Understanding Men's Non-Employment Using Longitudinal Data: Wage Opportunities, Employment Dynamics, and Long-term Effects

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I. Introduction

The declining employment of prime-aged men in the United States, which began in the 1980s, continues as one of the chief threats to the health of the labor market and economy and to individual self-sufficiency. This decline has been cited as contributing to the slow recovery from the great recession (Stock and Watson 2012), a symptom of the broader declining fortunes of low-skilled men (Autor 2010) and (when viewed as a response to trade shocks) as a factor in the 2016 Presidential election (Davis and Hilsenrath 2016). Economists have explored the causes of this decline, focusing on the role of stagnant or declining real wages (Juhn 1992, Moffit 2012) in discouraging work and on the underlying causes of those declining wages (Abraham and Kearney 2017, Krause and Sawhill 2017, Eberstadt 2016). This project focuses on two neglected aspects of this broad literature: the long-term patterns and dynamics of male prime-age non-employment; and the long-term consequences for individual men of this non-employment.

Understanding the causes of male non-employment is critical to designing policies to address the issue. Recent debates have centered around distinguishing cyclical factors from longer term trends, and on documenting the role of specific demand shocks versus other factors. These findings, however, have been based entirely on repeated cross-sectional data, potentially limiting our understanding of how men respond in the longer-term to reduced wages. My proposed research will use longitudinal data and cohort analysis to examine the relationship between non-employment and the subsequent employment and well-being of prime-aged men. Specifically, I aim to answer two sets of questions that have been ignored in the literature to date. First, how frequently (and under what circumstances) do the full-year non-employed return to employment and what wages do they earn? Second, how does non-employment affect future employment patterns and wages of these men?

My preliminary work has produced two key findings that show the potential importance of this line of research. First, using panel data from the Panel Study of Income Dynamics (PSID), I show that nearly two-thirds of full-year non-employed men are again employed when observed five years later, and only a small minority never return to work. Second, the subsequent observed wages of full-year non-

employed men are substantially lower than those based on similar workers with low hours from a cross-section that are typically used to impute wages for non-workers. These findings together suggest that a re-examination of the role that low wages may play in later labor supply can help us understand the implications of and prospects for the growing population of long-term, non-employed men.

II. A Brief Review of Research on Prime-aged Men's Non-Employment

Our initial understanding of the rise of male non-employment came from Juhn's (1992) work exploring the role of falling demand and falling wages for less-skilled workers. Juhn initially showed that the increase in non-employment was strongly and inversely related to skill, as measured by observed wages or wages predicted based on observable characteristics. Like most work on this topic, Juhn used data from the Current Population Survey (CPS) to examine non-participation and wages, focusing on those who report no work during an entire calendar year. Juhn (1997) also showed that, for both black and white men, wages of part-year workers likely overstate the wage opportunities for full-year non-workers. She also documents that the connection between wage opportunities and hours of work increased from the 1980s to the 1990s, and increased differentially by race.

Non-employment among prime-aged men has continued to increase in the years since Juhn's work. For example, both Moffitt (2012) and Coglianese (2016) argue that wages explain forty to fifty percent of male non-employment, but both of these use cross-sectional wage imputations that may overstate the wages available to non-workers. Moffit (2012) uses several different methods for imputing wages to non-workers based on both observables and a Heckman-style correction for selection into the labor market. Importantly, Moffit (2012) shows that methods of wage imputation that recognize the relationship between low wages and low hours tend to produce, not surprisingly, a larger role for low wages in explaining trends in non-participation.

As rates of full-year non-employment have continued to rise, particularly during and after the Great Recession, research has sought to understand both other (non-wage) potential drivers of non-employment and the causes of real wage declines that may drive growing non-employment. A recent

survey by Abraham and Kearney (2017) review a large number of studies and conclude that wages, specifically wages lowered as the results of trade shocks, are a major cause of long-term non-employment among men. An extensive review by Krause and Sawhill (2017) recognizes the possibility of the non-employed returning to work through their focus on skills-gaps and reservation wages. Their focus on policy implicitly assumes that some of these men will (or are) returning to the work force. Still, there is little research that directly examines the experiences, outcomes, or self-sufficiency of these full-year non-employed men.[1]

III. What is Missing from Studies of Men's Non-Employment: Preliminary Evidence

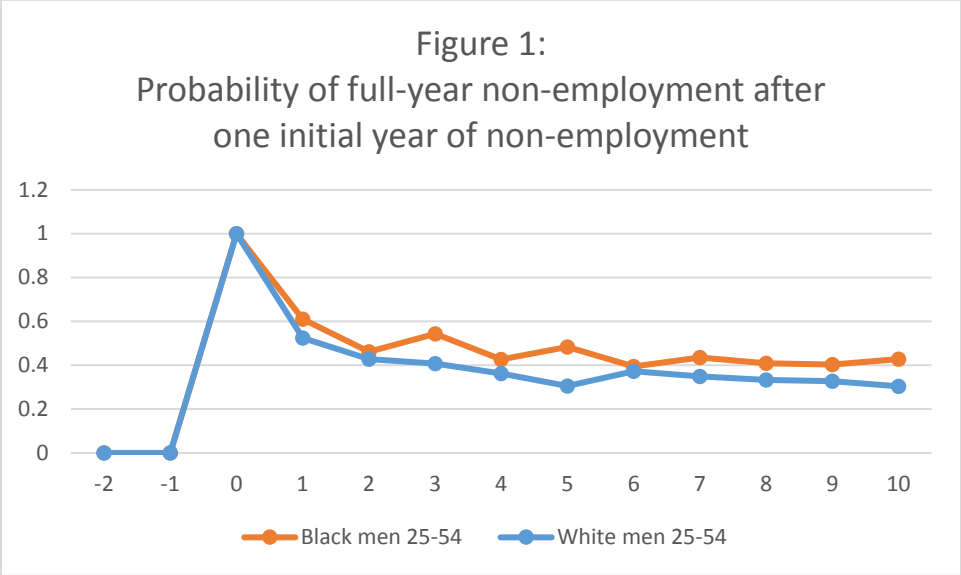
What virtually all of these prior studies have in common is a reliance on cross-sectional data to identify and study the long-term non-employed. Juhn and Potter (2006), for example, are explicit when they note that "a lack of work during the entire year suggests that these men have left the labor force for all intents and purposes." With cross-sectional data, however, we cannot know how many of the full-year non-employed will work in a future year. The simplification that a year without employment represents a permanent exit from the labor force is convenient, but is almost certainly not accurate.

Figure 1, based on tabulations from the PSID, shows that men observed with no employment for twelve months overwhelmingly return to the workforce. Specifically, I construct a sample of PSID male respondents between the ages of 25 and 54, observed from 1980 to 2015. From this sample, I identify the first year in which they report fewer than 200 hours of work.[2] For the sample of men observed with at least one year of very low hours, the figure gives the probability of non-employment in subsequent years. Given the focus of much of the early literature on male non-employment on black-white differences (Bound and Freeman (1992), Juhn (1997)), I show results separately by race. By two years after an initial

[1] Other parts of this literature have explored the role of compositional and demographic changes in driving diminished male labor supply. Most of these have concluded that, while demographics, including the aging of baby-boomers has contributed to some increase in non-employment, there remains an unexplained and sustained increase in non-employment among those under age 55.

[2] The cutoff of less than 200 hours cutoff produces a sample with annual average of just over 22 hours worked. Results are similar if I change the definition to a cutoff closer to 0 hours.

year of non-employment, half of men have returned to work; after four years nearly two-thirds are again working. Rates of return to employment are somewhat lower for black men, but are still substantial. Overall, 65% of men observed with a full-year of non-employment have only one or two years of non-employment over the next ten.



This preliminary finding has several implications. First, to understand the wage opportunities facing the prime-age non-employed, this shows that we can often use their own wages in the years around the period of non-employment, along with their observable characteristics, for improved predictions. While simple lifecycle labor supply theory would suggest that wage options in the period of non-employment may overstate actual opportunities during periods of non-employment, this overstatement is certainly less than estimates relying on only observable characteristics of similar men, as has been done in prior work.

To test the potential importance of this issue, I replicate a key table from Juhn (1992) showing the contemporaneous relationship between hourly wages and annual hours of work. Unlike prior work, I impute wages for full-year non-employed men in the PSID using a standard log wage regression controlling for age, education, race and year. To mimic the prior literature, I assign full-year non-employed the wage given their observable characteristics and the wage level imputed for men who work fewer than 500 hours in the year. These results are shown in the first row of the Table 1. Given the

similarity of the non-employed to men who work slightly more hours, it is not surprising that their imputed wage is almost identical to the part-year employed. Next, I alternatively impute wages to the non-employed using their own wages in subsequent or prior years, adjusted for age and calendar year. This produces a strikingly lower imputed hourly wage of just $15 per hour. As noted above, this may still be an over-estimate of their earnings opportunities in the year of non-employment.

Table 1: Hourly Wages by Annual Hours of Work

Annual Hours of Work	**Average Real Hourly Wage**
< 200 hours: wages imputed from observationally similar individuals with low hours	$18.31
< 200 hours: wages imputed from *own individual's earnings* in surrounding years	$15.03
200-750 hours	$18.80
750-1999 hours	$24.05
2000 or more hours	$23.57
Source: Author's tabulation from PSID, 1980-2015, men ages 25-54	

Finally, much prior research on this area has considered differences by race, specifically between black and white men in the evolution of wages and non-employment over time. In the work proposed below, I will incorporate these race differences in two ways. First, some of the analysis below will rely on group-level changes in wages and employment to help identify the covariance between wages and employment. Different histories and trends in black-white wages and employment will thus be an important part of the underlying story. Secondly, however, these different patterns over time make it important to highlight, in the descriptive work proposed, how the empirical facts vary across men of different races. Bound and Freeman (1992), for example, show how demand shocks during the 1980s differentially affected blacks and whites. Given my focus here on improving our understanding of supply responses, it will be important to look at blacks and whites separately given these well-established

differences. A final point is that examination of Hispanic/non-Hispanic differences in non-employment may also prove important, but it difficult for the PSID analysis. Because the PSID sample is primarily composed of individuals connected to the original 1968 families, it is known to under-represent Hispanic populations in the U.S. To examine sensitivity to this deficiency, I will also show the main descriptive results using data from the PSID's "immigrant refresher" sample which began in 1997.

IV. Proposed Research

A. Understanding current non-participants with longitudinal data

The first part of the proposed analysis will use the PSID to expand our understanding of the characteristics and circumstances of current full-year non-employed men and how those characteristics have changed over time. A number of studies[3] have contributed descriptive analyses of non-participants, aiming to understand how the characteristics of this group have changed (or not), and allowing for decomposition methods to describe which factors are associated with increased non-participation. Using the PSID, I will begin with a similar descriptive analysis, but one that includes information on the non-employed taken from other time periods, when they, themselves, were employed. The type of questions to be answered within this simple descriptive framework include:

- How have wage opportunities, properly imputed, of full year non-employed men changed over time?
- Do the current non-employed have greater or lesser labor force attachment prior to non-employment than previous cohorts?
- Have there been changes in the fraction of full-year non-employed men who are transitioning between industries?
- Have long-run (several years after non-employment) levels of household income of the non-employed changed over time, suggesting a role for income effects?

[3] See for example, Aaronson, et al. 2014, Aarsonson et al. 2015, Fujita 2014, or Council of Economic Advisors, 2014.

Data on past or future illness or disabilities, reasons for job losses prior to non-employment, and interactions of these with characteristics of the non-employed over time can be similarly incorporated.

A second empirical approach to describe the experience of non-employed men over time will involve additional event-study type analysis such as that shown in Figure 1. For example, examining wages and household income around the time of non-employment will provide information about whether key aspects of these men's labor supply functions have changed. As in Figure 1, the "event" in this case is simply an observed year of non-employment. While the event in this case cannot be thought of as exogenous, the event study patterns can still be informative as to the longer-term patterns of key determinants and shifters of labor supply for the non-employed.[4]

The next part of the analysis will use wages imputed from longitudinal data and place them in a traditional labor supply framework. I will use a simple group-level approach similar to that used by Moffitt (2012), or Blau and Kahn (2007) for women.[5] I begin by combining individual years of PSID data into five-year groups, beginning with 1980-1984, and continuing through 2015 to de-emphasize the high-frequency annual variation. With the time subscript now representing 5-year periods, I estimate the following group-level regression with groups defined by groups, race, and education.

(1) $NE_{gt} = V_{gt}\gamma + X_g\beta + \varepsilon_{gt}$

NE gives the fraction of group g in time period t with a full year of non-employment. The vector V includes wages and non-labor income and X is a set of age-group, race, and education dummy variables. Using a group-level estimation approach helps to correct for well-known issues of measurement error and individual-level omitted variables in labor supply estimation. In most recent literature, wages within V have been imputed for the non-employed using wages of those working only a few weeks per year; here we use the longitudinal data for the wage imputations as described above. These results can be used to

[4] A recent example of this type of event-study analysis comes in Dobkin, et al. (2018) who note the lack of known exogeneity in the hospitalization event, but also argue that observing and interpreting a variety of values around that event can nonetheless be informative.

[5] Moffitt estimates a model based on individual data, but using group-level variation over time as the key source of idenfication. The individual model can improve efficiency, but I present my plans here in terms of the cell-level estimation for ease of presentation.

calculate the predicted change in non-employment predicted by changes in wages (and non-labor income) alone, or the change in non-employment predicted by supply factors. This initial approach assumes that all changes over time in group-level non-employment occur along a stable labor supply curve, so that coefficients on wages and non-labor income do not vary over time. Given the long-time period studied here, this assumption may be relaxed, with the period divided into sub-periods, as a robustness check.

The result of this estimation will allow me to answer the question of whether demographic groups that have seen greater deterioration in wage opportunities have also seen greater increases in full-year non-employment. For example, wages for less-educated groups declined in the 1980s, but then gained ground in the late 1990s. These differential pattens over time and across groups are the key source of identification in this exercise. Additionally, the black-white male wage gap narrowed during the 1990s and much attention has been focused on the declining fortunes of less-educated white men in particular. This approach confronts the different time patterns of wages across demographic groups, but uses a wage imputation that more accurately captures wage opportunities for the non-employed.

One objection to this approach is that, if non-employment itself causes later wages to be lowered, using imputed wages based on all observed earnings opportunities may introduce endogeneity into the labor supply estimates. If a large fraction of a particular group is non-employed in one year, and that causes their lower wages in subsequent years, the relationship running from reduced wages to subsequent non-participation may be overstated. I will also test the sensitivity of using only observed wages prior to a period of non-employment (rather than in all adjacent periods) to impute wages to non-workers. This will avoid the possibility that the current (imputed) wage is mechanically related to non-employment.

B. Additional analyses with Current Population Survey data

An important concern with this type of analysis based on PSID data is the relatively small, cross-sectional, samples sizes in the PSID. For this reason, most have estimated labor supply relationships using larger, cross-sectional samples available in the Current Population Survey (CPS) or Census data.

Two additional parts of the analysis will turn to the CPS, incorporating the lessons learned from the initial longitudinal data analysis.

First, the labor supply analysis described above will be repeated with CPS data, largely replicating earlier labor supply studies (Moffitt 2012, Coglianese 2016, Blau and Kahn 2007) but incorporating better wage information for non-workers in a given year. This will be more in line with typical labor supply estimates using the CPS and will take advantage of the much larger cell-sizes in those data. To incorporate information on wage opportunities, however, for any given group (defined, as above, by age, race and education), I can construct a correction factor from my PSID results that gives the ratio of group-specific wages based on a standard wage imputation for non-workers versus the imputation from longitudinal data. This correction factor will then be applied to group-level wages from the CPS, and the basic group-level labor supply relationship re-estimated. This will effectively adjust the group-level wages more for groups with large numbers of full-year non-employed based on the use of repeated wage observations in the panel data. This will provide an upper bound on the extent to which the inability to observe wages opportunities for the non-employed has affected labor supply estimates, but take advantage of the more common use of the larger CPS data for estimation of the basic labor supply relationships.

Finally, the CPS data will be used to further explore the question of the consequences of non-employment on subsequent outcomes. The event-study approach using PSID data described above can examine the evolution of hours, earnings and income following non-employment. It is also possible to follow cohorts on men in CPS data over time to provide additional evidence on this issue which avoids the potential conflation of individual characteristics with low wages and low employment. In particular, using repeated cross-sections from the CPS, I can ask whether average wages of cohorts and geographic regions with higher past rates of non-employment lower than for cohorts with lower values of lagged non-employment? By relating cell-level wages to lagged values of non-employment, I can whether non-employment has long-term consequences for future wages. This is similar to work by Western and Pettit (2005) who show the wage penalties resulting from periods out of the labor force caused by incarceration, using differences by age and race in incarceration rates for identification. Given any reasonable return to

experience, men who have a history of long-term non-employment are likely to have lower current wages than similar men without such interruptions.

For this analysis I plan to add geographic variation in wages and non-employment along with the group-level differences noted above. While this is not practical given cell sizes in the PSID, it may be a useful source of variation in the CPS-based analysis. The importance of regional (and regional by race) variation in employment and wages has been documented in recent work by Eberstadt (2016) who shows, for example, that labor-force non-participation rates for prime-aged men ranged from around 7 percent (in several Midwest and Western states) to more than 15 percent in other parts of the country. Similarly, patterns of wage levels and wage changes over time have varied across regions. This combination suggests that effects of lagged non-employment on current wage and employment can be identified in a group by time by region setting.

A preview of this type of analysis illustrates the approach. I have used Census data to construct cells defined by ten-year birth cohort groups, completed education, Census Division and calendar year. I then regress current wages for each cell on the cohort's current and one decade-lagged employment rate. Controls are also included for cohort, education group, Divison and year so that the identification comes from the interaction of geography, group and time. The results show that groups with the lowest rates of employment ten years earlier have current wages that are approximately six percentage points lower than those with the highest lagged employment rates. While this preliminary analysis requires additional robustness testing, including the addition of cross-group interactions and trends, it does suggest that there is sufficient variation to identify the effects of interest.

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