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The Effect of Social Security on Savings

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Contents

1 Introduction

The Social Security program was created in 1935 in order to protect individuals against the financial devastation and destitution suffered suffered by the elderly in the early years of the Great Depression (Altmeyer, 1966). Initially modest in scope, the program has grown to be a pillar of the economy: 30% of Social Security recipients derive 90% of their income from Social Security (Gruber, 2013). A central question in understanding how Social Security affects people and the economy as a whole is how it affects private savings. However, until recently, there has been a lack of convincing empirical evidence on this question.

Social Security insures individuals against loss of income when they retire, so from the point of view of the worker, it functions as a sort of government-sponsored pension plan. Individuals contribute premiums in the form of garnished wages—matched by employer contributions—and collect benefits when they reach the age of 65.[1] For an individual, saving for retirement through Social Security is like saving through a private pension plan, though it differs from saving privately because Social Security benefits are illiquid prior to retirement.

However, unlike a pension plan, which invests the premiums individuals contribute, Social Security uses the "premiums" collected to pay benefits to currently retired workers, meaning that no money is actually saved. If individuals consider Social Security payments to be a substitute for private savings and therefore decrease their saving by that amount, then the amount paid into Social Security is "lost" from aggregate savings. From a macroeconomic point of view, these lost savings mean lower economy-wide savings and lower GDP growth. Hence, if the money collected by Social Security, which was 5% of GDP in 2014, were privately invested, there would be non-negligible macroeconomic consequences.[2]

[1] Individuals may elect to begin receiving Social Security benefits as early as age 62. The size of benefits are adjusted to take into account when an individual retires so as to not pay higher aggregate benefits to an individual who retires earlier.

[2] https://www.nasi.org/learn/socialsecurity/economy-share

Although the reasoning that Social Security reduces private savings is compelling, it is also conceivable that Social Security induces individuals to save more. Because Social Security brings individuals closer to their savings goals, they may choose to save the additional amount needed to reach a goal that might otherwise have seemed unattainable. Social Security also could lead to an increase in savings because it changes familial relationships with respect to retirement; that is, because Social Security provides financial support to the elderly, adult children no longer feel responsible for their parents, meaning that those parents must amass larger retirement savings during their lifetimes to support themselves in retirement without assistance from their children. It is also possible that Social Security has little to no effect on savings, since some Social Security recipients have such constrained liquidity during their lifetimes that they would be able to save very little in the absence of Social Security (Munnell, 1974. Feldstein, 2002).

Understanding the relationship between Social Security and savings is of increasing importance. Retirees are living longer than they did in previous generations, and therefore need more savings to sustain their lengthened retirement. Further, the cost of living is increasing for retirees, meaning that workers must set aside more per year than in the past. Retirees are becoming less healthy, so they must have more savings to support their medical expenses. Though retirement savings are becoming increasingly important, employers are now less likely to provide pension plans for their employees, meaning that individuals are more responsible for their own savings outside of Social Security. Further, Social Security replacement rates have fallen over recent years, leading individual benefit levels to fall, making an individual's private savings choices of increasing importance (Poterba, 2014).

In this paper, I seek to provide new evidence concerning the effect of Social Security on savings. I use the unique situation provided by the phase-in of Social Security, which, to my knowledge, has never been considered in the vast literature on this question. Though

contemporary Social Security covers essentially everyone and is uniform across the nation, Social Security initially covered only individuals in certain occupations. In the 1950s, Social Security was expanded to cover more occupations. I exploit variation from these occupational expansions through difference-in-differences regressions to estimate the effect of receiving Social Security benefits on individuals' private savings. Following this analysis, I examine how the phase-in of Social Security interacted with Old Age Assistance, a preexisting old-age-support program.

I employ of early iterations of the Survey of Consumer Finance (SCF), a dataset whose contemporary iterations are often used but whose historic iterations are largely forgotten. The SCF contains detailed information about individuals' holdings in different forms of saving accounts, checking accounts, bonds, stocks, housing stock, mortgage debt, and non-mortgage debt. This data provides unique information about changes in individual's assets during a period of greatly changing social policy. I combine the SCF data with data on Old Age Support programs from *The Social Security Bulletin* and *Historical Statistics of the United States*.

An important paper in the literature on the effect of Social Security on saving is Martin Feldstein's 1974 *Journal of Political Economy* paper, in which, using time series data, he estimates that the presence of Social Security depresses personal savings by between 30 and 50 percent. (Feldstein, 1974) Outside of the time-series literature, much of the previous empirical literature on the relationship between Social Security and saving follows the approach of Martin Feldstein and Anthony Pellechio's seminal (1979) paper which uses a cross-sectional approach to estimate the effect of Social Security on savings. With a sample of men between ages 55 and 64, Feldstein and Pellechio estimate that each marginal dollar of Social Security wealth crowds out seventy cents in private savings. (Feldstein, 1979) Following this paper, a flood of papers with varying levels of econometric sophistication use a

similar empirical strategy and estimate a wide variety of different crowd-outs, though the majority are between zero to fifty cents per dollar of Social Security. (Feldstein, 2004)

Despite the vast literature on the relationship between Social Security and savings, the question remains unsettled. Because Social Security is universal in the sense that essentially everyone is covered by Social Security, and is uniform in the sense that everyone receives a Social Security benefit calculated from the same formula, identifying the relationship between Social Security benefits and saving by regressing the stock of an individuals savings on the present discounted value of their Social Security benefits will likely not reveal the causal effect of Social Security on savings. The very factors that led someone to have a particular Social Security benefit are likely to also influence their savings choices. Individuals with higher earnings during their lives mechanically have higher levels of Social Security benefits. Individuals with higher incomes also tend to have higher levels of savings during their lives for observable and unobservable reasons: perhaps they also have tastes for higher savings. Because of unmeasurable and unobservable characteristics, cross-sectional estimates of the impact of Social Security on savings are likely to be biased.

Recently, compelling literature on pension reform in Europe provides insights into how Social Security might affect savings in the United States. Two papers that exploit these pension reforms are Attanasio and Rohwedder (2003) and Attanasio and Brugiavini (2003). In Attanasio and Rohwedder (2003), the authors estimate the effect of changes in pension wealth of public-sector workers in the United Kingdom using variation from pension reforms and indexation changes of the state's pension system. There, the authors find that, for individuals between ages 54 and 64, increasing pension wealth by £100 was related to a reduction in private savings of £75. Attanasio and Brugiavini (2003) examine reforms to the Italian pension system that impact people of different ages differently. They find that individuals, especially those closer to retirement ages, substitute pension wealth for private

savings. Studies of this type cannot be conducted in the United States because the recent adjustments to the Social Security benefit formula are not of similar magnitude to those in Europe.

In this paper, contrary to previous research, I find mostly positive, albeit statistically insignificant, point estimates on the effect of receiving Social Security on savings. These estimates may stem from a lack of power or from random noise in the data. However, it is not inconceivable that the phase-in of Social Security did lead to an increase in savings. I will elaborate on various reasons why the phase-in of Social Security might have had a positive effect on savings before empirically exploring one of these possibilities. Finding positive and mostly insignificant effects from the phase in of Social Security is not necessarily evidence to the contrary to the notion that increasing the generosity of Social Security benefits would depress savings. Rather it suggests that changing Social Security on the extensive margin is different than changing Social Security on the intensive margin.

2 A Simple Model of Social Security and Savings

In order to illustrate the relationship between Social Security and savings, I present a two-period model, in which individuals work and save in the first period, and retire in the second. With this simple model, I seek to provide a theoretical basis for the intuition that Social Security would crowd out private savings and demonstrate the complexity of the relationship. This model closely follows that in Feldstein and Liebman's (2002) chapter on Social Security in the *Handbook of Public Economics*.

Consider an individual whose life is composed of two periods. In the first period, she works, earning a wage of $wage$, and she saves $Save$. In the presence of Social Security, she

faces a Social Security tax of δ on her wages. Therefore, her consumption in Period 1 in the presence of Social Security is

$$C_1 = (1 - \delta)wage - Save.$$

rearranging terms, this is

$$Save = (1 - \delta)wage - C_1.$$

In the second period, she does not work, so in the presence of Social Security, her consumption is given by the present value of her savings and her Social Security benefit, SSB . I denote the interest rate as r. Consumption in Period 2 is defined as

$$C_2 = Save(1 + r) + SSB.$$

Substituting in the equation for $Save$ from the first period, we can write this as

$$C_2 = ((1 - \delta)wage - C_1)(1 + r) + SSB$$

I define U_1 to be the utility function for Period 1 and U_2 to be the utility function for Period 2,[3] so the lifetime utility function, LUF, is as follows:

$$LUF = U_1(C_1) + U_2(C_2)$$

I solve this individual's utility maximization problem by differentiating LUF with respect to $Save$, δ, and SSB which yields

$$w(U_1'')\mathrm{d}\ \delta + [U_1'' + (1 + r)^2\ U_2]\ \mathrm{d}Save + (1 + r)U_2''\ \mathrm{d}SSB = 0$$

[3]Note that discounting is accounted for in U_2.

To simplify this optimization problem, assume that Social Security is actuarially fair, that is, $r = g$ where g is the growth rate of money individuals pay into the Social Security system. So $SSB = (1 + r)\delta(wage)$ and $\mathrm{d}\delta = \mathrm{d}SSB/(1 + r)wage$. So we have $\mathrm{d}save = -1/(1 + r)\mathrm{d}SSB$. This implies that each expected dollar of Social Security is substituted one-for-one for a discounted dollar of savings.

Figure (1) provides a graphic of this "base case". Here, I show the individual's consumption and saving in period 1 and period 2 on the x-axis and y-axis respectively. Following the derivation, the individual substitutes the present value of a dollar of Social Security for a dollar of savings and maximizes her utility. This is best thought of as a one-for-one substitution between retirement savings in the form of an illiquid pension and Social Security benefits because Social Security benefits are not a perfect substitute for private savings in a saving account. Private savings are liquid and can be used to insure an individual against risk during period 1 while Social Security benefits are illiquid and can only be used during period 2.

By making small modifications to this framework, the one-for-one relationship between the present value of Social Security and savings changes. If an individual knew she were to receive a Social Security benefit larger in net present value than the present value she pays into the system, then she would decrease her savings in the first period even farther than in the base case, increasing her period 1 consumption. If the net present value of Social Security benefits were smaller than the share of wages paid into the Social Security system, the prediction for change in savings for the individual during the first period is ambiguous and the change in savings in the model depends on the shape of her utility curve.

Along with changing private saving incentives, the presence of a Social Security system also shifts labor market incentives. A large literature documents that retirement benefits

may induce individuals to retire earlier, meaning that there are more years of retirement for an individual to finance with savings (Feldstein, 2002. Fetter, 2016). Because Social Security benefits are actuarially adjusted, an individual must save more during the first period in order to finance a longer second period of retirement. The effect of Social Security on savings then, depends on both the theoretical reduction in private savings because of Social Security and the theoretical increase in private savings from Social Security incentivizing individuals to retire earlier.

It is also important to consider that Social Security is not perfectly actuarially adjusted; individual's future benefits are functions of current government policy, as well as their earnings history. If an individual has little faith in the Social Security system and does not believe that she will receive Social Security benefits when she retires, then she will likely substantially reduce her period 1 consumption and her savings will be less depressed that an individual who believes that Social Security in actuarially fair. Conversely, an individual who has great faith in the government and in population growth might believe that her Social Security will be more generous that the actuarially fair model I presented above, meaning that she would save even less during period 1. Because Social Security is not perfectly actuarially adjusted, the model presented here is abstract and serves to develop an underlying insight rather than to provide a firm prediction (Feldstein, 2002).

It is important to consider the myopia in models of the relationship between Social Security and savings. In the above mentioned models, individuals demonstrate perfect foresight when considering their future retirement benefits. That is, they perfectly adjust their consumption in the first period such that they are maximizing their utility over their lifecycle. This is an incredibly restrictive assumption; people neither have perfect foresight nor are they perfectly myopic. Many individuals who depend on Social Security are severely liquidity constrained as they work, and in the absence of Social Security, would use the additional

income to consume a good for which they have a relatively inelastic demand. In a world with myopia and liquidity constraints, individuals would save too little. This combination of these factors likely contributed to the plight of the elderly during the Great Depression.

To determine how the presence of Social Security influences the economy as a whole, I must consider changes in individuals savings simultaneously. Consider a base case where I assume that each generation of workers has the same number of people and that there is no wage growth in the economy. In the absence of Social Security in this model, the young will consume C_1 in period 1 while the old consume C_2 in period 2. Because each generation has the same number of people and there is no wage growth in this economy, the consumption of C_2 for the old will be exactly balanced by the savings of the young in period 1, therefore leading to an economy with no net savings. Because in the base case version individuals substitute dollar for dollar of Social Security and savings, the phase in of the Social Security system will not move net savings of this economy from zero.

If I relax these assumptions and allow wage growth and population growth to be positive, individuals will receive Social Security benefits larger than what they paid into the system, leading them to shift C_1 out, leading to an aggregate fall in savings. Note that here, individuals still substitute a dollar of Social Security for a dollar of savings, but aggregate savings in the economy falls.

In this paper, I seek to empirically explore the prediction that the phase-in of a Social Security system leads to decreases in individuals stocks of savings and do not address the macroeconomic aspects of Social Security.

3 The Phase-In of Social Security: Approach and Data

3.1 Identifying the Effect of the Phase in of Social Security

Social Security, in its modern form, originated in 1935 with the passage of the Social Security Act. The Social Security Act included two programs which benefitted the elderly: Old Age and Survivor's Insurance (OASI), now called Social Security, and Old Age Assistance (OAA), a means tested income supplement for the elderly.[4] Figure 2 shows that growth of per person OASI and OAA payments across time. Though OAA was initially the larger of the two programs, by 1950, OASI became the larger and continued to dramatically expand over the following decades while OAA remained comparatively small in size.

I will first estimate the effect of receiving Social Security coverage on stocks of savings using variation in the occupations that are covered by Social Security. Upon passage of the Social Security Act, about 60% of the workforce was covered, particularly those working in commerce or industry (Kollmann, 1996). The occupations initially covered by Social Security were not randomly selected. Farm workers and domestic workers were not covered by Social Security, in part because collecting an earnings tax and calculating benefits was administratively difficult. A historical literature argues that Social Security initially did not cover the entire workforce because politicians in the South sought to maintain a servile black labor force working as farm and domestic workers and worried that expanding Social Security coverage would lead to increased wages for black people. Hence, for the Social Security Act to pass Congress, the legislation could not cover these groups (Alston, 1999. Quadagno, 1988). During the period of this study, there were occupational expansions of Social Security in 1950, 1954, and 1956, denoted by red lines in Figure 2.

[4]The1935 Social Security Act created Old Age Insurance. In 1939, Old Age Insurance became Old Age and Survivor's Insurance.

The 1950 amendments to the Social Security Act, signed by President Truman on August 28, 1950, expanded coverage to 8 million people, including non-self-employed farm workers and some self-employed workers except doctors, lawyers, and engineers.[5] Though the legislation became effective January 1st of 1951, the anticipation of coverage of these groups began prior to the law's enactment. The amendment was first introduced to the House of Representatives in 1949 as two separate bills, H.R. 2892 and H.R. 2893, prior to being combined into a single bill, H.R. 6000. H.R. 6000 first passed the House of Representatives in October, 1949 and then passed the Senate, along with additional amendments, in June, 1950. It passed both Houses of Congress after further negotiation on August 16, 1950 and President Truman signed the Bill at the end of August (Altmeyer, 1966. Cohen, 1950. Leibowitz, 1954). Because of the legislative lead-up to the Bill's passage, workers who were to gain coverage probably were aware that beginning in 1950, people in their occupation would receive Social Security benefits upon retirement. Therefore, anticipatory effects regarding savings likely began in 1950 rather than 1951.

The 1954 amendment to the Social Security Act, signed by President Eisenhower September 1st of 1954 and enacted January 1st of 1955, further extended coverage to self employed farmers, more professional and self-employed workers who had previously not been covered. Still excluded from Social Security were lawyers, medical professionals and some other self employed, though state and government employees, except police and firemen were able to opt into the program (Cohen, 1954. Kollmann, 1966. Marquis, 1954). Notably, state and local employees had previously been covered by pensions. I do not have information concerning these pensions and do not control for them in my analysis. As with the 1950 expansion, individuals likely learned in advance their occupations would be added to Social Security coverage, so anticipatory effects probably began in 1954 rather than 1955.

[5]Some self employed individuals outside of doctors, lawyers, and engineers were not covered in the 1950 expansion.

The 1956 amendment to the Social Security Act, signed by President Eisenhower on August 1st of 1956 and enacted January 1st of 1957, further extended coverage to uniformed military servicemen, and most previously excluded professionals, except medical professionals and lawyers, as well as farm owners and operators (Kollmann, 1996. Schottland, 1956). This amendment granted coverage to approximately an additional 900,000 people. Just as with the earlier amendments, individuals likely began to shift their behavior in 1956 rather than 1957.

I use this variation to compare changes in savings of those whose coverage status changed as a result of the amendments to the changes in savings of those whose coverage status did not change as a result of the amendments. For this empirical strategy to yield a causal effect, I argue that the timing of the occupational expansion was quasi-random, that is, the exact timing of gaining Social Security coverage was random even if the expansion of the Social Security system itself was not random. If individuals anticipated their occupation would be by Social Security in advance to the legislation and previously adjusted their behavior accordingly, the estimated effect reported here would be biased towards zero.

In the final section of the paper, I will use variation from Old Age Assistance (OAA).[6] OAA was a means-tested program with no pay-in requirement administered at the state level that, broadly speaking, assisted people above the age of 65 living below a poverty threshold by bringing their income up to the state-defined threshold. There is substantial heterogeneity in income floor by OAA across states, so the average payment per individual above age 65 varied greatly across states. For example, OAA payments in New England were low relative to those in the West and the South West of the United States in 1949. Later in this paper, I will explain how the means test of OAA and benefits from OASI interact to influence the total change in per person public old age support payments which is suggestive

[6]Note that contemporary OAA is SSI.

of heterogeneous treatment effects by state for the phase in of Social Security.

3.2 Survey of Consumer Finances

The primary data source for this study is the Survey of Consumer Finance. Though contemporary data from the SCF is well known, the early data is underused. Between 1947 and 1963, the years I use for this study, the SCF was an annual survey taking detailed information about respondents' savings, assets, and debt featuring 1500 to 3000 respondents per iteration. I use these years because 1947 was the first year in which the Survey of Consumer Finances was conducted and I stop after the 1963 iteration because the unit of observation changes thereafter. I exclude two survey years, 1960 and 1961, because 1960 is missing sample weights and 1961 is missing many of the questions that I would need to construct analogously defined variables.

The unit of observation of the SCF is the spending unit, defined as a group of related people who live in a home together and pool at least half their income for the unit's expenditures. From this dataset, I have constructed consistent variables estimating stocks of assets, income, and demographic characteristics over time.

3.3 Asset Variables

Figure 3 shows the mean of the dependent variables in this study across time. In this paper, monetary values will be reported as 1960 dollars; one 1960 dollar is equal to 7.37 2010 dollars. Panel (a) shows the mean value of net worth without housing, defined as the sum of holdings in saving accounts, checking accounts, bonds, less non-mortgage debt restricted tho those ages 25-64. As is clear in this figure, this measure of net worth is relatively stable across

time, excluding 1955 where there is an unexplained increase in the data.[7]

The detail of this dataset allows me to further break down components of net worth. Panel (b) of Figure 3 shows holdings in liquid assets, defined as the sum of holdings in saving accounts, checking accounts, and bonds in the SCF.[8] Panel (c) of Figure 3 shows holdings in savings accounts, postal saving accounts, building and loan saving accounts, saving and loan accounts, and checking accounts. This variable is also quite stable across time. Panel (d) shows holdings in bonds defined as the sum of different bonds available in each year of SCF data.[9] This asset shows a strong downward trend over time. It is likely that holdings in bonds were high in 1946 because of forced savings and buying of war bonds during World War II. Over the following decades, individuals' bonds may have matured, been called, or perhaps sold for stocks in the booming post-war economy. Panel (e) shows average holdings in net worth, inclusive of housing defined as non housing net worth plus home equity. This asset grows substantially across the survey suggesting an accumulation of housing wealth during this time period. Finally, panel (f) shows the share of the sample that owns stocks during this time period. Just as housing wealth increased across the sample, so did the share of individuals' holding stocks.

I also observe individual's flows of liquid assets between 1947 and 1951. It is important to consider flows of savings in addition to stocks of savings because flows of savings are likely to respond more quickly than stocks of saving. Summary statistics for the flows of liquid assets for individuals between ages 45 and 64 are shown in Table 1. Because this measure is incredibly variable, I report summary statistics of it in multiple forms. The first row of this

[7] I include year fixed effects in all regressions which should control for this systematic difference in 1955

[8] Liquid assets is a measure defined by the SCF that appears to have a constant definition across survey years. I was able to closely recreate this variable as defined in the text.

[9] From 1946-1951, this is the sum of A-F Bonds and US Bonds. From 1952-1958, this is the sum of War Bonds and US Bonds, from 1959 to 1962, this is defined as savings bonds. Note that A-F bonds are a type of War Bonds. I am not certain that these are identical; however year effects should remove unobserved fixed systematic differences across years.

table reports the flow variable for liquid assets in 1960 dollars. Here, the mean liquid asset flow in the sample is 70 dollars which is .8% of a standard deviation of the stock of liquid assets. The median and modal liquid asset flow per year is zero.

The next row of this table shows the current years liquid asset flows as a percent of the stock of the prior year liquid assets, defined as $\frac{liquid\ asset\ flow}{liquid\ asset\ stock\ last\ year}$.The mean percentage flow is 1.19%. Again this measure of liquid asset flows is highly variable; the minimum flow as percentage of last years liquid assets is a -370% and the maximum flow as a percentage of last years liquid assets is 6000%. It is quite peculiar that the minimum percentage liquid asset flow is -370% as liquid assets are defined to be positive when flows are not. This implies that individuals had a negative flow tremendously larger than the stock of asset. It seems implausible that factors such as bank over-drafting could explain such a flow. Despite this unexplained component of liquid asset flows, I still use the variable because it is a best attempt at a measure that may be more responsive to Social Security coverage.

Because of the variability in this measure, I measure liquid asset flows in three other ways to attempt to minimize the weight of the outliers. First, I create a dummy variable for if an individual had a positive flow in liquid assets. Here, I estimate that 58% of individuals had positive savings during this time period. Second, I compute which percentile of the 1949 liquid asset flows into which each liquid asset flow from other years falls.[10] I use the percentile distribution of 1949 because it was the year prior to the Social Security expansion. As such, this measure shows how becoming covered by Social Security relates to ones place in the pre-policy change distribution. Finally, I measure liquid asset flows as a fraction of the individual's total income in the current year, defined as $\frac{liquid\ asset\ flow}{total\ income}$. On average, individuals decreased flows as a share of income by 10%, though the median of this variable

[10]Note that the 33 to 64 percentiles of the 1949 percentile distribution are all zero liquid asset flows. Because of this, I mechanically set these all equal to 49, which is the midpoint of the distribution.

is 0%.

Figure 4 shows demographic variables for the sample. These figures are restricted to individuals between 25-64. Panel (a) shows the average number of people in the spending unit across years, which consistently grows across the sample. Panel (b) shows the share of the sample whose respondent identifies as white. Panel (c) shows the share of the sample across years whose highest level of education was attending or completing high school and Panel (d) shows the share of the sample across years whose highest level of education was attending or completing some college. Observe that the education levels of individuals consistently increase across the sample. These variables will be included in a vector of controls in some of the regression specifications as their inclusion might increase the precision of the point estimates.

3.4 Occupations in the SCF

Creating mappings from the SCF occupation codes to occupations covered by Social Security involved some discretion because the occupation codes did not remain consistent across different years of the SCF, and therefore required me to create consistent occupational coding across years. For example, the code "professional man" was used before 1950, but not thereafter. It is not clear if these individuals should have received coverage in 1950 or in 1954 as some, but not all self-employed "professional men" received Social Security coverage in 1950. After 1950, the detail in the occupation codings increased greatly. It is worth noting that results are sensitive to alternate occupation codings.[11] It is not obvious how to merge together years with more or less detail in occupational coding.

Figure 5 shows the distribution of individuals by the year that they received Social

[11] The results presented code self employed professional individuals in higher status occupations as receiving coverage in 1954 when it was unclear which year they should have received coverage.

Security coverage. The red lines indicate the years 1950, 1954, and 1956, which are the years in which the legislation expanding Social Security was passed. In this data, 74% of the sample was always covered by Social Security, an additional 4% was covered in 1950, another 11% was covered in 1954, and another 12% was covered in 1956. These shares do not match shares of the population that should have been covered by each occupational expansion; this is either the result of my occupation coding or it is because the SCF was not representative of the population. In this figure, the share of individuals in a certain occupation does not appear to increase substantially prior to any of the occupational expansions. This alleviates some concern about individuals switching occupations in order to receive Social Security coverage.

4 Empirical Strategy and Results

4.1 Results from the full sample

My first empirical strategy compares changes stocks of savings for individuals who were impacted by the expansions relative to individuals who were not impacted by the expansion using the following regression:

$$outcome_{iot} = \theta_t + \alpha_o + \lambda \mathbf{1}(treat)_{it} + \mathbf{x}\zeta + \varepsilon_{it} \tag{1}$$

i indexes the individual, o indexes occupation, and t indexes time. θ_t and α_o represent year and occupation fixed effects. $\mathbf{x}$ represents a vector of controls that includes a dummy variable for if the respondent is white, a dummy variable indicating whether the head of house is male, a variable for the number of individuals living in the house, and dummy variables for levels of education of the respondent. $\mathbf{1}(treat)_{it}$ is an indicator variable that

turns on if the individual's occupation was legislated to be covered by year t. Though the 1950 occupational expansion took legislative effect in January of 1951, this indicator variable turns on in 1950 because I am interested in finding a behavioral response to the knowledge of being covered by Social Security, and because this is an anticipatory effect, I want to look for an effect as soon as individuals begin to anticipate a different package of retirement benefits. As outcome variables, I will use net worth exclusive of housing, liquid assets, holdings in savings and checking accounts, holdings in bonds, net worth inclusive of housing, and a dummy variable for stock ownership.

For λ to identify the causal effect of being covered by Social Security on savings, it must be the case that in the absence of a change in Social Security policy, the savings between those whose coverage status changed and those whose coverage status remained unchanged would have evolved on parallel trends. Note that the inclusion of a vector of controls is not necessary for the causal identification, though it may increase the precision of the estimates.

A potential threat to identification is endogenous occupation choice. Suppose that individuals who are particularly zealous about savings switch occupations in order to receive Social Security coverage. This would upwardly bias the effect of Social Security on savings because in the absence of Social Security, these individuals would still save more than individuals who would not switch occupations in order to become covered by Social Security. Ideally, to solve this problem, I would use individuals' occupations prior to the announcement of which occupations are covered by Social Security or are to be covered in each expansion. The SCF data does not allow me to use individual's prior occupations because it does not include them, although as previously noted, there does not appear to have been shifts in occupational composition in the SCF surrounding occupational expansions easing the threat of endogenous occupation choice.

Table 2 reports results from these regressions of net worth, exclusive of housing. Here, I estimate that, without controls, becoming covered by Social Security is related to an increase in non-housing net worth of $183 for those ages 25-64, and that with controls, becoming covered by Social Security is related to a $75 increase in net worth exclusive of housing. After restricting to those 45-64, that is those who are close to retirement age, these estimates both increase. Upon the inclusion of controls, for individuals 45-64, becoming covered with Social Security is related to a $230 increase in non-housing net worth which is a 2.5% increase of in standard deviation of non housing net worth.

Though these coefficients are all positive, I cannot reject a zero effect of receiving Social Security coverage at a conventional confidence level. Nevertheless, I can reject effects outside of a confidence interval at conventional levels of statistical significance. A 95% confidence interval around the point estimate of $\hat{\lambda} = 230.2$ in column 4 of Table 1, is $(-287.24 \leq \lambda \leq 747.64)$, so I can reject effects outside of these bounds at conventional levels. More intuitively, I can reject an effect of the phase in of Social Security of outside of a 3.1% fall in standard deviation of net worth not housing and an increase in savings outside of an 8.1% increase in standard deviation of net worth non-housing, a relatively tight bound on the effect of becoming covered by Social Security.

Table 3 reports results from regression (1) for liquid assets. Here, for individuals 45-64, becoming covered by Social Security after including a vector of controls is related to a $231 increase, or 3.8% of a standard deviation, increase in liquid assets. Just as with non-housing net worth, the magnitudes of the effects are larger when looking at those closer to retirement age, and the magnitudes become less extreme upon the inclusion of controls. Though none of the point estimates are statistically different from zero at conventional levels, I can reject effects of the phase in of Social Security outside of the interval $[-294.86, 757.26]$ at a 95% confidence level which is the same as rejecting effects of less than a 3% decrease of a standard

deviation of liquid assets or more than an 9% increase of a standard deviation of liquid assets.

Table 4 reports results from the regressions on the sum on holdings in savings and checking accounts. The point estimates for the sample with the wider age range are negative while the point estimates restricted to those near retirement are positive. Column 4, my preferred specification, estimates that being covered by Social Security is related to a $132.8 increase in saving and checking accounts which is 2% of a standard deviation increase. Using the point estimate in column 4, I can reject effects of the Social Security expansion outside of 3% of a standard deviation decrease in saving and checking accounts and a 7% of a standard deviation increase in saving and checking account.

Table 5 reports regression results from holdings in bonds. Though the point estimates in this table are negative, again none are statistically different from zero at conventional levels. Using the point estimate from column 4—becoming covered by Social Security is related to a $312.2 decrease in holdings in bonds—I can reject effects of the phase in of Social Security smaller that a $706.75 or 18.1% of a standard deviation decrease in bonds associated with being covered by Social Security or larger than $82.248 or 2.1% of a standard deviation increase in holdings in bonds associated with becoming covered by Social Security.

Table 6 report regression results from net worth inclusive of housing. In column 4, I estimate that for individuals ages 45-64, conditional on a vector of controls, receiving Social Security coverage is related to a $3632.8 increase in net worth inclusive of housing. At a 95% significance level, I can reject that effects smaller that a $1499.26 or 9.6% of a standard deviation decrease in net worth inclusive of housing and larger than a $8764.864 or 56.16% increase in net worth inclusive of housing.

Table 7 reports regressions on the probability of stock ownership.[12] In column 4, for

[12]I observe this variable in 1946-1951, 1952, and 1954.

individuals ages 45-64, becoming covered by Social Security is related to an 8.4 percentage point increase in the probability of owning stocks. This coefficient is marginally significant, though the estimates using the entire sample are significant at the 95% level.

Though none of the point estimates presented here for individuals ages 45-64, the group for which I would expect the expansions of Social Security would have the largest effects, are significantly different from zero at a 95% confidence levels, the effects within 95% confidence intervals are reasonably close to zero when considering the boundaries as percent of the standard deviation of the underlying variable. It is possible that the coefficients estimated in this section are biased towards zero if individuals in the later occupational expansion anticipated that their occupation would become covered by Social Security prior to their retirement, and therefore adjusted their behavior to future Social Security benefits before it was legislated that they would receive benefits. Also, it is important to consider the degree that I would observe changes in stocks of assets because stock variables move quite slowly and therefore these coefficients are best thought of as qualitative descriptions.

4.2 1950 occupational expansion

Next, I focus on the 1950 occupational expansion because of it was one of the larger occupational expansions and it allows me to focus on a smaller time period. As noted earlier, although this expansion was large in terms of additional individuals covered nationwide, it was the smallest in my dataset. This is perhaps because the discretionary choices I made with occupation codes was mistaken or perhaps because this data was not representative of the population. If the small proportion of individuals affected treated is due to incorrect coding, my coefficients will be biased towards zero. First, I reestimate equation (1) restricting my sample to the years 1946-53; λ has the same interpretation as in the previous regressions.

I also explore the Social Security expansion in a less parametric form by estimating event studies. Here, I estimate the following regression:

$$outcome_{isot} = \theta_t + \alpha_o + \sum_{t \neq' 49} \phi_t \mathbf{1}(year = t)_t \times \mathbf{1}(1950\ expansion)_{ot} + \varepsilon_{isot} \tag{2}$$

and by examining the pattern in the ϕ_t coefficient, I estimate the effect of the expansions of savings. Here, $\mathbf{1}(year = t)$ are dummy variables for each year t in the sample and $\mathbf{1}(1950\ expansion)_{ot}$ is a dummy variable indicating whether an individual was in an occupation covered by the 1950 occupational expansion of Social Security. I display the event studies for individuals ages 45-64 without the inclusion of controls.[13] In this regression, a finding that the ϕ_t coefficients become more positive after 1949, this would suggest that after becoming covered by Social Security, individuals increase their savings. Likewise, if the ϕ_t coefficients become more negative after 1949 would suggest that individuals who become covered by Social Security decrease their savings more relative to individuals whose treatment status did not change.[14]

Critically, the event studies serve as a falsification test for the parallel trends assumption needed for regression (1) to identify the causal effect of Social Security on savings. If savings of those who will be covered by Social Security are evolving on different trends to those whose Social Security coverage status does not change prior to the change in coverage status in 1950, this would suggest that the parallel trends assumption does not hold and that the λ estimates do not identify that causal effect of receiving Social Security coverage on savings. That is, prior to 1949 the ϕ_t coefficients should not be statistically different from zero if the parallel trends assumption does hold.

Results from specification (1) are reported in Table 8 for those ages 45-64 after con-

[13] Event studies including those 25-64 are qualitatively similar.

[14] Event studies for the full sample are qualitatively similar to the event studies presented here.

ditioning on a vector of controls. Other than the point estimate on net worth inclusive of housing, each of these coefficients is more positive than the coefficient estimated using the entire sample. In column (1), I estimate that being covered by Social Security is related to a $929 increase in net worth exclusive of housing. Though this coefficient is four times as large as the point estimate from the entire sample, the associated 95% confidence interval is quite large; I can reject effects of the phase in of Social Security outside of the interval $[-1569.8, 3427.8]$, a far wider confidence interval than the interval associated with the first point estimate. Given the decrease in sample size associated with only using years just around the 1950 occupational expansion, it makes sense that the there would be a fall in statistical power that would explain the larger confidence interval. Panel (a) of Figure 6 reports an event study from this regression. Observe that the ϕ_t coefficient prior to the occupational expansion is not statistically different than zero which is suggestive that I have not violated the parallel trends assumption. However, the ϕ_t coefficients after for the group of occupations that received Social Security coverage after 1950 also are not statistically different from zero after this group becomes covered by Social Security suggesting that there is little detectable effect of becoming covered by Social Security.

Though the coefficient on bonds increases to -84.3, which is 27% of the initial point estimate in absolute value, the validity of this coefficient as a causal estimate is brought into question by the event study for bonds shown in panel (d) of Figure 8. Here, the $\phi_{(1947)}$ coefficient is nearly statistically different from zero at the 5% level, suggesting that the changes in stocks of bonds for individuals whose Social Security coverage status changed in 1950 may have been evolving on differential trends from those whose Social Security coverage status did not change in 1950.

Concerns about violations of the parallel trends assumption are not as severe for net worth inclusive of housing, panel (e) of Figure 6, though the changes in this coefficient after

restricting to only years around the 1950 expansion are suggestive that this regression is identifying something other than just the occupational expansion. The coefficient of net worth inclusive of housing decreases by a factor of four after restricting the sample to just the years around the 1950 occupational expansion; my initial estimate of a $3632.8 dollar increase in net worth inclusive of housing associated with becoming covered by Social Security falls to there being a $890.6 dollar increase in net worth inclusive of housing associated with becoming covered by Social Security. This fall in point estimate is contrary to the increase in point estimates in the other coefficients when restricted to the 1950 expansion; a potential explanation for this fall in point estimate is that the initial point estimate was influenced by some other variable leading to an increase in net worth inclusive of housing.

4.3 Liquid Asset Flows

I next present regression results from liquid asset flows during the period of 1947-1951.[15] As previously discussed, I use liquid asset flows because flows of liquid assets might respond more quickly than stocks of liquid assets meaning I might be able to find an effect here that I could not identify when using the stock variables. The use of flows also follows the recent literature on this question (Attanasio and Rowhedder, 2003. Attanasio and Brugiavini, 2003). In the odd numbered column of Tables 8-9, I present regression results from the entire sample of 45-64 year olds and in even numbered columns of Tables 8-9, I present regression results after restricting this sample to exclude those in the 1st and 99th percentile of liquid asset flows.

In column 2 of Table 9, I estimate that becoming covered by Social Security is related to a $174 flow into liquid assets. Though this estimate is 50% larger than the mean liquid

[15]Ideally I would use a larger period of flows of liquid assets, but these are the only years for which this variable is available in the SCF

asset flow during his time period, it is only 3.2% of a standard deviation in liquid asset flows indicating that this effect is not relatively large. I can reject effects at a 95% confidence interval outside of the range of $[-222.21, 570.808]$ or effects between -6.5% to 16% of a standard deviation. If receiving Social Security coverage were associated with a change in flows of liquid assets shifting an individual 16% of a standard deviation, this would not be economically insignificant, though it is likely that an effect that large is in the confidence interval because of a lack of power in these calculations.

In column 4, I estimate that becoming covered by Social Security is related to a 10% increase in holdings of liquid assets. Though on the face of it, the magnitude of this change is quite large, the 10 percent increase in flow as share of stock was imprecisely estimated–I can reject effects at the 95% level outside more extreme than a 23% decline or a 44% increase in percentage liquid asset flow. Because of the width of this confidence interval, I am hesitant to attribute much meaning at all to the point estimate. Because the variability of the liquid asset flow variable makes it difficult to interpret effects of liquid asset flows using these two variables, next I turn to two different measures of flows of liquid assets that reduce the variability in the dependent variable.

Table 10 reports three blunter measures of liquid asset flows; the first measures the probability of having positive liquid asset flows, the second measures variation in the percentile distribution of assets across years, and the third measures liquid asset flows as a share of income. Here, I estimate, in column 2, that being covered by Social Security is related to a 2 percentage point decline in the probability of having a positive flow on liquid assets. 58% of the sample during this period has a positive flow of liquid assets, so the Social Security expansion is related to a 3% decline in the probability of an individual having a positive flow of liquid assets. However, this coefficient was estimated very imprecisely, I can only reject effects more negative than a 33 percentage point decline in the probability of having positive

flows and effects more positive than a 29 percentage point increase probability of having a positive flow in liquid assets being associated with receiving Social Security coverage. Hence, at either extreme, I can reject effects larger than a 55% decline in the probability of having a positive flow of liquid assets or a 49% increase in the probability of having a positive flow of liquid assets. Because of the width of this confidence interval and the share of individuals who have no liquid asset flows, I am hesitant to attribute much meaning to this point estimate.

In column 4 of Table 10, I examine effects of the Social Security expansion on individuals' place in the 1949 percentile distribution of liquid asset flows; there I estimate that becoming covered by Social Security in 1950 is associated with falling 2.06 percentile points in the 1949 percentile distribution of liquid asset flows. I can build a 95% confidence interval around this coefficient and reject effects of the Social Security expansion more extreme than a 12.12 percentile point decrease or a 8.01 percentile point increase. That is, for the mean level of liquid asset flows, I can reject effects outside of an individuals shifting to below the 36th percentile and above the 57th percentile which are both zero in the 1949 distribution of liquid asset flows. Hence this estimate is a precise zero, suggesting the phase in of Social Security has no effect on liquid asset flows.

In column 6 of Table 10, I report regression results using liquid asset flows as a percent of total earnings as the dependent variable. Here, I estimate that becoming covered by Social Security is related to a 24 percent increase in flow as share of total income implying that individuals save a higher share of their income. I can reject effects of less that an 9% decrease and more than a 40% increase in flow as share of total income at a 95% confidence level. I consider the point estimates in columns 4 and 6 to be the most compelling estimates using liquid asset flows. I do not attribute too much meaning to the statistical significance of the point estimates in columns 5-6 because of multiple testing.

Again when using flows of liquid assets as the dependent variable, I do not gain enough statistical power to reject zero effects at conventional levels. Two of the point estimates in this series of regressions were again positive, one of the more persuasive estimates in this section was a precise zero and the other estimate was positive. Because the pattern of point of point estimates contradict the majority of the literature on the effect of Social Security on savings as well as the simple model I previously presented, in the next section, I will explore in more detail theoretical explanations of the positive point estimates before empirically exploring one explanation.

4.4 Possible Explanations for Positive Effects

As I briefly discussed in the introduction, it is theoretically possible that the creation and phase-in of the Social Security system would have led to an increase in savings. This could have happened for a number of reasons. In her book, *The Effect of Social Security on Private Savings*, Alicia Munnell proposes a number of ways that the phase-in of Social Security could have led to an increase in savings. Munnell first postulates that the phase-in of Social Security may have led to a higher aggregate level of savings in the economy. This is because the creation of Social Security influences high savers and low savers differently. If high savers substituted dollar for dollar their Social Security income for private savings, previously low savers would be forced to save more than they previously did after becoming covered by Social Security because Social Security payments were garnished from their paychecks. Someone who saved zero dollars prior to Social Security was forced to increase her saving to something akin to the level of her garnished wage. Hence, Social Security may well increase the total amount of private retirement savings in the economy.

Munnell also provides other explanations of how Social Security, or other forced-savings

plans, could lead to an increase in private savings. Forced-savings plans such as Social Security lead to a recognition effect, by which participants in the program are reminded of the importance of retirement savings and therefore increase their level of savings outside of the program (Cagan, 1965). Forced-savings plans such as Social Security also increase goal feasibility of savings; Social Security can bring individuals closer to their retirement savings goal that may have seemed infeasible prior to Social Security. Because individuals are closer to these savings goals as a result of Social Security, they are more likely to increase their private savings by the smaller amount to reach their actual savings goals (Katona, 1964).

Another reason that Social Security may have led to increased retirement savings is that Social Security, with its promise of a funded retirement, could have caused fundamental changes in intergenerational relationships. The passage of the 1935 Social Security Act may have led to changes in cultural expectation; prior to Social Security, children provided housing and care for their parents after retirement. Because of the comprehensive government support for the aged, the Social Security program could have conceivably led to an increase in private savings because individuals needed to fund their own retirements, independent of their children (Costa, 1999). Social Security also could have induced positive savings as it depressed the labor supply of the aged, extending retirements, leading to individuals needing to have more savings (Fetter, 2016).

Finally, Social Security could have created an increase in private savings because it was not introduced in an environment free of public old-age support. Rather, Social Security payments were phased in on top of the already existing means-tested Old Age Assistance (OAA) payments. There is a some empirical evidence that the existence of means-tested programs reduced private savings (Neumark, 1998).

OAA was a state based means-tested program that brought retirees' incomes up to a

state income floor. Each state set a specific income floor and set particular guidelines about exactly who would be eligible to receive OAA. Because income from Social Security counted against the income component of the means test, it taxed away individuals' OAA benefits dollar for dollar. In Figure 7, I show how OAA payments related to the phase in of Social Security. In this figure, I plot the average OAA payment per person above age 65 in a given state in 1949 against the difference in OAA payments per person between 1960 and 1949. Here, there is a strong downward trend, suggesting that the higher the OAA per person payment in 1949, the lower the 1960 OAA payment relative to this underlying level. That is, the phase in of Social Security in this time period substituted for OAA dollars in high OAA states. This phenomenon was discussed in both general circulation newspapers and Social Security Bulletins.

Because Social Security impacted people different in different states based on the underlying levels of OAA, it is plausible that Social Security could have had a more positive effect on individuals in states with generous OAA because any disincentive to save from Social Security is less strong than a disincentive to save from OAA. This is because OAA dollars were means-tested and asset-tested while Social Security dollars were not asset-tested. That is, if individuals in those states chose not to save because they wanted to receive OAA in retirement, once Social Security payments brought them over the OAA means-test, they were no longer disincentivized from saving by OAA because increased savings no longer cost them future old age benefits. I will test for heterogeneity in response to the phase in of Social Security in this next specification.

4.5 Phase in of Social Security along with OAA

This next specification explores the interaction between Social Security and OAA. Here, I investigate whether there were heterogenous effects to receiving Social Security coverage based on underlying levels of OAA. To investigate this, I first estimate a differenced regression interacting being treated by the Social Security expansion with a dummy variable for being above the median OAA per person payment in 1949 as follows:

$$outcome_{isot} = \theta_t + \alpha_o + \beta_s + \tag{3}$$
$$\sum_{t \neq 1949} \tau_t \mathbf{1}(year = t)_t \times OAA\ in\ 1949_s + \sum_o \upsilon_o \mathbf{1}(occ = o) \times (OAA\ in\ 1949)_s +$$
$$\kappa_1 \mathbf{1}(treat)_{iot} + \kappa_2 \mathbf{1}(treat)_{iot} \times \mathbf{1}(OAA\ in\ 1949)_s + \mathbf{x}\zeta + \varepsilon_{isot}$$

As before, θ_t and α_o are year and occupation fixed effects, $\mathbf{1}(treat)_{iot}$ is a dummy variable indicating whether the individual was in an occupation covered by Social Security by time t, and $\mathbf{x}$ is the same vector of controls. β_s is a vector of state fixed effects which I include in the place of a dummy variable for each each state's level of OAA per person above the age of 65 in 1949. $(OAA\ in\ 1949)$ is a continuous variable that measures the level of OAA per person above the age of 65 in state s in 1949.

In estimating this regression, I take the identification assumption from specification (1) as given. Here, the sign of κ_2 is suggestive of how the underlying level of OAA in a state was related how individuals adjusted their savings in response to becoming covered by Social Security. That is, κ_2 measures how individuals in states with higher underlying OAA levels change their savings in response to the phase in of Social Security relative to individuals in

states with lower underlying levels of OAA. Though out of sample, κ_1 of this specification estimates the effect of the phase in of Social Security as if the average state level of OAA in 1949 were zero dollars, something akin to Social Security being phased into an economy without preexisting old age support.

Results from these regressions are reported in Table 11. Observe that the coefficients on the majority of the interaction terms, the κ_2 coefficients, in this table are negative and statistically insignificant. If these point estimates were statistically significant, this conceivable would be evidence against the hypothesis that the positive point estimates previously estimated were in part due to the lighter savings disincentive from Social Security relative to OAA but because they are not significant, these estimates are neither evidence for or against this explanation of positive point estimates.

In column (1) of Table 11, I estimate that for a state with zero dollars of 1949 OAA, becoming covered by Social Security is related to a \$596 increase holdings in net worth, exclusive of housing. Note that this coefficient is more than two and a half times the estimated effect was in Table 1 where I did not allow for heterogenous treatment effects from underlying OAA levels. In this specification, $\kappa_2 = -5.1$, so each additional dollar of 1949 OAA is related to a \$5.5 greater decrease in non-housing net worth. The mean level of 1949 OAA per person above age 65 is \$77, so the effect of the Social Security expansion for this state would be a \$171.43 increase in non-housing net worth.

The other interpretations are largely similar to the interpretation of κ_1 and κ_2 on net worth exclusive of housing. Because coefficients from this specification are not statistically different from zero, they do not provide evidence against the theory that a reason that there may have been positive effects of Social Security on private savings due to the underlying differences in the nature of old age support in different states. That said, the signs on the

point estimate of the κ_2 coefficients is suggestive of evidence to the contrary, though the magnitudes of the coefficients due suggest that the regressions specification may pick up on factors than the Social Security expansion because the magnitude of effects are so large.

5 Conclusion

In this paper, I contribute to the literature estimating the effect of the phase-in of Social Security on savings through leveraging the occupational expansions from the phase in of Social Security. I find a consistent pattern of positive and statistically insignificant points estimates; interpreting these point estimates at face value would contradict the majority of the literature, which finds negative effects of savings associated with increasing generosity of Social Security benefits. However, unlike the majority of the literature, I leverage the origins of the Social Security system which differs from more recent expansions or contractions. The creation and expansions of the Social Security program could have changed the way individuals financed retirement in ways that would shift towards individuals wanting to save more in ways that expanding benefits in an already existent system would not do. I tested the possibility that the phase-in of Social Security would lead to positive savings because of heterogeneity in a preexisting means-tested old age support program with stronger savings disincentives than Social Security, but find no effect. In future work, I hope to better understand the occupational expansions and use more detail about OAA programs within states. I will also investigate other specifications for the effect of the phase in of Social Security on savings, such as a parameterization that estimates the effect of length of Social Security coverage.

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7 Tables

Table 1: Summary Statistics for Liquid Asset Flows

	mean	st. dev	p25	p75	min	max
liquid asset flow	70.34	3376.79	-184.23	201.06	-42658.82	82881.24
percent flow of stock	.019	1.52	-.27	.08	-3.70	60
positive flow	.58	.49	0	1	0	1
percentile 49	49.30	30.78	22	78	1	99
percent flow of income	-.10	3.04	-.046	.039	-199.87	7.07

Note: This table reports summary statistics for liquid asset flows. The sample is restricted to those ages 45-64 and is weighted using weights provided in the SCF. Liquid asset flows were available for years 1947-1951. p25 stands for the 25th percentile. p75 stands for the 75th percentile.

Table 2: Effect of Social Security on Non-Housing Net Worth

	(1)	(2)	(3)	(4)
	net worth nh	net worth nh	net worth nh	net worth nh
SS Covered	183.3	417.8	75.23	230.2
	(316.4)	(221.6)	(299.7)	(264.0)
N	24803	10534	24473	10374
r2	0.0273	0.0418	0.0412	0.0606
controls	None	None	Yes	Yes
ages	25-64	45-64	25-64	45-64

Note: Regression results for specification 1. Includes the years 1946-1959, 1962-1963. Regressions weighted using weights provided in the SCF. Standard errors in parentheses clustered at the occupation level. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

Table 3: Effect of Social Security on Liquid Assets

	(1) Liquid Assets	(2) Liquid Assets	(3) Liquid Assets	(4) Liquid Assets
SS Covered	77.35	409.1	-22.64	231.4
	(133.8)	(324.9)	(122.8)	(268.5)
N	30548	12012	30076	11817
r2	0.0471	0.0541	0.0639	0.0755
controls	None	None	Yes	Yes
ages	25-64	45-64	25-64	45-64

Note: Regression results from specification (1). Includes 1946-1959, 1962-1963. Regressions weighted using weights provided in the SCF. Standard errors in parenthesis clustered at the occupation level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Effect of Social Security on Saving and Checking

	(1) saving and checking	(2) saving and checking	(3) saving and checking	(4) saving and checking
SS Covered	-85.93	260.6	-151.0	132.8
	(143.1)	(159.8)	(139.8)	(170.0)
N	30388	11921	29917	11727
r2	0.0341	0.0464	0.0446	0.0626
controls	None	None	Yes	Yes
ages	25-64	45-64	25-64	45-64

Note: Regression results for specification (1). Includes 1946-1959, 1962-1963. Regressions weighted using weights provided in the SCF. Standard errors in parenthesis and clustered at the occupation level. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

Table 5: Effect of Social Security on Bonds

	(1) Bonds	(2) Bonds	(3) Bonds	(4) Bonds
SS Covered	-156.7	-252.0	-190.2	-312.2
	(145.5)	(194.3)	(142.3)	(201.3)
N	30538	12007	30067	11813
r2	0.0303	0.0389	0.0414	0.0550
controls	None	None	Yes	Yes
ages	25-64	45-64	25-64	45-64

Note: Regression results for specification 1. Includes 1946-1959, 1962-1963. Regressions weighted using weights provided in the SCF. Standard errors in parentheses clustered at the occupation level. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

Table 6: Effect of Social Security on Net Worth with Housing

	(1) net worth h	(2) net worth h	(3) net worth h	(4) net worth h
SS Covered	3070.0	4006.6	2884.1	3632.8
	(2093.0)	(2524.0)	(2055.4)	(2618.4)
N	22687	9621	22397	9481
r2	0.0692	0.0855	0.0888	0.123
controls	None	None	Yes	Yes
ages	25-64	45-64	25-64	45-64

Note: Regression results for specification (1). Includes 1946-1959, 1962-1963. Regressions weighted using weights provided in the SCF. Standard errors in parenthesis clustered at the occupation level. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

Table 7: Effect of Social Security on Stock Ownership

	(1) owns stocks	(2) owns stocks	(3) owns stocks	(4) owns stocks
SS Covered	0.0929**	0.0934*	0.0894**	0.0846*
	(0.0291)	(0.0336)	(0.0274)	(0.0357)
N	15802	5734	15533	5636
r2	0.0616	0.0791	0.0844	0.117
controls	None	None	Yes	Yes
ages	25-64	45-64	25-64	45-64

Note: Regression results for specification 1. Includes 1946-1951, 1952, 1954. Regressions weighted using weights provided in the SCF. Standard errors in parenthesis clustered at the occupation level. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

Table 8: Effect of 1950 Occupational Expansion

	(1) networth_nh	(2) liqassets	(3) save_check	(4) sum_bonds	(5) networth_h	(6) stockown_1
treat	929.0	976.2	1048.4	-84.30	890.6	0.126
	(1274.9)	(1180.3)	(1165.8)	(139.9)	(1243.2)	(0.0684)
N	5317	6644	6643	6641	4424	4733
r2	0.0624	0.105	0.0885	0.0638	0.130	0.111

Note: Regression results for specification (1). All models include years 1946-1953, are restricted to those ages 45-64, and include a vector of controls. Regressions are weighted using weights from the SCF. Standard errors in parenthesis clustered at the occupation level. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

Table 9: Liquid Asset Flows

	(1)	(2)	(3)	(4)
	liquid asset flow	liquid asset flow	flow as pct stock	flow as pct stock
SS Covered	284.4	174.3	0.0745	0.102
	(268.9)	(202.2)	(0.177)	(0.174)
N	4795	4736	2293	2273
r2	0.0132	0.0154	0.00689	0.00597
controls	None	Yes	None	Yes
exclusion	None	1st 99th pctile	None	1st 99th pctile

Note: Regression results from specification (1). Includes years 1947-1951 and restricted to those ages 45-64. Weighted using weights from the SCF. Standard errors in parenthesis clustered at the occupation level.
*: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

Table 10: Liquid Asset Flows (cont.)

	(1) positive flow	(2) positive flow	(3) percentile 1949	(4) percentile 1949	(5) flow as pct income	(6) flow as pct income
SS Covered	-0.0178	-0.0169	-1.485	-2.060	0.261**	0.243**
	(0.155)	(0.156)	(6.346)	(5.136)	(0.0840)	(0.0781)
N	3608	3549	4891	4785	4448	4397
r2	0.0190	0.0195	0.0137	0.0136	0.00452	0.00400
controls	None	Yes	None	Yes	None	Yes
exclusion	None	1st 99th pctile	None	1st 99th pctile	None	1st 99th pctile

Note: Regression results from specification (1). Includes years 1947-1951 and individuals ages 45-64. Regressions weighted using weights provided by the SCF. Standard errors in parenthesis clustered at the occupation level. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

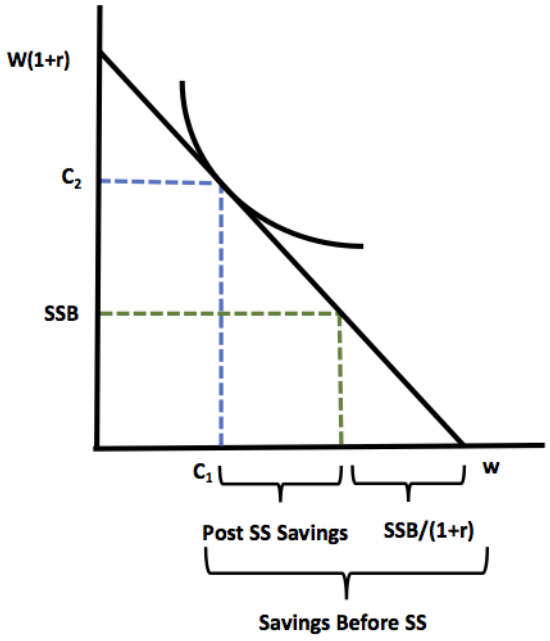
Table 11: Effect of Social Security and OAA: all

	(1) net worth nh	(2) Liquid Assets	(3) saving and checking	(4) Bonds	(5) net worth h	(6) owns stocks
SS Covered	596.4	1235.0	66.08	175.4	3970.8**	0.0335
	(758.5)	(1048.2)	(485.8)	(347.6)	(1324.9)	(0.0681)
treat_oaa	-5.519	-10.91	1.845	-7.299	-7.365	0.000573
	(7.350)	(8.378)	(4.519)	(4.145)	(21.58)	(0.000883)
N	10372	11815	11725	11811	9479	5636
r2	0.154	0.150	0.158	0.144	0.216	0.231

Note: Regression results from specification (2). Regressions include years 1946-1959, 1962-1963. The sample is restricted to those ages 45-64 and all regressions include a vector of controls. Standard errors in parenthesis clustered at the occupation level. *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

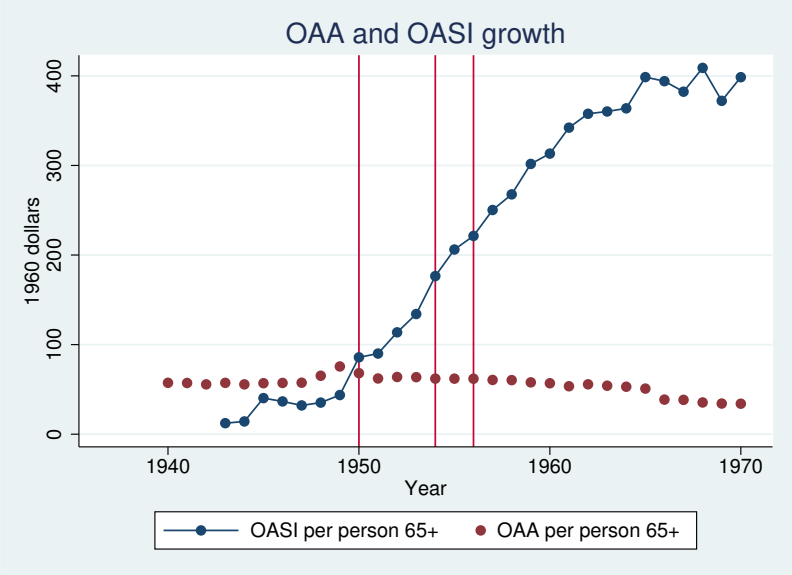
8 Figures

Figure 1: A Two Period Model For Social Security



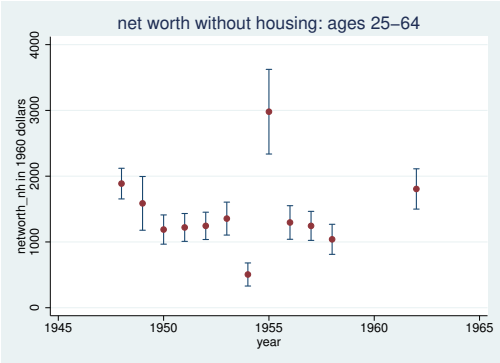
Note: This figure is a two-period model for actuarially fair Social Security.

Figure 2: Growth of OASI and OAA

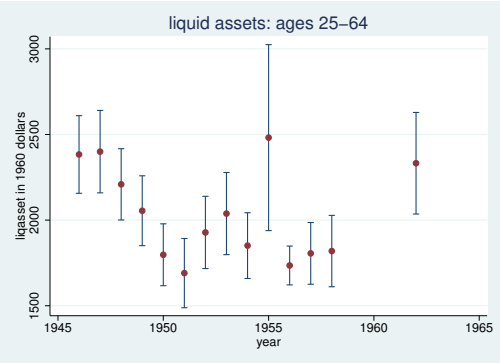


Note: This figure shows the growth of OAA and OASI across time. From 1925-1935, OAA payments are from Parker (1936). From 1936 onward, OAA payments are from Carter et. al. (2006). OASI payments are from Carter et. al. (2006). Red lines are across years 1950, 1954, 1956, mark the years of occupational expansions in OASI that I use in this study.

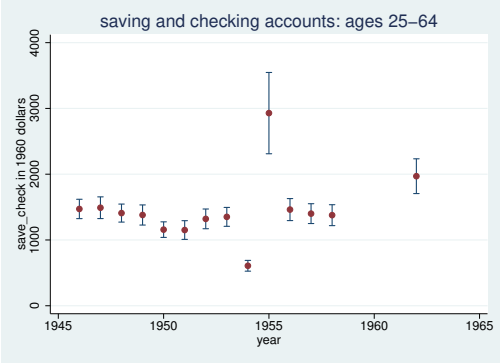
Figure 3: Summary Statistics for Dependent Variables



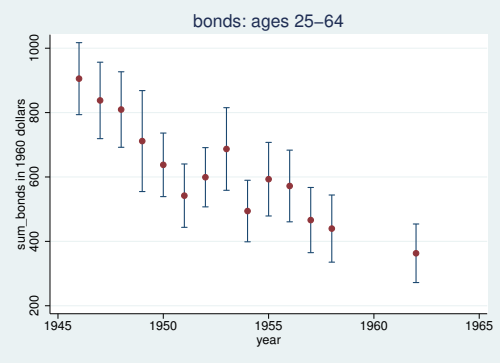
(a) mean=1441 stdev=7340



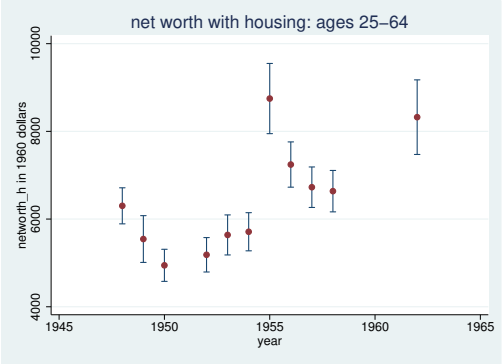
(b) mean=2037 stdev=6140



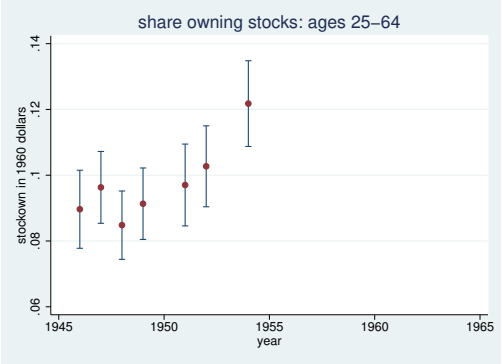
(c) mean=1457 stdev=5417



(d) mean=621 stdev=2817



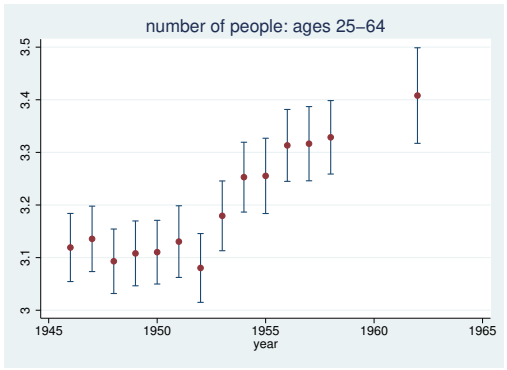
(e) mean=6456 stdev=12675



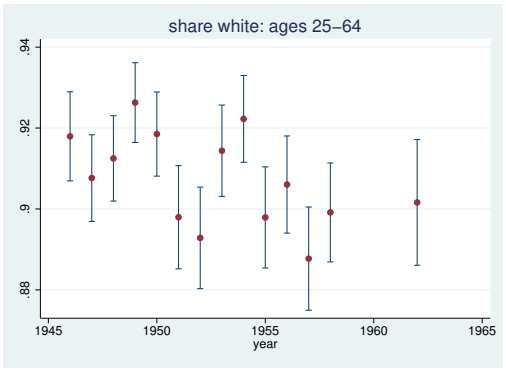
(f) mean=.1 stdev=.3

Note: This figure shows the means and standard deviations of dependent variables restricted to ages 25-64. These figures are weighted using weights provided in the Survey on Consumer Finances. Note that the years 1960 and 1961 are excluded because weights for 1960 are missing and variables for 1961 are missing. See text for variable definitions.

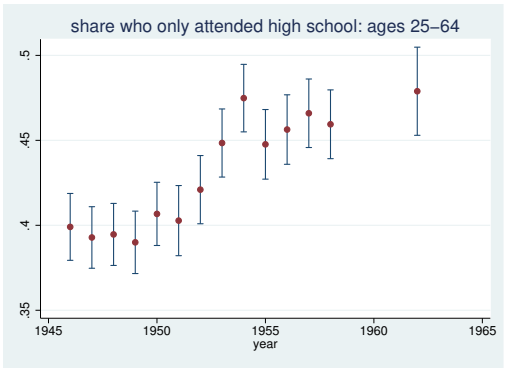
Figure 4: Summary Statistics for Control Variables



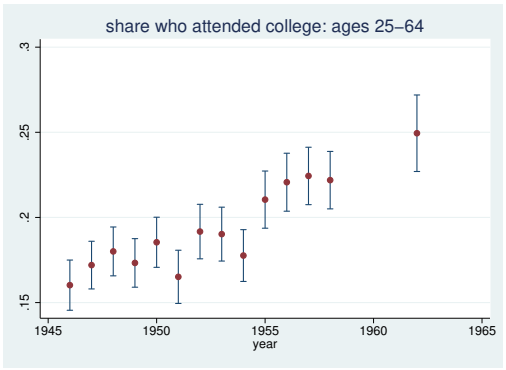
(a)



(b)



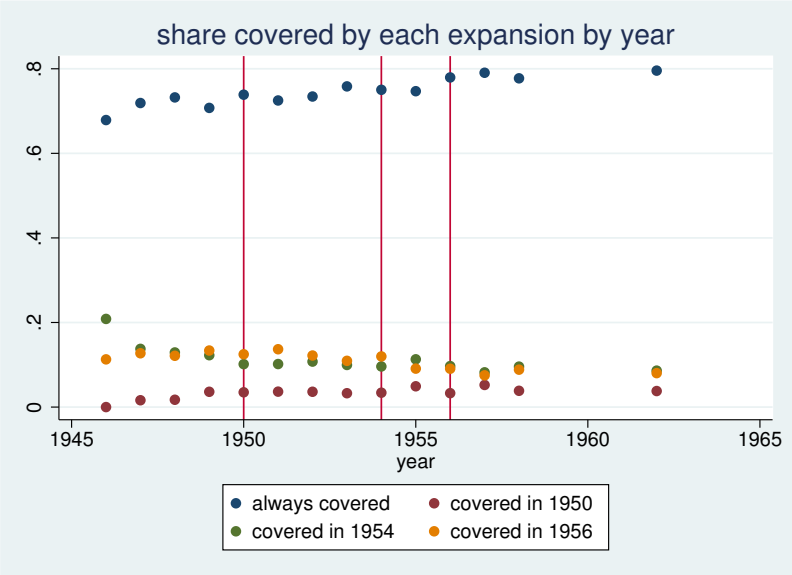
(c)



(d)

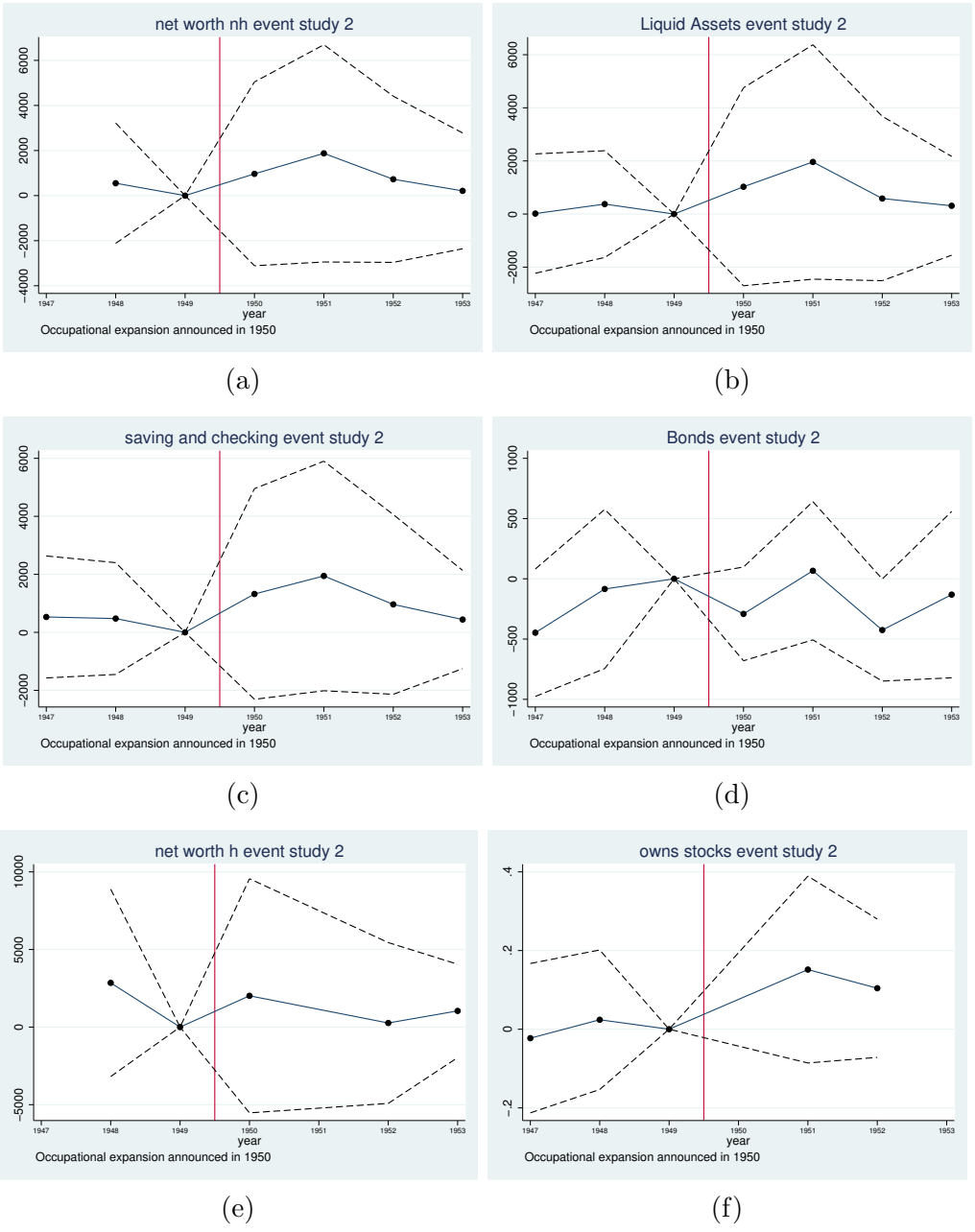
Note: This figure shows means and standard deviations of variables used in a vector of controls in some regressions. These figures are weighted using weights provided in the Survey of Consumer Finances. This figure is restricted to those ages 25-64. Note that the years 1960 and 1961 are excluded from this figure as they are excluded from the analysis.

Figure 5: Share Occupation by Year covered



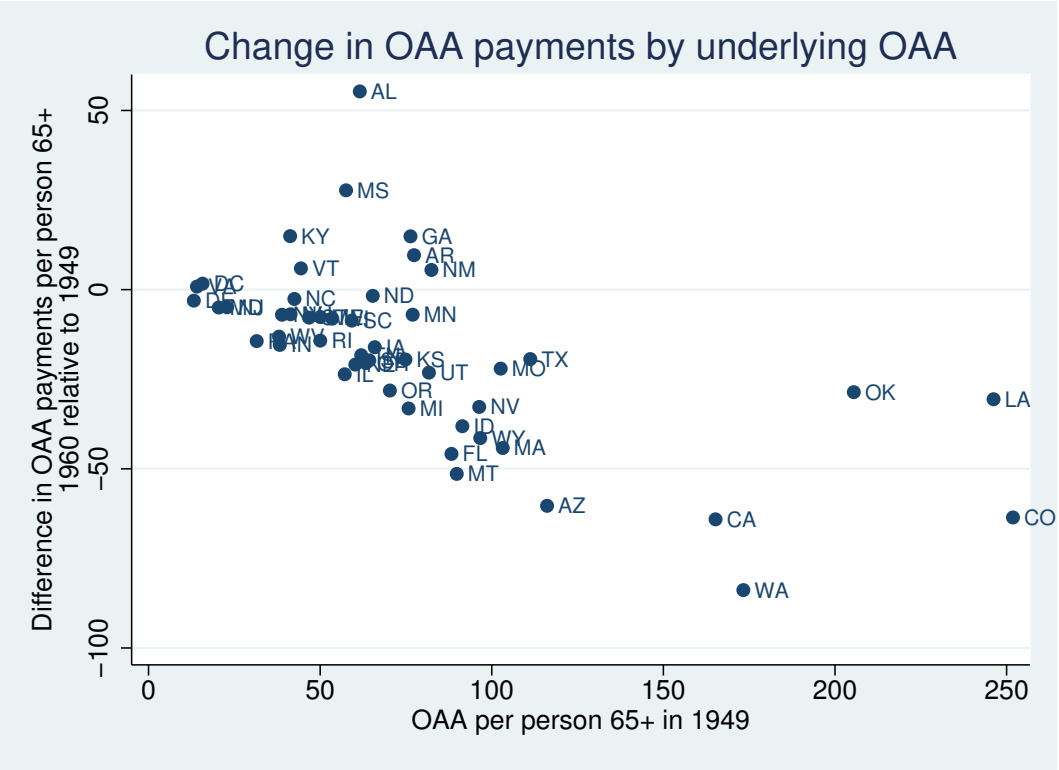
Note: Share of people in occupations covered by particular occupational expansion by year. This figure is restricted to those ages 25-64.

Figure 6: Event Studies



Note: Figures show point estimate and 95% confidence interval from interaction terms of dummy variables for year with a dummy variable for whether an individual was in an occupation covered by the 1950 occupation expansion from specification 2. The sample is restricted to those ages 45-64 and regressions are weighted using weights provided in the SCF.

Figure 7: Change in OAA payments by State



Note: This figure shows OAA payment per person above the age of 65 in 1949 against the difference in OAA per person between 1960 and 1949. OAA payments are reported in 1960 dollars. Data on OAA payments from Carter et. al. 2006.