The Drawdown of Assets during Retirement: Evidence from Sweden

By Martin Ljunge, Lee Lockwood, and Day Manoli

September 2013

ABSTRACT
In this paper, we analyze the evolution of wealth during retirement in Sweden. Because of the generous social insurance system that reduces the need for saving for health expenditures relative to the United States, Sweden provides an interesting environment to study wealth dynamics. Following an empirical analysis similar to Poterba, Venti and Wise (2011), we document several major patterns about how wealth evolves during retirement. Our particular focus is on learning about the effects of changes in household composition – from spousal death and divorce – on the evolution of wealth during retirement. Our results indicate that spousal death is associated with more modest declines in assets in Sweden than in the US. Nevertheless, the results also indicate that Swedish retirees are not completely insulated from the financial consequences of health shocks, as spousal death is associated with non-negligible declines in household wealth.

This research was supported by the U.S. Social Security Administration through grant #5RRC08098400-05-00 to the National Bureau of Economic Research as part of the SSA Retirement Research Consortium. The findings and conclusions expressed are solely those of the authors and do not represent the views of SSA, any agency of the Federal Government, or the NBER.
1. Introduction

Understanding the financial decisions of retirees is becoming increasingly important. The populations of many countries are aging rapidly, and people age 50 and over hold the majority of the world’s financial wealth (The Economist, 2007). Their decisions about how to allocate the wealth in their portfolios and how quickly to draw down their assets can therefore have a large impact on the global and local economies. Moreover, many countries are undergoing a major shift in how retirement assets are managed both before and during retirement, with the role of governments and firms declining and the role of individual households increasing. Households’ financial decisions can therefore have a profound impact on their own well-being and on the broader economies in which they live.

In this paper, we analyze the evolution of wealth during retirement in Sweden. We document several major patterns about how wealth evolves during retirement. Our particular focus is on learning about the effects of changes in household composition – from spousal death and divorce – on the evolution of wealth during retirement. Sweden provides an especially promising context in which to study these issues for several reasons. Foremost among them is Sweden’s unique institutional environment, especially its near-comprehensive social insurance programs. These programs shield households from many of the financial consequences of various risks that they face, which significantly eases the challenge of learning about the key determinants of households’ behavior. Moreover, by comparing our results with well-known results from the U.S., which has a very different set of institutions, we will be able to gauge the likely importance of the different institutional settings in determining households’ key financial decisions. Another major advantage of studying Sweden in particular is the rich administrative data sources available on the Swedish population.
Understanding wealth dynamics over the life cycle is an important issue for policymakers, especially as households are becoming increasingly responsible for providing for their own retirement and managing the drawdown of their assets. The benefits to society from a better understanding of the determinants of households' decisions regarding the accumulation and drawdown of wealth are likely to be substantial. As social security reforms in many countries reduce the level of income provided by public pensions programs, it is important to understand the nature of the risks households face in order to evaluate various policies for insuring these risks.

**Related literature**

Our paper is related to a large literature on the financial decisions of retirees in general and on the drawdown of wealth during retirement in particular. Our paper is most closely related to two main strands of this literature: one about the determinants of the drawdown of assets among retirees and another about the effects of various shocks on the evolution of wealth among retirees.
Our paper is closely related to an extensive literature that seeks to understand the determinants of the drawdown of assets among retirees, e.g., Dynan et al. 2002, De Nardi et al. 2010, and Ameriks et al. 2011. The vast majority of these papers focus on the US. A repeated, robust finding in the US-based literature is that retirees draw down their assets more slowly than one would expect based on simple versions of the life cycle model that have neither strong precautionary motives nor strong bequest motives. Although there is widespread agreement about this failing of the simplest life cycle model to explain the behavior of US retirees, there is no consensus about the causes of this failure or about which alternative models best fit the facts. One important reason that the literature has failed to reach a consensus is a fundamental identification problem inherent to the problem of trying to understand the saving behavior of US retirees (Ameriks et al. 2011): Given the significant uncertainty that retirees in the US face, especially the risk of incurring potentially large out-of-pocket medical spending, retirees' slow drawdown behavior is similarly consistent with models that feature strong precautionary motives, models that feature strong bequest motives, and models that feature some combination of strong precautionary motives and strong bequest motives.

The ability to overcome this fundamental identification problem is likely the biggest advantage of our approach of analyzing the evolution of wealth among retirees in Sweden. Given Sweden's comprehensive social insurance programs, retirees face little in the way of medical spending risk. This significantly limits the extent to which retirees' saving can be driven by the precautionary motive, which allows for sharper tests of the importance of other factors.
The patterns of wealth drawdown among retirees in Sweden that we document in this paper are qualitatively very similar to those found in the US. Much like retirees in the US, retirees in Sweden tend to draw down their assets more slowly than is predicted by simple life cycle models, despite the fact that retirees in Sweden face little in the way of medical spending risk. This has important implications for the debate about the determinants of the drawdown of wealth during retirement in the US and other countries, and is an important area for future research.

Another part of the literature about the determinants of the drawdown of assets among retirees to which our paper relates is the set of papers investigating the effects of government social insurance and welfare programs on retirees' saving behavior, e.g., Hubbard et al. 1995 and Scholz et al. 2006. As is the case for much of the literature on retirees' behavior, these papers tend to focus on the US. Our focus on Sweden is a valuable complement, especially since Sweden's social insurance and welfare programs systematically differ from their counterparts in the US, mostly in the sense that they are more comprehensive and provide a higher minimum living standard. Standard models would predict that Sweden's programs would therefore have larger effects on retirees' behavior. One such prediction, for example, is that Sweden's welfare programs, which guarantee a higher living standard relative to overall living standards than their US counterparts, would attract more retirees onto welfare by crowding out saving. Although not the main focus of our paper, we do find evidence consistent with this effect, as the fraction of retirees with virtually no assets who rely almost exclusively on social insurance and welfare programs to finance their consumption during retirement appears to be significantly greater in Sweden than it is in the US.
Our paper follows Poterba, Venti, and Wise (2011) (hereafter, PVW) closely. PVW study the effects of household composition shocks – arising from spousal death or divorce – on the evolution of assets during retirement in the US in the period from 1992-2006. They find that household composition shocks are associated with large reductions in assets. In particular, they find that among households that do not experience a household composition shock total assets tend to increase during most of the retirement period. Among households that experience a household composition shock, on the other hand, assets tend to grow much more slowly or even decline significantly at the time of the shock. These results suggest that, in the US, uninsured medical expenses, fixed costs of divorce, and other costs of household composition shocks are substantial and incompletely insured by government programs and private insurance contracts.

In this paper we analyze the effects of household composition shocks on the evolution of assets in Sweden. We intentionally follow PVW quite closely, both in terms of questions and methods. We do this to facilitate comparison of our results from Sweden to PVW's from the US. This comparison reveals interesting similarities and contrasts between the US and Sweden that should help improve our understanding of the determinants of wealth changes during retirement in both countries.
The situations facing retirees in the US and Sweden differ from each other in many respects, most notably in the comprehensiveness of coverage implicit in social insurance programs. Social insurance programs in Sweden tend to have much more comprehensive coverage than those in the US. The Swedish programs insure retirees fairly completely against the financial consequences of health shocks. In the US, by contrast, retirees face significant financial risk from uninsured medical expenses, especially those associated with chronic health problems requiring long-term care, such as a stay in a nursing home. One would expect, given these differences, that household composition shocks relating to health problems, such as spousal death, would have a larger impact on household wealth in the US than in Sweden. Indeed, our results indicate that spousal death is associated with more modest declines in assets in Sweden than in the US.

Yet our results also indicate that Swedish retirees are not completely insulated from the financial consequences of health shocks, as spousal death is associated with non-negligible declines in household wealth. Given the near-completeness of Sweden’s social insurance programs, this result suggests that a non-negligible portion of the effects of spousal death on household assets arises not from medical expenses but from other factors that occur at the time of death. This is consistent with the findings of Poterba et al. 2010, who find that the evolution of assets is very strongly related to health, and that the cost of poor health appears to be larger than observed spending on medical care.

This paper proceeds as follows. Section 2 discusses the data we use to study the evolution of wealth among retirees in Sweden. Section 3 documents the major patterns in the evolution of wealth among Swedish retirees and analyzes the effects of changes in household composition on the level and evolution of assets. Section 4 concludes.
2. Data Description

We use registry data on individual panels over the period 1981 to 1993. The data draw information from several sources; demographic information from the population registry, income and wealth information from the tax authorities, and various public benefits from the social insurance administration. We use a random sample of the 1981 population who are followed for 13 years. The only sampled individuals that disappear from the data are those who die or emigrate. About 3 percent of the population is sampled. In addition to the sample individuals, other household members are also included in the data as long as they are part of the same household as the sampled individual. This allows us to study household wealth. For further details on sample selection and data coverage see Edin and Fredriksson (2000).

2.1 Taxable wealth

Data on wealth are from the tax registry. Wealth is taxable above a threshold and the tax authority collects data on wealth. Although the tax authority was only mandated to keep wealth data on households above the wealth threshold that triggered a tax liability, there are wealth reports for a majority of the households between 1981 and 1993. The high rate of reported taxable wealth over this time period is the reason we focus our analysis to these years. Nominal reported taxable wealth is transformed into real 1990 SEK using the consumer price index.

Household wealth is computed by summing the reported taxable wealth over the household members. Taxable wealth includes both real and financial assets. Net wealth is computed as taxable assets minus debts. Some financial assets, like bank holdings and bonds, as well as debts were valued at their nominal value or market value at the end of the year. Stocks were valued at some discount, for example blue chip stocks may be valued at 90% of their end of year market value while stocks in
smaller companies were valued at lower percentages. Some stocks had no taxable wealth value.

Real estate such as single family homes was appraised by the tax authority, which formed the basis for the wealth and real estate taxes. The appraised value tended to be about two-thirds of the market value. There was only one major reassessment of the real estate tax, in 1990, during our sample period. Another change in the tax base is the exclusion of small business wealth from 1991 and forward.

2.2 Sample

We study several cohorts of people age 50 and older in order to describe fully the evolution of wealth over the latter part of the life cycle. To study pure life cycle profiles of wealth we restrict the sample to households who do not change size or civil status over the period. Constant single households have one member and no civil status change and constant two person households have two members and no civil status change between 1981 and 1993. Basic summary statistics are presented in Table 1.

The two constant household samples are studied both on average for individuals age 50 and above and for specific cohort groups.¹ Six groups are defined to include five birth cohorts. The youngest is those born between 1939 and 1943, followed by those born between 1929 and 1933, and so on until the oldest group for those born between 1889 and 1893. 32 centennials are observed in 1993.

¹ There is also a requirement that there is information on age, civil status, and wealth.
Table 1. Summary statistics.

<table>
<thead>
<tr>
<th></th>
<th>1 person constant households</th>
<th>2 persons constant households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>St. Dev.</td>
</tr>
<tr>
<td>Age</td>
<td>71.1</td>
<td>11.1</td>
</tr>
<tr>
<td>Taxable household wealth</td>
<td>176,869</td>
<td>3,189,557</td>
</tr>
<tr>
<td>Observations</td>
<td>358,530</td>
<td></td>
</tr>
</tbody>
</table>


2.3 Household transition groups

Four household transition groups are defined to allow for an analysis of how household transitions affect wealth similar to PVW. First, there are the constant single households (1 -> 1) who are defined as having one household member both in the current and the previous year. Second, there are the constant two person households (2 -> 2) who are defined as having two household members in the current and previous year, as well as the same civil status code in both years. Third, there are households who go from two persons to one due to divorce (2 -> 1, divorce). They are defined by having 1 person in the current year, 2 persons in the previous year, the current year civil status code being divorced, and the previous year’s civil status code not being divorced. Fourth, there are households who transition from two persons to one due to death (2 -> 1, widow). The definition is analogous to that for the (2 -> 1, divorce) group but uses the civil status code widow/widower instead of divorced.

The sample when studying household transitions is restricted to individuals born 1931 and earlier. Individuals are hence age 50 and above in our initial sample year.
1981. This corresponds to our objective to study wealth dynamics during the latter part of the life cycle, in particular around and following retirement.

In 1982 there are about 33,000 stable one-person households and 50,000 stable two-person households. There are about 50 transitions to one-person households due to divorce and about 1,100 due to death. In 1992, there are about 29,000 in the first group, 35,000 in the second, 30 in the third, and 900 in the fourth group.

There are relatively few observations for transitions to divorce. To protect data privacy, groups with less than 30 observations are omitted. This results in there being no observations for divorce transitions in a few years. These four household transition groups don’t cover the full sample. In addition, there are for example transitions from one to two person households and single households who die.

For each household transition group and pair of years, percentiles of taxable household wealth are computed for both year t and t-1 in the year pair. Means of the percentiles across the years are presented in Table 2.
Table 2. Summary statistics, household transition groups.

<table>
<thead>
<tr>
<th>Household transition group</th>
<th>1 -&gt; 1</th>
<th>2 -&gt; 2</th>
<th>2 -&gt; 1, divorced</th>
<th>2 -&gt; 1, widowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean by year</td>
<td>t-1</td>
<td>t</td>
<td>t-1</td>
<td>t</td>
</tr>
</tbody>
</table>

Household wealth:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>50th percentile</td>
<td>80183</td>
<td>76721</td>
<td>284846</td>
<td>284063</td>
<td>139681</td>
<td>51331</td>
<td>210342</td>
<td>137704</td>
<td></td>
</tr>
<tr>
<td>75th percentile</td>
<td>214896</td>
<td>209129</td>
<td>498679</td>
<td>501333</td>
<td>329006</td>
<td>182031</td>
<td>396621</td>
<td>288854</td>
<td></td>
</tr>
<tr>
<td>90th percentile</td>
<td>416933</td>
<td>412358</td>
<td>768550</td>
<td>777300</td>
<td>627763</td>
<td>384613</td>
<td>644792</td>
<td>493708</td>
<td></td>
</tr>
<tr>
<td>95th percentile</td>
<td>582058</td>
<td>579963</td>
<td>1006904</td>
<td>1021883</td>
<td>843738</td>
<td>517150</td>
<td>866092</td>
<td>666358</td>
<td></td>
</tr>
</tbody>
</table>

Note: Household taxable wealth percentiles are computed by pairs of years. Means are computed of percentiles across years. Amounts in 1990 SEK. The period t runs from 1982 through 1993.

3. Empirical Analysis

3.1 Lifecycle Wealth Profiles

In this section we present our empirical analysis of wealth accumulation and decumulation in Sweden using several key graphs. We start our graphical empirical analysis with Figure 1 which plots taxable wealth by age for constant single person households in different five-year birth cohorts over the period 1981 to 1993. For example, we start by taking individuals who are between ages 38 and 42 in 1981 and follow them forward from 1981 through 1993 when they are ages 50 to 54. For this group of individuals, we compute the 25th, 50th, 75th, 90th and 95th percentiles of taxable wealth at each age, and then plot these percentiles against age. We follow similar procedures for individuals who in 1981 are ages 48 to 52, 58 to 62, 68 to 72,
78 to 82 and 88 to 92. This gives us six cohorts in total to form each percentile series.

Figure 1 indicates several interesting features. First, the 25th percentile group primarily has no taxable wealth over much of the pre-retirement ages, and only relatively minimal wealth amounts during retirement. There is little evidence of any wealth accumulation prior to retirement, but there is evidence of a jump in wealth at age 65 which is the normal retirement age in Sweden. Second, there appear to be similar jumps in wealth at the normal retirement age for all of the percentiles, and this suggests that social security plays a significant role in wealth during retirement. Third, all of the wealth profiles, with the exception of the 25th, appear to show a hump-shaped pattern that peaks at the normal retirement age. Between ages 65 through 70, the lifecycle wealth profiles are mostly flat or only slightly decreasing. Following age 70, more pronounced decumulation patterns are evident in the wealth profiles. Fourth, while the percentiles are distinctly different for most of the lifecycle, it is interesting that the 25th and 50th percentiles both start off near zero taxable wealth at age 40, but the 50th percentile series shows a noticeable increase in wealth that then persists at and even after retirement through the oldest ages. This indicates that pre-retirement wealth differences persist well after retirement and this could be important for explaining differential mortality rates at older ages.

Figure 2 presents similar lifecycle wealth profiles at Figure 1, but this plot focuses on constant two-person wealth profiles instead of constant one-person households. This figure shows hump-shaped patterns in the lifecycle wealth profiles as in Figure 1, but there are several other interesting features of Figure 2. First, in contrast to the constant single-person households, the 25th percentile series shows positive wealth at all ages. Secondary earners providing additional income that can be saved in assets counting as taxable wealth could drive this. Second, while there is some evidence of changes at age 65, it appears that the changes in taxable wealth for couples at the normal retirement age are less pronounced than for the constant single households. Intuitively, constant two-person households appear to be able to
accumulate significant non-social security wealth prior to reaching retirement; thus, when these households reach retirement, they are not as dependent on social security benefits and there is less of a change in their overall wealth due to the social security pension benefits. Third, in terms of persistence, it appears that differences in wealth at age 40 persist across all ages for each of the percentiles, and it may even be the case that the differences across the percentiles continue to diverge even at older ages. If higher-wealth households have more wealth in higher-return assets, this may drive divergences in wealth accumulation since the higher-wealth households could continue accumulating higher returns while lower-wealth households draw down their stock of wealth.

Overall, Figures 1 and 2 indicate the following main conclusions. First, there is significant accumulation of taxable wealth for all households up through age 65, the normal retirement age. Second, there is pronounced decumulation of wealth from ages 70 onwards. Third, there are noticeable discontinuous increases in wealth at age 65 indicating that social security pensions likely play an important role in overall wealth. Nonetheless, the discontinuous increases in wealth at the normal retirement age are still small compared to total wealth accumulated by age 65.

3.2 Changes in Household Composition and Wealth Dynamics

We next turn to considering how anticipated and unanticipated changes in household composition affect wealth accumulation and decumulation. We present this analysis of wealth dynamics in Figures 3 through 6. We start by describing how these figures are constructed. As mentioned in the previous section, we create four household transition groups to study wealth dynamics and household transitions as in PVW. We consider transitions between 2 calendar years, year t and t-1. The first group consists of individuals who are single in year t and who were also single in the earlier year t-1. The second group consists of constant two-person households that have two people in year t and in year t-1. The third group consists of individuals who are divorced in year t but who were married in year t-1. The fourth group
consists of individuals who are widowed in year \( t \) but who were part of two-person households in the previous year \( t-1 \). For all of the plots in Figures 3 through 6, we restrict the sample to individuals who are ages 50 and older in 1981. In each group in a given year, we compute the 50th, 75th, 90th and 95th percentiles. These percentiles are plotted in Figures 3 through 6 respectively.

Overall, the plots in Figure 3 through 6 highlight the role of health shocks, or specifically spousal death, in describing wealth dynamics at older ages. This conclusion is similar in spirit to results from PVW. To see this conclusion, we focus on a few key features of the plots. First, the series for constant two-person households is always higher than that of the constant one-person household; this is consistent with the evidence in Figures 1 and 2 and could be driven by dual earners having more financial resources to save than single-earner households. Second, the households that experience divorce tend to have had lower wealth than other constant two-person households, suggesting that lower wealth households are more likely to experience divorce at older ages. Third, households with widows experience significant declines in wealth, but interestingly, they still have higher wealth than constant single-person households. It is also interesting to note that households with widows tend to have been lower-wealth households in the previous year. That lower-wealth households may be more likely to experience a spousal death than higher-wealth households may explain this result. This is particularly interesting to note given Sweden’s universal health care and generous social insurance system compared to that of the United States. Thus, even in a country with generous social insurance, health shocks that cause changes in household composition are likely to be key determinants of wealth decumulation at older ages.

4. Conclusions

In this paper, we analyzed the evolution of wealth during retirement in Sweden. In addition to documenting the overall evolution of wealth by age, we focus especially
on the changes in wealth during the years surrounding changes in household composition due to divorce and spousal death. We find that retirees in Sweden, like retirees in other countries such as the US, tend to draw down their wealth slowly during retirement, holding much of their wealth well into old age. In terms of wealth changes around the time of changes in household composition, we find that divorce and spousal death each lead to significant reductions in household wealth. Spousal death may even “explain” a significant portion of the total drawdown of wealth during retirement. This finding, too, is similar to PVW’s findings for retirees in the US.

The apparent similarity between Sweden and the US in the patterns in the evolution of wealth during retirement is in many ways surprising. There are many important differences between Sweden and the US in terms of institutions that would be expected to affect the evolution of wealth among retirees. Foremost among these differences is the differing extent of coverage against the financial consequences of poor health from universal government health insurance programs. Retirees in Sweden have nearly all of their medical care paid for by government programs. Retirees in the US, by contrast, spend a significant amount of money on medical care. These payments consist of premiums for government and private health insurance programs, deductibles and co-payments for various health services whose costs are partly covered by insurance, and direct out-of-pocket spending on services not covered by insurance, such as the many long-term care services that are covered neither by Medicare nor by most private health insurance contracts.

Differences in the extent of government coverage of medical care would be expected to affect the evolution of wealth during retirement in two offsetting ways. On the one hand, greater coverage of medical care tends to reduce households’ demand for wealth in old age for two reasons. First, because spending on medical care tends to be greatest at the oldest ages, greater coverage of medical care significantly reduces the demand for assets late in life and thus the benefits of holding wealth into old age. Second, because the demand for medical care is often highly concentrated – the
many people who enjoy a relatively healthy old age tend to use little care while the few people with certain health problems tend to use large amounts of expensive care – uncovered medical care costs comprise an important source of risk against which households would be expected to engage in precautionary saving. For both of these reasons – the life cycle saving motive and the precautionary saving motive – standard economic models predict that retirees would save less in economies like Sweden than in economies like the US, given that a greater portion of medical care is financed collectively through the tax system in Sweden. On the other hand, greater coverage of medical care tends to increase households’ wealth holdings in old age for any given path of non-medical consumption, since greater coverage of medical care leaves less care that is paid for privately out of privately-held wealth.

In principle, either one of these effects could dominate – the reduction in saving by households in response to greater coverage of care through government programs or the reduction in spending on care by households due to the greater spending by the government. In practice, at least when comparing the US and Sweden, it appears that these two factors at least roughly cancel out, leading to patterns of wealth drawdown that are qualitatively very similar in the two countries despite the significant differences in the institutional environments.

Our research did identify at least one important difference in the patterns of wealth across the two countries: A larger fraction of retired households in Sweden than in the US hold very little wealth. This difference seems likely to be explained by another important difference in the institutional environment between the US and Sweden: Welfare programs in Sweden provide a higher living standard than do their counterparts in the US. As argued by Hubbard et al. 1995 among others, as welfare programs become more attractive, they become increasingly likely to crowd out the saving of people who would otherwise – in the absence of the programs – have chosen to save even more. This occurs because means-tested welfare programs that condition eligibility for benefits on wealth (with people with less wealth qualifying for more benefits) implicitly tax saving and wealth accumulation and are therefore
expected to lead people who plan to rely on the programs in the future to save less wealth in anticipation of their future reliance on the program. A more detailed analysis of this and other differences between the US and Sweden is a promising avenue for future research.
References


Figures

Figure 1 Lifecycle Wealth Profiles: Constant Single-Person Households
Figure 2. Lifecycle Wealth Profiles: Constant Two-Person Households
Figure 3: Household Transitions & Wealth Dynamics: 50^{th} Percentile
Figure 4: Household Transitions & Wealth Dynamics: 75th Percentile

75th Percentile

Wealth, 10,000s

Year


1-1 2-2 2-1, divorce 2-1, widow
Figure 5: Household Transitions & Wealth Dynamics: 90th Percentile
Figure 6: Household Transitions & Wealth Dynamics: 95th Percentile