Survey data on Austrian households' financial wealth: main findings and challenges

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1. Introduction

Austrian financial accounts data show that the Austrian household sector's financial wealth increased by nearly 70% in nominal terms from the end of 1995 to the end of 2005. During this period, while the share of securities in financial assets expanded only marginally, investment shifted from bonds to stocks and mutual fund shares (Andreasch, 2006). With households'[2] financial assets on the rise and their investment in capital markets growing, interest rate and asset price developments are increasingly influencing households' investment behavior.

However, aggregate data reflect only the development of the household sector as a whole and do not provide any information about developments within this sector, which may well be quite heterogeneous. Consequently, micro data on assets, investment and debt structure at the household level provide indispensable information about numerous issues relevant to economic policy.

A growing number of central banks recognize the importance of household microdata and thus conduct surveys to collect such data. Among others, the Federal Reserve Board (Bucks et al., 2006), the Banca d'Italia (Brandolini et al., 2004), the Banco de España (Bover, 2004) and De Nederlandsche Bank conduct such surveys. These surveys provide information important for research about some key issues: the consumption and savings behavior of households in relation to the level and composition of household income, wealth effects on consumption and on the monetary transmission mechanism, the presence of credit rationing, wealth and income distribution, the influence of income risk on households' consumption decisions, the impact of tax incentives on households' savings behavior, general financial knowledge, financial investment decisions, the consequences of different pension systems and financial stability-related aspects such as the exposure of household investments to capital market risk and finally household debt sustainability.

As it is important to link the variables at the center of analysis (eg consumption, investment or financial wealth) with the socioeconomic characteristics of households to analyze all of these issues, an analysis is possible only with the help of detailed microdata.

This paper is organized as follows: The design of the survey on households' financial wealth conducted by the OeNB in 2004 and some basic methodological problems of household wealth surveys are discussed in section 2. Section 3 presents the main results of the OeNB's survey as well as data on household investment and saving behavior provided by the survey. Section 4 gives the main results of some more analytical methods (cluster analysis, logit estimates) to characterize the households' financial situation. The next steps forward are described in section 5. Section 6 summarizes the main findings. The paper concludes with an annex of tables that provides data on selected issues.

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[1] Oesterreichische Nationalbank. The authors would like to thank Thomas Scheiber for research assistance.

[2] The term "households" in this study refers to private households.

2. The Survey design - potential problems and how to deal with non-response

This study presents the results of a (pilot) survey on Austrian households' financial wealth the Oesterreichische Nationalbank (OeNB) conducted in the summer and fall of 2004 and discusses methodical questions. The purpose of the survey was to capture microdata on households' financial wealth, investment and debt. 87 questions covering the sociodemographic characteristics of the households surveyed, assets, asset sources, information sources about financial market topics and approaches to financial market issues. The data were collected by the market research institute FESSEL-GfK, which applied multistage stratified clustered address random sampling to achieve representative results. The survey was carried out by means of face-to-face and written interviews. The interview partner was the household head or the household member with the most accurate knowledge about the respective household's finances. A total of 2,556 analyzable data sets were compiled (in Vienna, 1,026 of an original 1,869 addresses and in the other provinces 1,530 of 2,408 addresses provided results). Generally, households were stratified by the province of residence, except for Vienna, where households were stratified by the 23 political districts. Within the districts, the prospective respondents were selected at random. To make the sample more representative post-stratification weight were computed. The age, occupation and education of the household head and the size of the household, the presence of children up to the age of 14 and the district were factored into the weighting.

Methodical issues

Conducting and designing a survey on household wealth involves many conceptual methodical challenges. This topic is for example discussed in Schürz (2006). In this section some of these issues are discussed with a focus on the Austrian survey.

(a) Sampling errors

Sampling errors arise from estimating a population characteristic by looking at only one portion of the population. Regarding wealth surveys the high variability of wealth in the population and its concentration among a few households poses special challenges. To give an example assume that one is interested in the number of billionaires in a country. With a sample size of e.g. 5,000 households, in most cases there will be no billionaire in the sample. But if by chance a billionaire happens to be in the sample the conclusion that one in 5,000 households has a net wealth of EUR 1 billion is wrong.

To correct for this and to obtain a good depiction of wealth holdings and the use of financial instruments, wealthy households have to be treated differently. For instance, some household surveys oversample wealthy households (i.e. the probability of inclusion in the sample is higher for wealthy households). Oversampling can be based on tax records[3] or on other information (e.g. information concerning residential areas of the rich). The OeNB survey used for this study did not oversample wealthy households. A particular problem in Austria is that the wealth tax was abolished in 1994 and capital income is mostly taxed at the origin. Therefore it is not possible to apply techniques as in the Spanish EFF or in the US SCF.

[3] Eg Barceló, C. and O. Bover (2006) or Kennickell, A. (2005).

(b) Non-sampling errors

Non-sampling errors can stem inter alia from non-response and wrong responses, as households are not willing to participate in the survey at all (unit non-response) or they refuse or are not able to answer certain questions (item non-response). Evidence shows, that rich households are to a lower extent ready to answer financial wealth questions (D'Alessio 2002). Hence, wealth surveys face the problem that non-response is not at random but depends on the wealth of the household, ie on the key variable the survey is interested in.

The case of Viennese household data illustrates how these problems were dealt with in the OeNB survey.

In the survey a total of 1,039 interviews were taken. Missing items were asked by telephone. At this stage 13 cases were removed from the data set, as some respondents refused to answer questions on income and wealth items. Therefore, the data set contains 1,026 interviews. In 492 interviews (48%) at least one question was not answered. Most of these unanswered questions concerned saving forms, saved sums and life insurance contracts. These questions accounted for the largest part of incomplete interviews. For households with older persons and households with more than one person the value of the saved sum of all household members was often not directly available. In all these cases the missing information could be obtained by telephone. However, it is unclear whether the responses given after the respective questions were asked for a second time can be compared with the answers from households that answered right away.

3. Households' financial assets - overview of the main results of the 2004 survey

3.1 Concept of financial assets

The discussion of wealth naturally requires clarification as to what is to be understood under this term (see e.g. Schürz, 2006). In analysing survey data as well as data from financial accounts analysts often apply approaches that are led by the available data. Radner and Vaughan (1987) described this approach as "Net worth consists of all assets less all debts covered by the survey". In research the wealth concept used should depend on the particular question to be analysed. An overview of different wealth definitions is given by Stein (2004).

At this point is seems useful to define the term "wealth" as applied in this study. Gross financial assets were calculated as follows:

gross financial assets = current account holdings[4]

+ savings deposits including deposits made under building loan contracts

+ value of bonds

+ value of stocks quoted on the stock exchange

+ value of mutual fund shares (equity funds, bond funds, mixed funds, real estate funds, hedge funds, money market funds)

+ value of holdings in enterprises

+ accumulated payment of life insurance premiums.

[4] The survey did not cover cash holdings. After all, whether to include cash in assets is a matter of debate (transaction balances, loss of value etc.).

In this study, net financial assets are defined as gross financial assets excluding consumer loans. Net financial assets include neither home loans nor their counterpart, real estate holdings. Taking home loans into account might have distorted the estimate of household assets, whereas there is less danger of distortion in the case of consumer loans, as the value of the consumer goods purchased with such loans generally declines quickly.

In interpreting the data in this study, it should be noted that they come from a single cross section survey. Repeated cross-section surveys or, ideally, a panel would be desirable as a basis for research in most of the areas listed above.

3.2 Net income is the prime determinant of the level of financial assets

The survey shows Austrian households' net assets to average EUR 51,790. The median amounts only to EUR 21,855. This underlines that net financial assets are highly unevenly distributed.

Considered by socioeconomic criteria[5], the level of financial assets is shown to depend markedly on household net income. Households with a monthly net income of less than EUR 750, for example, have net financial assets of EUR 6,621 (median: EUR 3,583); the net financial assets of households with incomes in excess of EUR 3,000 average EUR 117,779 (median: EUR 53,039).

Broken down by the household head's age, the youngest group in the survey (18 to 29 years) has the lowest average net financial assets, namely EUR 15,816 (median: EUR 5,903). Net household financial wealth rises from category to category, peaking at an average of EUR 79,010 in the group of household heads aged 60 though 69.[6] The share of households with negative net financial assets is higher than average among 30- to 39-year-old household heads, as especially many households in this category have taken out consumer loans. A presentation of financial assets across age groups produces a hump-shaped curve, which corresponds to the theoretical expectations about individuals' asset developments according to the life cycle model.[7]

3.3 Debt focuses on housing loans

Principally, only consumer loans are included in the calculation of net financial assets in this study (section 3.1). However, data on home loans and outstanding housing debt were also collected in the survey to complete the picture of household debt. These data and data on total household debt are examined below.

Overall, more than 40% of all Austrian households have taken out loans, 30% of which are for consumption purposes, nearly 60% for housing purposes and over 10% for both purposes. As in the case of financial assets, there is a positive correlation between borrowing and household net income. The relative share of consumer loans, however, is higher among low-income households. If one looks at the different age groups, households headed by 30-to 39-year-olds are most likely to borrow, with both home and consumer loans important in this group. The reason for this age group's high debt is its high demand for long-term consumer goods and investment in housing.

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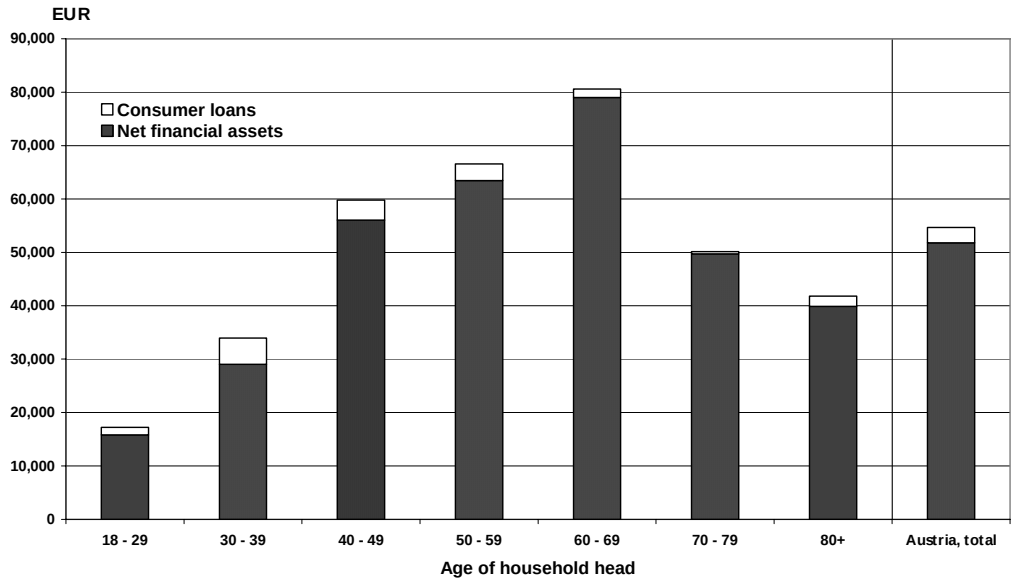
5 A more detailed analysis can be found in Beer et al. (2006).

6 Median household financial assets rise up to the group of 50- to 59-year-olds.

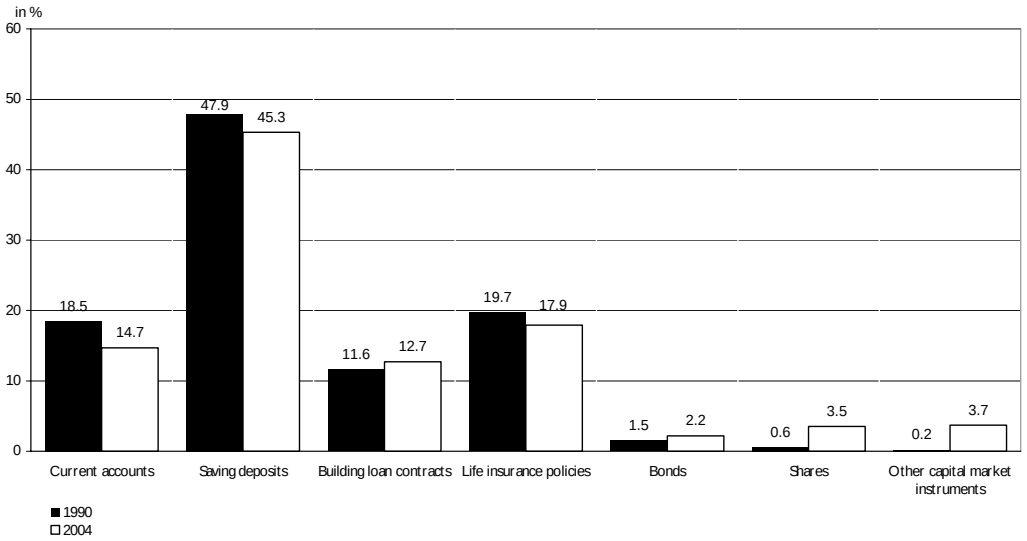
7 In principle cross-sectional data from a (static) age distribution at a specific survey date must not be interpreted as dynamic across the life cycle.

Comparison of net financial assets and consumer loans by age of household head



Source: Authors' calculations based on a survey conducted by FESSEL-GfK.

Change in composition of gross financial assets over time (Vienna)



Source: Mooslechner (1997), Authors' calculations based on a survey conducted by FESSEL-GfK.

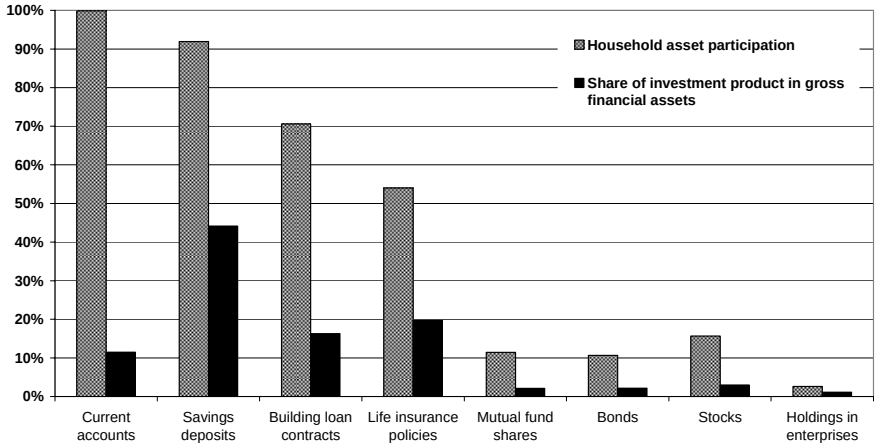
Note: As definitions of life insurance products differ, their comparability is limited.

The average Austrian household has borrowed some EUR 20,000, with home loans accounting for approximately 86% of the loan volume. Households which take out home loans incur an average debt of roughly EUR 40,800 (median: EUR 18,000) through these loans. Factoring in home loans, Austrian households' average financial assets come to just above EUR 35,000 (median: roughly EUR 14,000).

3.4 Savings deposits are the main investment

The average share of savings deposits[8] in gross financial assets is approximately 44%, building loan contracts account for 16%, life insurances for 20%,[9] stocks for 3%, mutual fund shares for 2% and bonds for 2% of gross financial assets. Holdings on current accounts represent 11% of financial assets, with the share declining sharply as income rises. Households with incomes of below EUR 750 hold nearly a third of their financial wealth on average on their personal accounts; the share drops to 5% for households with incomes of over EUR 3,000. Capital market instruments[10] and holdings in enterprises[11] show opposite developments across household categories. The average share of stocks in gross financial assets rises from 0.3% among households with incomes below EUR 750 and rises to 5.8% among households with incomes above EUR 3,000.

Household portfolios and the importance of selected financial assets



Source: Authors' calculations based on a survey conducted by FESSEL-GfK.

Income is obviously an important determinant factor in portfolio decisions. As income rises, the share of assets held on current accounts and in savings deposits, including building loan contracts, declines, whereas the weight of capital market instruments rises. The share of holdings in enterprises in individual household categories also rises in parallel to income. Only 1% of all households with net incomes of less than EUR 750 own stocks, but 33% households with incomes of more than 3,000 own stocks; the pattern is similar for bonds and mutual fund shares.

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8 The average share of investment product j in gross financial assets is calculated as $Share_j = \frac{\sum_{i=1}^{N} \frac{X_{ij}}{BV_i}}{N}$, with $i = 1, \ldots, N$, representing a household in the respective investment category, X_{ij} representing the amount invested by household i in investment product j and BV_i representing the gross financial assets of household i. This calculation method weights all households equally and thus reflects average investment behavior better than other methods.

9 For technical reasons, the value of the stock of life insurance assets was calculated on the basis of premium payments in this survey, so that the actual value of life insurance assets tends to be underestimated.

10 Stocks, bonds and mutual fund shares.

11 The survey questions called for a breakdown by individual or family ownership and stakes in limited liability companies.

3% of households have holdings in enterprises; the average net financial assets of this group come to over EUR 330,000 (median: roughly EUR 115,000), which is far higher than the average net financial assets of the total population.

A similar survey was conducted in Vienna in 1990 (Mooslechner, 1997). While the differences between some definitions and delimitations limits comparisons between the two surveys, some changes in Viennese households' investment behavior can nevertheless be discerned: The average share of holdings on current accounts and savings deposits in Viennese households' gross financial assets has declined markedly, whereas the weight of capital market instruments in their portfolios has risen noticeably. Above all, their holdings of stocks have expanded, but higher investment in mutual fund shares is also likely to have been at the heart of the increase in the category other capital market instruments.[12]

3.5 Saving for retirement: life insurance contracts and savings deposits top other investment

The pension reforms of recent years were aimed at boosting the importance of making private pension provisions in households' financial planning (individual saving for retirement). Respondents were asked to assess the importance of making private provisions for retirement, to state what measures they had taken and to specify the provisions they had made. Unlike the other questions in the survey, these questions on saving for retirement were addressed directly to the respondent and hence do not apply to the entire household. The answers indicated that more than 80% of the persons questioned consider individual saving for retirement (in addition to the statutory scheme) very important or rather important. The importance of individual saving for retirement declines as the age of the household head increases. By profession, owners of businesses and independent professionals see individual saving for retirement as most important.

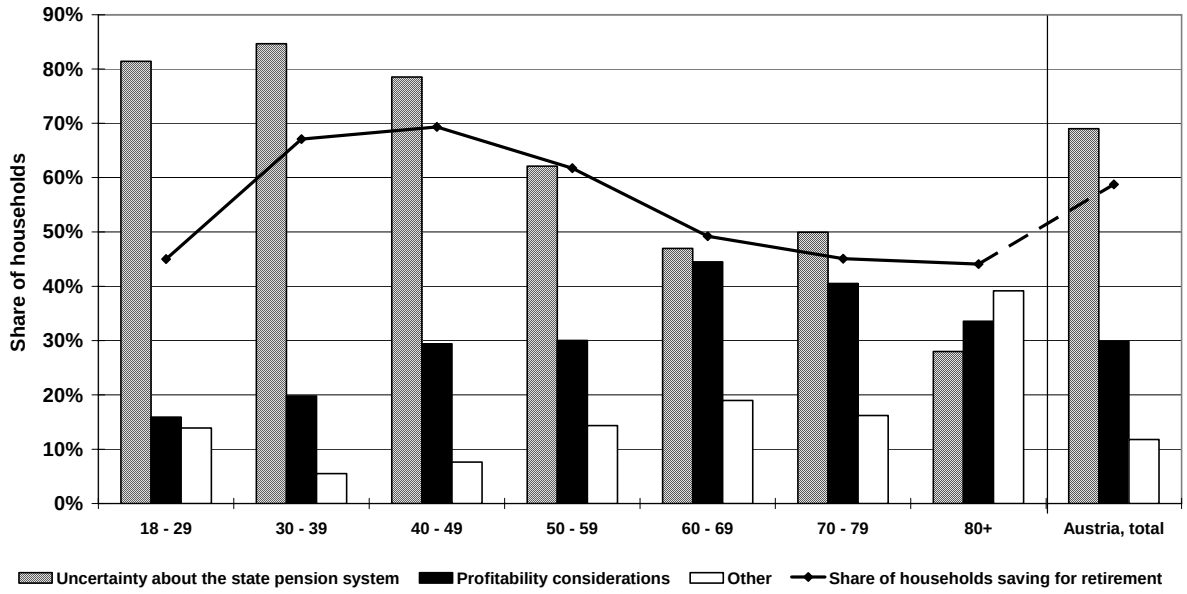
Nearly 60% of the respondents report having saved for their own retirement. The survey covered all forms of investment the respondents considered saving for retirement, ie not just investment specially designed for this purpose (eg subsidized personal pension schemes), but also assets such as passbook savings accounts.

Considered by age, the frequency of individual saving for retirement was highest in the group of 30- to 50-year-olds. This is the age cohort that is most heavily affected by the pension reforms and in which most people work. Broken down by occupational status, saving for retirement is most prevalent among owners of businesses. 71% of all civil servants, whose pensions are better secured than those of other professional groups, save for their own retirement. The higher a group's income is, the more likely it is that its members will provide for old age. Higher income enlarges the scope for saving for old age, but also provides more economic incentive to do so. High incomes prior to retirement are often preceded by a steep life-cycle income curve. Thus, a longer contribution period used to calculate pensions has a negative impact on the size of the expected pension. Moreover, households can expect the income replacement ratio for incomes above the earnings cap for pensions to be low. The incidence of individual saving for retirement also rises strongly in parallel with the size of household financial wealth.

[12] 1990: dividend right certificates, mutual fund shares, participation certificates, real estate bonds; 2004: mutual fund shares, holdings in enterprises.

Saving for retirement and related motives by age of household head

Multiple responses



Source: Authors' calculations based on a survey conducted by FESSEL-GfK.

Logit estimates (see also section 4.2) show that income and age are highly significant for the investment in individual retirement savings, as are the occupational status, the housing status and education. The higher their education level is, the more likely household heads are to save for retirement themselves.

3.6 Households' saving behavior: roughly half of all households save regularly

Households report that the main source of savings is disposable income not required for consumption (relinquishment of consumption). As income and financial assets rise, the role of inheritances increases. 20% of households with very high net financial assets name inheritances as a major source of their savings. By comparison, about 9% of the total population lists inheritances as a source of savings.

More than half of the respondents report that they save regularly or make deposits under a savings plan; 44% save at irregular intervals or put aside whatever income is left at the end of the month. 5% of households are unable to save. The higher households' income and financial wealth are, the more they save on a regular basis. 24% of households with net incomes of below EUR 750 state that they are unable to save; 12% have no savings.

4. Some further approaches to draw conclusions about the financial position of households

4.1 Cluster analysis: 13% of all households feature a strong tendency to invest in capital markets

A cluster analysis[13] was performed directly on the basis of households' investment strategies rather than on the basis of their socioeconomic characteristics. Households are grouped into clusters that can be considered the statistically most homogeneous groups in terms of investment strategies. The aim is to draw conclusions about demographic characteristics on the basis of the financial products[14] these households have chosen to invest in and in this manner to identify possible determinants of the investment decision.

Table 1

Results of the cluster analysis

	Cluster 1	Subcluster 1a Traditional investors	Subcluster 1b Traditional investors who tend to invest in more sophisticated products	Cluster 2 Capital market-oriented households	Cluster 3 Households with a minimum of investment products (passbook savings account)	Cluster 4 Capital market orientation with a lower volume of investment
	%					
Distribution of households	52.7	39.8	12.8	12.6	22.7	12.0
	EUR					
Gross financial assets, mean	43,845	35,285	70,385	170,317	20,787	44,277
Gross financial assets, median	25,486	21,775	35,785	94,614	7,634	24,713
Net financial assets, mean	41,186	32,492	68,141	166,661	18,618	39,940
Net financial assets, median	23,011	19,788	35,701	92,214	6,590	23,070
Consumer and housing loans, mean	19,924	19,050	22,634	28,782	10,983	25,058
Distribution of capital market instruments	% of households					
Mutual fund shares	5.2	4.6	6.9	49.9	2.9	14.3
Bonds	5.4	4.4	8.4	51.2	2.9	5.5
Stocks	3.7	2.2	8.6	84.6	4.4	16.6
Equity investment	2.2	2.6	1.0	6.7	1.1	2.8
Individual saving for retirement						
Yes	61.1	58.5	69.2	84.4	37.3	62.1

Source: Authors' calculations based on a FESSEL-GfK survey.

The cluster analysis identifies four clusters; the first cluster may additionally be subdivided into two subclusters (clusters 1a and 1b). Cluster 1 covers "traditional" investors. The financial wealth of households in cluster 1a is limited to deposits, building loan contracts and life insurances. The prevalence of building loan contracts and the average share of building loan contracts in gross financial assets are highest in this cluster. Households in cluster 1b invest above all in savings products with a higher return (eg a capital savings account, premium-aided savings). The households subsumed in cluster 2 are capital market oriented. The average share of capital market instruments in these households' financial assets is around 30%. The households in cluster 3 may be defined as those with a minimum of investment products, as all investment products are only represented to a small degree. The

[13] The methods used for the cluster analysis are described in the appendix.

[14] See the appendix for the variables/financial products used.

households in cluster 4 have a low level of assets, but endeavor to diversify their investment. Therefore, in relative terms, their investment in capital market instruments is high.[15]

4.2 Logit estimates: income determines investment decisions

The socioeconomic characteristics of households play a key role in their choice of investment products. The question of which of these characteristics has the biggest impact on households' investment strategy can be analyzed using logit models that estimate the probability of holding a certain investment product as a function of specific household characteristics.

Table 2

Influence of socioeconomic characteristics on investment decisions

	Building loan contract	Stocks	Mutual fund shares	Bonds	Life insurance policies	Capital savings account
Employment of the household head						
Occupational status (worker, employee, entrepreneur)						
Gender of household head						
Marital status of household head						
Housing status (owner-occupied versus rental)	***	**	**	*	*	
Education of household head						
Employment status (private sector/public sector/self-employed)				***		
Household size	***	**				
Age of household head				***	***	**
Household net income	***	***	***			

Source: OeNB.

Note: Level for significance: * = <0.1; ** = <0.05; *** = <0.01. Shading indicates the interaction between age and household net income.

Income is shown to be a decisive and highly significant determinant of households' investment decisions in the case of all investment products.[16] Moreover, for capital savings accounts and bonds, but also for life insurance contracts, there is a link to age (which is in turn linked with income); the probability of a household owning these products rises with age, as income does. The housing status is one important determinant for the ownership of a building loan contract. The regression coefficients show that homeowners tend to own such contracts more often than renters do. Moreover, household size has an effect on investment decisions. As expected, the more people there are in a household, the greater the probability is that the household owns a building loan contract.

The housing status also plays a major role in stock and mutual fund share investment. For bonds, the employment status is important: The probability of owning bonds declines for the self-employed, for instance.

[15] For a more detailed description of households grouped in the clusters, see Beer et al. (2006).

[16] Various criteria were used to assess the goodness of the logit estimates. To calculate classification accuracy, logit coefficients were used to determine the probability with which a household owns a particular investment product. While goodness criteria such as Nagelkerke's R square, Cox and Snell's R square and the total classification accuracy produce fairly satisfactory results, the classification accuracy of both subgroups (ownership/nonownership) is only moderately satisfactory.

5. Steps forward

One major step forward was taken in summer 2006. Austria was the tenth country that joined the Luxembourg Wealth Study (LWS).[17] A network, aiming at assembling existing micro data on household wealth into a coherent database to enable cross-country comparisons on household net worth, portfolio composition and wealth distribution. Furthermore, it provides a platform of experts of micro-data on household net worth to share accumulated knowledge and best practices. The integration of the Austrian data in the LWS is under way and should be completed by November 2006.

Table 3

LWS countries and datasets

LWS countries and datasets

Austria	**Survey of household financial wealth**	**2004**
Canada	Survey of financial security	1999
Cyprus	Survey of consumer finances	1999-2002
Finland	Household wealth survey	1994-1998
Germany	Socio-economic panel study	2002
Italy	Survey of household income and wealth	1995-1998-2002
Norway	Income and wealth survey	1997-1999-2002
Sweden	Wealth survey	1997-1999-2002
United Kingdom	British household panel study	2000
United States	Panel study of income dynamics	1999-2001
	Survey of consumer finances	1998-2001

Source: LWS.

In the design and the implementation of the wealth survey there is clearly room for improvement. If the survey were to be repeated, the following changes would seem appropriate:

More time and resources should be devoted to interviewer training (including a better involvement of and information exchange between the central banks analysts and the interviewers). The aim of training interviewers is to improve data collection. Furthermore, trained interviewers should be able to persuade reluctant households to participate in the survey and to monitor the quality of the information collected during the interview. Hence, interviewer training should have a positive impact on both the participation of households in the survey and the quality of the data.

Another step to increase the quality of the data is to replace paper and pencil interviews (PAPI) by computer assisted personal interviews (CAPI). Due to the plausibility checks incorporated in the questionnaire the latter allows for an efficient interviewing and data collection process and guarantees in the end a more precise data set at an earlier stage. Additionally, paradata (ie data on the interviewing process) should be collected. These data

[17] Further information on the LWS project is available at http://www.lisproject.org/lws.htm. A description of this project and Initial results for eight countries can be found in Sierminska et al. (2006), which was also presented at this conference.

can help to reduce unit and item non-response in future surveys and to improve data quality over time.

As mentioned above, oversampling of wealthy households would be highly desirable to get a more accurate depiction of households' wealth. Such techniques are not yet available for Austria, they have to be developed.

If the survey were to be repeated more questions on income (a more detailed breakdown by income sources) and additionally questions on non-financial wealth and consumptions should be added.

Conducting the survey regularly would be highly desirable. Ideally, a panel component should be included.

6. Summary and conclusions

This study discusses the design of the (pilot) survey conducted by the OeNB on households' financial wealth in 2004 and presents an overview of the results of the survey. The central bank's survey of autumn 2004 was the first attempt since 1990 to gather microdata on households' financial wealth in Austria.

Differences in the size and composition of wealth and debt among households are today considered an important source of information for a number of important economic policy issues. Such issues include the transmission of monetary policy impulses or the consumption and saving behavior of households as well as changes in investment structures in financial markets triggered by pension system reforms.

OeNB survey results reveal some interesting links: For example, household income is shown to have a dominant influence both on the size of financial wealth and on investment structures. Moreover, factors like education and the occupational status of the household head play a determining role. These factors, in turn, exhibit a connection to household income. Somewhat more than 40% of Austrian households have taken out loans. Examined by the purpose of the loan, housing loans predominate. The highest level of household debt was found among households headed by persons aged 30 to 39, the reason for indebtedness being the purchase of consumer durables and investment in owner-occupied housing. Consequently, most of the households with negative net financial wealth belong to this category.

Savings deposits and deposits on building loan contracts remain by far the most important investment vehicles of households. 93% of all households have savings deposits; 71% have building loan contracts. These two forms of investment account for an average share of 60% of financial assets. The importance of capital market instruments in household portfolios has risen by comparison to the 1990 survey. Today, 16% of households already state that they own stocks, with stocks representing 7.5% of financial assets. 11% of households own bonds, 11% own mutual fund shares.

The 2004 survey will serve as the basis for further research on topics like asset poverty, financial capability, risk orientation, over-indebtedness and other financial stability issues.

Overall, the results demonstrate the usefulness of microdata on household financial assets and debt for analytical purposes. Microdata on investment permit the establishment of an analytical link between the risk undertaken by households and their capacity to absorb adverse price developments, which is determined among other things by the size of income and financial wealth. Similarly, microdata on debt allow for a comparison of debt with the assets purchased with the loans that constitute debt. The data also make it possible to assess the influence of interest rate and income shocks on households' capacity to repay loans. Households' different levels of financial wealth and differences in portfolio composition

raise expectations that the impact of monetary policy on wealth and hence on consumption and savings also differs markedly among households. Finally, the current promotion of individual saving for retirement by economic policymakers is inducing changes in household behavior, suggesting that such investment will have a major impact on macroeconomic variables and financial markets in the future.

Appendix

Calculation of credit aggregates

Housing credits are loans taken out to buy, restore, construct, adapt or renovate houses or apartments. Loans taken out for other purposes were classified as consumer credits. The households surveyed were asked to state the purpose and size of various types of loans (e.g. bank loans, private loans). No distinction by the purpose of a loan was possible in cases in which households had taken out more than one loan of a particular type for different purposes. In this case, the loans were subsumed under housing loans. Thus, it is likely that the volume of consumer loans is (relatively) understated and the volume of housing loans is (relatively) overstated.

Calculation of the value of life insurances

Households were asked to provide the following information about life insurance contracts: the year in which they took out a life insurance policy, the premium amount and the frequency of premium payments. The value of life insurances is not known and is difficult to assess, as life insurance contracts are not traded in a standardized form like quoted stocks, bonds and mutual fund shares. This approach is considered the best possible approximation; however, the amount invested is highly likely to be understated.

Cluster analysis

Ward's hierarchical clustering method and the partitioned K-means procedure were used as complements. First, the number of clusters was determined with Ward's hierarchical method; this number was confirmed by means of the K-means algorithm.

With the K-means procedure, the centroid of a cluster represents the respective cluster. The procedure defines this centroid and assigns the remaining households to the cluster to whose center they are closest. A three-stage iterative algorithm is used. Starting from an initial assignment of the data points to the cluster centroids (in this case from the group mean values of the clusters determined by means of Ward's method), the households are assigned to the cluster centroids in a way that minimizes the sum of squares of distances between the data and the corresponding cluster centroids. In a next step, the cluster centroids are recomputed. This iteration process is terminated once the modification of cluster centers no longer produces changes in the assignment of the classification objects.

The variables used to draw conclusions about demographic characteristics were the holding of passbook savings accounts, savings accounts, capital savings accounts, premium-aided savings, building loan contracts, life insurance contracts, bonds, stocks, mutual fund shares and holdings in enterprises.

Logit estimates

The following characteristics were taken into account in the computations as independent category variables:

- Head of household: education level, employment, occupational status, type of employment, gender, marital status, age; and
- Household: housing status, size of household, household net income.

Annex of tables

Annex 1

Households' financial assets

			Gross financial assets		Consumer loans	Net financial assets (3-4)		Housing loans	Total loans (4+6)	Net financial assets 2 (3-7)	
	1	2	3		4	5		6	7	8	
	Frequency		Mean	Median	Mean	Mean	Median	Mean	Mean	Mean	Median
		%	EUR								
Austria total	**1,430**	**100.0**	**54,666**	**23,579**	**2,876**	**51,790**	**21,855**	**16,758**	**19,634**	**35,032**	**14,135**
Age of household head											
18 to 29	112	7.8	17,217	6,648	1,402	15,816	5,903	12,300	13,701	3,516	1,386
30 to 39	271	19.0	33,971	17,047	4,920	29,050	13,654	25,280	30,201	3,770	3,097
40 to 49	358	25.0	59,799	35,014	3,749	56,049	34,436	25,725	29,475	30,324	19,787
50 to 59	237	16.6	66,558	36,712	3,101	63,457	35,475	19,156	22,257	44,301	26,155
60 to 69	247	17.3	80,610	29,397	1,600	79,010	28,210	5,448	7,048	73,562	24,848
70 to 79	164	11.5	50,144	17,377	432	49,712	16,756	2,861	3,293	46,851	16,182
80 and over	41	2.8	41,801	16,107	1,906	39,895	14,100	3,976	5,882	35,918	12,740
Occupation of household head											
Self-employed	43	5.0	48,975	14,889	10,762	38,213	11,521	17,360	28,122	20,852	6,928
Entrepreneur	50	5.8	195,101	43,151	5,323	189,778	38,372	26,183	31,506	163,595	18,278
Employee	420	48.4	52,610	27,059	4,011	48,599	24,172	28,015	32,026	20,584	10,935
Public servant	150	17.3	67,468	41,453	3,684	63,784	37,473	22,469	26,153	41,315	24,600
Farmer	19	2.2	35,148	26,722	311	34,838	26,722	9,955	10,266	24,883	10,507
Worker	185	21.3	27,513	17,633	2,974	24,539	15,528	17,862	20,836	6,677	8,475
Jobholders total	**868**	**60.7**	**57,495**	**26,319**	**4,065**	**53,429**	**23,585**	**23,861**	**27,927**	**29,568**	**11,805**
Not employed total	**562**	**39.3**	**50,296**	**20,453**	**1,038**	**49,257**	**19,392**	**5,787**	**6,825**	**43,471**	**16,538**
Net household income											
Up to EUR 749	76	5.3	6,912	3,775	291	6,621	3,583	2,144	2,435	4,477	2,942
EUR 750 to EUR 1,349	297	20.8	16,082	8,753	1,278	14,804	7,750	6,323	7,602	8,480	6,550
EUR 1,350 to EUR 2,249	506	35.4	43,385	23,341	2,209	41,176	21,415	12,514	14,723	28,662	16,049
EUR 2,250 to EUR 2,999	264	18.5	57,151	37,380	2,172	54,979	36,117	23,212	25,384	31,767	21,493
EUR 3,000 and over	287	20.1	124,814	59,768	7,035	117,779	53,039	32,966	40,001	84,813	38,786
Net financial assets											
Net financial assets = median	715	50.0	10,757	9,175	4,125	6,632	7,198	12,229	16,354	-5,597	4,300
Net financial assets > median	288	20.2	34,096	32,344	1,920	32,176	31,748	21,912	23,832	10,264	27,522
Net financial assets > double the median	289	20.2	68,648	64,400	1,022	67,626	63,942	21,865	22,887	45,761	56,987
Net financial assets > five times the med	138	9.7	295,417	179,628	2,279	293,139	179,446	18,770	21,048	274,369	167,800
Marital status of household head											
Single	249	17.4	34,059	10,798	2,359	31,701	10,203	7,609	9,967	24,092	6,617
Married/partnership	851	59.5	70,395	36,031	3,409	66,986	34,514	22,253	25,662	44,733	22,146
Divorced/separated	173	12.1	29,062	14,325	2,977	26,085	11,268	13,749	16,727	12,335	8,970
Widowed	157	11.0	30,312	13,000	696	29,617	12,761	4,806	5,502	24,811	10,975
Housing status											
Owner-occupied housing	798	55.8	64,119	33,158	2,722	61,398	31,935	26,613	29,334	34,785	18,632
Rental housing	633	44.2	42,744	14,187	3,070	39,674	11,911	4,331	7,401	35,343	10,670
Education level of household head											
Mandatory schooling at most	195	13.6	20,197	8,802	1,050	19,148	7,835	6,460	7,510	12,687	7,139
Apprenticeship, vocational/technical school	729	51.0	42,360	21,774	2,462	39,899	19,859	15,109	17,570	24,790	13,991
Academic secondary school, higher-level technical and vocational school	329	23.0	78,503	31,235	3,512	74,990	30,445	23,036	26,548	51,954	19,463
Fachhochschule, University	177	12.4	98,998	45,179	5,411	93,586	41,381	23,209	28,621	70,377	29,387

Source: Authors' calculations based on a FESSEL-GfK survey.

Annex 2

Holdings of savings and capital market instruments

Share of households with investments (%)

	Passbook Savings Account	Building Loan Contract	Mutual Fund Shares	Bonds	Stocks	Holdings in enterprises
Austria total	**85.0**	**70.6**	**11.4**	**10.6**	**15.7**	**2.6**
Age of household head						
18 to 29	69.1	60.3	8.4	5.7	14.8	2.9
30 to 39	82.4	68.2	14.1	6.8	15.2	2.6
40 to 49	87.5	83.6	15.0	11.4	17.5	3.6
50 to 59	87.1	75.3	9.7	12.2	17.2	1.9
60 to 69	86.1	73.6	9.9	14.3	17.2	3.4
70 to 79	87.7	48.4	8.4	12.6	10.5	0.7
80 and over	94.3	44.2	2.8	3.9	6.7	0.0
Occupation of household head						
Self-employed	73.0	59.0	14.0	9.4	20.1	7.4
Entrepreneur	69.1	59.8	20.4	11.3	19.0	28.5
Employee	84.9	77.3	16.0	11.0	19.6	2.2
Public servant	88.4	84.7	15.2	14.0	22.8	3.0
Farmer	95.4	82.2	7.4	10.9	4.1	0.0
Worker	80.4	73.8	6.0	6.1	7.0	0.2
Jobholders total	**83.3**	**76.0**	**13.7**	**10.4**	**17.1**	**3.6**
Not employed total	**87.7**	**62.2**	**7.9**	**10.9**	**13.4**	**1.0**
Net household income						
Up to EUR 749	63.4	39.2	0.3	1.9	1.1	0.0
EUR 750 to EUR 1,349	83.9	54.0	3.5	3.0	5.3	0.2
EUR 1,350 to EUR 2,249	83.9	70.6	8.4	8.9	11.0	2.4
EUR 2,250 to EUR 2,999	90.7	82.4	15.0	13.4	21.9	2.9
EUR 3,000 and over	88.6	85.2	24.5	21.4	32.7	5.8
Net financial assets						
Net financial assets = median	79.0	57.1	3.6	2.3	4.4	0.4
Net financial assets > median	90.7	81.2	9.2	7.3	12.0	3.0
Net financial assets > double the median	91.6	86.6	16.6	15.7	25.9	2.4
Net financial assets > five times the median	90.6	84.8	45.7	50.0	59.8	13.5
Marital status of household head						
Single	74.8	58.5	11.3	7.9	12.1	2.8
Married/partnership	89.1	79.0	13.6	13.1	19.4	3.2
Divorced/separated	79.2	61.8	5.1	6.2	10.7	0.9
Widowed	85.3	53.7	6.7	6.7	6.6	0.9
Housing status						
Owner-occupied housing	89.0	78.6	13.1	13.3	19.4	3.0
Rental housing	79.9	60.5	9.3	7.3	10.9	2.1
Education level of household head						
Mandatory schooling at most	81.3	53.0	3.1	3.4	5.5	0.0
Apprenticeship, vocational/technical school	86.1	71.2	8.4	8.4	12.1	2.1
Academic secondary school, higher-level technical and vocational school	82.7	75.6	16.2	14.1	22.9	3.9
Fachhochschule, University	88.7	78.0	24.3	21.3	28.0	4.8

Source: Authors' calculations based on a FESSEL-GfK survey.

Annex 3

Individual saving for retirement

% of respondents

	Have you taken steps to save for retirement?				Why are you saving for retirement?[1]		
	yes	no	don't know	total	uncertainty about the state pension system	profitability considerations	other
Austria total	**58.8**	**38.6**	**2.6**	100	**69.0**	**29.9**	**11.8**
Age of household head							
18 to 29	45.0	52.0	3.0	100	81.4	15.9	13.9
30 to 39	67.1	29.5	3.4	100	84.7	19.8	5.5
40 to 49	69.3	28.6	2.1	100	78.5	29.4	7.7
50 to 59	61.7	36.5	1.8	100	62.1	30.0	14.3
60 to 69	49.2	48.8	2.0	100	47.0	44.5	18.9
70 to 79	45.1	50.7	4.3	100	49.9	40.5	16.2
80 and over	44.1	52.6	3.4	100	28.0	33.6	39.2
Occupation of household head							
Self-employed	65.8	32.4	1.8	100	73.7	31.6	7.0
Entrepreneur	78.7	20.3	1.0	100	73.6	30.4	10.1
Employee	65.9	31.7	2.4	100	79.0	25.3	10.1
Public servant	70.6	25.9	3.5	100	74.3	33.9	5.6
Farmer	47.4	51.2	1.4	100	78.7	45.0	0.0
Worker	63.3	34.4	2.3	100	80.2	18.8	10.2
Jobholders total	**66.5**	**31.1**	**2.4**	100	**77.8**	**26.5**	**9.0**
Not employed total	**46.8**	**50.3**	**2.9**	100	**49.8**	**37.6**	**17.5**
Net household income							
Up to EUR 749	37.1	58.6	4.3	100	67.8	17.8	21.4
EUR 750 to EUR 1,349	42.1	54.1	3.9	100	65.6	29.6	13.6
EUR 1,350 to EUR 2,249	58.4	39.1	2.5	100	68.6	26.7	12.5
EUR 2,250 to EUR 2,999	66.1	31.3	2.6	100	68.2	32.7	12.6
EUR 3,000 and over	75.7	23.2	1.1	100	71.8	33.6	7.8
Net financial assets							
Net financial assets = median	45.7	50.3	4.0	100	72.8	20.8	14.7
Net financial assets > median	66.2	32.5	1.2	100	73.3	29.3	7.9
Net financial assets > double the median	71.8	26.8	1.4	100	67.0	33.8	10.1
Net financial assets > five times the median	83.5	16.0	0.5	100	54.6	50.2	13.0
Marital status of household head							
Single	57.6	40.2	2.3	100	78.9	19.5	11.2
Married/partnership	63.8	33.9	2.3	100	68.5	32.2	10.7
Divorced/separated	52.7	44.9	2.4	100	74.5	28.5	9.9
Widowed	40.0	54.8	5.2	100	42.9	36.6	25.4
Housing status							
Owner-occupied housing	63.6	34.4	2.0	100	68.4	33.7	10.6
Rental housing	52.7	44.0	3.3	100	69.9	24.0	13.5
Education level of household head							
Mandatory schooling at most	40.2	54.6	5.3	100	71.6	20.5	12.8
Apprenticeship, vocational/technical school	57.9	39.5	2.7	100	69.2	27.7	11.6
Academic secondary school, higher-level technical and vocational school	65.6	32.7	1.7	100	68.1	37.5	10.6
Fachhochschule, University	70.3	28.7	1.0	100	68.4	30.6	12.9

Source: Authors' calculations based on a FESSEL-GfK survey.

Note: These two questions were asked of the respondent directly (not necessarily the household head).

[1] Multiple answers were possible. The sample consists of those households which have saved for retirement.

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