Household Portfolios in Germany*

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Abstract

This paper describes the reactions of German households adjusting their asset portfolios to the policy changes of the 1980's and 90's. Starting out from a few well-known facts as to the saving behavior of West German households, such as the high saving rates and low ownership rates for housing and risky assets, we use both macro- and microdata from various sources to analyze the gradual shift from investments in savings accounts to bonds, stocks, and mutual funds in particular. A particularly interesting "policy shock" is the transition process in East Germany. We therefore pay special attention to the portfolio choice of East German households during the transition process and compare their portfolios in the mid-nineties to those of West German households.

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1. Introduction

The savings behavior of German households has attracted the interest of several empirical studies.[1] German households' saving rates are not only fairly high by international standards, yet they also do not seem to follow the strong downward trend of saving rates in Britain or the U.S. (cf. Figure 13 in the appendix[2]). Germany's high (financial) savings rates are mirrored in the high share of financial assets as compared to households' total net worth which has amounted to 43% according to Deutsche Bundesbank (1999b) estimations. They are also mirrored in the high rates of increase of households' financial assets (cf. Figure 14 in the appendix). In recent years, households' total financial assets have increased at a much faster pace than disposable income in spite of the slightly decreasing saving rates (cf. Figure 13 and Figure 14), suggesting that capital gains from financial assets have become more and more important in recent years.

Contrary to savings in financial assets, ownership rates of housing have been traditionally low in Germany and have only slightly increased in recent years. The ownership rate of housing has risen to 47% in West Germany in 1993 according to the German Income and Expenditure Survey and is much smaller in East Germany. The percentage of households' disposable income invested in real estate has increased around the period of German reunification, yet has dropped to its values in the sixties in recent years (cf. Figure 13). During the same period, gross real estate formation has risen to a peak level of 6.2% in 1994 (which has only been exceeded by gross real estate formation in the early seventies) and gradually fallen back to 5.4% in 1997.[3]

In 1993, debt financing of the real estate formation has reached a record level of 90% and afterwards decreased to the (by German standards still unusually high) value of 75% in 1997. In spite of the increased percentage of debt financing of real estate, the percentage of new loans (as compared to disposable income) has fallen strongly after 1991 and has increased only slightly in the late nineties (cf. Figure 13). Consumer loans that have always been uncommon in Germany as compared to other countries have slightly increased, yet have still

[1] Cf. e.g. Deutsche Bundesbank (1993b, 1999b), Kim (1992), Schönig (1996), Börsch-Supan (1994a,b), Börsch-Supan et al. (1999), or Schnabel (1999).

[2] Figure 13 refers to households including non-profit organizations. Deutsche Bundesbank (1999b) estimates that the savings rate of East and West German households (excl. organizations) has dropped from 13.2 % in 1991 to 10.9% in 1997.

[3] Cf. Deutsche Bundesbank (1999a), p. 36.

amounted to less than 1.5% of total household net worth in wave 1993 of the German Income and Expenditure Survey.

Not only the savings rates, percentages of new loans and homeownership rates of German households deviate substantially from their counterparts in the Anglo-Saxon world, yet also the composition of the portfolio of financial assets among German households – and institutional investors – seems to be at variance: Even in 1993, when the ownership rates of mutual funds had rocketed after the introduction of the capital gains source tax on interest income, only 12% (14%) of West (East) German households held mutual funds. Those who did hold mutual funds had invested less than 20% (East: around 25%) of their financial wealth in these assets according to household responses recorded in wave 1993 of the German Income and Expenditure Survey. The portfolios of German households are instead still dominated by life insurance and savings accounts. Bonds had gained short-term favor during the period of reunification (cf. Deutsche Bundesbank, 1999a,b). The percentage of financial assets directly invested in stocks has started to rise only after 1995 and is still below 10%.

It is the aim of this – wholly descriptive and exploratory - study to present stylized facts and recent trends on the German financial markets in general and in the portfolio composition of German households in particular. The specific focus of this paper is on shifts in the asset structure of West and East German households to the policy changes of the 1980s and 90s. Starting out from a few well-known facts as to the saving behavior of West German households, such as the high saving rates and low ownership rates for housing and risky assets, we use both macro- and microdata from various sources to analyze the gradual shift from investments in savings accounts to bonds, stocks, and mutual funds in particular. A particularly interesting "policy shock" is the transition process in East Germany. We therefore pay special attention to the portfolio choice of East German households during the transition process and compare their portfolios in the mid-nineties to those of West German households.

In spite of the "unusual" composition of households' portfolios, empirical studies of German households' portfolio choice are comparatively rare. The lack of a panel survey of financial behavior in Germany and the until recently very restricted access to the German Income and Expenditure Survey (EVS) has inhibited empirical researchers from thoroughly investigating the determinants of households' portfolio composition and its changes over time. The latter survey addresses (varying sets of) households every five years, asking roughly 30,000

households[4] for their asset holdings, expenditures, and a number of socioeconomic characteristics. Households whose income exceeds a fixed upper limit (which roughly amounts to the 97 percentile of the income distribution) are excluded. Results from these cross-section surveys are regularly published by the German Statistical Office.[5]

Schlomann (1992), Grimm (1998), and Lang (1996) have used waves 1983, 1988, and 1978, 1983, 1988 of the Income and Expenditure Survey, respectively, to analyze the socioeconomic determinants of household portfolio choice. Börsch-Supan and Stahl (1989) as well as Brunsbach and Lang (1998) and Walliser and Winter (1999) have focused on specific assets, i.e. building society savings contracts ("*Bausparverträge*") and life insurance contracts, to analyze the effect of tax incentives and policy changes on the households' asset choice.

Himmelreicher (1999) has instead profited from the panel structure of the German Socioeconomic Panel for a cohort study of wealth and portfolio choice, yet had to rely on reported income levels from interests and dividends and highly aggregated indications as to asset ownership in order to determine household wealth levels.

Referring to national accounts figures, Deutsche Bundesbank and Deutsches Institut für Wirtschaftsforschung[6] regularly report on the financial assets of German households and infrequently add estimations as to the total net worth of German households.[7] Unlike micro data sets, national accounts statistics cover all the population and are immune to underreporting and selectivity bias. They may, however, lead to a biased impression as to the trends in the portfolio composition of German households if the growth rates of ownership rates and investments counterbalance each other. Moreover, Germany's financial statistics no longer distinguish between West German and East German households since 1992 when the two-year overlap period of West German and Unified German time series ended.

Surprisingly little is known as to recent trends in households' portfolio composition and especially as to the adjustment process of East German households to a new financial system. This seems particularly noteworthy since the process of deregulating German financial

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[4] The 1993 wave of the Income and Expenditure Survey has increased in size and covers roughly 30,000 West German households and rougly 10,000 East German households.

[5] Cf. e.g. Euler (1985, 1990, 1992) or Hertel (1997).

[6] Deutsche Bundesbank regularly reports on the financial assets of households in the May issue of their monthly reports. Also, Deutsches Institut für Wirtschaftsforschung reports on financial assets and interest and dividend income on the basis of the national accounts once a year in their weekly reports.

[7] Cf. Bundesbank (1993b and 1999b).

markets in the late eighties and nineties should have affected German households at least indirectly. Moreover, savings and income policies have changed during and after German reunification and have aimed to increase wealth formation in East Germany. Deutsche Bundesbank has reported on the effects of tax changes on household behavior in several issues of their monthly reports, yet it remains largely unclear whether households have reacted to the changes in savings policies. A study of households' reactions to recent changes in the after-tax yield structure seems, however, necessary to predict the success of a partial reform of the German social security system that aims to set incentives for households' savings for retirement.

To this end, the paper is structured as follows: The second section of this paper sketches changes in the institutional framework of financial markets and household savings as well as changes in asset yields in Germany that may have affected household portfolio choice in the eighties and nineties. The third section describes recent trends in the composition of household portfolios on the basis of national accounts statistics and the Income and Expenditure Survey. The fourth section focuses on trends in ownership rates, patterns of diversification, and asset holdings and compares the results from three German micro data sets. The specific focus of each of these three micro data sets is exploited in the fifth section to provide glimpses as to the likely effect of various households' socioeconomic characteristics on their portfolio choice. The sixth section is devoted to East-West-German differences in household portfolio choice and their determinants. Section seven concludes the paper.

2. Institutional Framework

2.1. A summary of facts on German financial markets and monetary policy

The universal bank system as well as the German government have relied on the domestic bond market to refinance loans and to finance the budget deficit during the eighties. The percentage of bonds issued by companies other than banks has been negligible, however. Capital export restrictions hindering foreigners to purchase domestic bonds have been abolished in the mid-eighties.[8] Bond market deregulation aimed at widening the range of

[8] In 1984, the coupon tax discriminating foreign from domestic owners of bonds was abolished. In 1985, German based foreign banks were granted the right to act as leaders of syndicates issuing DM-valued bonds. In 1986, foreign banks based in Germany were granted access to the syndicate offering government bonds.

possible purchasers of domestic bonds which more or less exclusively consisted of government and bank bonds. The deregulation process was, moreover, favored by Deutsche Bundesbank since it secured the role of its minimum reserve policy as a means of monetary control. From an ex-post-view, the deregulation process had occurred timely and permitted German banks and up to nine government agencies to attract international capital to finance reunification by issuing new bonds.

Unlike the deregulation process of the bond market which had occurred earlier than in other European countries, the process of deregulating the German money market has started only in 1989. As of 1985, Deutsche Bundesbank used the money market as the primary means to control monetary growth. Deutsche Bundesbank therefore opposed the deregulation of the money market throughout the late eighties and only gradually given in to the introduction of commercial papers (1989, 1991)[9] and money market funds (1994).

German stock markets have been thin and comparatively "neglected" until recently. Stock market capitalization is only 23% as compared to 97% in the Netherlands, 87% in the United Kingdom, and 55% in the United States.[10] Balance publication and codetermination regulations disfavored corporations. The large majority of smaller companies therefore chose the legal form of a company with limited liabilities (*GmbH*) rather than a corporation (*AG*). Stock exchange supervision was lagging behind international standards and did not contribute to the attractiveness of German stock markets for international investors. Various tax regulations[11] and regulations as to the composition of assets of institutional investors[12] disfavored stocks to bonds. The access of mutual funds to German capital markets was strongly restricted by various regulations that started to be liberalized in 1986. Major breakthroughs in the deregulation process for stock markets in general and mutual funds in particular were reached only by the three major policy changes promoting financial markets in 1990, 1994, and 1998, however.[13] It seems noteworthy that the process of improving stock

[9] Deutsche Bundesbank accepted the introduction of commercial papers in 1989. Only when the stock exchange value tax was abolished in 1991, commercial papers became attractive, however.

[10] Cf. World Bank (1998), Table 5.2.

[11] Double taxation of dividends by the corporate and personal wealth taxes has only been abolished in 1996. Accounting laws and tax regulations imply that investing in registered bonds is favorable to stocks for institutional investors such as life insurance companies. Tax regulations also imply that establishing pension reserves has been favorable to employers as compared to investments in mutual funds.

[12] Insurance companies have been obliged to invest no more than 30% in German stocks until 1994 and are still obliged to invest 80% of their assets in the same currency as their liabilities.

[13] The first law to promote financial markets (*Finanzmarktförderungsgesetz*) implied the abolishment of stock exchange value taxes (*Börsenumsatzsteuer*) in 1991 and of a tax on newly issued bonds or stocks (*Gesellschaftsteuer*) in 1992. Both this law and a law directed exclusively at institutional investors (*Gesetz über*

market supervision and the deregulation process for stock markets has been initiated by the European Communities rather than by domestic interest groups: In the late eighties, policy changes as to the stock markets had by and large been necessitated by EC directives aiming to provide a joint institutional framework for the common financial market that has been set into action by January 1, 1992. In the second half of the nineties, however, stock market deregulation has gained additional impetus by the privatization of parts of the public sector industries (such as the initial public offering of Deutsche Telekom shares in November 1996) and, more importantly, by the need to reform Germany's ailing social security system.[14]

2.2.Taxation and savings subsidies

Starting already in the fifties, German tax and savings subsidies policies had initially been set up in order to increase the formation of household wealth and the stock of housing. During the sixties and seventies, the focus of these policies was shifted from high-income earners to low- and medium-income earners with children.

The downswing of the government's program to enhance wealth formation started in 1975 when budget cuts were unavoidable. As of 1980, the range of financial assets entitled to tax exemptions and savings subsidies was gradually narrowed to building society savings contracts (*Bausparverträge*) and investments in "productive capital", i.e. employees' shares or loans to the employer. Subsidies were implicitly reduced by fixing the upper thresholds for household income at their 1975 nominal values until 1990.

German reunification initiated a revival of policies promoting household wealth formation especially in East Germany. Discriminating between East and West German households by their place of residence, subsidies and tax exemptions focused exclusively on buildings society savings contracts and mutual funds as of 1990/1991. Income thresholds were raised in 1990, 1996, and 1999. In 1999, the maximal amount of investments entitled to savings subsidies has been raised for the first time since 1983 and now consists of a two-tier system of subsidizing up to 936 DM investments in building societies savings contracts (as before) plus up to 800 DM tax-exempt investments in mutual funds per year.

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*Kapitalanlagegesellsch*aften) substantially widened the range of investments for institutional investors as of 1990. 1994 policy changes focused at smaller corporations, stock market and banking supervision and again widened the range of investments of institutional investors. The third law to promote financial markets (1998) was passed to prepare German capital markets for the European Monetary Union, yet also focused on mutual funds and aimed to open the stock and bond markets for private pension funds.

[14] Cf. Börsch-Supan and Winter (1999).

In addition to this system of savings subsidies, German policies of promoting wealth formation rests on a second pillar, i.e. the favorable tax treatment of assets such as housing and life insurance contracts. The range of tax exemptions and tax-deductible items has gradually been curbed during the eighties and has been expanded only for a restricted period of time after German reunification:

The focus of tax-exemptions for investments in owner-occupied housing was narrowed to families with children in 1986 and expanded to residents of East Germany after 1990. After German reunification, investments in East Germany generally offered a number of tax advantages aiming to attract West German investors including richer West German households. In order to further increase incentives for housing construction after German reunification, mortgage interests became tax-deductible for a restricted period of three years as of 1991.[15] In 1996, the focus of the tax-favored treatment of housing was shifted back to low- and medium-income households with children: The tax-favored treatment of housing for high-income earners was reduced by switching to a capped system of subsidies. Also in 1996, a verdict of the German Supreme Court (*Bundesverfassungsgericht*) ruled out the tax discrimination between housing and financial assets in the wealth and bequest/gift tax code. Homeowners have previously been treated increasingly favorably as compared to tenants since the wealth and bequest tax system referred to outdated unit values of housing rather than sales values.[16] As of January 1, 1997 the wealth tax was abolished. The revised bequest tax, however, still allows for tax exemptions of housing up to the price of an average family home for children and an average townhouse for grandchildren.

As of 1983 already, the group of persons entitled to tax exemptions for insurance premia (including endowment life insurance contracts) and contributions to building societies savings contracts was restricted almost exclusively to self-employed persons and civil servants irrespective of their income. This regulation is particularly noteworthy since it runs counter to the general thrust of German policies to promote wealth formation of the less well-to-do. It is planned to close this - and a number of other – loopholes in the personal income tax regulations by the year 2000, however.

As described by Börsch-Supan (1994a) or Lang, Nöhrbaß, and Stahl (1998), loopholes in the personal income tax laws and especially the tax authorities' reluctance to check upon income

[15] Mortgage interest and interest on loans are not tax-deductible for households in Germany cf. Börsch-Supan (1994a).

[16] Cf. Börsch-Supan (1994a).

tax declarations formed another pillar of German policies promoting investments in interest-bearing financial assets rather than stocks and housing. In light of the various tax-exemptions for housing, it becomes evident that investments in stocks has been largely disfavored as compared to other assets by personal income and wealth tax regulations: 36% of the dividend income is automatically withheld and double taxation of stocks by the corporate and personal wealth tax has ended only with the abolishment of the personal wealth tax in 1997. Loose control of tax evasion implied that the difference in the yield of stocks and bonds narrowed considerably if interest income remained unknown to the tax authorities (see also the average pre- and after-tax yields summarized in Table 1).

Table 1: Yields of stocks and government bonds (cf. Stehle, 1999)

Asset	**Marginal tax rate**	**Average annual yield in % (nominal)**		**Average annual yield in % (real-valued)**	
		Jan. 1988 - Dec. 1997	**Jan. 1969 – Dec. 1998**	**Jan. 1988 - Dec. 1997**	**Jan. 1969 – Dec. 1998**
Stocks	**0%**	16.9	10.8	13.7	7.0
	36%	15.5	9.2	12.3	5.5
	56%	14.7	8.3	11.5	4.6
Government bonds	**0%**	7.4	7.6	4.8	3.9
	36%	4.7	4.8	1.8	1.3
	56%	3.2	3.3	0.4	-0.2

Source: Stehle, R., 1999, p. 13.

The short-term introduction of a capital gains source tax (*Kleine Kapitalertragsteuer*) in the period January to June 1989 as well as the definite introduction of this source tax (*Zinsabschlagsteuer*)[17] on January 1, 1993 and the introduction of a tax on interest income from foreign assets (*Zwischengewinnbesteuerung*) in September 1994 set an end to this implicit policy of favoring high-income owners of interest-bearing financial assets. Similar to the abolishment of the wealth tax by the end of 1996, this policy change had been necessitated by a verdict of the German Supreme Court demanding equal treatment of income from all

[17] Beyond a tax-exempt threshold of 6,000 DM (12,000DM for married couples), 30% of interest payments are automatically withheld. This rate increases to 35% if bonds are held at home (*Tafelpapiere*). Note that this rule is still slightly discriminatory towards stocks since 36% of dividend income are automatically withheld.

sources. In the wake of the introduction of the new source tax, controls of income tax declarations have become more frequent and several of the major German banks have been accused of helping their customers to illegally avoid tax payments. The envisaged income tax reform starting in 2000 aims to further reduce the number of loopholes in the personal income tax and to reduce tax-exemptions for interest income by 50%.

2.3 Market reactions

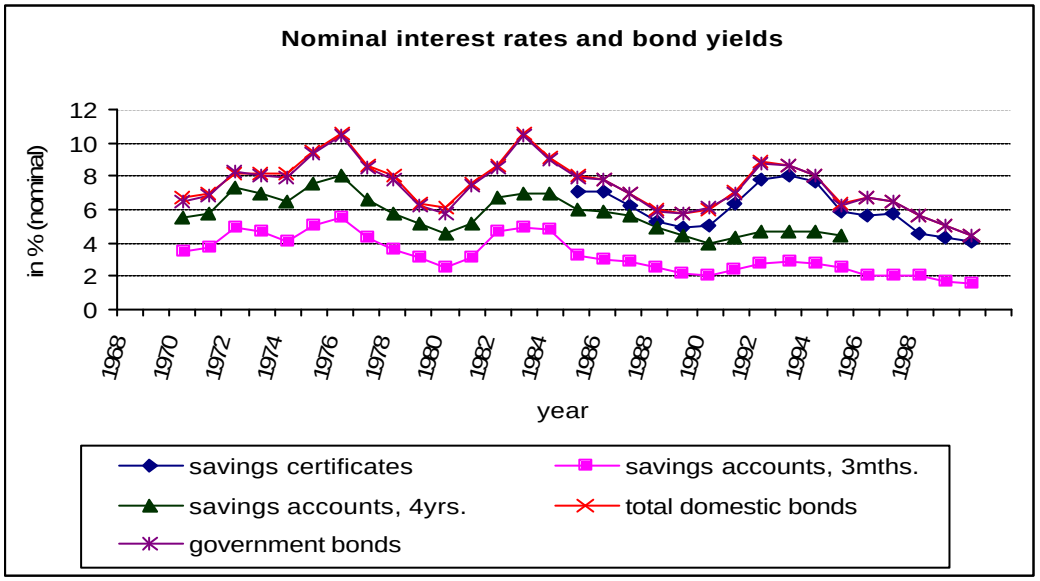
The change of monetary policies in the seventies, the very restrictive monetary policy of Deutsche Bundesbank during the second oil crises, the international increase of interest rates in the early eighties as well as German reunification are clearly reflected by nominal interest rates in Figure 1a. This figure also clearly indicates that government bonds have always been offered at competitive rates. Nominal interest rates of savings certificates follow the general trend of bonds with similar term structure, yet seem to be characterized by a somewhat smaller yield - especially in periods when nominal interest rates of other domestic bonds show strong peaks. Nominal interest rates of savings accounts, savings passbooks, and savings certificates have been substantially lower than bond yields. Figure 1a and Figure 2 clearly reflect that the difference between bond yields and interest rates for savings accounts and passbooks increases whenever nominal bond yields increase strongly. This pattern is particularly noteworthy for long-term savings accounts that should be close substitutes to bonds and savings certificates and rules out explanations that refer higher expected inflation rates for long-term than for short-term assets. Instead, it seems that even in the nineties the competition between banks did not suffice to adjust interest rates to market rates for those assets that were of no relevance for institutional investors. This proposition is also confirmed by the difference between credit and debit interest rates: Interest rates for loans seem to have been adjusted to market rates immediately when bond yields have risen, yet have been fairly slow to respond to decreases in nominal bond yields.

Figure 1b shows that real bond yields have almost steadily increased since the mid-seventies and have started to decrease during the process of deregulating bond markets. Real bond yields have rocketed during the period of German reunification and have dropped equally fast and to unprecedently low levels when inflation rates increased dramatically in 1993. When monetary control won over inflation, real bond yields started to increase again shortly, yet have been continuously decreasing throughout the late nineties. Real interest rates have followed the trend of bond yields, yet show smaller rates of increase before short-term peaks.

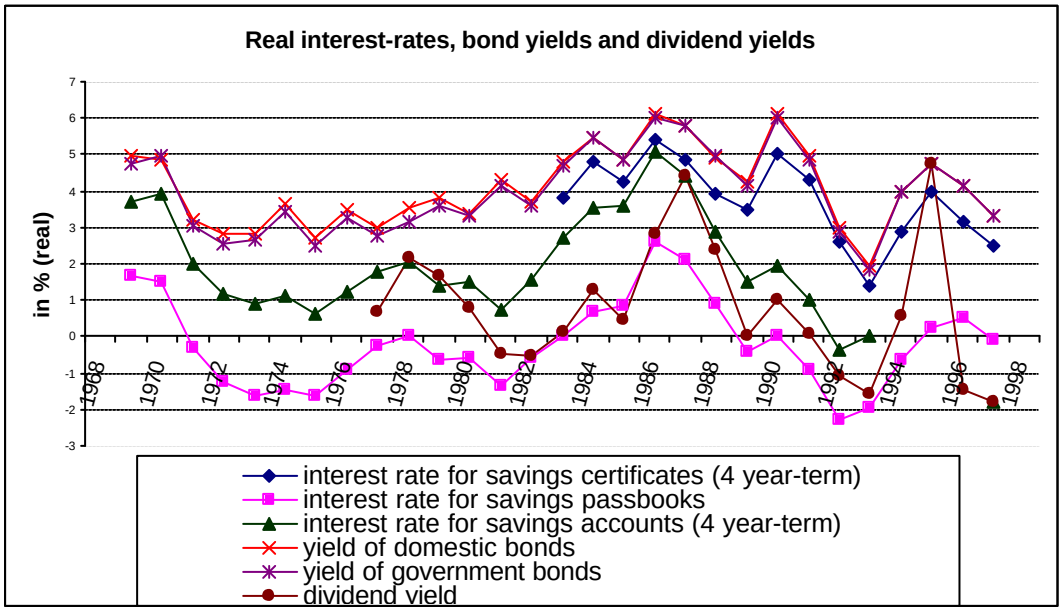
Eventually, it seems noteworthy that real interest rates of savings passbooks (and short-term savings accounts when reported) have been negative throughout the seventies and the early eighties. Interest rates of savings passbooks and savings accounts increased strongly in the late eighties and became negative again during the period of German reunification.

Figure 1: Interest rates and bond yields

a) Nominal interest rates and bond yields

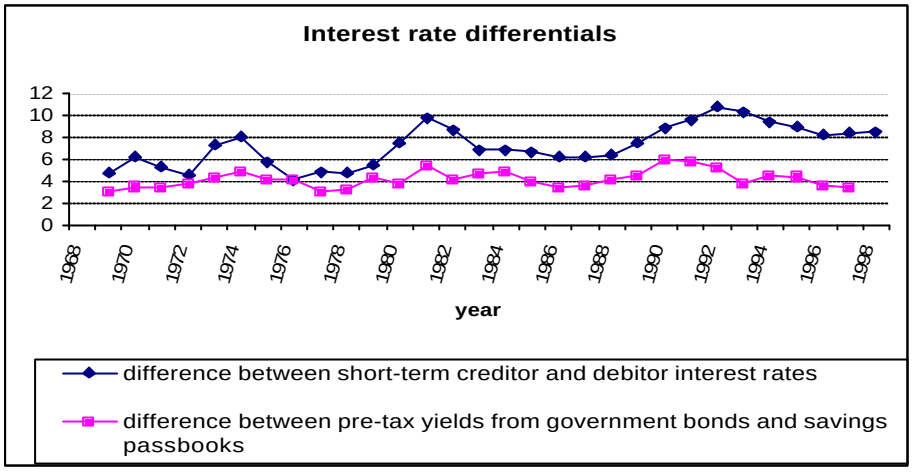


b) Real interest rates and bond yields



Source: Deutsche Bundesbank, Monthly Reports. Various Issues.

Figure 2: Interest differentials



Source: Deutsche Bundesbank, Monthly Reports. Various Issues.

3. Portfolio Composition

The average portfolio composition of German households as reflected by national accounts data and the Income and Expenditure Survey is described in this section. National accounts data refer to households' financial assets only and, moreover, do not permit to distinguish households from non-profit organizations or West German households from East German households as of 1993. We therefore split the presentation of macro results into a first part reflecting long-run trends on the basis of West German national accounts data until 1992 and unified German national accounts data after 1992 (cf. Figure 3a and b) and a second part referring to separate estimations by Deutsche Bundesbank (1999b) as to the portfolio composition of German households (excluding non-profit organizations) after German reunification (cf. Table 2).

It should be noted that the definitions of some of the assets vary slightly between the diverse data sets. We have tried to aggregate asset categories as little as possible and will describe variations in the asset definitions at great detail in order to provide insights as to the differences in the behavior of non-profit organizations and households as well as the effect of weighting schemes and sample selectivity in the micro data sets.[18]

In all the graphs and figures presented in this section, percentages for subcategories (such as single financial assets or types of loans) refer to the ratio of the sales value of this specific

[18] For a detailed analysis of the differences between corresponding figures from national accounts data and waves 1978 to 1988 of the Income and Expenditure Survey cf. Lang (1998). Hertel (1997) and Börsch-Supan et al. (1999) discuss differences between waves 1993 and the national accounts.

subcategory of assets as compared to the sales value of corresponding assets at the next higher aggregation level (such as total financial assets or total debt). The percentage for bonds in Table 3 e.g. should be interpreted as the ratio of the sales value of all bonds held by households or non-profit companies as compared to the total sales value of all financial assets represented in this list. The percentages of total financial assets, total debt, and total non-financial assets refer to the ratio of the total net sales value of this broad category of asset and the sales value of households' total net wealth in Table 2. Correspondingly, percentages in Table 3 are computed as the ratio of average asset holdings and average holdings of the aggregate. The average share of real estate e.g. is defined as the ratio of the average net sales value of households' real estate and their average net wealth.

Since the stock of households' non-financial assets other than real estate is not indicated in the Income and Expenditure Survey[19] and the net sales value of non-financial assets other than real estate cannot be computed for this data set, we introduce the share of the average value of consumer credits as compared to average total net wealth as a correction term in Table 3. Accumulated pension wealth is comprised in the national accounts asset category "insurance and pension wealth" and cannot be distinguished from the sales value of life insurance contracts and households' claims towards insurance companies in general. There are no indications as to pension wealth in the Income and Expenditure Survey, however. The percentage of financial wealth should thus be higher in Table 2 than in Table 3.

3.1. Long-term macro trends

Clearly, it is impossible to analyze the structure of causes, consequences, and feedbacks of policy changes, changes in real interest rates and bond yields, and shifts in the households' portfolio composition within the framework of a descriptive study. Still, the two graphs combined in Figure 3 show remarkable trends in the composition of the assets of households and non-profit organizations which seem to be related to the general trends on financial markets and roughly match the timing and direction of policy changes in Germany: The percentages of both short-term and long-term savings accounts and building society savings accounts have shrunk throughout the observation period, yet rates of decrease were highest before 1985. West German households evidently shifted their assets from long-term savings contracts of any kind towards life insurance contracts and bonds (including savings

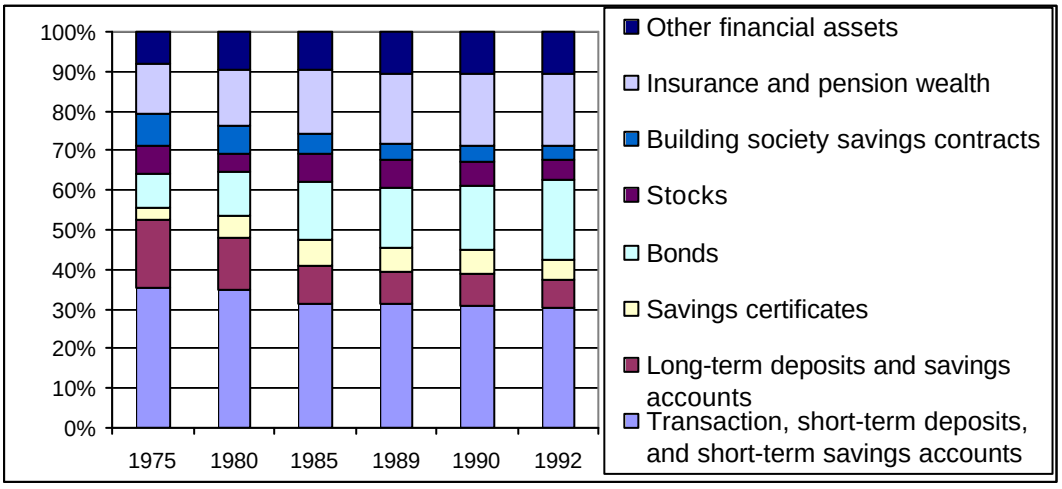
[19] The unit value of business property is indicated in wave 1983.

certificates. Rates of increase of life insurance contracts were highest before 1989 and dropped to almost zero during the period of reunification. The market shares of bonds had stayed roughly constant during the second half of the eighties and increased strongly during the early nineties for bonds other than savings certificates.

As of 1990, (unified) German national accounts include mutual funds as a separate asset rather than splitting mutual funds into bond- and stock-related mutual funds and merging these with categories stocks and bonds as before. In spite of the revised definition of stocks, bonds, and mutual funds it becomes clear from Figure 3b that the market shares of mutual funds rocketed during the nineties. The sum of the market shares of bonds and stocks has also increased during the nineties, yet it seems noteworthy that the relative shares of either of the assets moved in opposite directions: In light of the yield structure represented in Figure 1, Figure 3b suggests that investors have considered bonds and stocks as close substitutes and switched between the two assets in accordance with their relative yields. Eventually, it seems noteworthy that the market share of short-term savings, deposit, and transaction accounts (i.e. accounts with a term of less than one year) has increased during the early nineties and decreased again in the second half of the nineties. Figure 3b suggests that this change of investment behavior may have been related to the sudden jump in Germany's inflation rate in 1993/1994.

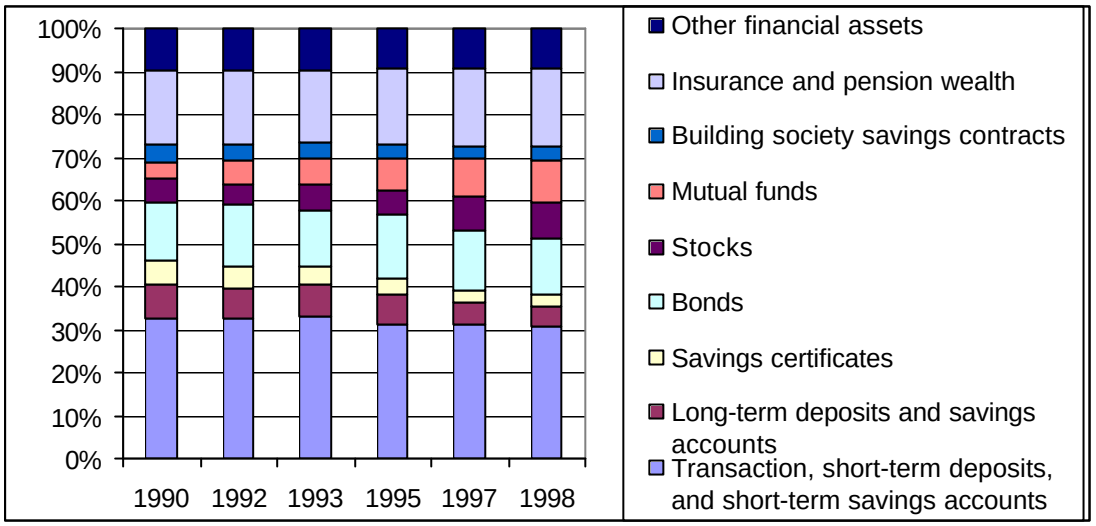
Figure 3: The composition of households' financial assets: Aggregate financial accounts

a) West Germany



Source: Deutsche Bundesbank (1994b).

b) Germany



Source: Deutsche Bundesbank (1999a).

3.2. Recent changes in the portfolio composition of households

3.2.1. A macro-perspective

Differences between the composition of financial assets for households (cf. Table 2) and the aggregate of households and non-profit organizations (cf. Figure 3) are smallish and by and large refer to transaction, deposit, and savings accounts as well as insurance and pension wealth. National accounts data underestimate households' asset holdings in these two assets by roughly three percentage points. The current sales value of mutual funds and bonds is slightly overestimated, whereas estimates as to the current sales value of stocks are surprisingly precise.

As has been reflected by Figure 13 and Figure 14 already, Table 2 shows that the relative share of households' financial assets has increased as compared to their share of non-financial assets. Regarding non-financial assets, it seems noteworthy that the net worth of real estate wealth has decreased slightly as compared to other non-financial assets whereas the share of consumer credits decreased as compared to mortgage loans (after 1992). The ratio of total debt as compared to total net wealth has increased slightly since 1992.

Table 2: Composition of household net worth: Aggregate financial accounts

	Germany: Households excl. non-profit organizations				
	1990	**1992**	**1993**	**1995**	**1997**
Financial assets					
Transaction, deposit, and savings accounts and savings certificates[20]	43.8	42.7	42.3	39.6	37.0
Bonds[21]	13.9	14.3	13.6	15.0	13.6
Stocks	5.5	4.8	5.8	5.5	8.3
Mutual funds and managed investment accounts	3.9	5.5	6.2	7.6	8.6
Building society savings contracts	4.1	3.9	3.7	3.4	3.4
Insurance and pension wealth	20.9	20.9	20.9	21.8	22.5
Other financial assets	7.8	7.8	7.4	6.9	6.6
Total financial assets	**37.5**	**38.1**	**39.2**	**40.4**	**42.8**
Non-financial assets					
Real estate wealth	83.0	82.5	82.4	82.7	81.9
Stock of durable goods	17.0	17.5	17.6	17.3	18.1
Total non-financial assets	**62.5**	**61.9**	**60.8**	**59.6**	**57.2**
Debt					
Mortgage loans	76.6	74.7	75.8	78.1	79.6
Consumer credit	23.4	25.3	24.2	21.9	20.4
Total debt	**13.1**	**13.1**	**13.4**	**14.2**	**14.8**

Source: Deutsche Bundesbank (1999b).

[20] Note that the definition of this asset differs from Figure 3 which distinguishes savings certificates from savings, transactions, and deposit accounts

[21] Bonds are no further disaggregated in the national accounts data nor in the figures given in Deutsche Bundesbank (1999b), which also rest on the national accounts data. In their deposit statistics, Deutsche Bundesbank publishes only the nominal value of households' bond holdings. Judging from the latter data, the relative shares of government bonds, domestic bank bonds, and other domestic bonds have amounted to 37, 61, and 2% of total domestic bond holdings in 1997. Less than 5% of total bond holdings have been invested in foreign DM-valued bonds.

3.2.2. Comparing macro- and micro-data

Several studies have compared national accounts data to Income and Expenditure Data already. Lang (1998) finds that underreporting of financial assets is substantial and has increased over waves 1978, 1983, and 1988: In 1978, the total net worth of financial assets as measured on the basis of the Income and Expenditure Data amounted slightly less than 50% of the total net worth reported by Deutsche Bundesbank. This percentage has dropped to slightly less than 40% in 1988. Lang (1998) also finds that underreporting varies by assets and is particularly serious for bonds, mutual funds, loans, and deposit accounts.[22] Börsch-Supan et al. (1999) find that income and transfers received are slightly underreported in 1993 while ownership rates of housing are substantially larger than in the housing census.

Clearly, the same pattern is reflected by the asset shares in Table 2 and Table 3. Considering the fact that the Bundesbank (1999b) figures include the sales value of life insurance contracts as well as pension wealth and claims towards insurance companies while 1993 Income and Expenditure Survey data refer to the sales value of endowment life insurances only, the difference of ten percentage points between the asset shares corresponding to Income and Expenditure Survey and Bundesbank data seems enormous. Also, the indicated share of buildings society savings contracts in the Income and Expenditure Survey is double its size in the Bundesbank figures for 1993. Underreporting in the Income and Expenditure Survey is most extreme in transaction and savings accounts: In 1993, the share of transaction and savings accounts as indicated in the Income and Expenditure Survey amounts to less than 60% of the Bundesbank figures (from which the national accounts percentage of savings certificates has been subtracted to match asset definitions). The share of mutual funds reported in wave 1993 of the Income and Expenditure Survey amounts to three thirds of the Bundesbank (1999b) shares. Underreporting also seemed to prevail for stocks and bonds in 1993.

Comparing the estimated shares of financial assets as compared to households' total net wealth that have been reported by Deutsche Bundesbank (1993b) to the shares computed for waves 1983, 1988, and 1993 of the Income and Expenditure Survey, we find surprising differences: According to Deutsche Bundesbank (1993b), the share of financial assets has remained stable at a level of roughly 39% for years 1970, 1980, and 1990 and has only started to increase in the nineties. The massive jump in the share of financial assets between waves 1988 to 1993 of the Income and Expenditure Survey is anything but paralleled by estimates of

[22] Cf. Lang (1998), p. 63.

Deutsche Bundesbank (1993b) and rather suggests that the extent of underreporting may have decreased between 1988 and 1993.

As has been stated above already, the gross worth non-financial assets other than real estate is not reported in the Income and Expenditure Survey. The indicated shares of financial assets and non-financial assets as compared to total net wealth cannot be directly compared for Tables 2 and 3. It is all the more surprising, however, that the indicated share of financial assets as compared to the households' total net wealth is substantially smaller in the Income and Expenditure Survey than in the Bundesbank (1999b) estimates. Eventually, this result confirms Lang's (1998) finding that the total worth of households' financial assets is massively underreported. It is also surprising (and possibly an artefact due to the underreporting of financial assets) that the 1993 percentage of total debt as compared to total net wealth is in the same range for both data sets in spite of Lang's (1998) result that loans have been underreported in previous waves.

3.2.3. Comparing the composition of East and West German households' portfolios

Assuming that underreporting behavior is identical for East and West German households, the differences between the portfolios of East and West German households seems striking: The percentage of financial wealth as compared to total net wealth is substantially higher for East Germans. Also, the percentage of consumer credits as compared to total debt is much higher for East Germans than for West Germans, although the percentage of loans as compared to total net wealth is lower.

Focussing on their portfolio of financial assets only, it seems noteworthy that East Germans (admit to) hold double the share of West German households in savings and transaction accounts. They also hold a higher percentage of their financial assets in mutual funds, building society savings contracts and "other financial assets" and thus seem to have responded positively to the savings incentives set by post-reunification policies. On average, East Germans hold a substantially smaller percentage of their assets in bonds and hold practically no stocks directly. Endowment life insurance contracts were unavailable in the German Democratic Republic. It therefore comes as no surprise that East and West Germans could not reach equivalent shares of life insurance contracts within three years after reunification.

In light of the above described differences in the portfolio composition of East and West German households, it seems noteworthy, however, that the percentage of *risky assets* (i.e. bonds other than government bonds and savings certificates, mutual funds, and stocks) is fairly similar for both parts of the country. The share of risky assets as compared to total financial wealth of East German households is already higher than the respective share for West German shares in 1988. It is the massive difference in the shares of life insurance contracts and savings and transaction accounts that determines the marked difference in the share of "*clearly safe assets*" (which are identical to savings and transaction accounts) and "*fairly safe assets*" (which include all other financial assets) between West and East Germans in 1993.

Table 3: Composition of household wealth: Survey data

	1983	**1988**	**1993 (Total)**	**1993 West**	**1993 East**
Financial assets					
Transaction and savings accounts	26.9	26.4	24.1	22.1	42.8
Government bonds	3.2	2.4	4.7	4.7	4.7
Other bonds (including savings certificates)	11.3	11.7	15.2	15.7	11.3
Stocks	3.8	4.7	4.3	4.6	0.8
Mutual funds and managed investment accounts	1.5	2.2	4.7	4.6	6.1
Life insurance contracts[23]	36.3	39.1	29.1	31.4	7.6
Building society savings contracts	13.1	9.9	7.2	7.0	9.0
Other financial assets	4.0	3.5	10.7	9.8	17.8
Total financial assets	**19.7**	**20.9**	**28.0**	**27.2**	**35.0**
Clearly safe financial assets	**26.9**	**26.4**	**24.1**	**22.1**	**42.8**
Fairly safe financial assets	**66.8**	**64.9**	**64.1**	**65.8**	**48.2**
Risky financial assets	**6.3**	**8.8**	**11.8**	**12.1**	**9.1**
Non-financial assets					
Total real estate[24]	**81.2**	**80.2**	**73.4**	**74.2**	**67.2**
Total risky assets=risky financial assets	**6.3**	**8.8**	**11.8**	**12.1**	**9.1**

[23] Waves 1978 to 1988 of the Income and Expenditure Survey do not include the sales value of endowment life insurance contracts, yet only the insurance sum of life insurance contracts of any kind. The shares of life insurance contracts have been constructed on the basis of 1993 estimation results of regressing sales values of endowment life insurance contract on insurance sums at various ages and employment characteristics of the respondent.

[24] Waves 1979 to 1988 do not include indications as to the sales values of real estate. We have therefore predicted sales values of real estate on the basis of 1993 estimation results of a hedonic regression of sales values on unit values at various years of purchase and a number of housing characteristics.

Table 3, cont.

	1983	1988	1993 (Total)	1993 West	1993 East
Debt					
Mortgage and real estate debt	92.4	91.4	90.2	90.7	78.1
Consumer credit	7.6	8.7	9.8	9.3	21.9
Consumer credit in % of total net wealth	1.0	1.1	1.4	1.4	2.1
Total debt	**12.5**	**12.6**	**14.5**	**14.7**	**9.8**

Source: Income and Expenditure Survey

4. Qualitative Aspects of Portfolio Choice

4.1. Ownership rates and asset shares of asset owners

Both Figure 3 and Table 3 reflect a marked increase of the shares of risky assets in the portfolios of German households. Table 3, moreover, indicates that the share of financial assets out of total net household wealth has increased massively in the nineties. The question therefore arises whether a small and stable percentage of the population has increased the worth of their financial assets by profiting from increasing capital gains of their risky assets or whether the observation of large capital gains, policy changes, increasing total wealth and other factors have led to an increase in the ownership rates of risky assets. Moreover, it seems interesting to analyze whether owners of risky assets have increased their shares of risky assets over time.

Table 4 reports ownership rates and asset shares conditional upon ownership on the basis of waves 1978 to 1993 of the Income and Expenditure Survey. Conditional asset shares have been computed in accordance with the previous definition of asset shares, i.e. the average worth of a specific asset is divided by the average worth of the more aggregated asset type. Averages refer to all households owning this specific asset, however, rather than to all households interviewed in the Income and Expenditure Survey.

This disaggregated view of the behavioral changes of German households leads to remarkable results for financial assets: With the single exception of building societies savings contracts, ownership rates of financial assets seem to be far more volatile than asset shares. In principle, this could – at least partly - be due to mere size effects of the households' stocks of each assets. It seems, however, that both West and East Germans aim for specific focal points when investing in risky or "fairly safe" financial assets and that these focal points remain stable over time: For West Germans, the combined share of life insurance contracts, building

society savings contracts, government bonds, or other financial assets as compared to total financial assets remains constant at two thirds over the ten-year period or 1983 to 1993. The share of risky assets has increased over time for owners of risky assets. The increase is, however, almost exclusively due the increased share of mutual funds. The share of bonds and stocks has remained remarkably stable while ownership rates have increased very strongly at the same time. From a policy perspective, it seems, moreover, remarkable that the ownership rates of building society savings contracts have slightly increased over time, yet that the share of financial wealth invested in this asset has decreased strongly over time.

Regarding the shares of financial, non-financial assets, and loans as compared to the households' wealth, it seems noteworthy that the share of non-financial assets for homeowners has decreased although ownership rates of housing have increased according to the Income and Expenditure Survey data. This could be explained by the decreasing percentage of own capital in real estate formation which has been described in the introduction and is also reflected by the increase in the shares of total debt and mortgage loans. The increased share of financial assets could, however, also be explained by higher yields of financial assets than of real estate during the period of German reunification.

Comparing East and West German ownership rates and conditional asset shares, it seems striking that East German households portfolios seem to be less diversified and (if risky assets are held at all) riskier than West German households' portfolios: The ownership rates of assets (other than mutual funds) are substantially smaller than for West Germans, yet the share of each single asset out of total financial assets (and total net wealth) is higher for East German asset owners than for West German asset owners.

Table 4: Asset ownership: Survey data

	Ownership rates					Asset shares (conditional on ownership)			
	1978	1983	1988	1993		1983	1988	1993	
				West	East			West	East
Financial assets									
Transaction[25] and savings accounts	91.2	90.6	84.7	99.3	99.8	28.1	28.3	22.2	42.8
Government bonds	6.3	6.4	4.8	11.2	7.7	20.7	21.3	21.6	31.2
Other bonds	16.8	21.3	22.6	32.9	22.0	27.8	27.9	29.1	31.9
Stocks	10.0	9.7	11.4	12.0	3.1	17.6	19.2	18.5	17.0
Mutual funds and managed investment accounts	3.8	3.3	4.7	12.2	14.1	15.5	19.0	19.7	25.0
Life insurance contracts	69.9	67.2	64.6	61.6	59.1	44.8	48.1	41.3	11.7
Building society savings contracts	37.1	40.5	38.7	42.1	33.9	23.7	18.8	14.1	20.2
Other financial assets	n.a.	5.8	5.3	19.9	26.4	27.9	27.7	26.8	41.5
Total financial assets	**96.5**	**96.7**	**94.1**	**99.5**	**99.8**	**19.9**	**21.2**	**27.2**	**34.9**
Clearly safe financial assets	**91.2**	**90.6**	**84.7**	**99.3**	**99.8**	**28.1**	**28.3**	**22.2**	**42.8**
Fairly safe financial assets	**80.9**	**81.3**	**78.2**	**82.7**	**80.4**	**69.9**	**68.2**	**68.5**	**53.4**
Risky financial assets	**14.1**	**13.7**	**17.9**	**26.2**	**19.8**	**22.0**	**24.6**	**26.2**	**27.3**
Non-financial assets									
Owner-occupied housing	41.8	43.9	45.7	46.7	18.2	n.a.	n.a.	n.a.	n.a.
Total real estate	**43.3**	**46.0**	**47.4**	**51.1**	**27.4**	**86.9**	**85.5**	**79.8**	**84.9**
Business	n.a.	5.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total risky assets	n.a.	**17.8**	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Debt									
Mortgage and real estate debt	24.1	26.2	25.0	27.2	10.3	97.2	96.7	96.1	95.8
Consumer credit	14.5	17.3	19.1	22.5	19.5	27.5	27.2	24.7	52.1
Total debt	**34.9**	**38.7**	**38.6**	**42.9**	**27.1**	**21.8**	**23.9**	**27.3**	**23.2**

Source: Income and Expenditure Survey

[25] Information as to transaction accounts is provided by wave 1993 only.

4.2. Diversification

In the latter subsection, we have speculated that East German households' portfolios have been less diversified than West German households' portfolios in 1993. Table 5 confirms this hypothesis, yet shows that the difference between East and West German ownership rates of asset combinations is largest for portfolios that contain clearly safe as well as fairly safe and risky assets.

Comparing ownership rates of asset combinations over time, it should be noted that transaction accounts have not been included in waves 1978 to 1988 of the Income and Expenditure Survey. This explains the massive decrease of ownership rates for "no assets at all" and "fairly safe assets only" and the increase of corresponding asset combinations including "clearly safe assets" between waves 1988 and 1993. Still, table 5 reflects a trend towards more diversified and riskier portfolios over time. This general trend seems to have gained impetus between waves 1988 and 1993.

Table 5: Diversification of household financial portfolios

Clearly safe[26]	Fairly safe[27]	Risky	1978	1983	1988	1993	
						West	East
0	**0**	**0**	3.5	3.2	5.9	0.5	0.2
0	**0**	**1**	0.1	0.1	0.2	0.0	0.0
0	**1**	**0**	5.0	5.7	8.4	0.2	0.0
0	**1**	**1**	0.3	0.4	0.9	0.0	0.0
1	**0**	**0**	14.3	14.2	14.2	15.0	17.3
1	**0**	**1**	1.3	1.2	1.5	1.8	2.2
1	**1**	**0**	63.2	63.2	53.6	58.1	62.7
1	**1**	**1**	12.4	12.0	15.4	24.4	17.6

Source: Income and Expenditure Survey

4.3. Ownership rates: A comparison of three micro data bases

The comparison of macro- and micro-figures in tables 2 and 3 has revealed considerable underreporting of risky and "clearly safe" assets as compared to some of the assets that we

[26] Transaction accounts have been included in the definition of "clearly safe" assets only in 1993. Previous waves of the Income and Expenditure Survey neglected this assset.

[27] Information as to "other financial assets" is unavailable for wave 1978 of the Income and Expenditure Survey.

describe as "fairly safe" (life insurance and pension wealth and building societies saving contracts) in the Income and Expenditure Survey. In addition to the fact that the Income and Expenditure Survey excludes the very richest German households for reasons of data protection, Lang (1998) and Schnabel (1999) have shown that the Income and Expenditure Survey is not immune to selectivity bias even among the poorer households and generally oversamples middle-income households. Underreporting could be explained at least partly by the fact that households whose socioeconomic characteristics should increase their willingness either to hold safe assets only or hold higher shares of risky assets[28] are systematically excluded.

Since ownership rates cannot retrieved from national accounts data by definition, it seems impossible to investigate whether underreporting refers to both qualities and quantities as could be expected. At best, we can compare households' asset indications and socioeconomic characteristics from different micro data bases and analyze the discrepancies.

Unfortunately, the two other German micro data sets that provide information as to the financial behavior of German households, i.e. the German Socioeconomic Panel (GSOEP) and a marketing-oriented survey of independent cross-sections published by Spiegel-Verlag, do not provide quantitative information as to household wealth and asset holdings and use varying aggregation levels for stocks, bonds, mutual funds etc.[29] We confine ourselves to introducing the two other data sets (that we will exploit in sections 5 and 6) and to comparing ownership rates of asset combinations therefore:

Spiegel-Verlag publishes *"Soll und Haben"* surveys of households' responses as to their financial behavior roughly every fifth year. The focus of the cross-section analyses is on information, technical innovations, and customer satisfaction. The study covers independent samples of roughly 5000 West German persons in 1980, 1984, 1989, and 1995, respectively plus roughly one thousand East German respondents in 1995, and provides information as to personal and households' asset holdings at a fairly disaggregated level. Person weights have been added for 1980 and 1995 only. Household weights are not provided in this data set. The respondents' socioeconomic characteristics are described at some detail, however.

[28] For the effect of household wealth and income on their willingness to hold risky and safe assets, cf. e.g. Haliassos and Bertaut (1995), Guiso, Jappelli, and Terlizzese (1996), Bertaut (1998), Hochgürtel, Alessie, and van Soest (1997), or Börsch-Supan, Euwals, and Eymann (1999).

[29] Quantitative indications are provided for GSOEP wave 1988 only.

The German Socioeconomic Panel is the only data base that allows to follow the asset choice of single households over time. It is also the only micro data base that provides information as to the financial behavior of East German households since 1989. Savings behavior is not a major focus of the GSOEP questionnaire, however. Panel participants are regularly asked whether or not their household holds any of four financial assets, i.e. savings passbooks, life insurance contracts, building society savings contracts and a conglomerate of stocks, bonds, savings certificates and others.

Neither the definition of safe, nor fairly safe, nor risky assets that we use for the Income and Expenditure Survey and Spiegel-Verlag data matches with the GSOEP definitions. We therefore concentrate on a comparison of Spiegel-Verlag and Income and Expenditure Survey. A "corresponding" summary of the portfolio composition of the households according to GSOEP data is given in the appendix. It should be noted, however, that the ownership rates for both fairly safe assets (life insurance contracts and building society savings contracts) and risky assets as defined by the GSOEP (stocks, bonds, savings certificates, mutual funds, and other financial assets) are substantially smaller than in the two other data bases. Even more striking is the large percentage of households indicating not to have any of these four assets: Most probably the aggregation level for the four GSOEP assets was too coarse and left households unsure how to fill in widespread assets such as transaction, savings, or deposit accounts.

Comparing ownership rates of asset combinations in Table 5 and Table 6, we find that ownership rates are in fact remarkably similar, especially for the period 1983 to 1989. Figures for asset combinations comprising safe or fairly safe assets vary for years 1978/1980 and 1988/1989 suggesting that transaction and savings accounts may have been misclassified or neglected in the 1980 sample of *"Soll und Haben"* and the 1988 wave of the Income and Expenditure Survey. The single most striking difference between the two data sets refers to percentages of risky portfolios in *"Soll und Haben"* in 1995 and wave 1993 of the Income and Expenditure Survey. It seems that the increase in households' possession of risky assets, which is documented by national accounts data and to a lesser extent by the Income and Expenditure Survey, is grossly underestimated in the latest Spiegel-Verlag survey *"Soll und Haben"* for both West and East Germans.

In light of the difficulties to measure the recent increase of risky assets by interviewing households, the question arises whether a specific group of persons can be identified for whom rates of increase were particularly high. Judging from simple crosstabulations of the

distribution of age, family status, employment status, and education in the Income and Expenditure Survey 1993 and the Spiegel-Verlag survey in 1995, we find that the Spiegel-Verlag sample is generally younger, includes fewer retired persons and fewer widow(er)s, more employees, and less persons with either very low or very high education. Considering the results of empirical studies as to the determinants of ownership rates for risky assets, it seems fairly surprising, however, that undersampling the aged and persons with little education should lead to a raise in ownership rates of risky assets. Instead, we speculate that the smaller ownership rates in the Spiegel-Survey may have resulted from underreporting of interviewed households rather than sample selectivity. In order to shed light on the likely causes of varying rates of increase over time, we focus on a restricted sets of socioeconomic determinants of household portfolio choice in the following section and depict trends in the ownership rates of different segments of the population.

Table 6: Diversification of household financial portfolios

Clearly safe	Fairly safe	Risky	1980	1984 (unweighted averages)	1989 (unweighted averages)	1995	
						West	East
0	**0**	**0**	7.0	3.8	0.5	0.7	0.2
0	**0**	**1**	0.2	0.0	0.0	0.0	0.0
0	**1**	**0**	11.9	5.3	0.2	0.4	1.2
0	**1**	**1**	1.0	0.4	0.0	0.0	0.0
1	**0**	**0**	10.4	13.1	14.2	17.7	17.6
1	**0**	**1**	0.8	0.5	0.8	0.8	0.3
1	**1**	**0**	57.7	66.4	67.9	65.6	71.5
1	**1**	**1**	11.1	10.5	16.5	14.9	9.2

Source: Spiegel-Verlag

5. Determinants of Portfolio Composition

5.1. Age

King and Leape (1987) have first suggested that there might be a strong impact of age on the willingness to hold risky assets, since older persons should have acquired more information as to the variance and yield of risky assets than younger. The cross-sectional ownership rates of risky assets in Table 7a do not confirm this hypothesis. We find that the cross-sectional age

profile has been surprisingly flat for respondents of the Income and Expenditure Survey. It seems, however, that the general increase of the households' willingness to hold risky asset has affected households of different age groups at different periods. The rate of increase seems to have been highest for young persons during the mid-eighties whereas ownership rates of the very old have only started to rise in 1993. The ownership rates of middle-aged households have steadily increased since wave 1983.

Considering asset shares conditional upon ownership in Table 7b, it seems noteworthy that the cross-sectional age profile is markedly different from the age profile of ownership rates. Conditional asset shares have been highest for the very old respondents of the waves 1983 to 1993 of the Income and Expenditure Survey. The profile of conditional asset shares has been essentially flat for young and middle-aged households until 1993 when the very youngest owners of risky assets have increased the share of risky assets in their portfolios.

In light of King and Leape's (1987) hypothesis, it seems most noteworthy that it is the mixture of convex and concave age profiles of ownership rates and asset shares of owners that leads to the artefact of increasing asset shares (irrespective of ownership) with age.

Table 7: Cross-sectional age profile of asset ownership and share of risky assets

a) Ownership rates (in %):

Age group	1978	1983	1988	1993	
				West	East
<30	8.1	9.0	17.5	23.8	13.4
30-39	15.1	13.0	18.8	29.2	25.4
40-49	16.7	15.9	20.8	28.1	25.2
50-59	15.3	15.7	20.3	29.0	24.8
60-69	13.5	14.6	17.8	25.2	16.5
70+	12.6	12.3	12.6	20.4	9.1

Source: Income and Expenditure Survey

b) Share of risky assets

Age group	% of financial assets				% of financial assets (conditional upon owning risky financial assets)			
	1983	1988	1993		1983	1988	1993	
			West	East			West	East
<30	3.3	7.9	11.3	5.8	19.4	22.6	25.6	24.6
30-39	4.0	6.7	10.4	11.0	18.2	20.9	22.6	25.3
40-49	4.5	7.5	9.1	8.7	17.1	21.4	20.6	23.5
50-59	5.4	7.4	10.2	6.9	18.7	20.0	21.6	29.1
60-69	8.0	10.5	12.9	5.3	23.1	27.5	28.1	30.2
70+	12.2	13.4	19.5	3.4	33.6	38.4	41.4	36.0

Source: Income and Expenditure Survey

5.2. Cohort Effects

Various studies[30] have shown that the age distribution of household wealth in Germany is characterized by strong cohort effects for generations born during of before World War II. Schnabel (1999) shows that cohort effects are particularly strong for housing wealth (see also Figure 15 in the appendix). The (weak) cross-sectional age profile reflected by Table 7 indicates that ownership rates differ between age groups, yet do not permit to judge whether or not this pattern occurs for elderly households of all cohorts. Figures 4 and 5 depict average ownership rates of risky and fairly safe financial assets by cohort and age. Empirical (weighted) averages have been computed for all West German households interviewed in waves 1978 to 1993 of the German Income and Expenditure Survey. Figures 4 and 5 also include the predicted ownership rates of households of differing ages. Predictions are based on estimation results for a probit model of households' possession of risky or fairly safe assets with a fifth-order age polynomial as the only explanatory variables of the model and refer to the pooled cross-sections of waves 1978 to 1993. Figure 6 depicts the average number of financial assets[31] held by West German households of differing cohorts and age groups. Figure 6 also includes the predicted number of financial assets held by households of different

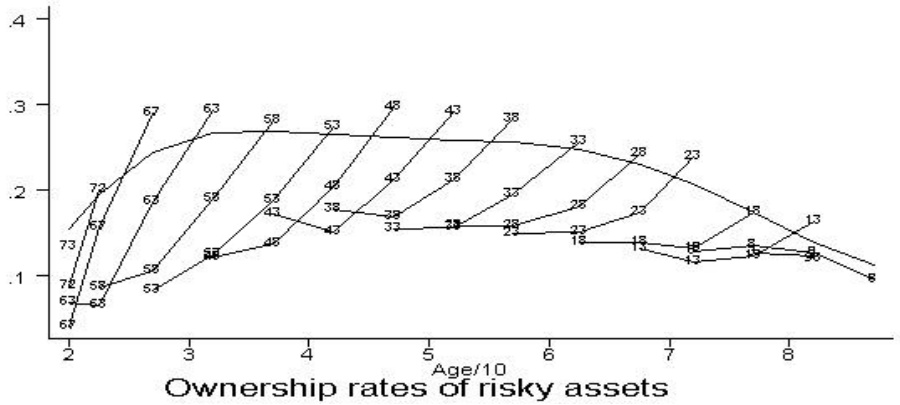
[30] Cf. e.g. Börsch-Supan (1994b) or Schnabel (1999).

[31] Financial assets are defined as in Table 3. The number of financial assets is defined as the sum of asset-specific dummy indicator variables that indicate whether or not households have indicated to own the respective assets (such as government bonds, other bonds, stocks, mutual funds etc.).

age groups. Similar to the approach chosen for figures 4 and 5, predictions are based on the estimation results of regressing the number of financial assets on a fifth-order age polynomial.

Figures 4, 5, and 6 suggest that cohort effects could be less strong for financial assets than for housing. Cohort effects for risky assets are particularly difficult to interpret, however, since the age-cohort profile is blurred by the general trend to increasing ownership rates of risky assets for all age groups. Figure 4 confirms our interpretation of Table 7a and reveals a strong increase of the young households' ownership rates of risky assets already in the mid-eighties. Older cohorts seem to have started to invest in risky assets only during or after German reunification and with decreasing rates of increase with age.

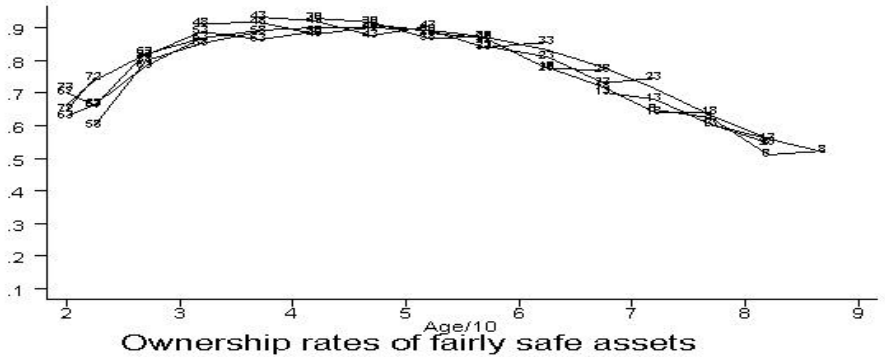
Figure 4: Ownership rates of risky assets by cohorts and age



Source: Income and Expenditure Survey 1978, 1983, 1988, and 1993 (West German households)

Contrary to the households' increased willingness to hold risky assets, average ownership rates of fairly safe assets have remained remarkably stable over time. Since fairly assets comprise life-insurance contracts and building society savings contracts, it does not come as a surprise that figure 5 reveals a distinct age profile for the ownership rates of fairly assets. Cohort effects seem to exist, yet to play a minor role.

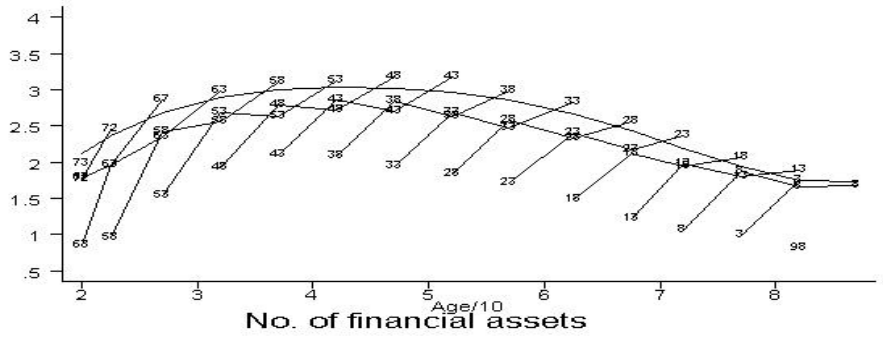
Figure 5: Ownership rates of fairly safe assets by cohorts and age



Source: Income and Expenditure Survey 1978, 1983, 1988, and 1993 (West German households)

Figure 6 shows that the increased willingness to hold risky assets has also led to an increase of the number of financial assets in the portfolios of West German households. It should be noted that the strong increase of the number of financial assets in 1978 as compared to 1983 is at least partly due to the omission of "other financial assets" in wave 1978 of the Income and Expenditure Survey.

Figure 6: Number of financial assets by cohorts and age



Source: Income and Expenditure Survey 1978, 1983, 1988, and 1993 (West German households)

5.2. Wealth

Wealth has been found to be major determinant of households' willingness to hold risky assets in several empirical studies (cf. footnote 28). Unfortunately, no German micro data set exists that focuses on the very wealthy. The German Income and Expenditure Survey

excludes households of the three highest income percentiles for reasons of data protection and thus implicitly excludes the wealthiest households. In order to shed light on the impact of wealth on portfolio choice, we have therefore split the (restricted) sample of households participating in wave 1993 of the Income and Expenditure Survey into four wealth quartiles[32] and compute asset shares (irrespective of ownership) for each quartile as well as the 5% richest households in the Income and Expenditure Survey (i.e. households that can be expected to be in the top decile of the wealth distribution of all German households). In order to further investigate the sources of heterogeneity in the households' increasing willingness to hold risky assets over time, we also plot weighted empirical averages of the ownership rates of risky assets by wealth quartile, age, and cohort.[33]

Table 8 reflects the wealth composition of East and West German households by quartiles. The definition of asset shares follows the definition of asset shares in section 3. Average asset holdings refer to quartiles, however, rather than to all households in the Income and Expenditure Survey. The composition of assets varies substantially between quartiles, yet also between East and West German households within the same quartile: Consumer credits exceed total net wealth for the lowest quartile of West German respondents for instance, yet amount to only one fourth of total net wealth of East German respondents. This result clearly does not justify the conclusion that borrowing restrictions are tighter for East Germans than for West Germans: Since quartiles have been computed for the distribution of total net wealth for both West and East Germans, it should be noted that the share of East Germans households in the lower quartiles (as compared to the total number of East German respondents) should be substantially higher than the share of West German households (as compared to the total number of West German respondents). The heterogeneity of East and West German households could therefore be substantial within the same quartile.

[32] Quartiles refer to household total net wealth of all households interviewed in the respective wave of the Income and Expenditure Survey. It should be noted that the cell size of higher quartiles for East Germans are fairly small.

[33] The cohort study does not include 1978 since information as to total net wealth is unavailable for this wave of the Income and Expenditure Survey.

Table 8: Composition of household wealth by (Income and Expenditure Survey) wealth quartiles

	1993 West Germany					1993 East Germany				
	Below quartile I	**Between quartiles I and II**	**Between quartiles II and III**	**Above quartile III**	**Top 5%**	**Below quartile I**	**Between quartiles I and II**	**Between quartiles II and III**	**Above quartile III**	**Top 5%**
Financial Assets										
Transaction and savings accounts	47.2	29.6	24.2	17.0	11.3	60.7	41.3	34.6	29.1	36.1
Government bonds	1.5	4.9	4.3	5.0	5.2	1.3	5.9	5.1	3.6	1.0
Other bonds	6.2	14.6	15.2	17.1	17.2	6.2	13.1	11.6	12.2	3.0
Stocks	1.6	2.1	3.1	6.3	10.1	0.8	0.7	1.1	0.6	2.1
Mutual funds and managed investment accounts	2.0	3.8	4.4	5.1	5.4	2.6	6.3	8.1	7.4	5.3
Life insurance	26.7	27.1	30.7	33.4	35.8	10.4	6.2	7.1	11.0	9.7
Building society savings contracts	11.1	8.8	9.1	5.2	3.1	7.9	7.9	11.8	10.4	10.2
Total financial assets	**217.6**	**90.2**	**27.3**	**21.2**	**21.0**	**120.6**	**78.9**	**17.5**	**9.5**	**2.3**
Clearly safe financial assets	**47.2**	**29.6**	**24.2**	**17.0**	**11.3**	**60.7**	**41.3**	**34.6**	**29.1**	**36.1**
Fairly safe financial assets	**47.9**	**62.4**	**65.9**	**68.2**	**68.9**	**35.1**	**49.3**	**54.1**	**58.3**	**56.0**
Risky financial assets	**4.9**	**8.0**	**9.9**	**14.9**	**19.8**	**4.2**	**9.4**	**11.4**	**12.6**	**7.9**
Non-Financial Assets										
Total real estate	**9.4**	**13.6**	**73.7**	**79.2**	**79.3**	**3.6**	**22.8**	**83.1**	**90.9**	**97.9**
Total risky assets=risky financial assets	**4.9**	**8.0**	**9.9**	**14.9**	**19.8**	**4.2**	**9.4**	**11.4**	**12.6**	**7.9**
Mortgage and real estate debt	32.9	88.5	95.6	95.7	96.0	14.5	85.2	93.3	93.6	94.8
Consumer credit	67.1	11.5	4.4	4.3	4.0	85.5	14.8	6.7	6.4	5.2
Consumer credit in % of total net wealth	127.0	3.8	0.3	0.4	0.3	24.1	1.7	0.6	0.3	0.2
Total debt	**189.2**	**33.0**	**5.7**	**9.1**	**8.7**	**28.2**	**11.2**	**9.2**	**5.4**	**3.7**

Source: Income and Expenditure Survey 1993

We find distinct jumps between the first and second quartiles in the shares of bonds as well as mutual funds and mortgage loans. These jumps can be observed both within the West and East German subsample. The asset share of bonds remains by and large constant as of the second quartiles while the shares of mutual funds seem to increase for higher quartiles.

There is also a distinct jump in the share of real estate as compared to total net wealth between the second and third quartile (which may explain the interest of German politicians in building society savings contracts and tax exemptions for housing). The share of mortgage loans stays constant as of the third quartile for both East and West Germans while the share of building society savings contracts decreases as of the third quartile for West Germans only.

Behavioral changes also seem to occur within the highest wealth quartile: The asset share of stocks (and to a lesser extent life insurance contracts and mutual funds) is still higher and the asset share of clearly safe assets is still lower among the 5% wealthiest respondents of the Income and Expenditure Survey than among the highest quartile as a whole. The shares of all other assets seem to have reached a platform level for the highest quartile.

In order to analyze the households' heterogeneity as to their increasing willingness to hold risky assets over time, we repeat the age-cohort analysis described in section 5.2 for each of the four net wealth quartiles. Clearly weighted empirical averages of ownership rates which are plotted in Figure 7 refer to substantially smaller cell sizes especially in the top wealth quartile. Confidence bands (which will be inserted in a later version of this paper) should be particularly broad for both very young and very old households.

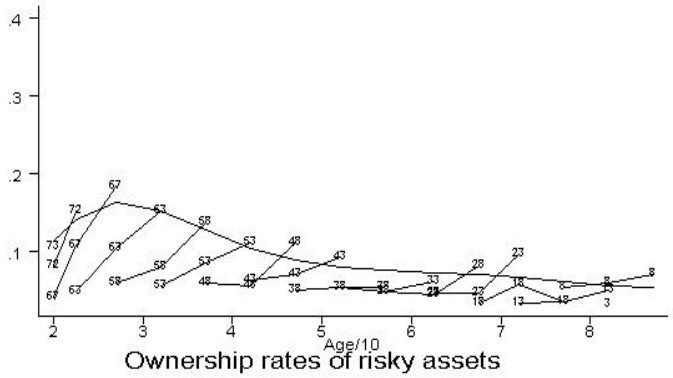
Figure 7 reveals distinct differences both in the rates of increase as well as their timing: Only the youngest households in the first quartile seem to have participated in the general trend towards holding risky assets. Similar to the pattern shown by Table 7 and Figure 4, the very youngest households seem to have invested in risky assets already in or before 1988 while the increase of ownership rates for older households in the first quartile seems to have started only between 1988 and 1993. The behavioral patterns in the second quartile resemble those of the first quartile very closely, yet the level of ownership rates amounts to roughly two times the average level of ownership rates in the first quartile.

In the two highest quartiles, the age profile is much less distinct than for the lower quartiles. Ownership rates of risky assets seem to have been positively correlated with age for the top quartile in the late seventies. The age profile in this quartile has been essentially flat, however, in 1993, while ownership rates of risky assets seem to decrease slightly with age in the third quartile. Similar to the first two quartiles, the increase in ownership rates of the third quartile

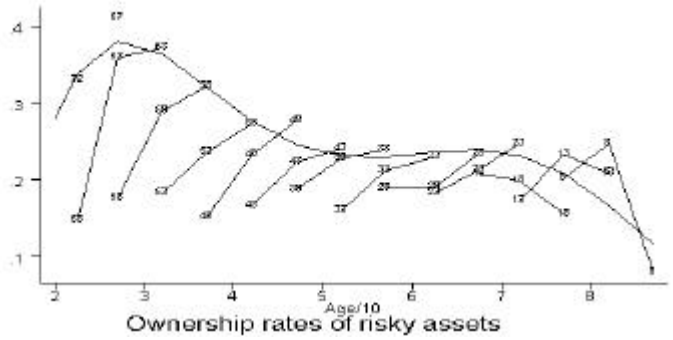
seems to have gained speed between 1988 and 1993 for middle-aged and elderly households. Young households in the third quartile seem to have joined the bandwaggon already in or before 1988. Rates of increase seem to have been stable (and high) for all respondents younger than 60 years in the fourth quartile.

Figure 7: Ownership rates of risky assets by net wealth quartiles

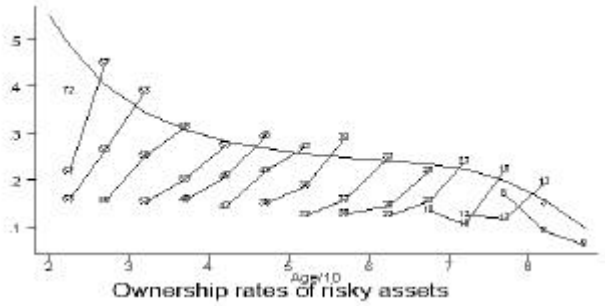
a) First quartile



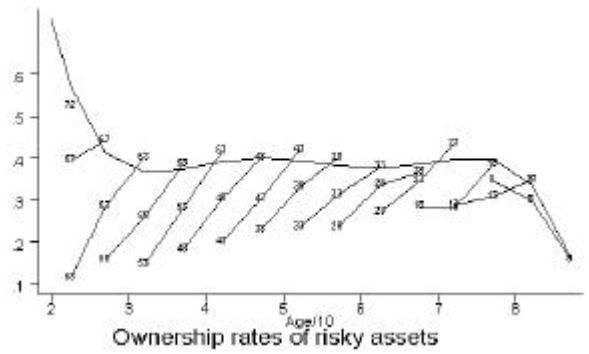
b) Second quartile



b) Third quartile



d) Fourth quartile



5.3. Education

Bertaut and Haliassos (1997) have emphasized the relevance of education for the willingness to hold risky assets and have shown that the predictions of portfolio models on the basis of CRRA preferences match the observed ownership rates for persons with high schooling, yet differ substantially from the observed values for persons with very little schooling. Bertaut and Haliassos (1997) have referred exclusively to the impact of education on income uncertainty. Education could, however, also affect households' portfolio choice via better information and income prospects for the young and educated.[34]

Information as to the respondents' schooling is provided in wave 1993 of the Income and Expenditure Survey only. In order to reflect the impact of age and education on the

[34] Cf. Bodie, Merton, and Samuelson (1992).

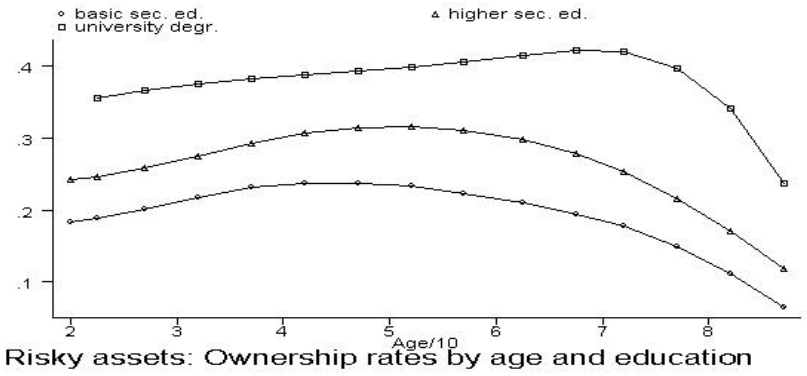
households' willingness to hold risky assets, we have followed the approach underlying Figures 4 to 6 and estimated probit models of the households' decision to hold risky assets using a fifth-order age polynomial as the only set of explanatory variables. In contrast to the pooled data set underlying Figures 4 and 6, we have run separate estimations for West and East German households with either basic secondary education or higher secondary education, or a university or polytechnic degree and restricted the samples to wave 1993.

Figures 8a and b show both a distinct difference in the cross-section age profiles of West and East German households and of household segments with differing levels of schooling. (Confidence intervals will be inserted in a later version of the paper.) The age profiles of West German respondents with thirteen years of schooling or less (i.e. basic or higher secondary education, yet no university/ polytechnic degree) are by and large parallel, yet differ in levels. The age profiles of East German respondents with less than university differ somewhat stronger than those of West Germans. We find a slight peak of ownership rates of persons with more than nine years of schooling around the age of forty. The age profile of respondents with a university/ polytechnic degree differ from those of respondents with less education: The ownership rates of risky assets increases shortly after retirement for West Germans. Among East German households with university education, ownership rates show a distinct peak at the age of forty when they reach levels that are almost identical to those for West Germans of the same age and education.

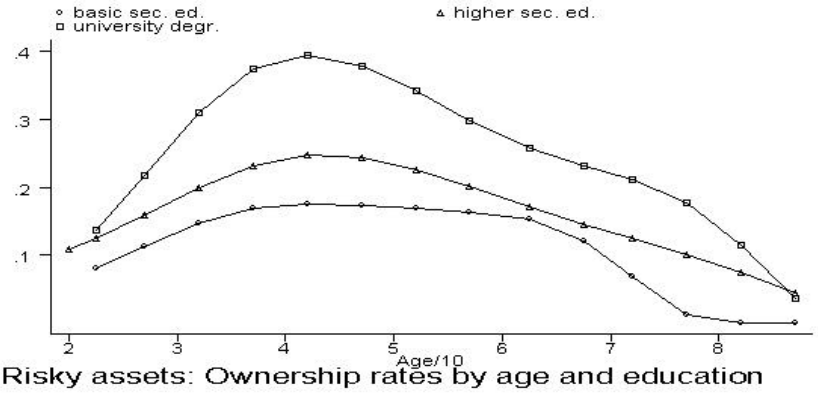
Clearly, a cross-section analysis does not allow us to draw conclusions as to the effect of age on the willingness to hold risky assets. It seems likely that strong cohort effects exist for persons with little schooling. Moreover, we speculate that (the comparatively small number of) elderly households with a university degree could differ from other households in several other respects such as significantly higher wealth.

Figure 8: Risky assets by age and education

a) West German households



b) East German households

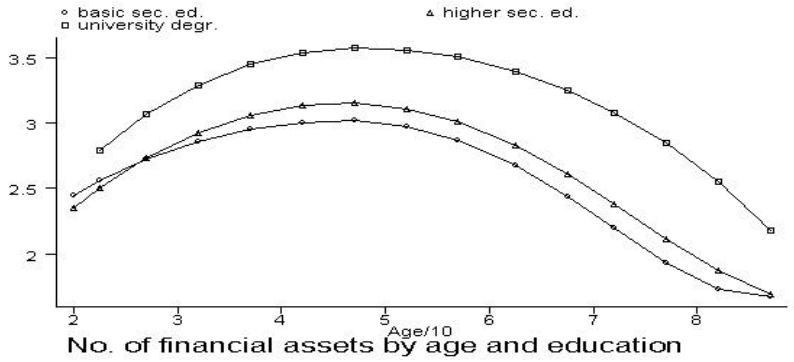


Source: Income and Expenditure Survey 1993

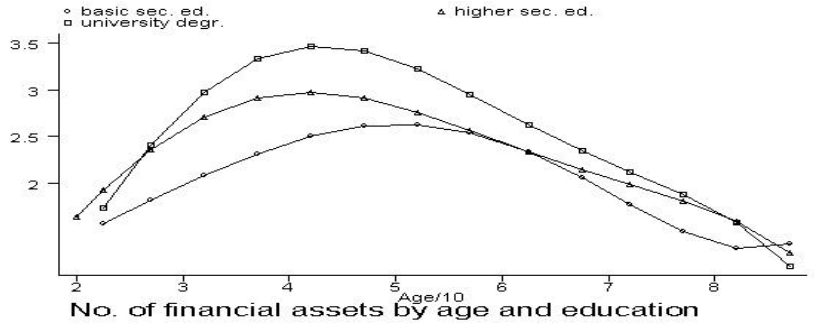
In order to shed light on the willingness to hold diversified portfolios, we also plot the predicted number of assets held by East and West German households of differing levels of schooling. Figures 9a and b show more distinct age profiles than Figures 8a and b suggesting that households dissolve fairly safe assets (such as life insurance contracts) around the age of retirement. The age profiles of East Germans reflect the same pattern as Figure 8b, i.e. portfolios comprise the largest number of assets for respondents around the age of forty. At this age, the number of assets is essentially equal for both East and West Germans with more than nine years of schooling.

Figure 9: Number of financial assets by age and education

a) West German households



b) East German households



Source: Income and Expenditure Survey 1993

As has been stated above already, education could be correlated to knowledge about the risk and yields of more involved assets, yet also to wealth, income expectations, age and other factors. In order to disentangle these effects, we focus on the effect of the respondents' information status as well as of differing wealth patterns of East and West Germans on the households' portfolio choice in the subsequent (sub)sections. Unfortunately, the Income and Expenditure Survey does not include information as to the financial knowledge of households, nor does it permit to analyze the process of wealth formation in East Germany after reunification. We therefore employ the Spiegel-Verlag survey and the German Socioeconomic Panel to depict stylized facts and trends of the portfolio composition of households – in spite of the serious degree of underreporting in both data sets. We will eventually discuss the likely effects of sample selectivity and underreporting on our results.

5.4. Sources of information and information status

In order to shed light on the impact of financial advice on portfolio diversification and the willingness to hold risky assets, we cross-tabulate the indications of respondents to the 1995 Spiegel-Verlag questionnaire as to their sources of information with the eight asset combinations defined in section 4. It should be noted that the cell size of each of the following tables is much smaller than in previous tables. The indicated percentages should be interpreted with greater care therefore. Figure 9 shows that West Germans seem to acquire more outside advice than East Germans who rather tend to rely on their own expertise. It seems noteworthy that relatives and friends rank fourth for both East and West Germans. In both parts of Germany the percentage of respondents who have relied on the advice of friends is only slightly higher than the percentage of households who have consulted a single bank.

Regarding diversification patterns it seems striking that respondents who claim to have relied on their own expertise seem to hold fairly diversified assets and to be more willing to hold risky assets than other respondents in West Germany. West Germans who have relied on the advice of relatives or friends or a single bank (possibly because they were not too well informed themselves) hold the least diversified portfolios. Moreover, the relatives or friends of West Germans seem to be fairly conservative advisers as is reflected by the very small percentage of respondents holding risky assets in this group. Comparing the columns of East and West Germans who have been advised by banks, it seems noteworthy that East Germans have been more willing to hold risky assets than West Germans. Possibly, this remarkable difference is due to the different timing of investments for West and East Germans.

Table 9: Portfolio diversification by information sources

Clearly safe	Fairly safe	Risky	1995 West Germany				1995 East Germany			
			Banks	Div. Banks	Relat./ Friends	Self	Banks	Div. Banks	Relat./ Friends	Self
0	**0**	**0**	0.2	0.4	0.6	0.6	0.0	0.6	0.0	0.2
0	**0**	**1**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	**1**	**0**	0.0	0.0	0.0	0.5	0.0	0.0	2.1	1.2
0	**1**	**1**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	**0**	**0**	19.5	16.6	20.3	16.5	14.4	15.1	50.1	16.1
1	**0**	**1**	1.2	0.8	0.1	0.8	0.0	0.1	0.2	0.3
1	**1**	**0**	65.9	67.1	68.8	65.8	68.0	72.5	41.0	73.3
1	**1**	**1**	13.1	15.1	10.2	15.7	17.6	11.8	6.6	9.0
Total			**6.8**	**16.4**	**7.2**	**66.6**	**2.3**	**13.4**	**4.0**	**76.8**

Source: Spiegel-Verlag (1995)

Tables 10 and 11 aim to shed light on the impact of the respondents' information status on their portfolio choice. Regarding Table 10, it should be noted that the wording of the question, that has asked individuals to self-assess their knowledge of financial assets, has changed in wave 1993. Possibly, it is due to differing focal points on the two scales used before 1993 and in wave 1993 that the percentage of households who describe themselves as well informed has shrunk strongly. Still, it seems noteworthy that the majority of respondents in each of the waves has described themselves as "not very well informed".

Table 10: Individual self-assessments as to information status

	Very well informed	Fairly well informed	Not very well informed	Not informed at all
1980	19.6	31.7	35.0	13.7
1984	19.6	30.2	35.8	14.5
1989	17.3	32.1	37.5	14.1
1993 West	3.8	29.2	48.7	18.3
1993 East	2.7	25.0	55.1	17.2

Source: Spiegel-Verlag (1980, 1984, 1989, 1995)

The percentages presented in Table 11 eventually do not come as a surprise: As has been hypothesized by King and Leape (1987) among others, the willingness to hold risky assets seems to be correlated to information status. Knowledge also seems to affect the degree of diversification of households' portfolios as is reflected by the increasing percentages of respondents holding a single (type of) asset in their portfolio. The two effects seem to combine and to increase the willingness of those describing themselves as neither very well nor not at all informed to hold clearly safe and fairly safe assets only in their portfolios.

Table 11: Portfolio diversification by individual assessment of information status

Clearly safe	Fairly safe	Risky	1995 West Germany				1995 East Germany			
			Very well inform.	Fairly well inform.	Not very well inform.	Not at all inform.	Very well inform.	Fairly well inform.	Not very well inform.	Not at all inform.
0	**0**	**0**	0.3	0.1	0.3	2.5	0.0	0.1	0.2	0.5
0	**0**	**1**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	**1**	**0**	1.3	0.3	0.2	0.9	0.0	0.0	1.1	3.3
0	**1**	**1**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	**0**	**0**	3.6	8.3	18.8	32.7	7.4	10.8	17.9	28.5
1	**0**	**1**	0.9	0.8	0.0	1.2	0.0	0.0	0.2	0.0
1	**1**	**0**	45.0	66.7	69.6	57.6	55.7	74.3	72.6	66.1
1	**1**	**1**	49.0	23.8	10.5	5.1	37.0	14.3	7.9	1.7

Source: Spiegel-Verlag (1995)

6. East German Households' Portfolios

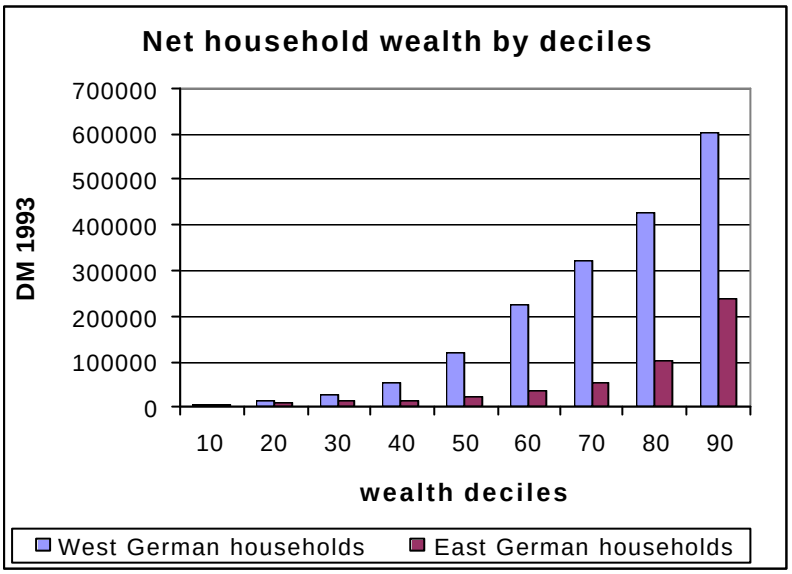
Previous sections have revealed very distinct differences in the portfolio choice of West and East Germans. So far, these have been observed for single waves only, however. In light of the fundamental change of the financial system in East Germany, it seems likely that the financial behavior of East Germans has changed strongly since 1989. It is the aim of this section therefore to analyze the transition process of East German portfolios and to distinguish behavioral differences due to an ongoing adjustment process from those that are due to fundamental differences in the socioeconomic characteristics of East and West Germans.

We will first focus on differences in household wealth as the primary determinant of portfolio choice and will then describe the adjustment process of East German portfolios on the basis of the German Socioeconomic Panel. We employ the latter data set despite the evident problem of underreporting since it is the only micro data set that permits to observe the behavioral adjustments of single households over time.

The wealth distribution of East Germans is supposed to have been more equal than the wealth distribution of West Germans in 1990. Figure 10 seems surprising in this respect since it not only shows dramatic differences in the wealth levels of East and West Germans, yet also shows that the two highest deciles of the East German wealth distribution (as measured on the basis of the Income and Expenditure Survey 1993 which excludes the wealthiest three

percentiles of the unified German wealth distribution) own much larger shares of total wealth in the region than the two top deciles of West Germans. Possibly, this result is an artefact due to the sample frame of the Income and Expenditure Survey. Still, it seems striking that the wealth distribution of East Germans has been less equal than generally assumed in 1993.

Figure 10: Distribution of household wealth



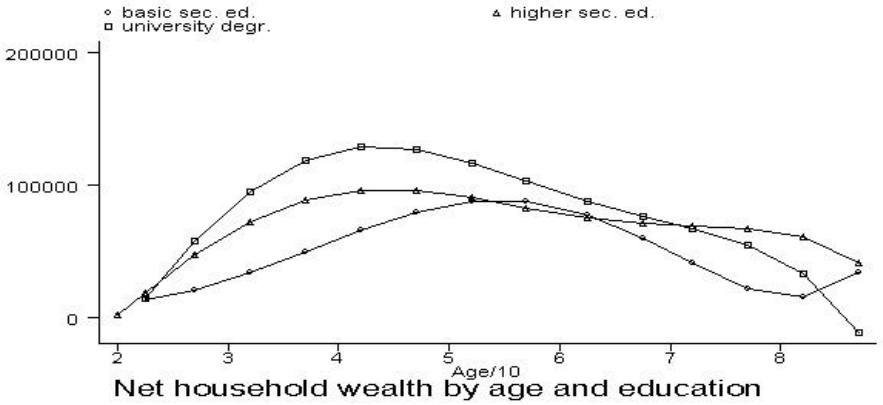
Source: Income and Expenditure Survey 1993

Figures 8 and 9 showed a distinct peak of the willingness to hold risky assets as well as the number of financial assets held for East German households in the Income and Expenditure Survey. Figure 11 compares the cross-sectional age profiles of wealth for East and West Germans in order to investigate whether these could be related to the distinct peak in ownership rates and the degree of portfolio diversification. In fact, Figure 11 reveals a distinct peak of the cross-sectional age profile of wealth for East Germans with university education and suggests that this segment of East Germans has managed to accumulate substantial levels of wealth since German reunification.

Figure 11: Wealth levels by age

a) West German households

b) East German households



Source: Income and Expenditure Survey 1993

The following figures are based on the German Socioeconomic Panel and refer to a balanced panel of East Germans only. The four subpanels of Figure 12 depict (unweighted) empirical averages of dummy indicator variables reflecting whether or not households of a specific cohort have held specific assets in the period of 1989 to 1996.

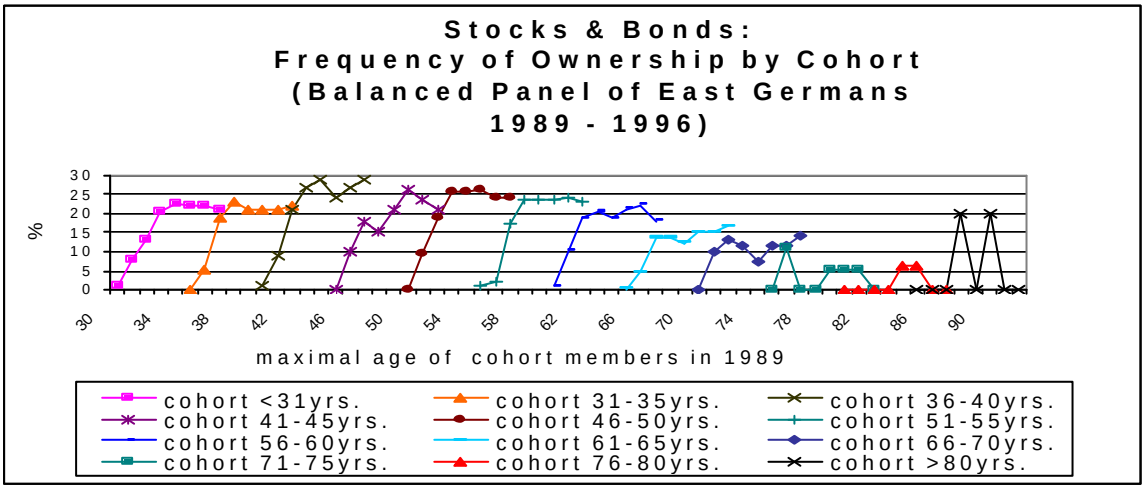
Figures 12a to c reflect a remarkably distinct pattern of adjustment of East German households in the German Socioeconomic Panel: Within four years, households seem to have decided whether or not they want to invest in building society savings contracts and stocks, bonds, mutual funds, savings certificates and other financial assets. Within two years, East Germans seem to have decided whether they should keep their former (whole-life) insurance contracts, cancel these, or substitute them by new life insurance contracts of any kind. Only

the ownership rates of housing are still increasing steadily for households younger than 55 in 1996. As of 1992 already, (especially middle-aged and old) East German households seem to have adjusted their existing stock of risky assets in accordance to the yield structure of bonds and stocks.

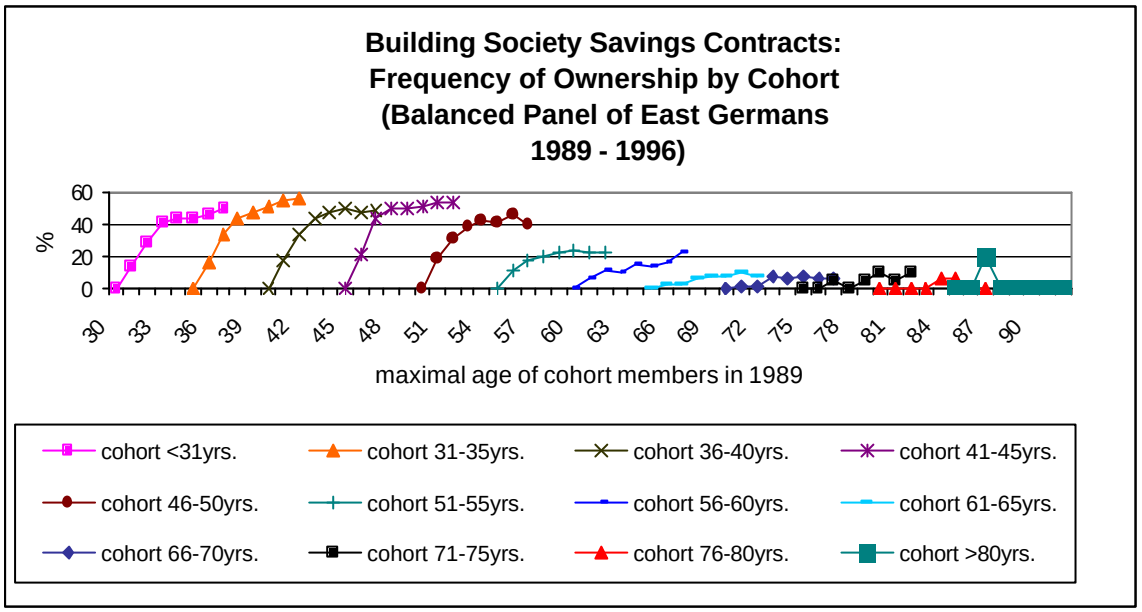
Figures 12a to c therefore clearly indicate that the adjustment process has ended after four years for financial assets that do not pose barriers to entry such as minimal amounts of investment. The differences of East and West German households in the wave 1993 of the Income and Expenditure Survey and especially those in wave 1995 of the Spiegel-Verlag survey therefore seem to be caused by differences in the socioeconomic characteristics of East German households, such as their employment status, income, and – most importantly – wealth.

Figure 12: Age-cohort profiles of East German households' ownership rates of financial and non-financial assets

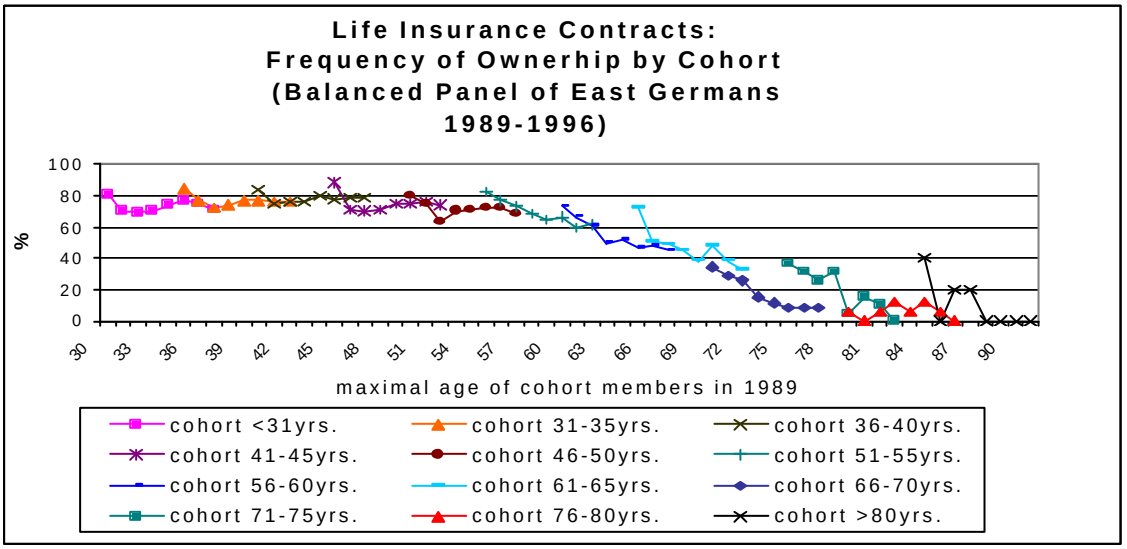
a) Stocks, bonds, mutual funds, savings contracts and other financial assets



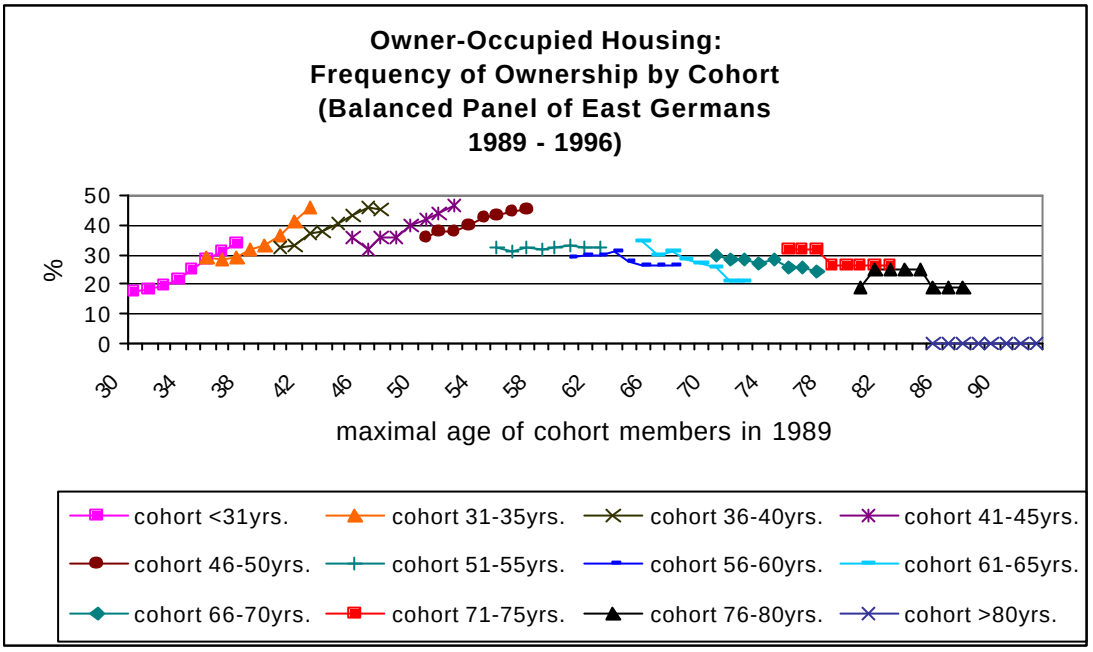
b) Building society savings contracts



c) Life insurance contracts (including whole-life insurance contracts)



d) Owner-occupied housing



Source: GSOEP

7. Conclusion

The present study shows that the ownership rates of German households have changed strongly over time and by and large matched the temporal structure of yields and policy changes: Savings accounts have lost their attractiveness when savings subsidies finished and real interest rates became negative. Life insurance contracts have gained households' favor after changes of tax regulations that favored life insurance contracts as compared to other financial assets. Bonds became popular when German reunification led to a strong (and short-term) increase of real bond yields. Mutual funds and stocks, eventually, have become increasingly popular in the late nineties when the process of deregulating stock markets had gained impetus and the focus of savings policies was shifted to mutual funds that could serve as possible substitutes to life insurance contracts and a no-longer-as-generous social security system. Ownership rates of building society savings contracts have increased over time, yet contributions seem to have shrunk during the observation period. In contrast to ownership rates, asset shares (conditional upon ownership) seem to have generally been surprisingly stable for the other financial assets, however.

Comparing national accounts to three micro data sets, this study shows that underreporting of financial assets in general and stocks and mutual funds in particular is a serious problem especially in smaller data sets. A fairly superficial analysis of the selectivity of the three micro

data sets shows that underreporting cannot be traced back to sample selectivity, yet seems to be caused by mismeasurement instead. It seems likely that the observed increase in ownership rates of risky assets in the nineties substantially underestimates the true rate of increase.

Focussing on differences in the portfolios of East and West Germans, this study shows that differences are indeed large. Differences seem to have been caused by major differences in wealth and other socioeconomic characteristics of East and West German households rather than by an ongoing transition process: Age-cohort profiles of financial assets' ownership rates suggest that the adjustment process has ended after four years and before the two surveys of the financial behavior of East and West Germans had taken place.

References

Bertaut, C. C., 1998, Stockholding Behavior of U.S. Households: Evidence from the 1983-1989 Survey of Consumer Finances. *Review of Economics and Statistics* **80**, 263-275.

Bertaut, C. C. and M. Haliassos, 1997, Precautionary Portfolio Behavior from a Life-Cycle Perspective. *Journal of Economic Dynamics and Control* **21**, 1511-1542.

Bodie, Z., R. C. Merton, and W. F. Samuelson, 1992, Labor Supply Flexibility and Portfolio Choice in a Life Cycle Model. *Journal of Economic Dynamics and Control* **16**, 427-449.

Börsch-Supan, A., 1994a, Savings in Germany - Part I: Incentives. In: Poterba, J. M. (ed.), *Public Policies and Household Saving*. Chicago: University of Chicago Press, 81-104.

Börsch-Supan, A., 1994b, Savings in Germany - Part II: Behavior. In: Poterba, J. M. (ed.), *International Comparisons of Household Saving*. Chicago: University of Chicago Press, 207-236.

Börsch-Supan, A., R. Euwals, and A. Eymann, 1999, Portfolio Choice with Behavioral Decision Mechanisms. *Discussion Paper No. 1999-37*, Sonderforschungsbereich 504, University of Mannheim.

Börsch-Supan, A., A. Reil-Held, R. Rodepeter, R. Schnabel, and J. Winter, 1999, Ersparnisbildung in Deutschland: Meßkonzepte und Ergebnisse auf Basis der EVS. *Discussion Paper No. 99-02*, Sonderforschungsbereich 504. University of Mannheim.

Börsch-Supan, A. and K. Stahl, 1991, Do Savings Programs Dedicated to Homeownership Increase Personal Savings? An Analysis of the West German Bausparkassensystem. *Journal of Public Economics* **44**, 265-297.

Börsch-Supan, A. and J. Winter, 1999, Pension Reform, Savings Behavior and Corporate Governance. *Discussion Paper No. 99-48*, Sonderforschungsbereich 504. University of Mannheim.

Brunsbach, S. and O. Lang, 1998, Steuervorteile und die Rendite des Lebensversicherungs-sparens, *Jahrbücher für Nationalökonomie und Statistik* **217**, 185-213.

Deutsche Bundesbank, 1992, Die Entwicklung des Geld- und Sachvermögens westdeutscher privater Haushalte in den letzten zwanzig Jahren. *Monthly Reports.* April 1992, 14-20.

Deutsche Bundesbank, 1993a, Die Entwicklung des deutschen Auslandsvermögens und der Kapitalerträge. *Monthly Reports.* January 1993, 43-66.

Deutsche Bundesbank, 1993b, Zur Vermögenssituation der privaten Haushalte in Deutschland. *Monthly Reports.* October 1993, 19-32.

Deutsche Bundesbank, 1994a, Entwicklung und Bedeutung der Geldanlage in Investmentzertifikaten. *Monthly Reports.* October 1994, 49-70.

Deutsche Bundesbank, 1994b, Ergebnisse der gesamtwirtschaftlichen Finanzierungsrechnung für Westdeutschland 1960 bis 1992.

Deutsche Bundesbank, 1999a, Ergebnisse der gesamtwirtschaftlichen Finanzierungsrechnung für Deutschland 1990 bis 1998.

Deutsche Bundesbank, *Monthly Reports.* Various Issues.

Deutsche Bundesbank, *Wertpapierdepotstatistik*. Various Issues.

Deutsche Bundesbank, 1999b, Zur Entwicklung der privaten Vermögenssituation seit Beginn der Neunziger Jahre. *Monthly Reports*, January 1999, 33-50.

Deutsches Institut für Wirtschaftsforschung, *Weekly Reports.* Several Issues.

Euler, M., 1985, Geldvermögen privater Haushalte Ende 1983. *Wirtschaft und Statistik* **5**, 408-418.

Euler, M., 1990, Geldvermögen und Schulden privater Haushalte Ende 1988. *Wirtschaft und Statistik* **11**, 798-808.

Euler, M., 1992, Einkommens- und Verbrauchsstichprobe 1993. *Wirtschaft und Statistik* **7**, 463-469.

Grimm, M., 1998, Die Verteilung von Geld- und Grundvermögen auf sozioökonomische Gruppen im Jahr 1988 und Vergleich mit früheren Ergebnissen. *Discussion Paper No. 14*, University of Frankfurt (Main).

Guiso, L., T. Jappelli, and D. Terlizzese, 1996, Income Risk, Borrowing Constraints and Portfolio Choice. *American Economic Review* **86**, 158-172.

Haliassos, M. and C. C. Bertaut, 1995, Why Do So Few Hold Stocks? *Economic Journal* **105**, 1110-1129.

Himmelreicher, R. K., 1999, Westdeutsche Haushalte und ihr Vermögen. Eine Längsschnitt-Kohortenanalyse auf Basis des SOEP (1985-1996). *Manuscript*. University of Bremen.

Hochgürtel, S., R. Alessie, and A. van Soest, 1997, Saving Accounts versus Stocks and Bonds in Household Portfolio Allocation. *Scandinavian Journal of Economics* **99**, 81-97.

Kim, S., 1992, *Sozialversicherungskapital und das Sparen der privaten Haushalte in der Bundesrepublik Deutschland von 1961 bis 1988*. Hamburg: Verlag Dr. Kovac.

King, M. A. and J. I. Leape, 1987, Asset Accumulation, Information, and the Life Cycle. *NBER Working Paper No. 2392*, September 1987.

Lang, O., 1998, *Steueranreize und Geldanlage im Lebenszyklus*. Baden-Baden: Nomos.

Lang, O., K. H. Nöhrbaß, and K. Stahl, 1997, On Income Tax Avoidance: The Case of Germany. *Journal of Public Economics* **66**, 327-347.

Schlomann, H., 1992, *Vermögensverteilung und private Altersvorsorge*. Frankfurt (Main): Campus.

Schnabel, R., 1999, Vermögen und Ersparnis im Lebenszyklus in Westdeutschland. *Discussion Paper No. 99-43*, Sonderforschungsbereich 504, University of Mannheim.

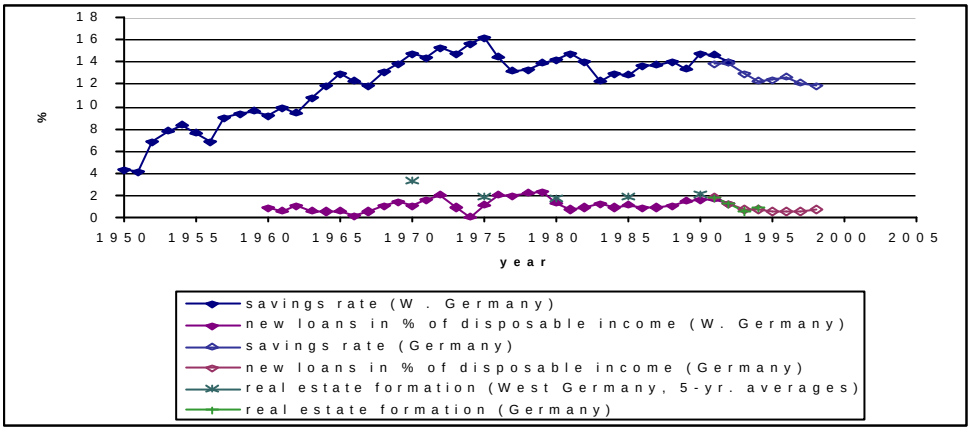
Schönig, W., 1996, *Ersparnisbildung und Vermögensanlage privater Haushalte.* Frankfurt am Main: Peter Lang.

Stehle, R., 1999, Renditevergleich von Aktien und festverzinslichen Wertpapieren auf Basis des DAX und des REXP, *Discussion Paper*, Humboldt-University Berlin. April 1999.

Walliser, J. and J. Winter, 1999, Tax Incentives, Bequest Motives and the Demand for Life Insurance: Evidence from Germany. *Discussion Paper No. 99-28*, Sonderforschungsbereich 504, University of Mannheim.

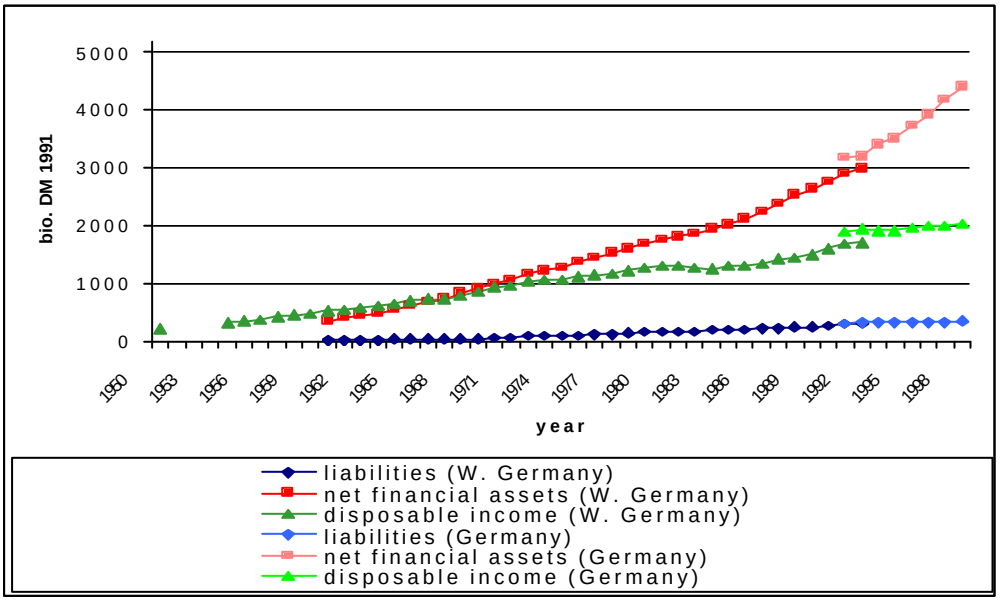
Appendix

Figure 13: Savings rate, net investment in real estate, and percentage of new loans



Source: Deutsche Bundesbank (1992), p. 17., Deutsche Bundesbank (1993b), p. 31., Deutsche Bundesbank (1994b, 1999a).

Figure 14: Disposable income, net financial assets, and liabilities

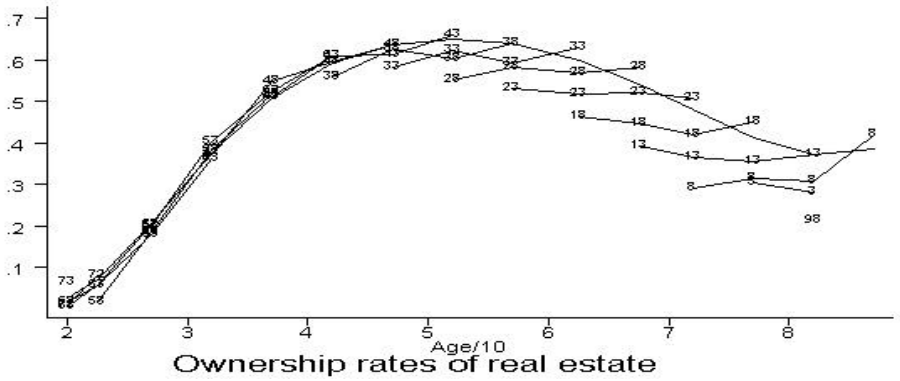


Source: Deutsche Bundesbank (1994b, 1999a).

Table 12: Diversification of household portfolios according to GSOEP data

Clearly safe	Fairly safe	Risky	1983	1984	1988	1989 West	1989 East	1993 West	1993 East	1995 West	1995 East
0	**0**	**0**	13.3	13.1	13.9	12.8	1.3	12.8	7.7	15.1	10.5
0	**0**	**1**	0.2	0.2	0.5	0.6	0.0	1.2	0.2	0.8	0.3
0	**1**	**0**	7.8	7.3	6.8	6.9	0.6	7.2	5.6	7.2	5.9
0	**1**	**1**	0.5	0.7	0.9	1.3	0.0	1.6	0.8	1.1	0.8
1	**0**	**0**	25.0	26.9	23.4	23.3	32.3	21.6	27.4	20.4	24.5
1	**0**	**1**	3.4	4.3	5.2	5.7	0.0	6.0	4.0	6.3	3.6
1	**1**	**0**	39.6	36.8	35.2	35.5	65.3	31.5	41.5	33.1	41.4
1	**1**	**1**	10.2	10.8	14.1	14.0	0.6	18.1	12.8	16.0	13.0

Figure 15: Age-cohort profiles of ownership rates of housing



Source: Income and Expenditure Survey 1978-1993 (West Germany)