

**Wealth and Savings:
Data and Trends in the Netherlands**

Rob Alessie*
Arie Kapteyn**

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Abstract

In this paper we examine trends in the cross-sectional wealth distribution. We use two wealth definitions: net worth and financial wealth. We use data from the Socio-Economic Panel, a representative panel survey conducted by Statistics Netherlands. First, we describe the information on wealth available in the SEP, and the problems with person- and item-non response. Moreover, we compare the SEP data with an external data source, the Income Panel Survey (IPS). The IPS has been constructed from administrative records (e.g. records from the wealth and income tax). We then analyze the trends in wealth inequality (the cross-sectional distribution of wealth), and in the age and income gradient of wealth holdings. Finally, we consider shortly some explanations for the observed pattern of wealth accumulation in the Netherlands. We especially focus on saving motive data which are available in the SEP.

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* Free University Amsterdam, De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands, ALERT and Tinbergen Institute, email: ralessie@econ.vu.nl

** CentER, Tilburg University, P.O. Box 90153, 5000 LE Tilburg, The Netherlands.

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1. Introduction

In this paper we examine trends in the cross-sectional wealth distribution. We use two wealth definitions: net worth and financial wealth. We use data from the Socio-Economic Panel (SEP), a representative panel survey conducted by Statistics Netherlands. The SEP contains detailed information about household characteristics, income, and wealth. It follows households over time, enabling the researcher to gain greater insight into their behavior. The fact that wealth data is collected every year is a feature of the SEP, which is not shared by many other data sets. For example, the U.S. Panel Study of Income Dynamics reports data on wealth in 1984, 1989 and 1994, while the Survey of Consumer Finances (SCF) collects wealth data in a three-year interval. In addition, the SEP provides some valuable information on subjective income expectations and motives to save. This information allows for a very careful examination of household behavior and, in addition, it provides researchers with some instruments to account for measurement error problems.

The paper is organized as follows: In section 2 we describe the information on wealth available in the SEP, and the problems with person- and item-nonresponse. Moreover, we compare the SEP data with an external data source, the Income Panel Survey (IPS). The IPS has been constructed from administrative records (e.g. records from wealth and income tax records). In section 3, we analyze the trends in wealth inequality (the cross-sectional distribution of wealth). Section 4 discusses trends in the age and income gradient of wealth holdings. Finally in section 5 we consider briefly some explanations for the observed pattern of wealth accumulation in the Netherlands, focusing especially on saving motive data available in the SEP.

2. The Socio-Economic Panel

The SEP covers approximately 5,000 households. The purpose of the SEP, as summarized in Statistics Netherlands publications (see, for example, Statistics Netherlands (1991)), is to provide a description of the most important elements of individual and household welfare and to monitor changes in these elements. The survey is representative of the Dutch population, excluding those living in special institutions like nursing homes. In order to arrive at a representative sample, Statistics Netherlands applies a stratified sampling procedure. In the first step, municipalities are drawn with probabilities depending on the number of inhabitants (the four biggest cities are drawn with certainty). In the second step, addresses are selected randomly. All households present at the

selected address are interviewed, up to a maximum of three households. In contrast to the American Survey of Consumer Finances (SCF) wealthy households are not oversampled (see e.g. Avery, Elliehausen and Kennickell (1988) for more information about the SCF). Moreover, the SEP does not have a low-income supplement, as is the case with the Panel Study of Income Dynamics (PSID). The SEP has been launched in April 1984. The same households were interviewed in October 1984 and then twice a year (in April and October) until 1989. Since 1990 the survey has been conducted once a year in May. In order to address the problem of sample attrition, Statistics Netherlands regularly adds new households to the SEP.

In the October interview, information is collected on socio-economic characteristics, income and labor market participation.¹ The April interviews collect information about socio-economic characteristics, as in the October interview, but rather than gathering data about income, from 1987 onwards the April questionnaire includes questions on a wide range of assets and liabilities.

A useful feature of the SEP set is the provision of variables such as households' expectations about the behavior of income in the future and the motives for saving. This information provides an additional check on the consistency of the data and enables a more detailed assessment of models of household behavior. In addition, these variables can act as instruments for both savings and income changes. A less attractive feature of the SEP is that it contains hardly any information about the health status of the respondents. Only the 1994 wave of the SEP includes a subjective question about health status. Obviously, health information is very relevant for empirical investigations into the retirement choice and the wealth holdings of the elderly.

Every respondent (i.e., a person who is at least 16 years old) in the household has to complete a rather short questionnaire on assets and liabilities.² In the SEP questionnaire, a distinction is

¹ Alessie and Kapteyn (1999) describe in more detail the information about household income and its components which is available in the SEP. This study also indicates how the variable 'household disposable income' is constructed. This household income measure has also been used in this paper.

² However, from 1990 onwards, only one household member (the head of the household) reports the value of housing related assets and liabilities i.e. 1) the value of the primary residence, 2) remaining mortgage debt, 3) life insurance mortgage). In most other wealth surveys only one household member has to fill in the questionnaire. There are pros and cons of the approach adopted in the SEP. It is rather unlikely that the main respondent (head of household) has a full knowledge of all asset items held by the members of the household. This problem is especially relevant for those households whose head and spouse keep their financial administration separate. Therefore, Statistics Netherlands has decided to interview all respondents. A disadvantage of the "SEP approach" is that for instance the balance of joint checking and saving accounts can be reported both by the head of the household and/or his spouse. In that case, there is a problem of double counting. However, the SEP questionnaire explicitly indicates that in case of joint ownership of some asset and liability items, only one respondent should report its, preferably the head of the household.

made between the ownership of a particular asset or liability on the one hand, and the value of the asset and liability on the other. Information is collected for the following assets³: (1) checking accounts; (2) savings and deposit accounts⁴; (3) saving certificates (certificates of deposit); (4) bonds, mortgage bonds; (5) shares, mutual funds, options, and other securities; (6) value of the primary residence; (7) other real estate (not used for own residence); (8) value of the car(s); (9) net worth of own company (for the self-employed); (10) life insurance mortgage⁵; (11) other life insurance with a saving element⁶ (starting date of the insurance, insurance premium); (12) other assets. These assets are reported at the current market value. From the 1990 wave onwards, no information has been collected on the following asset items: ‘other life insurance with a saving element’ and ‘net worth of the own company’ (as of 1990, self-employed respondents do not have to report their asset and liability holdings). Notice also that the SEP does not contain information on cash holdings and on occupational pension wealth.

The surveys collect information on the liabilities of every respondent. Unfortunately, Statistics Netherlands revises the questions and liabilities regularly. This could limit the comparability of the liability data between years. In the SEP questionnaire of April 1987 and April 1988, the

³ The April 1987 and 1988 questionnaires also contain questions concerning the following asset category: Claims against private persons (friends, acquaintances). Moreover, in all waves information has been collected on tangibles (paintings, jewelry etc.). However, Alessie and Zandvliet (1993) point out that this information is of dubious quality. They have analyzed changes in ownership status over time of this asset category. Their analysis shows that implausibly many changes in ownership are reported. For instance, it appears that from the 1277 households reporting ownership of tangibles for 1987 and/or 1988, only 781 households have some tangibles in both years. Given these implausible results we have decided not to use the information on tangibles.

⁴ We assume that the respondents include the balance on their dedicated saving accounts when they answer the question on the total balance of all their saving accounts. Notice that we cannot distinguish the balance of the dedicated saving accounts from the balance of the other saving accounts. However, we know whether the household has dedicated saving accounts and we know the yearly contribution to these saving accounts. What we unfortunately do not observe, is the yearly withdrawal from the saving accounts.

⁵ A special type of mortgage is possible in the Netherlands when buying a house. With this mortgage contract, the mortgage debt remains constant during the contract period. The mortgage-holder pays life insurance premia and, at the end of the contract period, the value of the life insurance policy is used to redeem the mortgage. The cash value of the life insurance mortgage is not directly observed. However, we have imputed this value using the information provided in the survey (the starting date of the insurance, the balance of the mortgage, and assuming an interest rate of 3 percent on a 30 year maturity). It should be noted that only the 1990 wave does not contain enough information to impute the cash value of the life insurance mortgage. We have attempted to remedy this problem by merging into the 1990 dataset some relevant information from the 1991 wave.

⁶ As already noted by Alessie and Zandvliet (1993) the questions about the other life insurances are rather messy. Only information on the (yearly) premium and the year when the insurance policy is effected, has been collected. Moreover, no clear distinction has been made between whole life insurance policies and (single premium) annuity insurance policies. Given the information at hand, it is impossible to come up with a reasonable estimate for the cash value of the other life insurance policies (see also Alessie, Pradhan and Zandvliet (1993)). Therefore we have not

following categories are listed: (1) personal loan and revolving credit; (2) purchase on credit, hire purchase; (3) remaining mortgage debt; (4) other loans; (5) debt not already mentioned. In 1989 ten liabilities categories have been distinguished. They are as follows: (1) personal loans; (2) revolving credit; (3) debt with mail orders, retail debt; (4) other purchases on credit; (5) hire-purchase; (6) remaining mortgage debt; (7) collateral-based loans; (8) debt with relatives and friends; (9) other outstanding debt, unpaid bills; (10) debt not already mentioned. In 1990 and 1991, the SEP distinguishes the following liability categories: (1) personal loans and revolving credit; (2) debt with mail orders, retail debt; (3) hire-purchase, other purchases on credit, collateral-based loans; (4) debt with relatives and friends; (5) remaining mortgage debt; (6) loans not already mentioned. In 1992, Statistics Netherlands has used the following liability categorization: (1) personal loans and revolving credit; (2) debt with mail orders, retail debt; (3) hire-purchase; (4) other purchases on credit; (5) collateral-based loans; (6) debt with relatives and friends; (7) remaining mortgage debt; (8) other loans. From 1993 on, Statistics Netherlands has used the following liability categories: (1) personal loans and revolving credit; (2) debt with mail orders, retail debt; (3) hire-purchase, other purchases on credit; (4) collateral-based loans; (5) (interest bearing) student loans (6) debt with relatives and friends; (7) remaining mortgage debt; (8) other loans.

From the May 1990 wave onwards, the questions on assets and liabilities are not asked anymore to self-employed. It appeared that the data on business equity, which has been collected in the April 1987, 1988 and 1989 waves of the SEP, is rather unreliable (see also Alessie, Lusardi and Aldershof (1997a) and Alessie and Zandvliet (1993)). Therefore we have deleted the self-employed from our sample. Household assets and liabilities are obtained by summing all the assets (except the asset items 'business equity' and 'other life insurance with a saving element') and liabilities of each respondent in the household. Net worth is obtained by subtracting total liabilities from total assets. In this study we also analyze financial wealth holdings. Financial wealth has been defined as the difference between net worth on the one hand and housing equity (value of the primary residence plus life insurance mortgage minus remaining mortgage debt), other real estate and the value of the cars on the other hand.

For confidentiality reasons, the values of all asset and liability items have been top-coded for each category and set at the value of NLG 999,997 if the values exceed that amount.⁷ Note,

included this asset item in our measure of net worth.

⁷ From 1990 onwards, the wealth items 'value of the primary residence' and 'remaining mortgage debt' have been

however, that very few households are affected by top coding, which is concentrated among the self-employed. In our sample, we exclude the self-employed, and top coding is barely a problem.

We have examined the relevance of non-responses at the respondent level regarding both the size and ownership of assets and liabilities. Non-responses are of two types: “refuse to answer” and “do not know”. Most respondents were prepared to answer the question concerning ownership properly. Alessie, Lusardi and Aldershof (1997a) report that a sizable fraction of respondents refused to report or did not know the amount held in certain assets, such as (mortgage) bonds, savings certificates, other real estate and shares, options and other securities.⁸ In the 1996 wave these fractions are smaller for most asset categories (this remark especially applies to the categories ‘shares, options and other securities’ and ‘other real estate’). The panel feature of the SEP has been exploited to impute some of the missing values. For example, in the case of a missing value in the house value in period t , a value equal to the average of period $t-1$ and $t+1$ has been imputed, if the household lived in the same house in periods, $t-1$, t , and $t+1$. See Camphuis (1993) for details.

To calculate net worth at the household level, we have chosen the following criteria (this refers to the data after imputation has been effected): we exclude those observations for which (i) the head of the household or the spouse “refuses to answer” one or more questions about their assets or debts; or (ii) at least one respondent answers with “do not know” to one or more questions about his/her assets and debt. After removing the self-employed from the sample, it is possible to calculate net worth for approximately 90% of the households in 1987 (4,154 out of 4,531 households) and for about 95% of the households in 1988 and 1989 (4,287 out of 4,538 in 1988, and 4,410 out of 4,712 in 1989). These samples show some evidence of selectivity (see Alessie, Lusardi and Aldershof (1997a)). From 1990 on, item non-response seems to be less of a problem: net worth can be measured for more than 95% of the households. It appears that item non-response is especially relevant for saving and checking accounts. No attempts have been made to impute the missing values.

For an external validation of our survey data, we want to compare ownership rates with rates derived from other sources. In the Dutch Flow of Funds (national) accounts data, the stock of wealth (and its composition) is not observed. We do, however, compare the data in our panel with statistics on the distribution and composition of household wealth published by Statistics

top coded at a value of NLG. 9,999,997. A Dutch Guilder (NLG) is approximately equal to US\$.50.

⁸ Unlike the SCF, PSID and the Health and Retirement Study (HRS), the SEP does not include so-called bracket

Netherlands (Statistics Netherlands, 1996, 1997, 1998), which are derived mainly from the IPS data set. The IPS contains administrative data on about 75,000 households collected by Statistics Netherlands, providing information on asset and debts from the wealth and income tax records. This micro data set itself is not available to us. However, Statistics Netherlands annually publishes statistics on the wealth distribution and composition of Dutch households⁹ based on the IPS supplemented with some information from the SEP. Although the IPS is based upon a large number of observations and administrative records, it is not guaranteed that the published data perfectly reflect national ownership rates or aggregate amounts held. Underreporting to avoid paying taxes might be as serious as measurement errors in surveys. For this reason, Statistics Netherlands has adjusted the IPS information on the value of the primary residence by making use of the SEP.¹⁰ On the other hand, banks and other financial institutions are obliged to provide the tax authorities with details on the clients' saving accounts balances, the remaining mortgage debt (plus the mortgage interest payments), and on interest and dividends paid out. This obligation implies that these asset items should be measured rather accurately in the IPS. The aggregation level in IPS is rather high, and not all the assets are covered (e.g. life insurance policies, tangibles, cars and other durables). For instance, the IPS does not contain information on any type of life insurance. To combine IPS with SEP, several *ad hoc* approximations had to be made.¹¹

In table 1, we compare the IPS and SEP survey concerning some relevant asset items the ownership rates and the mean (conditional upon ownership). This comparison which refers to the year 1995, is rather limited, however, for several reasons. The most important reason is that contrary to the SEP the IPS figures include the wealth holdings of the self-employed. Moreover, it is not entirely clear whether in table 1 the item 'other assets' is defined in the same way in the SEP and IPS. Keeping these caveats in mind, one can draw the following conclusions from table 1:

- The ownership rates of most asset items are roughly similar between the two datasets although the SEP figures suggest a higher home ownership rate than IPS. It should be mentioned that the SEP figure almost coincides with that of the Housing Needs Survey (this is also a large-scale

questions in order to alleviate the problem of item-nonresponse.

⁹ These statistics are published in various issues of *Sociaal Economische Maandstatistiek*, Statistics Netherlands, Voorburg/Heerlen.

¹⁰ Alessie, Pradhan and Zandvliet (1993) have compared the SEP data on home ownership and the value of the primary residence with data of the Netherlands Association of Real Estate Agents (*Nederlandse Vereniging van Makelaars* (NVM)). From these comparisons they conclude that the quality of the SEP of the houses owned is adequate.

¹¹ For details, see Meuwissen (1994).

survey conducted by Statistics Netherlands). We don't understand why the IPS figure is lower.

- If one takes the IPS figures as the reference point, the SEP underestimates average net worth by 20%. A part of this underestimation has been caused by the fact that the SEP does not observe the wealth holding of the self-employed. However, table 1 also strongly suggests that stock and bond holdings are severely underreported in the SEP.¹² One should keep in mind that the IPS figure on stock and bond holdings includes stocks from a substantial holding in a company¹³ Typically, these stocks are not listed on the Dutch exchange. Given the way the SEP question on stock holdings has been phrased, we suspect that especially the stocks from a substantial holding in a company are severely underreported by the SEP respondents. Finally, the underestimation of average net worth is also partly due to the fact that in the SEP checking and saving accounts balances are underreported.
- The SEP underestimates the average amount of consumer credit considerably. On the other hand, the SEP might overestimate the holdings in other real estate. One should realize that these differences barely explain the difference in the estimated average net worth holdings as observed in the SEP and IPS.

In table 2 we compare the IPS decile distribution of net worth with that of the SEP. It appears that the lower deciles (until 80%) are rather precisely estimated by the SEP. The reader should realize that the IPS wealth data of the low-income households are based on the SEP. This probably explains the similarity of the two wealth distributions. The 90%- and especially 95%-quantiles are severely underestimated. Similar although less dramatic results have been found by Juster, Smith and Stafford (1998), who have compared the wealth figures of the PSID with those of the SCF. They conclude that the underestimation is partly due to differences in the sampling frame of the PSID (basically a representative sample) and the SCF (high-income households oversampled).

12 Just recently, Statistics Netherlands published the National Accounts of the year 1998. For the first time, the National Accounts include the Flows of Funds Statement for the sector 'households'. Up to now, we were not able to obtain the NA publications. From private conversations with mr. Kusters of the Netherlands Bureau of Economic Analysis it became clear that even in the IPS the average value of stock holdings might be underestimated.

13 In the note 'Taxation in the Netherlands' of the ministry of Finance (see <http://www.minfin.nl>) the term income from a substantial holding in a company is described as follows: a taxpayer is regarded as having a substantial holding in a corporation if he or she, either alone or with his or her spouse, holds directly or indirectly 5% of the issued capital. If the corporation has issued different classes of shares, a substantial holding also exists if the taxpayer, either alone or with his or her spouse, holds more than 5% of the issued capital of a particular class of shares. If the taxpayer holds a substantial interest in a corporation, *jouissance* rights and debt-claims issued by that corporation and held directly or indirectly by the taxpayer, either alone or with his or her spouse, are regarded as

3. Wealth inequality

The primary goal of this section is to examine trends in the cross-sectional distribution of net worth and financial wealth. Table 3 summarizes the percentile distribution of net worth for the years 1987 through 1996. All values are expressed in 1987 prices. In all years, the distribution of net worth is clearly right-skewed and very dispersed. In all years, about 10% of the households have negative or zero wealth whereas the 90% decile increased from NLG 156,000 in 1987 to NLG 267,000 in 1996. The relative increase in the median, sixth and seventh decile is even more striking: in 1987 mean net worth is almost equal to the seventh decile. However, in 1996 mean net worth is considerably smaller than the seventh decile. Moreover, from table 3 it can be inferred that between 1987 and 1996 the coefficient of variation (CV) decreased from 1.88 to 1.57. These results suggest that in contrast with the United States wealth inequality decreased in the Netherlands between 1987 and 1996.

The question why the wealth distribution has become more equal is difficult to answer. In table 4 and figure 1 we present some evidence which partly explains the phenomenon of the decreasing wealth inequality. Table 4 presents the trends in the household ownership rates of several asset and liability components. Between 1987 and 1996 the home ownership rate rose considerably from 42.7% to 50.5%. In the same period, we observe a similar striking trend in the ownership rate of stocks (5.8% in 1987 and 13.2% in 1996). Figure 1 summarizes the evolution over time of the average price of the houses sold (source: Netherlands Association of Real Estate Agents). It appears that between 1987 and 1996 the average price rose from NLG 153,000 to NLG 262,000. The trend in the home ownership rate and the house prices might explain why median net worth has increased so much between 1987 and 1996. For the median household the share of housing equity in total net worth is considerably larger (especially in 1996) than for households in the top decile in the wealth distribution. In other words, the increase in the house prices is relatively less important for the rich than for the median household, which in turn might explain the decreasing tendency in the wealth inequality between 1987 and 1996. In order to back up this claim, we also present in table 5 the percentile distribution of financial wealth. This figure does not show a negative trend in financial wealth inequality: between 1987 and 1996: the third through nine-th decile rose roughly by the same rate. Like net worth, the distribution of financial

forming part of the substantial holding.

wealth is right-skewed and very dispersed.

Some other conclusions can be drawn from table 5. The most striking one is that the value of median wealth (NLG 7500 in 1987 prices and NL 9200 in 1996 prices) is low especially in comparison with the United States. However, Jappelli and Pistaferri (1999) also report a rather but somewhat higher number for median financial wealth in Italy (in terms of Dutch guilders: NLG 16,200). However, in contrast with our financial wealth measure, they include the cash values of life insurance and of defined contribution pension plans and 'foreign assets'. Moreover, contrary to us Jappelli and Pistaferri do not subtract consumer credit from their financial wealth measure. Finally, Jappelli and Pistaferri (1999) have included the self-employed (Compared with the Netherlands relatively much more people are self-employed in Italy). The fact that median wealth is rather low might be due to the fact that in the Netherlands most employees are covered by a rather extensive social security and occupational pension system. In section 5 we will pay more attention to this issue.

4. The age-wealth and the income-wealth profiles

Tables 6 and 7 summarize for the year 1996 the age gradient of the distribution of net worth and financial wealth respectively. Table 6 shows that there exists a clear hump-shaped age profile for median net worth with a peak in the age range 50-54. In comparison with households in their middle ages median net worth is rather low for the young and old households. One can also observe a hump-shaped pattern in the age profile of average net worth with a peak around age 55. Notice, however, that after age 55 average net worth decreases at a much slower pace than median net worth. From table 6 one can compute the interquartile distance $((p75-p25)/p50)$ and other inequality measures (e.g. $(p90-p10)/p50$). These inequality measures clearly suggest that, among the old, wealth inequality is much greater than among the young. Contrary to net worth, we do not observe a clear hump-shaped age pattern in median and average financial wealth.

From table 6 one could be tempted to conclude that people dissave after retirement as the standard life cycle model predicts. However, in one cross-section, one cannot disentangle age and cohort effects. Therefore we exploit in figures 2a and 2b the longitudinal feature of the SEP. In these figures, we plot median and mean net worth from 1987 to 1996 for each 5-year-of-birth-cohort. For clarity, the graphs only indicate the average year when the head of the household was born (for example, "38" refers to heads of households born between 1936 and 1940). The vertical

difference between lines measures the "cohort-time" effect. The difference along the same line measures the "age-time" effect¹⁴

The figures show that there are substantial cohort-time effects as well as age-time effects in total net worth. Within the same cohort, both mean and median net worth are steadily increasing over time. This is particularly true for the young cohorts, but even for some elderly mean net worth continues to increase over time (median net worth remains fairly constant for the old cohorts)¹⁵. The increase in mean total net worth over the 10-year period is for 1936-1940 cohort as big as NLG 100,000. The fact that mean and median net worth increase for most cohorts (except the old ones) in a "parallel" way suggests, that time effects may also be important. This effect may be due, for example, to common macro shocks, changes in housing prices and the increase in home ownership rates (see table 4 and figure 1).¹⁶ While important, home-ownership is; however, not solely responsible for the existence of cohort-time effects in total net worth. In Figures 3a and 3b we report financial wealth and show that strong cohort-time effects are still present in the mean and median of this more restrictive measure of wealth.

Figures 2a and 2b clearly show that on the basis of cross-section evidence (e.g. table 6) one cannot answer the question whether or not people dissave after retirement. In contrast with table 6, the figures suggest that the elderly do not dissave. On the basis of figure 2a one can also infer that the cross-section age profile of net worth of the year 1996 is much more hump-shaped than that of 1987. These results underline the problem associated with testing the predictions of the life-cycle model using cross-section data.

Examining the wealth distribution by income deciles allows one to assess if households in the top quantiles of the income distribution also fall in the top quantiles of the wealth distribution. We report therefore within each decile of the household income distribution the distribution of net worth and financial wealth (see tables 8 and 9). Both mean and median wealth increases with the rank in the income distribution, implying a strong correlation in the relative positions in the

¹⁴ We use this terminology to emphasize that it is not possible to disentangle age from cohort and time effects in these figures. See also below.

¹⁵ The age-time effects of the old cohorts (especially the cohort 1910-1915) should be interpreted with care because the estimate of the age-time could be biased for reasons of differential mortality: survival probabilities may be positively correlated with wealth implying that rich households are over-represented in the oldest cohorts. This correlation implies that one may find a low rate of decumulation after retirement simply because the poor tend to disappear from the sample earlier than the rich.

¹⁶ There is another potential cause for the existence of these time effects. It is possible that the amount of measurement error, and particularly under-reporting of wealth, is decreasing over time.

two distributions.

5 Why Do Households Say They Save? ¹⁷

The questionnaires of the 1987 and 1988 waves of the SEP also list several possibilities for motives to save and asks the respondent to consider one or several combinations of the motives listed. The main possibilities are: to buy a house, to buy a car, to buy other durables, for unforeseen events, for children, for old age, for no specific purpose, and all possible combinations of the above motives. Examining the motives to save in more detail, it is interesting to note that the households who have indicated unforeseen events alone or in combination with other motives account for 22 percent of the total sample. This result is relevant in light of recent studies of savings which emphasize the precautionary saving motive, i.e. that people save to insure against risk. The percentage of people who have indicated the desire to buy a house as a motive to save is 13 percent, the percentage indicating automobile purchase is 12 percent; 15 percent have indicated the purchase of other durables. There is a very small proportion of households, only 2 percent, indicating that they save for old age. This is probably due to the fact that almost every employee (as well as persons who receive unemployment or disability benefits) in the Netherlands is covered by extensive social security and occupational pension schemes: studies of Alessie, Kapteyn and Klijn (1997b) and Kapteyn, Alessie and Lusardi (1999) indicate that there is a considerable displacement effect between private saving and social security wealth. This may explain the fact that the median Dutch household holds very little (financial) wealth.

The behavior of these motives across the life cycle is presented in Figure 4. The precautionary saving motive remains relatively stable across the life cycle, but it is somewhat greater for young and old households. Note that this motive may capture several types of risk, not only income or unemployment risk, but also mortality risk. It is conceivable that other types of risks than income uncertainty are more important to explain saving behavior of Dutch households: Das en Donkers (1999) use the CentERpanel which collects information on the subjective distribution of future income. Their analysis shows that more than 80% of the households report a coefficient of variation of future income below 6.5 % (see also Jappelli and Pistaferri (1999)). This low variability in future income is presumably caused by the tight labor regulations (it is difficult to fire employees

¹⁷ This section draws heavily on section 5.2. of Alessie, Lusardi and Aldershof (1997)

in the Netherlands) and the generous social insurance programs in the Netherlands. The motive related to the purchase of a house is concentrated among households below the age of 40; after age 40 this motive becomes less important. Saving for children affects the young households between 30 and 40 and is presumably related to raising children. This motive seems to be relevant for the elderly as well, in particular for the households over the age of 70, and it is possibly related to a bequest motive. Evidence (based on the CentERpanel, presented in Alessie, Lusardi and Kapteyn (1999), suggests that the bequest motive is especially relevant for the high income households.

6. Conclusions

In this paper, we have examined wealth data from the Dutch Socio-Economic Panel. The survey provides detailed information on the assets and liabilities of each household member. This information allows one to study wealth holdings over the life cycle, portfolio choice, and wealth inequality. From the analysis presented in this paper the following conclusions can be drawn:

- The wealth data of the SEP are of reasonable quality. The amount of individual and item-non response is rather small. However, average stock holdings are considerably underestimated by the SEP. Moreover, the SEP is not suitable to analyze the determinants of the wealth holdings of the very rich.
- Between 1987 and 1996 the wealth distribution became more equal. This phenomenon can be attributed partly to the increasing trend in the home ownership rates and the rise in house prices.
- The age- (median) wealth profile has an inverted U-shape. Between 1987 and 1996 it became even more hump-shaped. Wealth inequality is greater among the old than among the young.
- Not surprisingly, there is a strong positive relationship between wealth and income.

The panel feature of the SEP allows the researcher to further examine household accumulation. One can study questions such as: do the elderly dissave (see, e.g., Alessie, Lusardi and Kapteyn (1995, and 1997) and do young people facing upward sloping earnings profiles borrow as predicted by the theoretical models? The SEP provides information on the motives to save, making it possible to check whether the reported answers conform to actual behavior.

The analysis of the profiles of wealth, savings, and income over the life cycle shows that there is substantial heterogeneity in the behavior of households, which should be taken into account in the econometric modeling. As with all survey data, there is a misreporting and measurement error

problem. This problem becomes more acute with data in first differences (i.e. savings). However, a useful feature of this data set is the provision of many variables, which could act as instruments and alleviate the measurement error problem in econometric analyses.

The survey covers a long time span and is continuing. This data set will enable researchers to examine household behavior in several dimensions and should prove extremely valuable for research and policy evaluations. However, the sample size is rather small especially if one likes to analyze in more detail the saving and retirement behavior of the elderly. Another drawback of the SEP is the limited information on health.

References

Alessie, Rob, Menno Pradhan, and Christine Zandvliet, "Measurement of Household Saving obtained from First Differencing Wealth Estimates", VSB Progress Report n. 13, Tilburg University, 1993.

Alessie, Rob, and Christine Zandvliet, "An Exploratory Analysis of the Socio-Economic Panel Data with Regard to the Financial Position of Households", VSB Progress Report n. 14, Tilburg University, 1993.

Alessie, R., A. Lusardi, and T. Aldershof (1997a), "Income and Wealth over the Life Cycle: Evidence from Panel Data," *The Review of Income and Wealth*, 43, 1-32.

Alessie, R., A. Kapteyn and F. Klijn (1997b), "Mandatory pensions and personal savings in the Netherlands", *De Economist*, 145, no. 3, pp. 291-324.

Alessie, R., A. Lusardi and A. Kapteyn (1999), "Saving after retirement: evidence based on three different savings measures", *Labour Economics*, 6, pp. 277-310.

Avery, R. B., G. E. Elliehausen, and A. B. Kennickell (1988), "Measuring Wealth with Survey Data: An Evaluation of the 1983 Survey of Consumer Finances", *The Review of Income and Wealth*, 34, 339-369.

Alessie, R., and A. Kapteyn (1999), "Savings, Pensions and Portfolio Choice in the Netherlands", Free University Amsterdam.

Camphuis, H. (1993), "Checking, Editing and Imputation of Wealth Data of the Netherlands Socio-Economic Panel for the period 87-89," VSB Progress Report n. 10, CentER, Tilburg University, The Netherlands.

Statistics Netherlands (1991), *Sociaal-Economisch Panelonderzoek: Inhoud, Opzet en Organisatie*, SDU, The Hague.

Das, M. and B. Donkers (1999), "How certain are Dutch households about future income? An empirical analysis", *The Review of Income and Wealth*, Vol. 45, pp. 325-338.

Jappelli, T. and L. Pistaffferri (1999), "The dynamics of household wealth accumulation in Italy: measurement and distributional issues", mimeo, University of Salerno.

Juster, T., J. Smith, and F. Stafford (1998), "The measurement and structure of household wealth", mimeo, Rand Corporation.

Kapteyn, A., R. Alessie and A. Lusardi (1999), "Explaining the wealth holdings of different cohorts: productivity growth and social security", mimeo, Tinbergen Institute.

Meuwissen, P.J.J. (1994), "Het meten van vermogen via enquêtes en fiscale administraties", *Supplement Sociaal-economische Maandstatistiek* 1, 17-27.

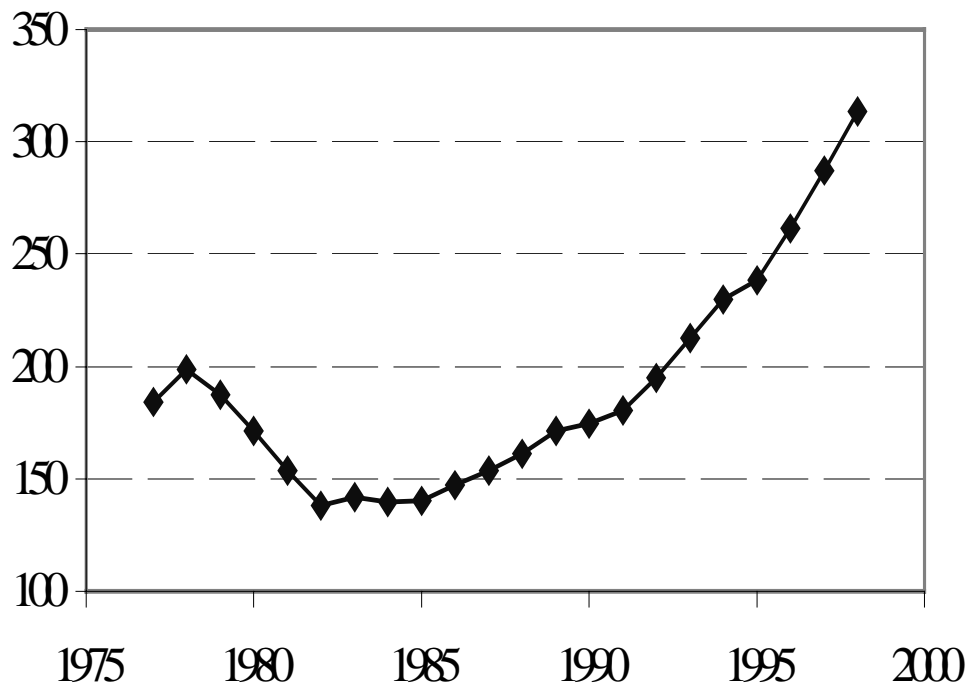
Table 1: Comparison of SEP with Income Panel Survey (IPS)

	SEP		IPS	
	%-owners	Mean (NLGx 1000)	%-owners	Mean (NLGx 1000)
Net worth	100	109	100	136
Gross wealth	100	163	100	192
Checking, saving accounts	100	22	99	29
Stocks, bonds, derivatives	14	66	12	231
Other real estate	5	213	4	168
Primary residence	50	240	43	255
Business equity			8	148
Other assets	8	32	10	74
Debts	58	92	55	100
Mortgage	43	118	38	125
Other debts	28	13	31	34

Source: own calculations based on the SEP and Statistics Netherlands (IPS numbers)

Source	p10	p20	p30	p40	p50	p60	p70	p80	p90	p95	Mean(NLG x 1000)
SEP	-1	2	6	16	38	76	126	189	284	417	109
IPS	-2	1	5	13	31	69	120	192	326	528	136

Figure 1: Huseprices accross years



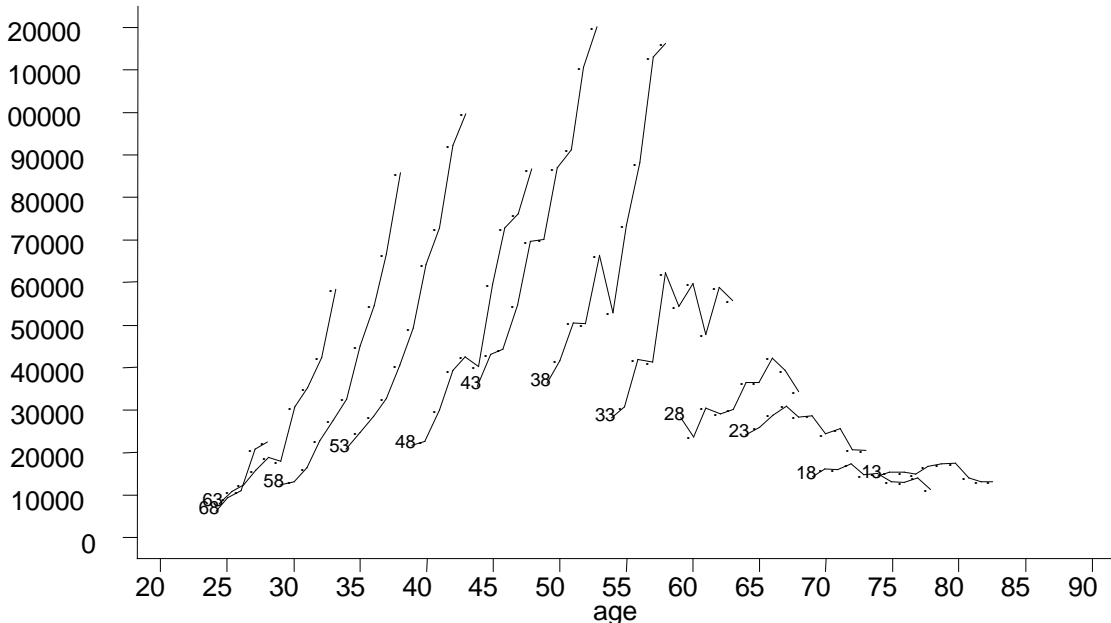


Figure 2a: Median net worth by age and cohort

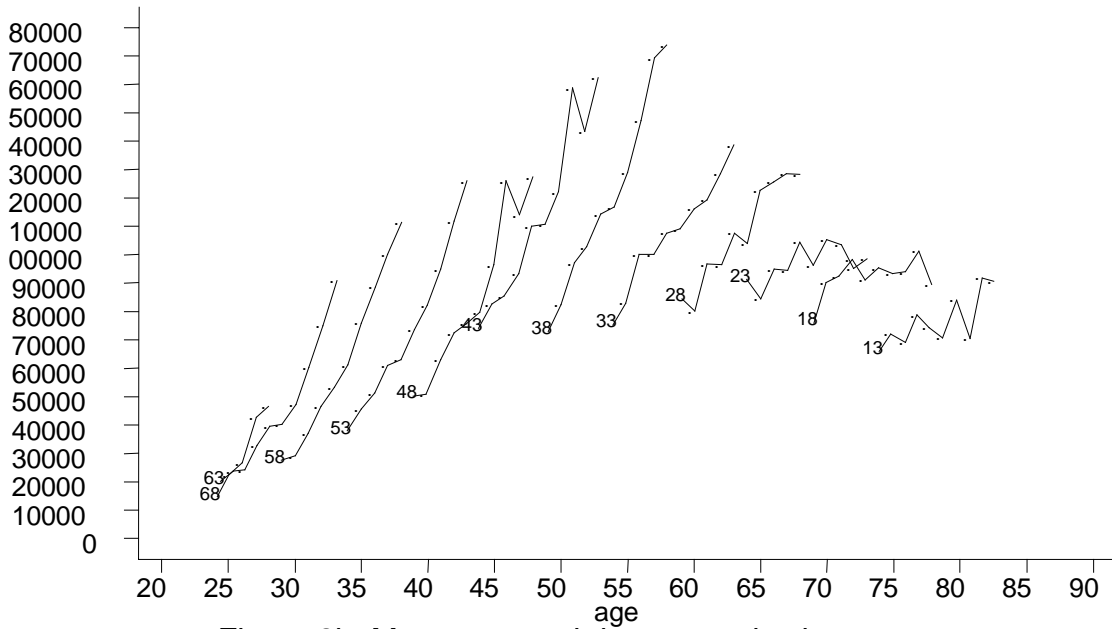


Figure 2b: Mean net worth by age and cohort

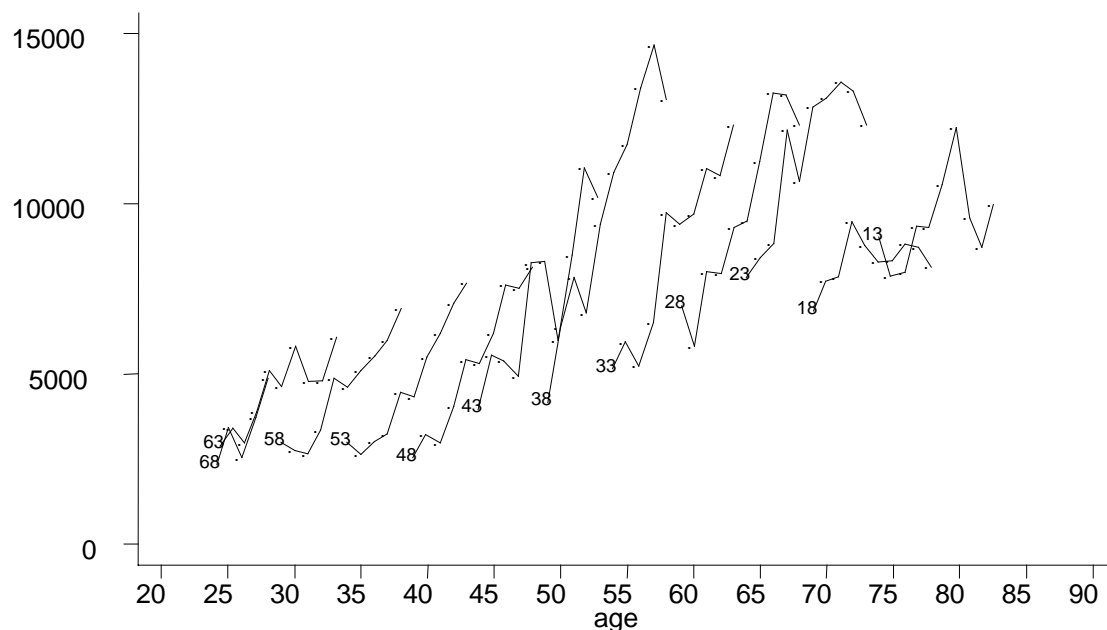


Figure 3a: median financial wealth by age and cohort

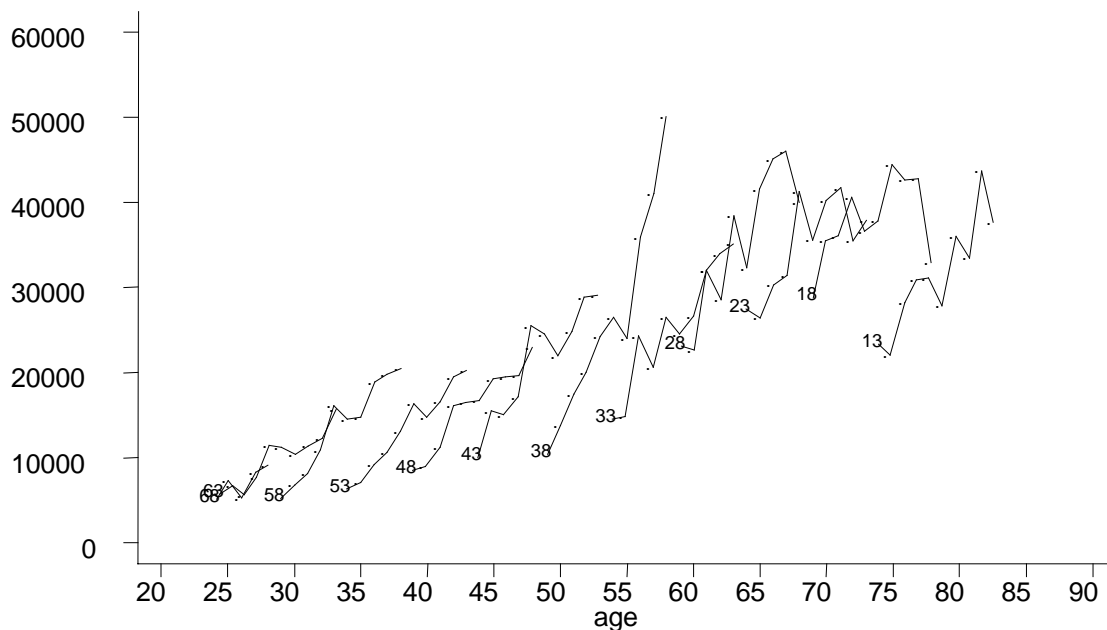


Figure 3b: Mean financial wealth by age and cohort

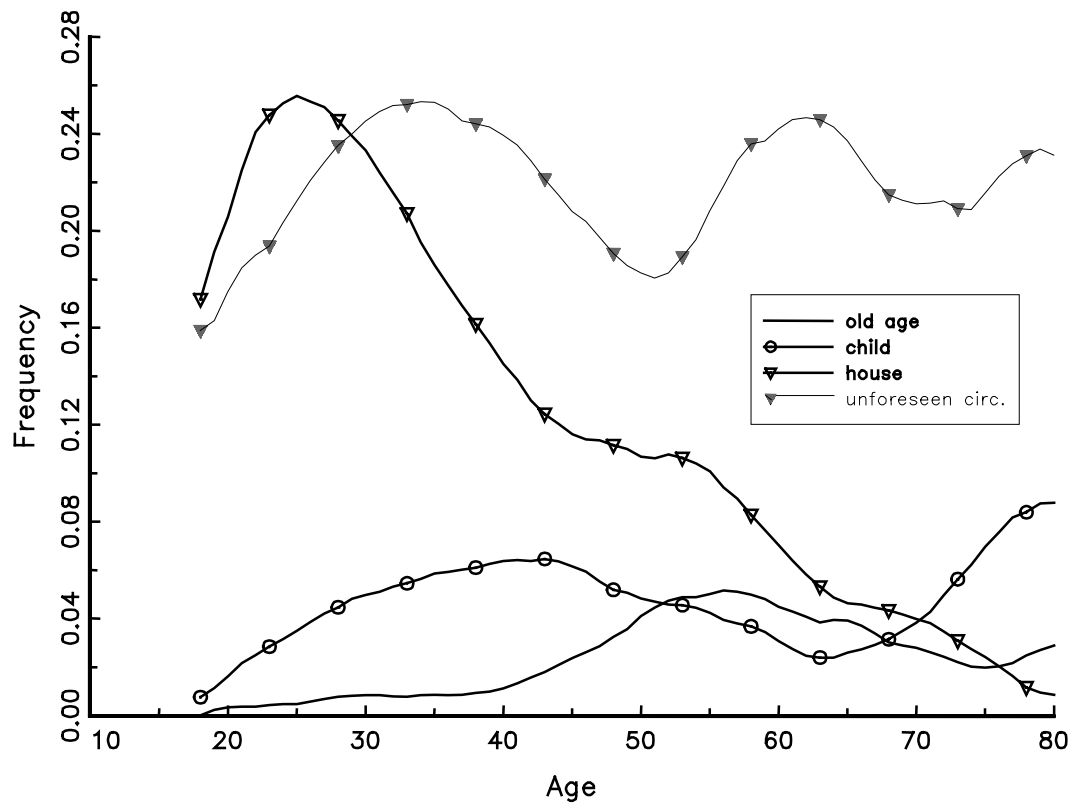


Figure 4: Saving motives across age

Source: Alessie, Lusardi and Aldershof (1997)

Year	Nobs	p10	p20	p30	p40	p50	p60	p70	p80	p90	Mean (NLG)	Std. dev.
1987	4021	-1050	1519	4735	9800	17050	30000	56089	95056	155542	56150	104345
1988	4191	-347	1686	4861	10129	18849	33432	59522	100874	165415	59676	109689
1989	4351	-243	1850	5468	11285	20442	35425	63098	107509	176125	64811	120505
1990	4392	1	1921	5803	12429	23322	40985	70118	114453	188333	69773	125903
1991	4127	47	2741	7296	14625	25754	46815	75043	122765	199850	73960	127940
1992	4384	0	2407	7160	14695	27297	47434	81443	129493	201302	75622	132523
1993	4257	209	3498	8798	18716	34336	58188	95465	143478	218060	85151	141032
1994	4331	0	3106	8585	19320	38493	68053	105135	156259	243384	96239	235320
1995	4235	151	3149	8899	20246	42847	77362	121301	170979	261525	100995	156262
1996	4305	-20	2909	8817	20572	43078	81426	124299	180309	266947	103370	166801

Table 3 (continued): Trends in the decile distribution of net worth										
Year	Nobs	p1	p5	p10	P50	p90	P95	p99	Mean (NLG)	std. dev.
1987	4021	-25500	-6618	-1050	17050	155542	219838	476000	56150	104345
1988	4191	-26587	-5278	-347	18849	165415	233129	497012	59676	109689
1989	4351	-21098	-4203	-243	20442	176125	254157	539028	64811	120505
1990	4392	-18834	-3170	1	23322	188333	274415	570538	69773	125903
1991	4127	-15439	-2272	47	25754	199850	285521	569183	73960	127940
1992	4384	-21368	-3401	0	27297	201302	291493	580838	75622	132523
1993	4257	-14124	-2055	209	34336	218060	313968	621376	85151	141032
1994	4331	-17405	-3337	0	38493	243384	346063	666236	96239	235320
1995	4235	-16062	-2881	151	42847	261525	359519	695487	100995	156262
1996	4305	-19989	-3753	-20	43078	266947	369592	734778	103370	166801

Table 4: Ownership rates of several asset components

Total sample

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Net worth	99.7	99.7	99.8	99.3	99.7	99.6	99.9	99.9	99.9	99.8
Gross wealth	99.5	99.6	99.6	99.1	99.4	99.5	99.7	99.7	99.7	99.7
Financial assets										
With banks	99.3	99.5	99.6	98.8	99.3	99.3	99.7	99.6	99.7	99.7
Checking accounts	99.1	99.5	99.4	98.3	98.5	98.9	99.6	99.4	99.6	99.6
Saving accounts, saving certificates	65.9	69.0	70.9	68.9	74.9	76.6	77.4	78.3	77.7	77.7
Stocks, bonds, derivatives	7.6	8.2	8.9	10.0	11.4	11.7	12.4	13.4	14.0	15.2
Bonds	2.8	3.5	3.6	3.5	4.3	3.6	4.1	4.0	4.2	3.7
stocks, options	5.8	6.2	7.1	8.1	8.8	9.7	10.1	11.3	11.6	13.2
Real estate	44.0	43.5	44.3	45.1	45.9	45.6	48.4	49.2	50.9	51.1
own house	42.7	42.5	43.5	44.4	45.1	44.8	47.1	48.0	49.7	50.5
other real estate	4.6	4.3	4.2	3.8	4.0	4.2	4.6	4.4	4.8	4.0
Other assets	10.3	10.0	6.9	6.8	8.4	8.3	7.9	8.3	7.6	10.2
Debts	54.1	52.7	55.5	53.1	53.4	54.1	53.6	57.5	58.0	59.5
Mortgage	36.0	35.7	37.0	37.2	37.4	37.6	39.7	40.9	42.7	43.7
Other debts	29.7	28.5	32.2	27.6	27.7	28.0	26.4	29.7	27.5	28.1
Nobs	4039	4207	4379	4432	4130	4401	4267	4353	4251	4325

Table 5: trends in the decile distribution of financial wealth												
year	nobs	p10	p20	p30	p40	p50	p60	p70	p80	p90	Mean (NLG)	std. dev.
1987	4021	-5630	-121	1019	2300	4193	6657	10141	16540	33000	14218	52647
1988	4191	-5357	0	1190	2480	4445	7048	11308	18956	37499	15550	57779
1989	4351	-5593	-294	981	2458	4416	7360	11776	19322	39350	17157	63209
1990	4392	-4851	1	1085	2582	4858	8164	13202	21574	44663	18694	65959
1991	4127	-3999	95	1674	3488	6045	9481	15811	25855	52082	21750	66075
1992	4384	-4784	0	1342	3270	5817	9755	16110	27028	55936	20879	65862
1993	4257	-4778	109	1662	3748	6647	10719	16966	28423	56073	21867	66447
1994	4331	-5775	-84	1529	3822	6846	11204	18343	29723	59403	24021	71412
1995	4235	-4769	60	1671	4161	7240	11651	18850	31153	59790	24917	72932
1996	4305	-5058	0	1664	4079	7506	11683	19729	31989	64772	24977	70735

Table 5 (continued): trends in the decile distribution of financial wealth										
year	nobs	p1	p5	p10	p50	p90	p95	p99	Mean (NLG)	std. dev.
1987	4021	-25500	-6618	-5630	4193	33000	219838	476000	14218	52647
1988	4191	-26587	-5278	-5357	4445	37499	233129	497012	15550	57779
1989	4351	-21098	-4203	-5593	4416	39350	254157	539028	17157	63209
1990	4392	-18834	-3170	-4851	4858	44663	274415	570538	18694	65959
1991	4127	-15439	-2272	-3999	6045	52082	285521	569183	21750	66075
1992	4384	-21368	-3401	-4784	5817	55936	291493	580838	20879	65862
1993	4257	-14124	-2055	-4778	6647	56073	313968	621376	21867	66447
1994	4331	-17405	-3337	-5775	6846	59403	346063	666236	24021	71412
1995	4235	-16062	-2881	-4769	7240	59790	359519	695487	24917	72932
1996	4305	-19989	-3753	-5058	7506	64772	369592	734778	24977	70735

Table 6: distribution of net worth by age in 1996								
age group	Nobs	p10	p25	p50	p75	p90	Mean (NLG)	std. dev
<25	236	-6450	-300	2741	10220	24665	9729	32838
25-29	374	-8500	100	16813	61771	132300	43036	72923
30-34	444	168	11100	63541	154423	269310	102825	139469
35-39	510	400	13500	104182	208322	321046	138450	166649
40-44	518	463	19661	112774	217811	364013	150295	160697
45-49	439	400	16096	104487	231328	347343	149762	176892
50-54	348	308	27199	153185	281623	427100	199132	314402
55-59	271	559	15252	126000	280500	456862	210879	314631
60-64	266	900	9039	76088	250000	453000	170597	248677
65-69	315	989	6882	44000	221932	401790	152109	229231
70-74	245	2200	10000	29000	222000	416163	145089	226039
75-79	187	775	4014	15500	99595	310000	99712	201958
80+	153	1500	4354	14000	136327	472000	133853	263239
Total	4306	0	7000	55509	197297	340785	132992	208840

age group	Nobs	p10	p25	p50	P75	p90	Mean (NLG)	std. dev
<25	236	-8500	-2028	1350	5100	13775	2306	12383
25-29	374	-14239	-3688	3500	16900	38000	9514	40037
30-34	444	-9899	305	6500	23735	53580	16729	47422
35-39	510	-7415	500	9162	26041	65701	25870	78651
40-44	518	-7200	407	9072	28433	59000	23788	60645
45-49	439	-8982	586	9520	31707	74125	27439	72254
50-54	348	-9700	972	13995	44387	109927	34004	66772
55-59	271	-6000	1000	15299	51600	126400	59371	172858
60-64	266	-263	2679	14482	51795	121900	40988	81842
65-69	315	300	2781	12695	43000	100658	45304	105891
70-74	245	722	5853	17800	44000	149970	56258	112313
75-79	187	500	2588	10342	40000	74196	35531	87085
80+	153	1500	4100	12000	41000	171900	61086	137936
Total	4306	-6200	972	9200	30500	79760	30646	86715

Table 8: distribution of net worth by deciles of the income distribution in 1996								
Decile	nobs	p10	p25	p50	p75	p90	Mean (NLG)	std. dev
inc<17943	411	-4500	0	-120	-4500	52005	504	106571
17943<inc<=24255	410	-2981	800	6521	26355	159525	44106	111085
24255<inc<=30623	411	-2056	1600	10367	41100	185000	51987	108190
30623<inc<=37337	410	-1137	6100	24175	101998	267700	80286	128071
37337<inc<=44205	411	1852	12514	57702	187642	304127	121953	166968
44205<inc<=51960	410	-964	13404	71923	175500	274875	113716	133757
51960<inc<=59139	411	8700	31548	109518	218717	326390	164309	287687
59139<inc<=68192	410	14820	52948	129268	242355	382767	174417	172481
68192<inc<=81525	411	31000	85012	158471	271575	401790	201422	171681
inc>81525	410	52452	127300	231538	370776	636029	320120	335496

Table 9: distribution of financial wealth by deciles of the income distribution in 1996								
Decile	nobs	p10	p25	p50	p75	p90	Mean (NLG)	std. dev
Inc<17943	411	-5700	0	-366	5557	15000	504	38627
17943<inc<=24255	410	-3753	310	3174	12100	34958	12748	35483
24255<inc<=30623	411	-4745	261	5175	16983	39100	13051	37004
30623<inc<=37337	410	-7797	900	7967	28686	60288	21596	44368
37337<inc<=44205	411	-7225	2258	9429	28000	66500	27191	77910
44205<inc<=51960	410	-11828	-833	7499	31551	58561	19680	42823
51960<inc<=59139	411	-5281	3793	12698	36022	84598	32062	76039
59139<inc<=68192	410	-7616	4607	16472	39100	87356	33434	72474
68192<inc<=81525	411	-1899	6270	20800	49887	112063	44327	79711
Inc>81525	410	-8459	9600	37382	97000	232835	93922	190009

