience, before resurvey	4.210	5.248	0	48
actual full-time experience, after resurvey, constrained to start at age 18	17.845	10.403	0	46
actual part-time experience, after resurvey, constrained to start at age 18	4.067	5.134	0	43

Table 12: Descriptive Statistics, PDII Wage Earners Sample, August 2008

A. Men (n=704)	Mean	Std. Dev	Min	Max
log hourly wage	3.132	0.630	1.099	7.447
age	40.898	11.710	20	65
educ (years)	13.785	2.885	0	20
potential experience	21.113	11.623	0	56
black	0.074	0.261	0	1
hispanic	0.174	0.379	0	1
asian	0.031	0.174	0	1
otherrace	0.045	0.208	0	1
actual experience, after resurvey	21.922	11.724	1	50
actual experience, before resurvey	22.084	11.789	1	50
actual experience, after resurvey, constrained to start at age 18	21.715	11.670	1	47
actual full-time experience, after resurvey	19.902	11.947	0	48
actual part-time experience, after resurvey	2.020	3.422	0	33
actual full-time experience, before resurvey	19.985	11.963	0	48
actual part-time experience, before resurvey	2.104	3.658	0	33
actual full-time experience, after resurvey, constrained to start at age 18	19.759	11.925	0	47
actual part-time experience, after resurvey, constrained to start at age 18	1.956	3.327	0	33

B. Women (n=807)	Mean	Std. Dev	Min	Max
log hourly wage	2.843	0.625	0.405	6.548
age	41.297	11.694	20	65
educ (years)	14.083	2.655	0	20
potential experience	21.214	11.863	0	56
black	0.107	0.310	0	1
hispanic	0.136	0.343	0	1
asian	0.028	0.164	0	1
otherrace	0.046	0.209	0	1
actual experience, after resurvey	20.485	11.242	1	49
actual experience, before resurvey	20.600	11.312	1	49
actual experience, after resurvey, constrained to start at age 18	20.278	11.112	1	47
actual full-time experience, after resurvey	17.072	11.301	0	47
actual part-time experience, after resurvey	3.413	4.659	0	31
actual full-time experience, before resurvey	17.128	11.334	0	47
actual part-time experience, before resurvey	3.472	4.754	0	44
actual full-time experience, after resurvey, constrained to start at age 18	16.958	11.214	0	47
actual part-time experience, after resurvey, constrained to start at age 18	3.320	4.600	0	31

Table 13: Descriptive Statistics, Married PDII Wage Earners Sample, August 2008

A. Men (n=487)	Mean	Std. Dev	Min	Max
log hourly wage	3.302	0.576	1.609	7.447
age	43.766	9.995	23	65
educ (years)	14.116	3.051	0	20
potential experience	23.650	10.324	1	56
black	0.063	0.244	0	1
hispanic	0.150	0.357	0	1
asian	0.032	0.177	0	1
otherrace	0.046	0.209	0	1
actual experience, after resurvey	24.809	10.129	4	50
actual experience, before resurvey	24.964	10.208	4	50
actual experience, after resurvey, constrained to start at age 18	24.656	10.002	4	47
actual full-time experience, after resurvey	22.809	10.400	1	48
actual part-time experience, after resurvey	1.999	3.267	0	24
actual full-time experience, before resurvey	22.847	10.491	1	48
actual part-time experience, before resurvey	2.117	3.544	0	24
actual full-time experience, after resurvey, constrained to start at age 18	22.732	10.326	1	47
actual part-time experience, after resurvey, constrained to start at age 18	1.925	3.137	0	24

B. Women (n=454)	Mean	Std. Dev	Min	Max
log hourly wage	2.928	0.624	0.916	6.548
age	43.244	10.125	22	65
educ (years)	14.486	2.692	0	20
potential experience	22.758	10.669	3	51
black	0.070	0.255	0	1
hispanic	0.090	0.287	0	1
asian	0.039	0.194	0	1
otherrace	0.021	0.142	0	1
actual experience, after resurvey	21.976	10.032	2	49
actual experience, before resurvey	22.006	10.028	2	49
actual experience, after resurvey, constrained to start at age 18	21.813	9.902	2	45
actual full-time experience, after resurvey	18.022	10.504	0	47
actual part-time experience, after resurvey	3.954	4.976	0	31
actual full-time experience, before resurvey	18.024	10.486	0	47
actual part-time experience, before resurvey	3.982	4.984	0	31
actual full-time experience, after resurvey, constrained to start at age 18	17.953	10.446	0	45
actual part-time experience, after resurvey, constrained to start at age 18	3.860	4.900	0	31

Table 14: Average Female Residual from Male Wage Equation, Various Specifications (PDII Sample)

Specification	Average Female Residual	
	All Workers	Married Workers Only
Raw Gender Pay Gap	-0.289	-0.373
Potential Experience	-0.319	-0.410
Aggregate Actual Experience, After Resurvey	-0.303	-0.396
Aggregate Actual Experience, Before Resurvey	-0.304	-0.397
Aggregate Actual Experience, After Resurvey, constrained to start at age 18	-0.304	-0.396
Full- and Part-Time Actual Experience, After Resurvey	-0.289	-0.390
Full- and Part-Time Actual Experience, Before Resurvey	-0.287	-0.385
Full- and Part-Time Actual Experience, After Resurvey, constrained to start at age 18	-0.289	-0.387

Note: potential and actual experience variables are quadratic.

Table 15: Goodness of Fit and Residual Inequality, Alternative Specifications for Women (PDII data)

Specification (n=807)	
Potential Experience	
R Squared	0.251
Adj. R squared	0.245
Residual Variance	0.296
Actual Total Experience, Constrained to Start at Age 18	
R Squared	0.248
Adj. R squared	0.241
Residual Variance	0.297
Actual Full-Time and Part-Time Experience Disaggregated, Constrained to Start at Age 18	
R Squared	0.258
Adj. R squared	0.250
Residual Variance	0.293
Potential Experience, Actual Full-Time and Part-Time Experience Disaggregated, Constrained to Start at Age 18	
R Squared	0.286
Adj. R squared	0.276
Residual Variance	0.283

Controls include: race and years of schooling. Potential and actual experience variables are quadratic.

Table 16: Goodness of Fit and Residual Inequality, Alternative Specifications for Women with Valid Job Tenure Data (PDII data)

Specification (n=704)	
Potential Experience	
R Squared	0.274
Adj. R squared	0.267
Residual Variance	0.258
Potential Experience and Tenure	
R Squared	0.323
Adj. R squared	0.314
Residual Variance	0.242
Potential Experience, Tenure, Actual Full-Time and Part-Time Experience Disaggregated, Constrained to Start at Age 18	
R Squared	0.351
Adj. R squared	0.334
Residual Variance	0.233

Controls include: race and years of schooling. All potential experience, actual experience, and tenure variables are quadratic.

Table 17: Actual vs. Proxy Responses, Married Individuals Age 18-65, PDII Survey

	Men		Women	
	Proxy	Self	Proxy	Self
age	42.422	44.011	44.049	43.557
educ (years)	13.893	14.161	14.808	14.452
potential experience	22.334	23.856	23.198	23.105
black	0.060	0.054	0.050	0.070
hispanic	0.024	0.156	0.125	0.094
asian	0.000	0.031	0.000	0.045
otherrace	0.000	0.036	0.105	0.019
actual experience, before resurvey	23.218	25.220	21.330	22.204
actual experience, after resurvey, constrained to start at age 18	23.036	24.874	21.316	21.912
actual full-time experience, before resurvey	21.542	22.991	18.850	17.994
actual part-time experience, before resurvey	1.677	2.229	2.480	4.210
actual full-time experience, after resurvey, constrained to start at age 18	21.471	22.826	18.850	17.845
actual part-time experience, after resurvey, constrained to start at age 18	1.565	2.048	2.466	4.067
Sample size	48	687	51	679

Note: "Proxy" men are husbands of women who were asked to provide information about another adult in the household, with an analogous definition for proxy women. "Self" denotes married respondents providing their own data.

Table A1: Selected Wage Regression Results, PDII Survey Data, All Workers

A. Potential Experience	Men		Women	
	Coef	Std Err	Coef	Std Err
educ	0.105	0.008	0.103	0.008
potential exp	0.036	0.006	0.044	0.006
potential exp squared	-0.0006	0.0001	-0.0008	0.0001
black	-0.060	0.079	-0.143	0.063
hispanic	-0.182	0.057	-0.227	0.058
asian	0.209	0.116	0.017	0.119
otherrace	-0.104	0.097	0.138	0.093
R squared	0.3103		0.2511	
n	704		807	

B. Actual Experience, Before Resurvey	Men		Women	
	Coef	Std Err	Coef	Std Err
educ	0.087	0.007	0.083	0.008
actual exp	0.039	0.007	0.035	0.007
actual exp squared	-0.0006	0.0001	-0.0005	0.0001
black	-0.045	0.079	-0.114	0.063
hispanic	-0.138	0.057	-0.199	0.058
asian	0.289	0.117	0.055	0.120
otherrace	-0.118	0.097	0.174	0.093
R squared	0.309		0.248	
n	703		807	

C. Actual Experience, After Resurvey	Men		Women	
	Coef	Std Err	Coef	Std Err
educ	0.087	0.007	0.083	0.008
actual exp	0.040	0.007	0.035	0.007
actual exp squared	-0.0006	0.0001	-0.0005	0.0001
black	-0.044	0.079	-0.112	0.063
hispanic	-0.148	0.057	-0.199	0.058
asian	0.303	0.117	0.056	0.120
otherrace	-0.101	0.097	0.180	0.093
R squared	0.308		0.249	
n	704		807	

D. Actual Experience, After Resurvey, Constrained to Start at Age 18	Men		Women	
	Coef	Std Err	Coef	Std Err
educ	0.086	0.007	0.084	0.008
actual exp	0.041	0.007	0.035	0.007
actual exp squared	-0.0006	0.0001	-0.0005	0.0002
black	-0.047	0.079	-0.111	0.063
hispanic	-0.154	0.057	-0.201	0.058
asian	0.299	0.117	0.052	0.120
otherrace	-0.103	0.096	0.177	0.094
R squared	0.3168		0.2475	
n	704		807	

Table A1 : Selected Wage Regression Results, PDII Survey Data, All Workers (ctd)

E. Actual Experience, Before Resurvey	Men		Women	
	Coef	Std Err	Coef	Std Err
educ	0.087	0.008	0.087	0.008
actual part-time exp	0.006	0.012	-0.004	0.009
actual part-time exp squared	-0.0001	0.0006	0.0000	0.0004
actual full-time exp	0.042	0.006	0.029	0.006
actual full-time exp squared	-0.0007	0.0001	-0.0004	0.0001
black	-0.050	0.078	-0.138	0.063
hispanic	-0.129	0.057	-0.225	0.058
asian	0.310	0.118	0.061	0.119
otherrace	-0.085	0.096	0.138	0.093
R squared	0.321		0.260	
n	703		807	

F. Actual Experience, After Resurvey	Men		Women	
	Coef	Std Err	Coef	Std Err
educ	0.088	0.008	0.086	0.008
actual part-time exp	0.001	0.012	-0.001	0.010
actual part-time exp squared	0.0003	0.0007	-0.0001	0.0005
actual full-time exp	0.041	0.006	0.030	0.006
actual full-time exp squared	-0.0007	0.0001	-0.0004	0.0001
black	-0.053	0.078	-0.135	0.063
hispanic	-0.141	0.057	-0.225	0.058
asian	0.287	0.117	0.062	0.119
otherrace	-0.057	0.096	0.145	0.093
R squared	0.324		0.260	
n	704		807	

G. Actual Experience, After Resurvey, Constrained to Start at Age 18	Men		Women	
	Coef	Std Err	Coef	Std Err
educ	0.087	0.008	0.086	0.008
actual part-time exp	0.0021	0.0117	-0.0001	0.0098
actual part-time exp squared	0.0002	0.0007	-0.0002	0.0005
actual full-time exp	0.041	0.006	0.030	0.006
actual full-time exp squared	-0.0007	0.0001	-0.0004	0.0001
black	-0.056	0.078	-0.132	0.063
hispanic	-0.145	0.057	-0.225	0.058
asian	0.285	0.117	0.061	0.120
otherrace	-0.058	0.096	0.146	0.093
R squared	0.325		0.248	
n	704		807	

Table A2 : Selected Additional Wage Regression Results for Women, PDII Survey Data

	All Workers		Workers with Valid Tenure Observations		Workers with Valid Tenure Observations	
	Coef	Std Err	Coef	Std Err	Coef	Std Err
educ	0.087	0.010	0.088	0.010	0.081	0.010
potential exp	0.031	0.009	0.023	0.009	0.018	0.009
potential exp squared	-0.0009	0.0002	-0.0007	0.0002	-0.0007	0.0002
tenure (yrs)					0.023	0.007
tenure squared					-0.0003	0.0002
actual part-time exp	0.001	0.011	0.001	0.011	0.001	0.010
actual part-time exp squared	0.0002	0.0005	0.0002	0.0005	0.0001	0.0005
actual full-time exp	0.014	0.009	0.018	0.009	0.016	0.009
actual full-time exp squared	0.0001	0.0002	0.0001	0.0002	0.00003	0.0002
black	-0.165	0.062	-0.178	0.061	-0.185	0.059
hispanic	-0.250	0.057	-0.246	0.056	-0.231	0.055
asian	0.056	0.118	0.130	0.120	0.147	0.117
otherrace	0.123	0.092	0.091	0.098	0.096	0.096
R squared	0.286		0.316		0.351	
n	807		704		704	
Test: actual full-time exp coeffs=0 (prob)	0.0000		0.0000		0.0002	
Test: all actual exp coeffs=0 (prob)	0.0000		0.0000		0.0000	

Note: experience variables refer to the post-resurvey values in which experience is constrained to begin at age 18.