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Wealth *Dynamics* in the 1980s and 1990s: Sweden and the U. S.

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Abstract

Given differences in public saving programs between Sweden and the United States, an examination of household private wealth accumulation in these two countries can be enlightening. In this paper we examine wealth inequality and mobility in Sweden and the United States over the past decade. We show that wealth inequality has been significantly greater in the U.S. than in Sweden and, while remaining relatively constant since the mid-1980's in Sweden, has increased in the United States. In addition to less inequality and a higher median wealth, we also show that wealth quintile mobility in the 1990's has been 25.7% higher in Sweden, as measured by Shorrocks' index. Noting the role of various demographic components in shaping the patterns of wealth mobility as well as the importance of the initial wealth distribution, we utilize a matching algorithm that controls for these differences. Matching on the initial wealth distribution alone accounts for most of the mobility difference between the two countries and yields a Shorrocks' index in the U.S. 11.1% less than that in Sweden. Adjusting for the large degree of imputation in the Swedish data, the U.S. index is only 3.4% to 6.1% less than that of Sweden. Along with exploring the role of racial composition differences, we conclude that demographic variation between Sweden and the U.S. play very little role in explaining wealth mobility beyond that explained by the initial wealth distribution. Despite the higher quintile mobility in Sweden, dollar mobility is still high in the United States.

Introduction

The extent of the dispersion of income and wealth and the reasons for such dispersion have always attracted interest of social scientists and the larger public. For example, why is there such a highly dispersed income distribution in Brazil (Lam, 1999)? What are the long-term consequences? How much economic mobility is there through time and across generations (Loury,1981; Solon,1992)? This paper addresses the question of comparative wealth mobility during the life course in Sweden and the United States during the 1980's and 1990's. This comparison is possible because of shared measures and design features in the two data sets available for our use. The reason the comparison is of interest is because the two countries differ so much with regard to private and public saving behavior and hence in the dispersion and dynamics of household wealth.

We begin by examining the basic cross-sectional wealth distribution in each country and how it has changed in the last 10-15 years. Despite the rapid rise in the high profile billionaires, the 'dot-com' affluent and the precipitous rise in broader indices of equity prices in the U.S., there is considerable controversy over whether and the extent to which the U.S. wealth distribution has become more unequal in the last 15 years. In Sweden inequality estimates suggest that the wealth distribution has become more unequal since the late 1970s, but the exact path and the timing of peaks depend on data and inequality measures used. Some estimates indicate that most of the increase in inequality originates from a more rapid wealth increase in the very top of the distribution, reflecting changes in the stock market, while there was less action further down the distribution. We first address the question of changing inequality using cross-sectional household wealth measures from the Panel Study of Income Dynamics (PSID) and the Household Market and Nonmarket Activities Survey (HUS) for Sweden.

While the PSID data appear to track the household wealth distribution well up to the top one or two percentile points of the wealth distribution (Juster, Smith and Stafford, 1998), wealth holdings at the very top need to be obtained from external sources such as the Statistics of Income estate tax measures of the Internal Revenue Service and the Forbes 400 lists, for selected years. The importance of this lies in the fact that about 40% of wealth is held by those families in the upper two percentiles of the U.S. wealth distribution. The Swedish HUS survey is likely to have the same shortcoming, not covering the very top of the wealth distribution very well. Using a complete enumeration of register data for the wealthiest in Sweden, Statistics Sweden estimated that in 1997 the top 1% held 20.3% of total wealth and the top 5% held 44.1%.[1] For the United States, it has been estimated that as of 1989, the share of wealth (excluding pensions) held by the top 1% was 25.6% and 47.3% for the top 5% (Hurst, Louh, Stafford, 1998). Given the extent to which the large gains in wealth over the past decade are a product of capital gains from corporate equities, it is likely that this share has increased.

Here we present the successive cross-sectional wealth percentile distribution up to the 98th percentile point for both Sweden and then the United States for the years during which household wealth was measured in HUS and PSID in the 1980's and 1990's. From this we can see if the basic cross-sectional distributions, save the very rich, of the two countries has changed dramatically over time. We offer some brief remarks on wealth holdings of the very wealthy in the United States. Then for 1993 (Sweden) and 1994 (U.S.) we convert to a common (purchasing power parity) currency. As expected, we find the household wealth distribution far more dispersed in the United States. It is also evident that household wealth has become more dispersed from 1984 to 1999 in the U.S., but less so in Sweden, 1984-1998.

A high level of wealth inequality or rising wealth inequality commonly raises concerns over equity. To think about this subjective evaluation of the wealth distribution, economists can make some contribution by analyzing the extent to which this cross sectional rise can be attributed to underlying factors. A key element is whether, as a first approximation, any rising cross sectional dispersion can be

[1] Table 12 in Förmögenshetsfördelningen i Sverige 1997 med en tillbakablick till 1975. Report 2000:1, Statistics Sweden, Örebro. Please note that both the concept of net worth and the household definition used by Statistics Sweden differ from those used in this paper.

attributed to greater inter-temporal variability in wealth holdings. Is today's 'dot-com' shareholder millionaire tomorrow's bill consolidation loan applicant? Is yesterday's negative net worth family today's financially stable household? Further still, is declining wealth a consequence of a spending spree or rising wealth the result of a deliberate savings plan? Another source of rising wealth inequality and differential mobility is long-term compositional changes in households. If a large share of the population moves into their peak pre-retirement earnings years, life cycle theory would predict that they will have rapid wealth accumulation, possibly from a substantial mid-career base. If at the same time there are more newly formed young households taking on debt from the older generations and with little home equity, household wealth dispersion will grow, but not necessarily in a full, life-course context.

To no small extent, if point-in-time inequality is the 'stick' of capitalism then mobility is the 'carrot.' While finding oneself at the lower tail of the wealth distribution is wrought with all the unpleasantries of poverty, it is the belief in the possibility of upward mobility that keeps one struggling.[2] But the concept of mobility is elusive. While mobility is by its nature a relative construct, it is not clear to what it must relate. For instance, consider an increase in wealth by a given proportion to all individuals. Provided that all individuals have at least some wealth (a strong assumption), this could be seen as a tremendous amount of mobility. But this is mobility related only to the individual at different points in time.

On the other hand, supposing that all individuals were the same in every respect except for their initial endowment of wealth, then quantile mobility would be non-existent given a proportionate increase in all wealth. That is to say that mobility in the sense of movement among the ranking of the population would be unchanged since an increasing monotonic transformation does not alter ordinal properties. Furthermore, point-in-time absolute inequality would increase. Thus, a proportional increase in wealth, while certainly increasing individual mobility, has no effect on quantile mobility and leads to increased point-in-time inequality.[3] Nevertheless, the belief in a rising tide that raises all boats has dominated social and economic policy in the United States. In contrast, redistribution has been the focus of economic and social policy in some Northern European countries and in particular in the Nordic countries. This transatlantic difference in values and policy might be a major explanation to the great differences we have observed in wealth inequality between Sweden and the United States.

A thorough discussion of the roots of rank, or quantile, mobility is beyond the scope of this paper but some brief remarks may motivate our analysis. Quantile mobility in wealth is largely a result of behavior and initial heterogeneity as well as variable returns on investments. There are differences in the desires to postpone current for future consumption, the willingness to accept investment risks in exchange for higher returns, the amount of investment in human capital and hence the return to human wealth and the levels of investment in one's progeny. In addition, simple differences in life-cycle stages is also a fundamental cause of variation and hence mobility. While today's young and middle aged households nest in the respective bottom and top of the wealth distribution, this will certainly reverse itself over the following thirty years, as the young become middle aged and middle aged consume their wealth in retirement. On the other hand, variation can also be a result of unchosen phenomena. These range from various forms of discrimination which alter the 'rules of game' for specific groups of people to inherent ability differences. Distinguishing between tastes and inherent impediments is a crucial step in monitoring economic inequality.

Another set of factors shaping the evolution of wealth is the behavior of the macroeconomy, financial markets and responses to public policy . The Swedish private savings rate peaks at about 12 – 13 percent around 1993-94 from a low of a few percent in the prior years. After 1993 the rate drops back down to under 5 percent in 1998 and 1999. One explanation of the time series is the reduction of debts after the tax reform in 1991 and in the recession of the first half of the 1990s. Debt ratios decreased in

[2] This point is consistent with the wide political support in the U.S. for an elimination of the estate tax.

[3] Assuming everyone holds positive wealth, the logarithmic wealth distribution would be unchanged but the absolute distribution would spread out. For example, given a 10% return to wealth, $10,000 increases to $11,000 while $100,000 increases to $110,000. Although rankings do not change, the distribution has become more unequal.

particular for high income and wealthy people. In the same period real estate prices went down. Stock prices started to increase in 1992/93. After 1996 both real estate prices and stock prices increased and, to some extent, may have neutralized each other in their effect on wealth inequality. Savings decreased even further reflecting a need to purchase durables, purchases that were postponed during the recession, and which were boosted by favorable expectations about future income growth. All this contributed to a peak in the inequality of the Swedish wealth distribution in the first half of the 1990's. The descriptive statistics in our Display 1 shows this in the 90/10 ratios, and if one computes the mean/median ratios from Table 2 one sees the same thing (1984 1.29, 186 1.29, 1993 1.52, 1998 1.34)

A parallel assessment of the macroeconomy can be developed for the U.S. From 1986 on to 1999 the private savings rate fell from the low teens to essentially zero. A good deal of the wealth gains were from rising equity prices and transferring assets into the equity markets in the late 1980's into the 1990's. These larger patterns and dispersion in the underlying rates of saving gave rise to growing wealth dispersion up until the mid-1990s in the U.S. The rate of U.S. wealth dispersion may have slowed, at least in the late 1990's, although the wealth gains of the very richest families appear to have accelerated, judging form data on the Forbes richest 400 families. While in both countries there is a variety of interesting assessments of macroeconmic factors, in this paper, we instead focus on a reduced form version of quantile mobility and examine the extent to which initial conditions affect quantile mobility without seriously ferreting out its fundamental causes. This is a research agenda which may in the future be supported with better comparative micro panel data on wealth and active savings on a more frequent periodicity (one or two year intervals, not five year intervals) in each country.

In this paper we plan to portray the basic differences in the cross sectional wealth distribution and the panel dynamics of the household wealth distribution for Sweden and the United States. Then we will seek to understand some of the differences. After conversion of the financial measures using PPP indices[4], we conduct an initial examination of successive cross sectional wealth distributions in the two countries. We also develop some comparisons of the wealth distribution for African-Americans, since, as a group within the U.S., they have some distinct wealth holding patterns. Next we turn to simple descriptive measures of wealth transitions, starting first with wealth quantile groups.

To complete the overview we examine quintile transitions for both countries. Initially these will be unadjusted transition tables. Prior work with such tables has shown that there is greater decile wealth mobility in Sweden than in the United States (Bager-Sjögren and Klevmarken, 1998; Hurst Luoh and Stafford, 1998). Is this also true for the most recent time periods? One reason for greater relative mobility in Sweden is that the wealth distribution is more compressed in Sweden, and thus absolute changes carry the family further in relative position.

Along with basic cross-sectional dispersion differences, compositional differences in the family and other characteristics can also create relative mobility differences between the Sweden and the United States. To motivate the topic we disaggregate the U.S. wealth transition tables into a few broad age groups. There are age group differences as one might expect from life cycle or other theories of saving and wealth accumulation. Of course, variables other than age are likely to matter and operate jointly to shape wealth transitions. To explore the question of mobility net of a set of standardizing variables we propose to apply matching methods as suggested by Rubin (1979).

To initiate work with the matching approach we start by matching solely on the Swedish initial period cross-sectional wealth distribution. That is, we simply match on cross sectional wealth for Sweden in 1993 and for the U.S. in 1994. Then for these initially matched cross-sectional samples, we examine wealth *dynamics* as measured by quintile transitions over five year intervals. We find that standardization on initial wealth is an important component in explaining quintile wealth mobility differences between the two countries. The process of standardizing by way of matched sampling compressed the U.S. wealth distribution, i.e. decreases the initial cross-section dispersion, thereby making movements across quintiles more likely.

[4] Obtained from the Organization of Economic Cooperation and Development, July 2000.

Given the relationship between life-cycle stages, i.e. age, and mobility, we extend the exercise in standardization for a single variable and create multivariate matched samples. We match on not only initial wealth and age, but also control for other possible characteristic differences such as family composition, marital status and income. Somewhat surprisingly, this multivariate matching does little to change the univariate matched sample on initial wealth. It is probable that initial wealth is a sufficient statistic that captures much of the other differences between Sweden then the U.S. Nevertheless, certain variables do seem more critical than others and we examine these independently. For instance, in the United States many African American families are persistently without significant participation in the financial world of stocks, financial accounts or mortgages (Chiteji and Stafford, 2000; Charles and Hurst, 2000). Does the absence of this group in the Swedish sample 'explain' some of the inter-country wealth mobility differences? Are there other demographic and economic characteristics that appear to explain much of the country differences in mobility?

I. Cross-National Wealth Distributions Mid 1980s to Late 1990s

A. The Measures

As do all such data from household surveys, measures of wealth holdings for Sweden and the United States have well-known limits. This is despite a long term series of methodological improvements, notably including the use of unfolding brackets, pioneered in the PSID in 1984. With unfolding brackets respondents unable or unwilling to provide dollar amounts are routed through a series of upper and lower ranges. These estimates have been shown to substantially improve the reporting of wealth (Hill and Heeringa, 1985; Hurd and Mc Fadden, 1997; Juster and Smith, 1997). Major remaining limits are that household surveys do not readily measure the top 1% or possibly 2% of wealth holders[5], and even missing the top 1% of U.S. families means that the data are missing for about one-third of the overall wealth dollars.

Household surveys normally do not include private pension wealth, and, arguably they should ideally include public pension wealth (the present value of expected future Social Security payments) or even the present expected value of publicly provided medical care in both countries. As an extreme example, occupants of public housing in England have allegedly argued that they hold an effective asset, the present value of the continuing subsidy. Of course, while private and public pensions in the form of annuity or in-kind type payments affect saving behavior and so should not be neglected, it is incorrect to simply add them to wealth since they are almost completely illiquid and cannot be borrowed against. The effects of this fact are crucial for understanding saving behavior (Hurd, 1989). For the purist, one can add to the challenge by considering the addition of human wealth and the issue of family wealth, the latter depending on mortality and divorce/separation rates.

Although there is some pension information in the PSID in 1984 and much more in 1999 and still more to be collected in 2000-2001 from pension plan providers, we will not be able to include pension wealth consistently across the years in the two surveys. What we have to work with is a measure of what has been called household wealth, or that which the household has in immediate or current period control for conversion to other assets or spending without high conversion costs.[6] Some definitions of this have been referred to as 'fungible wealth', though even what should be included in such a measure of household wealth can be, and is, debated. Another limitation of our study is that with the exception of a subsample for 1998, the HUS wealth data do not include the net value of unincorporated family businesses. For the PSID in 1994 this represented about 15 percent of household wealth. The

[5] Some very high wealth holders have simple portfolios, consisting primarily of the value of 'their' company or the value of the shares they hold, but many other have complex balance sheets with large differences between gross and net assets. In this latter case, reasonable measurements are probably out of the realm of accurate measurement in a household survey.

[6] See the appendix for a more detailed description of how wealth is measured in the HUS and the PSID.

corresponding 1998 figure for the HUS is only about 3 percent. For comparison purposes we will have to net out wealth in the form of closely held family businesses from the PSID.

In the spirit of wealth measures as a kind of continuum, ending the operational definition short of including equity in closely held businesses may be defended. If the concept which we are studying is fungible wealth – that which people could reasonably access within a year to convert to other assets or to consumption – a case can be made for excluding equity in a family business. First, a business is often indivisible. It can be sold entirely but then its value may be dependent on the complementary input of the entrepreneur.[7] In the same vein it may provide poor collateral for a loan because it may only be liquidated on a fire sale basis. In our work studying wealth dynamics we have found that the returns to equity in closely held business are quite high (Hurst, Luoh and Stafford, 1998, p. 314). Yet, the willingness to respond to business equity wealth gains in the form of reduced saving is much lower than for gains in publicly held equities (Juster, Lupton, Smith and Stafford, 1999). Lower willingness to spend such gains supports the view that they are less fungible.

B. The Repeated Cross-Sectional Data on Household Wealth

In Table 1 we have the basic household wealth holdings in the PSID 1984, 1989, 1994 and 1999. These are in constant 1993 dollars[8] and include business equity.[9] Median household wealth rises modestly over time from $45,200 in 1984 to $46,000 in 1989, to $49,100 in 1994 and $56,800 in 1999. The home ownership rate rises from 59.6% in 1984 to 66.2% in 1999. During the same interval, conditional on owning, median equity falls from about $55,000 in the 1980's to about $50,000 in the 1990's. One reason for the later may be the changing U.S. tax code. Interest deductions on household debt were eliminated by the early 1990s, except for mortgage debt. This tax change and the growth of easy refinancing of home mortgages (Hurst and Stafford, 2000) may account for declining equity in the 1990's. At the same time median vehicle equity rose some, reflecting the possibility that – despite the rise in auto leasing – many families substituted vehicle financed auto purchases by refinancing their home mortgage, drawing equity from their home. At the same time that tax deductible mortgage debt was rising, so too was non-deductible non-collateralized debt (largely credit card carry over balances, along with debt for medical dental and educational services).

Over the period, 1984-1999, stock ownership (including equities in an Individual Retirement Accounts or IRA's) rose strongly, from 24.8% in 1984 to 27.9% in 1989 and then 34.5% in 1994. For 1999, IRA's were separated from other stock owning in the PSID question sequence. As of 1999, the direct stock ownership rate for families was 28.5% and IRA's were held by 32.5%. At this point we cannot identify those holding IRA's with some or all equities in them and who hold no non-IRA equities. However, a reasonable estimate of those with some stocks either in IRA's or otherwise holding stocks is probably in the 40%-50% range as of 1999.

While the mean wealth in Sweden (Table 2) is only about half of that in the U.S., the median wealth exceeds the U.S. median by the order of 10-20 percent. This demonstrates the much higher inequality and positive skewness of the U.S. wealth distribution. In both countries the mean to median ratio has increased 1984-1998/99, but much more in the U.S. Measured in this way inequality in wealth has thus increased more in the U.S. than in Sweden. These comparisons suffer from the fact that assets in

[7] For example, consider a family physician who rents an office from which she works. When asked the value of her business, she should correctly compute the discounted value of her future profits. However, when asked how much she could get if she sold her business, the amount would be trivial since the profits come mostly from her human capital. To be sure, list of her patient names and her endorsement is of value to another doctor but this is still quite an illiquid asset.

[8] For the U.S. we use the personal consumption chain-price index of the GDP deflator. For reference purposes in 1993 the U.S. deflator value was 93.94 while 1994 and 1999 were 95.86 and 104.27, respectively.

[9] Note that the 1999 PSID data do not include families formed via split-offs in the 1997-1999 time interval.

unincorporated business are included in the PSID but not in the HUS, and that more of durables are included in the HUS than in the PSID. A more standardized comparison is offered below.

One of the most pronounced changes in Sweden seems to be the rise in real estate in the mid/late 1990's. The percent owning their own home rose from about 60% in the 1980'and early 1990's to almost 70% (68.9%) in 1998, and other real estate was held by a rising percent of families over the period, 1984-1998. It is also interesting to note that endowment policies and private pension policies have increased as a complement to social security and negotiated pensions. Debts decreased after the major tax reform in 1991 when interest deductions became less favorable, but have increased at the end of the 1990s as the marginal tax rates again have become higher. Swedish households held more money in bank accounts following the tax reform, since the new tax system gives a more favorable treatment of interest earned on bank accounts than did the old system.

In the 1990's over 90% of Swedish families held a bank account. In the U.S. the percent with a bank account first fell 1989-1994 from 80.8 percent to 77.8 percent. Then, from this dip in 1994 the percent of families with a bank account rose back up to 84% in 1999. The significance of a substantial share of families with no bank accounts in the study of wealth ownership in the United States is that it fits into a larger pattern of wealth dispersion. That is, at the lower end of the U.S. wealth distribution there is a group of U.S. families persistently 'out of the financial game'. This group appears to differ from a growing negative net worth segment. This latter group may have at one time had the financial credibility to have had credit extended to them. Subsequently, their financial position deteriorated putting them into a situation of negative net worth. To see this group in the U.S. and Sweden we can turn to the distribution of overall household (or fungible) wealth.

How different is the household wealth distribution through time and between the two countries? Here we have Display 1 based on the conversion of the HUS and PSID to approximately common definitions and to a common (deflated, 1993) currency through the use of PPP indices from O.E.C.D. In the upper part we have the four successive wealth distributions divided into the lower half (LH) (0-50th percentile) and the upper half (UH) (51-99th percentile) and have superimposed the HUS (solid line) and PSID (dashed line) on the same panel. What is evident is that the LH segment for Sweden lies always above the LH segment for the U.S. and that after crossing the Swedish curve from below at somewhat above the median, the U.S. distribution rises steeply above the Swedish distribution. In brief, the U.S. wealth distribution is far more dispersed than that of Sweden. Further, while this dispersion has remained relatively constant in Sweden over the last two decades, it has grown substantially in the United States.

Both countries exhibit a negative net worth segment. In the U.S. this segment grows progressively larger and the (constant dollar) absolute values of the percentiles in this segment become progressively larger through time. In Sweden the negative net worth segment first grows, 1984-1986, and then – after the tax reform - it diminishes successively in 1993 and 1998.[10] Another difference in the two countries is the large flat segment of U.S. households (but not for Swedish households) that are essentially out of the asset game and have zero net worth by virtue of having neither assets nor liabilities.[11] For the U.S., combining the negative and zero net worth leads to positive net worth starting at the percentile teens.

The strong and growing relative dispersion of the U.S. fungible household wealth can be seen in the lower tabular summary in Display 1. As implied from our discussion of the low wealth segment of U.S. families, the 90/10 percentile ratio is not defined for the U.S. For Sweden the 90/10 percentile ratio shows a peak in the beginning of the 1990s (see Display 1), but it may not be a robust statistic since the 10th percentile is also only a modest positive value. Data on the very wealthy from Statistics Sweden

[10] In Table 5 of the publication Förmögenshetsfördelningen i Sverige 1997 med en tillbakablick till 1975. Report 2000:1, Statistics Sweden, Örebro, Statistics Sweden shows a completely different picture. From 1975 to 1997 the share of households with zero net worth decreased from 23.6 percent to 6.6 percent and the share of households with negative net worth increased from 7.6 percent to 23.7 percent. However, these estimates most likely reflect more changes in the self assessment procedures rather than changes in the distribution of wealth.

[11] The Swedish definition of net worth includes consumer durables and few household are without durables.

suggest that the right end tail of the distribution has moved even further to the right in the period 1975-1997 (cf. Table 3) The 75/25 percentile dispersion holds, however, pretty steadily at about 5 for Sweden, 1984-1998. For the U.S. it rises from 20.6 in 1984 and then to 23.3 in 1989 and then to 30.8 in 1999.

Comparing the PSID/HUS ratio by quantile is another way to assess the relative wealth dispersion in the two countries. For deciles at or below the median the PSID/HUS ratio is always below unity and often radically below unity and drifts down over time. At the median, U.S. household wealth is a bit less than household wealth for Sweden and persists at about 10 percent less than the Sweden in the 1980's and the 1990's. For deciles above the median (60th and above) the PSID/HUS ratio is always above unity and very substantially above unity in the upper quantile ranges and generally drifts upward over time. At the 95th percentile U.S. household wealth is about two to three times as great as Swedish wealth.

For the U.S., calculations of the mean wealth of the 400 richest families have been made using data from Forbes magazine (Broom and Shay, June 2000). As of 1984 (in 1999 dollars) the wealth of the 400 richest families averaged $504 million[12]. By 1989 this had become $901 million, by 1994 it was $980 million and by 1999 it had risen to an average of $2,590 million. This represents an increase from 1984 to 1999 of 5.14 fold. Just in the period 1994 to 1999, the Forbes average rose by a factor of 2.6. From the PSID data at the 99th percentile, the growth was from $1.794 million in 1994 (1999$) to $2.743 in 1999. This is a far smaller growth factor (1.52) and is consistent with the claim that there is rising dispersion in the U.S. household wealth distribution.

Using the tax authorities' household definition Statistics Sweden estimated that 522 households (the top 0.011 percent) had more than 31.3 million kronor taxable wealth in the end of 1997[13], which approximates 2.9 million 1993 USD. This number is much smaller than the U.S. mean estimate above for several reasons: It is not the mean wealth of the richest but a percentile measure of the lower bound and it is tax assessed wealth and not net worth. Nevertheless, it reflects that, even after adjusting for the size of countries, the wealthiest in Sweden are not as wealthy as the wealthiest in the U.S. The wealth data of Statistics Sweden also permit a comparison of the growth rate of median net worth with that of the top 1 percent. Table 3 gives the beginning and end period ratios of median net worth and the top 1 percent net worth respectively, in both cases in constant prices.[14] For the 1983-1997 period as a whole the wealthiest have almost doubled their wealth while the median household only got an increase of 27 percent. Inequality thus increased, although not as much as in the United States. Volatility was much higher among the wealthy than further down the wealth distribution, indicating that there were periods with decreasing inequality.

One of the major factors accounting for the wide and growing difference between the U.S. and Sweden could be the low levels of wealth of African American families. Many African-American families have virtually no household wealth. Reasons offered for these low wealth holdings include discrimination (Oliver and Shapiro, 1995; Conley, 1998; Charles and Hurst, 2000), and intergenerational transfer of asset holding knowledge (Chiteji and Stafford; 2000). Another type of explanation looks at differential incentives for life course accumulation of wealth in light of replacement ratios from Social Security in combination with bequest motives (Barsky, Bound, Charles, and Lupton, 2000).

The reasons for the distinct asset holding patterns and the levels of overall wealth of African-Americans are not fully resolved at this point, but the extent of the differences can be readily seen from Display 2. The African-American (A-A) wealth percentile chart lies everywhere below that for the rest of the population. Because A-A wealth is barely positive even at the 40th percentile, the 90/40 ratio relative to the rest of the U.S. population is extremely high, starting at 73.6 in 1984 falling modestly in the next ten years to under 50 and then rising to 59.3 in 1999. In fact, over the period 1994-1999 there was a stall

[12] The 400 number should be reduced in proportion to the number of families in the full U.S. population going backward in time from 1999, but here we ignore the adjustment, since it would require reprocessing the Forbes data.
[13] Table 3 in Förmögenshetsfördelningen i Sverige 1997 med en tillbakablick till 1975. Report 2000:1, Statistics Sweden, Örebro
[14] Table 14 in Förmögenshetsfördelningen i Sverige 1997 med en tillbakablick till 1975. Report 2000:1, Statistics Sweden, Örebro

out and reversal of the modest upward relative movement of the A-A wealth distribution. The reasons for this reversal are yet to be investigated and range from intrafamily transfers in light of changing public income support programs to reduced precautionary asset balances – a type of human wealth effect from a much improved labor market in the 1990's. Another possibility is reduced private saving as a result of less uncertainty over Social Security wealth, arising from the eroding political support for efforts to reduce or eliminate Social Security.

Taking the A-A wealth differences as a candidate factor changing the shape of the overall U.S. wealth distribution, how different are the Swedish and U.S. wealth distributions if the A-A difference within the U.S. is netted out? A simplistic way to net out this difference is to reexamine the U.S. wealth distribution excluding African-American families. Here we implement this in Display 3.

The strong and growing relative dispersion of the U.S. fungible household wealth can still be seen in the tabular summary in Display 3. The 75/25 percentile ratio for the U.S. now rises from 13.3 (was 20.6 for the full sample in Display 1) in 1984 to 15.8 (was 23.3 for the full sample in Display 1) in 1989. The ratio stays about the same in 1994 (16.0) and 1999 (15.6). Again, comparing the PSID/HUS ratio by decile is another way to assess the relative wealth dispersion in the two countries. For deciles below the median the PSID/HUS ratio is somewhat greater but still always below unity and still often far below unity and drifts down over time. At the median U.S. household wealth is now a bit more than household wealth for Sweden and persists at about five percent more than the Swedish wealth in the 1980's and the 1990's. For deciles above the median (60^{th} and above) the PSID/HUS ratio is always above unity and even more substantially above unity in the upper decile ranges and generally drifts upward over time. At the 95^{th} percentile U.S. household wealth is a bit higher but still in the range of two to three times as great as Swedish wealth. A simple explanation for this last relationship is that so few African-American families are in the upper parts of the U.S. wealth distribution.

II. The Mobility of Household Wealth Holdings in Sweden and the United States

A. Background and Measures

How does mobility in the wealth distribution compare across the two countries? If the cross-sectional wealth distribution is widely dispersed is it still possible that the rich and poor trade places frequently in either or both countries? What do we mean by trading places? One definition is movement in *relative* position in the wealth distribution through time, such as changing location in the decile or quintiles of wealth through time. For comparison purposes we will rely primarily on wealth quintiles for the two countries. This is to avoid excessive detail in the mobility tables and because the sample sizes in HUS are not large enough for additional quantile disaggregation. The extent of wealth transitions across quantiles can be measured by Shorrocks' index.[15] It measures the share of the off-diagonal elements in quantile transition tables, such as Tables 4 through 7 below, and it ranges from zero (no mobility) to a value just above one (no stability). It is not invariant to the choice of quantiles and it will of course depend on the time span used. Factors that influence these transition tables were discussed in the introduction.

B. Measuring Mobility

For Sweden over the nine-year period, 1983/84 -1992/93 the Shorrocks index for household *decile* wealth mobility has been estimated as .87 (Bager-Sjögren and Klevmarken, 1996) compared to the .804 for the U.S. and the ten-year period 1984 - 1994 (Hurst, Luoh and Stafford, 1998). For the U.S. between 1984 -1989 and then 1989 -1994 the Shorrocks measure rose modestly from .733 to .754 (Hurst,

[15] Here we use the Shorrocks' measure, $S = (N - tr(P)/(N - 1)$, where N is the number of groups (quintiles) and tr (P) is the trace of the N*N transition matrix P. $0 < S < N/(N - 1)$. See Shorrocks (1978) for more details on the attractiveness of this index for capturing the properties of mobility.

Luoh and Stafford, 1998). Looking at the period 1993-1998 for Sweden the HUS data for *quintiles* show a value of .744 for the Shorrocks index and for the PSID, 1994-1999 the data for *quintiles* show a value of .587. These estimates are based on the transition matrices in Tables 4 and 5. While these measures suggest more wealth mobility in Sweden, it should be remembered that they are measures of mobility across quintiles (deciles in the previously cited research). If these quintiles themselves are wider apart and widening through time as shown for the U.S., one cannot straightforwardly conclude that there is more wealth mobility in Sweden. Remembering that the absolute spread of the U.S. wealth distribution has been rising, it seems safe to conclude that there is rising wealth mobility in the U.S., a finding parallel to the rising income mobility (Gottschalk and Moffitt, 1994).

Much of the quintile wealth mobility is in the midrange quantiles. The top and bottom quantiles are characterized by substantial persistence, partly the simple consequence of only single direction movement at the top and bottom quintiles. Of the families in the top U.S. wealth quintile in 1994, almost three-quarters (71.3 percent) are in the top quintile in 1999. Even in terms of deciles and extending the transition period to 10 years, between 1984 and 1994, for example, over half (53.3 percent) of those initially in the top decile were still in the top decile.[16] For Sweden, of the families in the top quintile in 1993 almost three-fifths (57.8 percent) remained in the top quintile in 1998. At the other end of the spectrum, of those U.S. families in the bottom decile in 1984 - which include numerous negative net worth families - about half are still in the bottom decile in 1989 and about two-fifths are in the bottom decile a decade later in 1994. This is more important when we remember that the 1994 bottom decile for the U.S. was in much greater negative territory than the 1984 bottom decile. (See Display 1.)

For 1994 to 1999, Table 4 shows that 58 percent or almost three-fifths of U.S. families in the lowest quintile in 1994 were still in the lowest quintile in 1999. For Sweden (Table 5), of those in the bottom quintile in 1993, over half (56.8 percent) were in the bottom quintile in 1998. Of course absolute amounts matter, since the real value of assets of those in the bottom quintile in Sweden are well above the assets of those in the bottom quintile in the U.S.

There are families with persistently low and negative net worth in the United States, despite the overall drift toward greater wealth mobility. In the mid quintiles, since movements can occur both upward and downward from the initial position, there is less persistence. Using the overall summary of the Shorrocks index, we have a five-year quintile-based value of .744 for Sweden (1993-98) and .592 for the United States (1994-1999) indicating higher degree of mobility in Sweden that in the United States on the order of 25.7%.

C. Standardizing Mobility Differences

Although the quintile mobility gap between Sweden and the U.S. is large, much of this could be attributed to differences in the demographic composition of the two countries. As shown in Display 2, there is a significant wealth gap between African Americans and their compliment. Also, life-cycle theory suggests hump-wealth age profiles which has implications for aggregate wealth mobility. These effects on wealth accumulation are magnified under a model of heterogeneous agents acting under various forms of risk. For instance, consider households that act as buffer-stock savers in the sense of Deaton (1991) or Carroll (1997) in the early portions of their lives but then as standard life-cycle hypothesis consumers from age 40 onward.[17] In this case, since most young households accumulate very little wealth, quintile mobility is primarily a result of income and returns shocks which effect the optimal buffer stock of wealth. On the other hand, as households move into their prime saving years, the heterogeneity of behavior combined with increasing income lead to more quintile mobility. Finally, post-retirement heterogeneity of behavior with regard to bequests, life expectancy and rates of return combine with large

[16] Hurst Luoh and Stafford, 1998. Remember that the families who are still intact over a 10 year span are over-representative of stable families.

[17] This simple characterization is consistent with theoretical and empirical evidence presented in Gourinchas and Parker (1997).

and falling levels of wealth which all lead to even higher levels of mobility. This story is bared out in the quintile transition tables portrayed in Table 7 which reflect mobility in the United States between 1994 and 1999 for three age groups: less than 40, 40 to 65, and over 65. As suggested, the Shorrocks' index increases over the life-cycle by 10% from the first to the second age group and then by 17.% from the second age group to the oldest. The point here is that these life-cycle characteristics as well as other various demographic features of Sweden and the United States can be contributors to the large mobility gap between the two countries, provided that there are differences in this respect.

Using the multiple waves of the PSID, we are also able to examine how mobility has changed over the past two decades for these three age groups. The increase in ownership of corporate equities, either in the form of defined contribution pensions plans, individual retirement account, or privately held assets, across all age groups should lead to an increase in quintile mobility given heterogeneous portfolio compositions combined with varying rates of return. Nevertheless, these channels for increased mobility are likely to be most prevalent and increasing for older age groups. Indeed, we find that while the Shorrocks' index has fallen for the youngest age group (less than 40) from .535 to .512, the index has increased by 11.7% for households aged 40 to 65 and by 10.9% for households over age 65.[18] Given this rise in the heterogeneous volatility of wealth evolution for those over age 65, proposed policy measures to increase individual access and hence exposure to the corporate equities market by way of individualized Social Security accounts, while increasing mean returns, is likely to also further return heterogeneity and hence wealth inequality.

Although age and other demographic differences may be important, the largest difference between Sweden and the U.S. is the initial wealth distribution. As shown in Display 1, the U.S. wealth distribution is much more spread out than the Swedish distribution. The result is that the quintiles from which we are measuring mobility are larger and hence a larger absolute change in wealth is required in order to change quintiles. It is therefore difficult to compare mobility in the two countries. Given the larger wealth dispersion, it is possible for the U.S. to have larger absolute wealth changes but still have less rank mobility.

In the next section, we standardize the initial wealth distribution between Sweden and the U.S. and re-compute the transition tables. We also outline a method for standardizing (or matching) on multiple variables. We apply this matching method to the HUS-PSID data to see if there is differential wealth mobility beyond that related to the cross-sectional dispersion and factors such as race, age, marital status and longer run family income.

III. Cross-National Transitions in a Multivariate Matching Context

Consider a U.S. 1994 household distribution created by matching to the (almost) same year (1993) for Sweden. Going forward from that point, and anchored at the same *absolute* starting point, would we observe the same relative wealth mobility? Table 6 presents such a matched quintile transition matrix for the PSID, 1994-1999. On inspection, the matching moves a majority of the individual elements closer to the corresponding HUS elements in most cases, particularly in the upper quintiles. As a result the Shorrocks index on these transitions matched the HUS files becomes .661, up from the baseline of .592 and much closer to the 1993-1998 HUS value of .744.

Is it the case that additional matching on basic economic and demographic variables can further align the quantile mobility in the two countries? That is, we know that part of the difference in relative mobility can be explained by the distinct wealth holding patterns of African-Americans. Some is related to the basic differences in wealth dispersion. If we add life cycle factors such as age, marital status and children, do relative wealth mobility differences persist?

[18] The measured fall in mobility for households aged less than 40 is indicative of the increase in defined contribution pensions which are not measured in the PSID. This is primarily a cohort difference and not an age difference, owing to the increased popularity of these DC plans over defined benefit plans. Thus, it is likely that mobility has also increased for this age group as well.

A. The Matching Methodology

The general aim of matching is to obtain a sample of PSID observations, which is as close as possible to the HUS sample. We use the matching technique outlined in Rubin(1979). We begin with two samples: the PSID (S_1) with N_1 observations and the HUS (S_2) with N_2 observations where $N_1 > N_2$. We consider a set of matching variables comprised of wealth, income and various demographics, $x_{ij} \in S_j \;\; j = 1,2 \,;\; i = 1,2,...,N_j$ where x_{ij} is a $1 \times p$ vector of matching variables for each individual. The criterion for a close match between two observations is the Mahalanobis metric. This metric is a weighted measure of squared deviations where the weight, as suggested by Rubin (1979), is the pooled empirical covariance matrix:

$$z_{Rubin} \equiv \left[\left(X_1' X_1 - N_1 \bar{X}_1' \bar{X}_1 \right) + \left(X_2' X_2 - N_2 \bar{X}_2' \bar{X}_2 \right) \right] \Big/ \left(N_1 + N_2 - 2 \right). \qquad (1)$$

Then, after randomly sorting the HUS data, matches from the PSID are chosen according to the following algorithm:

$$\begin{aligned} s_{11} &= \underset{s_{1i} \in S_1}{\arg\min} \left(x_{21} - x_{1i} \right) z^{-1} \left(x_{21} - x_{1i} \right) \\ s_{12} &= \underset{s_{1i} \in (S_1 - s_{11})}{\arg\min} \left(x_{22} - x_{1i} \right) z^{-1} \left(x_{22} - x_{1i} \right) \\ s_{13} &= \underset{s_{1i} \in (S_1 - s_{11} - s_{12})}{\arg\min} \left(x_{23} - x_{1i} \right) z^{-1} \left(x_{23} - x_{1i} \right) \\ &\vdots \end{aligned} \qquad (2)$$

Note that the suggestion of z_{Rubin} should work well if the two data sets (HUS and PSID) have approximately the same covariance matrix. But if they differ in covariance the larger data set (PSID) will dominate in the estimate of Z and we will tend not to get as close a match of PSID observations to HUS. For this reason matching has also been done with a covariance matrix only estimated from HUS-data,

$$z_{HUS} \equiv \left[\left(X_2' X_2 - N_2 \bar{X}_2' \bar{X}_2 \right) \right] \Big/ \left(N_2 - 1 \right) \qquad (3)$$

For every observation in the HUS sample the closest match among the PSID observations was searched using the above matching algorithm. Matching was done without replacement, so when a PSID match was found this observation was no longer eligible in the following searches. This implies that the search order could become important. Rubin thus suggested that the mother data set (HUS) should be sorted randomly before the search starts. In our case the PSID sample is more than four times the size of the HUS sample and the order of the HUS sample did not seem to be very important to the results. Matching with replacement only gave a marginally closer match.

In addition to matching on the 1993/94 net worth in 1993 USD, matching was done on the following variables: number of adults in the household, number of children in the household, age of head, schooling of head, marital status of head and household disposable income as of 1993. Matching was also done separately for whites and in a few cases by family type (single with/without children, couples with/without children).

B. Matching Results

The results are summarized in Table 8. In the first half of the table there are results from matching on the entire PSID sample independently of race, while in the second half only white households were used. The very first rows give the median wealth and the ratio of the fourth to the first quartile for the HUS samples in 1993 and 1998 followed by Shorrocks' mobility measure. Then follows the corresponding statistics for the PSID. These are the numbers to which the statistics for the matched samples should be compared.

The closest match and the highest mobility measure is obtained when matching is done only on the 1993/94 net worth. Adding other variables to the matching criterion will result in a matched wealth distribution which deviates more from the HUS distribution and the corresponding mobility measure becomes smaller. Similarly when matching was done by family type, which implies that the search becomes more limited, the matched distribution deviates more from the HUS distribution and the matched transition matrix has a lower mobility compared to a match using only the 1993/94 net worth. Limiting the sample to whites actually lowers observed mobility from 0.592 to 0.585, while matching on whites only increases the matched mobility measure marginally, for instance from 0.661 to 0.698. Although there is a small difference in mobility between whites and nonwhites this heterogeneity in the U.S. population cannot explain the difference between Sweden and the U.S. in mobility.

Matching on demographic variables and on disposable income but not on the 1993/94 net worth produces rather different matched samples. They are much closer to the original PSID sample and they give mobility measures, which are almost as low as the observed measure. Differences in income and in demographics do not seem to explain the difference between the two countries either. One can conclude from these exercises that while differences in income and demographics between Sweden and the U.S. may have some effect, it is differences in the initial wealth distribution that account for a majority of differences in mobility. Nonetheless, this could simply imply that initial wealth is a sufficient statistic for all other differences when examining mobility, and not that these other variables are unimportant.

Thus, the most important elements of standardization in comparing Swedish and U.S. mobility measures is apparently to match on 1993/94 net worth. Because the Swedish distribution of wealth is less dispersed than the U.S. it implies selecting most of the observations from the central parts of the U.S. distribution. The quintiles of this matched 1999 distribution will thus not become as wide as the quintiles of the 1999 original distribution, and thus mobility will increase. Table 6 shows, however, that the fourth to first quintile ratio of the 1999 matched distribution is about twice as high as the quintile ratio of the 1998 Swedish distribution, and thus the matched mobility measure reaches only about halfway towards the Swedish mobility measure.

Table 9 compares the 1993/94-1998/99 dollar changes in net worth for the two countries. The median change in Sweden was almost 12,000 dollars, about twice as much as in the U.S. But the mean change was almost three times as high in the U.S. as in Sweden (45,569 versus 16,425). The U.S. distribution of change was thus much more positively skewed than the Swedish. It also had a dispersion more than four times the Swedish dispersion and the difference between the 9^{th} and the 1^{st} deciles was higher too. Limiting the U.S. population to whites does not decrease the dispersion of the change in wealth, on the contrary the standard deviation increases by more than 20 percent and the decile range by more than 30 percent. Also after matching on the 1993/94 net worth most of these differences remained. These results suggest that dollar mobility is higher in the U.S. than in Sweden, while (relative) quantile mobility is higher in Sweden.

We have so far used the Swedish measure of mobility as a reference, but it is probably inflated. The reason is that there is a fair amount of randomness from imputations in the Swedish wealth estimates, which might have artificially increased mobility. To get an idea of how much these imputations could have influenced the mobility measure, transition matrices were also computed for subsamples with a decreasing degree of imputations. The Shorrocks measure for the full sample (1021 observations) was 0.735. For a subsample obtained when observations with missing values in the income variable were deleted but still with imputations in the wealth variables (732 observations) the Shorrocks index became

0.744. When another subsample was used with just few imputations (686 observations) mobility dropped to 0.704, and finally when observations with no imputations were used (286 observations) mobility dropped further to 0.687. This last estimate is of the same magnitude as the estimates obtained from the matched PSID samples, and these results suggest that there is after all no great difference in quantile mobility between the two countries. It is not a definitive conclusion because the samples with few or no imputations are rather small and they might be selective in a way, which could influence the mobility measures. There are also imputations in the PSID and in both surveys there are most certainly measurement errors, all of which might inflate the mobility measures from both data sets in an unknown way.

Given this reservation the main conclusion from the matching exercise is that dollar changes and probably also dollar mobility is higher in the U.S. than in Sweden, while quantile mobility is smaller. The smaller relative mobility is however due to the larger absolute quantile differences, which implies that a U.S. household on average has to change its wealth more in dollars to pass from one quantile to another than must a Swedish household. After standardizing for differences in the initial distribution of wealth, quantile mobility appears to become about the same, although quantile differences are still larger in the matched U.S. sample.

C. Properties of the Mobility Process

We have used the transition matrix of a first order Markov process as a descriptive tool to characterize the mobility process during a limited time period. Although there are many good reasons not to believe that a first order Markov chain is a good model, it is still of some interest to see what it would imply if it would continue undisturbed for a longer period. That is another way to characterize mobility *in the observed sample period.*

Let the transition matrix from t to t+k be M(t,k). The cumulative product

$$M(t, nk) = \prod_{r=0}^{n-1} M(t + rk, k) \qquad (4)$$

is the transition matrix for the period t to t+nk. Using the HUS and PSID quintile transition matrices we have computed cumulative matrices for increasing n. It turns out that in five to seven steps they converge to a matrix with every element equal to 0.2. The higher Swedish mobility makes the matrix for Sweden converge a little faster than that for the U.S. The ergodic property of the transition matrices to converge towards a limit is perhaps not so surprising because by inspection it is easy to see that every quintile can be reached from every other quintile and that there are no periodic or absorbing states. More interesting are the properties of the limit. They imply that after about 25 years in Sweden and about 35 years in the U.S. every household independently of initial wealth would have the same chance to become poor or wealthy. In this sense the 1993/94 –1998/99 mobility processes are very egalitarian. They also imply that the existing (1998/99) distribution of wealth would tend to become preserved. (The quintiles are the same all the time.) In this sense it is perhaps not so egalitarian, but in principle many different transition matrices with very different mobility patterns are consistent with this property.

As mentioned already the simple Markov property is not a good description of the wealth process as it can be observed for a longer time period. Successively estimated transition matrices are not constant but influenced by changes in the composition of the population and even more important, by changes in the asset markets. Bager-Sjögren & Klevmarken(1998) analyzed how these forces influenced mobility in Sweden in the 1980s and in the early 1990s. They found for instance, that households, which experienced a separation or death of a spouse, had a high probability of losing in rank. Those who persistently had single heads were also more likely to lose in rank than to gain and if these single heads had children they were even more likely to loose. There was also an age effect. Very young households and retirees were

not likely to gain in rank while 55-64 year olds had a relatively high probability to gain. More schooling also increase the probability to gain in rank.

The household's portfolio position significantly influenced mobility. Changes in the relative price of real estate and on stocks and share will influence mobility because these assets are not evenly distributed among households. Relative price increases will increase the probability of real estate owners and share holders respectively to gain in rank. Because an owner occupied home is the major asset for many households, an increase in house prices will tend to make the distribution of net worth less uneven. A boom in the stock market will, however, make it more uneven, because shareholders tend to belong to the right tail of the wealth distribution. This is an observation also made in the recent report on the Swedish distribution of wealth from Statistics Sweden.[19] An analysis similar to that in Bager-Sjögren & Klevmarken(1998) for the most recent period 1993-98 remains to be done.

Conclusions

One conclusion that comes out of our analysis is that there has been no major difference in relative (quantile) mobility between the two countries in the last 15 years. People probably change rank in about the same way, but dollar mobility is higher in the United States than in Sweden. Relatively more people reached extreme wealth or extreme poverty in the United States. This is at least a partial explanation to the much higher U.S. inequality of wealth. The racial heterogeneity in the United States does not explain this country difference. Why these differences between Sweden and the United States exist and what in a deeper sense explains them is a topic for future research. Explanations could, for instance, be found in legislative differences and in particular in differences in the taxation of the returns to capital and on wealth, in the difference in income inequality (after income tax), in differences in savings behavior, for instance due to differences in social security pension benefits or cyclical factors, in differences in entrepreneurship and the treatment of entrepreneurial incomes, and in portfolio composition and changes of the relative prices of assets.

[19] Förmögenshetsfördelningen i Sverige 1997 med en tillbakablick till 1975. Report 2000:1, Statistics Sweden, Örebro

Appendix: HUS and PSID Description

The U.S. measure of wealth was defined to include real estate (own 'main' home, second home, rental real estate, land contract holdings), cars, trucks, motor homes, boats, farm or business, stocks, bonds, mutual funds, savings and checking accounts, money market funds, certificates of deposit, government savings bonds, Treasury bills, IRAs, bond funds, cash value of life insurance policies, valuable collections for investment purposes, rights in a trust or estate, less mortgage, credit card, and other debt on such assets. For comparability with the HUS we exclude family business after the initial descriptive cross-sectional U.S. tables, Table 1. Wealth in the form of private pensions or expected future Social Security retirement benefits is not included. See Appendix A of Hurst, Louh and Stafford for details. The questions on the wealth components were from an interviewing process known as unfolding brackets, originally developed for the 1984 PSID data. For a discussion of this survey method as applied to wealth from different surveys, see Heeringa, Hill, and Howell (1995). The cross section sample sizes are 1984: 6915, 1989: 7114, 1994: 7415, 1999: 5256. The panel used to analyze mobility 1994-99 includes 4383 households. For a description of the wealth data and related files, reach the Internet address

http://www.isr.umich.edu/src/psid/

then click on "What's new?" and also "Supplemental Files".

The Swedish HUS measure of wealth includes real estate (own 'main' home, second home, rental real estate, and forest and farm property), financial assets (stocks and shares, bonds, stock market and money market funds, bank deposits, endowment policies and life insurance, and private but not negotiated pension policies), consumer durables (cars, boats, art and antiques, furniture, electronic equipment, washers and dryers, etc.), less mortgages, consumer credit and other loans including student loans.

Data were collected in the beginning of a year and stocks of wealth refer to the last of December the previous year or the beginning of the year when the interview was made.

Survey data on assets usually have a problem with partial nonresponse. Following Rubin(1987) partially missing wealth data were compensated by multiple random imputations. Ten replicated sets of wealth data were created, making it possible to estimate the variance of a statistic including the uncertainty originating from the imputations. However, for the aggregate 'net worth' the share of the total variance generated by imputations is usually so small that one safely can use only one replication. Measurement errors and imputations create a particular problem when analyzing mobility, because they tend to inflate mobility measures. This problem is further discussed in the main text.

The effective cross-sectional sample sizes are respectively 1984: 1505, 1986: 1772, 1993: 1585, and 1998: 2366 households. The panel used to analyze mobility 1993-1998 includes 1021 households. The sampling frame of the HUS surveys only included people in the age range 18-74. In the panel there are also people who have become older than 74, but the share of this age group is smaller than in the Swedish population.

For a description of the HUS surveys see Klevmarken and Olovsson (1993) and Flood et.al. (1997), and the Internet address

http://www.handels.gu.se/econ/econometrics/hus/husin.htm

from where code-books can be down loaded.

In both data sets a household was defined as those who lived with a designated head. The head was usually but not always a man. Changes in wealth may thus depend on changes in the household composition. No equivalence scale was used to standardize for household size.

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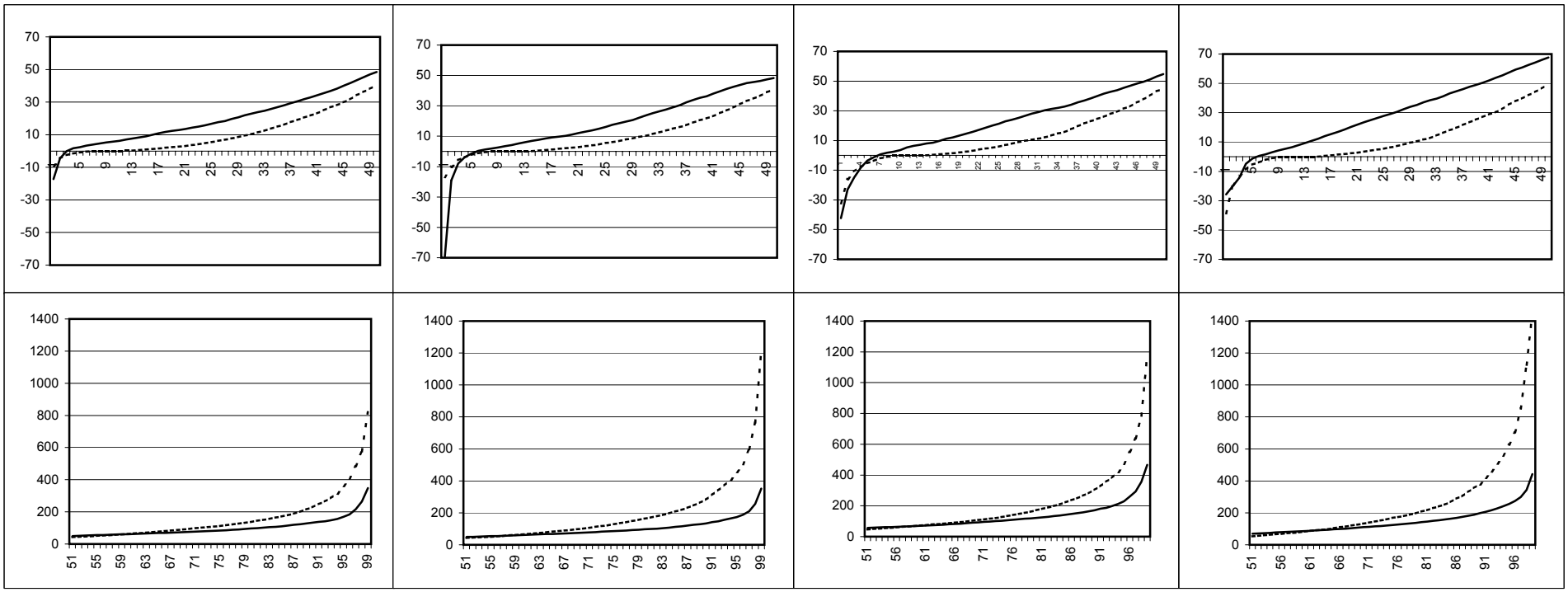
Display 1: PSID and HUS Wealth Distribution



Note: HUS 1984, 1986, 1993 and 1998 are the solid line. PSID 1984, 1989, 1994, 1999 are the dashed line. The top figures are percentiles 1 to 50 while the bottom figures are percentiles 51 to 99. Wealth is defined as total net worth less business wealth. Values are in thousands of 1993 dollars.

Descriptive Statistics

	1984		1986 & 1989		1993 & 1994		1998 & 1999	
Dispersion	HUS	PSID	HUS	PSID	HUS	PSID	HUS	PSID
90/10	23.2	n.a.	39.5	n.a.	49.0	n.a.	37.0	n.a.
75/25	5.0	20.6	5.3	23.3	5.0	22.8	4.5	30.8
60/40	1.9	2.8	1.7	3.0	1.7	2.9	1.7	3.0
PSID / HUS Ratio at Given Percentile								
15	0.10		0.07		0.03		0.00	
25	0.32		0.34		0.28		0.20	
40	0.66		0.60		0.61		0.54	
50	0.83		0.84		0.82		0.73	
60	1.01		1.06		1.03		0.95	
75	1.34		1.50		1.27		1.35	
90	1.73		2.10		1.77		1.91	
95	2.13		2.63		2.05		2.45	
99	2.35		3.45		2.52		3.26	

Table 1: U.S.Household Wealth, Panel Study of Income Dynamics (Thousands of 1993 U.S. dollars)

	1984					1989				
			Percent	Conditional on Own				Percent	Conditional on Own	
	Mean	Median	Own	Mean	Median	Mean	Median	Own	Mean	Median
Business	24.0	0.0	12.2%	196.2	56.3	27.8	0.0	13.4%	208.0	48.4
Checking / Savings	17.6	2.9	80.8%	21.8	5.8	21.5	3.0	81.2%	26.5	6.1
Other Debt	2.6	0.0	46.3%	5.7	2.2	3.5	0.0	50.2%	7.0	3.0
Real Estate	19.7	0.0	20.0%	98.6	36.1	28.1	0.0	19.6%	143.3	37.5
Stocks	10.3	0.0	24.8%	41.4	10.1	15.7	0.0	27.9%	56.3	12.1
IRA										
Vehicle	8.0	4.3	83.2%	9.6	6.2	9.4	6.1	83.1%	11.4	7.3
Other	14.7	0.0	23.4%	63.0	4.6	7.1	0.0	26.3%	27.1	6.1
Home Equity	41.7	19.5	59.6%	69.9	54.9	49.6	17.0	60.3%	82.3	54.5
Total	133.3	45.2				155.9	46.0			

	1994					1999				
			Percent	Conditional on Own				Percent	Conditional on Own	
	Mean	Median	Own	Mean	Median	Mean	Median	Own	Mean	Median
Business	22.0	0.0	13.2%	165.9	40.5	35.9	0.0	13.0%	277.0	36.0
Checking / Savings	19.3	3.0	77.8%	24.9	5.1	16.5	2.7	84.0%	19.7	4.1
Other Debt	6.1	0.1	50.6%	12.0	4.6	4.9	0.0	47.0%	10.5	4.5
Real Estate	24.0	0.0	17.7%	135.6	40.5	22.6	0.0	17.2%	131.8	46.8
Stocks	28.5	0.0	34.5%	82.6	20.3	37.2	0.0	28.5%	130.4	27.0
IRA						22.4	0.0	32.5%	69.0	22.5
Vehicle	10.8	6.6	85.4%	12.6	8.1	11.9	6.3	n.a.	n.a.	n.a.
Other	9.5	0.0	24.5%	38.7	9.1	7.8	0.0	19.7%	39.8	9.0
Home Equity	44.3	17.2	62.8%	70.7	48.6	50.5	22.5	66.2%	76.3	53.8
Total	152.3	49.1				199.9	56.8			

[1] For 1984 through 1994, Stocks included equities in IRA. However, no IRA category was included (which would cover non-equity IRA). In 1999, the stock question excluded stocks in IRA and a separate question was asked for value of IRA. However, how much stock in the IRA was not explicitly asked but a question regarding "mostly stock", "mostly interest bearing", or "split" in IRA was also asked.

[2] Ownership status for vehicles was not asked in 1999. The value only was asked.

[3] All calculations are done using PSID weights.

[4] 1999 results are based on preliminary data and use the 1997 weights. As a result to be in the 1999 sample, a household had to have the same head in 1997 and 1999.

[6] PSID wealth does not include pension wealth. Therefore, this excludes private defined contribution and defined benefit plans. It also excludes rights to Social Security wealth.

[7] See the appendix for more details.

Table 2: Swedish Household Wealth, Household Market and Non-Market Activity Survey (Thousands of 1993 U.S. dollars)

	1984						1986					
	Mean	Std Dev	Percent Own	Std Dev	Median	Cond Mean	Mean	Std Dev	Percent Own	Std Dev	Median	Cond Mean
Checking / Savings	5.8	0.3	..	..	2.9	5.8	6.8	0.3	..	..	2.5	6.8
Total Debt	19.2	0.7	69.4	1.3	7.8	27.7	24.8	1.3	76.4	1.1	8.0	32.4
Real Estate	9.0	0.8	24.9	1.1	0.0	36.4	13.4	2.5	28.2	1.1	0.0	47.3
Bonds and Stocks	6.0	0.8	..	..	0.1	6.0	5.5	0.6	..	..	0.1	5.5
Pension Policies	..	..	..	..	..	..	1.2	0.2	14.4	0.9	0.0	8.2
Life Insurance	..	..	..	..	..	..	0.9	0.1	14.2	0.9	0.0	6.6
Consumer durables	25.1	0.6	100.0	0.0	15.6	25.1	27.2	0.6	100.0	0.0	16.0	27.2
Home Value	35.8	1.3	61.2	1.3	24.5	58.5	32.1	0.9	60.9	1.2	21.1	52.7
Total Net Worth	62.6	1.9			48.4		62.4	3.1			48.3	

	1993						1998					
	Mean	Std Dev	Percent Own	Std Dev	Median	Cond Mean	Mean	Std Dev	Percent Own	Std Dev	Median	Cond Mean
Checking / Savings	11.2	0.4	96.6	0.5	5.7	11.6	11.9	0.4	89.0	0.9	5.8	13.4
Total Debt	20.8	0.7	72.2	1.2	8.8	28.7	25.5	0.8	73.5	1.3	17.2	34.8
Real Estate	21.8	3.9	28.7	1.1	0.0	75.5	18.8	1.9	29.4	1.2	0.0	63.9
Bonds and Stocks	6.6	0.5	83.7	1.0	0.1	7.8	14.5	0.7	63.7	1.3	1.6	22.8
Pension Policies	3.4	0.3	32.6	1.2	0.0	10.5	2.8	0.2	24.9	1.2	0.0	11.1
Life Insurance	1.2	0.2	14.0	0.9	0.0	8.3	3.5	0.3	29.4	1.2	0.0	11.8
Consumer durables	24.9	0.6	99.9	0.1	24.5	24.9	24.4	0.5	100.0	0.0	22.3	24.4
Home Value	35.4	1.3	59.1	1.3	22.0	59.8	40.6	1.1	68.9	1.2	37.0	58.9
Total Net Worth	83.5	4.6			54.8		90.9	2.8			67.6	

[1] Swedish Kronor are converted to U.S. dollars using the PPP index of 9.85 in 1993.

[2] Standard deviations are based on 10 replications of the imputed data.

[3] Number of households: 1984, 1505; 1986, 1772; 1993, 1585; 1998, 2366.

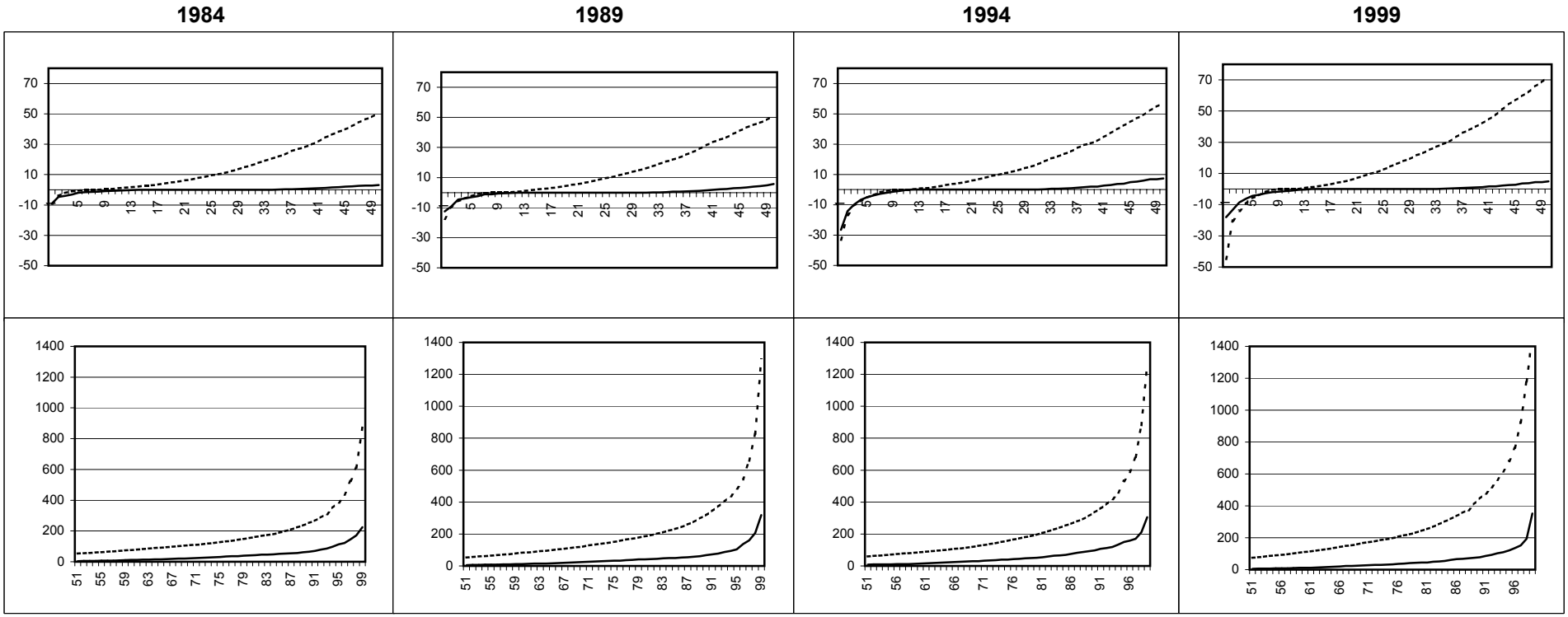
[4] Home values and Real Estate are not net of mortgages. Instead, mortages are included in Total Debt. The high mean value of Real Estate in 1993 is due to one single outlier.

[5] See the appendix for more details.

Table 3: Growth of Net Wealth in Sweden, Median & Top 1%

Period	Ratio of Medians	Ratio of Top 1% Mean Wealth
1983/78	1.06	0.88
1990/83	1.26	1.83
1992/90	0.9	0.77
1997/92	1.12	1.28
1997/83	1.27	1.81

Display 2: PSID Black/White Wealth Distribution

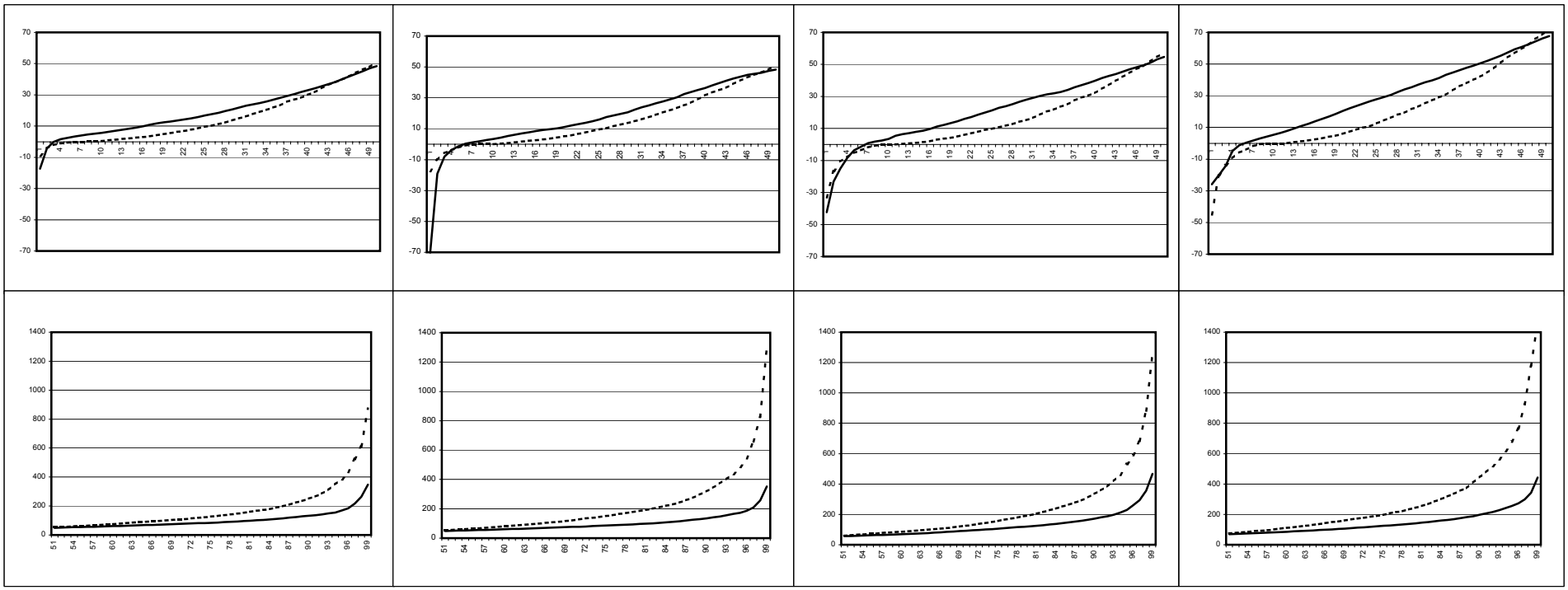


Note: The Black wealth distribution is the solid line while the dashed line is the White wealth distribution. The top figures are percentiles 1 to 50 while the bottom figures are percentiles 51 to 99. Wealth is defined as total net worth. Values are in thousands of 1993 dollars.

Descriptive Statistics

	1984		1989		1994		1999	
Dispersion	Black	White	Black	White	Black	White	Black	White
90/40	73.6	8.4	45.4	10.1	49.4	10.5	59.3	10.6
75/40	35.4	4.2	21.4	4.8	20.6	4.9	25.5	4.7
60/40	12.8	2.5	8.0	2.6	7.5	2.7	9.0	2.6
White / Black Ratio at Given Percentiles								
40	33.85		20.94		16.35		32.21	
50	16.22		8.92		7.73		14.55	
60	6.69		6.84		5.81		9.46	
75	4.05		4.67		3.88		5.89	
90	3.87		4.65		3.47		5.73	
95	3.42		4.69		3.55		5.63	
99	3.89		4.04		4.12		4.16	

Display 3: PSID (Whites Only) and HUS Wealth Distribution



Note: HUS 1984, 1986, 1993 and 1998 are the solid line. PSID 1984, 1989, 1994, 1999 are the dashed line. The top figures are percentiles 1 to 50 while the bottom figures are percentiles 51 to 99. Wealth is defined as total net worth less business wealth. Values are in thousands of 1993 dollars.

Descriptive Statistics

	1984		1986 & 1989		1993 & 1994		1998 & 1999	
Dispersion	HUS	PSID	HUS	PSID	HUS	PSID	HUS	PSID
90/10	23.2	n.a.	39.5	n.a.	49.0	n.a.	37.0	n.a.
75/25	5.0	13.3	5.3	15.8	5.0	16.0	4.5	15.6
60/40	1.9	2.5	1.7	2.6	1.7	2.7	1.7	2.6
PSID / HUS Ratio at a Given Percentile								
15	0.30		0.28		0.17		0.15	
25	0.57		0.59		0.46		0.45	
40	0.91		0.87		0.80		0.83	
50	1.05		1.06		1.04		1.07	
60	1.23		1.35		1.23		1.29	
75	1.51		1.75		1.48		1.58	
90	1.90		2.36		1.95		2.24	
95	2.27		2.80		2.32		2.66	
99	2.51		3.67		2.69		3.32	

Table 4: Quintile Transition matrix for the United States 1994-99 (quintiles in 1993 USD)

		1	2	3	4	5
			2949	29730	80752	206195
1		0.583	0.273	0.099	0.031	0.015
2	1043	0.267	0.435	0.223	0.058	0.016
3	22011	0.087	0.208	0.419	0.232	0.055
4	66118	0.048	0.079	0.193	0.481	0.2
5	165345	0.014	0.022	0.051	0.2	0.713

Shorrocks: 0.592

[1] Row numbers are 1994 quintiles while column numbers are 1999 quintiles.

[2] Bottom of quintile brackets reported adjacent to quintile numbers.

Table 5: Quintile Transition matrix for Sweden 1993-98 (quintiles in 1993 USD)

		1	2	3	4	5
			29137	60171	100552	153582
1		0.568	0.247	0.096	0.041	0.048
2	20436	0.253	0.315	0.26	0.103	0.068
3	47218	0.136	0.218	0.238	0.306	0.102
4	74712	0.034	0.144	0.294	0.322	0.206
5	126078	0.007	0.075	0.116	0.224	0.578

Shorrocks: 0.744

[1] Row numbers are 1993 quintiles while column numbers are 1998 quintiles.

[2] Bottom of quintile brackets reported adjacent to quintile numbers.

Table 6: Matched transition matrix for the United States 1994-99 (quintiles in 1993 USD)

		1	2	3	4	5
			18006	47521	97200	181308
1		0.603	0.253	0.089	0.027	0.027
2	20445	0.164	0.431	0.253	0.11	0.041
3	47272	0.102	0.218	0.374	0.218	0.088
4	74718	0.089	0.048	0.226	0.37	0.267
5	126174	0.041	0.048	0.061	0.272	0.578

Shorrocks: 0.661

[1] Row numbers are 1994 quintiles while column numbers are 1999 quintiles.

[2] Bottom of quintile brackets reported adjacent to quintile numbers.

Table 7: Total U.S. Net Worth Transition Tables by Quintiles (PSID): 1994 to 1999

Full Sample

	1	2	3	4	5
1	0.592	0.291	0.080	0.031	0.006
2	0.219	0.459	0.233	0.062	0.026
3	0.092	0.167	0.445	0.242	0.053
4	0.058	0.056	0.183	0.480	0.223
5	0.035	0.026	0.060	0.187	0.692
	Shorrocks:	0.583			

Age less than 40

	1	2	3	4	5
1	0.754	0.172	0.022	0.020	0.032
2	0.292	0.460	0.186	0.038	0.024
3	0.119	0.257	0.466	0.149	0.010
4	0.064	0.034	0.221	0.532	0.149
5	0.028	0.013	0.039	0.181	0.738
	Shorrocks:	0.512			

Age between 40 and 65

	1	2	3	4	5
1	0.549	0.307	0.090	0.048	0.007
2	0.236	0.470	0.221	0.041	0.032
3	0.064	0.146	0.495	0.247	0.048
4	0.042	0.059	0.165	0.505	0.228
5	0.028	0.020	0.043	0.188	0.721
	Shorrocks:	0.565			

Age greater than 65

	1	2	3	4	5
1	0.593	0.296	0.081	0.027	0.003
2	0.204	0.455	0.244	0.074	0.023
3	0.113	0.158	0.385	0.271	0.074
4	0.083	0.067	0.190	0.392	0.269
5	0.072	0.068	0.154	0.188	0.517
	Shorrocks:	0.664			

[1] Note that total net worth includes business equity.

Table 8: Wealth mobility 1993/4 to 1998/9 in Sweden and the United States

Dataset/Experiment	Match variables	Replacement	Dist. measure	Median wealth	Q4/Q1.	Shorrock's mobility
HUS 1993	..	..	..	61583	6.17	
HUS1998	..	..	..	77217	5.27	
HUS 93-98	..	..	..			0.744
PSID 1994	..	..	..	39818	158.52	
PSID 1999	..	..	..	52603	69.92	
PSID 94-99						0.592
PSID Match94	nw93/94	no	..	61548	6.17	
PSID Match99	nw93/94	no	..	71928	10.07	
PSID Match94/99						0.661
PSID match94	all	no	*zrubin*	84498	19.71	
PSID match99	all	no	*zrubin*	124676	17.43	
PSID match 94-99						0.581
PSID match94	all	no	*zhus*	41727	33.72	
PSID match99	all	no	*zhus*	69531	23.92	
PSID match 94-99						0.675
PSID White94	..	..	..	71458	24.9	
PSID White99	..	..	..	93027	18.87	
PSID White 94-99						0.585
PSID White match94	nw93/94	no	..	61548	6.14	
PSID White match99	nw93/94	no	..	78641	9.49	
PSID White match 94-99						0.698
PSID White by family match94	nw93/94	no	..	59461	7.5	
PSID White by family match99	nw93/94	no	..	78881	11.19	
PSID White by family match94-99						0.688
PSID White match94	all	no	*zrubin*	89714	15.81	
PSID White match99	all	no	*zrubin*	132348	13.72	
PSID White match 94-99						0.619
PSID White match94	all	no	*zhus*	49029	18.63	
PSID White match99	all	no	*zhus*	79888	16.46	
PSID White match 94-99						0.674
PSID White match94	all but nw	no	*zrubin*	137700	14.9	
PSID White match99	all but nw	no	*zrubin*	185096	14.06	
PSID White match 94-99						0.598
PSID White match94	all but nw	no	*zhus*	135614	15.52	
PSID White match99	all but nw	no	*zhus*	174546	14.45	
PSID White match 94-99						0.596

[1] All transition matices were quintile matrices. Q4/Q1= ratio forth quintile to first quintile.

[2] All matching variables include: no of adults, no of children, age of head, years of schooling of head, marital status, family disposable income, and net worth 93/94. PSID data were NOT weighted by sampling weights.

[3] Monetary values are in 1993 USD.

Table 9: 1993/94 – 1998/99 change in net worth; descriptive statistics
(Thousands of 1993 USD)

Data set	Mean	Std.err.	Median	D9-D1	Max
HUS 1993-1998	16.4	124.9	11.8	150.7	1532.8
PSID 1994-1999	45.6	525.0	6.0	216.2	23803.6
PSID 1994-1999, whites	57.6	640.2	14.0	286.1	23803.6
PSID match 1994-1999	36.0	136.6	9.9	200.4	1485.1

[1] PSID match was obtained by matching on net worth 93/94 only.