Is Retirement Fun or Is it Depressing?: Labor Force Withdrawal and Subjective Well-Being

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Abstract

This paper assesses how retirement - defined as labor force non-participation in later life - affects subjective well being. O.L.S. estimates find a negative relationship between well being and retirement status, which suggests that retirement is depressing. Using two different IV estimators, I find that this result is illusory. Retirement appears to actually improve well being in both a difference-in-difference estimator which tracks the change in retirement and well being in 60 years olds (the controls) over time relative to the changes over time for men in their 70’s (the controls); as well as in a TSLS model in which current retirement status is instrumented for by whether the man was covered by a mandatory retirement rule at his job at a point in the past. I conjecture that the contrary result from the O.L.S. estimates is caused by the fact that, given the voluntary nature of permanent labor force withdrawal, the people who choose to leave at any given age are those whose idiosyncratic dissatisfaction with their jobs (and possibly their lives) is high relative men who continue to be labor force participants.

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1 Introduction

1.1 Motivation

Economists presume that people’s decisions are the product of constrained utility maximization - their effort to make themselves as happy as possible given the various impediments in their way. While this formulation has been successful at describing a wide range of outcomes, it is most often applied indirectly, in the sense that economists typically study people’s actions and rarely, if ever, concern themselves with directly measuring their satisfaction or “happiness”. In contrast, scholars in psychology and psychiatry routinely attempt to directly measure happiness and its covariates, and their efforts have been hugely informative about the phenomenon. But their work differs from the approach taken by economists not only with respect to the focus on happiness - or subjective well being (S.W.B.) as it is often called in the academic literature - but also in the sense that most of this literature does not draw the distinction between simple associations and causation with the degree of attention which characterizes empirical economic research.

This paper assesses whether labor supply is one of the causal pathways to happiness. Specifically, it asks what effect retirement from the labor force in later life has on subjective well being. This question has not been previously studied at all in the large and growing literature on the economics of retirement, and work in psychology which has dealt with this issue has not teased out the magnitude of the causal relationship, but rather has only identified how the variables are correlated.

The paper’s question is important for a number of reasons. First, as the population ages and moves in record numbers out of the labor force and into retirement, knowledge about how this life change affects variables other than wealth, income and consumption - the outcome variables on which economists have most often focused - becomes increasingly vital. Learning about the effect of retirement on the well being of the elderly clearly enriches our understanding of what exactly people derive from work and what they go through when it ceases. These answers have an important policy dimension, for they may affect how we view the wisdom of public policy initiatives such as the modifications to Social Security eligibility rules which are designed to encour-
age delayed or early retirement. Second, despite the recent outpouring of research by economists on different questions related to health, analysis of aspects of mental well being has not continued apace. This paper may be therefore read as an initial effort to fill an important void in the economics of health literature. Third, as previously mentioned, the notion of “happiness” permeates nearly all economic modeling. Given this central position, there is a benefit to be derived from a research effort which examines the link between well being and a choice variable of interest to economists. Fourth, and finally, just as overall understanding of the income generating process has been enhanced in recent decades by the fact that many different types of scholars from very different perspectives have studied income as an outcome measure, so too can overall knowledge about well being be improved by fact that scholars other than psychologists study the phenomenon.

Previewing the results, I find that with O.L.S. regressions, using two measures of well being, and defining retirement status as whether a mature man is no longer a participant in the labor force, that retirement is associated with greater loneliness and feelings of depression. Since retirement status is likely to be endogenous in a well being equation, I next estimate two different two different sets of IV models. In both a difference-in-difference estimator which tracks the change in retirement and well being in 60 years olds (the controls) over time relative to the changes over time for men in their 70’s (the controls); as well as in a TSLS model in which current retirement status is instrumented for by whether the man was covered by a mandatory retirement rule at his job at a point in the past, I find evidence that retirement appears to actually improve well being. I conjecture that the contrary results from the O.L.S. estimates is caused by the fact that, given the voluntary nature of labor force withdrawal, people who choose to leave the labor force at any given age are those with idiosyncratically low levels of well being.

Below, I briefly review the literature in psychology on S.W.B and the literature in retirement and S.W.B. Section 2 presents a framework which describes the relationship between well being and retirement status, and describes the two sets of estimators I use later. Section 3 discusses the data and measurement issues. Section 5 presents the results and Section 5 concludes.
1.2 Subjective Well Being

Research on subjective well being\(^1\) is concerned with the determining whether people live their lives in positive ways, and why they do or do not (see Diener (1984), Diener (1999), Wilson (1967)). As construed by psychologists, SWB covers concepts as varied as life satisfaction, morale, depression, and happiness. SWB is fundamentally subjective; it is the way that a person feels about his life at a point and place in time. Though often thought of as a state which is subject to change or modification, it almost surely contains an aspect which is fixed and unchanging. This aspect of well being is probably what is meant by the expression “disposition”. In other words, people’s psychological well being depends both on what is happening to them and who they are.

People who study SWB are usually interested in a summary measure such as whether, at this point in his life, Johnson is or is not experiencing satisfaction with life. Sometimes, there is interest in a particular aspect of Johnson’s well being, partly because it is recognized that, though being sad or bored both enter into overall life satisfaction, for example, particular events or circumstances might affect these things quite differently. Studying a particular aspect of well being has the advantage of providing information about how a particular aspect of well being is affected by some variable. Armed with this information, a researcher is then able to make sensible conjectures about how people life satisfaction in the broad, summary sense is affected.

Psychologists have taken the approach that the best way to measure SWB or one of its components is to ask people direct questions. The popular single item instrument of Andrews and Withey (1975), asks people how they “feel about their lives as a whole”, with their various responses then given different numerical scores. Multiple item methods such as that of Kamman and Flett (1983) elicit information such as whether people smile alot, and whether “nothing seems fun anymore” to them. On many large survey datasets, there are now “depression scale” sections. The questions in these sections are designed to measure what are called positive affect (how happy people are, or have been recently); depressed affect (how sad, blue, depressed or down

\(^1\)The work in this section relies heavily on the two excellent survey articles by Diener (1984 and 1999)
people are and have recently been; somatic (whether people have recently had trouble
eating/sleeping/getting started); and the degree of one’s recent problems with others
(people criticized you/been unpleasant to you). Persons whose cumulative scores on
one of these instruments exceed a threshold are those deemed by the researcher to have
a high probability of suffering from a clinical problem. Of course, if one is not interested
in making clinical diagnoses about mental illness, or is nervous about ascribing a
single, overall measure to people’s well being based on their responses to these different
questions, the individual responses may be used to focus on the specific aspect of well
being. Indeed, many scholars have used questions of precisely the type found now in
many surveys to ask, for example, how a particular variable is correlated with feeling
depressed, happy or lonely.

The idea behind all these questions that people who feel well about their lives will
generally say that they do, and will report experiencing more positive than negative
emotions. Despite its intuitive appeal, there are certain problems with this reasoning.
For example, cultural factors might affect the willingness to report that one feels badly
about life, and it is not necessarily true that people who are people who are “happy” in
the stereotypical sense in which that term is used will always experience a preponder-
ance of positive feelings. Nonetheless, appears to be the case that, on average, people
who are satisfied with life report that they are, and report more positive than negative
emotions and experiences. Moreover, it is quite reassuring that the measures of sub-
jective well being remain relatively constant for the same individual over time; are very
stable within a society; and move, for an individual, in the direction one would predict
after events such as the death of a loved one. Also, work by cognitive psychologists
and other experts has found distinct brain wave patterns across people who report that
they are “happy” and those who do not, lending credibility to the idea that there is a
strong physiological basis to self-reports about satisfaction with life.

Over the past three decades, a large research effort has been directed at deter-
mining the covariates of positive SWB. To highlight just a few of the results, scholars
have established that marriage is associated with positive SWB, as is good physical
health. Interestingly, income has been found to have only a modest positive effect on
well being and in some cases greater income has been associated with lower happiness. Despite the impressive body of work that psychologists have out together in this area, Ed Diener, one of the world’s foremost experts in the study of SWB, remarks in the abstract of his review article that the further evolution of the field requires “...go(ing) beyond correlations to understand(ing) the causal pathways leading to happiness.” He argues too that these causal relationships must be, “examined through more sophisticated methodologies,” than those which psychologists have heretofore used. In the next section, I briefly describe work on the relationship between SWB and retirement behavior, and discuss whether this work allows causal inferences to be drawn.

1.3 Subjective Well Being and Retirement

Numerous psychologists have speculated about and studied the effects of retirement the different aspects of well being. There are two conflicting views about how retirement ought to affect well being. One theoretical perspective argues that the effect is likely adverse. Proponents of this view tend to emphasize the central role that work plays in the life of the typical adult. Retirement, which necessarily implies the end of this important work role, means that the retiree is likely to suffer from no longer being able to view himself as a productive, contributing member of society. Henry (1971) eloquently describes this idea, and variants of it are to be found in the work of Miller (1965) who emphasizes the “identity crisis” which the cessation of work is likely to occasion. According to this argument, even with the freedom and additional leisure time which the retired are able to enjoy, the satisfaction that leisure activities bring cannot compensate for decrease in satisfaction which follows the loss in the work role. Also, to the extent that people income falls at the date of retirement, the capacity for the retired to engage in certain activities which bring them pleasure is compromised.

The theoretical argument among psychologists for why retirement can be positive for well being, emphasizes the negative aspects of work, and the importance of other roles that people play. It argues in effect that, though people might identify strongly with the “work role”, anyone who stops working probably has fewer stresses in his

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*A possible explanation for this result is presented by economist Robert Frank in his book “Luxury Fever”.* Frank also summarizes research on SWB.
daily life, almost by definition. Freedom from these stresses can be expected to help well being. “Continuity theory” (Atchley, 1971, 1993), goes on to argue that work is not, for many persons, the most prominent of the many roles played in adult life. Time spent at home, with family, or devoted to religious and civic activities are at least as important. Retirement leaves more time available for these activities and should therefore lead to greater life satisfaction. Nadler et. al. (1997) make the interesting point that retirement, while clearly the event which marks the end of the work life, also, for many people, marks the important achievement of having contributed to society for a substantial length of time. Achieving retirement status is likely to bring psychological benefit not only from a sense of accomplishment, but also from the many favors which society bestows upon the retired.

There has been a concerted empirical research effort by psychologists over the past three decades to assess how retirement affects life satisfaction, and thereby determine which of the two theoretical views is correct. Some of this previous work has not addressed retirement per se, but has looked instead at the issue of how people fare psychologically when they are out of work. Johada (1982), for example, finds that people are negatively affected psychologically when they are unemployed, so it may be reasoned (and has been reasoned by some) that retirement might have similar effects. Empirical work by psychologists which has looked at the issue of retirement specifically usually either looks at differences between the retired and non-retired at a point in time or follows a sample of near retirees over time as they pass through retirement. It is fair to say that the empirical evidence is mixed, though a fair reading of the literature suggests that many adhere to the notion of retirement being negative for well being.

Bosse et al. (1987) find that retirees report more psychological distress (lower life satisfaction) than workers. Portnoi (1983) finds that retirement is associated with depression, and the work of Kirsling (1981) and Seiden (1981) finds that retirement may be a contributing factor in elderly suicide - a clear indication of life dissatisfaction. Atchley and Robinson (1982) and de Grace, Joshi, et al. (1994) all find evidence that retirement is associated lower well being in cross section type models. These results are consistent with work done in the 1950’s (see Kutner et al. 1956) which found essentially the same thing.
On the other hand, in some other recent work Mindanik et al. (1995), study a sample of about 600 elderly members of the Northern California H.M.O. over two surveys. They find that those who retired were less stressed than those who were not; were more likely to exercise; and were less likely to classify themselves as depressed. Work by Matthews, Brown, Davis and Denton (1982) finds that people rate retirement as the least stressful of a series of 34 events. Jackson et al. (1993) find that blacks in a longitudinal study experience an increase in their well being after retirement. Crowley (1985) finds that retirement does appear to adversely affect well being, and other scholars such as Padmore, Fillenbaum and George (1984) find inconclusive results.

The previous empirical work on this important subject has several shortcomings - not the least of which is the fact that the question the work is intended to address remains essentially un-answered. One issue is the very small and possibly non-representative samples which psychologists have used. In many papers, the analysis samples consisted of few dozen observations. More troubling is the fact that previous authors have failed to isolate variation in their treatment variable which is independent of that in the outcomes. Nor does the fact that some studies have been longitudinal deal with this concern. If it is appropriate to be concerned that a life person’s choice of whether to be retired is correlated with his level of life satisfaction, then it is probably the case that the \textit{change} in his decision about whether to be retired is correlated with the change in his life satisfaction as well. The natural result of these problems is that it is quite difficult to draw any causal inference about the effects of retirement.

In the next section I describe the endogeity problem in models of retirement and well being, and describe my strategy for dealing with it.

2 Theoretical Framework and Motivation for Empirical Strategy

I wish to study the effect of labor force non-participation in later life, so as I will use the expression, retirement occurs when a mature men is no longer a labor force participant. Thus, a man who leaves a job he has worked at for 35 years, to take a
half-time, lower paying “bridge job”\textsuperscript{3} is not retired in the paper. Similarly, a mature man who does not say that he is “retired” but who has appears to no longer be a labor force participant is retired in this paper.

Thought of this way, retirement is nearly always voluntary, though, as I argue later, the treatment one receives from a particular firm can make complete labor force withdrawal more desirable. In the U.S., men usually stop being labor force participants sometime before the very end of life. The typical man’s work life can thus be separated into three distinct intervals: (i) the pre-retirement years, in which there is virtually universal labor force participation; (ii) the retirement interval, which is the age span over which men withdraw from the labor force; and (iii) the post-retirement years, in which nearly all men have permanently withdrawn from the labor force and will work little or not at all until their deaths. In this paper, I focus on the behavior of people in the retirement interval - the years over which the lion’s share of U.S. men withdraw from the labor force. Throughout, I will suppose that this age category, consists of men in their 60’s. I will suppose that, as countless evidence shows, that men aged 70 and older are in their post-retirement years.

Consider the following simple framework for the relationship between well being and retirement. The framework presented here is simple and heuristic and ignores many of the complications of the rich class of dynamic optimization problems to which the decision to retire properly belongs.\textsuperscript{4} Nonetheless, it captures all of the basic points about retirement behavior I wish to emphasize and serves as motivation for the subsequent empirical work.

Suppose that an individual’s subjective well being at a point in time $t$, if he is of age $A_{it}$ is $M_{it}$, where

$$M_{it} = \beta_t R_{it}(A_{it}) + \beta_x X_{it} + \sigma_t + \epsilon_{it}. \quad (1)$$

$R_{it}(A_{it})$ is an indicator variable which equals 1 if the person is permanently withdrawn from the labor force (retired) and equals 0 otherwise, and $X_{it}$ is a vector or observable individual controls which likely affect psychological well being. The error $\epsilon_{it}$ summarizes the set of factors unseen by the analyst which determine SWB. In a population,

\textsuperscript{3}See Quinn (1997) for a good discussion of this type of later life work choice. Also Ruhm (1995) describes the patterns of retirement behavior over time.

\textsuperscript{4}See Stock and Wise (1990) are very rigorous analysis of the retirement decision.
it is reasonable to assume that, for these latent factors, \( E(\epsilon_{it}) = 0 \). Finally, \( \sigma_t \) is a dummy variable specific to time period \( t \) which measures factors which affect SWB of all individuals at time \( t \). This time effect captures the idea that the 1960’s were probably a “happier” decade than the 1980’s. In a regression context, if there are only cross-section data, the time effect would be subsumed in the intercept term of an O.L.S. model. The coefficient in \( \beta_r \) in (1) denotes the causal effect of retirement status on SWB and its estimation is the desideratum of this paper.

As I have already argued, the binary variable \( R_{it}(A_{it}) \) is a treatment which, for the most part, an individual chooses. If \( M_{it} \) is the same thing as “utility”, then economists would expect that, in a world of good or perfect information, \( \beta_r > 0 \). After all, why would people choose to do something if doing so did not make them better off? One might argue that because of imperfect information about the effect of retirement might not be perfect, people could choose to do it, and then find themselves unpleasantly surprised. Notice, though, that rationality requires that, at the time the decision to retire is made, retirement had to have seemed the best thing, given the information the person had. Nor is it likely that people would remain ignorant about how retirement would affect their well being given the vast numbers of other people who are retired at any time.

The typical way an economist models the decision to retire among the age group where the choice is relevant is suppose that people have a certain expected utility from continuing to be labor force participants at any age, \( u_{it} \); an expected utility of \( U_{it} \) from retiring; and retire at a given age if and only if \( U_{it} - u_{it} > 0 \). The difference \( R_{it}(A_{it}) = U_{it} - u_{it} \) is a person’s desire to be retired at time at a particular time, and may be written

\[
R_{it}(A_{it}) = \alpha \Gamma_{it} + v_{it},
\]

where \( \Gamma_{it} \) and \( v_{it} \) are, respectively, the observed and unobserved determinants of \( u_{it} \) and \( U_{it} \), and

\[
E[v_{it}, \Gamma_{it}] = 0.
\]

Because people will only retire if \( R_{it}(A_{it}) > 0 \), O.L.S. regression performed on (1) will not yield an unbiased estimate of \( \beta_r \) unless the unobserved determinants of SWB are completely unrelated to the latent determinants of the desire for labor force withdrawal;
that is, the O.L.S. estimate of the effect of retirement is biased unless $\text{Cov}(\epsilon_{it}, v_{it}) = 0$.

The variable $v_{it}$ represents the combined effect of all of the different idiosyncratic pleasures and pains which people derive from labor force participation in later life. It includes factors such as the frustrations of the daily commute to work; the drudgery of sitting through staff or department meetings; the stress caused by working under the pressure; and the sense of achievement associated with making a positive contribution to society. Clearly, how pleasant or unpleasant any of these things makes continued work is likely to depend importantly on aspects of one’s psychological make-up summarized in (1) as $\epsilon$. It is quite improbable that the decision to be retired is unaffected by how one feels about working ($v_{it}$), and improbable too that the way one feels about working is completely unrelated to how one feels in general ($\epsilon_{it}$). Thus, $\text{Cov}(\epsilon_{it}, v_{it}) \neq 0$ and retirement status will almost surely be endogeneous in an SWB equation. Moreover, it is difficult to sign the endogeneity bias caused by correlation between the latent costs of work and the idiosyncratic component of SWB: people who have a very high distaste for continued work could either be those whose good cheer is incompatible with work, or those whose generally morose nature makes the normal stresses of work unbearable.

In summary, if persons with particular levels of distaste for continued employment are more likely to retire at any age in the retirement interval than are others, an incorrect inference about how retirement affects well being may be drawn from an O.L.S. type regression. This inference may be either too large or small in absolute value, and in the very likely case in which $\beta_r > 0$ and where the people who retire are those whose distaste for the work they do is quite high, the inference can be even of the wrong sign. Any success at obtaining an estimate of the true effect of labor force withdrawal on psychological well being - $\beta_r$ - requires isolating variation in retirement status which is independent of $v_{it}$ and $\epsilon_{it}$. In this papers, i use two sources of variation which both derive from changes over time in the environment faced by people contemplating retirement. I briefly discuss some of these changes and then present the two estimators.
2.1 Changes in the Retirement Environment Over Time

I describe the retirement environment as the set of factors, outside of a potential retiree’s control, which affect the relative desirability of state of retirement versus continued labor force participation. The most obvious part of this environment is what other people happen to be doing at the time. Presumably, people in the retirement interval, where there is some choice over whether to be retired or not, the attractiveness of the state can be expected to depend on what others choose to do. We might think of this as a type of societal “convention”. When every 64 year old is no longer a labor force participant, which individual 64 year old on his street wants to be the only person working?

If these conventions exist - and simple reflection suggest that they should - individual retirement probabilities should be functions of overall patterns of retirement behavior. Over the past few decades, retirement choices for men in the retirement interval have gone through many changes. Many have speculated about, for example, the decline in labor force participation among men in their 60’s (Parsons (1984) is a good example), but it is irrelevant for my purposes which factor of set of factors explains the overall pattern. All that matters is that these patterns: (1) affected the retirement behavior of men in particular age categories; and (2) did not affect at all, or affected differently men in other age categories. This last point is very likely to be true for men in the retirement interval, and those in the post-retirement years. we would expect that the retirement patterns for these two groups differ at a point in time, but probably change differently over time as well. Indeed, we would suspect that for men as elderly as their 70’s retirement would have changed very little over time.

A more direct argument for why retirement probabilities for men in different age categories changed differently between the 1980’s and 1990’s is the fact that some of the important changes in the retirement environment which occurred during that time were age- specific.\(^5\) Consider first changes in Social Security rules. Economists have long been interested in how financial incentives affect the retirement decision an,

\(^5\)Quinn (1998) provides an excellent summary of some of the more important factors which probably affected the retirement choices of the elderly over the past few decades, including the shift in private sector firms towards defined-contribution (pension plans with few - if any - age disincentives, and away from defined-benefit plans (with their traditionally large age-specific work disincentives).
for the typical American worker, there is no more important financial consideration vis-a-vis retirement than how the his Social Security benefits are affected by the date (age) he chooses to withdraw from the labor force. Whereas people continue to be eligible for full Social Security benefits at age 65, beginning in 1983 there were a series of amendments to the Social Security code which will likely have large effects on the labor force decisions of the elderly. Unlike the late 1970’s and very early 1980’s, a larger amount of income can be earned before someone in his 60’s loses his retirement benefits. Income which could be earned before being taxed away to indexed to the growth in wages. For people in their 70’s the earnings test was completely abolished. These changes would be expected to have uniformly affected the work choices of mature men, but, since many of these Social Security changes were age-specific, they also could have been predicted to have different effects on people in their 60’s and those in the 70’s.

Over the same time, there were also age-specific changes in what type of mandatory retirement laws were allowed in the workplace. For much of the century employers were free to adopt rules stipulating the ages at which their workers had to retire. These rules were gradually made illegal over several years. The staggered nature of the legislation against retirement rules meant that, during the early 1980’s, people in their 60’s could not be subject to binding (in the sense that confronted with the rule at a particular time, the person would be forced to retire) mandatory retirement rules since rules which stipulated that people leave the labor force before age 70 had already been made illegal in 1978. Only in 1986 were all mandatory retirement laws completely outlawed, so the relative possible exposure of 60 and 70 years olds to binding rules changed greatly between the early 1980’s and the early 1990’s.

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7A quick summary of the changes in the legality of mandatory retirement codes is as follows. In 1967 the passage of the Age Discrimination in Employment Act (A.D.E.A., P.L 90-202; Dec. 15, 1967) prohibited the unfair dismissal of workers up to age 65. Three amendments to the Act were passed was passed in 1974, 1978 and 1986 which respectively: extended the protections of the first law to people employed in the federal sector; raised the minimum mandatory retirement age for private sector workers from 65 to 70 and eliminated such rules entirely for all federal workers; and eliminated such rules entirely for all private-sector employees.
2.2 Difference-in-Difference Estimator: Relative Changes for 60 and 70 years olds over Time

Given the arguments in the previous section, and under the reasonable argument that men in their 70’s are, by and large, in the post-retirement years, we know that

\[ P_r[R_{it}(A_{it}) = 1] = \begin{cases} 
1 & \text{if } A_{it} \in A^+_r \\
 f(t, \Gamma_{it}) & \text{if } A_{it} \in A_r 
\end{cases} \]  

(4)

where \( f(t, \Gamma_{it}) \) is a function which assumes values between 0 and 1 and varies over time, ages \( A_r \) refers to ages in the 60’s and \( A^+_r \) refers to ages in the 70’s. Importantly, these changes were not choice variables for men in the 60’s; the retirement environment was simply different from one period to the next for completely exogenous reasons.

Recalling the description of SWB given in (1), and ignoring the observable factors \( X_{it} \) for the moment, over the two time periods \( t \) and \( s \),

\[ E_1 = E[M_{it}(A_{it}) - M_{is}(A_{it}) | A_i \in A_r] = \beta_r E[R_{it}(A_{it}) - R_{is}(A_{it}) | A_i \in A_r] + [\sigma_t - \sigma_s] + E[\epsilon_t - \epsilon_s], \]

and

\[ E_2 = E[M_{it}(A_{it}) - M_{is}(A_{it}) | A_i \in A^+_r] = [\sigma_t - \sigma_s] + E[\epsilon_t - \epsilon_s]. \]

Expression (5) implies that

\[ \beta_r = \frac{E_1 - E_2}{E[R_{it}(A_r) - R_{is}(A_r) | A_i \in A_r]} \]  

(6)

where the denominator in (6) is assured to be non-zero so long as \( f(t, \Gamma_{it}) \neq f(s, \Gamma_{is}) \). In other words, we can estimate the effect of retirement on well being by looking at the change in the well being of 60-years olds over time to the relative to the change in the well being of 70-year olds over time, weighted by the change in the retirement probability of 60-years olds over time.

This estimator treats 70 year olds in every time period as the controls for 60 years old in that time. The difference-in-difference estimator (6) measures the effect of retirement on S.W.B. as the change in subjective well being across different time periods for groups where the retirement probability has changed over time for exogenous reasons.
(the treatment group), net of the change in subjective well being for groups where the retirement probabilities should be largely constant over time (the controls). Estimator (6) is a Wald estimate of the effect of retirement on well being.

The difference-in-difference estimator can be set up as an IV estimator, estimated on a sample of 60 and 70 year olds over the early 1980’s and early 1990’s. Letting the binary variable \( A_{60} \) represent people aged 60; while the variable \( \sigma_{1990's} \) denotes the 1990’s. The structural equation in the IV context is

\[
M_i = \beta_x X_i + \beta_r R_i + \sigma_{1990's} + A_{60} + \epsilon_i,
\]

and the first-stage regression is:

\[
R_i = \beta_z Z_i + \sigma_{1990} + A_{60} + \sigma_{1990's} \ast A_{90} + \epsilon_i.
\]

For the TSLS estimation of (7) and (8) to provide a consistent estimate of the causal effect of retirement, \( \beta_r \), there are two main requirements. First, the instrument \( \sigma_{1990's} \ast A_{90} \) must have a non-trivial effect on retirement probabilities. In other words, there must be a change in the probability of retirement for 60-year olds between the 1980’s and 1990’s. Second, the instrument cannot affect well being except thorough its effect on retirement probability. Thus, the estimator allows for the possibility that SWB might change over time for people in their 60’s and 70’s, but presumes that there is no change over time in the relative levels of S.W.B. across retirement categories. In other words, if, in each period, S.W.B. is affected not only by an overall time (as would be true if the 1980’s were overall a “happy” decade), but also by a term which is both retirement group and time specific (if the 1980’s were a “happy” decade only for a specific group), then the estimator does not yield an unbiased estimate of the effect of retirement on S.W.B. I do not rely exclusively on this estimation strategy. I use another IV estimation method which is describe below.

2.3 Mandatory Retirement Coverage

Clearly, an important determinant of whether someone in his 60’s has retired by a particular age is whether he worked for a firm which forced him to retire from the firm by that age, possibly by virtue of a retirement rule. If exposure to these rules in an
era when they were still legal in some form - such as the early 1980’s - is not related
to well being except through its effect on retirement probability; and if the rules have
a non-trivial effect on retirement probability, then observed differences in retirement
status by differences in exposure to the constraint are a source of independent variation
in retirement status. Suppose that retirement rules mandated retirement by age $A_M$.
At first blush, a good instrument for retirement status as of age $A_M$ is a binary variable
indicating whether, at ages just prior to $A_M$, say $A_M - 1$ or $A_M - 2$, the person is
covered by a mandatory retirement law. If retirement rules had any effect at all on
behavior, then people covered by a law which mandates that they retire in a year or
two should be more likely to be retired in a year or two than those of the same age
who are not covered.

This reasoning ignores the fact that a legitimate instrument for retirement status
in an well being equation must be a variable which not only has a non-trivial effect
on retirement, but which is also un-correlated with S.W.B. This second condition is
unlikely to be met with the binary variable $L_{A_M-1}$. If there are some firms with
retirement laws and other firms without, then as people get closer to age $A_M$ in an era
when retirement laws were legal, we would expect that those who very much want to
work beyond $A_M$ because they feel so positively about work (and presumably about
their lives overall) would tend to select out of the firms with laws into those without.
Thus, exposure to retirement laws as of age $A_M - 1$ is quite unlikely to be unrelated
to the S.W.B. at an arbitrary age $A_M$.

But to sort sensibly into new employment requires time: the worker spends some
time learning the characteristics of the current job, and need time to identify jobs with
characteristics he desires. If the characteristic is something which that will be most
relevant when he is older, such as whether the job has a mandatory retirement law,
then the gap between when the worker first starts to work and when he sorts himself
into his ideal job as far a retirement rules are concerned will be even longer. Thus, if
we focused on an age many years before $A_M$, such as $A_M - 25$, before workers have
had either the time or the inclination to sort into ideal jobs, then workers’ coverage
by retirement laws should be unrelated to their desire to work at age $A_M$. Define a
dummy variable $L_{A_M-25}$ which equals 1 is the person is covered by a retirement law at
age $A_M - 25$. This variable satisfies one of the conditions of a legitimate instrument - namely, that it is uncorrelated with S.W.B much later on - but it a likely to affect retirement status much later on, the variable for which it is to serve as an instrument?

The most straightforward explanation for why $L_{A_{M-25}}$ will be correlated with $R(A_M)$ - retirement status at age $A_M$ - is the fact that mobility from jobs is “sticky”. Once someone has taken a job the, even if there are negative aspects of the job he subsequently discovers which he would like to avoid, actually leaving an employer entails costs. People can end up getting stuck in jobs because of these costs. Moreover, people who are covered by retirement laws who know that they know in their youth that they will want to work beyond the age stipulated in the law, and who therefore begin actively searching for the ideal employer early are probably a minority of people thus constrained. If the difficulty one faces in leaving a job rises with one’s tenure in the job, this uncertainty about future preferences serves to magnify the “stickiness” described above. It follows that

$$Pr \left[ L_{A_{M-1}} = 1 | L_{A_{M-25}} = 1 \right] \neq Pr \left[ L_{A_{M-1}} = 1 \right]. \quad (9)$$

If, as has been argued, retirement at age $A_M$ is affected by whether one is covered by a law at that age, then

$$Pr \left[ R(A_M) = 1 | L_{A_{M-25}} = 1 \right] > Pr \left[ R(A_M) = 1 | L_{A_{M-25}} = 0 \right]. \quad (10)$$

There is another, more speculative, reason why condition (10) is likely to hold. People probably make preparations for retirement such as making friends outside of work; learning a hobby which will be useful with the spare time retirement brings; or putting aside some financial resources before they actually retire. We can think of these preparations as a type of retirement capital. But if someone is covered at any point in his life by a compulsory retirement law, he forms a greater expectation of being retired at the future age $A_M$ because he knows that his efforts to find alternative employment by age $A_M$ might be abortive. This means that people for whom $L_{A_{M-25}} = 1$ will invest in more capital at earlier ages. If retirement capital does not depreciate completely over time then they will have accumulated more capital by age $A_M$ for than will someone for whom $L_{A_{M-25}} = 0$. If the attractiveness of retirement at age $A_M$ is an increasing function of how much retirement capital one has accumulated by that age, it follows
that people with $L_{A_{M-25}} = 1$ will be more likely to be retired at age $A_M$ than their counterparts.

The foregoing arguments suggests that a consistent estimate of the effect of retirement on S.W.B. can be obtained from an instrumental variables (IV) estimator, which uses previous coverage by a mandatory retirement law to instrument for subsequent retirement behavior. This estimator takes the form

$$
\beta_r = \frac{E \left[ M_{it}(A_M) | L_{A_{M-25}} = 1 \right] - E \left[ M_{it}(A_M) | L_{A_{M-25}} = 0 \right]}{E \left[ R_{it}(A_M) | L_{A_{M-25}} = 1 \right] - E \left[ R_{it}(A_M) | L_{A_{M-25}} = 0 \right]},
$$

(11)

where the expectations are taken over the ages $A_M \in A_r$, and $A_M - 25 \in A_r^-$. The IV estimator isolates a local average treatment effect (LATE) (see Angrist and Imbens (1994)): the effect of being retired on mental health, when differences in the probability of retirement are caused by differences in the constraints on labor supply behavior which are implied by the presence of retirement laws.

In the next section, I discuss the data I use to implement the two estimators I have described. I also describe how I measure S.W.B. in this paper. I then present my results and conclude.

3 Data and Measurement Issues

3.1 Data Sources

The empirical work in this paper is intended to determine how retirement among people in their 60’s affects their subjective well being or life satisfaction. The data needs for the two estimators laid out in the previous section are strong. For the difference in difference estimator, we need information on retirement and life satisfaction for people in their 60’s and people in their 70’s over the early 1980’s and early 1990’s. For the other estimator, we need, for people who are in their 60’s at a point in time, information on what their mandatory retirement coverage was in some previous time period. While no single data source meets all of these criteria, an analysis dataset which combines information from the National Longitudinal Survey of Mature Men (NLSMM); the Health and Retirement Survey (HRS) and the combination the Survey of Asset and Health Dynamics among the Oldest Old (AHEAD) meets the criteria for
the implementation of the DD estimator. Information from multiple waves of NLSMM is sufficient for the other estimator.

The HRS is a nationally representative panel data set. It samples people who are born between 1931 and 1941 and their spouses. For the analysis, I draw a sample of men from the second and third waves of the data, with the restriction that the respondents are at least 60 years old in each wave, but less than 67 (69) in wave 2 (3). This restriction is placed on respondents’ age because the only way that a 67-year-old man is present in Wave 2 of the HRS is if he at least 5 years older than his wife. Because persons in marriages with very large age difference might differ from the rest of the population in some non-random way, I chose to exclude these people.\textsuperscript{8} The AHEAD is a new panel data source which bi-annually samples households in which at least one person aged between 70 and 80 in 1991 resides. I use the first two waves of these data, drawn in 1993 and 1995, and restrict the sample to people who are less 80, but who were no more than 5 years younger than the minimum age-eligible age in the year they were surveyed. The reason for the age exclusion is the mirror-image of that for the H.R.S; here the concern is that men who are much younger than their wives differ systematically with respect to well being and life satisfaction.

The NLSMM is a representative sample of men aged between 45 and 59 in 1966 - the first year of that data was collected in this panel study. People were re-interviewed at varying intervals over the next 25 years. For this paper, I use data from survey years 1969, 1971, 1981, 1983 and 1990. The last three years are the only years with questions about well being, but I use the other two surveys for information on previous mandatory retirement coverage. In each of NLSMM data, men had to be in either their 60’s or 70’s to be included in the data I used for the difference in difference model, or in their 60’s for the model where previous retirement law coverage is an instrument. Pooling the data from these three sources, I information on men born in their 60’s and 70’s in the early 1980’s and early 1990’s.

Two important issues in the study are how I measure “retirement” and well being. I have already discussed the desire to focus on labor force withdrawal in later life, and have mentioned also some recent work about the difficulty of classifying people

\textsuperscript{8}I ran the models presented below with these observations present, and the results were basically the same.
as retired or not. Respondents on surveys may sometimes equate retirement with the receipt of benefits, or with the movement out of jobs they have long held. They may therefore continue to be labor force participants, while classifying themselves as retired. Alternatively, someone not in the labor force, but who does volunteer or other unpaid work might not call himself retired until the day that he starts receiving benefits. Focusing on the specific definitional issue of whether someone in the age sample I study is not a part of the labor force, and has not been so for at least one year gets around some of the problems.

The second measurement concern deals with the measures of well being I study. In all three of the data sources, in the years I study, there is information of many measures of well being, but for only two measures is there information in all of the data sources. These are questions which assess whether the person has recently been “feeling depressed”, and whether he has been ”feeling lonely”. Both of these measures have been studied by social psychologists, and are generally believed to be important components of well being.

Table 1 summarizes the data I use in the analysis. Seventy-one per cent of the sample is withdrawn permanently from the labor force in the year they are observed. The proportion is, not surprisingly, higher for those in their 70’s than it is for men in their 60’s. Older men are, of course, older. They are also less likely to be in good health and much more likely to come from the 1990’s data. They are less likely than their younger colleagues to be married with the spouse present, but this is probably simply the result of greater mortality. The older sample of men is more likely to be white - another result which probably has to do with mortality. Interestingly, there is virtually no difference in the incidence of depressed feelings between men in their 60’s and men in their 70’s, but the older group is more likely to report themselves as lonely.

In the next section, I present the results for the estimation of models presented previously.

4 Results

Table 2 presents O.L.S. estimates of the effect of labor force withdrawal on the two well being measures. The first set of regression are performed on a sample consisting
entirely of 60 year olds; the second set on the full sample. All of the regressions are robust regressions to control for the fact that some individuals contribute more than a single observation to the analysis data. In the cross-section, the marginal effects of most of the control variables are the of the same sign for the two measures and are not surprising. Whites have better well being (recall that the well being measures - depression and loneliness - are “bads”); the less educated seem to experience more depressed and more lonely feelings; and being married reduces more depressed feeling and loneliness. Oddly, the greater the number of children the lower the person’s well being. The same effect is found for residence in the South. A very important variable, consistent with the findings of social psychologists, is good physical health. People whose physical health is excellent rather than merely good or poor, display much higher well being.

Of course, the variable we care about most in these regressions is whether the person is withdrawn from the labor force. In all four regressions, notice the strong, statistically significant adverse effect of being retired on the well being of the elderly. The results in this table would suggest that the process of leaving the world of work takes a heavy toll on well being, in that feelings of being depressed and feeling lonely, are more common among retirees than non-retirees. But is this cross section relationship causal?

To begin to explore this, consider the results in Table 3. These are the Wald estimates as given by equation (6), where we examine the change over time in the well being of 60 year olds relative to the change over time in the well being of 70 year olds. Notice that, over the decade, the incidence of depressed among the 60 year olds slightly decreases relative to that 70 year olds. Notice also that there is no change whatever over time in the relative incidence of loneliness. The table also shows that between the early 1980’s and early 1990’s, the change in the fraction withdrawn from the labor force rises for 60 year olds - both absolutely, and relative to 70 year olds. The last two lines in the table combine these various estimates to show that the simple Wald estimate suggests that retirement, contrary to what the simple O.L.S. models suggest, lowers depressed feelings, and does not affect feelings of loneliness. It must be emphasized that these Wald estimates should be interpreted with caution. After all, they consist of functions of simple means without any other controls, particularly age
which might be the source of the large change in the retirement probability for the 60 year-old sample.

To explore the results more carefully, in particular to ascertain whether the relative change in retirement probabilities between 60 and 70 year olds holds up when other controls are added, Table 4 presents retirement equations, where the interaction term in the last line measures the relative change in the behavior of the two groups over time. The results indicate that the interaction term is strongly statistically significant, and is, in fact, slight larger than the differences used to compute the Wald estimate in the previous table. Thus, the results suggest that 60 year olds indeed became relative more likely to be withdrawn from the labor force relative to 70 year olds. Recall that this equation in Table 4 is really a first-stage regression for a TSLS model, where retirement status is instrumented by the interaction term.

Table 5 presents these TSLS estimates. Similar to the Wald estimates, the results suggest that retirement appears to make depressed feelings less likely (albeit by an amount that is only weakly statistically significant), and has no statistically significant effect on feelings of loneliness. These results contradict those from O.L.S., and run counter to much of the received wisdom in psychology about the effects of retirement. Notice that they are perfectly consistent with the description of a voluntary retirement decision laid out in Section 2. People who choose to withdraw from the labor force, will be people whose dissatisfaction with the idiosyncratic aspects of work is higher than those of their similarly aged counterparts who remain. Since a part of the intensity of their dissatisfaction has to do with how they feel in general, the people who retire will be disproportionately “depressed”, hence the O.L.S. result. But the fact that people who are more depressed than their observationally identical counterparts are more likely to retire, does not imply that retirement does not cause joy to even these people.

A plausible story may certainly be constructed which helps these results hang together, but how credible are the results? In particular, what of the concern that the identification in the model presented hinges on the assumption that there is no change over the decade under study in the relative well being of 60 and 70 year olds, except through the change in their relative retirements. I now present the results for
the other set of instruments - the previous mandatory retirement coverage for people in their 60’s. Table 6 presents Wald estimates analogous to those previously shown. Focusing on coverage by a mandatory retirement plan in 1969 - 12 or 14 years before the years under study - the third column indicates that people so covered were more likely than those not covered to be retired in 1981/1983. Also, their depressed and lonely feelings in 1981/1983 were lower. These together again lead to the result that retirement is associated with better well being, as measured by lower depressed feelings and lower loneliness. The results are very similar with the when coverage in 1971 is the used.

Again, Wald estimates do not control for observables and must be cautiously interpreted. Tables 7 and 8 present, respectively, the first stage and TSLS estimates for the model where I instrument for retirement status using previous plan coverage. In the first stage models, previous retirement plan coverage is a strong predictor of subsequent retirement behavior. The $R^2$ for these equations are relatively large, and the plan coverage variables are all strongly significant. If anything, the TSLS estimates in Table 8 give provide even stronger evidence that retirement tends to improve well being. This true for both instruments, and for both of the well being measures. As with the difference-in-difference results, there are caveats here as well. The chief concern with this model is that the instrument is not unrelated to underlying retirement preferences. There might indeed be sorting, but I believe this effect to be considerably mitigated by the fact that I look at retirement coverage more than a decade before the date retirement is observed. If one believes that sorting explains previous retirement coverage, then one would have to argue that people who know that they would not be happy ten years in the future with life outside of the work sorted themselves systematically into jobs ten years ahead of time where they are no retirement rules. Though possible, this seems improbable. Also, the credibility of the both sets of results is strengthened by the fact that both find the same effect for retirement.

5 Conclusion

This paper assesses how retirement - defined as labor force non-participation in later life - affects subjective well being. O.L.S. estimates find a negative relationship between
well being and retirement status, which suggests that retirement is depressing. Using two different IV estimators, I find that this result is illusory. Retirement appears to actually improve well being in both a difference-in-difference estimator which tracks the change in retirement and well being in 60 years olds (the controls) over time relative to the changes over time for men in their 70’s (the controls); as well as in a TSLS model in which current retirement status is instrumented for by whether the man was covered by a mandatory retirement rule at his job at a point in the past. I conjecture that the contrary result from the O.L.S. estimates is caused by the fact that, given the voluntary nature of permanent labor force withdrawal, the people who choose to leave at any given age are those whose idiosyncratic dissatisfaction with their jobs (and possibly their lives) is high relative men who continue to be labor force participants.

The topic the paper addresses has interested psychologists for some time, but has not been the focus of any research by economists. This lack of attention derives partly from the fact that economists rarely try to measure well being directly, and in part from the fact that most research in economics on retirement focuses on its causes rather than its effects. That an ever larger fraction of the population will be withdrawn from the labor force in the next few years creates an urgent need to gain a richer understanding of how this transition is likely to affect well being. Income, poverty status and other measures which typically interest economists surely affect well being (that, after all, is why we study them), but there is much to be gained from exploiting the direct information which is available about well being and which is used routinely by psychologists and other scholars. Otherwise, we will have to rely exclusively on their reports about the retirement’s effects, economists can ill afford to allow this for a choice variable of fundamental interest to the field.