



**Institut für  
Volkswirtschaftslehre  
und Statistik**

No. 594-00

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**Beiträge zur  
angewandten  
Wirtschaftsforschung**



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# The German Savings Puzzle

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Paper Prepared for the Special Issue of “Research in Economics”

## Abstract

Germany has one of the most generous public pension and health insurance systems of the world, yet private savings are high until old age. Savings remain positive in old age, even for most low income households. How can we explain what we might want to term the “German savings puzzle”?

We provide a complicated answer that combines historical facts with capital market imperfections, housing, tax and pension policies. The first part of the paper describes how German households save, based on a synthetic panel of four cross sections of the German Income and Expenditure Survey ("Einkommens- und Verbrauchsstichproben") collected between 1978 and 1993. The second part links saving behavior with public policy, notably tax and pension policy.

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their able research assistance. We appreciate the financial support by the Deutsche Forschungsgemeinschaft (Sonderforschungsbereich 504) and by the EU (TMR-Project „Savings, Pensions and Portfolio Choice“).

# The German Savings Puzzle

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## Introduction

This paper describes how German households save and why the observed savings patterns might have emerged. In the descriptive part of the paper, we present cross sectional and longitudinal patterns of household saving. We then explain why these saving patterns have likely been strongly influenced by public policies. These policies include capital taxation and subsidies to specific forms of saving, and, most notably, pension policies.

We face a “German savings puzzle”: Germany has one of the most generous public pension and health insurance systems of the world, yet private savings are high until old age.<sup>1</sup> We provide a complicated answer to the questions raised by that puzzle, combining historical facts with capital market imperfections, housing, tax and pension policies.

The paper is a brief version of the German country chapter in Börsch-Supan (2001). The reader is referred to this volume for details on methodology and results. This summary paper is set up as follows: Section 1 briefly describes our data sources. Section 2 presents cross-sectional and longitudinal profiles of various saving measures by age and birth cohort. Section 3 looks at financial, real and pension wealth. Section 4 links the observed saving and wealth patterns to public policy, and Section 5 concludes.

## 1. Data

We base our description of savings behavior in Germany on four cross sections of the German Income and Expenditure Survey (“Einkommens- und Verbrauchsstichproben,” EVS). The EVS is collected every five years by the German Bureau of the Census.<sup>2</sup> The design roughly corresponds to

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<sup>1</sup> A survey of the German pension system is provided by Börsch-Supan and Schnabel (1998).

<sup>2</sup> Descriptive analyses of household wealth have been carried out by the German Bureau of the Census (Euler, 1985, 1990; Guttman, 1995). The 1978-1988 surveys have been analyzed with respect to household savings by

that of the U.S. Consumer Expenditure Survey. The surveys include a very detailed account of income by source, consumption by type, saving flows, and asset stocks by portfolio category. As opposed to earlier waves, the 1993 wave also includes households in East Germany, and foreign residents in West Germany. For comparability reasons, we will restrict our analysis to the subsample of West Germans.

The surveys are representative of all households with annual gross incomes below DM 300,000.<sup>3</sup> They include about 45,000 households in each wave. These large sample sizes provide sufficiently large cell sizes in each age category, even for old ages. The data exclude the very wealthy households and the institutionalized population. The former represent about two percent of households. For this reason, the data cannot be expected to add up to national accounting figures. For example, aggregating household savings in the EVS 1983 yields a net private saving rate of 12.3 percent while the corresponding figure reported by the Deutsche Bundesbank is 13.6 percent.<sup>4</sup> Omission of the institutionalized is serious only among the very old. Although less than four percent of all persons aged 65 and more in Germany are institutionalized, this percentage increases rapidly with age and is estimated to be about 9.3 percent of all persons aged 80 and more. Elderly in institutions are more likely to have few assets and no savings, hence, we probably overestimate the assets of elderly persons.

Households in the quinquennial EVS cross sections are not necessarily the same and cannot be matched. It is therefore impossible to construct a panel of individuals. This would be most desirable for the identification of life-cycle saving behavior and the separation of age and cohort effects. Lacking longitudinal data on savings behavior in Germany, we resort to the construction of a synthetic panel. We aggregate the cross sectional data into age categories and identify adjacent age groups across waves. The large sample sizes are of considerable help for the synthetic cohort approach because aggregation units can be defined sufficiently narrow to assure homogeneity without a major loss of statistical precision.

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Börsch-Supan and Stahl (1991), Velling (1991), Lang (1998), and Börsch-Supan (1992, 1994).

<sup>3</sup> More details of the multi-stage quota sample design can be found in the full version of this paper (Börsch-Supan, Reil-Held, Rodepeter, Schnabel and Winter, 2001). It also contains a more detailed comparison between aggregate and survey based saving measures.

<sup>4</sup> This divergence is due to two differences in the base: The EVS omit the upper 2 percent of the income distribution while the Bundesbank also includes non-profit organizations.

## 2. Saving by age and birth cohorts

The data permit two measurements of savings.<sup>5</sup> The first measure is computed as the sum of purchases of assets minus sales of assets. Changes in financial assets reported in the EVS are deposits to and withdrawals from the various kinds of savings accounts; purchases and sales of stocks and bonds; deposits to and withdrawals from dedicated savings accounts at building societies ("Bausparkassen") which are an important savings component in Germany; and contributions to life insurances and private pension plans minus payments received. New loans are subtracted and repayments are added to net savings. Not reported are changes in cash and checking accounts. Changes in real assets reported in the EVS are purchases and sales of real estate and business partnerships. Not reliably reported are changes in durables (other than real estate). Unrealized capital gains are unreported. To arrive at saving rates, household saving is divided by disposable household income, consisting of labor, asset, and transfer income minus taxes and social security contributions.

The second definition of saving is the residual of income minus consumption. We will show that both definitions are very close on average although there is substantial discrepancy for some households. A third definition, the difference between initial and end of period stocks of wealth, cannot be computed from the data since stocks are measured only once in each wave. Following the definitions in the introductory paper of this journal issue (Börsch-Supan, 2001), we distinguish among discretionary saving, composed of real and financial saving, mandatory saving to funded pension plans, and "notional saving", the mandatory contributions to unfunded social security systems.

### *Discretionary Saving*

Figure 1 shows mean total discretionary saving by age in the four cross sections 1978-1993. On the vertical axis, amounts are given in real terms, converted to 1999 Euro.<sup>6</sup> On the horizontal axis, we have age, generally in five year intervals. Each age category also represents a cohort, and fol-

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<sup>5</sup> See the full version of this paper (Börsch-Supan, Reil-Held, Rodepeter, Schnabel and Winter, 2001) for details on data sources, definitions for the variables used in this paper, and a discussion of measurement problems together with our preferred solutions. All measures have been defined to be strictly comparable across waves. Börsch-Supan (2001) also provides an electronic appendix with all data in spreadsheet form.

<sup>6</sup> All amounts were deflated using the German consumer price index.

lowing points on one of the cross sectional lines drawn in Figure 1 compares households that are simultaneously in different age categories and cohorts.

The shapes are roughly similar. Changes across years are far from a simple shift of each profile: for the younger age groups, 1978 and 1993 were the years with the highest saving, while there is less of a clear picture for the older ones. There are two main features. First, saving exhibits a hump shape, reaching a peak at the age/cohort group around age 45. Second, saving remains positive, even in old age.

***Figure 1: Mean Discretionary Saving in 1978-1993***

These features are astoundingly similar for all income groups except the lower income quarter of the German households, see Figure 2. Median and mean saving have the same hump shape as Figure 1, and remain positive for all age groups, except for the lower quartile.

***Figure 2: Mean and Median Discretionary Saving in 1993***

While Figures 1 and 2 were calculated as purchases minus sales of assets during one calendar year, the EVS also permits the computation of a second savings measure, namely the residual from subtracting all consumption expenditures from disposable income.<sup>7</sup> Figure 3 depicts the comparison of both measures and shows that our saving measure is robust. The figure also gives an impression of the sampling error of our saving measure which is relatively small due to the large cell sizes.

***Figure 3: Mean Discretionary Saving by Two Different Definitions, 1993***

The first measure is almost always within the  $2\sigma$ -confidence bands of the second measure.<sup>8</sup> Using confidence bands for both measures, the difference is not significant. This is an important result as it strengthens the belief in the internal consistency of the data, even though there are some large deviations between the two measures for a few households which are masked by the averages depicted in Figure 3.

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<sup>7</sup> Disposable income is gross income minus direct taxes and contributions to mandatory social security systems. Consumption expenditures are reported very detailed in the EVS, based on weekly diaries. For precise definitions see Börsch-Supan, Reil-Held, Rodepeter, Schnabel and Winter (2001).

<sup>8</sup> The bands are computed under the assumption that the quota sample can be treated as a random sample.

Figures 1-3 display cross-sectional variation across age/cohort-groups and do not identify life-cycle changes. In order to do understand life-cycle behavior, we need to follow households over time. As pointed out in Section 1, we lack longitudinal data on savings in Germany and therefore combine the data of the available four EVS cross-sections from 1978 to 1993 to a synthetic panel of household groups. Figure 4 displays cohort-specific age savings profiles from this synthetic panel under the identifying assumption that time effects are zero, starting on the left with the youngest cohort in our data, born between 1954 and 1958, and proceeding to the oldest cohort, born between 1909 and 1913.<sup>9</sup> Saving increases until it reaches a peak in the age range 45-49, then declines until the age group of the 65-69 old. It then remains essentially flat. As pointed out before, saving remains positive even in old age.

***Figure 4: Mean Discretionary Saving by Cohort***

The life-cycle pattern in saving visible in Figure 4 has two components: the hump-shaped pattern of disposable household income,<sup>10</sup> and the relatively flat pattern of saving rates to which we turn now.

***Saving Rates***

Because mean saving rates are very sensitive to changes in nominator and denominator, we focus on the median and quartile saving rates in each age category. We only show the 1993 cross section since the others have a very similar shape. Figure 5 shows that the age/cohort pattern is rather stable across income quartiles. The differences (pronounced hump shape for the richer, fairly flat for the poorer households) are thus mainly due to differences in income profiles. The increase in saving rates in very old age is interesting. Remember, however, that the data only covers households, not elderly in institutions. Thus, the sample selects those who are less likely to dissave. A back-on-the-envelope calculation (Börsch-Supan, 1992) shows that this selection effect by itself is unlikely to explain the high saving rates in old age, although a precise analysis cannot be done without genuine longitudinal data.

***Figure 5: Median Saving Rates, 1993 Cross Section***

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<sup>9</sup> Identifying assumptions in genuine and synthetic panels (Deaton, 1985) are discussed by Brugiavini and Weber (2001).

<sup>10</sup> Displayed in Börsch-Supan, Reil-Held, Rodepeter, Schnabel and Winter (2001).



If we combine the data visible in Figure 5 with the other waves and disentangle age and cohort effects, we obtain the life-cycle profiles of Figure 6. Saving rates are fairly stable and around 12% for all young and middle-aged groups until around age 45-49. They then decline and stabilize around age 65-69, when they remain at about 4%.<sup>11</sup>

### ***Figure 6: Median Saving Rates by Cohort***

#### ***Composition of Saving: Real and Financial Saving***

Real estate saving, depicted in Figure 7, mainly consists of purchases minus sales of owner-occupied housing, including a correction for upkeep and depreciation, and subtracting applicable mortgage payments.<sup>12</sup> Figure 7 shows the four cross sections of real saving, 1978-1993. Because homeownership in Germany is only about 40 percent, much lower than in most other countries, the median is mostly zero and not shown. The means depicted in Figure 7 quickly reach a sizable magnitude for the age/cohort groups around age 35 and then decline. Mean real estate saving for the older age groups has a very large variance – it is mainly imputed depreciation and ill-measured upkeep – and is omitted from Figure 7.

### ***Figure 7: Mean Real Saving, 1978-1993***

Financial saving is relatively flat between age 30 and 40, then reaches a peak between age 40 and 45.<sup>13</sup> Figure 8 shows the median for all four cross sections, Figure 9 mean and medium for 1993. The flat part is most likely be due to the slow build-up or even withdrawal of financial assets during the ages when many households purchase a house.

### ***Figure 8: Median Financial Saving, 1978-1993***

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<sup>11</sup> The data suggests an increase for the 1988 wave for all older cohorts. We have no satisfactory explanation for this effect, particularly, because the pension level decreased between 1983 and 1988.

<sup>12</sup> Other real wealth is not well measured. For example, the EVS data do not permit a sensible measurement of changes in wealth that is invested in business partnerships. This does affect only a few households significantly but not the average. See Börsch-Supan, Reil-Held, Rodepeter, Schnabel and Winter (2001). We also do not have the regional information necessary to impute capital gains in housing which were large in some places such as Munich.

<sup>13</sup> Our measure of financial saving includes the conventional financial saving categories, includes consumer loans, but excludes mortgages as well as capital gains or losses. Capital gains to the consumer have been small in Germany relative to the UK and the US, see Börsch-Supan and Eymann (2000).

Mean and median financial saving are very close. This is visible in Figure 9 which shows details of financial saving in the 1993 wave. As mentioned in Section 1, our data excludes the upper two percent of the income distribution and thus misses households that deviate considerably from the mean. It is noteworthy that financial saving remains positive even for those households that are age 70 and older.

***Figure 9: Mean and Median Financial Saving in 1993***

***Mandatory Saving***

Mandatory contributions to public funded pension plans are negligible in Germany. Only a minority of civil servants are required to contribute a small percentage of their salary increases to funds that are effectively invested in government bonds. The contributions amount to roughly 0.5% of salary.

Contributions to private pension plans are not negligible in Germany, but they are much smaller than, e.g., in the Netherlands or in the Anglo-Saxon countries. Slightly more than 50% of workers are covered by a firm pension at least part of their career, but these pensions are small and provide only about 6 percent of total average retirement income. In many cases, these pension plans are mandatory in the sense that they come as a package deal with the employment contract and offer no opting-out possibility.

Because mandatory occupational pensions play such a small role in Germany, the related saving flows have been subsumed in the discretionary saving category discussed earlier.

***“Notional saving:” Mandatory contributions to pay-as-you-go systems***

Germany has very large pay-as-you-go systems that finance old age and health care. Almost all dependent employees and their employers must contribute to the German public retirement insurance. As pointed out in the introductory paper (Börsch-Supan, 2001), these contributions are not saving in a narrow sense. However, they are a functional equivalent of saving and thus a potentially important determinant for discretionary saving. We will discuss this extensively in Section 4.

The contribution rate to the public retirement insurance is 19.3% of gross earnings during the year 2000.<sup>14</sup> In addition, an estimated 8.5% of gross earnings is levied indirectly via other taxes, mainly V.A.T. and the new ecology tax. The contribution base for public pension contributions is capped at about 1.8 times the average earnings. Opting out is impossible. High wage earners therefore pay a lower percentage of their income into the pay-as-you-go system and receive a correspondingly lower replacement rate. The contributions add up to a claim on public pensions that is substantial when compared to actual financial and real wealth. We turn to this point in the following section on wealth.

Other branches of the German social insurance system include health, long-term care, and unemployment insurance. For the average worker, the contributions to these branches add up to another 21 percent of gross income.<sup>15</sup> For the public health and long-term care insurance, the tax base is capped at about 1.6 times the average earnings. Workers above this threshold can opt out. The contribution base for the unemployment insurance is capped at about 1.8 times the average earnings. Opting out is impossible.

In sum, these social insurance contributions by far exceed discretionary savings for all dependent employees below the earnings cap – about 85 percent of all workers.

### **3. Wealth by age and birth cohort**

The EVS also provide data on the stocks of financial, real and total discretionary wealth in a separate interview at the end of each survey year. We use these data to cross-check our findings on saving flows and to obtain a picture of total resources at the disposal of a household when the household reaches retirement.

#### ***Discretionary real and financial wealth***

Figure 10 depicts total discretionary wealth, defined in accordance to the flow measure of discretionary saving in Section 2, and arranged by cohorts using the synthetic panel approach described

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<sup>14</sup> More precisely: Gross earnings include net earnings, income taxes and the employee's share (one half) of social security contributions. Total labor compensation includes gross earnings as defined plus the second half of social security contributions, the so-called employer's share.

<sup>15</sup> See previous footnote.

earlier. It consists of gross financial and real wealth, minus outstanding consumer loans and mortgages.

We see that total discretionary wealth increases until late in life, and there is only a brief (and statistically insignificant) indication of a flat episode for the 1909 and 1914 cohorts, and even there the change between the first and the last observation is positive.

***Figure 10: Mean Total Discretionary Wealth by Cohort***

West German private households possessed an average total wealth of DM 245,000 (€ 122,000). At the time of the head's retirement an average German household owned around DM 275,000 (€ 138,000) of total wealth in 1993. This is 12.5 times the annual public pension of an average employee with 45 years of service in 1993 (net DM 22,000, € 11,000). The median wealth at that age is DM 200,000, (€ 100,000) which is lower than the mean but still relatively high. Thus, drawing down wealth could quite substantially contribute to consumption (Schnabel, 1999). Nevertheless, accumulation of even more wealth in the form of financial wealth takes place on average in old age, as was illustrated in the savings profiles presented earlier. This is a surprising departure from the life-cycle hypothesis.

The largest part of total discretionary wealth is real estate, in particular owner-occupied housing, compare Figures 11 and 12. For the group aged 30 to 59, real wealth amounts to 80 to 90 percent of total wealth. Mean gross real wealth increased substantially from 1978 to 1993. A more detailed analysis shows that this is mainly caused by an increase in homeownership from cohort to cohort, while ownership rates remained essentially constant with increasing age after age 60 for any given cohort (Schnabel, 1999).

***Figure 11: Mean Gross Real Estate Wealth, 1978–1993***

Financial wealth increased by 38 percent between 1978 and 1993. This increase was mainly caused by a wealth expansion of middle age classes. The expansion of financial wealth is striking between 1988 and 1993. The reason is a large increase in securities ownership for all age classes.

***Figure 12: Mean Gross Financial Wealth, 1978–1993***

### ***Pension wealth***

The life-cycle pattern of discretionary wealth in Germany – almost always increasing, at most flat – is in contrast to the hump shaped pattern of unfunded (“notional”) pension wealth that trivially emerges from the sequence of first paying pension contributions and then receiving pension benefits. Figure 13 shows how notional pension wealth builds up and is drawn down in a synthetic life cycle. The representative worker underlying this simulation has an earnings history of the average age-specific wage between ages 20 and 60, then retires at the average retirement age and draws the statutory pension benefits. Notional pension wealth  $SSW$  at time  $t$  is then computed as<sup>16</sup>

$$SSW(t) = (1+rho)*SSW(t-1) + contributions(t) - benefits(t)$$

where  $rho$  is the internal rate of return that equalizes the present value of contributions and benefits for the above 40-year contribution history and a duration of benefits corresponding to average life expectancy. At retirement, notional pension wealth of the representative worker is about DM 400,000, 30 percent more than the sum of average financial and real wealth shown in Figure 11. By definition, notional pension wealth is drawn down after age 60 and becomes negative after age 78, average life expectancy, see Figure 13. In contrast, financial and real wealth increases until age 70 for the 1919 cohort (see Figure 10), and increases between age 60 (65) and age 75 (80) for the 1914 (1909) cohort. This contrast is not by chance. Rather, it reflects the influence of pension policies on discretionary saving. This is the main argument of the following section.

<b><i>Figure 13: Life-Cycle Build-up of Notional Pension Wealth</i></b>
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## **4. Saving Patterns and Public Policy**

We can summarize the observed saving patterns of German households in the following three points:

- ◆ Saving rates are high and stable until around age 45-49.
- ◆ Saving is lower but still positive even in old age. There is depreciation drawing down real wealth, but virtually no signs of drawing down financial wealth.

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<sup>16</sup> See Brugiavini and Weber (2001) for a discussion of this measure.

- ◆ Until age 35, saving is mainly invested in owner-occupied housing, while it is mainly financial saving at older ages.

These observations pose a host of questions: How can we explain a life-cycle profile of discretionary household saving in Germany which is much flatter than, e.g., in the US? Specifically: Why does saving remain positive in old age, even for most low income households? And what explains the “German savings puzzle”, the puzzling fact that pensions and health insurance are generous and likely to have large crowding out effects, yet German households accumulate so much real and financial wealth and do not appear to draw it down?

We need a complicated answer to resolve this puzzle. We obviously need to distinguish between the older and the younger generation because they appear to save for different purposes. Moreover, our data on the flat and positive savings in old age only pertain to the cohorts born before the 1930s; we do not yet know whether that pattern will also hold for the younger generation.<sup>17</sup> We then distinguish among three effects of public policies: effects on the level of savings, essentially by crowding-out mechanisms mainly through social insurance; effects on the life-cycle pattern of savings, flattening the age-savings profile; and effects on the portfolio composition of savings, mainly through differential taxation.

### *Crowding-out effects of public pensions*

We start with an analysis of the older generation in our data. Their members were born between 1910 and 1930 and they retired until about 1995 – this is today’s generation of German retirees. Their current income is dominated by public pension income, much more so than in many other countries, see Table 1:

<p><b><i>Table 1: Retirement Income by Pillar (Percentages)</i></b></p>
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About 85% of retirement income stems from the public mandatory retirement insurance, and only 15% come from private sources such as funded firm pensions, individual retirement accounts and other asset income, only a little remaining labor income and family transfers.

The international comparison in Table 1 suggests a strong substitution between the provision of pay-as-you-go pensions and other income sources in old age. This crowding-out result is in line with a

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<sup>17</sup> We refer to the generation now aged between about age 30 and 50. There is also a third generation, the “really young”, but we have little data on their saving and consumption habits.

careful time-series analysis of Kim (1992). He links changes in the retirement system to the savings rate and shows that the German pay-as-you-go system has crowded out saving to a significant extent. Cigno and Rosati (1996) confirm these findings but explain the crowding-out effect unconventionally by repercussions on fertility rather than through the familiar channels stressed by Feldstein (1974).

The crowding-out result as it pertains to current retirement income is also at odds with the fact that Germany has such a high saving rate, and in particular, that German elderly have on average real and financial wealth levels that suffice for about 10 years of their retirement income (cf. Figure 10). This is of course the core of the “German savings puzzle”. We need three elements to explain it.

First, a part of the apparent contradiction between stocks of wealth (almost equally divided between notional pension wealth and tangible real and financial wealth) on the one hand and current income (85% pensions, 15% other income) on the other hand is resolved by realizing that Table 1 only reports current money income, not the imputed rent from homeownership, and that most wealth held by the elderly is owner-occupied housing (cf. Figures 11 and 12). Hence, Table 1 exaggerates potential crowding-out effects. However, the omission of imputed rent cannot fully explain the puzzle. The German homeownership rate is much lower than in the Netherlands, the UK, and the US. For the generation born between 1910 and 1930, it is just above 50 percent.<sup>18</sup> Moreover, flat and positive saving rates in old age are also prevalent among elderly German renters (cf. Figure 2).

Schnabel (1999) provides the second element of our explanation. It is a story of *ex ante* versus *ex post* savings plans. He shows that the growth of income during the German economic miracle years and up to the seventies was so large and unprecedented that the elderly could just not have anticipated it. Hence, they saved more than if they had known how miraculous a growth rate they would experience.

Figure 14 displays the growth of earnings during the work history of a typical worker who retired in 1970, the drop due to the 70% replacement rate after retirement, and then the subsequent increase in pension income due to gross indication. All numbers are in real terms. After less than 10 years into retirement, the average worker had essentially recouped the former income level. The process was

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<sup>18</sup> This lower homeownership rate is only partially offset by the fact that the average home in Germany is more expensive than in the Netherlands, the UK, and the US, see below.

only stopped in the early eighties, when economic growth slowed down to normal also in Germany. Since such an income path could hardly be anticipated, workers consumed too little and ended up with too large a stock of wealth around retirement.

***Figure 14: Life-Cycle Income Path of the 1910 Cohort***

While Schnabel's (1999) story is plausible, it does not explain why this wealth has not been spent at higher rates in old age. This is the third element of our explanation of the "German savings puzzle." First, habit formation may play a role. The elderly do not want to change the accustomed level of consumption which they have learned some 50 years ago, not even increase it in the face of accumulated financial wealth. There is some new evidence on the importance of habit formation (Dynan, 2000). Second, Börsch-Supan and Stahl (1991) provide a complementary explanation. They argue that due to deteriorating health conditions, the elderly are less able to spend as much as they would need to make saving negative. Both lines of argument are strengthened by capital market imperfections since annuitized pension income cannot be borrowed against. Hence, even if the current generation of elderly had anticipated their unwillingness or inability to draw down wealth at later ages, they could not have responded by dissaving faster as long as their annuity income exceeds the planned consumption level. Evidence for this effect is provided by Börsch-Supan (1992).<sup>19</sup>

***Life-cycle saving patterns***

While the older generation may have had a retirement savings motive, but was surprised by the high retirement income and could not draw the accumulated wealth down, the younger generation – now aged between about 30 and 50 years – has learned that retirement will not be a time of scarce resources. For them, the high replacement rates of the German public pension system have made additional private retirement provision largely unnecessary. Saving for retirement, the only motive under the pure life-cycle hypothesis, is of secondary importance. Other saving motives dominate, most importantly saving for homeownership, as Figures 7 and 8 have shown. In addition, there are motives such as high frequency precautionary saving, high frequency saving for durables such as cars, and

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<sup>19</sup> We know very little about bequests which may, in theory, contribute to the observed flat age-saving profiles in old age. Cross-section regressions of wealth levels on number of children do not produce significant results. This finding, however, does not necessarily rule out an operative bequest motive. Only longitudinal data will clarify this matter.



saving for intergenerational transfers. In fact, inter vivos transfers are high in Germany and survey questions on savings motives show an almost equal spread between the aforementioned saving motives (DIA, 1999).

The mechanisms pertaining to both generations generate much flatter age-saving profiles than under the retirement-saving oriented life-cycle hypothesis. The older generation still has positive saving rates because of the unwillingness or inability to draw down wealth at later ages which they have accumulated in lack of anticipation of the spectacular economic growth. The young generation has a flat saving profile because the slow process of owning a home and short-frequency saving motives generate a flat saving rate over a long period.<sup>20</sup>

Hence, the generous public pension system in Germany appears to be the main cause for a relatively flat age-saving profile. It has made the retirement savings motive relatively irrelevant for the younger generation, and it has led to overannuitization among the elderly. We are aware that this line of argument is vulnerable because it lacks a counterfactual. The international comparisons in this journal issue do help in this respect. For instance, among the countries represented, the hump-shaped life-cycle savings pattern is most pronounced in the U.S. where the replacement rate of the public pension systems is lower – and thus the retirement savings motive is more important – than in continental Europe.

If a substantial portion of the saving patterns currently observed in Germany is caused by the public pension system, we should expect substantial changes in saving patterns in the future. Growth rates have declined and the dependency ratio is deteriorating rapidly. The current generosity of the social insurance system is unlikely to prevail. A major pension reform is under way which will cut benefits substantially and, in effect, introduces more prefunding. This will revive the retirement motive for saving. Hence, saving rates among the young are likely to increase, and saving rates among the elderly are likely to decline sharply because they have to rely more on their retirement savings to finance consumption. We will have to wait for this counterfactual to obtain a clearer explanation of what caused the puzzling German savings behavior.

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<sup>20</sup> Conventional mortgages in Germany have a term of 30 years.

### *Portfolio composition*

Public policies appear also to have shaped the composition of tangible household wealth.<sup>21</sup> As pointed out in Section 3, the largest part is real estate, mainly owner-occupied housing. For the group aged 30 to 59 this makes 80 to 90 percent of total wealth. While ownership rates are lower than in most other European countries, the US and Japan, both land and housing construction is relatively expensive in Germany. This paper is not the place to analyze why this is the case, but there is some evidence pointing towards restrictive land regulation.<sup>22</sup> In addition, saving for down payment in building societies (“Bausparkassen”) is tax privileged.

Tax policy appears to have shaped the composition of financial wealth, displayed in Table 2.<sup>23</sup>

<p><b><i>Table 2: Composition of Financial Household Wealth, 1978–1993</i></b></p>
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The most important component is whole life insurance, about a third of gross financial wealth. The central reason for the important role of whole life insurance in German households life-cycle savings decisions is its favorable tax treatment, as shown by Brunsbach and Lang (1998) and Walliser and Winter (1999). Stocks and bonds are the second most important category. Bonds make up the lions’ share in this category, while stocks are less than 10 percent of the average household portfolio. This fact is also significant for financial markets, as life-insurance companies have not been allowed to invest significantly in stocks in the past, which in turn is one of the main reasons for thin capital markets in Germany. Stocks and bonds are tax privileged in so far as capital gains are tax exempt if the underlying asset has been held for longer than one year.<sup>24</sup> The lenient taxation of capital income may be another explanation for the high saving rate in Germany, but we are not aware of a reliable time series analysis that links the level of tax relief to the aggregate household saving rate.

It is highly speculative how the portfolio composition in Table 2 would change in the wake of a major change of the German social insurance system, notably a partial transition to prefunding pensions. If there were no substitution between new retirement saving and current saving, the household saving

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<sup>21</sup> For a detailed study of German household portfolio choice, see Börsch-Supan and Eymann (2000).

<sup>22</sup> Börsch-Supan, Kanemoto and Stahl (2001) claim that housing policies explain a significant share of the price differences among Germany, Japan and the US, such as restrictive land development by local governments, excessive building codes and insufficient legislation to avoid monopolization of the construction industry.

<sup>23</sup> A survey of tax policy in Germany is provided in the companion paper Börsch-Supan, Reil-Held, Rodepeter, Schnabel and Winter (2001).

<sup>24</sup> This has recently been changed to two years.

rate would increase by between 2 and 4 percent, see Birg and Börsch-Supan (1999). If these new savings were channeled into pension funds, which only recently have been introduced in Germany and still do not receive preferential tax treatment similar to whole life insurance, pension funds would amount to between 15 and 18 percent of households' portfolios, comparable to the United Kingdom, the U.S., the Netherlands and Switzerland. Substitution between new retirement saving and current saving would increase this share, but part of new retirement saving may also be done as whole life insurance. Households' direct and indirect exposure to stock markets then depends on future investment decisions of life insurance companies who only recently began to increase their portfolio share of stocks. Judging from the international experience in countries as diverse as the United Kingdom, the U.S., the Netherlands and Switzerland, a more prominent role of equities seems very likely when more of the German retirement income is prefunded.

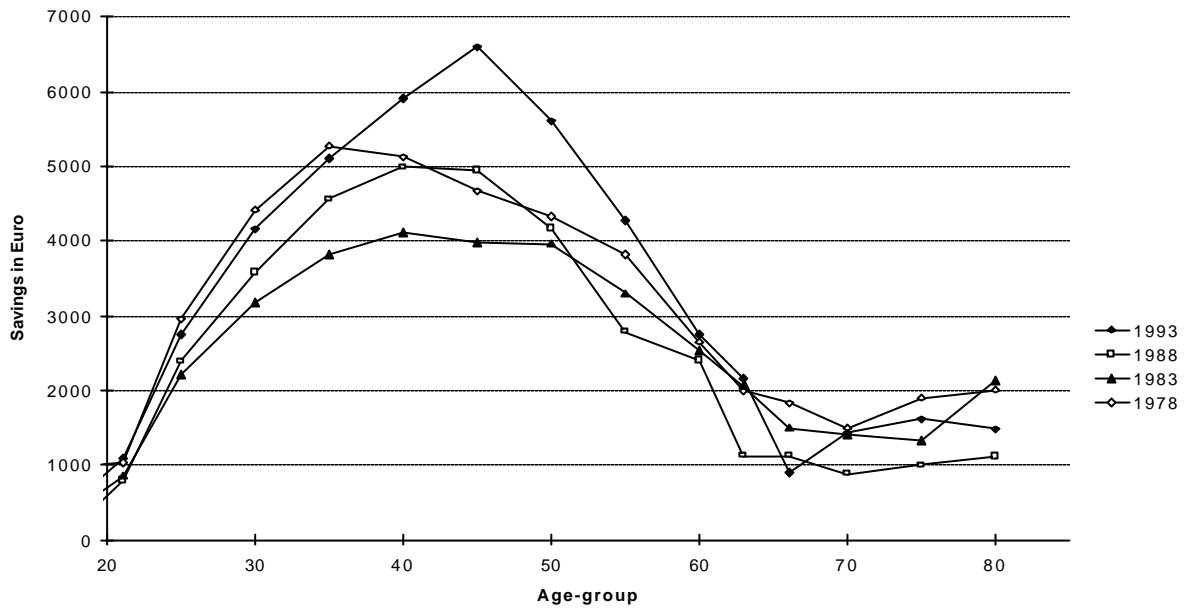
## **5. Conclusions**

The case of Germany presents an interesting "savings puzzle." On the one hand, saving rates are high and stable until around age 45-49, and remain positive even in old age. While depreciation draws down real wealth among elderly homeowners, we find virtually no signs of drawing down financial wealth. On the other hand, Germany has a very generous public pension system. "Notional pension wealth" provided by the pay-as-you-go social insurance system is larger than real wealth and much larger than financial wealth.

Our explanation is cohort-specific. Our data on the flat and positive savings in old age only pertain to the cohorts born before the 1930s; we do not yet know whether that pattern will also hold for the younger generation. The older generation was surprised by an unprecedented income growth in the 1960s and 70s. Households born between 1910 and 1930 were saving for retirement but ended up being over-annuitized. Habit formation and ill health then prevented the older generation from spending their unexpected wealth down.

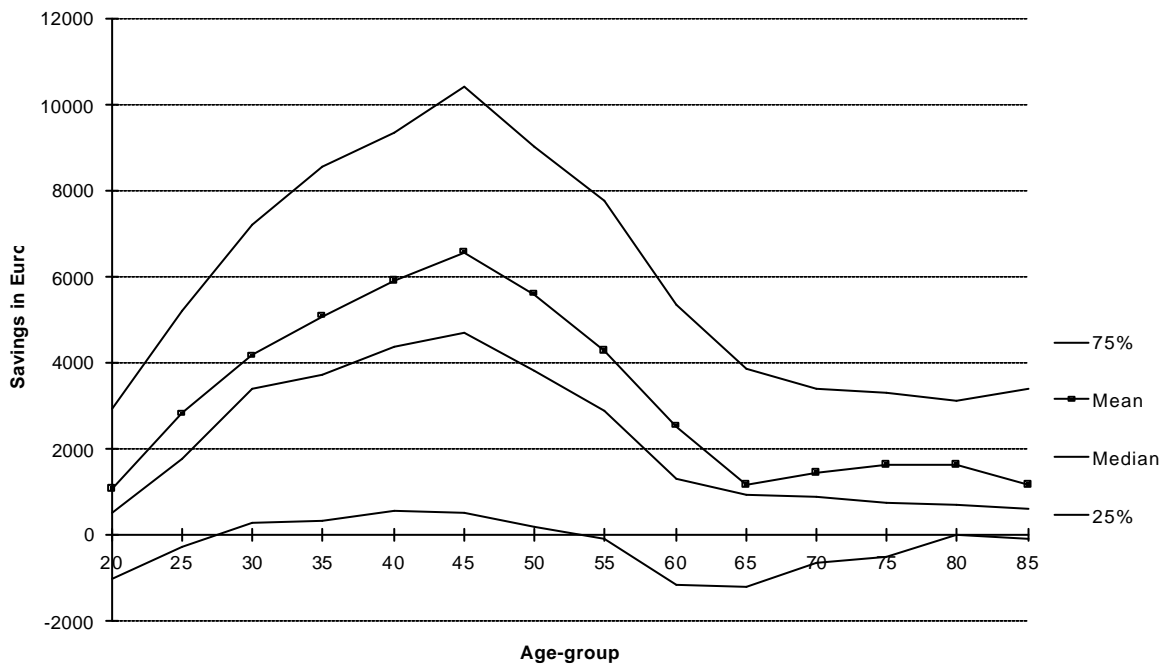
What will happen, when younger cohorts reach retirement, is likely to depend on future pension policy. Pension reform is under way in Germany. It will shift a significant share – between a quarter and a third – of retirement income from the pay-as-you-go pillar to a funded pillar. Most likely, this will increase saving in younger ages, and induce dissaving among the elderly. We will have to wait for this "experiment" to obtain a clearer explanation of what had caused the puzzling German savings behavior.

**Figure 1: Mean Discretionary Saving in 1978-1993**



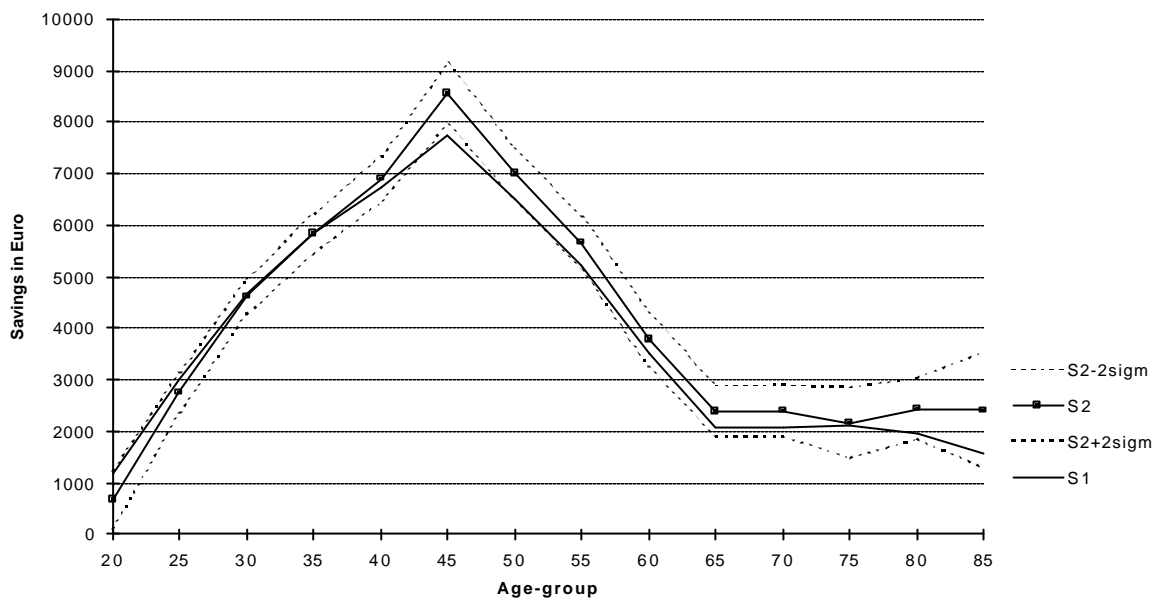
Note: All data in prices of 1993 and weighted. Age/Cohort-groups denoted by *begin* of 5-year interval.  
 Source: Own calculations on the basis of the EVS 1978–1993.

**Figure 2: Mean and Median Discretionary Saving in 1993**



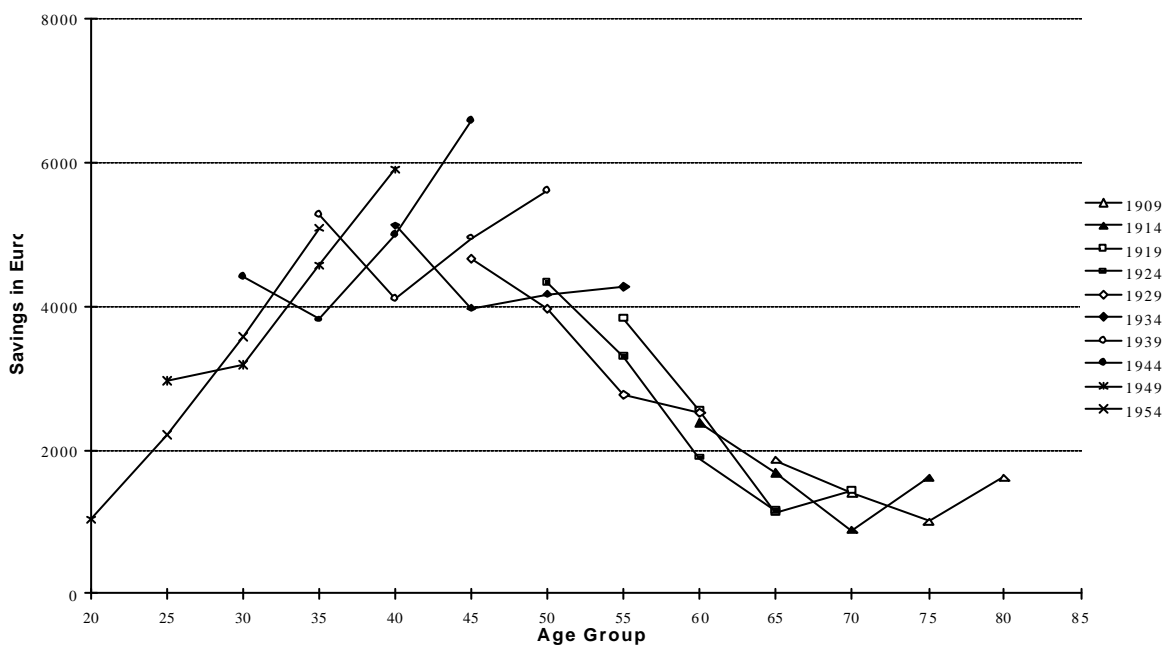
Note: All data in prices of 1993 and weighted. Age/Cohort-groups denoted by *begin* of 5-year interval.  
 Source: Own calculations on the basis of the EVS 1978–1993.

**Figure 3: Mean Discretionary Saving by Two Different Definitions, 1993**



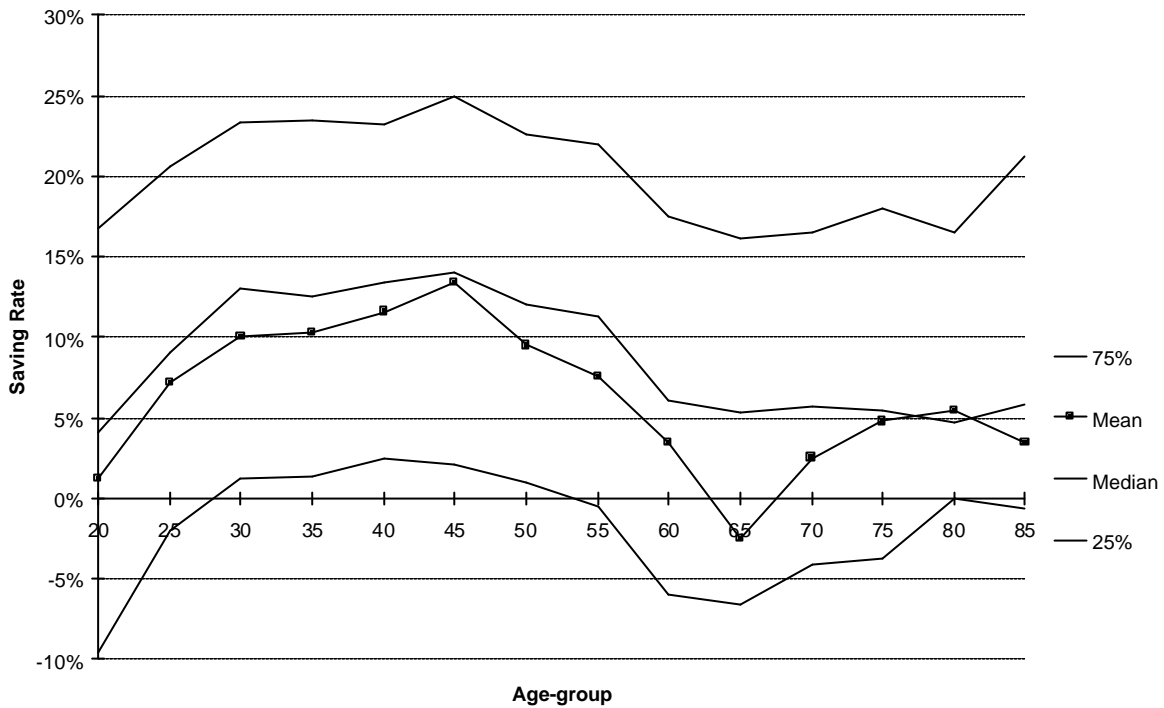
Note: S1 is the first measure (purchases minus sales of assets), shown with the 95%-confidence bands ( $S2 \pm 2\sigma$ ). S2 is the second measure (residual of income minus consumption). All data in prices of 1993. Age/Cohort-groups denoted by *begin* of 5-year interval. Source: Own calculations on the basis of the EVS 1978–1993.

**Figure 4: Mean Discretionary Saving by Cohort**



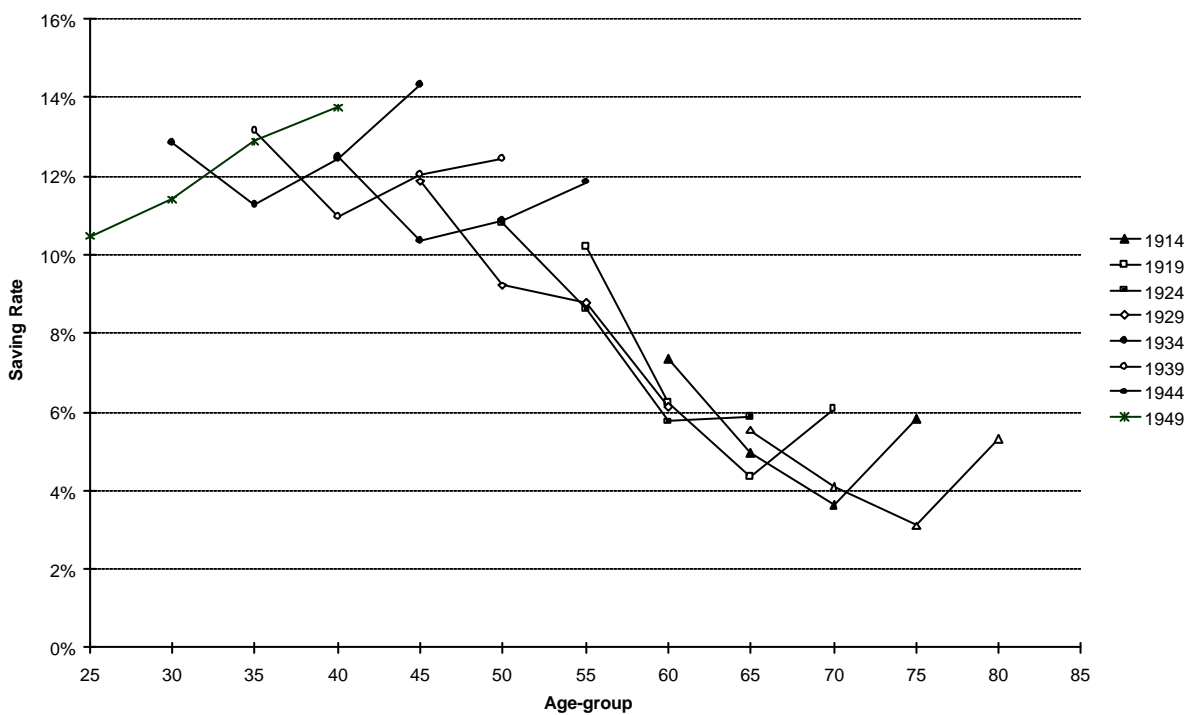
Note: All data in prices of 1993. Age-groups denoted by *begin* of 5-year interval. Source: Schnabel (1999)

**Figure 5: Median Saving Rates, 1993 Cross Section**



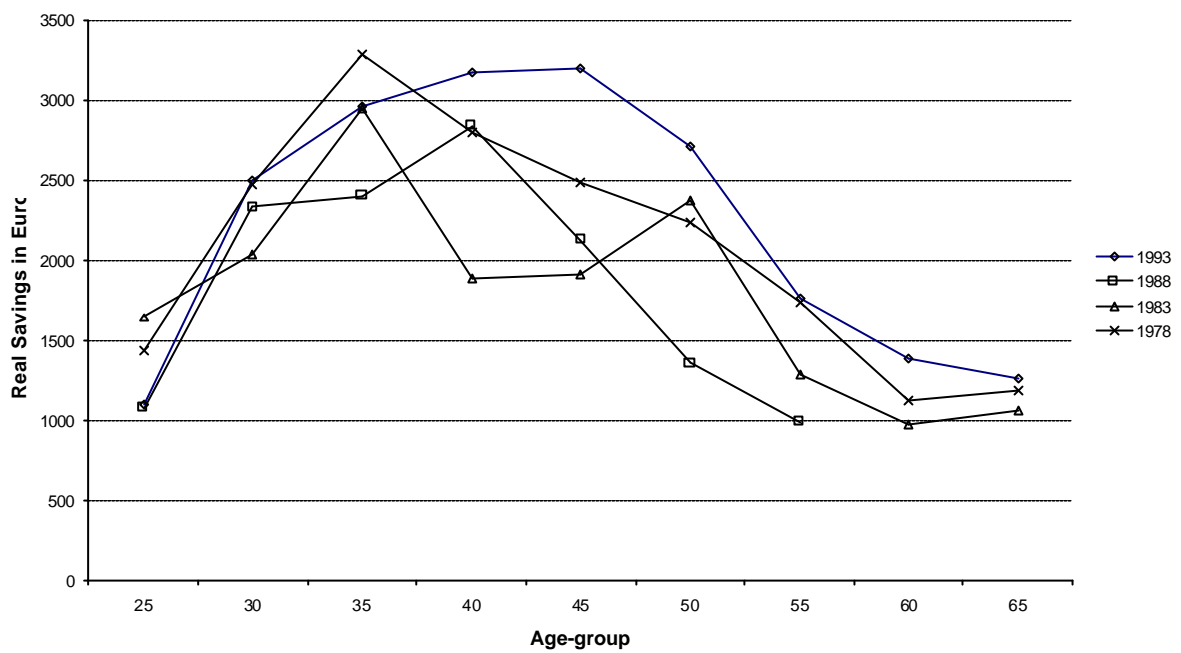
Note: All data in prices of 1993. Saving is defined as purchases minus sales of assets. Age/Cohort-groups denoted by *begin* of 5-year interval. Source: Own calculations on the basis of the EVS 1978–1993.

**Figure 6: Median Saving Rates by Cohort**



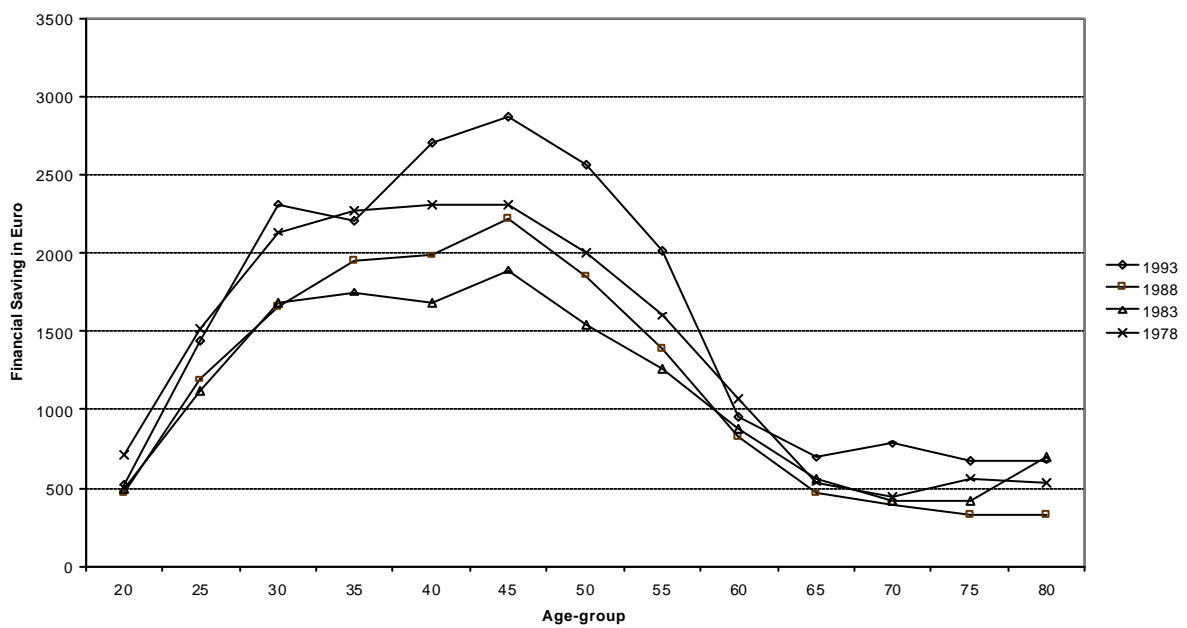
Note: All data in prices of 1993. Age-groups denoted by *begin* of 5-year interval. Source: Schnabel (1999)

**Figure 7: Mean Real Saving, 1978-1993**



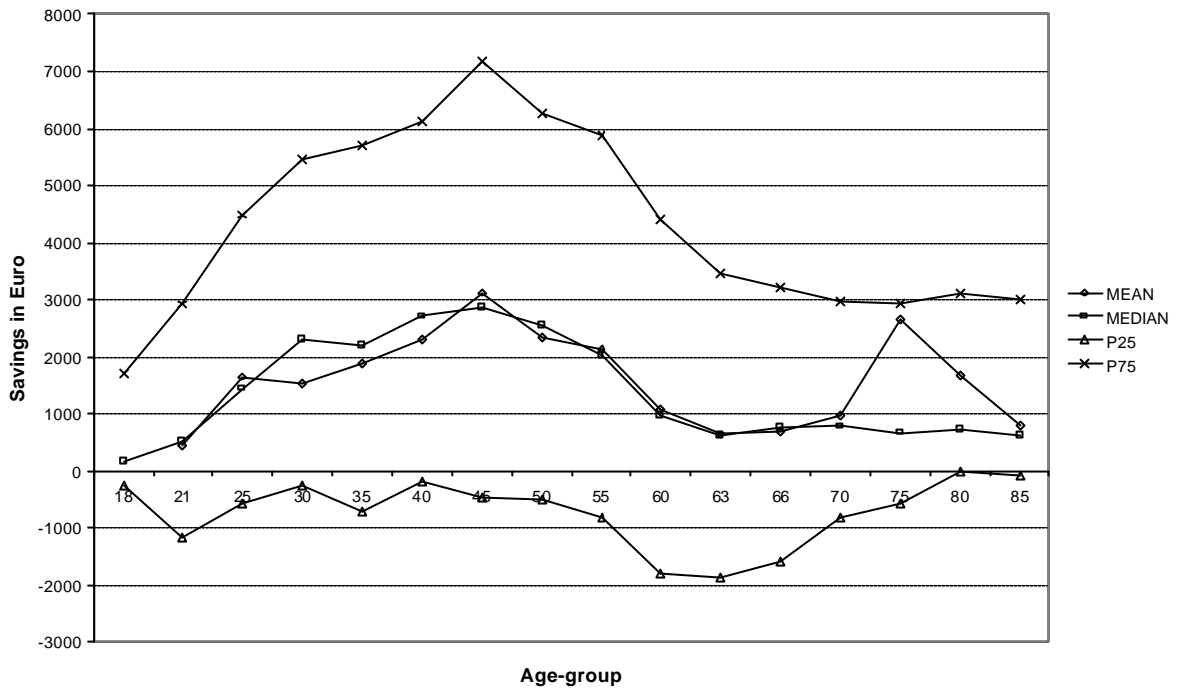
Note: All data in prices of 1993 and weighted. Source: Own calculations on the basis of the EVS 1978–1993.

**Figure 8: Median Financial Saving, 1978-1993**



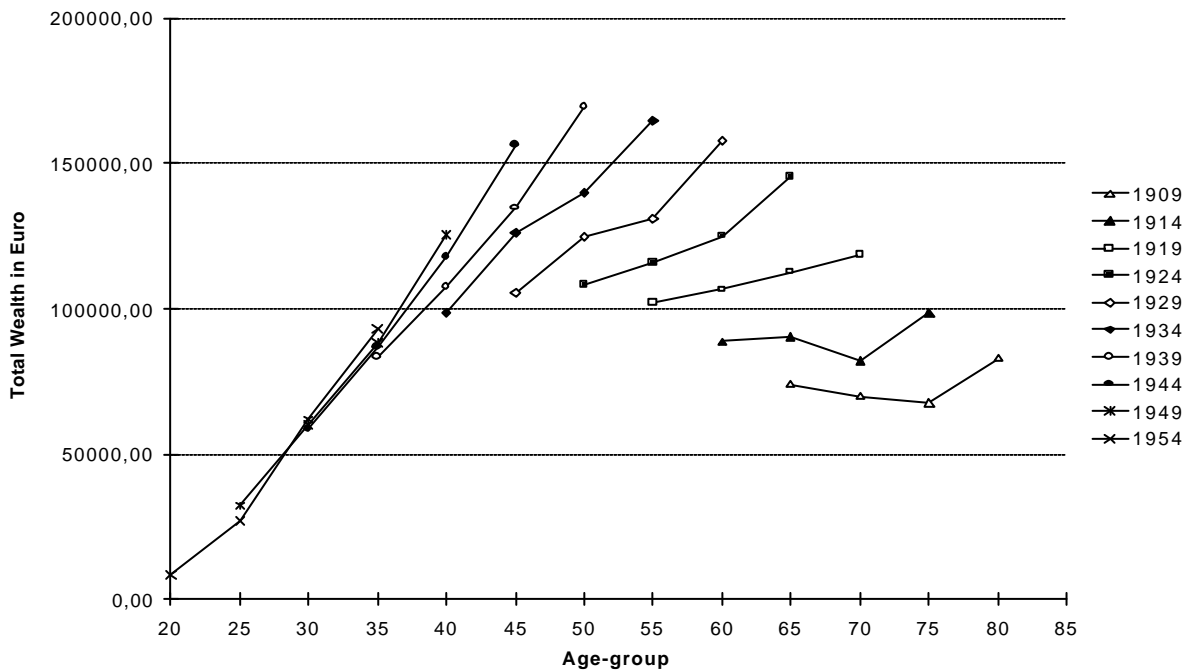
Note: All data in prices of 1993 and weighted. Age/Cohort-groups denoted by *begin* of 5-year interval. Source: Own calculations on the basis of the EVS 1978–1993.

**Figure 9: Mean and Median Financial Saving in 1993**



Note: All data in prices of 1993 and weighted. Age/Cohort-groups denoted by *begin* of 5-year interval. Source: Own calculations on the basis of the EVS 1978–1993.

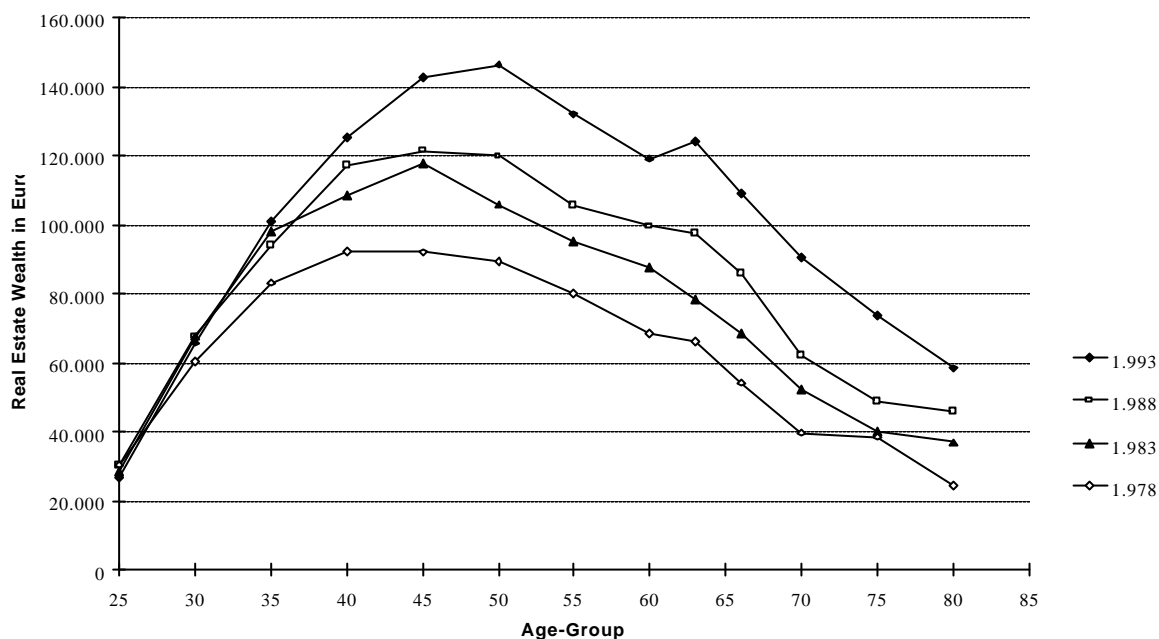
**Figure 10: Mean Total Discretionary Wealth by Cohort**



Note: All data in prices of 1993. Age-groups denoted by *begin* of 5-year interval. Source: Schnabel (1999)

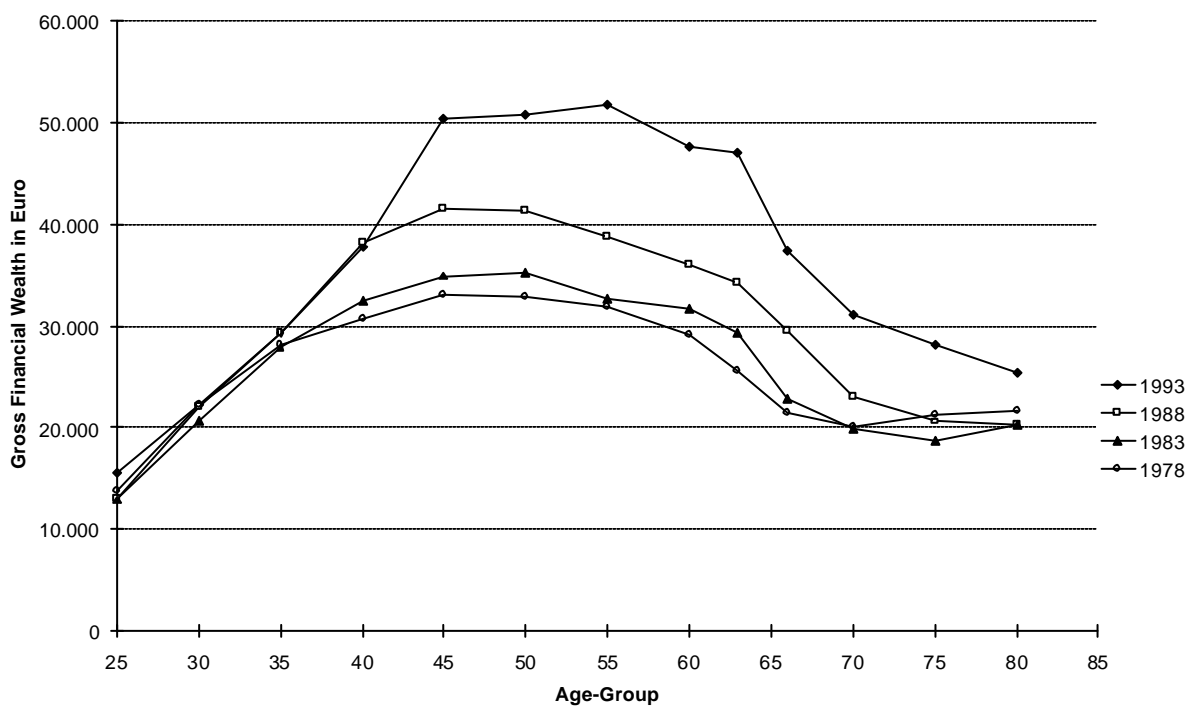


**Figure 11: Mean Gross Real Estate Wealth, 1978–1993**



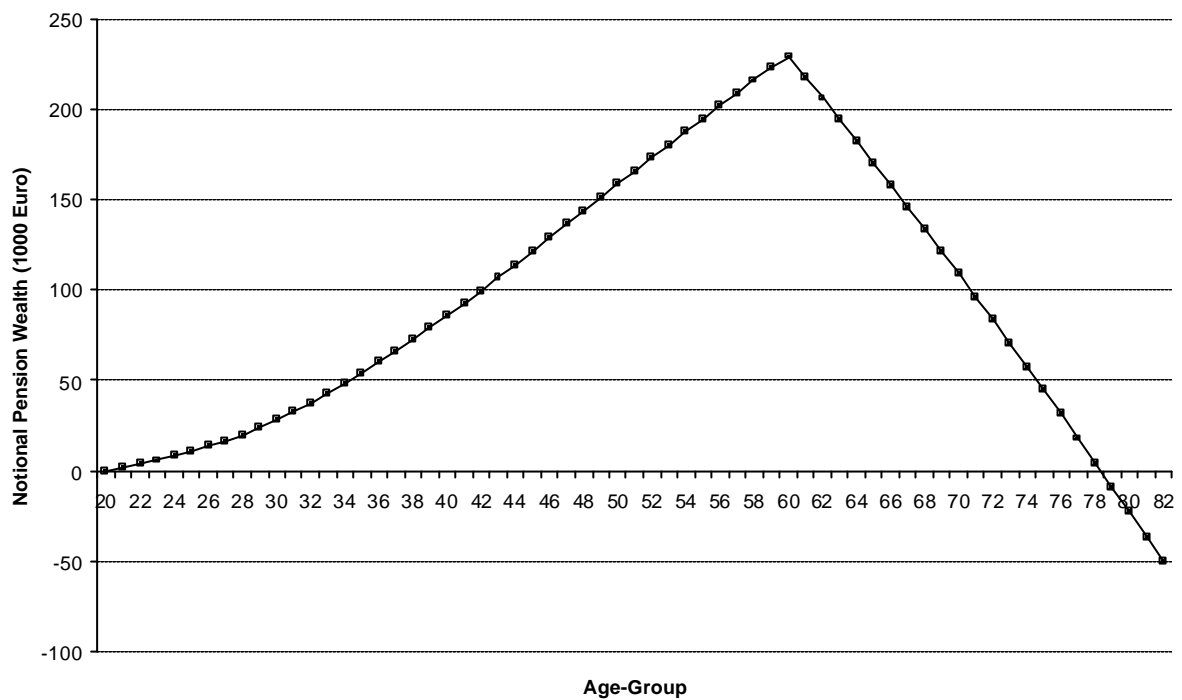
Note: All data in prices of 1993 and weighted. Age/Cohort-groups denoted by *begin* of 5-year interval. Source: Own calculations on the basis of the EVS 1978–1993.

**Figure 12: Mean Gross Financial Wealth, 1978–1993**



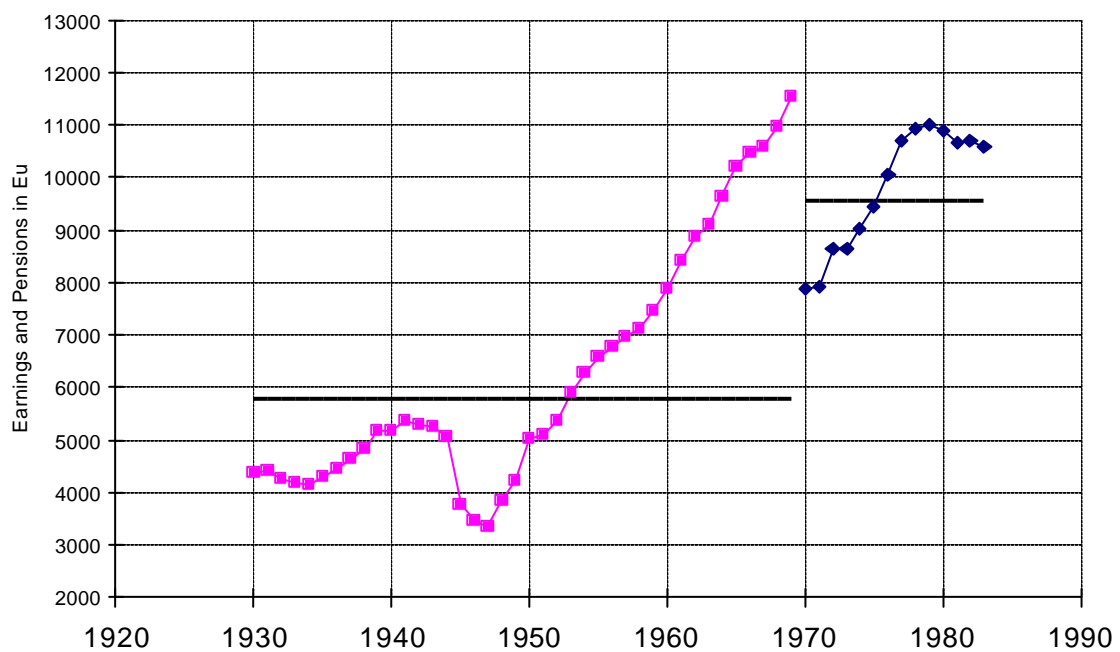
Note: All data in prices of 1993. Age/Cohort-groups denoted by *begin* of 5-year interval. Source: Own calculations on the basis of the EVS 1978–1993.

**Figure 13: Life-Cycle Build-up of Notional Pension Wealth**



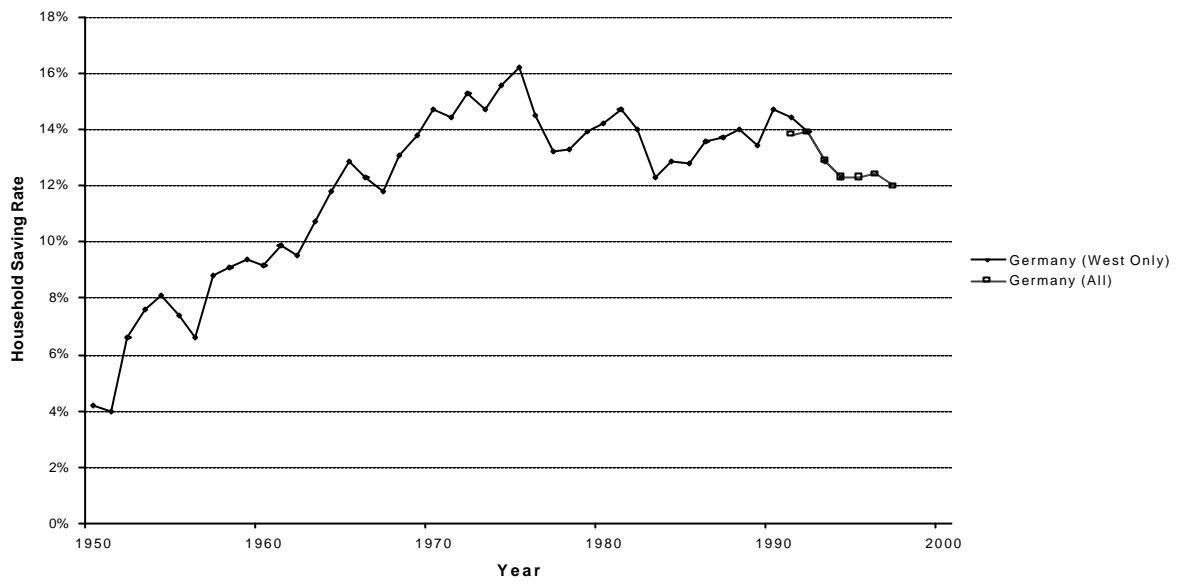
Note: All data in prices of 1993. Source: Own calculations, based on the average earner in the EVS 1993.

**Figure 14: Life-Cycle Income Path of the 1910 Cohort**



Source: Schnabel (1999)

**Figure 15: Household Saving Rates in Germany**



Source: Deutsche Bundesbank (1998).

**Table 1: Retirement Income by Pillar (Percentages)**

	Germany	The Netherlands	Switzerland	UK	US
<b>State</b>	85%	50%	42%	65%	45%
<b>Employer</b>	5%	40%	32%	25%	13%
<b>Individual</b>	10%	10%	26%	10%	42%

*Notes:* Income composition of two-person households with at least one retired person. UK: „State“ includes SERPS. US: „Individual“ includes 25% earnings, much less in the other countries.

*Source:* Börsch-Supan and Reil-Held (1998) and Disney, d'Ercole and Scherer (1998).

**Table 2: Composition of Financial Household Wealth, 1978–1993**

	1978	1983	1988	1993	Share in 1993
Savings accounts	8.721	6.863	7.459	6.243	17.5%
Building societies	3.495	3.344	2.806	2.663	7.5%
Bonds and stocks <sup>a</sup>	4.171	5.028	5.828	11.199	31.4%
Life insurance (cash value)	9.386	9.443	12.564	11.869	33.3%
Other financial wealth	-	1.017	1.002	3.713	10.4%
Gross financial wealth	25.773	25.695	29.659	35.687	100.0%
./. Loans	12.936	16	16.991	19.680	
Net financial wealth	12.837	9.494	12.667	16.007	

*Note:* Household data from the Einkommens- und Verbrauchsstichprobe (EVS). All figures in DM and in 1993 prices. a) About 70% bonds and 30% stocks. For details see Börsch-Supan, Reil-Held, Rodepeter, Schnabel and Winter (2001).

## References

- Birg, H., and A. Börsch-Supan (1999):** *Für eine neue Aufgabenteilung zwischen gesetzlicher und privater Altersversorgung*, Berlin: GDV.
- Börsch-Supan, A. (1992):** Saving and consumption patterns of the elderly: the German case. *Journal of Population Economics*, 5, 289-303.
- Börsch-Supan, A. (1994):** Savings in Germany - Part II: Behavior. In: Poterba, J. (ed.), *International Comparisons of Household Savings*. Chicago, London: University of Chicago Press, 207-236.
- Börsch-Supan, A. (ed.) (2001):** *International Comparisons of Household Saving*, New York: Academic Press.
- Börsch-Supan, A., and A. Eymann (2000):** Household Portfolios in Germany, mimeo, University of Mannheim. Forthcoming in: L. Guiso, M. Haliassos and T. Jappelli (eds.), *Household Portfolios*, Cambridge, Mass.: MIT-Press.
- Börsch-Supan, A., and A. Reil-Held (1998):** Retirement income: level, risk, and substitution among income components. *OECD Ageing Working Paper AWP 3.7*. Paris.
- Börsch-Supan, A., and R. Schnabel (1998):** Social Security and Declining Labor Force Participation in Germany. *American Economic Review* 88.2, 173-178.
- Börsch-Supan, A., and K. Stahl (1991):** Life-cycle savings and consumption constraints. *Journal of Population Economics*, 4, 233-255.
- Börsch-Supan, A., Y. Kanemoto and K. Stahl (2001):** *Housing Markets in Germany, Japan and the United States*, unpublished manuscript, University of Mannheim.
- Börsch-Supan, A., A. Reil-Held, R. Rodepeter, J. Winter and R. Schnabel (2001):** Household Saving in Germany. In: Börsch-Supan, A. (ed.), *International Comparisons of Household Saving*, New York: Academic Press.
- Brugiavini, A., and G. Weber (2001):** Household Savings: Concepts and Measurement. In: Börsch-Supan, A. (ed.), *International Comparisons of Household Saving*, New York: Academic Press.
- Brunsbach, S., and O. Lang (1998):** Steuervorteile und die Rendite des Lebensversicherungssparens, *Jahrbücher für Nationalökonomie und Statistik* 217, 185-213.
- Cigno, A., and F.C. Rosati (1996):** Jointly Determined Saving and Fertility Behaviour: Theory, and Estimates for Germany, Italy, UK, and USA, *European Economic Review* 40, 1561-89.
- Deaton, A. (1985):** Panel data from time-series of cross-sections. *Journal of Econometrics*, 30, 109-124.
- Deutsche Bundesbank (1998):** *50 Jahre Deutsche Mark: Monetäre Statistiken 1948-1997*. München: Verlage C.H. Beck, Vahlen.
- Deutsches Institut für Altersvorsorge (DIA, 1999):** *Die Deutschen und Ihr Geld*. Köln: Deutsches Institut für Altersvorsorge.

- Disney, R., M. Mira d'Ercole and P. Scherer (1998):** Resources during retirement. *OECD Ageing Working Paper AWP 4.3*. Paris.
- Dynan, K. (2000):** Habit Formation in Consumer Preferences: Evidence from Panel Data. *The American Economic Review* 90, 391-406.
- Euler, M. (1985):** Geldvermögen privater Haushalte Ende 1983. *Wirtschaft und Statistik*, Heft 5, 408-418.
- Euler, M. (1990):** Geldvermögen und Schulden privater Haushalte Ende 1988, *Wirtschaft und Statistik*, Heft 11, 798-808.
- Guttman, E. (1995):** Geldvermögen und Schulden privater Haushalte Ende 1993. *Wirtschaft und Statistik*, Heft 5, 391-399.
- Kim, S., (1992):** Gesetzliche Rentenversicherung und Ersparnisbildung der privaten Haushalte in der Bundesrepublik Deutschland von 1962 bis 1988, *Zeitschrift für die gesamte Versicherungswirtschaft* 81, 555-.
- Lang, O. (1998):** *Steueranreize und Geldanlagen im Lebenszyklus: empirische Analysen zu Spar- und Portfolioentscheidungen deutscher Privathaushalte*. Baden-Baden: Nomos Verlag.
- Reil-Held, A. (1999):** Bequests and aggregate wealth accumulation in Germany. *The Geneva Papers on Risk and Insurance*, 24, 50-63.
- Schnabel, R. (1999):** *Ersparnis und Vermögen im Lebenszyklus in Westdeutschland*. Habilitation, University of Mannheim.
- Velling, M. (1991):** *Ersparnisbildung in Westdeutschland*. Diplomarbeit, University of Mannheim.
- Walliser, J. and J. Winter (1998):** Tax incentives, bequest motives and the demand for life insurance: Evidence from Germany. Discussion Paper No. 99-28, Sonderforschungsbereich 504, University of Mannheim.