Rushing to take Social Security retirement benefits before the "Normal Retirement Age" : labor market conditions as main incentives

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November 2008

Abstract

This paper examines the role of labor market conditions in Social Security take-ups. We aim at understanding if labor market status has an impact on the decision of taking SS benefits at age 62, that is as soon as possible and at the cost of permanently reduced pensions. To do so, we use the Health and Retirement Study, and estimate linear probability models to highlight the existence of a causal link between having no job at some wave, or more generally being liquidity-constrained, and taking SS benefits between that wave and the following one. We control for a full range of variables and use the panel dimension of the data to control for unobserved individual heterogeneity. Eventually we find evidence of the causal link we looked for between labor force status and the probability of taking SS benefits. Having no salary income last calendar year as well as not working at previous wave do increase the likelihood of SS benefits take-up in a significant way. By interacting the fact of having no job with age dummies, we find that the effect is stronger for people who just became eligible to early SS benefits. When we restrict our sample to individuals becoming eligible to early SS benefits between two waves in order to estimate this time the probability of taking early SS benefits, at the age of 62, we find the same striking pattern. All our regressions support the fact that as well as health, wealth, or education, labour market conditions, more particularly non-employment at the end of one's career, may incite people to take their Social Security benefits as soon as they can do so.

Keywords: Retirement Decision, Social Security, Labor Force Transitions.
JEL classification: H55, J22

1 Introduction

It is now well-established that the United States, although better placed than many OECD countries to cope with population ageing, will have to face a slower economic growth, labour shortages, and rising tax rates over the next few decades, for by 2030, almost one-fifth of its population is projected to be aged 65 and over compared with around one-eight in 2000. Baby boomers will begin to make their transition from labour force to retirement from year 2010, or even earlier for those who choose early retirement. As the ratio of workers to retirees (*i.e.* all persons aged 50 and over who are not in labour force) is projected to fall from over three to one to around two to one in 2030, and growing expenditures on social security will have to be financed by taxes on a smaller number of workers relative to pensioners or by cuts in the amount of social security benefits, the retirement decision, and more precisely the age of retirement, has become a key variable. Therefore, it has become crucial to understand what the determinants of the age of retirement are, in order to be able to influence the latter through its main explaining variables. More particularly we are interested in the determinants of taking Social Security benefits before the "Normal Retirement Age", which is 65 years old, at the cost of permanently reduced pensions. More than half of the individuals in our sample take early SS benefits as early as age 62, more than three quarters before age 65. Hence there must be powerful incentives that make these individuals rush to SS retirement benefits.

This paper examines the role of labor market conditions in Social Security take-ups. We aim at understanding if labor market status has an impact on the decision of taking SS benefits at age 62, that is as soon as possible and at the cost of cut down pensions until death. What we call the "classical" determinants of SS take-up, such as demographic features (gender, age, marital status), educational attainment, health status, wealth ... will not be studied for themselves but will serve as control variables in our empirical analysis.

To do so, we use the RAND-HRS data file, which is a cleaned, processed, and streamlined version of the Health and Retirement Study (HRS). The HRS is a national panel survey of individuals aged 51-61 at baseline (1992) and their spouses. The panel started in 1992 with 12,562 respondents in 7,702 households. Follow-up surveys were conducted biennally. Thus in 2008, six waves were available for study.

We estimate linear probability models to highlight the existence of a causal link between having no job at some wave, or more generally being liquidity-constrained, and taking SS benefits between that wave and the following one. We control for a full range of variables (all the "classical" determinants we enumerated earlier); and use the panel dimension of the data to control for unobserved individual heterogeneity. As we fear that eligibility to SS benefits may affect labor force status before the individual takes SS benefits, we introduce the local unemployment rate as an instrumental variable. This way, we can at the same time check the causality goes from labor market status toward SS take-up and not the opposite, and investigate the impact of unemployment in its aggregate dimension (conversely to our labor force variables that are measured at the individual level) upon the probability to make one's transition to SS retirement benefits.

Eventually we find evidence of the causal link we looked for between labor force status and the probability of taking SS benefits. Having no salary income last calendar year as well as not working at previous wave do increase the likelihood of SS benefits take-up in a significant way. By interacting the fact of having no job with age dummies, we find that the effect is stronger for people who just became eligible to early SS benefits, meaning that being not employed at the time one becomes eligible to early retirement SS benefits is a powerful incentive to take them, and that these incentives become weaker and weaker as individuals become older since if they had no job at 60, 61, or 62, they took SS early benefits at age 62. When we restrict our sample to individuals becoming eligible to early SS benefits between two waves in order to estimate this time

the probability of taking early SS benefits, at the age of 62, we find the same striking pattern. These results are validated by our robustness checks, including that of adding an instrumental variable to eliminate the possibility of inverse causality. We also find that SS transitions are cyclically sensitive, since a 3 percentage point increase of the local unemployment rate, which corresponds roughly from moving from a period of expansion to recession, raises the probability of taking SS by 0.06 percentage points.

All our regressions support the fact that as well as health, wealth, or education, labour market conditions, more particularly non-employment at the end of one's career, may incite people to take their Social Security benefits as soon as they can do so, regardless of the fact that their benefits will then be permanently cut by 20 percent; that should be a serious motivation for further research on this topic.

2 Background and Litterature Review

2.1 Institutional Features of Social Security

2.2 Previous Litterature

Many studies focus on older workers'unemployment, or on their decision to retire, but few deal with the link between these two issues, more particularly concerning the United States. Indeed the unemployment issue is usually addressed from the point of view of labor demand and supply specificities, while studies modeling the choice to retire forget to take into account a real labor market with flows between employment and unemployment, and stick to the role of health insurance or financial incentives provided by private pensions to explain retirement. We can however cite some studies which worked at dealing with the determinants of retirement and the labor market as two pieces of the same puzzle. [Farber, 2005], [Chan and Stevens, 1999] and [Chan and Stevens, 2001a] showed that job loss was common enough for older workers and had long-lasting negative effects on both employment prospects and earnings of these workers. [Chan and Stevens, 2004] raises the issue of the impact of job loss for an older worker upon his retirement transition, through the decrease in earnings and the shortfall in pensions that would have kept on increasing had the working period continued. They nevertheless conclude that "other barriers to reemployment may be more important explanations for the low employment rates of recently displaced older workers".

[Hutchens and Jacobson, 2002] looks at the distribution of ages at which people receive unemployment insurance, before and after the law forbiding receiving both UI and SS at the same time. Spikes at the ages of 62 and 65, which are the "conventional" retirement ages, tend to underline a relation between SS and UI. In other countries the issue of a possible link between unemployment at older ages and transitions to retirement have been dealt with more deeply. [Hallberg, 2006] finds that the probability that a worker takes early retirement in Sweden depends on deviations in aggregate employment in his industry from the long-run trend. Other researchers found out that many older workers spent some time living on UI before they claimed SS benefits. In Sweden they were only 7 per cent of older workers ([Palme and Svensson, 2004]), but they were 15 per cent in Belgium ([Dellis et al., 2004]), over 20 per cent in France and Germany (([Mahieu and Blanchet, 2004], [Borsch-Supan et al., 2004]), and almost 40 per cent in Japan ([Oshio and Oishi, 2004]), where applying to UI is considered to be normal for anyone losing his job, whether he looks for another job or not. Thus in all these countries, and many others, unemployment insurance is often used as a kind of early retirement benefits, while awaiting legal social security benefits.

According to [Coile and Levine, 2006], "much of the existing literature on retirement has focused on the

effect of poor health or lack of access to health insurance and the effect of Social Security and private pensions on retirement. Yet just as an older worker may experience a health shock that limits his ability to work as long as planned, so too may he become unemployed and find himself constrained by poor labor market conditions from working until his preferred retirement date". They examined the case of the United States in an interesting empirical project concluding that the unemployment rate has a significant and positive impact on retirement transitions : a 3 percentage point increase in the unemployment rate, which corresponds from moving from the peak of an expansion to the trough of a recession, raises the retirement hazard for older workers aged 55-69 by roughly 5 to 10 per cent. This magnitude can be compared to a $10,000 in SS wealth or the threat of a health shock such as heart attack, stroke or a new cancer diagnosis. What's more, this effect only becomes evident when workers hit age 62, which indicates that access to early SS benefits may incite unemployed workers to claim these in order to absorb the financial shock caused by job loss. Hence, in the keeping with Coile and Levine's questioning, we will investigate the relationship between non-employment (not in aggregate form this time but in its individual dimension, through the fact of not having a job for an individual) and retirement as SS taking.

3 Data

3.1 The Health and Retirement Study (HRS)

The database we use is the Health and Retirement Study, which is the first database in terms of healh, retirement, and ageing in the US. Initially the HRS was a longitudinal study upon individuals aged 51 to 61 at baseline (that is, in 1992), and their spouses, who could be younger or older, with new interviews of these 12,652 respondents from 7,702 households, every two years. Since 1998 the HRS have enriched of two older cohorts (born before 1924 and between 1924 and 1930), and two younger cohorts (born between 1942 and 1947, and between 1948 and 1953). Our database, provided by the RAND Corporation, is a cleaned and processed version of the HRS, which contains data about five cohorts, during seven waves separated by one or two years, from 1992 until 2004. Although the HRS is the best available database to study retirement issues in the US since it is a mine of information concerning health, wealth, demographics, respondents'expectations and projects as to retirement, *etc.*, it suffers from a great lack about labor market, such as the fact that there is no data concerning unemployment spells, or that benefits from UI and from WC (workers'compensations) are coupled in one variable. Moreover, because waves are separated by two years, we cannot study transitions from one state to another between two waves without some vagueness; in addition, since interviews do not entail any question about change of labor force status between two waves, we only have information about labor force status at the time of the interview, so every even year.

We use the HRS in its panel dimension, *i.e.* we change the way data is organized : initially every observation was a respondent to which corresponded one variable for each wave; from now on an observation will be a person-year observation, that is an individual does not match with one observation that we can follow during seven waves but with one observation per wave, as if there were seven different respondents (only their personal identifiers allow us to mark them). Hence our database, which was made of 30,197 observations and 5,502 variables, now includes 129,544 observations and 2,136 variables.We dropped the missing values that were common to all variables for they corresponded to observations for which individuals are not yet part of the sample or already out. Besides, these missing values are randomly missing, so the reason why individuals are out of the sample is not correlated with the idiosyncratic error term, and we have

the right to drop them. Before we pile up the seven databases (one for each wave) to make our new database, in every database we had kept two versions of each variable, one for wave t and one for wave $t-1$, which is necessary when some transition is being investigated. Then, once we have our big database, we drop any observation whose age is under 50 or beyond 75, which are not so concerned by retirement transitions.

3.2 Social Security Recipient Status

As our purpose is to explain why so many individuals take SS at age 62 at the cost of permanently reduced benefits, we construct a dependent variable that will gives us information about when a respondent makes his transition to retirement, where retirement refers to taking SS benefits rather than to withdrawing from the labor market or even reducing working hours. In other words we create a dummy variable that will be coded 1 at wave t if the individual receives SS benefits at wave t while he did not at wave $t-1$, 0 else. We could use a variable about SS income, where SS stands for SS retirement, spouse or widow benefits, and excludes disability insurance, which is exactly our focus; but doing so, because the HRS is a biennal survey, we have no means of knowing precisely at which age between two waves respondents claimed their SS retirement benefits. So for instance if some individual aged 61 in wave 4 and 63 in wave 5 takes early benefits at age 62, we must be careful and keep ourselves from considering this respondent took SS beneits at age 63, which corresponds to the first observation when he receives retirement benefits. One solution would then be to decide that respondents take benefits exactly halfway the two waves, but this is quite a strong assumption, so that we will prefer the following option.

We prefer another variable that gives exactly the age when the respondent starts to receive Social Security income, which may sound perfect, except that Social Security here refers to OASDI (Old Age, Survivors and Disability Insurance), *i.e* includes not only retirement benefits, but also widowhood and disability benefits. Hence, before we drop any observation in our database, more than 26 per cent of our respondents report having received "Social Security benefits" before the age of 62, sometimes as early as 9 years old. Indeed, early benefits are also payable to the spouse, ex-spouse, and widow(er) of retired worker beneficiaries. A spouse may receive benefits at age 62, a widow(er) as early as age 60, but if the spouse, ex-spouse, or widow(er) cares for a child under age 16 or disabled, these benefits may be claimed at any age; a deceased worker's children and dependent parents may also be entitled to benefits. Therefore, we drop 17,184 observations, for they report receiving SS benefits for the first time strictly before 62, and we are not interested in considering widowhood or disability as part of the decision to take early benefits. Our dummy is coded 1 at wave t if the respondent made his transition between wave $t-1$ and wave t, that is if he reaches the age he reports as when he receives SS for the first time between the two waves. If they enter the sample after their transition then we cannot observe their transition, therefore we drop them. More generally we drop observations as soon as they leave the "at-risk" pool, so that for every individual the last observation is the first in which he is aged over the age when he received SS for the first time. This way, individuals who already made their transition will not be such that their SS dummy is 0.

The distribution of the age when individuals "take" SS retirement benefits is displayed in table 1, it begins at age 62 as we explained earlier, and peaks at ages 62 and 65 as usually since these are SS early and normal retirement ages. The magnitude of the age 62 peak is much greater since more than half of the individuals in our sample do receive SS benefits as early as age 62 (we call them "earlytakers"), against 17 per cent at age 65, which is not so far from the 13 per cent of individuals who begin receiving retirement benefits at age 63. Indeed theses figures would have been largely higher if we had considered only those

Age when respondent starts receiving SS	Freq.	Percent	Cum.
62	14,030	54.44	54.44
63	3,333	12.93	67.37
64	2,325	9.02	76.39
65	4,410	17.11	93.50
66	880	3.41	98
67	278	1.08	95.63
68	153	0.59	98.59
69	165	0.64	99.23
70	87	0.34	99.57
71	46	0.18	99.75
72	21	0.08	99.83
73	14	0.05	99.88
74	9	0.03	99.92
75	1	0.00	99.92
76	11	0.04	99.97
77	7	0.03	99.99
81	2	0.0	100
Total	25,772	100	

Table 1: **Distribution of Social Security benefits "taking age"**

people who had already retired before age 62 (in the sense that they had stopped working and declared themselves as retired). [Hurd et al., 2002] find that 73 per cent of individuals who retired before age 62 take early and reduced benefits within 3 months of turning 62 and 88 per cent claim by the time they turn 63. [Burkhauser et al., 1996] consider a sample of all individuals aged 60 or 61 in wave 1 of the HRS and report that in wave 2, 30 per cent accepted early SS benefits at age 62. [Olson, 1999] claims that this paper underestimates the fraction of male "earlytakers" by 13 percentage points for not all respondents who are 62 when interviewed are "62 enough" to receive early SS benefits (since it takes some time from the moment one entitles to receive these benefits) if they claimed these. Yet we do not have to worry about this issue because we consider individuals take benefits at age 62 if they do between their 62nd and their 63rd birthday. Therefore we find that 60 per cent of respondents aged 60-61 in some wave receive SS retirement benefits (for the first time) in the following wave. Another noteworthy feature (which is not visible in this table though) is that most of the individuals who take early benefits at age 62 do so in the first months they turn 62. Indeed we already saw that 54 per cent of our respondents took early benefits at age 62, but we can go into further detail by saying that more than 41 per cent of the whole sample take their benefits within the first two months and a half of turning 62.

3.3 Key explicative variables

3.3.1 Labor market status

Now that we have a precise idea of the proportion of people -quite huge- who take early and reduced benefits at age 62, we can tabulate some of their characteristics, more specifically related to the labor market, the wave before they took these benefits. Table 2 allows us to compare their characteristics to those of the 45 per cent of respondents who take their SS benefits after they become 63, whom we call "postponers". What emerges from this table is the big proportion of "earlytakers" who do not work even before they take their retirement benefits. Indeed, more than 45 per cent report being completely retired the wave before they make their transition to SS benefits, while only 11 per cent do so among those who take their benefits later. As to people who work full time, they represent only 36 per cent of earlytakers before they take SS benefits, while their proportion is more than 64 per cent among those who take benefits later. The fraction of unemployed people is also greater among earlytakers, but remains very low in both cases. Yet this variable may suffer from a bias since labor force status is self-reported by respondents, who may prefer to declare themselves as partly or completely retired at age 60 or so, or even out of labor force, rather than unemployed. Another question , which asks repondents if they work for a pay at the time of the interview, provides a global view of the fraction working the wave before liquidation : if 78 per cent of posponers worked, this was only the case for 55 per cent of earlytakers, even though the latter are aged 61 on average while postponers are aged more than 63 the wave before they receive SS benefits for the first time .

3.3.2 Income sources

As we are interested in looking for the impact of liquidity constraints upon the decision to take early SS benefits, we also compare earnings, capital income, and pension income for the two categories. First one may notice that the dummy equaling 1 when the individual earns no salary at all is not the complementary of the "currently working for pay at wave $t-1$" variable. Indeed, the income variable refers to last calendar year whereas the labor market variable refers to wave $t-1$, that is two years before. Therefore we also tabulated the income variable of the preceding wave, but there remains a time-lag. The results are quite

Variable	Whole sample		Earlytakers		Postponers	
	Mean	N	Mean	N	Mean	N
Labor market status						
=1 if works full time at wave t-1	0.584	19948	0.361	3263	0.641	2503
=1 if works part time at wave t-1	0.102	19948	0.103	3263	0.08	2503
=1 if unemployed at wave t-1	0.017	19948	0.017	3263	0.011	2503
=1 if partly retired at wave t-1	0.059	19948	0.098	3263	0.059	2503
=1 if retired at wave t-1	0.131	19948	0.455	3263	0.113	2503
=1 if disabled at wave t-1	0.012	19948	0.015	3263	0.016	2503
=1 if not in labor force at wave t-1	0.095	19948	0.113	3263	0.08	2503
=1 if currently working for pay at wave t-1	0.74	19947	0.551	3267	0.779	2503
Income variables						
=1 if no salary income	0.34	25772	0.596	3268	0.443	2508
=1 if no salary income at wave t-1	0.285	19958	0.429	3267	0.277	2504
=1 if no hh capital income	0.342	25772	0.288	3268	0.274	2508
=1 if no hh capital income at wave t-1	0.359	19958	0.318	3267	0.312	2504
=1 if no pension	0.838	25772	0.667	3268	0.736	2508
=1 if no pension income at wave t-1	0.879	19958	0.79	3267	0.87	2504
log of wage income, cond. on being positive	9.919	17004	9.218	1319	9.992	1397
log of wage income at wave t-1, cond. on being positive	9.977	14265	9.708	1866	10.209	1811

All variables related to income (wage, pension, *etc.*) or wealth answer questions about last calendar year.

The whole sample is composed of respondents whose age of liquidation is non missing.

For earlytakers and postponers observations are those of the last wave before they take SS benefits.

Table 2: **Summary statistics about labour market and income variables**

similar though, with 60 per cent of earlytakers earning no salary at all last calendar year, against 44 per cent of postponers. As the transition may have occurred between the two waves but before last calendar year, we look at this variable at wave t-1: both figures shift downwards (43 per cent for earlytakers, 28 per cent for postponers) but the gap is as wide as before. When they do receive some salary income, earlytakers earn less than postponers. Capital income does not seem to discriminate between earlytakers and postponers; on the contrary pension income does but not in the sense we could expect since a larger part of earlytakers receive some pension, compared to postponers, which should loosen their liquidity constraints. However this may result from the fact that eligibility to private pension plan often occurs before 62, so that constrained individuals take these benefits as soon as they can, and will do the same about SS benefits. Receiving such private retirement benefits may be one explanation to the fact that so many respondents declare themselves as retired or partially retired even before receiving SS benefits.

3.3.3 Classical determinants and subjective variables

As the fraction of earlytakers working the wave before they take SS benefits for the first time is far below that of postponers, we may wonder if those earlytakers who stopped working before 62 decided to claim early and reduced SS benefits **because** they did not work anymore and if such early cessation of work was voluntary or totally accidental; or if the fact that they were close to eligibility age made them stop working and wait for their benefits. Therefore it may be interesting to investigate more subjective questions concerning expectations as to continuing to work after some point. In this way, the HRS asks respondents-who were aged less than 62 and working at the time of the interview- to give their self-reported probability of working full-time after 62. We can then notice that 38 per cent of earlytakers think there is no chance at all they will be working full time after 62, that is after they take their earky SS benefits, whereas this is only the case of 16 per cent of postponers. On the contrary, only 15 per cent of earlytakers are 100 percent sure they will work after 62, against 35 per cent of postponers. These results are quite intuitive, but we are more interested in those individuals who declared a positive probability of continuing to work full-time after 62 but did not. We find that 67 per cent of them took early benefits at age 62, against only 29 per cent when they did continue working. However these results are not very robust for lack of such observations, and even if they were, we cannot know which event led to the other, in other words descriptive statistics are not an adapted tool to understand if respondents claimed early benefits because they stopped working or if they stopped working because they were to receive SS benefits; what we know for sure is that an unanticipated cessation of work before age 62 is often associated with early claiming of SS benefits.

We do not deal here with what we call the "classical" determinants of liquidation, such as sex, race, education, health, wealth, but we display supplementary summary statistics in the appendix.

As to the job characteristics of earlytakers who are still working just before they take their benefits, we could tabulate their annual earnings, their job occupation, whether their job requires a lot of physical effort, whether their employer provides them with a retiree health insurance, a pension plan, *etc.* but summary statistics are not the core of our study and moreover the picture is quite simple: postponers are gifted with nicer characteristics than earlytakers regarding their annual earnings as well as the kind of activity they work in or the financial advantages (pension plan, health insurance,...) associated to their job. These results are consistent with Uccello's, in [Uccello, 1998], who found that earlytakers were more prone to work in "blue collar" activities, and that a great proportion of them had left their last job unvoluntarily, which supports our intuition that many earlytakers do not work before they take early benefits against their will, and without calling themselves unemployed. In the same vein, Chan and Stevens, in [Chan and Stevens, 2004], estimate

that a job loss for an individual aged over 50 duplicates the annual retirement probability.

Our descriptive analysis allowed us to find some correlations between job characteristics, income variables and SS taking age; but we did not catch the impact of each variable independently of the others, that is *ceteris paribus*. Moreover, the most healthy are at the same time the most wealthy and educated individuals, so that we do not know which variable does account for earlier or later claiming ... Hence we will try in the next section to disentangle the impact of non-employment, and more generally of liquidity constraints, from that of the other variables, by controlling for all these variables that influence retirement probabilities, and for unobserved individual characteristics such as family background or taste for leisure.

4 Empirical Strategy

Before we go into further detail with our econometric strategy, let us remind how we constructed our sample. We use the panel version of the HRS, from which we dropped missing values common to every variable, and more particularly all observations for which we do not know the age when they receive SS benefits for the first time. Besides we only consider individuals aged 50 to 75, more concerned by SS taking. We also dropped observations which did not belong anymore to the "at-risk" pool, corresponding to individuals whose transition to retirement was made, in order not to count them as belonging to the "liquidSS=0" group; and observations that already received SS when entering the database. At the end our regressions will take into account 13,249 observations when we do not include spouse variables as control variables, but only 7,405 observations when we do since single individuals are then dropped.

4.1 The determinants of taking Social Security : Basic specification

In order to evaluate the impact of labor market conditions upon the probability of taking, we will estimate the following equation:

$$liquidSS_{i,a,t} = \beta_0 + \beta_1 nojob_{i,t-1} + \beta_2 nojob_{i,a,t-1} + \beta_3 X_{i,t} + \gamma_a + \gamma_t + v_{i,t} \quad (1)$$

Our dependent variable, $liquidSS$ is a dummy that equals 1 if individual i, at age a, at wave t, starts to receive SS benefits. We detailed the way we constructed it in section 3.2.

About explicative variables now, the one that is at the core of our study is $nojob_{i,t-1}$, which is 1 if individual i does not work for some pay at wave $t-1$ and 0 otherwise, but we will also use other variables to catch the impact of not working, such as the fact of earning no salary income the calendar year before the interview, which may be useful because we have no information about unemployment spells between two waves. As we are looking for the impact of having no job on the decision to entitle to SS benefits, we include interactions between the *nojob* dummy and age group dummies, represented by the term $nojob_{i,a,t-1}$, which will allow us to find out if having no job is a most powerful incentive to take early benefits at 62 or when the individual is old enough to get normal SS benefits. We assume that any sharp break in respondents'reponse to non-employment at age 62 reflects the effect of workers'eligibility to early SS benefits at this age. This is not too strong an assumption and it has been commonly employed in the previous literature to determine the effect of SS on retirement; for example, see [Coile and Levine, 2006], [Kahn, 1988], [Hurd, 1990], and [Ruhm, 1995], who all attribute spikes in the retirement hazard at age 62 to the effect of SS.

$X_{i,t}$ is a vector of variables that sums up the characteristics of individual i at wave $t-1$, such as demographic variables (whether the individual is single, how many children he has, whether health status

limits work, *etc.*), income variables (whether no earnings from work, total wealth, whether no pension income, whether covered by public or private health insurance, *etc.*), and finally variables related to the respondent's spouse (whether spouse has no earnings, no pension, health insurance; whether spouse works; whether spouse already receives SS), which restricts the sample to married or partnered individuals. Variables such as gender, education, or race, will only be part of pooled OLS regressions since we will mainly run fixed effects regressions to estimate our unobserved individual heterogeneity model, where fixed effects already control for any time-constant variable.

We add control for ages, by introducing 8 age-group dummies represented by the γ_a term, and control for the 7 waves with the term γ_t. Age dummies incorporate in the model different propensions to take SS depending on age, which may depend in turn on eligibility to SS early or normal benefits, but also on eligibility to some programs like *Medicare* at age 65, while wave dummies are aimed at controlling for the possibility that some years may be more favorable to retirement than others. Including these controls essentially converts this model into a discrete-time proportional hazards model of retirement, where the estimated values of γ_a at each specific age represent the baseline hazard. Models of retirement transitions of this type are estimated in [Coile and Levine, 2006].

Last but not least, the composite error $v_{i,t}$ is the sum of the time-varying idiosyncratic error term $u_{i,t}$, and the time-constant error term a_i which stands for unobserved factors that do not vary with time. We estimate an unobserved individual heterogeneity model in order to control for individuals'unobserved characteristics such as family background or a greater taste for leisure than usual ... As the ideal random effects assumptions include all of the fixed effects assumptions plus the additional requirement that a_i is independent of all explanatory variables in all time periods, which may not be the case here, we use fixed effects to model individual heterogeneity. Besides, a Hausman test confirms the latter are better adapted to our regressions than random effects. Since the composite error is serially correlated (because a_i is part of the composite error at each period t), we use generalized least squares. We estimate our regressions as probability linear models, but probit estimations give similar results. The linear probability model has some drawbacks: first the predicted probability may take some values outside the [0,1] range, which is quite disturbing for a probability; then the impact of explicative variables is constant. But if we are interested in the sign and magnitude of the coefficients, then the linear probability model is a good compromise between accuracy and clearness, compared to the probit model. Moreover, as there must be heteroskedasticity in a linear probability model, we compute robust standard deviations in order to have the most accurate significativity tests.

If the fact of not being employed does act as a constraint upon individuals, inciting them to take SS benefits, then $\beta_1+\beta_2$ should be positive from age 62. Likewise if we run the regression without the interactions between age and *nojob*, we expect coefficient β_1 to be positive. Yet at this point we cannot be sure we pick up a causal effect of non-employment on SS transitions, thus we estimate other equations in the following section.

4.2 Robustness checks

Panel data and fixed effects regressions are useful tools to remove individual heterogeneity and therefore eliminate a possible bias caused by unobserved fixed omitted variables. Still there remains some concern about the direction of causality in our model. Indeed we are looking for some impact of having no job when eligible to early SS benefits upon the probability of making one's transition toward SS benefits taking. But

what about the possibility of inverse causality, that is of the decision of taking SS benefits having some impact on being non-employed? Evidence of the existence of this inverse causality has been put forward in [Hairault et al., 2006], which "reveals a deadline effect due to retirement which recursively reduces the search intensity, hence the rate of employment, of older workers".

To this end we estimate models of the form:

$$liquidSS_{i,a,c,t} = \beta_0 + \beta_1 nojob_{i,t-1} + \beta_2 nojob_{i,a,t-1} + \beta_3 lur_{c,t-1} + \beta_4 X_{i,t} + \gamma_a + \gamma_c + \gamma_t + v_{i,t} \quad (2)$$

In this specification *lur* stands for "local unemployment rate" by Census regions. Indeed we do not precisely know in which state respondents live, but we do know in which Census division, in the sense of the Bureau of Labor Statistics, which allows us to compute the local unemployment rate by year (the year of the end of the interview) and Census division, and to assign to every observation a value for this variable. We would have liked to construct a more disaggregated measure of the local unemployment rate, for example by sex and age category, but unfortunately the BLS does not provide such statistics. The local unemployment rate may help us to eliminate the possibility of inverse causality as it predicts our key explicative variable (not being employed) without influencing our dependent variable (making one's transition toward SS benefits), so that it satisfies the conditions to be a valid instrument. We also introduce in the set of explicative variables the interaction between *lur* and $(1 - nojob)$, that is the local unemployment rate for individuals who have a job (and 0 for the others), which may be interpreted as the probability for someone being employed to lose his job. Finally, as our approach relies on variability between Census divisions, we add controls for all 9 divisions, with the term γ_c. Similarly, national trends over time may be related to both SS taking patterns and labor market status, so we also include year-specific dummies (one for each year from 1992 to 2005, except year 2001) represented by the term γ_t.

Our first regressions (those corresponding to equation 1) will be considered as robust if the introduction of our instrument does not change the sign and magnitude of $\beta_1 + \beta_2$. Then we will be sure we identified some causal effect of *nojob* upon the probability of taking SS benefits. As to the local unemployment rate, we expect coefficient β_3 to be positive since a greater value of *lur* means a greater probability of becoming unemployed for someone being employed and a greater probability of staying unemployed for someone with no job, which should tighten liquidity constraints and increase incentives to take SS benefits.

4.3 The determinants of taking early SS benefits at age 62

All our regressions will be first estimated on the sample whose construction we detailed earlier, then on a restricted sample composed exclusively of individuals becoming eligible to early SS benefits, that is becoming 62, between two waves. Our purpose will no longer be to investigate the determinants of taking SS benefits while treating age only as an explicative variable, but to study the transition to SS early benefits, so that we only follow individuals during two waves, the wave before the respondent is 62 and the wave after he becomes 62 and is consequently old enough to entitle to SS early benefits. Hence we only use one observation per individual (concerning the set of explicatives variable), and two observations of the dependent variable (only two combinations are possible : 0 at t-1, 0 at t, or 0 at t-1, 1 at t), and we no longer estimate an unobserved heterogeneity model, we simply run OLS regressions. The equation we will then estimate is the following:

$$Earlytakers_{i,a,c,t} = \beta_0 + \beta_1 nojob_{i,t-1} + \beta_2 nojob_{i,a,t-1} + \beta_3 lur_{c,t-1} + \beta_4 X_{i,t} + \gamma_a + \gamma_c + \gamma_t + \epsilon_i \quad (3)$$

where the dependent variable is a dummy coded 1 if individual i , at age a, at wave t, receives SS benefits for the first time. Wave t is the first observation post liquidation but the dummy only equals 1 if the individual declares he took SS benefits at age 62 (more precisely between his 62^{nd} and 63^{rd} birthday). All explicative variables are measured at wave $t-1$ again, except income variables since they are asked for last calendar year.

5 Results

5.1 The determinants of taking Social Security : basic results

Table 3 first column presents the results of estimating equation 1 on the whole sample. Only those variables that are at the core of our study are displayed here but we show complete outputs of our regressions in the appendix. While having no salary income last calendar year has a positive and significant impact on the probability of taking SS benefits next wave, not having any pension income has almost the opposite effect in magnitude. Both variables are associated to liquidity constraints but no earnings means no work, which may be an incentive to retire-where retirement is defined as cessation of work- as the individual finds no job. On the contrary receiving some income from a private pension plan may be one reason why some declare themselves as partly retired before they receive SS benefits, which makes them more likely to take them than people who consider themselves as working full time for instance. We must be careful with the way we understand income variables coefficients since they have to do with last calendar year, and not last wave; hence the transition may have occurred in some cases before the individual declares having no income from work or pension.

Therefore we prefer focusing on the impact of not working at wave t-1 on the probability to take SS benefits between wave t-1 and wave t. The only advantage of column 3 is to show the raw impact of this variable without interacting it with age dummies. The fact of not being working at wave t-1 increases the probability of taking SS by 0.04 percentage points. Column 1 allows us to decompose this impact by age. Here the uninteracted *nojob* variable is still significant but its impact is negative this time. Yet the overall impact becomes largely positive, and of similar magnitude as in column 3 estimates, from age 62 in wave t. Before age 62 the interaction is not significant, which seems logical since an individual cannot take SS benefits in our sample before becoming 62. What is more interesting is the fact that the impact of the interaction becomes significant and positive at age 62, is greater at age 63, and peaks at age 64, before it loses magnitude and significance from age 65. It appears that being non-employed at ages 60, 61 and above all 62, has a much greater impact on transitions toward SS benefits, than being non-employed from age 63. The timing of this effect may begin as early as age 60 because individuals who lose their jobs are able to live with UI benefits or their own savings for a short time before SS benefit eligibility. When individuals are aged 65 or more at wave t, that is when they are 63 or more at wave t-1, the effect is not so big and roughly significant because few people this age and not working remain in the "'at-risk"' pool, most of them already took SS benefits when they faced difficulties on the labor market.

The second column provides an additional specification since we do not include spouse variables (whether spouse works at wave t-1, whether spouse already receives SS benefits at wave t-1,*etc.*) as control variables, in order not to restrict our sample to individuals married or in partnership. The sample now counts 13,249 observations instead of 7,405, but the magnitude and significance of estimates coefficients are barely altered.

Finally the estimates shown in last column are from the estimation of equation 1 as a pooled OLS

regression, which means that we consider two observations belonging to a same respondent as two distinct observations, and we no longer estimate an individual heterogeneity model with fixed effects removing any omitted fixed individual characteristic. If estimates from pooled OLS regressions are very different from those from fixed effects regressions, it implies that the bias of pooled OLS regressions, due to fixed unmeasured variables, is important. This is not the case with this model since all the coefficients keep the same sign (except the last one but it is not significant anyway) and are quite similar in magnitude, but we may though note that all coefficients (except the last one corresponding to the interaction between having no job at t-1 and being over 65 at t) are this time significant, at the 0.1 per cent level, for some variables are omitted in the pooled OLS regression, which reinforces the explicative power of the other variables. Moreover their effects are stronger in the pooled OLS regression (that is, when within and between effects are considered) , except for that of "no salary income last calendar year", which is greater in our "within regression". Thus there must be some unmeasured characterictic such as a lesser taste for retirement or a greater aversion to lack of money that decreases the probability of taking SS benefits when the individual has no salary income. When we run within regressions this negative effect goes away, so that the coefficient is higher. This also means that the impact of having no salary income last calendar year is greater when we compare the same individual at two distinct waves than when we compare two individuals in cross-section, which may imply that the loss of income for someone used to earning his livelihood is a greater incentive to take SS benefits than a cross-sectional absence of income.

Dependent Variable =1 if started to receive SS between wave t-1 and wave t				
	Fixed effects	Fixed Effects	Fixed effects	Pooled OLS
Interactions:age*nojob	Yes	Yes	No	Yes
Spouse Variables	Yes	No	Yes	Yes
=1 if no salary income last calendar year	0.0913***	0.0850***	0.0846***	0.0645***
	(0.0121)	(0.0088)	(0.0120)	(0.0091)
=1 if no pension last calendar year	-0.0754***	-0.0884***	-0.0694***	-0.0975***
	(0.0152)	(0.0104)	(0.0154)	(0.0101)
=1 if covered by hlth ins from current or ex employer at wave t-1	-0.0334	-0.00995	-0.0385	-0.0755***
	(0.0196)	(0.0131)	(0.0200)	(0.0127)
=1 if not currently working at wave t-1	-0.0614***	-0.0613***	0.0465***	-0.0771***
	(0.0143)	(0.0103)	(0.0130)	(0.0079)
=1 if not working at wave t-1 and age 60 at t	-0.00648	0.000339		-0.0195**
	(0.0227)	(0.0169)		(0.0073)
=1 if not working at wave t-1 and age 61 at t	-0.0238	-0.00978		-0.0199**
	(0.0174)	(0.0128)		(0.0071)
=1 if not working at wave t-1 and age 62 at t	0.238***	0.239***		0.254***
	(0.0357)	(0.0270)		(0.0292)
=1 if not working at wave t-1 and age 63 at t	0.285***	0.276***		0.294***
	(0.0290)	(0.0214)		(0.0227)
=1 if not working at wave t-1 and age 64 at t	0.316***	0.338***		0.325***
	(0.0429)	(0.0322)		(0.0351)
=1 if not working at wave t-1 and age 65 at t	0.113*	0.143***		0.140***
	(0.0523)	(0.0400)		(0.0400)
=1 if not working at wave t-1 and over age 65 at t	0.0566	0.0692		-0.00574
	(0.0612)	(0.0455)		(0.0641)
Observations	7405	13249	7405	7405

Robust standard errors in parentheses, clustered at the individual level for pooled OLS regression (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

Our models also include: gender, education, marital status, the presence of children under age 18, health status wealth along with a full array of wave dummy variables and age dummy variables.

For age dummies and interactions with age, the reference group is age 50-59.

Table 3: **Determinants of taking SS benefits**

5.2 The determinants of taking SS: eliminating inverse causality

As we explained when detailing our empirical strategy, the regressions we just commented may suffer from an inverse causality bias. In other words we need to make sure that the *nojob* variable is not endogenous to our dependent variable, that the decision of taking SS benefits between wave t-1 and wave t does not explain labor force status at wave t-1. To this end we introduce the local unemployment rate as an instrument, and estimate equation 2. Table 4 shows three different specifications of the latter equation: in the first column we only include the local unemployment rate and estimate a linear probability model with fixed effects as earlier; in the second one we add the interaction of the local unemployment rate with *nojob*; the last one includes both variable but is estimated as a pooled OLS regression. These figures are to be compared to those of the first column of Table 3 since the three of them include both spouse variables and interactions between age dummies and *nojob*.

The first striking conclusion we can draw when comparing the estimates of the first columns of the two tables is that estimated coefficients are almost exactly similar, meaning that the effects of labor market status on the probability of taking SS benefits that we picked up before adding an instrumental variable were causal effects.

Then we can take a look at the impact of the local unemployment rate on the probability to take SS benefits. We focus on the effect of a 3 percentage point increase, which corresponds roughly from moving from a period of expansion to recession. As the coefficient is 0.0198, a 3 percentage point increase raises the probability of taking SS by 0.06 percentage point. The effect is statistically significant at the 5 per cent significance level. Hence we conclude that SS transitions are cyclically sensitive. Still we do not know if SS take-up rates would increase following a recession because people lose their jobs, need a new source income, and then take SS benefits, or if they would go up for some other reason not associated with liquidity constraints. Indeed we do not have information about unemployment spells between two waves; nor do we know if individuals working at t-1 lose their jobs before they take SS. We would have learned more about the incidence of unemployment rate on the probability to take SS benefits if this information was available, along with the reason why people lost theirs jobs (lay-offs or quits).

What we can do on the other hand is interacting the local unemployment rate with the *work* dummy, both measured at wave t-1. The results are shown in the second column. The local unemployment rate is no longer significant when uninteracted with the *work* dummy. All the effect goes through the interaction, with a positive and coefficient significant. For someone working at wave t-1, a 3 percentage point increase in the local unemployment rate would raise the probability of taking SS benefits at wave t by 0.05 percentage points compared to someone not working at wave t-1. Hence even if we do not know if the individual working at wave t-1 experienced a job loss before he took his SS benefits, we know that an economic downturn would be a stronger incentive to take SS benefits for such an individual than for someone not working at wave t-1. Two interpretations of this phenomenon can be given, depending on whether the individual working at previous wave lost his job before SS take-up or not : if he did then SS benefits may be a useful income source when his savings or unemployment insurance are no longer a solution; if he did not, that is if he stopped working after taking SS benefits or if he continued to work at wave t, the local unemployment rate may be seen as a proxy for the probability of losing one's job, then during recessions workers may be tempted to take SS benefits if they are eligible to do so in order to ensure themselves against such a risk.

Dependent Variable =1 if started to receive SS between wave t-1 and wave t			
	fixed effects	fixed effects	pooled OLS
Interaction:lur*work	No	Yes	Yes
=1 if no salary income last calendar year	0.0902***	0.0905***	0.0644***
	(0.0122)	(0.0122)	(0.0090)
=1 if no pension last calendar year	-0.0748***	-0.0746***	-0.0975***
	(0.0152)	(0.0152)	(0.0102)
=1 if covered by hlth ins from current or ex employer at wave t-1	-0.0343	-0.0342	-0.0765***
	(0.0197)	(0.0196)	(0.0127)
=1 if not currently working at wave t-1	-0.0611***	0.0432	-0.122***
	(0.0144)	(0.0427)	(0.0331)
=1 if not working at wave t-1 and age 60 at t	-0.00849	-0.0267	-0.0130
	(0.0228)	(0.0253)	(0.0081)
=1 if not working at wave t-1 and age 61 at t	-0.0260	-0.0475*	-0.0135
	(0.0175)	(0.0197)	(0.0080)
=1 if not working at wave t-1 and age 62 at t	0.239***	0.214***	0.261***
	(0.0358)	(0.0364)	(0.0296)
=1 if not working at wave t-1 and age 63 at t	0.284***	0.257***	0.301***
	(0.0291)	(0.0297)	(0.0231)
=1 if not working at wave t-1 and age 64 at t	0.314***	0.283***	0.334***
	(0.0431)	(0.0447)	(0.0363)
=1 if not working at wave t-1 and age 65 at t	0.118*	0.0910	0.157***
	(0.0526)	(0.0520)	(0.0413)
=1 if not working at wave t-1 and over age 65 at t	0.0545	0.0185	0.00403
	(0.0617)	(0.0623)	(0.0645)
local unemployment rate at wave t-1,by census division	0.0198*	0.00735	0.0201*
	(0.0095)	(0.0106)	(0.0084)
local unemployment rate at wave t-1 when works at t-1,0 else		0.0159*	-0.00671
		(0.0065)	(0.0048)
Observations	7404	7404	7404

Robust standard errors in parentheses, clustered at the individual level for pooled OLS regression (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

Our models also include: gender, education, marital status, the presence of children under age 18, health status wealth along with a full array of wave dummy variables and age dummy variables.

For age dummies and interactions with age, the reference group is age 50-59.

Table 4: **Determinants of taking SS benefits-with local unemployment rate by year and census division**

In this specification the coefficients of the *nojob* variable and its interaction with age dummies are altered by the presence of the interaction between the local unemployment rate and $(1 - nojob)$ (that is, the *work* dummy). Some part of the effect of having no job at wave t-1 now goes through the interacted local unemployment rate, so that the interacted *nojob* variables lose some of their explicative power, and the uninteracted *nojob*variable become unsignificant. Nevertheless the hierarchy of magnitudes are respected and conclusions of Table 3 remain valid.

The latter equation is also estimated as a pooled OLS regression (see the third column of Table 4). We chose to display the results of this specification because the pooled OLS version of the first column was almost identical to the pooled OLS regression results in Table 3. On the contrary, the estimates are hugely altered when we add the interacted unemployment rate. Indeed the uninteracted *nojob* variable become significant whereas it was not in the fixed effects regression; its coefficient is negative, so that the overall effect of having no job at t-1 when being 62 or more at t is less positive than before. On the contrary, the local unemployment rate interacted with $(1 - nojob)$ is no longer significant while its coefficient was significantly positive in the fixed effects regression, so this time the whole effect of labor force status goes through the *nojob* variables, and not through the interaction with the local unemployment rate, whose effect is positive and significant when not interacted. One may wonder why the interacted unemployment rate is no longer significant when we run pooled OLS regressions. One possible explanation is that comparing two distinct individuals, one working, the other not working, and looking at the impact of the unemployment rate on them does not yield any discriminant result, while comparing the impact of the unemployment rate on two observations of the same individual working at some period but not working at another, does. Yet such an analysis is quite complex since labor force status appears in too many interactions here to understand the impact of each of them. Moreover our purpose when estimating these models was to check the validity of our first model by adding some instrumental variable and see how the coefficients or our key explicative variables moved; the unemployment rate and its impact on SS take-up rates were not our initial focus.

5.3 The determinants of taking early SS benefits, at age 62

Now that we demonstrated that labor force status had some causal effect on the probability of taking SS benefits, we want to concentrate on the determinants of taking early SS banefits at the age of 62, that is as soon as possible, which is the case of more than 54 per cent of our sample (see Table 1). Before we begin to describe the results of these regressions, let us remind that the latter are not to be compared to previous fixed effects regressions since they are more like cross-sectional regressions with lagged variables. In other words we can no longer include fixed effects since there is only one observation for every individual before the transition takes place.

The first regression estimates equation 3 without the local unemployment rate and its interaction with the *work* dummy. Again all coefficients seem to indicate that factors that tighten liquidity constraints incite to take early SS benefits, except for "'having no pension income"', but we already talked about the possibility that receiving some income from a private pension plan make people closer to the retirement status, and may be a first step toward early SS benefits. Actually it makes sense that people receiving some pension before they are 62 are more likely to claim SS benefits as soon as they can since cashing out one's pension generally goes with leaving one's job (voluntarily or not). On the contrary, being covered by some private health insurance at t-1 seems to decrease the probability of taking early SS beneits, probably because it

loosens liquidity constraints associated with the risk of a negative health shock. As to the relation between labor force status and early SS taking up, the absence of salary income last calendar year (which is a proxy for not working last year) as well as having no job at wave t-1, are incentives to take early SS benefits.

Good news is that the second regression confirms the fact that the causality goes from labor status market toward early SS benefits taking up, and not the inverse. Indeed adding the local unemployment rate as an instrumental variable does not change neither the magnitude nor the significance of our coefficients. The third column estimates 3, including the local unemployment rate and its interaction with $(1 - nojob)$ (coded 1 when the individual works at t-1, 0 else). This time while the coefficients related to income variables are not altered, that of "'not working at t-1"' loses its significance. Yet the interacted local unemployment rate does not catch the impact of the labor force status neither since it is not significant.

Hence these regressions as well as those estimating the determinants of taking SS benefits with no age condition, bring to light the existence of a causal link between labor market conditions and SS benefits take up.

Dependent Variable =1 if started to receive SS between wave t-1 and wave t at age 62			
	(1)	(2)	(3)
local unemployment rate	No	Yes	Yes
Interaction:lur*work	No	No	Yes
=1 if no salary income last calendar year	0.103***	0.102***	0.102***
	(0.0203)	(0.0203)	(0.0203)
=1 if no pension last calendar year	-0.160***	-0.160***	-0.159***
	(0.0205)	(0.0205)	(0.0205)
=1 if covered by hlth ins from current or ex employer at wave t-1	-0.103***	-0.105***	-0.106***
	(0.0235)	(0.0236)	(0.0236)
=1 if not currently working at wave t-1	0.0703**	0.0701**	-0.00346
	(0.0229)	(0.0229)	(0.0659)
local unemployment rate at wave t-1,by census division		0.0176	0.0262
		(0.0181)	(0.0198)
local unemployment rate at wave t-1 when works at t-1,0 else			-0.0128
			(0.0107)
Observations	3371	3370	3370

Standard errors in parentheses, clustered at the individual level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Our models also include: gender, education, marital status, the presence of children under age 18, health status wealth along with a full array of year dummy variables.

Table 5: **Determinants of taking SS early benefits at age 62**

6 Conclusion

Our aim in that study was to conciliate the classical approach of the determinants of SS take-up, which are gender, education, health, wealth, *etc.*, with individual labor market conditions. Many studies focus on older workers'unemployment, or on their decision to retire, but few deal with the link between these two issues, more particularly concerning the United States. Indeed the unemployment issue is usually addressed from the point of view of labor demand and supply specificities, while studies modeling retirement transitions usually stick to the role of health insurance or financial incentives provided by private pensions to explain retirement. Besides, in the US more than elsewhere, retirement is a complex concept : some researchers consider that an individual is retired when he stops working or looking for work, others when he works a certain fraction of the number of hours he used to work, or when he starts receiving benefits from a private pension or from Social Security. We are concerned by the large fraction of individuals taking SS retirement benefits at age 62, so that we choose the "Social Security" definition of retirement, and make a link between labor force status and transitions to retirement. We are interested in showing a link between liquidity constraints related to labor market conditions and the decision to take SS benefits, which would imply that people with no job are more likely to take SS benefits as a new source of income in order to overcome a job loss and the income loss it leads to, in the short as in the long run.

All our regressions validated the presence of a causal link between non-employment at the individual level and SS benefits take-up. While searching for an instrument to make our results more robust, we also found that the local unemployment rate had a positive impact on these transitions, meaning that individual as well as aggregate labor force conditions influence the probability of taking SS benefits. As the conclusions are the same for early SS benefits, it appears that losing one's job is a strong incentive to take SS benefits as soon as one becomes eligible, even though it implies largely reduced benefits until the end of one's life.

Nevertheless we cannot conclude that Social Security acts exactly as a kind of unemployment insurance since UI has two main objectives, that of insuring workers against accidents on the labor market by allowing them to smooth their consumption between working periods and unemployment spells (SS may play this role), and that of helping individuals to find a job well-suited for them, as in the matching *à la Mortensen*. Yet this second reason is more adapted to the younger than to the older who will not benefit a lot from a better match since their working horizon is shorter. Therefore older workers may be incited to claim SS rather than UI, or after they have no more benefits to expect from UI, since retirement benefits provide at least the same consumption level than UI, and or more than six months (until death). Besides UI, contrary to Old Age Insurance, is not costless: first there are some transaction costs associated with the necessary effort to look for a job and to report the results of the job search, then unemployed people are often stigmatised, which older people may try to avoid. These costs can explain why so many older individuals prefer declaring themselves as retired or retired looking for a job (which is coded as "partially retired" in our database) rather than unemployed looking for a job.

Variable	Whole sample		Earlytakers		Postponers	
	Mean	N	Mean	N	Mean	N
=1 if woman	0.503	25772	0.523	3268	0.457	2508
age at wave t-1	59	19958	61.05	3267	63.45	2504
=1 if married or partnered at wave t-1	0.812	19947	0.825	3267	0.792	2500
=1 if lt high school or ged	0.261	25721	0.293	3261	0.26	2503
=1 if high school graduate	0.338	25721	0.363	3261	0.302	2503
=1 if some college or above	0.4	25721	0.344	3261	0.438	2503
=1 if no salary income	0.34	25772	0.596	3268	0.443	2508
=1 if no salary income at wave t-1	0.285	19958	0.429	3267	0.277	2504
log of wage income, cond. on being positive	9.919	17004	9.218	1319	9.992	1397
log of wage income at wave t-1, cond. on being pos.	9.977	14265	9.708	1866	10.209	1811
total wealth	356108	20957	374227	2696	517176	2174
total wealth at wave t-1	330886	16056	330458	2700	446682	2029
=1 if no hh capital income	0.342	25772	0.288	3268	0.274	2508
=1 if no hh capital income at wave t-1	0.359	19958	0.318	3267	0.312	2504
=1 if no pension income	0.838	25772	0.667	3268	0.736	2508
=1 if no pension income at wave t-1	0.879	19958	0.79	3267	0.87	2504
=1 if excellent or vg health at wave t-1	0.544	19952	0.499	3265	0.507	2504
=1 if good health at wave t-1	0.308	19952	0.316	3265	0.323	2504
=1 if fair or poor health at wave t-1	0.148	19952	0.185	3265	0.171	2504
=1 if health pb limit work at wave t-1	0.139	19855	0.19	3251	0.133	2473
=1 if covered by govt hlth ins at wave t-1	0.082	19843	0.094	3246	0.128	2492
=1 if covered by hlth ins from current or ex employer at wave t-1	0.551	19442	0.468	3187	0.622	2425
=1 if has employer health plan that covers retirees at wave t-1	0.363	17969	0.352	3057	0.399	2057
=1 if no child at wave t-1	0.058	19772	0.052	3207	0.043	2457
=1 if has 1, 2 or 3 children at wave t-1	0.554	19772	0.561	3207	0.532	2457
=1 if 4 or more children at wave t-1	0.388	19772	0.387	3207	0.425	2457
=1 if reports proba of living to age 75 > 50% at wave t-1	0.616	17811	0.591	2920	0.64	2021
=1 if reports proba of continuing to work FT after 62> 50% at wave t-1	0.413	12507	0.303	1697	0.63	497
=1 if reports proba of continuing to work FT after 65> 50% at wave t-1	0.182	12819	0.123	1733	0.224	651
=1 if currently working for pay at wave t-1	0.74	19947	0.551	3267	0.779	2503
years of tenure at longer reported job, at wave t-1	18.744	18838	19.928	3051	20.826	2362
total years worked from self-report at wave t-1	32.655	19958	33.261	3267	36.304	2504
=1 if spouse has no salary income	0.428	20831	0.587	2644	0.571	1935
=1 if spouse has no salary income at wave t-1	0.384	16220	0.497	2702	0.478	1983
=1 if spouse has no pension	0.811	20831	0.680	2644	0.778	1935

Variable	Whole sample		Earlytakers		Postponers	
	Mean	N	Mean	N	Mean	N
=1 if spouse has no pension income at wave t-1	0.837	16220	0.729	2702	0.827	1983
=1 if spouse covered by hlth ins from current or previous employer at wave t-1	0.342	15759	0.287	2631	0.358	1907
=1 if spouse works for pay at wave t-1	0.627	15753	0.501	2631	0.555	1916
=1 if spouse already received SS at wave t-1	0.3	11805	0.474	2082	0.418	1513

All variables related to income (wage, pension, *etc.*) or wealth answer questions about last calendar year.

Table 6: **Summary Statistics**

Dependent Variable =1 if started to receive SS between wave t-1 and wave t				
	Fixed effects	Fixed Effects	Fixed effects	Pooled OLS
Interactions:age*nojob	Yes	Yes	No	Yes
Spouse Variables	Yes	No	Yes	Yes
=1 if woman	0	0	0	-0.0142
	.	.	.	(0.0086)
=1 if lt high school or ged	0	0	0	0.0491***
	.	.	.	(0.0094)
=1 if high school graduate	0	0	0	0.0334***
	.	.	.	(0.0076)
=1 if some college or above	0	0	0	0
	.	.	.	.
=1 if age 60 at t	-0.0637***	-0.0514***	-0.0660***	-0.0286***
	(0.0137)	(0.0096)	(0.0122)	(0.0044)
=1 if age 61 at t	-0.0457***	-0.0457***	-0.0560***	-0.0414***
	(0.0125)	(0.0087)	(0.0110)	(0.0050)
=1 if age 62 at t	0.331***	0.349***	0.405***	0.404***
	(0.0238)	(0.0173)	(0.0212)	(0.0192)
=1 if age 63 at t	0.467***	0.482***	0.553***	0.503***
	(0.0234)	(0.0170)	(0.0203)	(0.0188)
=1 if age 64 at t	0.543***	0.537***	0.633***	0.432***
	(0.0304)	(0.0222)	(0.0269)	(0.0240)
=1 if age 65 at t	0.853***	0.850***	0.890***	0.682***
	(0.0280)	(0.0202)	(0.0263)	(0.0246)
=1 if age over 65 at t	0.997***	0.987***	1.032***	0.701***
	(0.0322)	(0.0214)	(0.0313)	(0.0243)
=1 if married or partnered at wave t-1	-0.0551	0.0250	-0.0440	0.0181
	(0.1755)	(0.0197)	(0.1985)	(0.1581)
=1 if no child at wave t-1	0.0458	0.0306	0.0667	0
	(0.0592)	(0.0305)	(0.0584)	.
=1 if has 1, 2 or 3 children at wave t-1	0.0663	0.0292	0.0697	0.0144
	(0.0401)	(0.0231)	(0.0399)	(0.0210)
=1 if 4 or more children at wave t-1	0	0	0	0.00438
	.	.	.	(0.0212)
=1 if health pb limit work at wave t-1	0.0297*	0.0144	0.0271	0.00999
	(0.0146)	(0.0104)	(0.0149)	(0.0098)
=1 if no salary income last calendar year	0.0913***	0.0850***	0.0846***	0.0645***

Dependent Variable =1 if started to receive SS between wave t-1 and wave t				
	Fixed effects	Fixed Effects	Fixed effects	Pooled OLS
	(0.0121)	(0.0088)	(0.0120)	(0.0091)
log(1+total wealth) at wave t-1	-0.00278	-0.00411	-0.00394	-0.000913
	(0.0050)	(0.0029)	(0.0053)	(0.0025)
=1 if no hh capital income last calendar year	-0.000142	-0.00396	0.00311	0.00105
	(0.0107)	(0.0078)	(0.0110)	(0.0081)
=1 if no pension last calendar year	-0.0754***	-0.0884***	-0.0694***	-0.0975***
	(0.0152)	(0.0104)	(0.0154)	(0.0101)
=1 if mortgage last calendar year	-0.0100	-0.0144	-0.00456	-0.0177**
	(0.0123)	(0.0087)	(0.0126)	(0.0067)
=1 if covered by govt hlth ins at wave t-1	0.0298	0.0361	0.0253	-0.00201
	(0.0264)	(0.0205)	(0.0274)	(0.0140)
=1 if covered by hlth ins from current or ex employer at wave t-1	-0.0334	-0.00995	-0.0385	-0.0755***
	(0.0196)	(0.0131)	(0.0200)	(0.0127)
=1 if has employer health plan that covers retirees at wave t-1	0.0110	0.0124	0.0137	0.0532***
	(0.0182)	(0.0119)	(0.0187)	(0.0116)
years of tenure at longest reported job, at t-1	-0.000877	-0.000462	-0.00722**	0.000458
	(0.0023)	(0.0014)	(0.0023)	(0.0004)
=1 if not currently working at wave t-1	-0.0614***	-0.0613***	0.0465***	-0.0771***
	(0.0143)	(0.0103)	(0.0130)	(0.0079)
=1 if not working at wave t-1 and age 60 at t	-0.00648	0.000339		-0.0195**
	(0.0227)	(0.0169)		(0.0073)
=1 if not working at wave t-1 and age 61 at t	-0.0238	-0.00978		-0.0199**
	(0.0174)	(0.0128)		(0.0071)
=1 if not working at wave t-1 and age 62 at t	0.238***	0.239***		0.254***
	(0.0357)	(0.0270)		(0.0292)
=1 if not working at wave t-1 and age 63 at t	0.285***	0.276***		0.294***
	(0.0290)	(0.0214)		(0.0227)
=1 if not working at wave t-1 and age 64 at t	0.316***	0.338***		0.325***
	(0.0429)	(0.0322)		(0.0351)
=1 if not working at wave t-1 and age 65 at t	0.113*	0.143***		0.140***
	(0.0523)	(0.0400)		(0.0400)
=1 if not working at wave t-1 and over age 65 at t	0.0566	0.0692		-0.00574

Dependent Variable =1 if started to receive SS between wave t-1 and wave t				
	Fixed effects	Fixed Effects	Fixed effects	Pooled OLS
	(0.0612)	(0.0455)		(0.0641)
=1 if spouse has no salary income last calendar year	-0.00707		-0.00547	-0.00990
	(0.0127)		(0.0129)	(0.0091)
=1 if spouse has no pension last calendar year	-0.00283		-0.000893	-0.0138
	(0.0138)		(0.0142)	(0.0084)
=1 if spouse covered by hlth ins from current or previous employer at wave t-1	0.00853		0.00995	0.00664
	(0.0153)		(0.0157)	(0.0106)
=1 if spouse works for pay at wave t-1	-0.00848		-0.0106	0.00537
	(0.0127)		(0.0130)	(0.0093)
=1 if spouse already received SS	0.136***		0.135***	0.106***
	(0.0139)		(0.0143)	(0.0095)
=1 if wave 2	-0.262***	-0.383***	-0.317***	-0.241***
	(0.0276)	(0.0176)	(0.0270)	(0.0157)
=1 if wave 3	-0.221***	-0.341***	-0.268***	-0.252***
	(0.0248)	(0.0159)	(0.0242)	(0.0158)
=1 if wave 4	-0.337***	-0.370***	-0.388***	-0.205***
	(0.0549)	(0.0360)	(0.0535)	(0.0473)
=1 if wave 5	-0.257***	-0.350***	-0.300***	-0.239***
	(0.0215)	(0.0143)	(0.0209)	(0.0159)
=1 if wave 6	-0.188***	-0.250***	-0.222***	-0.170***
	(0.0167)	(0.0109)	(0.0159)	(0.0166)
Constant	0.339	0.440***	0.468*	0.299
	(0.1928)	(0.0557)	(0.2139)	(0.1641)
Observations	7405	13249	7405	7405

Robust standard errors in parentheses, clustered at the individual level for pooled OLS regression (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

For age dummies and interactions with age, the reference group is age 50-59.

Table 7: **Determinants of taking SS benefits**

Dependent Variable =1 if started to receive SS between wave t-1 and wave t			
	(1)	(2)	(3)
	fixed effects	fixed effects	pooled OLS
Interaction:lur*work	No	Yes	Yes
=1 if woman	0	0	-0.0138
	.	.	(0.0086)
=1 if lt high school or ged	0	0	0.0487***
	.	.	(0.0094)
=1 if high school graduate	0	0	0.0333***
	.	.	(0.0076)
=1 if some college or above	0	0	0
	.	.	.
=1 if age 60 at t	-0.0620***	-0.0571***	-0.0308***
	(0.0137)	(0.0139)	(0.0047)
=1 if age 61 at t	-0.0447***	-0.0376**	-0.0431***
	(0.0125)	(0.0129)	(0.0053)
=1 if age 62 at t	0.331***	0.340***	0.402***
	(0.0239)	(0.0239)	(0.0193)
=1 if age 63 at t	0.469***	0.479***	0.500***
	(0.0234)	(0.0236)	(0.0189)
=1 if age 64 at t	0.544***	0.556***	0.428***
	(0.0304)	(0.0306)	(0.0241)
=1 if age 65 at t	0.856***	0.867***	0.679***
	(0.0281)	(0.0283)	(0.0249)
=1 if age over 65 at t	1.000***	1.013***	0.696***
	(0.0324)	(0.0325)	(0.0244)
=1 if married or partnered at wave t-1	-0.0556	-0.0507	0.0188
	(0.1745)	(0.1728)	(0.1588)
=1 if no child at wave t-1	0	0	-0.00614
	.	.	(0.0215)
=1 if has 1, 2 or 3 children at wave t-1	0.0262	0.0239	0.00918
	(0.0505)	(0.0508)	(0.0070)
=1 if 4 or more children at wave t-1	-0.0415	-0.0456	0
	(0.0580)	(0.0582)	.
=1 if health pb limit work at wave t-1	0.0291*	0.0278	0.0114
	(0.0147)	(0.0147)	(0.0098)
=1 if no salary income last calendar year	0.0902***	0.0905***	0.0644***

Dependent Variable =1 if started to receive SS between wave t-1 and wave t			
	(1) fixed effects	(2) fixed effects	(3) pooled OLS
Interaction:lur*work	No	Yes	Yes
	(0.0122)	(0.0122)	(0.0090)
log(1+total wealth) at wave t-1	-0.00302	-0.00311	-0.000101
	(0.0050)	(0.0050)	(0.0025)
=1 if no hh capital income last calendar year	-0.000123	0.000182	0.00103
	(0.0106)	(0.0106)	(0.0081)
=1 if no pension last calendar year	-0.0748***	-0.0746***	-0.0975***
	(0.0152)	(0.0152)	(0.0102)
=1 if mortgage last calendar year	-0.00840	-0.00810	-0.0159*
	(0.0125)	(0.0125)	(0.0068)
=1 if covered by govt hlth ins at wave t-1	0.0291	0.0303	-0.00396
	(0.0263)	(0.0264)	(0.0139)
=1 if covered by hlth ins from current or ex employer at wave t-1	-0.0343	-0.0342	-0.0765***
	(0.0197)	(0.0196)	(0.0127)
=1 if has employer health plan that covers retirees at wave t-1	0.0123	0.0117	0.0543***
	(0.0183)	(0.0183)	(0.0117)
years of tenure at longest reported job, at t-1	-0.000981	-0.000527	0.000405
	(0.0023)	(0.0024)	(0.0004)
=1 if not currently working at wave t-1	-0.0611***	0.0432	-0.122***
	(0.0144)	(0.0427)	(0.0331)
=1 if not working at wave t-1 and age 60 at t	-0.00849	-0.0267	-0.0130
	(0.0228)	(0.0253)	(0.0081)
=1 if not working at wave t-1 and age 61 at t	-0.0260	-0.0475*	-0.0135
	(0.0175)	(0.0197)	(0.0080)
=1 if not working at wave t-1 and age 62 at t	0.239***	0.214***	0.261***
	(0.0358)	(0.0364)	(0.0296)
=1 if not working at wave t-1 and age 63 at t	0.284***	0.257***	0.301***
	(0.0291)	(0.0297)	(0.0231)
=1 if not working at wave t-1 and age 64 at t	0.314***	0.283***	0.334***
	(0.0431)	(0.0447)	(0.0363)
=1 if not working at wave t-1 and age 65 at t	0.118*	0.0910	0.157***
	(0.0526)	(0.0520)	(0.0413)

Dependent Variable =1 if started to receive SS between wave t-1 and wave t			
	(1)	(2)	(3)
	fixed effects	fixed effects	pooled OLS
Interaction:lur*work	No	Yes	Yes
=1 if not working at wave t-1 and over age 65 at t	0.0545	0.0185	0.00403
	(0.0617)	(0.0623)	(0.0645)
=1 if spouse has no salary income last calendar year	-0.00711	-0.00735	-0.00884
	(0.0127)	(0.0127)	(0.0091)
=1 if spouse has no pension last calendar year	-0.00209	-0.00241	-0.0138
	(0.0139)	(0.0138)	(0.0084)
=1 if spouse covered by hlth ins from current or previous employer at wave t-1	0.00796	0.00717	0.00827
	(0.0153)	(0.0153)	(0.0107)
=1 if spouse works for pay at wave t-1	-0.00670	-0.00680	0.00585
	(0.0128)	(0.0128)	(0.0093)
=1 if spouse already received SS	0.135***	0.134***	0.105***
	(0.0140)	(0.0140)	(0.0096)
local unemployment rate at wave t-1,by census division	0.0198*	0.00735	0.0201*
	(0.0095)	(0.0106)	(0.0084)
local unemployment rate at wave t-1 when works at t-1,0 else		0.0159*	-0.00671
		(0.0065)	(0.0048)
Constant	0.654**	0.617**	0.532**
	(0.2097)	(0.2086)	(0.1773)
Observations	7404	7404	7404

Robust standard errors in parentheses, clustered at the individual level for pooled OLS regression (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

Our models also include a full array of year and state dummy variables.

For age dummies and interactions with age, the reference group is age 50-59.

Table 8: **Determinants of taking SS benefits-with local unemployment rate by year and census division**

Dependent Variable =1 if started to receive SS between wave t-1 and wave t at age 62			
	(1)	(2)	(3)
local unemployment rate	No	Yes	Yes
Interaction:lur*work	No	No	Yes
=1 if woman	-0.0738***	-0.0736***	-0.0737***
	(0.0181)	(0.0181)	(0.0181)
=1 if lt high school or ged	0.0894***	0	0
	(0.0191)	.	.
=1 if high school graduate	0.0427**	-0.0475**	-0.0476**
	(0.0160)	(0.0184)	(0.0184)
=1 if some college or above	0	-0.0896***	-0.0901***
	.	(0.0191)	(0.0191)
=1 if married or partnered at wave t-1	-0.302*	-0.304*	-0.303*
	(0.1516)	(0.1519)	(0.1520)
=1 if health pb limit work at wave t-1	0.0137	0.0134	0.0147
	(0.0224)	(0.0224)	(0.0224)
=1 if no salary income last calendar year	0.103***	0.102***	0.102***
	(0.0203)	(0.0203)	(0.0203)
log(1+total wealth) at wave t-1	0.00109	0.00115	0.00145
	(0.0054)	(0.0054)	(0.0055)
=1 if no hh capital income last calendar year	-0.00350	-0.00347	-0.00374
	(0.0186)	(0.0186)	(0.0186)
=1 if no pension last calendar year	-0.160***	-0.160***	-0.159***
	(0.0205)	(0.0205)	(0.0205)
=1 if mortgage last calendar year	-0.0446**	-0.0447**	-0.0447**
	(0.0149)	(0.0149)	(0.0149)
=1 if covered by govt hlth ins at wave t-1	0.0357	0.0365	0.0363
	(0.0275)	(0.0275)	(0.0275)
=1 if covered by hlth ins from current or ex employer at wave t-1	-0.103***	-0.105***	-0.106***
	(0.0235)	(0.0236)	(0.0236)
=1 if has employer health plan that covers retirees at wave t-1	0.0928***	0.0930***	0.0941***
	(0.0211)	(0.0211)	(0.0212)
=1 if no child at wave t-1	0	0	0
	.	.	.
=1 if has 1, 2 or 3 children at wave t-1	0.00231	0.00294	0.00354

Dependent Variable =1 if started to receive SS between wave t-1 and wave t at age 62			
	(1)	(2)	(3)
local unemployment rate	No	Yes	Yes
Interaction:lur*work	No	No	Yes
	(0.0439)	(0.0443)	(0.0443)
=1 if 4 or more children at wave t-1	-0.0110	-0.0104	-0.0107
	(0.0441)	(0.0445)	(0.0445)
years of tenure at longest reported job, at t-1	0.00123	0.00128	0.00125
	(0.0008)	(0.0008)	(0.0008)
=1 if not currently working at wave t-1	0.0703**	0.0701**	-0.00346
	(0.0229)	(0.0229)	(0.0659)
=1 if spouse has no salary income last calendar year	-0.0232	-0.0233	-0.0228
	(0.0199)	(0.0199)	(0.0199)
=1 if spouse has no pension last calendar year	-0.0164	-0.0163	-0.0165
	(0.0180)	(0.0180)	(0.0180)
=1 if spouse covered by hlth ins from current or previous employer at wave t-1	0.00399	0.00410	0.00479
	(0.0209)	(0.0209)	(0.0209)
=1 if spouse works for pay at wave t-1	0.0160	0.0161	0.0162
	(0.0201)	(0.0201)	(0.0201)
=1 if spouse already received SS	0.213***	0.213***	0.212***
	(0.0173)	(0.0173)	(0.0174)
local unemployment rate at wave t-1,by census division		0.0176	0.0262
		(0.0181)	(0.0198)
local unemployment rate at wave t-1 when works at t-1,0 else			-0.0128
			(0.0107)
Constant	1.498***	1.464***	1.485***
	(0.1829)	(0.2098)	(0.2098)
Observations	3371	3370	3370

Standard errors in parentheses, clustered at the individual level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Our models also include a full array of year and state dummy variables.

Table 9: **Determinants of taking SS early benefits at age 62**

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