

**Thünen-Series of Applied Economic Theory**  
**Thünen-Reihe Angewandter Volkswirtschaftstheorie**

Working Paper No. 99

**Retirement saving and attitude towards financial intermediaries**  
**– Evidence for Germany**

by

Kathrin Dummann

**Universität Rostock**

Wirtschafts- und Sozialwissenschaftliche Fakultät  
Institut für Volkswirtschaftslehre  
2008

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*by Kathrin Dumannn\**

*This version: November 2008*

**Abstract**

*People often disregard the need for individual savings for old-age although a decreasing rate of birth and an increasing life expectancy make it necessary to save additional money for retirement by using private or occupational pensions. Due to a lack of financial literacy and a variety of products it is important that people consult financial intermediaries like banks and insurance companies which support their savings plans. We apply the behavioral life-cycle hypothesis to explain whether people of different socioeconomic attributes contact diverse financial intermediaries and which motives promote this consultancy. To answer those and other questions on differences in consulting behavior of financial intermediaries Probit regressions are used. We find that income, low risk aversion and the presence of banks in the local surrounding have a large impact on old-age savings behavior. Our results differ across intermediary groups. They have important policy implications as better financial literacy and enhanced consulting activities may cause less old-age poverty and more trust in the financial system.*

JEL classification: D14, D82, G10, G21

key words: life-cycle hypothesis, pension savings, financial intermediaries, financial literacy

The data used in this publication were made available to us by the Mannheim Research Institute for the Economics of Aging and the Spiegel Verlags GmbH Hamburg.

Thanks are due to Doris Neuberger and Bernard Casey for helpful comments and suggestions.

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\*Affiliation: University of Rostock, Department of Economics, Chair of Money and Credit, Ulmenstraße 69, 18057 Rostock, Germany,  
Mail: kathrin.dumannn@uni-rostock.de

## 1. Introduction

Many people disregard the need for old-age provision beyond the statutory pension system, although a decreasing rate of birth will undoubtedly make it necessary to save money for retirement in private or occupational pensions. This will become even more important as the Baby Boom generation starts to retire stepwise from 2015 on, and payments from the statutory pension system will no longer be enough to guarantee a sufficient standard of living.

This expected pension gap can be defined as the difference between the net wage payments in the last time period before retirement and the retirement payments from the mandatory pay-as-you-go (PAYG) system. The pension gap is also sometimes defined as the difference between net retirement payments after a pension reform and the old maintenance level of 70% for standard pensioner who retires at age 65 after 45 years of contributions.

Table 1 shows that differences in maintenance levels occur across both types of households and levels of charges. Households with higher levels of charges receive lower payments from the PAYG system because of deferred taxation of pensions, so the difference from the maintenance level in 2000 increases until 2050, whereas the levels remain unchanged from 2000 differences across households and as income levels increase. High-income single-person households will have the lowest maintenance level, so additional savings to dispel this gap are needed to finally raise the level of retirement income of younger cohorts.

Table 1: Maintenance level of the PAYG system

year of retirement	year of birth	single-household		couple households	
		level of charge	net maintenance level	level of charge	net maintenance level
2000	1935	low	70.0%	middle high	70.0%
		middle	70.0%		
		high	70.0%		
2020	1955	low	59.6%	middle high	59.6%
		middle	59.6%		
		high	55.8%		
2030	1965	low	55.2%	middle high	55.2%
		middle	55.2%		
		high	50.8%		
2040	1975	low	52.9%	middle high	52.9%
		middle	52.6%		
		high	47.7%		
2050	1985	low	53.2%	middle high	53.2%
		middle	51.9%		
		high	46.4%		

Source: on the basis of Schnabel (2003), p. 10 and p. 15

Note: maintenance level = level in the year of retirement. This level lessens within the retirement period and remains constant from 2050. Three categories of income (level of charge) are assumed for standard pensioners at different years of retirement, age 65, 45 years of contribution to the PAYG system

Based on empirical studies by Dumann (2008) and Essig (2005), we know that the demand for old-age pension products such as private or occupational pensions cannot be assumed to be homogeneous as it depends on socioeconomic attributes and differs with individual savings motives as people try to maximize utility over the life-cycle. If people have an above-average life expectancy or fear macroeconomic shocks such as unemployment or bad financial developments, they may be motivated to save more for retirement in order to maintain their standards of living. Descriptive surveys show that private savings for retirement are not yet sufficient (e.g., Reifner et al. 2003, Müller 2004), so financial intermediaries are needed to help overcome gaps in information in order to increase financial literacy and help individuals adopt an adequate way of saving for retirement. Consumers who are aware of the need for additional savings for retirement want to build insurance against insufficient income at retirement:

“After having recognized the need to take financial provisions, firstly, the consumer should determine her financial goals and make a risk analysis to detect whether there is a gap between her desired income after retirement and the prospective income according to her old-age provisions taken so far.” (Eckardt 2007, p. 5)

According to Lusardi and Mitchell (2005, 2007a and 2007b), if people plan to save a certain amount of money for old age, they need not only financial literacy but also tools to carry out their individual retirement savings plans and save successfully. They must also evaluate the best individual alternative given bounded rationality and asymmetric information or face losses from suboptimal contracts. Frequently, principal-agent conflicts occur if consumers cannot directly observe an intermediary's quality *ex ante*, with the result that they are willing to pay for only average quality, which decision reciprocally leads to a reduction of quality by intermediaries and market drop-outs if appropriate signaling mechanisms are not in place to reduce the asymmetries (Eckardt 2007, p. 120-122).

Several economic vehicles can serve as repositories for retirement savings: social insurance from the PAYG-system, market insurance through insurance companies or employers, or self-protection (via private savings or support from the family). Because of a lack of individual financial activities and low contributions to private and occupational pension schemes, authors like Madrian and Shea (2000) have suggested that a stronger enforcement by employers is needed to motivate employees to move into higher contribution rates and more aggressive investment strategies when adopting an occupational pension. However, institutions like financial intermediaries, which help people accumulate money in an individually appropriate way, are necessary in that they provide products for old-age income that are more or less adjusted to individual needs and preferences.

Economic research still fails to explain why people feel motivated to use a financial intermediary in order to build up a stock of assets for retirement by either saving privately or occupationally. According to Bernheim (1995, 1998), individuals know little about their financial vulnerabilities and rarely obtain authoritative advice and guidance to overcome them. This is not to suggest that people completely ignore finances or that they do not have a bank account, but that they do not know in

what type of asset their pension contributions are invested but are not provided with the financial products they might have originally thought of (o.V. 2008, p. 71-73). In order to close this information gap, researchers must know whether people are willing to contact a financial intermediary for old-age provision, what kind of intermediary is preferred and for what reasons. Evidence on that issue has not yet been provided for Germany.

This paper focuses on the market for financial services for pension savings in order to provide evidence concerning whether supply-side factors or demand-side attributes affect investors' decisions to consult financial intermediaries. We evaluate what kind of financial intermediary people contact to build up assets for retirement, concentrating on the frequency of consultancy, to assess what kind of people obtain financial advice from financial intermediaries, and what motivates contacting a bank consultant or an insurance intermediary. In addition to socioeconomic attributes, we account for whether our sample trusts financial markets for investment in long term assets and whether they are willing to accept certain risks in portfolios.

This paper is organized as follows: Section 2 presents the theoretical background of the analysis. Following the theory of financial intermediation and the Life-Cycle Hypothesis of saving, we add further aspects from behavioral finance to clarify individual savings behavior and the use of financial assistance in planning for old age. In section 3, we develop theoretical hypotheses in order to test them for Germany and explain the dataset used for empirical tests, as well as the multivariate methods used. Section 4 presents and discusses our results, and section 5 concludes.

## 2. Theoretical Background

Economic theory is comprised of concepts that explain individual savings behavior for consumption, for precautionary aims, or for retirement.

### 2.1 Theoretical explanations of saving

#### 2.1.1 Definition of saving

In most cases, saving is understood as keeping a certain amount of assets separated from current consumption in order to smooth assets future consumption. Börsch-Supan (2001, p. 4-7) distinguished saving for specific purposes (active saving) from capital gains, which are reinvested automatically, as one benefitting the saver by means of a certain action (active saving) and the other benefitting the saver by means of compound interest rate (passive saving). Discretionary saving occurs when individuals define a certain amount of saving, separate from mandatory saving, which is a regulatory form of saving like a pay-as-you-go pension system or funded occupational pension plans. Finally, real saving in the form of physical items like houses is separate from financial saving, which takes the form of financial assets, capital flows, monetary income, and consumption expenditures. As McCauley and Sandbrook (2006) noted, income and prices (such as interest rates) for savings are important because they affect the decision on portfolio selection. Since people do not form fully rational expectations and, thus, do not look for full information about financial vulnerabilities, risks or investment possibilities, income and prices allow them to account for the payoffs of certain assets and save more with an increase in individual income. The literature elucidates several theoretical concepts that explain what influences individuals' and households' decisions to save and how much to save. These will be discussed in the following chapters.

#### 2.1.2 Earlier Theories of saving

In *General Theory of Employment, Interest and Money*, John Maynard Keynes (1936) named eight motives people might have to save, regardless of their age and cohort: precautionary motives, consumption smoothing (life-cycle motive) profit-reaching, increase of individual standard of living, independence, investment in risky projects, bequest motives, and protestant arguments (people are not willing to spend anything). These eight were complemented by one further motive: saving for consumption of luxury goods (GDV 2004, p. 30, Browning and Lusardi 1996, p. 1797).

#### 2.1.3 Life-Cycle Hypothesis of Saving

Modigliani and Brumberg's (1954) Life-Cycle Hypothesis of saving established a relationship among age, income, consumption, saving and wealth to explain why people consume less than they earn over a certain period of time. An individual maximizes utility (1) determined by consumption ( $c_t$ ) and assets (with  $a_t$  being the assets at the beginning of period  $t$ ) over the life cycle by building a plan over its lifetime, subject to the budget constraint (2) including income (all but interest rate in-

come) in year  $t$  ( $y_t$ ) which is discounted over the earnings period  $N$ . Utility is assumed to be additive, separable and, thus, homogeneous over all periods.  $L$  denotes the life span of economic significance ( $N+M$ ), with  $M$  being the period of retirement,  $\tau$  being a future time period with  $\tau > t$ , and  $r$  the interest rate. No bequests from one generation to another are assumed.

$$U = U(c_t, c_{t+1}, \dots, c_L, a_{L+1}) \quad (1)$$

$$\text{s.t. } a_t + \sum_{\tau=t}^N \frac{y_\tau}{(1+r)^{\tau+1-t}} = \frac{a_{L+1}}{(1+r)^{L+1-t}} + \sum_{\tau=t}^L \frac{c_\tau}{(1+r)^{\tau+1-t}} \quad (2)$$

Dependent on non-interest income and individual income that is due to asset-building, each individual decides to save or consume in present and future periods. If present income  $y_t + ra_t < c_t$ , an individual dissaves, whereas, if  $y_t + ra_t > c_t$ , an individual saves. If income from period  $L+1$  is larger than income in period  $t$ , the bequest motive may be in play because maximum consumption in at least one period is equal to expected income. If expected income does not equal expected maximum consumption, the individual plans to save or dissave at age  $\tau$ . This is independent from the bequest motive, as an individual is always able to save if the preferred expected amount of consumption does not equal lifetime earnings. In addition to these two motives, Modigliani and Brumberg (1954) referred to the precautionary savings motive and to having assets as durable goods to be consumed at a later point in the life cycle. These motives aim at controlling for uncertainty over an individual life cycle.

Thus, current and future planned consumption  $\bar{c}_\tau$  at a given point in time  $\tau$  must be functions of current and expected (discounted) income plus initial assets, with respect to all resources  $v_t$  available in period  $t$  (3):

$$\bar{c}_\tau = f(v_t, t, \tau) \quad \tau = t, t+1, \dots, L; \text{ with } v_t = \sum_{\tau=t}^N \frac{y_\tau}{(1+r)^{\tau+1-t}} + a_t. \quad (3)$$

As a result, an individual expecting a rise in income does not consume the whole increase in one single period but distributes its benefits over all further periods. Thus, the allocation of maximum expected consumption (4) depends solely on the preferences  $\gamma'_\tau$ , dependent on the  $r$  of an individual toward the available resources and the form of the utility function.

$$\bar{c}_\tau = \gamma'_\tau v_t \text{ with } \tau = t, t+1, \dots, L \quad (4)$$

Modigliani and Brumberg (1954) derived the individual consumption function (5) to be dependent on income, expected income ( $e$  being the expectations about average income over the life span), assets and current age (year  $t$  of the individual's life).

$$c = c(y, y^e, a, t) = \frac{1}{L_t} y + \frac{(N-t)}{L_t} y^e + \frac{1}{L_t} a. \quad (5)$$

Since saving ( $s$ ) is defined as the difference between current income and current consumption, it can be developed by

$$s = y - c = \frac{L-t}{L_t} y - \frac{N-t}{L_t} y^e - \frac{1}{L_t} a. \quad (6)$$

In further analysis, Modigliani and Brumberg (1954) showed a proportional relationship of consumption  $c = \frac{N}{L} y$  and saving  $s = \frac{M}{L} y$  to current income. Based on this relationship, they inserted the equilibrium values of assets, consumption and saving into the savings equation (6), which yielded (7) and implied that individual saving is influenced by a constant share of permanent income, non-permanent income (difference between current and expected income) and age-dependent share of assets.

$$s = \frac{M}{L} y^e + \frac{L-t}{L_t} (y - y^e) - \frac{1}{L_t} [a - a(y^e, t)] = \frac{M}{L} y + \frac{N(L-t) - M}{LL_t} (y - y^e) - \frac{1}{L_t} [a - a(y^e, t)] \quad (7)$$

These derivations from the Life-Cycle Hypothesis of saving suggest that an individual divides current and expected income over the life expectancy of economic significance to benefit from assets and consumption. A spontaneous increase in income increases the total amount of saving. Thus, it can be concluded that individual elasticity of consumption with respect to income depends on three factors short-term variability of permanent income, variations of permanent income, and the elasticity of income expectations (Modigliani and Brumberg 1954, p. 417). The age of the individual can also be a factor because cross section relationships of the consumption functions showed graphically that some coefficients of the stationary equivalent income depend on age. Modigliani and Brumberg's (1954) findings are in contrast to that of Friedman (1957), who stated that every change in savings behavior is closely related to a change in income. The life cycle hypothesis, however, notes that the share of savings rises with the income or wealth level of a household (Modigliani and Brumberg 1954, p. 418). The Life-Cycle Hypothesis has been extended and widely tested both empirically and theoretically. Modigliani (1966) improved the entire analysis by making some changes in the assumptions; he assumed that a rise in individual productivity could lead to a rise in income. The assumptions of the model had been changed by Modigliani (1988), who claimed in an analysis of the bequest motive that:

“According to the Life Cycle Hypothesis, hump wealth should respond to variables or institutions like length of retirement, family size, liquidity constraints, uncertainty of income (at least from labor), private and public pension arrangements, and health insurance.” Modigliani (1988, p. 17)

One of the critiques of the Life-Cycle Hypothesis is that insufficient retirement wealth results because wealth often is defined as real assets (such as houses) and monetary assets through private savings processes; however, retirement saving in private, occupational, and public pension plans should be included as well (e.g., Dicks-Mireaux and King 1984). The absolute volume of saving might decrease after retirement, but there is no evidence for complete dissaving after retirement. Referring to the Life-Cycle Hypothesis, Börsch-Supan and Essig (2005) explained whether and how much German age cohorts save in preparation for closing the retirement provision gap. The authors



reported that people do not dissave at old age, as some theory supposes, and they find further evidence that the proportions of people who are able and willing to fill the pension gap<sup>1</sup> is constant over age and income classes, but differs across education levels. This difference might be because less educated people are less able to calculate their life expectancy and to put total wealth into annuities for retirement income (Modigliani 1988, p. 36). Therefore, we derive the first of our two main hypotheses:

*H<sub>1</sub>: The (behavioral) Life-Cycle Hypothesis of saving explains individual demand for retirement savings.*

To test this hypothesis, we derive further sub-hypotheses, which help to instrumentalize the Life-Cycle Hypothesis of saving (visualized by equation 7): Theory shows that individual behavior differs with age (saving shows an inverted u-shape of the curve with increasing age), and satisfaction with individual economic status (saving increases as economic status increases, denoted by current wealth and income). The amount of saving can be replaced by contact with an institution, such as an intermediary, which helps people select portfolios. Thus,

*H<sub>1.1</sub>: The younger an individual, the less likely he or she is to ask for financial assistance from a professional.*

Modigliani and Brumberg (1954) also showed that saving and consumption are distributed over the life cycle. This distribution positively depends on available household income, so we hypothesize that:

*H<sub>1.2</sub>: The volume of savings for retirement, as well as the willingness to save for retirement, is positively related to an individual's income and wealth.*

If we replace saving with demand for financial services, we can state that individual financial contacts differ over the life-cycle and according to circumstances. The assumption of homogeneous agents had to be dropped because households and individuals differ according to their preferences or savings motives. Some prefer to hold a so-called buffer stock of savings (see, e.g., Carroll 1992 for a detailed description).<sup>2</sup> In addition to factors like household composition, age, home ownership, bequest motive, and others, Samwick (2006) found both households defined according to whether they have a buffer stock or low savings. We apply household circumstances by socioeconomic attributes and include the following characteristics in our empirical analysis as control variables for the fact that economic agents are not homogenous, as Modigliani (1988) suggested: *gender, marital status, job situation, and region.*

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<sup>1</sup> People fill the pension gap using total net wealth and monthly amounts of household saving to calculate life annuities with respect to life expectancy.

<sup>2</sup> This buffer stock model of savings can explain low levels of wealth. To explain accumulation of substantial assets, Hubbard et al. (1995) used a model of consumption and saving with respect to uncertainty to evaluate the impact on saving of social insurance provided by the state. They showed that individual wealth accumulation depends to a large extent on individual lifetime income.

#### 2.1.4 Uncertainty and demand for saving

Uncertainty, as explained by Modigliani and Brumberg (1954), is an important reason for saving for future events like retirement or unforeseen events.<sup>3</sup> Savings behavior might change, especially if expected future income becomes uncertain.

According to Leland (1968), an increase in risk avoidance does not cause an individual to maximize the expected value of utility or increase precautionary saving. Leland (1968) used the behavioral assumption of decreasing risk aversion and found that demand for precautionary saving can be a positive function of uncertainty, depending on the degree of risk aversion. Uncertain income in a future period would always lead to an increase of saving in the first period, as risk-averse individuals try to secure the current level of consumption for future periods.

Therefore, our next hypothesis is:

*H<sub>1,3</sub>: Individual saving for precautionary aims is assisted by professionals.*

In order to maintain the standard of living, in particular to save for retirement, people need more financial assistance.

Whether savings are adequate for a certain aim is always subjective. Pessimism and optimism both influence savings rates and, in particular, more confidence in state provided pension benefits influences individual behavior to a high degree. Bernheim (1995) followed this idea to find a relationship among people's expectations of net income, what they actually will get, and what they want. Bernheim found that many people are not aware of their financial vulnerabilities because they are satisfied with their current financial status<sup>4</sup>; for example, he found that only one-fifth of the people in the US consider themselves not well prepared, although a lot more than that feel insecure about future events. According to Bernheim (1998), this lack of information reflects ignorance, which is often typical for certain subgroups of society, depending on age, gender, education, monthly earnings and race (Bernheim 1998, p. 48/49).

Critics of the Life-Cycle Hypothesis refer to the introduction of the bequest motive, a more distinct modeling of family compositions, changes of the utility function and the introduction of liquidity constraints (and other capital market imperfections), which are closely related to a distribution of income over age classes and over social groups. In most cases, empirical evidence could be found for the hypothesis because almost all datasets, apart from those used by White (1978) and Mork and Smith (1989) for the US and Norway, respectively, fit the theory very well, particularly if other factors - like age, income distribution and liquidity constraints - are considered.

Actions related to wealth accumulation and demand for financial assistance depend to a large extent on what people expect to receive as retirement income from the PAYG system and what people expect to need. As Hamermesh (1984) found, unsuccessful planning results from imperfect infor-

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<sup>3</sup> Uncertainty is often called the precautionary motive of saving because people save for events they cannot control or expect, which saving differs from saving for retirement.

<sup>4</sup> Because of this lack of awareness, we include in our analysis a variable controlling for individual life satisfaction.

mation about Social Security benefits and other retirement income resources. According to the Life-Cycle Hypothesis, the amount of money/wealth individuals need for future consumption changes over time, but knowledge about individual receipts from the PAYG system differs with reference to individual characteristics. Reifner et al. (2003) found from a survey that 75.5% of the respondents agreed with the statement that the mandatory pension system faces severe problems (18.2% stated “rather yes”), only 4.7% believed the benefits from the PAYG system to be sufficient, and 58% did not believe that the PAYG system will be sufficient. This leads us to the next hypothesis:

*H<sub>1.4</sub>: The less money people expect to have during retirement, the more they will try to save during pre-retirement.*

## 2.2 Behavioral Finance

Savings theory still leaves a gap between the intention to save for retirement and the establishment of an individual savings plan. Behavioral finance adds behavioral aspects to explain attitudes towards retirement saving. However, it is necessary to rely on behavioral finance literature because earlier strands of literature rarely account for the process of decision-making. Authors often assumed “mean-variance-investors”<sup>5</sup> in order to explain portfolio choice, which has been improved by prospect theory, including behavioral aspects of attitudes toward gains and losses (Mitchell and Utkus 2004, p. 21/22). Shefrin and Thaler (1988) added to the arguments of Kahnemann and Tversky (1979), including those related to behavioral aspects, and formulated prospect theory more realistically. The result is the Behavioral Life-Cycle Hypothesis.

### 2.2.1 Behavioral Life-Cycle Hypothesis

Three factors influence individual actions in long-term planning: self-control, mental accounting, and framing. Individuals try to build a plan for retirement saving, acquire information about options for funding their plans and, finally, execute a plan. The primary conclusions of the behavioral life cycle hypothesis are that individuals do not act according to rational expectations, but that factors other than age and wealth have an effect on saving.

To show the internal conflicts that arise while planning for retirement saving, Shefrin and Thaler (1988) assumed dual preferences of each individual. An individual acts as both a planner (a long-run perspective) and a doer (short-run perspective) who lives over T periods earning lifetime income with income in period T of zero, as it is supposed to be retirement income. Capital markets are assumed to be perfect with an interest rate of zero. Both doers and planners maximize individual utility with respect to consumption, dependent on the available set of choices. Unlike a doer, a planner prefers smaller consumption; and willpower makes it more costly to the planner to maxim-

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<sup>5</sup> According to Markowitz (1952), these investors come up with portfolio decisions that maximize individual utility only with respect to expected return (mean) and the volatility (variance) of a portfolio.

ize utility over time, compared to the doer who prefers consumption in the current period. Thus, a doer needs to maximize utility from the opportunity set and willpower. If an individual tries to reduce consumption of an opportunity, he or she needs to spend effort. Therefore, utility declines with an increase in willpower.

As a planner realizes the costs of willpower and its effects on utility (following a neoclassical utility function), he looks for a different solution for his choice problems. An introduction of one or more mental accounts, defined as the division of wealth into different components, which restrict the variety of choices an individual is allowed to consider, serves as a solution to the problem of self-control. In this way, a first-best solution can be achieved because the planner will be restricted completely to a consumption path over the life-cycle. As most restrictions with no willpower efforts are supposed to be external, in each case, internal rules cause willpower efforts that can be minimized by making use of mental accounts, an example of framing. In that case, the difference between using willpower in order to achieve self-control and using mental accounts or an external rule, with effort equal to zero, will be positive.

Mental accounts have three components: current income with a fraction  $s$  of income saved, current wealth, and future wealth as: sum of future income and pension wealth. The classical theory, which suggests that marginal propensity to consume is independent from wealth, contrasts with the concept of mental accounts, where wealth and its composition play an important role in decisions about consumption. Shefrin and Thaler (1988) accounted for the fact that households differ in their attitudes toward mental accounts. Over time, consumption will be taken out of the three mental accounts, beginning with current income. Temptation resulting from different levels of consumption affects willpower and, thus, the utility of the doer, and makes him worse off if temptation increases. The more effort an individual is forced to expend, the less will be individual utility.

Based on this model and its predictions (Shefrin and Thaler 1988, p. 621- 625), we need a closer look at individual actions in asset-building. The introduction of different mental accounts, despite preferences for current or future consumption, shows that individuals do not spend money only on current consumption but prefer other mental accounts, which serve as buffers for different situations over the life cycle, each causing different amounts of willpower effort.

### 2.2.2 Decisions about financial activities

Generally speaking, decisions are built in one or more of three ways:

1. With respect to gains: This includes the risk of becoming overconfident about future gains and contributions/benefits;
2. With respect to losses: Potential investors weigh different types of risks and have a low willingness to invest in risky projects;

3. With respect to framing effects: Decisions related to gains and losses can be influenced by framing effects, which are due to the investment menu.

These three ways of building decisions are weighed when an investment decision is to be made. If an individual has a variety of products to choose from, she will calculate with respect to her individual budget constraint and her preferences, represented by their utility function related to where to invest. In that case, she must decide to accept a certain risk of investment loss in order to gain certain benefits (Mitchell and Utkus 2004, p. 22/23). Based on the results of Shefrin and Thaler (1988), prospect theory (Kahneman and Tversky 1979), and Security Potential Aspiration-theory (SP/A) (Lopes 1987), a portfolio theory with respect to behavioral aspects has been developed by Shefrin and Statman (2000). It is based on the idea that, in a safety-first framework, investors try to minimize losses/the probability of ruin, and it refers to SP/A theory, which controls for two dimensions of investor-specific risk attitudes: hope and fear. The more an investor fears losing, the lower the expected return and the lower the expected utility.

Behavioral portfolio theory, then, began with a single account model, later improving to a multiple account system. Both types of investors that were developed in the model (low-aspiration doers and high-aspiration doers) have the opportunity to invest in lottery tickets or bonds that are to be divided into different accounts in order to maximize individual utility with respect to risk attitudes. Thus, we can hypothesize that: *Demand for financial assistance depends on individual attitudes towards risk.*

### 2.2.3 Financial literacy

Households acquire more savings as the level of education increases.<sup>6</sup> Thus, instruments provided by financial markets are needed that offer dividends to increase individual retirement income with respect to different individual knowledge, including the ability to acquire and understand different types of financial information, about financial needs and possibilities and to account for the willingness to spend money on retirement annuities.

Ameriks et al. (2003, p. 1010-1012) named several problems people face during their planning period: control problems, lack of control skills, attitudes towards saving and delaying consumption to the future (self-control, procrastination<sup>7</sup>), and bounded rationality. Self-control efforts are psychologically costly, so it requires people to have a commitment to a goal that makes reducing consumption and smoothing income towards retirement seem worthwhile (Rabinovich and Webley 2007, p. 447). Thus, most individuals try to fulfill their expectations by following the path of least resistance; they make decisions based on past information because this kind of information can be gained very cheaply (Choi et al. 2004, Mitchell and Utkus 2004, p. 6-16). This factor refers to indi-

<sup>6</sup> Börsch-Supan and Essig (2005, p. 32-34) ascribe this finding to the better discipline of more-educated households and to the possibility that less-educated households decline to answer questions about financial wealth.

<sup>7</sup> O'Donoghue and Rabin (2001) showed theoretically that, with an increasing number of alternatives, the probability of procrastination increases. Costs relative to immediate benefit also have a great impact on procrastination.

vidual limitations and capacity to acquire information, which are often summarized as financial illiteracy.

The literature discusses several types of financial literacy based on the ability to acquire information about financial products and to take individual specific actions. OECD 2005 provides the definition of financial literacy that is most widely accepted:

“The process by which financial consumers/investors improve their understanding of financial products and concepts, and through information, instruction, and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being.” (p. 26)

The reasons for financial illiteracy, which can be derived from the Behavioral Life-Cycle theory, include apathy and indifference to pension planning (Whitehouse 2002, p. 289), lack of education available for people who are not technically qualified (Anderloni 2006, p. 199), and lack of financial sophistication (Lusardi and Mitchell 2007a, p. 215). Any of these reasons might result in a decrease in purchase of financial products; the financially illiterate who are less aware of their needs and cannot specify their wishes (OECD 2005, p. 35) make procrastinate about saving, even if they have some knowledge about financial products, resulting in fewer contracts' being signed (Leinert and Wagner 2004, p. 430), over-indebtedness, or tenancy-breakdown (Ford and Jones 2006a, p. 88). Furthermore, wealthier people have better access to investment opportunities, as compared to minorities, women and less-educated people as groups (Ameriks et al. 2003, p. 1012, Lusardi and Mitchell 2007b). These authors found strong evidence that planning for retirement and income situations have significant influence on net wealth and gross financial assets. Moreover, many people are not willing or able to make decisions on investments in order to deliver sound benefits (Wesbroom and Reay 2005, p. 22).

If people are aware that they need to save more, they often face a gap between the process of planning and doing. As has been shown in the literacy discussion, financial intermediaries can help people who are preparing for retirement. In summary, two theoretical concepts from psychological studies support our analysis concerning professional consulting activities: Mental accounting (Shefrin and Thaler 1988) and the implementation intention (Gollwitzer and Brandstätter 1997). Successful planning can be possible with a pre-commitment and clear thoughts on needs and risk preferences (Rabinovich and Webley 2007, p. 446).

Bernheim (1998) and Lusardi (2003) showed that individuals in the US with a highly educated family background or who have a higher education themselves and, thus, have higher earnings are more likely to seek financial advice from financial professionals. Thus we suggest:

*H<sub>1.5</sub>: People with a lower educational status are more likely to contact a financial intermediary for retirement savings planning.*

#### 2.2.4 Further behavioral influence factors

Time preferences for consumption and saving are also of importance. Short time horizons are associated with higher discount rates, whereas people who use lower discount rates have longer time horizons. To include these in economic studies, one has to differentiate between linear or constant discount rates and hyperbolic, quasi-hyperbolic or even exponential discount functions.<sup>8</sup> These latter functions result in situations that differ according to individuals' consumption paths, which tend to be non-proportional. Every individual should be willing to change his or her consumption path every period as a result of differences in the expected value of consumption caused by the discount functions (Normann and Langer 2002, p. 1304/1305).

As Essig (2005) noted, savings motives (such as saving for bequests and saving for grandchildren) other than those named by Browning and Lusardi (1996) are of great importance in individual saving. More risky behavior is an attribute of people who aim at earning extra money, despite regular benefits from interest rates. According to Wärneryd (1996), risk-taking behavior is an indicator of impatience and of not trusting advice or long-term compound interest rates.

Another important aspect of savings decisions made popular by behavioral finance is the influence of social characteristics, as decisions can be swayed by individual characteristics like a penchant for gambling, smoking or drinking. In psychology literature, Barsky et al. (1997) found evidence that the US population is characterized by an aversion to high risk, but people who have certain characteristics, like certain religions and attitudes towards gambling, smoking and drinking, show statistically significant differences from the rest of the population in their approach to risk-taking. Precautionary wealth<sup>9</sup> depends on components like risk, individual preferences, liquidity constraints (income) and sociodemographic variables that capture health status and effects that influence behavior, such as patience (Carroll and Samwick 1998, Kennickell and Lusardi 2004). Patience is often related to drinking and smoking, both of which are addictions that cause differences in individual behavior. People who do not smoke or drink have a different attitude towards risky assets, have different planning behavior and are more willing to allot money to retirement saving, as they are not addicted to something. An increase in health risk leads to higher precautionary savings (Lusardi 2003, Lusardi 2004, p. 165/166, Schunk 2007). Thus, these variables show that financial actions may depend on individual constitutions and impatience, and we hypothesize that:

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<sup>8</sup> Theoretical expressions on life-cycle saving, including hyperbolic and exponential discount functions with an additional focus on the impact of defined contribution (DC) and defined benefit (DB) plans, can be found in Brooks and Razin (2005). Laibson (1997) discussed theoretically the case of illiquid assets (called "golden eggs," because they are complex to handle), one of the many possibilities people have in choosing investments. Laibson provided evidence that financial innovation in the form of borrowing instantaneously liquid assets supports individual demand for assets. This kind of investment reduces liquidity constraints in every period of consumption, but also may reduce welfare if financial institutions provide too much liquidity.

<sup>9</sup> The concept of precautionary wealth must be understood differently from the pure Life-Cycle Hypothesis of saving, which provides information about consumption-smoothing over the life cycle with respect to saving for bequest or retirement. The first study provided on the subject was a theoretical model on the relationship between income uncertainty and precautionary saving over the life cycle (see Skinner 1988).

*H<sub>1.6</sub>: If a person drinks or smokes frequently, he or she uses a budget differently, is less likely to save and, thus, is less likely to contact a financial intermediary.*

Global financial markets not only offer wider possibilities of portfolio diversification, but they also increase information asymmetries. Consumers are not able to internalize information about financial products as the number of financial products dramatically increases with the number of countries participating in global financial markets. Intermediaries rapidly develop retirement-provision products, and investment advisors help by investing in stocks, bonds and other types of assets, while insurance companies provide products such as life insurance contracts, and banks provide another range of products, such as savings accounts, Riester-pensions, and insurance contracts.

## 2.3 Financial Intermediation

### 2.3.1 The role of financial intermediaries

Research in the US showed that financial education (e.g., through financial seminars) can foster retirement savings (Lusardi 2004, p. 170). The theory of financial intermediation explains why people make use of intermediaries as an institution for providing savings and loans. Neither individuals nor financial intermediaries have full information about individual life expectancy, so annuity provision and portfolio structuring becomes more complicated. Furthermore, globalized financial markets offer a wide range of investment possibilities which provide many possibilities for diversification but do not make it easy to control for risks and chance (Jungbluth 2008, p. 23/24).

Deeper discussions of the theory of financial intermediation show that savings processes are complex and have many asymmetries. Retirement saving, as one out of several goals for saving, also has many complexities, as will be discussed in the following section. In general, we hypothesize that:

*H<sub>2</sub>: Accumulation of pension wealth causes a demand for financial services provided by different types of intermediaries, which differs according to the services attributes provided by each intermediary.*

As in previous paragraphs, we derive several sub-hypotheses to support hypothesis 2. As has been shown by information economics, the theory of financial intermediation tells us that intermediaries can help to overcome incomplete information by gathering, assessing and distributing information for both customers and suppliers of financial products. By doing so, intermediaries are able to give advice to their customers concerning portfolio selection and choice of riskier assets, and to provide annuity payments resulting from asset transformation. These functions work in the case of classical financial market actions, but they can also be adopted for the provision of old-age products. Both insurance companies and banks develop financial products to resolve concerns related to household-specific risks of aging and provide several products, like reverse mortgages, annuities, long-term care, which might help in managing household risks of longevity (Mitchell et al., 2006).



These products do not necessarily need to work independently from financial education through occupational seminars, earlier education or individual consultancy, but can work in tandem (The Economist, o.V. 2008, p. 73).

Financial intermediaries can attain both economies of scale and economies of scope from network externalities, cost advantages from division of labor, specialization and learning effects to lower transaction costs in the market. Lower transaction costs allow intermediaries to decide on distribution channels (multi-channel or mono-channel distribution) and customers to decide on their appropriate and optimal supplier of financial assistance (Rose 1999, as cited in Eckardt 2007, p. 10-14).

If intermediaries provided a wider range of products (i.e., “one-stop shopping”/Allfinanz), they could reach a larger share of the market by using different distribution channels. An intermediary that also provides high-quality services in helping to give customers information and education about different products can be more effective in helping customers gain a comfort level with the products they select (Reittinger and Stelzle 2007, p. 38-40). The idea of distributing insurance products by means of direct insurance is supported by Jara (1999) as the concept is applied to standardized products for young, open-minded customers; more flexible and complex products need more detailed consulting activities and should be distributed by affiliated banks or insurance intermediaries that offer extensive mentoring of customers.

Müller (2005) and others have hypothesized that, in the future, customer behavior will change as individuals will be less risk-averse and will make greater use of modern distribution channels, which will become more important for contract conclusions than are consultants who are nearly the same age as the customers. An earlier analysis by Wittmann (1989, p. 147/148) based on qualitative expert interviews and customers surveys showed that older people do not care for young consultants but rely more on discretion, quality, flexibility, and liquidity of financial products. Older customer also tend to have lower-risk preferences, compared to younger cohorts, and are less flexible about using “more-stops shopping.”<sup>10</sup> We derive four hypotheses from these arguments:

*H<sub>2.1</sub>: Provision of high-quality services by intermediaries increases individual demand for information about financial assistance with retirement-savings products.*

*H<sub>2.2</sub>: If the geographical density of intermediaries is high, financial consulting activities increase.*

*H<sub>2.3</sub>: Availability of multichannel distribution of information is positively related to demand for financial assistance.*

*H<sub>2.4</sub>: The broader the scope of financial services offered by a single intermediary, the more likely people are to make use of the intermediary.*

Advantages in acquiring information about certain products are a particular characteristic of financial intermediaries. These intermediaries are chosen for help with accumulating retirement income

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<sup>10</sup> According to Süchting (1987), one-stop-shopping and the inclusion of a distribution of insurance products can succeed only if a customer is not being provided with better alternatives in quality or price or does not benefit from lower transaction costs.

through savings. Section 2.2 and 2.3 showed that uncertainty and life-cycle motives influence demand for financial advice and the choice of one alternative out of several, but behavioral finance literature has shown that individuals do not act rationally in selecting portfolios. This behavior cannot be explained by bounded rationality, self-control issues and procrastination alone; the explanation depends to a large extent on individual beliefs and attitudes, which can be explained by the Customer Choice Model (CCM).

Developed by Fishbein and Ajzen (1975), the CCM differentiates itself from other choice models as it drops the assumption of rational expectations and rational choice. The CCM explains that individuals start an activity if there are enough incentives to stimulate them; some individuals look for incentives, while others need to be stimulated by external forces. Financial intermediaries which are active in one or more channels can increase the activity of individuals. Some individuals strongly rely on advice from family and friends, while others lean on the advice from financial advisors or intermediaries. Therefore, in the case of old-age provision, financial intermediaries need to set special incentives for customers in order to be chosen for consulting activities.

### 2.3.2 Pension saving and the need for intermediation

We apply the theory of financial intermediation to retirement savings in a private or occupational sense because aging amplifies and adds different kinds of incomplete and asymmetric information. As was explained in section 2.2.3, motives like precaution, bequest, and consumption-smoothing impact saving. Planning processes themselves are difficult because motives may cause a wish for saving but information about financial products is often missing; knowledge about developments of interest rates, housing prices, and companies' performances is uncertain or not possible to gain, or retirement benefits by the statutory pension system crowd out additional savings. Therefore, the US government introduced a process of automatic enrollment into retirement plans (e.g., 401(k) plans). By simply introducing an opt-out option for savers, the total ratio of extra saving for retirement increases (Venti 2006, p. 605-611).

Diamond (2000) mentioned three further possibilities for annuity provision: the government could take over the savings function, the government could contract with an intermediary and choose appropriate investments, or, instead of choosing a traditional occupational way of saving, the employee himself could contract with a financial intermediary. Based on theoretical considerations about the US pension system, Diamond concluded that privately organized firms are barely able to provide a basic level of social security because costs for private organization are higher than they would be if retirement provision were organized by the state. Diamond argued that costs for managing individual accounts for retirement can be better managed by state activities, although private firms might be able to pool management of individual accounts with other fund-management activities. Thus, it can be hypothesized that:

*H<sub>2.5</sub>: People who own an occupational or private pension understand the need for financial action and, thus, contact intermediaries for assistance.*

Default rules, as well as social interactions between individuals can impact savings decisions, as individuals exchange information about products, possibilities and other considerations of importance (Duflo and Saez 2004, p. 138-140).

Combining the life-cycle theory of savings and the theory of financial intermediation, authors such as Döge et al. (2007, p. 312-314) have found that younger cohorts of savers should start preparing for retirement earlier by demanding riskier assets. Because of time horizon effects<sup>11</sup> and intertemporal diversification,<sup>12</sup> wealth should be accumulated with respect to individual human capital since a higher share of stocks, especially at the beginning of the investment period with respect to a decrease in human capital at the end of the life-cycle, leads to higher returns on stocks and, thus, to a higher net financial wealth. To capture these difficult tasks of investing in riskier assets with an increasing number of possibilities for portfolio selection financial, intermediaries are needed to support and assist individuals with choices related to savings for retirement.

In order to capture the effects of attitudes towards financial action, such as risk attitudes and the need for building up assets, we propose that:

*H<sub>2.6</sub>: The more risk people prefer to take, the more probable it is that they will contact a financial intermediary for financial assistance.*

## 2.4 Individual constraints

The preceding sections made clear that both supply-side and demand-side factors that influence the individual decision to save for retirement can be derived from theory. Markets are incomplete and individuals cannot be assumed to act rationally because individual situations restrict the ability to be active in financial affairs. For example, liquidity constraints caused by differing labor-generated income over the life cycle influence consumption and restrict borrowing against future annuities, and present consumption will be paid from current wealth and income. Another example is when age and health status (influenced by individual habits, such as smoking or consumption of alcohol) constrain individual utility because bad health is often correlated with a decreasing willingness to keep a certain amount of wealth for retirement (Börsch-Supan and Stahl 1992, p. 172/173). Low education and bounded rationality are also constraints on individual actions. A lack of knowledge of financial affairs resulting from a low level of capability in acquiring information increases the demand for consulting activities. This need will be filled only if institutions in the surrounding area help an individual come to appropriate conclusions about individual needs and preferences by discussing financial topics and posing new ideas so the constraint can be overcome. Finally, the variety

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<sup>11</sup> Volatility shrinks with an increase in duration of an asset.

<sup>12</sup> A replicated decision on the distribution of assets into more secure or riskier assets.

of products and investment possibilities, each with a differing degree of risk and chance, constrains individual actions.

## 2.5 Summary

From Modigliani and Brumberg's (1956) life cycle hypothesis of saving, we derived hypotheses which will be tested in the following section. In general, we test the life cycle hypothesis by replacing the amount of saving or savings wealth with contact of financial intermediaries as a dependent variable. We chose this approach because intermediaries, in most cases, serve as the institution for financial advice because of their expert knowledge. As a result, they are responsible for wealth accumulation and saving.

## 3. Empirical Analysis

This section presents data, methodology and the results of our analysis in order to test the hypotheses developed in the preceding section on the probability of consulting a financial intermediary.

### 3.1 Dataset and Methodology

In order to provide evidence on which variables have a statistically significant impact on the decision to consult financial intermediaries, we use the SAVE dataset provided by the Mannheim Institute for the Economics of Ageing (MEA), a dataset on household savings behavior in Germany that is representative of the German residential population. The survey was first fielded in 2001, with a the second wave in 2003. We use the third wave, collected in 2005, which consisted of 2,305 households to do a cross-sectional analysis.<sup>13</sup> To control for the appearance of each household in the population, we use weights based on the distribution of income and age of the German sample census of the respective year. The overall number of observations in our final sample is 2,229 households. The SAVE dataset allows us to find evidence on the influence of socioeconomic variables, savings motives, attitudes towards saving, and expectations about future events on the probability of contacting a financial intermediary, but it does not distinguish between contacts with banks, insurance companies, investment advisors or other institutions.

We also use the "Debit and Credit 6 - 2004" dataset which has been provided to us by the Zentralarchiv für Empirische Wirtschaftsforschung, Cologne. The survey, which was first fielded in 1980, followed by successive waves in 1985, 1989, 1996, 2000 and 2004, documents individual attitudes towards financial actions. In addition to an analysis of individuals' behavior concerning financial affairs, the dataset makes possible an accounting of a changing structure of attitudes. The sample of 10,100 individuals is a representative sample of the German residential population (coverage 64.72

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<sup>13</sup> More detailed information on the composition of the dataset and its methodological aspects can be found in Schunk (2006a, 2006b).

million) age 14 and older. The results are weighted with a weighting factor based on an alignment of the demographic structure (income and age) with the structure of the German micro-census, as has been used in the yearly Media Analysis concerning German consumption behavior.<sup>14</sup>

To analyze demand-side factors such as household income, marital status, age, and the aim of saving for precautionary events that lead to consulting a financial intermediary, we use a vector of socioeconomic attributes  $X_i$ , a vector of savings motives  $\Theta_i$ , and several psychological variables  $\Psi_i$  to capture the factors mentioned in our hypotheses. We construct these vectors from our datasets by choosing the variables from the questionnaires underlying the surveys. These are explained in Table 2 for the SAVE dataset and in Table 3 for Debit and Credit 6. Empirical analyses, which focus on the supply side of the market for financial services, find arguments that intermediaries' ability to fulfill their objectives, like gathering and assessing information, is determined by different signaling mechanisms. These mechanisms can be categorized into six groups:

- (1) voluntary property liability insurance (signaling that customers will be compensated and that the insurer has undertaken necessary actions),
- (2) guarantees and warranties (a promise to compensate the customer for any harm resulting from, for example, misinformation),
- (3) standards, certificates and licensing (a signal of high quality resulting from external statements on intermediaries' knowledge or memberships),
- (4) reputation (a quality gained over time from interactions between customers and the intermediary),
- (5) price and other cost-related activities (a specialization in certain segments, price is a no-action parameter), and
- (6) advertising of high quality (e.g., public presentations).

In the case of insurance intermediaries, only reputation has been found to be highly statistically significant in an econometric study (Eckardt 2007, p. 122-130). From that analysis, then, supply-side factors are important to the quality of information provided by intermediaries.

The service quality of financial intermediaries may be measured by branch density because geographical range gives an impression about competition and economies of scale in supply of services (see, for example, Bichsel 2006, p. 134). Outreach can be measured by the number of branches per 100,000 people or by the number of branches per 1,000 square kilometers. If exact measurement of access to financial services is concerned, it needs to be distinguished between the possibility of using financial services and actual usage of services (see Beck et al. 2006). It is assumed that banks serve as the source of information about financial products for retirement savings; banks offer a large product portfolio for retirement (different types of savings accounts, consultation about port-

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<sup>14</sup> Tables 6 and 7 in the appendix show the location and dispersion parameters of the underlying datasets.

folio diversification with stocks, bonds, etc.). The number of branches per km<sup>2</sup> is available only for banks.

Because the dependent variable in the regressions based on the SAVE data includes both banks and insurance companies, we would normally need to include the number of insurance intermediaries in each federal state and the number of branches of different types of banks. However, these statistics are not available as they relate to the number of insurance brokers or agencies, because insurance companies are not obliged to report these numbers to a central agency like the BaFin, as banks were forced to do until 2005 due to the KWG<sup>15</sup>. In order to control for the availability of financial services from banks, we match our dataset with aggregate data taken from the Regional Statistics provided for 2004 and 2005 by Eurostat. We chose the number of branches per km<sup>2</sup> inside the living space (the federal state) of observed households to control for the availability of financial services by German banks.<sup>16</sup> Our regressions using the Debit and Credit 6 dataset also include the variable of the number of banks as an indicator for the availability of financial services.

Descriptive results of the SAVE data show that almost 26% of the households contacted a financial intermediary but that about 10% of those have contact less than once a year. No significant differences across gender could be identified on a descriptive level. Both surveys showed that slightly more women than men contacted a bank or other intermediary for services related to retirement savings (SAVE 50.1%, Debit and Credit 49.3%). Of all respondents, 55.3% of those who believe precautionary saving is of importance contacted a professional in financial affairs.

The share of households who gave importance to saving for precautionary events PRECAUTION (including health care, job loss, etc.) did not differ much from the share of households that gave a statement on the question concerning importance of contacting a financial intermediary INTERMED. The gap between the lines is smaller the less important people rank any of these statements. The gap between the lines of household ranking of importance to save for retirement and contacting a financial intermediary widens only slightly. The gap between the share of households that claimed saving for retirement was important OLD AGE and those that said contact with financial intermediaries was important is 5.5 percentage points smaller than the gap between the importance of saving for precautionary events and contact with financial intermediaries. This could signal that financial services were not thought an appropriate instrument for retirement, although this rationale cannot be seen from the figures.

If we compare banks, insurance intermediaries and investment advisors using the Debit and Credit 6-2004 dataset, we find that differences on a descriptive level are not statistically significant.<sup>17</sup> Half of those who favored risky investments contacted a professional about retirement savings services,

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<sup>15</sup> KWG = German Banking Act (law on the German credit system/ *Kreditwesengesetz*)

<sup>16</sup> This variable might be biased if the dependent variable included a large share of people that contact an insurance company for help with financial services.

<sup>17</sup> Decisions about whether differences across groups are statistically significant are formed by performing t-test on the comparison of different groups.

and 51.7% of the risk-averse economic agents contacted a bank for the same reason. However, the need for additional savings seems clear, as 57.7% of those who were not interested in the topic of “old-age provision” preferred to contact a professional on this topic. These numbers are close to the percentages of those who believed additional insurance for old age was necessary; 53.7% of these contacted a bank for retirement savings services, while 54.3% contacted an intermediary.

Taking a closer look at the different age groups, we find significant differences across types of intermediaries. Most of the respondents (58.49%) preferred a bank as a consultant, followed by 31.23% who preferred an insurance company as a consulting institution. Some of the respondents (2.70%) preferred to talk about financial issues concerning old age with a lawyer or tax consultant, and a few (7.57%) chose an investment adviser. Although the percentages of households that preferred investment advisers or tax consultants were small, and no significant differences could be found among them, younger respondents (age  $\leq 24$  to 34) preferred to get consulting activities from insurance companies, whereas the percentage increases from middle-agers to the group age 65+, who generally prefer a bank as consultant.

The influence of education on the decision to contact financial intermediaries needs to be evaluated on the multivariate level because it might interact with individual income. In order to control for effects differing across educational groups, we created dummy variables for different levels of education, starting from no vocational training completed and going up through a university degree or a degree of a university of applied sciences. Education serves as an indicator for individual ability to acquire and understand information about financial topics.<sup>18</sup>

As can be seen from Figure 1, decisions on whom to contact for discussions about old-age provision, partly because it is a sensitive topic, depends on educational levels, although the difference is not as much as expected; in each education category, more than 50% prefer to talk to a bank consultant. At least 6% more of the low-skilled than the high-skilled respondents prefer an insurance intermediary, possibly because insurance companies offer life-insurance contracts as a commodity for old-age, which is one of the products easiest to understand. Moreover, we find that despite the fact that only a small percentage of participants in this survey prefers an investment adviser for old-age provision, the willingness to ask this intermediary for advice is about 5 percentage points larger for the high-skilled compared to the intermediate- and low-skilled respondents, which is statistically significant.

Similar results can be gathered from a comparison of households that prefer other intermediaries, such as tax consultants or lawyers. The more educated a household, the larger the percentage of the group that prefers to consult “another intermediary” for retirement savings questions. This may be because high-skilled households have higher labor income and are, therefore, more likely to be in contact with a lawyer or tax consultant.

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<sup>18</sup> 1,384 observations have been treated as missing because no answer was given or it was not possible to relate the answers to one of the education dummies.

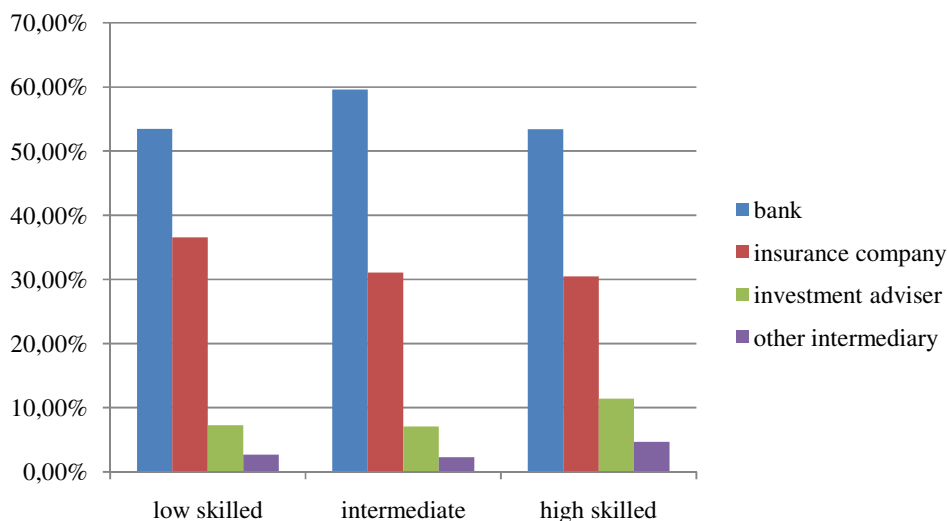


Figure 1: percentage of households preferring an intermediary for old-age, by educational level  
Source: own compilation, data: Debit and Credit 6 - 2004, weighted results

In addition, some people might be well educated but have low interest in financial topics, a condition denoted as financial aversion. We are not able to include this attitude towards financial activities in our analysis using the SAVE dataset because this survey does not provide suitable information. However, our analysis of the Debit and Credit 6 dataset provides us with information on individual attitudes towards financial activities. Therefore, we control for this by using a variable named FINANCE AVERSION, which explicitly covers the answers of the respondents to the statement “Money and finance on the whole are far too complicated for me.” Financial aversion is assumed to have a significant influence on the action of contacting a professional.

Finally, supply-side factors (such as quality evaluated by the customers, availability of multichannel distribution and the availability of intermediaries’ branches) are of statistically significant importance; the Debit and Credit 6 data show that 94.1% (93.7%) of the respondents emphasized high-quality services as important when they contact a professional (bank) in financial affairs, and the ability to handle a large number of financial actions and different types of businesses at a bank was important to 76.8% of the respondents.

Whether this descriptive evidence can be confirmed in a multivariate analysis will be documented in the succeeding sections of this analysis. Tables 2 and 3 explain in detail the variables which are used in our analysis. Using the variables we have mentioned, we estimate different multivariate regression models using Probit regressions underlying a standard normal distribution of our variables. We estimate the probability  $P$  of a household  $i$  talking to a financial intermediary concerning financial affairs ( $Y = 1$ ) in terms of a vector of socioeconomic attributes  $X_i$ , a vector of savings motives  $\Theta_i$  several psychological variables  $\Psi_i$  and an unexplained error term  $u_i$ , which leads to the regression model:

$$P_i = F(I_i) = \Pr(Y = 1) = \alpha_0 + \beta_k X_i + \beta_k \Theta_i + \beta_k \Psi_i + u_i \quad (8)$$



incorporating an unobservable utility index ( $I_i$ )<sup>19</sup> of household  $i$ , including a set of independent variables that can be tested econometrically. The critical value  $I_i^*$  of building a decision  $I_i$  is based on a standard normal distribution function (9), with  $t$  being a standardized normal variable  $t \sim N(0,1)$ .

$$P_i = \Pr(Y = 1) = \Pr(I_i^* \leq I_i) = F(I_i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\beta_1 + \beta_2 X_i} e^{-t^2/2} dt \quad (9)$$

By inverting equation (9), we are able to estimate the linear Probit model named above.

To test for robustness of our results, we estimated several models, each adding a set of variables and/or dropping insignificant or correlated variables to control for changes in specifications. Step-wise inclusion of variables enhanced overall significance and led to the final five models, shown in Tables 4a and 4b. After correcting for cross-sectional heteroscedasticity, robust standards are provided.

Table 2: Description of variables (SAVE dataset)

dependent variable	explanation, survey questions	expected sign	hyp
INTERMEDIARY	Do you talk about financial affairs to a financial intermediary? (dummy, 1 = yes, 0 = no)		
ADVICE	How much do you follow the advice of financial intermediaries? (0 = completely not, 10 = follow all advice)		
<b>socioeconomic control variables</b>			
GENDER	gender = male (dummy, 1 = yes, 0 = no)	+	con
MARRIED	family status: married (dummy, 1 = yes, 0 = no)	+	con
CHILDREN	number of children in household $i$	+	con
JOB	occupational status: employed (dummy, 1 = yes, 0 = no)	+	con
REGION	federal state of Germany a household lives in, Western Germany (dummy, 1 = yes, 0 = no)	+	con
RELATIVES	Do you talk about financial affairs to relatives not living in your household? (dummy, 1 = yes, 0 = no)	-	con
AGE	age in years	+	H <sub>1.1</sub>
AGE < 35	household is in this age category, (dummy, 1= yes, 0= no)	+	H <sub>1.1</sub>
AGE 35 – 44	household is in this age category, (dummy, 1= yes, 0= no)	+	H <sub>1.1</sub>
AGE 45 – 54	household is in this age category, (dummy, 1= yes, 0= no)	+	H <sub>1.1</sub>
AGE 55 – 64	household is in this age category, (dummy, 1= yes, 0= no)	-	H <sub>1.1</sub>
AGE 65 and 65+	household is in this age category, (dummy, 1= yes, 0= no)	-	H <sub>1.1</sub>
HINC	net household income (calculated from income of head of the household and partner)	+	H <sub>1.2</sub>
<b>savings motives</b>			
SAVING	personal savings behavior (save regularly) (dummy, 1 = yes, 0 = no)	+	H <sub>1.2</sub>
HOME OWNER	Is one of the people living in the household owner of the space you are living in? (dummy, 1 = yes, 0 = no)	+	H <sub>1.2</sub>
STATE PENSION	percentage a household expects to receive from the statutory pension system	-	H <sub>1.3</sub>
LIFE SAT	satisfaction with the current standard of living, Scale 0-10, (0 = not satisfied, 10 = very satisfied)	+	H <sub>1.3</sub>
PRECAUTION	precautionary saving (unexpected expenditures), Likert	+	H <sub>1.4</sub>

<sup>19</sup> See Gujarati (1995, p. 564).

OLD AGE	scale 0-10 (0 = totally unimportant, 10 = very important) reason for saving: provision for retirement, Likert scale 0-10 (0 = totally unimportant, 10 = very important)	+	H <sub>1.4</sub>
OP	household owns an occupational pension (dummy, 1 = yes, 0 = no)	+	H <sub>2.5</sub>
PRIVATE PENSION	household owns a private pension (dummy, 1 = yes, 0 = no)	+	H <sub>2.5</sub>
<b>supply side influences</b> ( <i>proxies for attitudes towards risk and quality</i> )			
UNTRAINED	no vocational training with completion (dummy, 1 = yes, 0 = no)	-	H <sub>1.5</sub>
LOW SKILLED	apprenticeship completed (dummy, 1 = yes, 0 = no)	-	H <sub>1.5</sub>
VOCATIONAL	vocational school completed (dummy, 1 = yes, 0 = no)	+	H <sub>1.5</sub>
HIGH SKILLED	Master craftsman diploma, university of applied sciences or university degree completed (dummy, 1 = yes, 0 = no)	+	H <sub>1.5</sub>
SMOKER	smoker (yes = 1)	-	H <sub>1.6</sub>
DRINKING	consumption of alcoholic drinks, Likert scale 1-7 (1 = no consumption, 7 = daily consumption)	-	H <sub>1.6</sub>
INTERNET	access to the world wide web at home, at the job, at school/university, or other places (1 = yes), proxy for the possibility to make use of online-banking	+	H <sub>2.1</sub>
BANK DENSITY	number of district offices of a bank per km <sup>2</sup> (geographical density)	+	H <sub>2.2</sub>
RISK PEF	It doesn't matter to me accepting risks in case of financial investments, Likert scale 0-10 (0 = not the case, 10 = applies completely)	-	H <sub>2.6</sub>
PATIENCE	I am patient, Likert scale 0-10 (0 = impulsive, 10 = patient)	+	H <sub>2.6</sub>

Source: own compilation, Note: con = control variable, questions and statements taken from the questionnaire provided by SAVE 2005.

Table 3: Description of variables (Debit and Credit 6)

<b>dependent variable</b>	<b>explanation, survey questions</b>	<b>expected sign</b>	<b>hyp</b>
INTERMEDIARY BANK	preferred financial service provider for provision for old age is a bank (dummy, 1 = yes, 0 = no)		
INTERMEDIARY INS	preferred financial service provider for provision for old age is an insurance company (dummy, 1 = yes, 0 = no)		
INTERMEDIARY FUND	preferred financial service provider for provision for old age is an investment consultant (dummy, 1 = yes, 0 = no)		
INTERMEDIARY OTHER	preferred financial service provider for provision for old age is another intermediary (lawyer, tax consultant (dummy, 1 = yes, 0 = no))		
<b>socioeconomic control variables</b>			
GENDER	sex = male (dummy, 1 = yes, 0 = no)	+	con
MARRIED	family status = married (dummy, 1 = yes, 0 = no)	+	con
CHILDREN	children younger than 18 in the household (dummy, 1 = yes, 0 = no)	+	con
REGION	federal states (dummy, 1 = Western Germany, 0 = Eastern Germany)	+	con
RELATIVES	I talk often with my family about financial affairs	-	con
AGE	age in years	+	H <sub>1.1</sub>
AGE 14 - 24	household is in this age category,	-	H <sub>1.1</sub>

AGE 25 – 34	(dummy, 1= yes, 0 = no) household is in this age category, (dummy, 1 = yes, 0 = no)	-	H <sub>1,1</sub>
AGE 35 – 44	household is in this age category, (dummy, 1 = yes, 0 = no)	+	H <sub>1,1</sub>
AGE 45 – 54	household is in this age category, (dummy, 1 = yes, 0 = no)	+	H <sub>1,1</sub>
AGE 55 – 64	household is in this age category, (dummy, 1 = yes, 0 = no)	-	H <sub>1,1</sub>
AGE 65 and 65+	household is in this age category, (dummy, 1 = yes, 0 = no)	-	H <sub>1,1</sub>
HINC	household income (net, monthly, 14 categories, increasing)	+	H <sub>1,2</sub>
<b>savings motives</b>			
SAVING	I save a fixed amount of money every month (dummy, 1 = yes, 0 = no)	+	H <sub>1,2</sub>
HOME OWNER	Do you own an apartment house, summer cottage, undeveloped real estate, agricultural land or com- mercial building? (dummy, 1 = yes, 0 = no)	+	H <sub>1,2</sub>
LIFE SAT	Maintenance of my standard of living in future is important to me (Likert scale, 1 = unimportant, 4 = very important)	+	H <sub>1,3</sub>
<b>supply side influences</b> <i>(proxies for attitudes towards risk and quality)</i>			
EDU1	still in traineeship or without completion (dummy, 1 = yes, 0 = no)	-	H <sub>1,5</sub>
EDU2	traineeship with completion, technical school/master craftsman´s diploma (dummy, 1 = yes, 0 = no)	-	H <sub>1,5</sub>
EDU3	university of applied sciences, university degree (dummy, 1 = yes, 0 = no)	+	H <sub>1,5</sub>
FINANCE AVERSE	Money and finance on the whole are far too com- plicated for me (dummy, 1 = yes, 0 = no)	-	H <sub>1,5</sub>
DRINKING	going to the pub/tavern in leisure time (Likert scale, 1 = not at all, 4 = enjoy a lot)	-	H <sub>1,6</sub>
RELIABLE	When investing money I rely on the advice I get from my bank. (dummy, 1 = yes, 0 = no)	+	H <sub>2,1</sub>
QUALITY	expectations regarding financial service providers: that first class financial services are provided (dummy, 1 = very important, 0 = not important)	+	H <sub>2,1</sub>
BANK DENSITY	number of district offices of a bank per km <sup>2</sup> (geo- graphical density)	+	H <sub>2,2</sub>
MULTICHANNEL	It is very important for me to be able to conduct my transactions in different ways (dummy, 1 = yes, 0 = no)	+	H <sub>2,3</sub>
ONE STOP	eexpectations regarding financial service providers: that I can handle all my financial matters there (dummy, 1 = very important, 0 = not important)	+	H <sub>2,4</sub>
RISK	I avoid investments because you can lose a lot of money with them (Likert scale, 1 = does not apply, 4 = completely applies)	+	H <sub>2,6</sub>

Source: own compilation, Note: con = control variable

### 3.2 Results on consultancy by financial intermediaries

In the estimated models in our sensitivity analysis we find evidence for a statistically significant relationship between the dependent variable and most of the chosen independent variables. Tables 4a and 4b report the results of our final regression models concerning the probability of contacting a financial intermediary about financial affairs, using the SAVE dataset. The following explanations refer only to the results gathered from the SAVE survey and, if not named differently, the explanations of the regression results are obtained from table 4b. Because of the construction of the survey, it is not possible to differentiate between different types of intermediaries, so this differentiation will be performed by using the Debit and Credit dataset, and the corresponding results for banks, insurance companies, investment advisers and other intermediaries will be documented in section 3.3. The overall quality of the results is high, as the coefficients show stable signs over different specifications and the Wald statistic on significance of the parameters' delivering larger values than the tabulated statistics, thus rejecting the hypothesis that the variables used have no effect on the dependent variable. The coefficients of the independent variables cannot be interpreted directly as marginal effects because the dependent variable is binary; but the signs of each coefficient show that the probability of contacting a financial intermediary increases with a positive sign and decreases with a negative sign of the corresponding coefficient.<sup>20</sup>

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<sup>20</sup> Estimations of a model, including a variable about subjective expectations concerning a percentage of income paid by the statutory pension system STATE PENSION, did not show statistically significant results for this variable and did not improve overall significance of the estimations.

Table 4a: Estimation models on contacting a financial intermediary (1)

dep. var.	Model 1	Model 2	Model 3	Model 4	Model 5
<b>INTERMEDIARY</b>					
<b>socioeconomic control variables</b>					
AGE	***0.0350 (2.80)	***0.0312 (2.49)	**0.0257 (1.96)	**0.0252 (1.93)	**0.0237 (1.79)
AGE <sup>2</sup>	***-0.0004 (-3.12)	***-0.0003 (-2.71)	**0.0003 (-2.27)	**0.0003 (-2.24)	**0.0002 (-1.95)
HINC	**0.00003 (2.35)	**0.00003 (2.33)	*0.00002 (1.79)	*0.00002 (1.78)	(*)0.00002 (1.47)
GENDER	0.0425 (0.63)	0.0522 (0.78)	-0.0135 (-0.18)	-0.0130 (-0.17)	-0.0343 (-0.47)
MARRIED	0.1113 (1.34)	0.0989 (1.22)	0.0614 (0.76)	0.0657 (0.83)	0.0747 (0.95)
CHILDREN	0.0249 (0.94)	0.0245 (0.95)	0.0320 (1.24)	0.0330 (1.27)	0.0329 (1.51)
WEST GERMANY	***0.2133 (2.95)	***0.2035 (2.83)	***0.2531 (3.41)	***0.2464 (3.26)	***0.2604 (3.43)
RELATIVES	0.1026 (1.38)	0.1075 (1.48)	0.1108 (1.51)	*0.1088 (1.48)	*0.1153 (1.58)
HOME OWNER	***0.2967 (4.11)	***0.2798 (3.97)	***0.2633 (3.67)	***0.2696 (3.70)	***0.27097 (3.74)
<b>savings motive</b>					
LIFE SAT	***0.0487 (3.46)	***0.0446 (3.15)	**0.0382 (2.65)	***0.0379 (2.64)	***0.0380 (2.62)
SAVING	***0.3484 (5.08)	***0.3326 (4.79)	***0.3137 (4.52)	***0.3123 (4.50)	***0.2714 (3.85)
OLD-AGE		***0.0365 (3.16)	***0.0361 (3.08)	***0.0359 (3.07)	***0.0302 (2.72)
PRECAUTION		0.0173 (1.25)	0.0179 (1.28)	0.0185 (1.33)	0.0180 (1.35)
<b>psychological variables</b>					
UNTRAINED			-0.0282 (-0.27)	-0.0277 (-0.27)	-0.0306 (-0.30)
LOW SKILLED			<b>reference group</b>		
vocational TRAINING			0.1106 (0.95)	0.1062 (0.95)	0.0888 (0.76)
UNIVERSITY			***0.3466 (4.07)	***0.3478 (4.08)	***0.3263 (3.78)
SMOKE			-0.1130 (-1.51)	-0.1134 (-1.52)	-0.0979 (-1.31)
DRINK			*0.0377 (1.79)	*0.0374 (1.78)	*0.0339 (1.61)
<b>other influences (supply side)</b>					
BANK DENSITY				0.1289 (0.75)	0.1063 (0.61)
RISK PREFERENCE					**0.0281 (2.12)
PRV					***0.4001 (3.92)
intercept	***-2.4421	***-2.7139	***-2.6333	***-2.6453	***-2.7026
Wald-Test	***172.24	***191.14	***222.58	***224.36	***240.85
n	2229	2229	2229	2229	2229

Note: heteroscedasticity consistent standard errors, z-values in parentheses, estimation method: binary probit, significance levels: \*\*\*= 1%, \*\*= 5%, \*= 10%

Source: own estimation with "Stata SE 9.2", SAVE wave 2005, weighted results are based on the distribution of income and age of the German sample census

Table 4b: Estimation models on contacting a financial intermediary (2)

	Model 1	Model 2	Model 3	Model 4	Model 5
<b>dep. var.</b>	<b>INTERMEDIARY</b>				
<b>socioeconomic control variables</b>					
AGE < 35	-0.1440 (-1.17)	-0.1271 (-1.06)	-0.1032 (-0.84)	-0.0974 (-0.79)	-0.0998 (-0.81)
AGE 35 – 44	-0.0012 (-0.01)	-0.0131 (-0.13)	-0.0285 (-0.29)	-0.0274 (-0.28)	-0.0574 (-0.58)
AGE 45 - 54	<b>reference group</b>				
AGE 55 - 65	*-0.1848 (-1.67)	*-0.1744 (-1.59)	** -0.2113 (-1.96)	** -0.2090 (-1.93)	*-0.1622 (-1.48)
AGE > 65	** -0.1936 (-2.03)	-0.1434 (-1.48)	*-0.1807 (-1.83)	*-0.1799 (-1.82)	-0.1132 (-1.13)
HINC	**0.00003 (2.47)	**0.00003 (2.44)	*0.00002 (1.83)	*0.00002 (1.81)	(*)0.00002 (1.53)
GENDER	0.0432 (0.65)	0.0529 (0.80)	-0.0196 (-0.26)	-0.0192 (-0.26)	-0.0415 (-0.57)
MARRIED	*0.1466 (1.81)	*0.1313 (1.66)	0.0844 (1.07)	0.0844 (1.07)	0.0961 (1.25)
CHILDREN	0.0261 (1.02)	0.0261 (1.04)	0.0331 (1.32)	0.0341 (1.35)	0.0408 (1.62)
WEST GERMANY	***0.2041 (2.83)	***0.1946 (2.71)	***0.2508 (3.37)	***0.2446 (3.22)	***0.2598 (3.41)
RELATIVES	0.0880 (1.21)	0.0925 (1.29)	0.0970 (1.34)	0.0951 (1.31)	0.1035 (1.43)
HOME OWNER	***0.3022 (4.26)	***0.2863 (4.10)	***0.2695 (3.80)	***0.2756 (3.83)	***0.2767 (3.85)
<b>savings motive</b>					
LIFE SAT	***0.0455 (3.28)	***0.0413 (2.95)	***0.0354 (2.49)	***0.0352 (2.47)	***0.0352 (2.45)
SAVING	***0.3510 (5.12)	***0.3350 (4.82)	***0.3129 (4.50)	***0.3116 (4.48)	***0.2720 (3.86)
OLD-AGE		***0.0383 (3.35)	***0.0375 (3.22)	***0.0373 (3.21)	***0.0336 (2.87)
PRECAUTION		0.0162 (1.17)	0.0173 (1.24)	0.0179 (1.29)	0.0183 (1.32)
<b>psychological variables</b>					
UNTRAINED			-0.0606 (-0.59)	-0.0598 (-0.58)	-0.0672 (-0.66)
LOW SKILLED	<b>reference group</b>				
vocational TRAINING			0.1021 (0.88)	0.0981 (0.84)	0.0845 (0.72)
UNIVERSITY DEGREE			***0.3549 (4.15)	***0.3560 (4.17)	***0.3346 (3.87)
SMOKE			-0.1056 (-1.43)	-0.1057 (-1.44)	-0.0876 (-1.19)
DRINK			**0.0404 (1.92)	**0.0401 (1.91)	*0.0363 (1.72)
<b>other influences (supply side)</b>					
BANK DENSITY				0.1215 (0.71)	0.1032 (0.60)
RISK PREFERENCE					**0.0278 (2.10)
PRV					***0.4018 (3.93)
intercept	***-1.5947	***-1.9477	***-2.0192	***-2.0455	***-2.1081
Wald-Test	***166.54	***184.74	***221.59	***223.70	***240.86
n	2229	2229	2229	2229	2229

Note: heteroscedasticity consistent standard errors, z-values in parentheses, estimation method: binary probit, significance levels: \*\*\*= 1%, \*\*= 5%, \*= 10%

Source: own estimation with “Stata SE 9.2”, SAVE wave 2005, weighted results are based on the distribution of income and age of the German sample census

### 3.2.1 Socioeconomic attributes

The estimation models 1-5 in Table 4a (variable AGE) show that older cohorts are more likely to keep in touch with an intermediary than are younger cohorts. This finding might be due to a lack of capability in financial affairs or to more expenditures with reference to own actions in financial asset building. Using regressions, including a squared variable of AGE, we find an inverted u-shaped curve (anything else equal) of demand for financial services according to age. A closer look at differences across AGE groups in Table 4b reveals that those older than AGE 45-54 (reference group) show a significant sign, but it changes into negative. In comparison with our reference group, younger cohorts show an unexpected negative sign, which is not statistically significant and so must be taken as coincidental. Our hypothesis  $H_{1,1}$ , that younger individuals are less likely to ask for professional help, *cannot be rejected* but, after a maximum age of 58, years the demand curve lapses again.

As expected, net household income (HINC) positively influences the dependent variable, which can be explained by the fact that there is no need to contact an intermediary (other than to seek loans) unless a household has money to save or invest in certain assets. The same argument holds for the job situation, as unemployed people are less likely to be receiving a high compensatory income that could offer the possibility to save. We have to reject this hypothesis because the estimated coefficient is not statistically significant. HOME OWNERSHIP can also be taken as an indicator of wealth, so theory leads us to expect this variable to have a significant impact, which we are able to prove with our dataset. An influence of income and wealth on demand for financial services provision, as proposed by  $H_{1,2}$ , *cannot be rejected*. Based on these results, we include this variable in our regression analysis later in order to evaluate its influence on the choice of a certain type of intermediary for old-age provision.<sup>21</sup>

Again, we have to refer to an aspect of wealth. It could be expected that, if they expect to receive a low percentage of income from the statutory PAYG pension system, households decide to contact a financial intermediary in order to close or diminish the retirement savings gap. Because of this expectation, we tried to estimate models including a variable STATE PENSION to control for individual expectations about repayments from the state.<sup>22</sup> However, this variable turns out to be insignificant and worsens the overall significance of the estimation and the independent variables because the number of households responding to this question is low and, thus, might bias the estimation.  $H_{1,3}$  which indicates that expectations on retirement payments from the PAYG system have an impact on demand for financial services, is rejected for our dataset.

The control variables that are used most often in econometric analyzes show miscellaneous levels of influence. We find evidence at the 10% level for differences between MARRIED households and

<sup>21</sup> Our choice here is motivated by the upcoming product of reverse mortgages as an instrument for old-age provision. A more detailed analysis on this topic concerning how this product is designed and whether sound potential exists in Germany can be found in Conrad (2007).

<sup>22</sup> Results are available from the authors upon request.

those who are not, but with a stepwise inclusion of variables that control for supply-side factors such as quality and reliability, the influence diminishes and becomes insignificant. An explanation might be that married households are more likely to start a planning process for the future, to save money for future events and to earn a higher income, so they decide to contact someone who is able to pool information about products, dividends and investments. We found no statistically significant differences between men and women (GENDER) in our analysis,<sup>23</sup> which result is in concordance with those in Meier et al. (1999), who found that neither spouse dominates general investment decision but that husband-dominance increases with the risk of an investment project. We did identify differences across REGIONS; these differences may be due to differences in economic development, as in the case of East and West Germany, where the free market economy was established earlier in the west.

### 3.2.2 Savings motives

Referring to estimation models 1 to 5 in Table 4b, the demand for financial services is positively correlated with the aim of SAVING regularly, such as for keeping a certain amount of money for smoothed consumption. Moreover, saving for precautionary events PRECAUTION shows no significant positive coefficient, possibly because these negative spontaneous events require flexible assets that can be handled flexibly. “Intermediary” as a dependent variable may, to a large extent, be answered “yes” for households that contact insurance companies, since they often sign long-term contracts for funds that cannot then serve as assets for precautionary events on short notice. Expected but surprising results are provided by the coefficients of saving for OLD-AGE and an increasing degree of satisfaction with the current standard of living (LIFE-SAT). Both variables show a statistically significant sign and, therefore, imply that the aim of saving for retirement can be carried out by authorizing a financial intermediary to help by structuring an individual portfolio. The probability of so doing increases with an increase in household satisfaction with the current standard of living, which suggests that households follow the aim of maintaining their overall economic status over their life cycles. *As a consequence, we are not able to reject  $H_{1.4}$ .* These results create considerable interest in whether differences across social groups or asset classes can be identified to provide insight into group specific portfolio structuring.

### 3.2.3 Psychological aspects

Education<sup>24</sup> level is an indicator of differences across households. While UNTRAINED and vocational TRAINING are not statistically significant, the coefficient for UNIVERSITY DEGREE

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<sup>23</sup> We included in our regression models a variable controlling for the number of CHILDREN living in the household. The estimated coefficient showed no statistically significant sign but, in order to avoid misspecifications resulting from ignorance about household size, we kept this variable as well as a variable controlling for advice on financial affairs given by RELATIVES, which cannot be found to be significant either.

<sup>24</sup> Education level is derived from UNTRAINED, vocational TRAINING and UNIVERSITY DEGREE.



shows a positive and significant sign. The better educated households are, the more likely they are to have a higher income HINC and, thus, to start investing. Accordingly, they have a more knowledge about investment possibilities and want to make use of it. We include a variable to more specifically control for financial illiteracy and to determine whether household-specific capabilities are responsible for shortcomings in provision activities. The SAVE data do not provide information on this household attribute, so it is left out of the analysis.<sup>25</sup> In any case, *we are able to reject  $H_{1.5}$* , which proposes that there are differences in demand for financial services between low-skilled and high-skilled households.

Psychological factors that influence individual demand for financial advice have been derived from behavioral finance. Models 1-4 show that a self-assessment of whether a person is patient or impulsive has no statistically significant impact on demand for financial services, so it has been left out of the analysis. Therefore, that patient people save differently from others, as supposed by Lusardi (2004), is not supported.

As has been shown in different psychological experiments, drinking (DRINK) and smoking (SMOKE) serve as indicators for attitude towards risk and for possible changes in health status. Smokers are less likely to ask for advice from a financial intermediary because they might not have enough money left to save or because they are too nervous to concentrate on financial affairs. The coefficient of SMOKE in our analysis shows the correct sign but it is not statistically significant. Levine et al. (1997) justified this effect from a theoretical perspective with a higher time preference rate for smokers, who are not willing to increase individual productivity and benefits for the future. Smoking is furthermore related to a weaker performance in the job market. DRINK does not exhibit the expected sign, as heavy drinking in this analysis correlates with a higher demand for financial advice. Thus, *we are not able to reject or confirm  $H_{1.6}$* , which hypothesized that SMOKE and DRINK operate in the same direction. Similar opposing signs of smoking and drinking have been found by van Ours (2002), who estimated the effects of alcohol and tobacco on wages. In 2SLS estimations, Ours found that drinking influenced wages positively because of better job performance but that smoking neutralized any positive effect. This might be the same in our analysis.<sup>26</sup>

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<sup>25</sup> We will include a variable of that kind (FINANCE AVERSE) when the Debit and Credit dataset is analyzed.

<sup>26</sup> The literature provides a wide discussion on the topic of the influence of alcohol and cigarettes on worker performance and wages. Becker and Murphy (1988) devised the theory of rational addiction concerning why people become addicted to different things (e.g., alcohol, cigarettes, religion, work.). Turner et al. (1981) showed from a medical standpoint that moderate consumption of alcohol can improve individual health conditions, although this is a point of discussion in medical research. Referring to this study, several authors have discussed the impact of alcohol consumption on wages, arguing that moderate use of alcohol improves health, which improves individual productivity and, thus, increases wages. However, these authors have also pointed out that the quantitative effect of alcohol use on wages of drinkers, compared to those of abstainers, can be outweighed by other observable characteristics, like age and educational status, so these findings should be regarded with care (Berger (1988), Zarkin et al. (1989), French and Zarkin (1995), Heien (1996) and Auld (1998)).

### 3.2.4 Supply side factors

We included quality indicators, an existing pension product and access to the web among our variables and found, unexpectedly, that the number of bank branches in the household's home federal state (BANK DENSITY) is positively related to contacting a financial intermediary, although it is not significant. We explain this as the result of a bias in the dependent variable, which probably includes more households that contact an insurance company or tax advisor instead of a bank consultant. A more detailed analysis could either include a variable with the number of insurance subsidiaries in the respective federal state, or more specifically divide the dependent variable into consulting a bank or an insurance company with the purpose of saving for old age, or include a variable indicating individual satisfaction with the quality of advice given to a specific household by a financial intermediary. *In this case,  $H_{2.2}$  is rejected.*

Whether a household has an occupational pension (OP) does not have a statistically significant impact; this finding might be due to fact that it is currently not popular to terminate contracts of occupational pensions from the household side. (This action is more commonly taken by the employer.) A direct contact between household and financial intermediary is more common in case of private pensions (PRV); therefore, we dropped it out of our analysis, and it is not included in Tables 4a and 4b. A variable on the ownership of a private pension (see Model 5 in Table 4b) raises the statistical significance of the overall results and shows a significant impact on the dependent variable. Since one must contact an intermediary now and again either in a local office, by internet or any other distribution channel to receive contract documents, those who remain in contact because they own one instrument are more likely to stay in contact for using another instrument. *Because of these results, we can only partly reject  $H_{2.5}$ .*

An unexpected result lies in the coefficient for household risk preferences, which shows a significant positive sign. We expected that risk-seeking people would not contact a financial intermediary because they believe in their own actions as regards financial markets. This coefficient might suggest that risk-seeking households contact financial intermediaries in order to acquire information about riskier assets that they are considering for their portfolios for portfolio diversification. They may also want consulting on active or passive portfolio strategies. *Hence, we have to reject  $H_{2.6}$ .*

### 3.3 Results on consulting activities by type of intermediary concerning old-age provision

Previous analysis of the positive and highly significant coefficient of the variable OLD-AGE has shown that households that plan to save a certain amount of money for retirement contact professionals. . In this part of the analysis, we evaluate whether differences exist in preferences toward different types of intermediaries. For this part of the analysis, we changed the dataset we used for our econometric analysis because the Debit and Credit 6 can distinguish between banks (BANK), insurance companies (INS), investment advisors (FUND) and other intermediaries such as lawyers

or tax advisors (OTHER) as dependent variables. Because of the small number of respondents naming OTHER as the preferred intermediary for old-age provision, we do not tabulate results of those regressions.

Our regressions on the main factors that influence the probability of contacting a bank as an intermediary for offering products for old-age provision are tabulated in Table 5a, those for contacting an insurance company are tabulated in Table 5b, and results for investment advisors are reported in Table 5c. As in our previous analysis, we used binary Probit to estimate the parameter coefficients forward stepwise, including variables of interest to test the hypotheses. To see whether independent variables are exogenous, we observed coefficient reactions to included variables. The tabulated models present evidence for a statistically significant relationship between the dependent variable and most of the chosen independent variables. As in our previous analysis, the dependent variable is binary, so only the signs of the coefficients should be interpreted.

### 3.3.1 Socioeconomic attributes

The regression models provided by our analysis using the Debit and Credit 6 data show some unexpected results. Like the coefficients of the SAVE data, the parameters estimated for the control variables MARRIED and RELATIVES do not point out a statistically significant impact. Only when an investment advisor is the preferred intermediary for old-age provision are there differences between men and women (GENDER); GENDER loses its significance if other variables controlling for supply-side factors, such as quality and reliability or multichannel distribution, are included. We interpret this to mean that some socioeconomic effects are compensated by supply-side arguments. Regional affiliation shows statistically significant influence on our dependent variable; West Germany's households are more likely to consult the BANK type of intermediary, but the opposite can be said for FUND and INS, as we calculate significantly negative signs in these analyses.

In order to evaluate whether AGE is of significant importance, we estimated our regression models again, dividing age into age groups of 9 years each, between age 14 and 64.<sup>27</sup> Our reference group consists of AGE 35-44 because these customers (the "ageing" customers) will be of major interest for financial intermediaries as a target group for finding and purchasing products to fill the retirement savings gap. Our results<sup>28</sup> for BANK show that differences between younger cohorts and the reference group do not exist, although younger cohorts should start preparing for retirement earlier. By comparison, older cohorts (AGE 45-54, AGE 55-64 and AGE 65 and 65+) show a statistically significant impact on the probability of asking a BANK for advice. We find that, compared to the reference group, the groups AGE 45-54 and older are significantly less likely to choose INS as preferred intermediary for retirement instruments, whereas younger cohorts do not deliver significant

<sup>27</sup> Estimation results of our analysis when AGE is not separated into age groups are available upon request.

<sup>28</sup> Estimations based on Debit and Credit 6-2004 and regression analyses with the SAVE data, including the same age groups, did not produce robust results.

parameters. Almost the same can be stated for FUND, because both younger age groups and older age groups show a significant and negative influence on the dependent variable, compared to the reference group. Households AGE 35-44 may be more likely than other groups to prefer investment advisors for old-age because they want to invest in stocks or equity. Calculations of the maximum of the age curves for BANK and FUND show both an inverted u-shape of the curve with BANK, having its maximum at age 56, and FUND, having its maximum at age 44. These findings support our interpretations of the regression results, although older customers show more preferences for BANK than for FUND, which is significantly negative.<sup>29</sup> These results show us that  $H_{1.1}$  is rejected in the case of BANK, whereas it cannot be rejected for INS or FUND.

As the Life-Cycle Hypothesis points out, wealth and income influence individual decisions about the choice of an intermediary. Available household net income (HINC) positively influences preferences for the BANK intermediary, whereas HOME OWNERSHIP negatively impacts the preference for a BANK. More money available for old age as part of household income makes it more likely that a household will contact a bank for assistance with old-age provision. The opposite holds for INS, HINC shows a negative sign, and HOME OWNER has a positive sign. We explain these differences as resulting from varieties in the products offered by the intermediaries. In case of a bank, HOME OWNERSHIP signifies a credit relationship for financing a house, whereas insurance companies accept houses as securities for insurance contracts and as an indication of a better financial background for contributions to insurance contracts. Therefore, *we can only partly reject  $H_{1.2}$* . No clear statement can be made for FUND, as the regressions on this intermediary do not produce significant coefficients.

### 3.3.2 Savings motives

Similar to the results from our regressions with the SAVE dataset, the decision of SAVING regularly a fixed amount of money shows a general willingness to make use of financial assistance. Therefore, it is not surprising that SAVING shows a significant positive sign and does not change very much with modifications of specifications if BANK is the chosen intermediary. For INS and FUND as the chosen intermediaries, we do not find significant coefficients; this finding leads us to the interpretation that banks serve as the most common institution for saving money, and that the products offered by a FUND or INS have more specific aims (precautionary saving). As Tables 5a-5c show, the subjective aim of maintaining the current standard of living LIFE SAT does not play a statistically significant role in whether to contact a bank for old-age provision; instead, LIFE SAT seems to be of more importance for the decision to contact a financial intermediary in general and insurance companies in particular. In this case *we are not able to reject hypothesis 1.4 for BANK, but we have to reject this hypothesis for INS and FUND*.

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<sup>29</sup> Calculations of the slope of the age curve for INS have not been possible because the sign of the coefficient is not significant, so it has to be taken as happening by chance.

### 3.3.3 Psychological aspects

Financial education and education in general become of increasing importance in determining which options are available. Furthermore, doing a self evaluation on present income and financial wealth compared to expected and designated future income and future wealth helps in discussions of individual financial situations. We expect more educated people, proxied by those who possess a university degree, to be less likely to contact a BANK for old-age provision, but our results prove us wrong because the estimated coefficient shows a negative sign changing in the degree of significance. The opposite is found in our analysis on FUND: the more educated an individual (household), the more likely he or she is to prefer this type of intermediary. In our interpretation, the regression results make evident that investment advisors who help in the purchase of more complex products in capital markets are preferred by highly educated customers, whereas banks are more suitable to the general public. There may be interdependence between choice of a FUND, education and income, because investment advisers charge customers a higher fee for consulting activities than a BANK does. *Thus, we are not able to reject  $H_{1.5}$  for BANK; we have to reject the hypothesis for FUND but are not able to make a statement for INS.* The non-significance of the coefficients for INS show us that the insurance contracts offered by an insurance intermediary, such as a life insurance contract, which is often chosen for retirement saving, is understandable to all degrees of education. Instruments like life insurance products signal a higher degree of standardization in comparison to bank products or assets, which can be bought with help of an investment advisor so that differences across educational groups cannot be identified. According to GDV (2007), more than 97 million life insurance contracts were underway in 2007 and, of these, approximately 8 million were eligible “Riester contracts.” Of the 8 million “Riester-contracts,” 602,000 had been a stock of eligible old-age pension contracts (or “base-pension”), which shows a wide acceptance of life-insurance contracts. Including the variable FINANCE AVERSE did not bring significant coefficients, so we suppose that financial aversion does not explicitly affect retirement saving, but it affects financial actions in general.

If the function of risk transformation by intermediaries is concerned, we expected someone who is RISK-averse to be more likely to contact an insurance intermediary for old-age products. Our finding in regressions with Debit and Credit 6 data show that people who avoid risk in investments because they could lose a lot of money are significantly less likely to contact a BANK or FUND. This tendency could be based on the long time horizon required for money to be invested in order to obtain a reasonable amount of return. People who fear risk might prefer not doing any financial investments at all or remaining with traditional forms of wealth accumulation, like life-insurance contracts or savings books at a BANK. This supposition is supported by the coefficients of RISK, which show a significant negative sign for BANK and FUND, which offer a wider range of prod-

ucts in the portfolio, as intermediaries, whereas INS, which offers standardized and less complex products, shows a significant positive sign for RISK because of the primary task of insurance companies: insurance against risk. *In consequence, we cannot reject  $H_{2,6}$ .*

Moderate drinking significantly increases the probability of economic agents' contacting a bank concerning financial affairs for old age, which might be due to higher impatience resulting from a shorter life-expectancy and a tendency to buy more liquid products and short-term products<sup>30</sup>. For the Debit and Credit 6 data, DRINKING shows that a preference for pubs and taverns leads to no significant preferences for INS and FUND, but it is significantly positive for BANK. However, this finding should be considered carefully because the discussion on the effects of alcohol and cigarettes on individual productivity and wages is ongoing and has not reached a final conclusion. On the other hand, the sign of DRINKING signals that the influence of drinking on individual health is negative, and insurance companies, in many cases, reject insurance contracts if an individual has a negative health indicator. Because of these arguments *we are not able to reject  $H_{1,6}$ , that habits of alcohol consumption have a negative impact on demand for financial services, for INS and FUND, but we have to reject it in case of BANK.*

### 3.3.4 Other factors

Finally, hypothesis 2 can be tested with the underlying dataset. All these variables stand for a different aspect of quality. First, reliability concerning investments (RELIABLE) is of significant impact on the decision to contact a BANK and FUND with questions on products for old age. The more people think they can rely on these intermediaries, the more likely they are to prefer them for old age. INS reliability shows a significant negative sign which points out that no special consulting activities are needed to distribute insurance products for old age, since mostly standardized products can be used. Second, subjective expectation of being offered first-class services (QUALITY) has been hypothesized to have a positive impact on financial contact for old-age provision. However, in our analysis, tabulated in Tables 5a-5c, this coefficient does not show a significant sign, although it is positive. Only in the case of INS do we find a slightly negative sign, which might suggest that insurance contracts for retirement provisions are supposed to be more standardized, so no special offers need to be made. We trace this back to the inclusion of other quality indicators discussed in this section, which might absorb the significance of this parameter. *We do not reject  $H_{2,1}$  when quality is measured by reliability.*

Third, availability of financial services, as Beck et al. (2006) discussed, also serves as a quality indicator. Availability can be measured by the number of local branches per km<sup>2</sup> (geographic density) or by the number of local branches per 100,000 inhabitants (demographic density). In our analysis, we included geographic density in order to provide an indicator of economic presence of banks,

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<sup>30</sup> This applies only to moderate drinking; heavy drinking thwarts the positive effect.

which can also be used as a competition parameter for the other intermediaries. No data are available for the number of investment advisers or insurance brokers per km<sup>2</sup>. We interpret this outreach variable as a competition variable. The results illustrated in Model 4 (Table 5a-5c) provide evidence that demographic density is of significant importance, but not in the direction we expected. BANK DENSITY shows a significant negative sign for contact between BANK and economic agents. The finding could be biased by the inclusion of city-states like Bremen or Hamburg, but when these observations are excluded from our analyses, the results do not change. Perhaps, since BANK DENSITY correlates with population density, we have a higher geographical density in agglomerative regions. These regions are more likely to be characterized by a younger population with higher educational level and a larger share of services or high-tech industries, which might reduce the potential of savings, and often results in less savings so that SAVING loses its influence in Model 4. An explanation different from more common interpretations is that the structure of inhabitants in these city-states differs from that in other states of Germany such that a larger number of inhabitants does not necessarily correspond with a larger demand for advice in financial affairs for old age. In the case of INS, our regression analysis provides a positive and significant sign for BANK DENSITY, which is contrary to our assumptions but can be explained by the idea that more banks and insurance companies are available in agglomerative regions. Because of higher uncertainty in these regions, demand for insurance contracts increases. For FUND, no significant influence could be found. Thus, *Hypothesis 2.2 is rejected for BANK, it cannot be rejected for INS, and no statement can be given for FUND.*

Last to be considered is the presence of technological progress in the form of multichannel distribution of services and the concept of “one-stop-shopping” (*Allfinanzkonzept*). If the availability of MULTICHANNEL distribution is of particular importance for an economic agent, he or she will less often contact a BANK for old age services. For this, we find a significant and stable coefficient. This finding can be justified by the fact that multiple distribution channels often cause a rise in costs through an increase in supply-side activities, but they lower the possibility for specializing in old-age products. The estimated coefficients of INS and FUND show a significant positive influence, which confirms our hypothesis that concentration on one product (or product range) increases the need for specific consulting activities if these products are more or less standardized and so can be sold over multiple channels. Thus, *H<sub>2,3</sub> cannot be rejected for INS and FUND but is rejected for BANK.*

Both estimated coefficients were expected to be positive, but estimation Model 4 (in Tables 5a-5c) shows that ONE STOP has a significant positive sign only for BANK; for INS and FUND, no significance can be documented. Thus, people who are offered the possibility of handling all financial matters at a single institution, as is often the case with banks that offer saving, insurance and products for old age, often feel more familiar with this institution and ask for special products for old-

age in addition to their everyday transactions handled at the same institute. *Thus, we are not able to reject  $H_{2,4}$ , that the offer to execute all financial affairs at one intermediary increases preferences for this intermediary for old-age provision.*<sup>31</sup>

### 3.4 Summary of results

Taking into account all indicators referring to *hypothesis 1 and 2*, we can draw some specific conclusions. Socioeconomic attributes, savings motives and psychological aspects are, in most cases, significant and show the correct sign, so we are not able to reject our sub-hypotheses  $H_{1,1}$ - $H_{1,6}$ . Furthermore, the regressions showed that the influence of variables motivated by the theory of financial intermediation as sub-hypotheses  $H_{2,1}$ - $H_{2,6}$  could not be rejected. Thus, *hypotheses 1 and 2 cannot be rejected*, and both the Behavioral Life-Cycle Hypothesis and the theory of financial intermediation are needed in order to explain the demand for financial services concerning retirement saving. In addition, these theories can explain differences across different types of intermediaries.

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<sup>31</sup> Concerning  $H_{2,5}$ , we are not able to draw any conclusions concerning whether ownership of a certain type of retirement savings has an impact on the choice of an intermediary for old-age provision. Debit and Credit 6 asks whether the respondents believe that certain types of products could serve as an old-age product, like Riester pension contracts, occupational pensions, or reverse mortgages and why these economic agents think that different investment possibilities are not useful or too complex to make use of them. However, no information about the effective use of a private or occupational pension by an economic agent can be gathered from this dataset. That is why we leave this hypothesis out of this part of our analysis.



Table 5a: Estimation models on contacting a bank for saving for old-age

variable	Model 1	Model 2	Model 3	Model 4
<b>dependent variable</b>	<b>INTERMEDIARY BANK</b>			
<b>socioeconomic control variables</b>				
AGE 14 - 24	**0.1611 (2.25)	**0.1812 (2.52)	0.0631 (0.67)	0.0409 (0.42)
AGE 25 - 34	(* )0.0880 (1.48)	(* )0.0888 (1.49)	*0.1137 (1.82)	*0.1147 (1.82)
AGE 35 - 44	<b>reference group</b>			
AGE 45 - 54	**0.1241 (2.27)	**0.1273 (2.33)	***0.1460 (2.56)	**0.1365 (2.38)
AGE 55 - 64	***0.1972 (3.21)	***0.1989 (3.24)	***0.2009 (3.11)	***0.1967 (3.04)
AGE 65 AND 65+	***0.4129 (6.09)	***0.4178 (6.16)	***0.3712 (5.04)	***0.3141 (4.16)
HINC	0.0077 (1.02)	0.0057 (0.76)	**0.0164 (1.90)	***0.0225 (2.55)
GENDER	-0.0143 (-0.37)	-0.0132 (-0.34)	-0.0228 (-0.52)	0.0174 (0.39)
MARRIED	(* )0.0742 (1.59)	(* )0.0695 (1.49)	0.0571 (1.14)	0.0369 (0.72)
REGION	***0.2452 (4.43)	***0.2383 (4.31)	***0.1485 (2.50)	***0.2025 (3.22)
RELATIVES	0.0375 (0.95)	0.0358 (0.90)	0.0344 (0.80)	0.0531 (1.23)
HOME OWNER	-0.0265 (-0.61)	-0.0289 (-0.66)	-0.0674 (-1.44)	-0.1015 (-2.14)
<b>savings motives</b>				
LIFE SAT	0.0031 (0.11)	-0.0015 (-0.05)	0.0085 (0.28)	-0.0180 (-0.57)
SAVING		**0.0979 (2.47)	***0.1101 (2.60)	**0.0907 (2.12)
<b>psychological aspects</b>				
EDU1			0.0255 (0.26)	0.0507 (0.51)
EDU2	<b>reference group</b>			
EDU3			***-0.1883 (-3.11)	**-.1209 (-1.97)
FINANCE AVERSE			0.0355 (0.80)	0.0043 (0.10)
DRINKING			***0.0571 (2.67)	***0.0496 (2.28)
RISK			***-0.0766 (-3.45)	***-0.0809 (-3.62)
<b>supply side influences</b>				
RELIABLE				***0.3350 (6.79)
QUALITY				0.1003 (1.03)
BANK DENSITY				***-0.3541 (-3.14)
MULTICHANNEL				**-.1120 (-2.51)
ONE STOP				(* )0.0710 (1.43)
intercept	**-.02450	**-.02518	(* )-0.2142	**-.04361
n	9431	9431	8236	8159
Wald Test	***62.85	***68.82	***80.01	***156.39

Note: heteroscedasticity consistent standard errors, z-values in parentheses, estimation method: binary Probit, significance levels: \*\*\*= 1%, \*\*= 5%, \*= 10%

Source: own estimation with "Stata SE 9.2", Debit and Credit 6 - 2004, weighted results

Table 5b: Estimation models on contacting an insurance company for saving for old-age

variable	Model 1	Model 2	Model 3	Model 4
<b>dependent variable</b>				
INTERMEDIARY INSURANCE COMPANY				
<b>socioeconomic control variables</b>				
AGE 14 - 24	-0.0169 (-0.23)	-0.0250 (-0.34)	-0.0168 (-0.18)	-0.0015 (-0.02)
AGE 25 - 34	-0.0025 (-0.04)	-0.0028 (-0.04)	-0.0295 (-0.45)	-0.0244 (-0.37)
AGE 35 - 44				
		<b>reference group</b>		
AGE 45 - 54	**-.01152 (-2.03)	**-.01165 (-2.05)	**-.01427 (-2.40)	**-.01449 (-2.42)
AGE 55 - 64	*-.01148 (-1.79)	*-.01153 (-1.79)	*-.01233 (-1.82)	-0.1372 (-2.04)
AGE 65 AND 65+	***-.02691 (-3.80)	***-.02711 (-3.83)	***-.02468 (-3.23)	***-.02109 (-2.72)
HINC	**-.00178 (-2.24)	**-.00169 (-2.13)	***-.00237 (-2.60)	***-.00290 (-3.16)
GENDER	-0.0415 (-1.03)	-0.0419 (-1.04)	-0.0187 (-0.41)	-0.0369 (-0.80)
MARRIED	0.0008 (0.02)	0.0029 (0.06)	-0.0017 (-0.03)	0.0148 (0.28)
REGION	***-.01666 (-2.93)	***-.01631 (-2.88)	-0.0622 (-1.02)	*-.01043 (-1.61)
RELATIVES	-0.037 (-0.90)	-0.0366 (-0.89)	-0.0454 (-1.01)	-0.0585 (-1.30)
HOME OWNER	0.0479 (1.05)	0.0489 (1.07)	*0.0784 (1.59)	**0.1046 (2.12)
<b>savings motives</b>				
LIFE SAT	0.0327 (1.14)	0.0346 (1.21)	(*)0.0443 (1.38)	*0.0567 (1.73)
SAVING		-0.0409 (-1.00)	-0.0383 (-0.87)	-0.0305 (-0.69)
<b>psychological aspects</b>				
EDU1			0.0102 (0.10)	-0.0071 (-0.07)
EDU2				
		<b>reference group</b>		
EDU3			0.0571 (0.88)	0.0191 (0.29)
FINANCE AVERSION			-0.0009 (-0.02)	0.0178 (0.39)
DRINKING			**-.00480 (-2.17)	*-.00409 (-1.83)
RISK			***0.0964 (4.18)	***0.0972 (4.20)
<b>supply side influences</b>				
RELIABLE				(*)-.0740 (-1.45)
QUALITY				*-.01717
BANK DENSITY				**0.2550 (2.24)
MULTICHANNEL				*0.0829 (1.82)
ONE STOP				-0.0434 (-0.84)
intercept	*-.02001	*-.01983	***-.04052	*-.02531
n	9431	9431	8236	8159
Wald Test	***34.71	***35.56	***53.45	***73.89

Note: heteroscedasticity consistent standard errors, z-values in parentheses, estimation method: binary Probit, significance levels: \*\*\*= 1%, \*\*= 5%, \*= 10%

Source: own estimation with "Stata SE 9.2", Debit and Credit 6 - 2004, weighted results

Table 5c: Estimation models on contacting an investment adviser for saving for old-age

variable	Model 1	Model 2	Model 3	Model 4
<b>dependent variable</b>	<b>INTERMEDIARY FUND</b>			
<b>socioeconomic control variables</b>				
AGE 14 - 24	** -0.2376 (-2.22)	** -0.2472 (-2.27)	-0.0345 (-0.26)	-0.0018 (-0.01)
AGE 25 - 34	* -0.1565 (-1.85)	* -0.1566 (-1.85)	** -0.1890 (-2.14)	** -0.2078 (-2.33)
AGE 35 - 44	<b>reference group</b>			
AGE 45 - 54	0.0155 (0.18)	0.0135 (0.16)	0.0032 (0.04)	0.0222 (0.25)
AGE 55 - 64	** -0.2257 (-2.48)	** -0.2267 (-2.50)	** -0.2242 (-2.38)	* -0.1775 (-1.83)
AGE 65 AND 65+	*** -0.5071 (-4.71)	*** -0.5079 (-4.70)	*** -0.4461 (-3.93)	*** -0.3638 (-3.08)
HINC	** 0.0218 (2.00)	** 0.0229 (2.10)	0.0126 (1.07)	0.0079 (0.68)
GENDER	** 0.1234 (2.19)	** 0.1229 (2.18)	0.0787 (1.26)	0.0384 (0.60)
MARRIED	*** -0.1741 (-2.66)	*** -0.1710 (-2.60)	** -0.1402 (-1.96)	* -0.1210 (-1.66)
REGION	*** -0.3319 (-4.33)	*** -0.3288 (-4.30)	*** -0.3235 (-3.94)	*** -0.3229 (-3.72)
LIFE SAT	-0.0291 (-0.81)	-0.0267 (-0.74)	-0.0542 (-1.34)	-0.0336 (-0.83)
RELATIVES	0.0028 (0.05)	0.0035 (0.06)	0.0235 (0.37)	0.0034 (0.05)
HOME OWNER	-0.0465 (-0.74)	-0.0463 (-0.73)	-0.0331 (-0.49)	-0.0149 (-0.22)
<b>savings motives</b>				
SAVING		-0.0541 (-0.90)	-0.0864 (-1.32)	-0.0761 (-1.13)
<b>psychological aspects</b>				
EDU1			-0.05194 (-0.38)	-0.0527 (-0.36)
EDU2	<b>reference group</b>			
EDU3			*** 0.2395 (3.00)	** 0.1763 (2.13)
FINANCE AVERSION			-0.0579 (-0.84)	-0.0327 (-0.46)
DRINKING			(* ) -0.0490 (-1.57)	-0.0439 (-1.37)
RISK			** -0.0612 (-1.91)	(* ) -0.0491 (-1.51)
<b>supply side influences</b>				
RELIABLE				*** 0.4011 (6.09)
QUALITY				0.1831 (1.36)
BANK DENSITY				0.1147 (0.64)
MULTICHANNEL				** 0.1376 (1.97)
ONE STOP				-0.0429 (-0.60)
intercept	*** -1.1011	*** -1.0971	*** -0.6540	*** -0.7000
n	9431	9431	8236	8159
Wald Test	*** 67.15	*** 67.49	*** 70.55	*** 120.45

Note: heteroscedasticity consistent standard errors, z-values in parentheses, estimation method: binary Probit, significance levels: \*\*\*= 1%, \*\*= 5%, \*= 10%

Source: own estimation with "Stata SE 9.2", Debit and Credit 6 - 2004, weighted results

### 3.5 Differences in demand due to financial exclusion

This analysis revealed differences among banks, insurance companies, funds (such as financial consultants or investment consultants) and other intermediaries, such as lawyers or tax consultants, in the rate at which they are asked for old-age provision. All belong to the group of financial intermediaries, but they offer different products and have different characteristics. Pension products of either private or occupational form belong to savings and, thus, to wealth accumulation guided by intermediaries. Therefore, pension wealth accumulation is strongly influenced by “financial exclusion,” which the European Commission (2008, p. 9) defined as:

“a process whereby people encounter difficulties accessing and/or using financial services and products in the mainstream market that are appropriate to their needs and enable them to lead a normal social life in the society in which they belong.”

The European Commission (2008) evaluated whether financial exclusion existed in different European countries, which types of financial exclusion occurred, what the reasons were and what policy options existed to overcome these problems. The driving factors for either level of financial exclusion in the EU (25) were gender, age, family status, work status, household income, geographical area, ability to compare information, knowledge about costs, and expectation of being given advice by financial institutions (all summarized as social factors, supply factors and demand factors) (European Commission 2008, p. 34-39). An evaluation of financial services provision across German regions and an evaluation of public access to financial services can be gathered from Conrad et al. (2008), who found that both regional savings and cooperative banks are present in economically strong regions and maintain branch penetration in economically weak regions. Even in regions with an increasing share of older people, savings banks keep their branches in order not to exclude any from financial services.

In general, households living on low incomes, such as those in weaker and less densely populated regions, single households, and those suffering from poor health (or other disabilities) are more exposed to financial exclusion. These results are similar to our results on demand for financial services, so it could probably be the case that those who do not contact any kind of financial intermediary for old-age provision might act in that way because of financial exclusion. However, this assumption is out of our scope of study; since we do not have any information about the area level of the households in our datasets, it is not possible to gather information on the number of insurance brokers or the regional distribution of financial and investment consultants.

## 4. Conclusion

Services offered by financial intermediaries become of increasing importance for people who want to save money for retirement. According to Bolton et al. (2007), these intermediaries gain their information advantage from a continuous presence in the market. These advantages should be used to assist households and individuals in composing the optimal individual portfolio for retirement income, since customers do not always have best knowledge about how to meet their needs.

Based on both the Life-Cycle Hypothesis of saving and the Behavioral Life-Cycle Hypothesis, as well as the theory of financial intermediation, we derive hypotheses on demand for financial services for saving for old-age. Our analysis, tested with two datasets, provides evidence that people who plan to save for retirement, outside of regular savings and precautionary savings, contact financial intermediaries concerning financial affairs. The SAVE dataset shows that the aim of retirement provision is a factor in the decision to seek financial assistance by a professional. We also applied multivariate regression models by using the Debit and Credit 6 dataset, which helps us to differentiate between types of intermediaries as preferred contacts for old-age provision. Our analyses show that, for a decision on financial assistance, personal expectations on the availability of certain attributes of the intermediary dominate over personal attributes. Although household income, educational status and age of a customer are important for the decision on whether a bank, insurance company or an investment advisor will be contacted for advice, we find evidence that it is more important that customers feel they can rely on advice from a financial intermediary.

In general, risk-seeking households up to age 44 tend to prefer an investment advisor as an intermediary for retirement provision. More risk-averse households prefer insurance companies, but attitudes towards these intermediaries differ according to their quality attributes. Our results also show that education is not of much importance where insurance intermediaries are concerned, which gives us a hint that these intermediaries might be preferred for more standardized products, such as life insurance products.

The more distribution channels that are available to the customers for handling their communication with this intermediary and for solving customers' needs, the more likely insurance companies are preferred, but the less likely are households to contact banks. The preference for insurance companies over banks might be due the increased costs of distributing more complex products via several channels. In addition, the concept of "one-stop shopping" (Allfinanz) and, thus, the possibility of handling different financial transactions at a single bank, is preferred by people who contact a bank. This also refers to a better intensity of consulting, which can be achieved by a higher geographic density. Although an employer could be considered as the contact person between employee and financial consultant concerning retirement savings products, we do not find evidence that having an occupational pension increases demand for financial assistance.

As occupational and private pensions increase in importance for additional retirement income, as has been the aim of the government in the 2001 pension reform of the German Social Security system, it will be necessary to help households and employers to acquire individual specific information. Ways of intermediation, like direct banking, may be a factor in promoting and improving this development.

Our results have several important implications. First, financial literacy across households should be increased so they can understand the need for additional saving, formulate preferences, calculate their individual ability to save at regular intervals and decide whom to contact for financial assistance. Second, we suggest that intermediaries should focus more on core activities in order to provide high-quality advice and excellent services for old-age provision. These improvements will help households with many different personal characteristics but will also help with varying attitudes towards risk, quality indicators and product complexity. Network effects (e.g., the enrollment of the social surrounding, like relatives, friends, colleagues, employer, or others who have a close relationship with the individual) can help to overcome information problems and help to simplify interpersonal and inter-institutional risk-sharing.

## Appendix

Table 6: location and dispersion parameters – SAVE dataset -

<b>variable</b>	<b>No. of obs.</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>dependent variable</b>					
INTERMEDIARY	2,305	0.277	0.447	0	1
ADVICE	639	5.884	2.100	0	10
<b>socioeconomic control variables</b>					
GENDER	2,305	0.498	0.500	0	1
MARRIED	2,305	0.619	0.486	0	1
CHILDREN	2,305	0.787	0.409	0	13
REGION	2,305	0.703	0.457	0	1
RELATIVES	2,305	0.307	0.461	0	1
AGE	2,305	51.291	16.444	19	95
AGE < 35	2,305	0.171	0.377	0	1
AGE 35 – 44	2,305	0.212	0.408	0	1
AGE 45 – 54	2,305	0.190	0.392	0	1
AGE 55 – 64	2,305	0.170	0.376	0	1
AGE 65 and 65+	2,305	0.256	0.436	0	1
HINC	2,229	2,413.645	2,546.858	0	40.000
<b>savings motives</b>					
SAVING	2,305	0.543	0.498	0	1
STATE PENSION	682	54.163	16.149	0	99
HOUSE OWNER	2,305	0.503	0.500	0	1
LIFE SAT	2,305	6.675	2.359	0	10
PRECAUTION	2,305	7.200	2.727	0	10
OLD AGE	2,305	7.083	3.156	0	10
PRIVATE PENSION	2,305	0.100	0.300	0	1
<b>supply side influences</b>					
EDU	2,305	0.123	0.328	0	1
UNTRAINED	2,305	0.148	0.355	0	1
LOW SKILLED	2,305	0.532	0.499	0	1
VOCATIONAL	2,305	0.083	0.276	0	1
HIGH SKILLED	2,305	0.185	0.388	0	1
SMOKER	2,305	0.302	0.459	0	1
DRINKING	2,305	3.382	1.722	1	7
INTERNET	2,305	0.578	0.493	0	1
BANK DENSITY	2,305	0.189	0.191	0.034	0.977
RISK PREF	2,305	1.888	2.396	0	10
PATIENCE	2,305	5.841	2.617	0	10

Source: own compilation, data: SAVE wave 2005 weighted according to income and age

Table 7: location and dispersion parameters – Debit and Credit -

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>dependent variable</b>					
INTERMEDIARY BANK	10,100	0.528	0.499	0	1
INTERMEDIARY INS	10,100	0.312	0.463	0	1
INTERMEDIARY FUND	10,100	0.075	0.264	0	1
INTERMEDIARY OTHER	10,100	0.027	0.162	0	1
<b>socioeconomic control variables</b>					
GENDER	10,100	0.512	0.499	0	1
MARRIED	10,100	0.532	0.499	0	1
REGION	10,100	0.827	0.378	0	1
RELATIVES	10,100	0.413	0.492	0	1
AGE	10,100	44.76	15.583	14	95
AGE 14 – 24	10,100	0.108	0.310	0	1
AGE 25 – 34	10,100	0.160	0.366	0	1
AGE 35 – 44	10,100	0.243	0.429	0	1
AGE 45 – 54	10,100	0.214	0.410	0	1
AGE 55 – 64	10,100	0.158	0.365	0	1
AGE 65 and 65+	10,100	0.114	0.319	0	1
HINC	10,100	8.931	3.131	1	14
<b>savings motives</b>					
SAVING	10,100	0.477	0.499	0	1
HOME OWNER	10,100	0.413	0.499	0	1
LIFE SAT	10,100	3.181	0.696	1	4
<b>other influences</b>					
EDU1	8,716	0.046	0.210	0	1
EDU2	8,716	0.791	0.406	0	1
EDU3	8,716	0.161	0.368	0	1
FINANCE AVERSE	10,100	0.438	0.496	0	1
DRINKING	10,100	2.239	1.019	1	4
RELIABLE	10,100	2.889	0.792	1	4
QUALITY	10,100	0.948	0.221	0	1
BANK DENSITY	10,100	0.213	0.203	0.034	0.977
MULTICHANNEL	9,980	2.636	1.140	1	4
ONE STOP	10,100	0.740	0.438	0	1
RISK	10,100	2.534	1.009	1	4

Source: own compilation. data: Debit and Credit 6. 2004



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