



MAX-PLANCK-INSTITUT FÜR SOZIALRECHT UND SOZIALPOLITIK
MAX PLANCK INSTITUTE FOR SOCIAL LAW AND SOCIAL POLICY

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Lessons from Germany**

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11-2012

MEA DISCUSSION PAPERS



Alte Nummerierung: 262-12

Backing out of private pension provision - Lessons from Germany¹

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Version: July, 2012

Abstract: *Financing pensions in the EU is a challenge. Many EU countries introduced private pension schemes to compensate declining public pension levels due to reforms made necessary by demographic change. In 2001, Germany introduced the Riester pension. Ten years after introduction the prevalence rate of this voluntary private pension scheme approximates 37%. However, numerous criticisms raise doubts that the market for Riester products is transparent. Using the 2010 German SAVE survey, this paper investigates for the first time terminated and dormant Riester contracts on a household level. Respectively 14.5% and 12.5% of households who own or have owned a Riester contract terminated it or stopped paying contributions. We find that around 45% of terminated or dormant Riester contracts are caused at least partly by product-related reasons, which is significantly higher than for endowment life insurance contracts. Uptake of a new contract after a termination is more likely if termination is product-related. Nevertheless, after a termination 73% of households do not sign a new contract, which can have serious long-term consequences for old-age income. Households with low income, low financial wealth or low pension literacy are more likely to have terminated or dormant contracts. Low income and low financial wealth households also have the lowest prevalence rate of Riester contracts and are at higher risk of old-age poverty.*

JEL: D12, D91, D14, J26

Key words: private pension, Riester, termination, financial literacy, SAVE

¹ We thank Martin Gasche (MEA) for very helpful support. Thomas Lueg (GDV), Heinz-Josef Nüssgens (BMAS), and Stefan Sieren (BaFin) provided many useful explanations and clarifications. Thanks as well to Muriel Bouchet (BCL), Paolo Guarda (BCL), Bettina Lamla (MEA) and Armin Rick (University of Chicago) for their helpful comments. We are grateful to participants at the Annual Meeting of the Austrian Economic Association (Vienna, 2012), and the SAVE – PHF Conference (Munich, 2012) as well as seminar participants at MEA and BCL for many helpful questions and suggestions. We thank the German Science Foundation (DFG) which has generously financed the creation of the SAVE panel dataset. The views expressed in this paper are personal views of the authors and do not necessarily reflect those of the Banque centrale du Luxembourg or the Eurosystem.

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Nichttechnische Zusammenfassung

Ähnlich wie in anderen Ländern während des letzten Jahrzehnts, wurde im Jahr 2001 in Deutschland im Zuge einer Rentenreform eine subventionierte, freiwillige, private Altersvorsorge eingeführt. Ziel dieser sogenannten Riester Rente ist es, das durch die Reformen der Jahre 2001 und 2004 bewirkte Absinken des Rentenniveaus zu kompensieren.

Ende 2011, rund zehn Jahre nach Einführung der Riester Rente, erreicht die Anzahl der Riester-Verträge mehr als 15 Millionen mit einer geschätzten Verbreitungsrate von mehr als 37%. Nach zahlreicher Kritik, vor allem von Verbraucherschützern, kommen jedoch Zweifel auf, ob der Markt für Riester-Produkte Konsumenten eine transparente Vertragswahl erlaubt. Die deutsche SAVE Studie 2010 ermöglicht erstmals, gekündigte und stillgelegte Riester-Verträge auf Haushaltsebene zu untersuchen, und schafft so neue Einblicke in das Konsumentenverhalten auf dem Markt für Riester-Produkte. Die Anzahl von gekündigten und stillgelegten Riester-Verträgen und die Gründe dafür erlauben eine indirekte Evaluation der Transparenz des Riester-Marktes und die Identifizierung von Risikogruppen, die durch Kündigung oder Stilllegung das Ziel, eine adäquate Altersvorsorge aufzubauen, möglicherweise verfehlen.

Die Auswertung der Riester-Fragen in SAVE 2010 ergibt, dass ungefähr 14,5% bzw. 12,5% der Haushalte, die derzeit einen Riester-Vertrag besitzen oder besessen haben, einen solchen Vertrag schon einmal gekündigt bzw. stillgelegt haben. Nach der Kündigung (Stilllegung) schließen 73% (81%) keinen neuen Riester-Vertrag ab, was langfristige Auswirkungen auf ein angemessenes Renteneinkommen haben kann.

Die Ergebnisse dieser Studie stehen teilweise im Kontrast zu der überaus positiven Beurteilung der Riester Rente durch das Bundesministerium für Arbeit und Soziales (BMAS). In 45% aller Fälle sind schlechte Beratung oder ein schlechtes Produkt zumindest teilweise für die Stilllegung oder Kündigung des Vertrages verantwortlich. Dies ist eine signifikant höhere Rate als bei Kapitallebensversicherungen. War der Grund der Kündigung oder Stilllegung produktbezogen, so beeinflusst dies die Wahrscheinlichkeit

eines neuen Vertragsabschlusses positiv. Es ist davon auszugehen, dass diese Haushalte weiterhin um die Wichtigkeit einer privaten Altersvorsorge wissen. Individuen hingegen, die ihren Vertrag aufgrund von unerwarteten Ereignissen, Arbeitslosigkeit oder Scheidung kündigen oder stilllegen, haben eine geringe Neigung, einen neuen Vertrag abzuschließen. Ferner sind es vor allem Haushalte mit geringem Einkommen oder knappem Finanzvermögen, ostdeutsche Haushalte sowie Haushalte mit bescheidenem Altersvorsorgewissen, die dazu neigen, einen Vertrag zu kündigen oder stillzulegen. Haushalte mit niedrigem Einkommen oder knappem Finanzvermögen sind es auch, die nur geringe Verbreitungsraten von Riester-Verträgen vorzuweisen haben. In diesen Fällen liegt damit eine stärkere Gefährdung durch Altersarmut vor.

Die Ergebnisse deuten darauf hin, dass Haushalte mit gewissen Merkmalen nicht gut über den Markt für Riester-Produkte informiert sind. In Kombination mit einer unzureichenden Markttransparenz wählen die betroffenen Individuen Riester-Verträge, die für ihre Bedürfnisse und Präferenzen teilweise ungeeignet sind.

Alle Teilnehmer des Markts für Riester-Verträge (Konsumenten, Anbieter, regulierende Behörden und Verbraucherschutzorganisationen) können zu einer Reduktion der Anzahl von Kündigungen und Stilllegungen sowie der damit verbundenen Kosten beitragen. Die regulierenden Behörden sollten die Rahmenbedingungen für Riester-Verträge in einer Weise gestalten, die die Vergleichbarkeit zwischen Verträgen verbessert, vor allem bezüglich Kostenstruktur sowie Ertrags- und Risikoerwartungen, um Konsumenten so Entscheidungen aufgrund von transparenten Informationen zu ermöglichen. Des Weiteren könnten regulierende Behörden und Verbraucherschutzorganisationen gezielte Maßnahmen ergreifen, um die Risikogruppen mit hohen Kündigungs- und Stilllegungsraten (niedriges Einkommen und geringes finanzielles Vermögen, schlechtes Altersvorsorgewissen, Ostdeutsche) bei der Wahl eines passenden Vertrages zu unterstützen, um so Kündigungen oder Stilllegungen zu vermeiden. Des Weiteren sollten Rahmenbedingungen geschaffen werden, die es erlauben und fördern, dass sich Haushalte ausreichend über das Thema Altersvorsorge informieren. Anbieter sind angehalten, transparente, mit niedrigen Kosten verbundene Verträge anzubieten. Die in dieser

Untersuchung gewonnenen Erkenntnisse sind auch für andere Länder interessant, die bereits freiwillige, private Altersvorsorgesysteme eingeführt haben, wie zum Beispiel Österreich (Zukunftsvorsorge, 2003), Frankreich (PERP, 2003), die Tschechische Republik, Slowenien, Irland oder Finnland. Gelingt es den Akteuren nicht, diese Aufgabe gemeinsam zu lösen, besteht für einen substantiellen Anteil der Haushalte die Gefahr, die sich auftuende Rentenlücke nicht schließen zu können, was weder aus individueller, noch aus gesellschaftlicher Sicht wünschenswert sein kann.

1. Introduction

In many industrialized countries public pension levels are reduced due to pension reforms made necessary by demographic change.² Private or occupational pension schemes were introduced or extended to close the forthcoming pension gap. The Riester pension is one prominent example, introduced by the German government to strengthen the third pillar of the pension system. The growing importance of Riester contracts to fill the gap of a declining public pension level in 2030 by 14.4%, compared to a situation without reforms in 2001 and 2004 (Börsch-Supan and Gasche, 2010), underlines the need to better understand consumer behavior within the market for Riester contracts as analyzed in this study. Our findings have important implications for policy-makers not only in Germany but also in other industrialized countries introducing voluntary private pension schemes like the 2003 tax-favored private scheme in Austria (Zukunftsvorsorge), the 2003 voluntary individual pension scheme (PERP) in France, or reforms in Czech Republic, Slovenia, Ireland and Finland (European Commission and the Economic Policy Committee, 2009).

On 7.12.2008, the German newspaper Bild Zeitung reported that since the introduction in 2001 950.000 Riester pension insurance contracts had been terminated by the end of 2007. One day later, at a government press conference, the spokes person of the German federal ministry of labor and social affairs (BMAS) could not indicate why so many individuals terminated their Riester contracts. Since then the number of terminated Riester contracts increased to almost 2.400.000 by the end of 2010 according to the German Insurance Association (GDV). Since its introduction, the total fraction of terminated Riester contracts (including through the death of the insured person) is around 18.8% of all signed contracts since 2001.

But how successful are the newly introduced private pension schemes in Europe to insure adequate old-age income? This paper focuses on the Riester pension contracts

² See Barr and Diamond (2008) for a detailed evaluation of recent pension reforms. The 2012 Ageing Report of the European Commission and the Economic Policy Committee (2012) contains details on each pension system of the EU-27 member states.

in Germany. The voluntary Riester pension is subsidized directly via premiums or tax deductions to increase the incentive to invest in private old-age provision instruments.³ Private providers offer certified Riester pension contracts, which can be separated into four different types: pension insurance funds, fund savings plans, bank savings plans, and “*homestead*” funds.⁴ All individuals subject to social security contributions, civil servants or individuals receiving unemployment benefits are directly eligible. Their spouses are indirectly eligible. By the end of 2011, the number of Riester contracts reached 15 million contracts (BMAS, 2012). Assuming that individuals have only one Riester contract and given around 41.3 million individuals directly and indirectly eligible for Riester pensions (Geyer, 2011)⁵, the coverage rate increases to more than 37%. This figure confirms the rapid spread of the Riester pension since its introduction in 2001.

The spread of Riester contracts through the German population is considered very successful by the German government, and the numbers supplied by the BMAS seem to reinforce this optimism. However, the success of the Riester pension scheme has been controversial ever since its implementation in 2001. Blank (2011) summarizes the current state of research and formulates questions the research community has not yet been able to address. It is questionable whether the market for Riester products allows an informed choice. Since this is difficult to assess directly, one way to evaluate market transparency is to investigate terminated and dormant contracts. How often and why consumers terminate or replace contracts is important in determining the success of the Riester pension and the transparency of the Riester market. Even ten years after the introduction of the Riester pension, only anecdotic evidence is available based on

³ To receive the full state subsidy, the individual has to save 4% of his or her gross income, at least €60 each year. The subsidy for each individual is €154/year. Furthermore, a child born before 1.1.2008 increases the subsidies by €185/year for each child or €300/year if the child is born in 2008 or later. Individuals below 25 years receive a one time bonus of €200 when they sign a Riester contract. Contributions up to €2100/year can be deducted from taxable income taking already received subsidies into account.

⁴ “*Homestead*” funds allow using the accumulated capital of the Riester contract to finance the purchase or construction of privately used real estate.

⁵ The estimate of Geyer (2011) is based on the German Socio-Economic Panel (SOEP). 37.4 million are directly eligible and 3.9 million indirectly eligible. The estimates are higher compared to the one of Fasshauer and Toutaoui (2009).

the numerous criticisms (Hagen and Reisch, 2010), especially by consumer advocates. Due to the lack of adequate data, these questions could not be satisfactorily answered. This is alarming when one considers the important role the Riester pension will play for old-age provision from an individual and social perspective. The 2010 SAVE questionnaire (saving and old-age provision in Germany) introduced a new section of Riester specific questions, which allows us to address these questions.

In our representative sample 14.5% of the households, who own or have at least once owned a Riester contract, have terminated. 12.5% of the households in the sample stopped paying contributions at least once. In around 55% of cases personal circumstances are responsible for terminated or dormant Riester contracts. In the remaining 45% cases, product-related reasons (poor advice and/or an inappropriate product) play at least a partial role. Around 35% reported product-related reasons as the only reason for terminated or dormant contracts. Furthermore, the reasons why a Riester contract is terminated or dormant highly influence the uptake of a new contract. New contracts are signed more often if contracts are terminated or dormant because of product-related reasons. Thus, the damage done by poor advice and/or an inappropriate product is partly compensated by individuals since they still seem to see the need to increase their old-age savings. Nevertheless, 63% of terminated contracts and 69% of dormant contracts due to product-related reasons do not lead to a new contract, which is still a relatively high fraction. These households may fail to close the gap between an adequate replacement ratio in old-age and the fall in public pension benefits. Terminating and then signing a new contract can be very costly. In addition to the cancellation fee, subsidies are lost if no new contract is signed. When a new contract is signed additional fees are collected that are often proportional to the amount transferred to the new contract (Hagen and Kleinlein, 2011, p. 6).

Regulating authorities in Germany should be concerned by the high share of households choosing the wrong Riester product, perhaps through poor advice, resulting in dormant or terminated contracts. We find that the fraction of endowment life insurance contracts terminated due to product-related reasons is significantly lower. In addi-

tion, we investigate how household characteristics are related to terminated or dormant Riester contracts with a special focus on low income/ financial wealth and poor financial literacy. We borrow from literature analyzing the exit decisions from the stock market (Biliás et al., 2010; Bucher-Koenen and Ziegelmeyer, 2011; and Calvet et al., 2009) and carry forward the insights to voluntary private pension products. In line with the formulated hypotheses, households with low income or financial wealth and household with low pension literacy are more likely to terminate a contract or to stop paying contributions. Low income and financial wealth households are also those with the lowest prevalence rate for Riester contracts and the highest danger of old-age poverty. It seems the market for Riester contracts is still not sufficiently transparent. Several policy conclusions follow. On the supply side, the regulating authorities should increase comparability between contracts and foster pension literacy among private households.⁶ Providers of Riester contracts should offer transparent and low cost contracts. Finally on the demand side, households should increase their own efforts to improve their pension literacy.

This paper is organized as follows: current official statistics on the prevalence of terminated and dormant Riester contracts are discussed in section 2.1. In section 2.2 we formulate hypotheses based on the existing literature. Section 3 introduces the SAVE data with a special focus on the Riester section in 2010. The number of dormant and terminated contracts in the SAVE data are investigated in section 4. Subsequently, the underlying reasons for dormant and terminated contracts are analyzed and the relation to household characteristics is explored. We conclude in section 5 with a summary of the results and a brief discussion of the implications of our analysis.

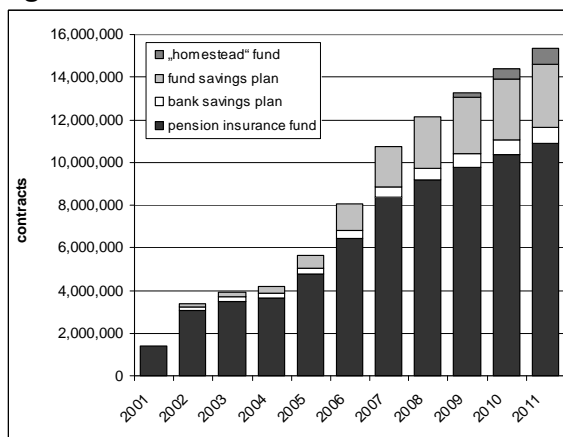
⁶ Currently the introduction of a uniform information leaflet as suggested by the Ministry of Finance is discussed in the media (e.g. Reiche, 2011).

2. Literature and Hypotheses

2.1. Official statistics – BMAS, GDV, and BaFin

Figure 1 shows the number of contracts for the different categories of Riester contracts offered since implementation in 2001. The most popular form of Riester contracts are pension insurance funds, followed by fund savings plans and bank savings plans. The recently introduced “*homestead*” funds are still not very widely spread but suggest a growing popularity.

Figure 1: Number of Riester contracts at the end of the year, 2001-2011



Source: BMAS (2012), own illustration.

Although the numbers presented suggest the Riester pension has been widely accepted, they should be interpreted with caution. The BMAS numbers take into account terminated contracts, but they do not consider dormant contracts. For fund savings plans, bank savings plans and “*homestead*” funds the BMAS only reports net stocks. They have no separate information on inflows and outflows, which would provide an estimate of the number of terminated contracts. Thus, there is no official information on terminations for fund savings plans, bank savings plans and “*homestead*” funds. The number of terminations is known only for pension insurance Riester contracts. The German Insurance Association reports inflows and outflows of pension insurance Riester contracts in their yearly report (Table 1).

Table 1: Stocks and flows of pension insurance Riester contracts (GDV)

Year	Number of contracts end of year	New contracts inflow	Termination & death outflows	Terminations & deaths in % of current contracts
2001	416	418	0	0.0%
2002	2937	2570	49	1.7%
2003	3352	521	106	3.2%
2004	3473	296	175	5.0%
2005	4419	1119	173	3.9%
2006	6246	2012	185	3.0%
2007	8042	2067	271	3.4%
2008	9131	1570	481	5.3%
2009	9826	1160	465	4.7%
2010	10320	982	487	4.7%
Total		12714	2392	

Figures are reported in thousands. The number of contracts at the end of the year does not correspond exactly to the figures provided by the BMAS as the BMAS adds so called "VBL-Pensionskassenverträge" of the public service to their Riester statistic.

Source: Die deutsche Lebensversicherung in Zahlen 2010/2011, p. 12 & 15.

The yearly outflows consist of terminations, which includes terminations with and without signing a new contract, and death. Death plays only a minor role as can be seen in Table 10 in Appendix A. The yearly termination rate is normally between 3-5%, which is in line with termination rates of Germany life insurance contracts which is around 5-5.5% for 2005-2008 or 4-3.6% for 2008-2010 (GDV, 2007-2011).⁷

Since introduction of Riester 2,392,000 pension insurance Riester contracts have been terminated, which corresponds to 18.8% of all inflows since 2001 ($\sum_{t=2001}^{T=2010} \text{outflows}_t / \sum_{t=2001}^{T=2010} \text{inflows}_t$). The GDV figures can be compared to BaFin (German Federal Financial Supervisory Authority) statistics. Even if both are restricted to pension insurance Riester contracts, they appear somewhat different. Appendix A explains the differences and details the figures provided by the BaFin. Based on BaFin data, the estimated total rate of terminations is 15.2% ($\sum_{t=2003}^{T=2010} \text{outflows}_t / (\text{stock}_{\text{beginning of 2003}} + \sum_{t=2003}^{T=2010} \text{inflows}_t)$), which is 3.6 percentage points below the rate estimated from GDV data.

⁷ Until 2008 the termination rate of life insurance includes contracts for which contributions are reduced or set to zero. From 2008 on, these contracts are no longer included.

The share of dormant contracts is estimated by the BMAS at approximately 15% in 2008 (BMAS, 2011) based on the fact that no contributions are paid. On request, the BMAS confirmed that the estimated number of 15% is estimated based on BaFin numbers (division: insurance regulation). This statistic covers only dormant pension insurance Riester contracts relative to all pension insurance Riester contracts. For other types of Riester contracts no statistics are available. Table 2 reports BaFin estimates of dormant pension insurance contracts from 2006-2010.

Table 2: BaFin estimates of dormant Riester contracts

	2006	2007	2008	2009	2010
Number of contracts at the end of the year	5,825,973	7,351,828	8,420,941	9,019,044	9,675,945
Number of dormant contracts	706,679	899,541	1,258,691	1,546,896	1,799,673
Number of dormant contracts in %	12.1%	12.2%	14.9%	17.2%	18.6%

Source: BaFin; only pension insurance Riester contracts; the number of dormant contracts include Riester contracts in the payout phase.

The share of dormant contracts increased from 12.1% in 2006 to 18.6% in 2010. Although no information for other types of Riester contracts is available, a BaFin expert suggested they are affected by similar shares of dormant contracts. Gasche and Ziegelmeyer (2010) find the prevalence of Riester contracts has stagnated in 2008 based on the SAVE dataset. This stagnation could be related to the outbreak of the financial crisis in 2007, contrasting with the continuing market penetration reported by the German government. Gasche and Ziegelmeyer argue that an increase in dormant contracts could explain the contrast with official figures. Although the official number of contracts increases in Table 2, the number of dormant contracts increases even faster. SAVE respondents do not distinguish a dormant and a terminated Riester contract since for the former they no longer get any subsidies or get the subsidies on another contract.

In summary, since the introduction of the Riester pension, 18.8% of all signed contracts have been terminated (GDV). Although for some years GDV and BaFin figures deviate strongly, the overall number of outflows is comparable and reaches roughly 2.4 million contracts from 2001 until the end of 2010. The share of dormant contracts increased steadily from 2006 and reached 18.6% at the end of 2010.

However, official statistics do not indicate which parts of the population have Riester contracts. Among others⁸ Coppola and Reil-Held (2009) show that the prevalence rate of Riester contracts increases with the number of children in the household. This empirical finding can be attributed to the very generous subsidies paid for each child. Moreover, they find that despite the relatively generous subsidies for low income households intended to address higher likelihood of old-age poverty, the coverage rate in this category is actually lower. Since Riester contracts are not uniformly distributed among eligible households, terminated and dormant Riester contracts might also be connected to certain household characteristics. The next subsection formulates hypotheses that are investigated empirically in section 4.

2.2. Research questions and hypotheses

The first step of our analysis is to provide some basic facts on terminated or dormant Riester contracts based in the 2010 SAVE survey and compare these figures to official sources (section 2.1).

While the problem of dormant and terminated Riester contracts is brought up frequently (e.g. *Wirtschaftswoche*: “*Schlecht versorgt mit Riester-Rente.*” or *Handelsblatt*: “*Riester-Wechsler riskieren einen Teil ihrer Rente.*”), almost nothing is known about the reasons. The possible causes are fairly limited, ranging from unexpected events that force an individual to stop paying contributions or terminate a contract, to the perception that another provider offers more favorable conditions. However, they have not been the focus of a thorough investigation.⁹ Therefore we ask: What are the

⁸ See Blank (2011, pp. 111-112) for a detailed overview of the distribution of Riester contracts over household characteristics.

⁹ Fang and Kung (2012) investigate why policyholders lapse their life insurance. The study is based on the Health and Retirement Study (HRS). They observe whether an individual currently has a life insurance, whether the individual obtained the policy since the last wave or whether the individual lapsed a policy. They do not directly observe the reason why a life insurance has been lapsed. Based on a dynamic discrete choice model of life insurance decisions they investigate which factors influence the lapsation of life insurances. When policy holders are young, their results suggest that a large fraction of lapsations is caused by idiosyncratic shocks. Idiosyncratic shocks will become less important and income, health or bequest motive shocks will gain relevance if individuals age.

main reasons why Riester contracts are terminated or why individuals stop paying contributions? Are personal circumstances such as unemployment, divorce, and unexpected events (like illness) the main reasons (hereafter “*personal circumstances*”)? Or are dormant and terminated contracts rather the result of poor advice or inappropriate products, which suggest an opaque, consumer unfriendly environment (hereafter “*product-related reasons*”)? For instance in a theoretical article Inderst and Ottaviani (2009) show that the misselling problem via a poor product or insufficient advice increases if sellers’ bonus payments raise with each signed contract. In Germany such bonus payments are very common in the form of so called “*Abschlussgebühr*” (Feigl et al., 2010). Ex-post there is a possibility that misselling will be discovered. While personal circumstances are related to changes in individuals’ conditions, product-related reasons are connected to a change in one’s perception of the advice or the product.

Households who terminate their Riester contracts or stop paying contributions might accumulate inadequate savings for their old-age. Therefore, it is important to know whether the reason why a Riester contract is terminated or dormant influences the uptake of a new contract. If dormant and terminated contracts are a result of product-related reasons, the household still has the ability to save and recognizes the need to build up old-age saving. Personal circumstances might be more persistent and influence the ability to save over a longer period. This gives rise to the following hypothesis:

Hypothesis 1: The uptake of a new contract is negatively (positively) influenced if personal circumstances (product-related reasons) caused the terminated or dormant contract.

In a further step, we investigate how household characteristics are related to terminated or dormant Riester contracts. Since household characteristics might have a different effect depending on the reason why Riester contracts are terminated or dormant, the hypotheses below distinguish between terminated/ dormant Riester contracts caused by product-related reasons or by personal circumstances. Moreover,

household characteristics can play an important role at different stages of the decision process. An easy way to think about this decision process is a three period model. In the first period, the individual decides whether or not to sign a Riester contract. In the second period, after having received additional information, e.g. about a better investment opportunity or new liquidity needs, the individual decides to keep the contract and to continue paying contributions, to keep the contract and stop paying contributions, or to terminate the contract. If the contract is terminated, the individual will receive contributions plus possible returns minus costs in period 2. If the contract is not terminated, the individual will receive contributions plus subsidies and possible returns minus costs in period 3. As is discussed in more detail in subsection 4.3, we cannot properly correct for the selection step (first stage) when estimating how household characteristics influence terminated or dormant contracts in the second stage (e.g. via a heckprob). This is difficult due to the lack of good exclusion restrictions. Therefore, we do not correct for the first stage. Instead of drawing inference on the complete sample, which would require a correction that not everyone has a Riester contract, we can only draw conclusions restricted to the conditional sample. Furthermore, due to possible endogeneity, omitted variable bias, and measurement error, the results in this paper should be interpreted as correlations and not as causal effects. These correlations are still policy relevant since they help to identify households which are at higher risk of terminated or dormant Riester contracts. These households are likely to fail to build up adequate private old-age savings and are therefore in danger of old-age poverty. The hypotheses formulated below are conditional on owning or having owned a Riester contract at least once.

We already know from other studies (Coppola and Reil-Held, 2009; Geyer and Steiner, 2009) that low income households have a lower prevalence rate. Moreover, low income households and households with low financial assets might be more likely to terminate their contracts because they have more difficulties to buffer shocks caused by unexpected events, divorce or unemployment. This leads to the following hypothesis:

Hypothesis 2a: Households with lower income or households who have low financial wealth are more likely to have terminated or dormant Riester contracts due to personal circumstances.

The buffer effect of higher income or financial wealth should play no role if the terminated or dormant contract is caused by product-related reasons. Thus, if one is able to control for variables on which income and wealth can have an indirect effect on terminated and dormant Riester contracts, the correlation between income/ financial wealth and terminated and dormant Riester contracts should not be significant.

Hypothesis 2b: Households' income or financial wealth is not correlated with terminated and dormant Riester contracts due to product-related reasons.

If low income/ low financial asset households terminate their contracts more often, they may even lose twice. First, they miss the chance to build up private pension wealth in order to increase their replacement rate when retired, and second, since the acquisition fees of Riester contracts are normally spread over the first five years (this is normally the case for pension insurance Riester plans), many of these households will not even get their full contributions back.

Since financial literacy has shown its importance in financial decision making (e.g. Lusardi and Mitchell, 2007a and 2007b), we investigate the relationship between financial literacy and terminated and dormant Riester contracts. Benjamin et al. (2006), Agarwal et al. (2009), Kimball and Shumway (2010) find that individuals with lower financial literacy are more likely to make investment mistakes. The fact that Riester contracts are complex financial instruments, in particular their costs cannot be calculated without at least some financial knowledge, makes it hard for consumers to compare of-

fers from different providers. Increasing the number of possible Riester contracts¹⁰ increases transaction costs but also the probability that an individual finds a low cost contract in line with his or her preferences. Maki (2004) argues that financial education increases the choice set individuals have available when planning for their future (lower transaction costs). This suggests that individuals with low financial knowledge are more vulnerable to poor advice or inappropriate products, possibly resulting in dormant or terminated contracts, as they have a limited choice set and lack the necessary information to assess the quality of advice or the appropriateness of a product. The paper by Bucher-Koenen and Koenen (2011) argues in the same direction. The higher the financial literacy, the more likely the individual will get useful financial advice from a bank or insurance agent, which increases the quality of the Riester contract. This hypothesis can be formulated as follows:

*Hypothesis 3a: Individuals with higher financial literacy are **less** likely to have terminated or dormant Riester contracts due to product-related reasons.*

If we could account for the selection of a Riester contract, this effect would not be observed in the second stage. However, without controlling for the selection bias in the first stage, the number of terminated or dormant contracts could be influenced as suggested by hypothesis 3a.

However, Hagen and Reisch (2010, p.5) argue that Riester contracts are “*trust-goods*”, with consumers usually being unable to judge the value of the contract even after having acquired it. Learning about the contract is possible when checking the yearly statement of the provider since it contains information regarding the total contributions, returns and possibly direct and indirect costs. Consumers may also learn about Riester contracts via the media. In any case, households with higher financial literacy are

¹⁰ Since introduction in 2001 until June 2010, BaFin certified more than 5000 old-age provision products and more than 2000 certifications were changed (BaFin, 2011). Since 1.7.2010 certification is provided by the Bundeszentralamt für Steuern (BZSt).

expected to be more likely to discover that they have selected a poor contract in the first stage and terminate it in the second stage. The competing hypothesis is:

*Hypothesis 3b: Individuals with higher financial literacy are **more** likely to have terminated or dormant Riester contracts due to product-related reasons.*

Whether one of the two competing hypothesis predominates is an empirical question, which is addressed below. If the terminated or dormant Riester contract is caused by personal circumstances, the argument will change. Individuals with higher financial literacy should know more about the necessity of private old-age savings and the need to continue to save even in difficult situations. Hypothesis 4 addresses this point.

*Hypothesis 4: Individuals with higher financial literacy are **less** likely to have terminated or dormant Riester contracts due to personal circumstances.*

3. Data

The data in this paper originate from the SAVE survey, which is conducted since 2001 by the Mannheim Research Institute for the Economics of Aging (MEA) in cooperation with TNS Infratest. SAVE is a representative panel survey aimed at investigating the saving and portfolio behavior of private households in Germany on a yearly basis since 2005. Börsch-Supan et al. (2009) provides a detailed description of the scientific background, design and first results of SAVE.¹¹ The survey is always conducted in early summer. In total 2,047 households participated in the SAVE survey of 2010, which is the main focus of this paper due to the extended section on Riester contracts. Appendix B provides a translation of the Riester questions used in this analysis.

¹¹ For more information on the SAVE survey, visit the SAVE section of the MEA homepage <http://mea.mpisoc.mpg.de/index.php?id=315>.

As with all larger micro datasets, SAVE suffers from item non-response. To reduce the resulting bias that occurs if the missing pattern is not completely missing at random, and to increase the efficiency of our estimates due to a larger number of observations, SAVE is multiply imputed using an iterative imputation method based on a Markov-Chain Monte-Carlo procedure (Schunk, 2008; Ziegelmeier, 2009/2012). We use all five of the resulting multiply imputed datasets for our analysis. The results obtained from each dataset are combined according to Rubin's method (Rubin, 1987/1996). Appendix C shows the missing rates for the Riester and endowment life insurance questions analyzed in this paper, which fall in the range 2-10%. All descriptive statistics are weighted using income and age classes from the German Mikrozensus to provide a representative sample for the German population (Börsch-Supan et al., 2009, pp. 48-52).¹²

The sample is restricted to households who were or are eligible for Riester subsidies. There are two different approaches to select these households from the sample. First, households can be asked directly whether they were or are eligible for Riester subsidies. This question was included in the Riester section in 2010. However, Coppola and Gasche (2011) find in a recent paper based on SAVE data that a large fraction of households do not seem to know that they are eligible for Riester subsidies. This ignorance is especially high among low income groups. Second, household eligibility for Riester subsidies can be derived logically from the values of other variables, such as current and past occupation of the respondent and the spouse. Since the first approach induces a bias, the second is chosen.

A household is not eligible if both the respondent and the spouse (if available) are in the following groups: self-employed individuals, pensioners,¹³ persons who do not participate in the labor market (like students, housewives or individuals working less than 15 hours a week). Eligible households include those where at least one member is an employee subject to social security contributions, civil servant or unemployed. From

¹² For the regression analyses no weights are used (Deaton, 1997, p. 70).

¹³ Individuals receiving a disability pension, who are eligible for Riester subsidies since 2008, cannot be separated in SAVE from individuals receiving an old-age pension, who are not eligible. The induced bias should be very small since disability pensioners reflect a very small fraction of pensioners.

the sample of 2,047 households in 2010 all households which are not eligible for all years from 2005-2010 are excluded unless one of their answers to a Riester question indicated that they were once eligible.¹⁴ The final sample size is reduced to 1432 households. The restricted sample characteristics of the 2010 SAVE dataset are provided in Appendix D.

4. Terminated and dormant Riester contracts

4.1. How often are Riester contracts terminated or dormant? Are these decisions only temporary or permanent?

Of our restricted sample of 1,432 households, 45% stated that they never had a Riester contract (Table 3). Conditional on the ownership of at least one Riester contract in the household today or in the past, 85.5% answered that they never terminated a Riester contract. 14.5% terminated a Riester contract at least once, and most of those (10.6%) did not sign a new contract.

Table 3: Termination of Riester contracts

	Obs	%	% of owners
Yes, now new contract	31	2.1%	3.9%
Yes, now no new contract	84	5.8%	10.6%
No, never terminated	674	47.1%	85.5%
No, never a Riester contract	643	44.9%	-
Total	1432	100.0%	100.0%

Source: own calculation based on SAVE 2010, data is weighted and multiply imputed.

The numbers are only partially comparable with the numbers presented by the GDV and the BaFin in section 2.1. The termination rate based on GDV figures is 18.8%, which is larger than obtained from SAVE (14.5%) due to several reasons: first, the SAVE

¹⁴ Households who answered categories 1 to 3 of question 73 (Appendix B) are also included even if households were not eligible in all years from 2005-2010. The measure of eligibility covers 2006-2010 and for some households even 2005, but it is not perfect since it does not consider occupational changes between the survey years or eligibility before 2005/2006.

questions ask only about terminations, while the GDV includes deaths; second, SAVE has a household perspective and the GDV has a contract perspective. Thus, households with two terminations will show up only once in the ratio calculated based on SAVE.

The termination rate based on BaFin figures is 15.2%, lower than the GDV rate and much closer to the one observed in SAVE since the outflows can be restricted to the category “*termination and change into dormant insurance*”.¹⁵

Regarding dormant Riester contracts we have a similar picture (Table 4). The percentage of households who never had a dormant Riester contract is 87.5%, a bit higher than the share of households who never terminated a contract. 12.5% stopped paying contributions to their Riester contract at least once, from which only a minority (2.4%) signed an additional contract. 10.1% of households remained with the old contract.

Table 4: Dormant Riester contracts

	Obs	%	% of owners
Yes, now new contract	19	1.3%	2.4%
Yes, now no new contract	80	5.6%	10.1%
No, never dormant contract	690	48.2%	87.5%
No, never a Riester contract	643	44.9%	-
Total	1432	100.0%	100.0%

Source: own calculation based on SAVE 2010, data is weighted and multiply imputed.

Concerning the official numbers of dormant Riester contracts, the BMAS (2011) estimates this share around 15% in 2008 based on the fact that no contributions are paid. As shown in Table 2, this fraction even increased to 17.2% in 2009. Thus, if there are no systematic differences by type of Riester contract, SAVE underreports the number of dormant contracts.

In summary, of all households in the SAVE survey having had a Riester contract at least once, 14.5% terminated a contract and 12.5% have a dormant contract.

¹⁵ The termination rate of the BaFin could be corrected further downwards if instead of the stock at the beginning of 2003, the inflows in 2001 and 2002 were known. It would be corrected upwards if the outflows in 2002 were known (2001 can be neglected). However, the change should be minimal since those figures are missing at the introduction of Riester.

Whereas terminations appear to be in line with official figures, dormant contracts seem to be underestimated in SAVE. In general, dormant Riester contracts seem quantitatively almost as important as terminated contracts. Furthermore, only a small fraction of households signed a new contract after they terminated or stopped paying contributions.

Since official statistics provide no information on terminated or dormant Riester contracts for fund savings plans, bank savings plans, and “*homestead*” funds, SAVE offers a unique possibility to compare termination rates or dormant contracts in pension insurance funds to the other three types of Riester contracts. However, SAVE has the limitation that the type of contracts refers only to current contracts and not to contracts which have been terminated. We restrict the following analysis to households who still have a current Riester contract and who indicate the type of Riester contract (some respondents selected the “*don’t know*” option). Terminations appear to be lower for pension insurance contracts (significant difference at a 5% level for all 5 implicates [both two-sample t-test with unequal variances and Wilcoxon rank-sum test]).¹⁶ Following the same procedure for the share of dormant Riester contracts among pension insurance funds and the other three types of Riester contracts, no significant difference can be found.

We draw attention to several possible pitfalls in drawing conclusions from these results. First, one has to remember that the type of Riester contract is not known for all terminated contracts. This limits the number of observations and might possibly bias the results. Second, and even more important, fund savings plans, bank savings plans, and “*homestead*” funds are combined in one variable even though these types of contracts are very different.

Conditional on having owned a Riester contract at least once, Table 5 cross tabulates terminated and dormant Riester contracts. 79% of households never terminated

¹⁶ Households with both types of contracts are excluded. If the other three types of Riester contracts are analyzed separately, the dataset does not include enough observations. Combining the other three types of Riester contracts we have only 147 households. Since in SAVE the category “*terminated, now no new contract*” plays no role (for those respondents the current type of contract was not asked), the results remain unchanged if one includes or excludes this category.

their Riester contract and never stopped paying contributions. 21% had at least one termination or a dormant contract or a combination of both.

Table 5: Cross tabulation - terminated and dormant Riester contracts

Terminated contract	Dormant contract			Total
	Yes, now new contract	Yes, now no new contract	No, never dormant contract	
Yes, now new contract	1%	0%	3%	4%
Yes, now no new contract	0%	5%	5%	11%
No, never terminated	2%	5%	79%	86%
Total	2%	10%	87%	100%

Source: own calculation based on SAVE 2010, obs=769 (obs), data is weighted and multiply imputed.

4.2. Reasons why Riester contracts are terminated or dormant

So far no statistic was available why households have dormant or terminated Riester contracts. Are personal circumstances such as unemployment, divorce, and unexpected events the main reasons? Or are terminated and dormant contracts the result of product-related reasons, such as poor advice or inappropriate products, which indicates an opaque, consumer unfriendly environment? Figure 2 illustrates the reported reasons why Riester contracts are terminated or dormant. Since multiple answers are allowed, the bars add up to more than 100%. The distribution is similar between terminated and dormant contracts. Around 77% (75%) of households provide one reason, 20% (22%) indicate two reasons and around 3% (3%) give three reasons.

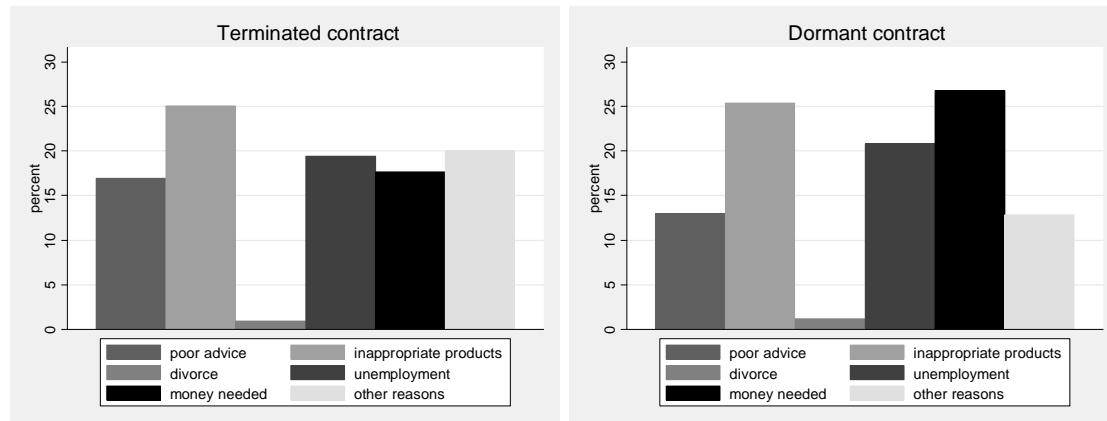
For further analysis we construct a dummy for product-related reasons and one for personal circumstances such as unemployment, divorce, etc.¹⁷ Compared to poor advice, inappropriate products play the major role. Regarding personal circumstances, only divorce plays a minor role. The other three reasons change their ranking over terminated or dormant contracts.

Despite some differences in the distribution for dormant and terminated Riester contracts (Figure 2), the influence of product-related reasons is similar (Table 6). In 36%

¹⁷ If the category "other reason" was specified in the text field, reasons which could be assigned to another category were grouped into the corresponding category.

of all terminations, product-related reasons are the only reason provided. Both personal circumstances and product-related reasons play a role in 10% of all terminations. Personal circumstances alone are responsible for 54% of all terminations.

Figure 2: Reasons why Riester contracts are terminated or dormant



Source: own calculation based on SAVE 2010, data is weighted and multiply imputed; multiple answers possible.

Table 6: Share of reasons for terminated and dormant Riester contracts

TERMINATED CONTRACT		Personal circumstances		
		No	Yes	Total
Product-related reasons	No	0%	54%	54%
	Yes	36%	10%	46%
Total		36%	64%	100%
DORMANT CONTRACT		No	Yes	Total
		Product-related reasons	0%	56%
	Yes	35%	8%	44%
Total		35%	65%	100%

Source: own calculation based on SAVE 2010; data is multiply imputed and weighted.

On the one side, this approach only detects product-related reasons if this leads to a terminated or dormant contract. Respondents might actually not know they have been poorly advised, or they might not be aware their product is not suitable for their needs. Furthermore, even if individuals are dissatisfied with their contract, they might be reluctant to sell based on the well known status quo bias (Kahneman, Knetsch, and Thaler, 1991) or high costs when they signed the contract. This means the actual impact of product-related reasons could be even higher, and some respondents could be willing

to terminate contracts if they had more information. On the other side, the data analyzed are individual responses, which might be subject to some bias if individuals favor answers which are perceived as socially or personally more desirable.

To evaluate whether the fraction of 44-46% terminated or dormant contracts caused by product-related reasons is high, one needs a benchmark. SAVE 2010 also includes a question on terminations of endowment life insurance contracts. The structure of the questions is exactly the same as for Riester contracts (Appendix B). Endowment life insurance contracts are terminated in 23% of cases due to product-related reasons. This share is reduced to 21% if product-related reasons are the only reason. 23% of terminated life insurance contracts are at least partly due to product-related reasons. This is significantly (5% level) lower compared to the 46% figure for Riester contracts. Appendix E provides additional information and statistics about the questions on endowment life insurance contracts used for this comparison and carries out some robustness tests if the groups to be compared are restricted to households who owned a Riester and an endowment life insurance contract at least once.

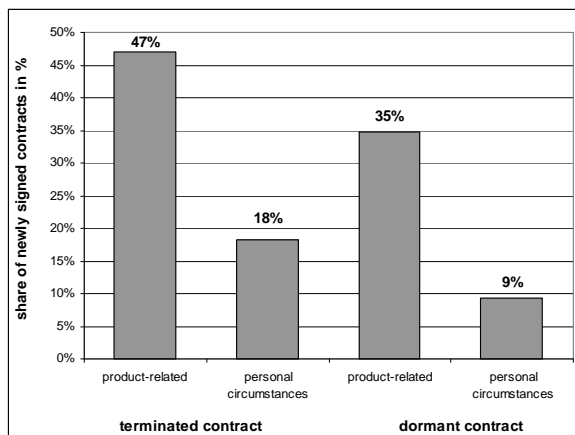
Summing up, in around 55% of cases personal circumstances are exclusively responsible for terminated or dormant Riester contracts. In the remaining 45%, product-related reasons play at least a partial role. This rate seems relatively high considering that advice is often provided by financial experts. The rate of contract terminations caused by product-related reasons is more than 20 percentage points lower for life insurance contracts. Thus, the market for Riester products seems to be less transparent and consumer friendly.¹⁸ Better advice and more transparent Riester products are needed to decrease the high share of terminated and dormant contracts, since households which stop paying contributions or even terminate their Riester contract are at risk of old-age poverty.

The reason why a household terminated a contract or stopped paying contributions might even influence the uptake of a new contract. In hypothesis 1 we state that

¹⁸ Another reason explaining this difference could be the longer experience of consumers and providers with endowment life insurance contracts.

given a terminated or dormant Riester contract, the uptake of a new contract is negatively influenced if personal circumstances caused the terminated and dormant contracts. Instead, it is positively influenced if product-related reasons caused the dormant and terminated contracts. Figure 3 shows the fraction of households signing a new contract after a contract was terminated or dormant. The figure separates the reasons why the contract is terminated or dormant. Since multiple reasons can be given, households are excluded from the sample if they provided both reasons. Appendix F shows that the qualitative results do not change if this group of households is also included.

Figure 3: Share of households signing a new contract according to the reason why Riester contracts are terminated or dormant



Source: own calculation based on SAVE 2010, data is weighted and multiply imputed. Households providing both reasons are excluded from the analysis (48 households are dropped from the sample with terminated contracts and 36 are excluded from the sample with dormant contracts).

Table 7: Significance of differences in shares of households signing a new contract according to the reason why Riester contracts are terminated or dormant

Implicate M	Two-sample t-test with unequal variances					Two-sample Wilcoxon rank-sum (Mann-Whitney) test				
	M=1	M=2	M=3	M=4	M=5	M=1	M=2	M=3	M=4	M=5
TERMINATED CONTRACT										
H ₀ : share of hhs which signed a new contract (reason=product-related) > share of hhs which signed a new contract (reason=personal circumstances)	0.1%	2.3%	0.1%	0.3%	0.1%	0.0%	1.9%	0.0%	0.2%	0.0%
DORMANT CONTRACT										
H ₀ : share of hhs which signed a new contract (reason=product-related) > share of hhs which signed a new contract (reason=personal circumstances)	1.0%	2.0%	0.4%	1.8%	1.4%	0.4%	1.1%	0.1%	1.0%	0.7%

Source: own calculation based on SAVE 2010, data is multiply imputed. Households providing both reasons are excluded from the analysis (48 households are dropped from the sample with terminated contracts and 36 are excluded from the sample with dormant contracts).

As one notices immediately, if the reason for terminated or dormant contracts is product-related then the share of households signing a new contract is substantially larger than if the reason is based on personal circumstances. The differences in fractions signing a new contract are highly significant as Table 7 points out.

We find evidence that the reason why Riester contracts are terminated or dormant highly influences the uptake of a new contract (hypothesis 1). The good news might be that signing a new contract is more common if the reason is product-related. Thus, the damage done by poor advice and/or an inappropriate product is partly revised by individuals, since they still seem to recognize the need to increase their old-age savings. Nevertheless, 63% of households with terminated contracts and 69% with dormant contracts do not sign a new contract given product-related reasons, which is still a relatively high share (see Appendix F, which includes also households providing both reasons in the analysis).

4.3. How are household characteristics related to terminated or dormant Riester contracts?

Is poor advice or an inappropriate product a general problem, or are only respondents with certain characteristics likely to suffer from it? Who are the households with terminated or dormant contracts? From a policy perspective it is important to know this because those actions carry certain disadvantages. For example, termination without signing a new contract means that the individual loses state subsidies, receives lower returns, or even losses some contributions depending on the cost structure of the contract. Further the risk of old-age poverty is increased. Policy makers need to know household characteristics related to the decision to terminate or stop paying contributions in order to intervene where necessary.

To estimate the effect of household characteristics on terminated and dormant Riester contracts, there are two approaches:

- i) Estimate a Heckman selection model (Heckman, 1976, 1979). The first stage models the decision whether to participate in the Riester market,

while the second stage (estimated on the sample of participants) models the occurrence of terminated or dormant contracts. This approach corrects for selection bias and separates participation from the occurrence of terminated or dormant contracts. The drawback is that the selection model is difficult to estimate since one has to find strong exclusion restrictions, which influence the selection equation but have no influence on the explained variable in the second stage (Achen, 1986, p. 99). If implemented properly, conclusions can be drawn for the complete sample and not only for households owning or having owned a Riester contract.

- ii) Estimate a probit conditional on Riester ownership. This approach is simpler but does not correct for the selection bias. However, if the aim is to draw conclusions only for the sample of Riester owners, which is also policy relevant, the conditional probit should be the preferred choice.

We choose option ii) since it is difficult to find appropriate exclusion restrictions given the similarity of the decision in stage 1 and 2. Whereas in stage one all individuals decide whether to sign a Riester contract, all individuals having signed a Riester contract decide in stage 2 whether to keep it or not. In a simplified way the decision in stage 2 can be exactly the reverse of the decision in stage 1. Thus, it is difficult or maybe not possible to find observed or constructed variables which influence the selection stage and not the decision whether to terminate a contract or stop paying contributions. Even to argue why certain variables enter in a different functional form in stage 1 and 2 might be difficult. If no exclusion restrictions are included, the Heckman two-step model is only identified by the distributional assumptions on the residual. To prevent the use of weak exclusion restrictions, which might lead to specification error and biased estimates, the conditional probit is estimated:

$$P(T_i = 1 | x) = P(T_i^* > 0 | x) = \Phi(\beta_0 + \beta_1 z_i + \beta_2 w_i + \beta_3 n_i + \beta_4 p_i) \quad (1)$$

where T is an indicator equal to one if household i has a terminated or dormant Riester contract and T* is a latent variable determined by:

$$T_i^* = \beta_0 + \beta_1 z_i + \beta_2 w_i + \beta_3 n_i + \beta_4 p_i + \varepsilon_i, T = 1 [T_i^* > 0] \quad (2)$$

x is the vector of all household characteristics; Φ is the standard normal density; ε is the error term which we assume independent of x and following a standard normal distribution; z denotes a vector of household characteristics; w is the log of gross financial wealth (excluding pension assets)¹⁹; n is the logarithm of household net income; and p is a financial literacy index. According to hypothesis 2-4, we expect the following signs for the coefficients in β (Table 8).

Table 8: Expected signs of coefficients according to hypothesis 2-4

Terminated and/ or dormant contracts due to	β_2	β_3	β_4
Product-related reasons	0	0	-/+
Personal circumstances	-	-	-
Product-related reasons and/ or personal circumstances	-	-	-/+

Note: "0" no effect, "+" positive effect, "-" negative effect, "-/+" ambiguous effect.

Household characteristics summarized in the vector z and the financial literacy index p need further clarification. We include household characteristics²⁰ in line with empirical evidence for the selection of a Riester contract (as summarized by Blank (2011, pp. 111-112)). As argued above, these should also influence terminated or dormant contracts. Thus, we incorporate a dummy for gender (d), for Eastern Germany (d), and age classes (≤ 35 ; 36-45; 46-55; >55 (ref.)). Furthermore, we add dummies for different educational attainments.²¹ In addition, we control for the following variables: whether the respondent has a partner (d), has a permanent employment contract (d), or is a homeowner (d). Moreover, since Riester subsidies are higher for families with children, the likelihood of signing and keeping a Riester contract should increase with

¹⁹ Sum of deposits held in savings accounts, building savings contracts, bonds, stocks, stock mutual and real estate funds, and other financial assets. Old-age provision assets are excluded due to partial endogeneity to the dependent variable.

²⁰ Since we do not know who owns the contract in the household, we take the characteristics of the reference person, who should be the most financial knowledgeable person in the household. Measurement error may bias the results downwards.

²¹ Basic education (d) if household head had 9 to 10 years education; high education (d) if household head had 13 to 14 years education (ref.); undergraduate edu. (d) if household head had 16 to 17 years education; graduate education (d) if household head had 18 to 19 years education.

the number of children. This strong relationship between the number of children and the selection of a Riester contract is confirmed in both “official” and survey data as described by Blank (2011, pp. 111-112). Thus, the number of children living in the household is added as control. Finally, we have the possibility in SAVE to include responses regarding the importance of different saving motives. Two saving motives seem especially relevant: old-age provision and saving through subsidies. The variables range on a scale from 0 (totally unimportant) to 10 (very important) with increments of one.

We also make use of a large section on financial literacy in the 2009 SAVE questionnaire. This allows much more elaborated measures of different kinds of financial literacy than the three standard questions testing the understanding of interest, inflation and risk (as developed by Lusardi and Mitchell (2008) for Health and Retirement study (HRS) in 2004) implemented in the 2007 SAVE survey. Nine questions out of the extended set in Van Rooij et al. (2011) and two additional pension literacy questions were selected for the 2009 SAVE survey. Bucher-Koenen (2011)²² describes the questions and how responses can be summarized in a basic and advanced financial literacy index. One measure not introduced by Bucher-Koenen is the measure of pension literacy. Two questions asked in an international project by Boeri, Börsch-Supan, and Tabellini (2000, p. 111) were chosen for this purpose. Appendix G provides an English translation of the questions, explains how the pension literacy index is constructed, and reports some basic descriptive statistics. Since the basic and advanced financial literacy measures show no significant result, the following analysis focuses on the pension literacy measure, which is – as will be shown – highly correlated with terminated and dormant Riester contracts.

Since the decision to own a Riester contract was already studied using the SAVE survey e.g. by Bucher-Koenen (2011) and Coppola and Reil-Held (2009), the participation decision using the SAVE sample of 2010 and the explanatory variables as outlined above are reported and shortly discussed in Appendix H. The results are in line with the literature (Blank, 2011, pp. 111-112).

²² The article contains additional information on these measures as well as their validation.

We are interested in the probability of a terminated or dormant Riester contract conditional on participation as in equation (1). Table 9 shows the conditional marginal effect for six different specifications. In specification (I) and (II) the explained variable is a dummy equal to one if a terminated or dormant Riester contract is observed (see Table 5 how terminated and dormant contracts overlap). From a policy perspective it is reasonable to combine terminated and dormant contracts since both groups might fail to accumulate adequate private old-age savings. In specification (III) and (IV) the dependent dummy is equal to one if a Riester contract is terminated or dormant due to product-related reasons. In specification (V) and (VI) the dummy is one if a Riester contract is terminated or dormant due personal circumstances. Specification (II), (IV), and (VI) exclude the logarithm of financial wealth due to high multicollinearity of the logarithm of financial wealth and income (correlation coefficient = 0.4363 for the conditional sample). Appendix I includes a robustness test using an additional control to consider possible interaction between reasons. This combines a dummy variable for a Riester contract terminated/dormant due to personal circumstances for specification (III) & (IV) and a dummy variable for a Riester contract terminated/dormant due to product-related reasons for specification (V) & (VI). As can be seen in Appendix I, the estimated coefficients hardly change.

In specification (I) only a few variables influence whether a Riester contract is terminated/dormant. The probability of a terminated or dormant contract is around 9% higher for East Germany and highly significant at a 1% level. Financial wealth and pension literacy are highly significant at a 1% and a 5% level respectively. An increase in financial wealth by 100% reduces the predicted probability of a terminated or dormant contract by 1.1% (in line with Table 8). An increase in the pension literacy index by 1 unit reduces the predicted probability of a terminated or dormant contract by around 5.5%. This is in line with previous literature on exit decisions from the stock market (Bilias et al., 2010; Bucher-Koenen and Ziegelmeyer, 2011; and Calvet et al., 2009). They find that low financial literacy/education household are more likely to leave the equity market.

A higher rate of terminated or dormant contracts is also observed for households in middle age groups and with more children. Net household income has no effect in specification (I). If the logarithm of financial wealth is excluded (specification (II)), then the negative coefficient on income increases. However, the marginal effect remains insignificant with a p-value of 11.3%. The other coefficients of specification (I) hardly change.

In the following, we try to disentangle the effects of variables by the reason why the contract is terminated or dormant. Restricting the analysis to terminated or dormant contracts due to product-related reasons (specification (III) and (IV)), only three significant factors can be observed. Individuals with higher financial/ pension literacy do not appear to select better contracts (Hypothesis 3a), lowering the rate of terminated or dormant contracts. Nor do individuals with higher financial/ pension literacy discover more often that their contract is inappropriate (Hypothesis 3b), raising the rate of terminated or dormant Riester contracts. Both effects may still be present in the data, partly offsetting each other. However, with the data available it is not possible to separate the effects. Income and financial wealth do not have a significant influence, as suggested by hypothesis 2b since if the termination or dormant contract is caused by product-related reasons the buffer effect of high income and financial wealth should play no role. The number of children and belonging to the youngest age group have a positive and significant effect. The positive effect for the youngest age group can be explained by the fact that this group still has time to correct inappropriate contracts. If the saving motive for subsidies is more important, the likelihood for terminated or dormant contracts is reduced. Termination means that all subsidies are lost. If no contributions are paid, no subsidies will be received.

Table 9: Conditional Probit: Determinants of terminated or dormant Riester contracts

This table reports the effect of the logarithm of household net income, the logarithm of financial wealth and pension literacy, and various covariates on the probability of having terminated or dormant Riester contracts. A probit is estimated conditional on having owned/ owning a Riester contract. The explained variable is a dummy=1 if a Riester contract is terminated or dormant (specification (I) & (II)); the dummy=1 if a Riester contract is terminated or dormant due to product-related reasons (specification (III) & (IV)); the dummy=1 if a Riester contract is terminated or dormant due personal circumstances (specification (V) & (VI)). The equal numbered specifications exclude the logarithm of financial wealth from the original specification. Marginal effects (ME) are calculated at the observation level and then averaged. Marginal effects and standard errors (SE) are calculated using 5 multiply imputed datasets according to Rubin's Rule (Rubin, 1987, 1996). (d) indicates the change of a dummy variable from 0 to 1. Ref. indicates the reference category if various dummies are used. N=769 (selected sample).

	All reasons			Product-related reasons			Personal reasons			
	(I)	(II)	(III)	(IV)	(V)	(VI)	(V)	(VI)		
	ME	SE	ME	SE	ME	SE	ME	SE		
Male (d)	0.016	0.030	0.021	0.030	-0.011	0.024	0.029	0.025	0.034	0.026
Age <= 35 (d)	0.054	0.049	0.059	0.049	0.095	0.043 **	0.095	0.043 **	-0.032	0.041
35 < age <= 45 (d)	0.078	0.048	0.086	0.048 *	0.070	0.045	0.070	0.046	0.047	0.038
45 < age <= 55 (d)	0.077	0.043 *	0.086	0.044 *	0.077	0.050	0.077	0.050	0.032	0.034
Age > 55 (d)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
East Germany (d)	0.085	0.030 ***	0.092	0.030 ***	0.040	0.025	0.040	0.025	0.058	0.026 **
Partner (d)	-0.012	0.039	-0.017	0.040	-0.045	0.031	-0.045	0.032	-0.005	0.037
No. of children in hh	0.027	0.015 *	0.034	0.015 **	0.027	0.011 **	0.027	0.011 **	0.005	0.012
Basic education (d)	0.057	0.060	0.062	0.060	-0.005	0.048	-0.005	0.048	0.082	0.046 *
High education (d)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Undergrad. edu. (d)	0.020	0.041	0.006	0.041	-0.004	0.034	-0.004	0.034	0.011	0.033
Grad. education (d)	-0.012	0.041	-0.026	0.040	-0.012	0.031	-0.012	0.032	0.007	0.036
Permanent contract (d)	-0.009	0.032	-0.013	0.033	0.033	0.023	0.033	0.023	-0.028	0.027
Log of hh net inc.	-0.023	0.034	-0.053	0.034	0.002	0.030	0.002	0.027	-0.025	0.029
Log of financial wealth	-0.011	0.004 ***		0.003	0.000	0.003	0.000	0.003	-0.011	0.003 ***
Home owner (d)	-0.028	0.032	-0.042	0.031	-0.025	0.025	-0.025	0.025	0.001	0.028
Saving motive subsidy	-0.003	0.005	-0.004	0.005	-0.006	0.003 *	-0.006	0.003 *	0.000	0.004
Saving motive pension	-0.002	0.007	-0.003	0.007	-0.002	0.005	-0.002	0.005	-0.003	0.005
Pension literacy	-0.054	0.022 **	-0.057	0.022 ***	-0.020	0.016	-0.020	0.016	-0.035	0.020 *
Pseudo R2	0.077		0.065		0.075		0.075		0.096	0.075

Source: own calculation based on SAVE 2009 and 2010, data is multiply imputed.
* significant at 10%; ** significant at 5%; *** significant at 1%.

Turning to specification (V) and (VI), the explained dummy variable is equal to one if personal circumstances caused the terminated or dormant contract. The effect we observed for specification (I) and (II) appears to be mainly driven by terminated or dormant contracts due to personal circumstances, which are involved in 64-65% of all these decisions. The positive effect of living in East Germany is slightly less pronounced. In addition, having only basic education increases the probability of terminated/dormant contracts by around 8%. According to hypothesis 2a households with low financial wealth are less able to buffer shocks caused by unexpected events, divorce or unemployment, resulting in more terminated or dormant Riester contracts. This hypothesis is confirmed at a 1% level. If financial wealth is excluded, as in specification (VI), household income becomes negatively significant at 10% level. An increase in household net income by 100% should reduce the likelihood of terminated and dormant contracts by almost 6%.

Finally, we find support for hypothesis 4. There is a significant negative correlation between pension literacy and the likelihood to have a terminated or dormant Riester contract. As always when interpreting the influence of a financial literacy variable, one has to be careful with a causal interpretation due to endogeneity, omitted variable bias, and measurement error. Bucher-Koenen (2011, p. 23) summarizes the impact on various outcomes of instrumental variables (IV) approaches to measure the effect of financial literacy. IV approaches suggest that the true effect of financial literacy is underestimated. Taking this into account, one might conclude that individuals with higher financial literacy, especially pension literacy, seem more aware of the need for private old-age savings and continue to save even in difficult situations. Thus, individuals with low pension literacy are more likely to terminate their Riester contract or stop paying contributions, when they face unexpected events, divorce or unemployment. The effect is significant at a 10% level.

Several robustness tests are carried out. First, if terminated and dormant Riester contracts are analyzed separately, then the results remain qualitatively similar although quantitatively minor changes are observed. Second, results are robust if one takes into

account the possible interaction between reasons for terminated and dormant contracts (Appendix I). Third, results are robust if one uses a dummy for pension literacy as defined in Appendix G instead of an index or if average household net wealth over the years 2006-2010 is used. Fourth, marginal effects change only to a limited extent if further control variables are included.

At the beginning of this subsection we asked whether terminated or dormant contracts due to product-related reasons or personal circumstances are a general problem, or whether households with certain characteristics are more prone to them. Overall (specification (I) and (II)), several groups appear to be significantly more likely to terminate their Riester contract or to stop paying contributions. In line with our hypotheses we find that households with low financial wealth (or low income) as well as households with low pension literacy have an increased probability of terminated/dormant contracts. In addition, we find a positive effect of living in East Germany. The low prevalence rate of Riester contracts among low financial wealth and income household combined with higher rate of terminated and dormant contacts increases the risk of old-age poverty for these groups.

5. Summary and conclusion

The 2001 German pension reform introduced a capital-funded private old-age provision. Due to the gradual decrease of the state pension level, the Riester pension was launched to ensure an adequate standard of living in old-age. Households must save 4% of gross income to obtain the maximum state subsidy. At the end of 2011, the number of Riester contracts reached more than 15 million with an approximated prevalence rate of more than 37%. The prevalence rate remains low among low income households (e.g. Coppola and Reil-Held, 2009), but in addition numerous criticisms (Hagen and Reisch, 2010), especially by consumer advocates, questioned whether the market for Riester products is transparent. This article uses the first available data on terminated and dormant Riester contracts and the associated reasons based on the

2010 SAVE survey, to provide new insights on the market for Riester contracts. One has to keep in mind that the data analyzed are answers from individuals, which might be subject to some bias if they favor answers perceived to be socially or personally more desirable.

SAVE 2010 shows that about 14.5% (12.5%) Riester contracts have been terminated (are/were dormant). After a termination (dormant contract), 73% (81%) of households do not sign a new contract. The numbers of dormant and terminated contracts partly conflict with the overly positive interpretation of BMAS. It turns out that almost half of the dormant or terminated Riester contracts are attributable to partly product-related reasons. In around 1/3 of cases, product-related reasons are the only reason for terminated or dormant Riester contracts, which is substantially higher than for endowment life insurance contracts. The role of product-related reasons is particularly important when terminated/dormant contracts are only temporary (hypothesis 1). Individuals who cancelled their contract or stop paying contributions due to unexpected events, unemployment, or divorce are less likely to take up a new contract. Consistent with the formulated hypotheses, we found that households with low income, low financial wealth or low pension literacy are more likely to have terminated or dormant contracts. Low income and financial wealth households are also those with the lowest prevalence rate for Riester contracts and the highest risk of old-age poverty.

The results seem to imply that a large share of population is not well informed about this market. On the one hand, the market does not seem sufficiently transparent, so that individuals mistakenly select contracts unsuited for their needs and preferences.²³ On the other hand, it might be wrong to blame only providers and financial experts selling Riester products. Households are partly responsible, as they seem to collect insufficient information on such an important issue, possibly because they discount long-term consequences. This is supported by the negative influence of pension literacy

²³ A high rate of terminations could also be seen as a sign of a transparent market. However, terminations or interchanges of contracts usually carry costs. Thus, there are incentives to pick the correct contract. One could argue that the problem is not the transparency of the market but the cost structure of contracts, e.g. the high initial fees of Riester contracts, which are normally spread over the first five years.

on terminated or dormant contracts. All players (consumers, providers, regulating authorities and consumer protection organizations) on the market for Riester contracts should be made aware of the relatively high rates of terminated and dormant contracts. Everyone can contribute to improving outcomes. The regulating authorities should set the framework for Riester contracts to increase comparability between contracts, especially with regard to cost structure, return and risk expectations (Feigl et al., 2010). Information on each type of contract could be saved in a standardized central register that is publicly available. Before a Riester contract is signed, the customer should be notified that such a register exists. In addition, regulating authorities and consumer protection organizations should take measures targeting groups at higher risk (low income and financial wealth, low pension literacy, East Germans) to reduce the number of terminated/dormant contracts. In addition, the regulating authorities should promote pension literacy among the German population. It is in the interest of Consumers themselves to increase their pension literacy, their knowledge about Riester contracts in particular and old-age provision in general. Providers should provide transparent and low cost contracts.

Future research should also ask whether the objective of adequate private old-age savings is jeopardized by terminations or dormant contracts for certain groups in other countries having introduced voluntary private pension schemes. Countries could learn from the German case when extending voluntary private pension system to compensate for future declines in replacement rates in the state pension system. An increase in comparability between contracts by means of a standardized information leaflet or central online register could help individuals select a contract which suits their needs. Furthermore, requirements could be improved with regard to maximum acquisition fees, running costs, capital protection of contributions, the pension payout period, information duties, exchange fees of contracts and so on. Failure to insure adequate private pension benefits might lead to old-age poverty for a substantial share of households, which is neither desirable from an individual nor a social perspective.

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7. Appendix

Appendix A: Inflows and outflows of pension insurance Riester contracts according to the BaFin

The main difference between figures provided by the GDV and the BaFin might be that the BaFin collects all contracts from companies according to the *“Gesetz über die Zertifizierung von Altersvorsorge- und Basisrentenverträgen”* (AltZerG). This means that not only Riester contracts are included in the statistic but also so called *“Basis-Renten”* contracts. Moreover, only the number of collective insurances is known to the BaFin. Not known is how many individual contracts are included in a collective insurance. Furthermore, pension insurance Riester contracts which are carried out as *“Kapitalisierungsgeschäft”*²⁴ are not separately recorded by the BaFin. Finally, the BaFin does not capture smaller insurance companies, which are under supervision of the federal states. The numbers provided in Table 10 can be seen only as a rough approximation of the number of Riester contracts.

The total number of outflows over all years is almost equal between the GDV (Table 1) and the BaFin (Table 10). However, the yearly figures deviate strongly. Whereas a more or less steady increase of outflows can be observed for the numbers provided by the GDV, the total number of outflows is already relatively high in the early years as reported by the BaFin. This is partly based on so called remaining cash outs for the years 2003 and 2005, which are defined as transfers in consequence of a change in the type of insurance, the amount insured or the contribution within a technical change of contracts (Bundesministeriums der Justiz, BerVersV, Anlage 2, Abschnitt A). A request why remaining cash outs are so large in some years could not be answered by an expert of

²⁴ Contracts are similar to cash value life insurances without risk component. § 1 Abs. 4 Satz 1 und 2 Versicherungsaufsichtsgesetz (VAG): *“Als Kapitalisierungsgeschäfte (Anlage Teil A Nr. 23) gelten Geschäfte, bei denen unter Anwendung eines mathematischen Verfahrens die im voraus festgesetzten einmaligen oder wiederkehrenden Prämien und die übernommenen Verpflichtungen nach Dauer und Höhe festgelegt sind.”*

the BaFin. Outflows due to death or occupational disability are only relevant for 1.9% of the total outflows over all years. The category “Ablauf” plays a role in only 0.6% and premature cash outs in 5.2%. Premature cash outs are defined as the reduction of the amount insured or the contribution as long as they are neither of the category termination nor the result of a technical contract change (Bundesministeriums der Justiz, BerVersV, Anlage 2, Abschnitt A). Over all years the category termination is the largest one with 73.6% or 1.755 million terminations.

Table 10: Stock and flows of pension insurance Riester contracts over different categories (BaFin)

Year	Number of contracts, end of year	Total inflows	Death, occupational disability	"Ablauf"***	Termination	Premature cash out	Remaining cash out	Total
2001*								
2002*								
2003	2906	1233	2	0	77	16	131	226
2004	2980	250	2	0	159	11	4	176
2005	4185	1151	4	0	126	19	104	253
2006	5826	1836	5	0	142	14	19	180
2007	7351	1807	6	1	185	19	35	246
2008	8421	1387	8	3	364	23	57	455
2009	9019	1029	8	4	347	12	52	423
2010	9676	921	11	7	355	10	42	425
Total			46	15	1755	124	444	2384
In %			1.9%	0.6%	73.6%	5.2%	18.6%	100.0%

Figures are reported in thousand.

Source: “Statistik der BaFin – Erstversicherungsunternehmen ’03-10 (Lebensversicherung),” table 150: Entwicklung des Bestandes an selbst abgeschlossenen Lebensversicherungen. *There exists no public available breakdown for the years 2001 and 2002. Riester insurance contracts are part of the category remaining insurances. ** The category “Ablauf” summarizes most likely mainly expired contracts of Riester pensions according to § 1 Abs. 1 Nr. 4 a) AltZertG. If the expected Riester pension is below a certain threshold, e.g. 25.92 Euro per month in 2009, then the Riester pension must not be paid in an annuity but can also be paid completely at once according to § 93 Abs. 3 EStG.

Appendix B: Analyzed Riester and insurance questions of the SAVE survey in 2010

Question 69 of the 2010 SAVE questionnaire

In the context of the so-called Riester funding, the government grants subsidies and eventually tax deductions for certain instruments of private old-age provision. Do you, or your partner, belong to the group of people that are eligible to these subsidies?

	You	Your partner
Yes	<input type="checkbox"/>	<input type="checkbox"/>
No, currently not eligible, but previously	<input type="checkbox"/>	<input type="checkbox"/>
No, have never been eligible	<input type="checkbox"/>	<input type="checkbox"/>

Question 70 of the 2010 SAVE questionnaire

If you and/or your partner currently own at least one Riester contract: Which type(s) of contract(s) do you currently own? Multiple answers possible.

Bank savings plan

Fund savings plan

Pension insurance fund

'Homestead' fund

Do not know.....

Not applicable, currently no Riester contract → question 73

Question 73 of the 2010 SAVE questionnaire

Have you (or your partner) previously terminated a Riester contract?

Yes, but a new contract has been purchased in the meantime

Yes, and no new contract has been purchased in the meantime

No → question 75

Not applicable, never owned a Riester contract → question 77

Question 74 of the 2010 SAVE questionnaire

Why did you and/or your partner terminate the Riester contract? Multiple answers possible.

Poor advice

Inappropriate product (i.e. excessive administrative and distribution costs, excessive risk)

Divorce.....

Unemployment.....

Money needed for other uses.....

Other reasons – please state reason.....

Question 75 of the 2010 SAVE questionnaire

Did you (or your partner) previously have a dormant Riester contract, i.e. interrupted your payment of contributions at least temporarily?

- Yes, we had a dormant contract, but a new contract has been purchased in the meantime*
- Yes, we had a dormant contract, and no new contract has been purchased in the meantime*.....
- No* → question 77

Question 76 of the 2010 SAVE questionnaire

Why did you and/or your partner have a dormant Riester contract? Multiple answers possible.

- Poor advice*
- Inappropriate product (i.e. excessive administrative and distribution costs, excessive risk)*
- Divorce*.....
- Unemployment*.....
- Money needed for other uses*.....
- Other reasons – please state reason*.....

Question 77 of the 2010 SAVE questionnaire

Have you terminated an endowment life insurance contract within the last 5 years?

- Yes, in the years from 2005 to 2007*
- Yes, since 2008*.....
- No* → question 79

Question 78 of the 2010 SAVE questionnaire

Why did you and/or your partner terminate the endowment life insurance contract? Multiple answers possible.

- | | <i>Termination</i> | |
|---|--------------------------|--------------------------|
| | <i>2005-2007</i> | <i>since 2008</i> |
| <i>Poor advice</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Inappropriate product (i.e. excessive administrative and distribution costs, excessive risk)</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Divorce</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Unemployment</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Money needed for other uses</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Other reasons – please state reason</i> | <input type="checkbox"/> | <input type="checkbox"/> |

Appendix C: Missing rates of used Riester questions

Variable	Missing rate (%)
Type of Riester contract	2.4%
Terminated Riester yes/no?	7.2%
Reason for termination	8.4%
Dormant Riester yes/no?	10.3%
Reason for dormant contract	10.3%
Terminated endowment life insurance yes/no?	6.4%
Reason for termination 2005-2007	6.6%
Reason for termination since 2008	6.7%

Source: own calculation based on SAVE 2010, obs=2047.

Appendix D: Summary statistics of the 2010 SAVE survey

Variable	Mean	Std. Dev.	Min	Max
Age	45.8	13.1	22	90
Female	54%	50%	0	1
East	30%	46%	0	1
Married	61%	49%	0	1
Single	22%	42%	0	1
Widowed	13%	33%	0	1
Divorced	4%	21%	0	1
Partner	67%	47%	0	1
Employed	69%	46%	0	1
Full-time employment	44%	50%	0	1
Part-time employment	15%	36%	0	1
Unemployed	10%	30%	0	1
Retired	18%	38%	0	1
Household size	2.7	1.3	1	7
Households with children	48%	50%	0	1
Number of children	1.6	1.4	0	9
Lower secondary education	8%	27%	0	1
Higher secondary education	60%	49%	0	1
Post secondary, not tert. education	15%	36%	0	1
Tertiary education	16%	37%	0	1
Household net income (Euro/month)	2292	1666	0	25000
Total net wealth - end of 2009 (Euro)	167675	579446	-164375	12500000
Financial wealth - end of 2009 (Euro)	18656	47081	0	842952

Source: own calculation based on SAVE 2010, obs=1432, data is weighted and imputed.

Appendix E: Reasons for terminated endowment life insurance contracts

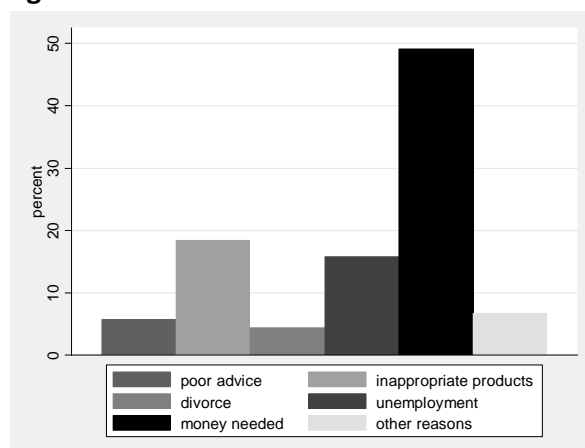
Since 2005, 12.6% of the owners of endowment life insurance contracts terminated their contract at least once (Table 11). Figure 4 shows the reasons for all terminations since 2005. Terminations due to the need of money for other issues are outstanding with almost 50%. Households seem less reluctant to liquidate an endowment life insurance compared to a Riester contract if there is need for money. The reasons might be that a household loses all the subsidies if the money is not transferred to a new Riester contract. The loss of subsidies might be worse compared to only receiving the repurchase value of an endowment life insurance. Terminations due to inappropriate products are more important compared to terminations due to poor advice. The same pattern is observed for Riester contracts, only on a higher level (Figure 2).

Table 11: Termination of endowment life insurance contracts

Termination	Obs	%	% of owners
Yes, 2005-2007	108	5.3%	8.9%
Yes, since 2008	46	2.2%	3.8%
No	1065	52.0%	87.4%
No ownership of life insurance 2005-2010*	829	40.5%	-
Total	2047	100.0%	100.0%

Source: own calculation based on SAVE 2005-2010, data is weighted and multiply imputed. *Construction based on yearly replies about the ownership of endowment life insurance contracts.

Figure 4: Reasons for terminated endowment life insurance contracts



Source: own calculation based on SAVE 2010, data is weighted and multiply imputed; multiple answers possible.

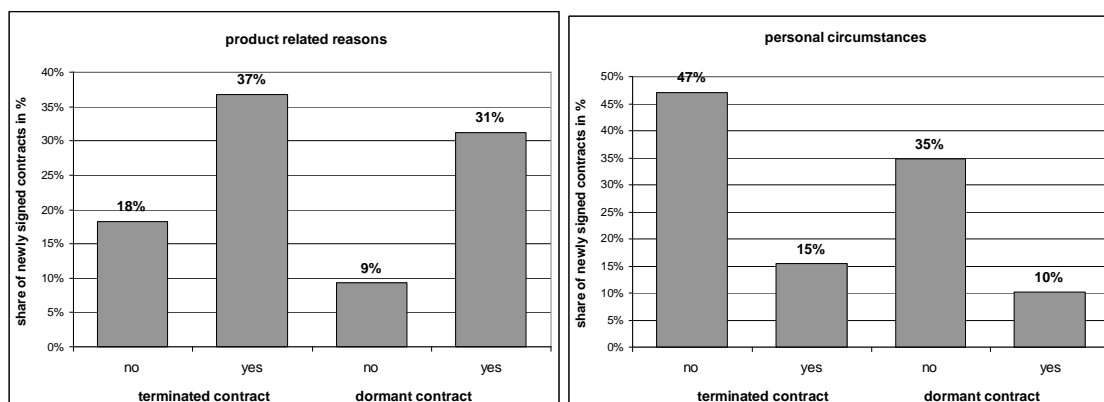
One might be concerned that the group of households having at least once owned a Riester contract and the group of households having at least once owned an endowment life insurance (2005-2010) are systematically different, and thus, it might be inappropriate to compare the termination rates between the two groups. Of the restricted sample of 1432 households 27.2% had at least once owned a Riester contract and an endowment life insurance (2005-2010). For households having at least once owned both, the termination rate for endowment life insurances (Riester contracts) is 26% (41%) due to product-related reasons. The fraction is reduced to 23% (35%) if product-related reasons are the only reason. The difference between Riester contracts and endowment life insurances stays impressively large. One reason for the lower termination rate due to product-related reasons might be that both providers and consumers have more experiences with endowment life insurances.

Appendix F: Does the reason why a contract is terminated or dormant influence the uptake of a new contract?

In this appendix we reproduce Figure 3 and Table 7 including as well households providing both groups of reasons. Figure 5 shows the fraction of households signing a new contract after a contract was terminated or dormant. Due to the fact that the group with both reasons is included, two figures are necessary according to the reason why the contract is terminated or dormant.

Figure 5 confirms the results obtained from Figure 3. If the reason for the terminated or dormant contract is product-related then the share of households signing a new contract is substantially larger. It is the other way around if the reason is based on personal circumstances. The differences in shares signing a new contract are highly significant as Table 12 points out.

Figure 5: Share of households signing a new contract according to the reason why Riester contracts are terminated or dormant



Source: own calculation based on SAVE 2010, data is weighted and multiply imputed; multiple answers possible.

Table 12: Significance of differences in shares of households signing a new contract according to the reason why Riester contracts are terminated or dormant

Implicate M	Two-sample t-test with unequal variances					Two-sample Wilcoxon rank-sum (Mann-Whitney) test				
	M=1	M=2	M=3	M=4	M=5	M=1	M=2	M=3	M=4	M=5
TERMINATED CONTRACT										
H_0 : fraction of households which signed a new contract (reason=yes) > fraction of households which signed a new contract (reason=no)										
Product-related reasons	0.8%	11.8%	0.7%	1.6%	0.8%	0.9%	11.7%	0.8%	1.7%	0.9%
H_0 : fraction of households which signed a new contract (reason=yes) < fraction of households which signed a new contract (reason=no)										
Reason personal circumstances	0.0%	0.6%	0.0%	0.1%	0.0%	0.0%	0.7%	0.0%	0.1%	0.0%
DORMANT CONTRACT										
H_0 : fraction of households which signed a new contract (reason=yes) > fraction of households which signed a new contract (reason=no)										
Product-related reasons	0.8%	1.6%	0.2%	0.9%	0.8%	1.2%	2.5%	0.3%	1.3%	1.1%
H_0 : fraction of households which signed a new contract (reason=yes) < fraction of households which signed a new contract (reason=no)										
Reason personal circumstances	0.5%	1.0%	0.3%	1.1%	0.8%	0.3%	0.9%	0.1%	1.2%	0.7%

Source: own calculation based on SAVE 2010, data is multiply imputed; multiple answers possible.

Appendix G: Pension literacy in the 2009 SAVE survey

Question 69 of the 2009 SAVE questionnaire

How high is the current contribution rate to the statutory pension system of employees subject to social insurance contributions (employer's and employee's share combined)? If you don't know the exact contribution rate, please estimate.

Contribution rate: %

Don't know, no estimation possible

Question 70 of the 2009 SAVE questionnaire

What do you think the contributions to the statutory pension system are used for?

- (i) *Only for the future pensions of today's contributors*
- (ii) *The larger part for the future pensions of today's contributors, the smaller part for the pensions of today's retirees*
- (iii) *The larger part for the pensions of today's retirees, the smaller part for the future pensions of today's contributors*
- (iv) *Only for the pensions of today's retirees*

Whereas the first question (question 69) asks for an institutional detail on the financing of the statutory pension system, the second question (70) asks how the contributions are used. Both questions should measure pension literacy in a compact way. Table 13 summarizes the answers given to question 69. Overall, 38% did not provide any answer to the question about the contribution rate to the statutory pension system. In 2009, the total contribution rate of employees and employers was 19.9% of the income subject to social-security contributions. Around 27% provided answers between 19 and 20%, which is relatively close to the true value and can be considered as correct even if they did not provide the exact value. Extending the range of correct values to +/- 1 percentage points or +/- 2 percentage points does not change the results in the multivariate analysis. The other households estimate a contribution rate which is sometimes relatively far away from the true value.

Table 13: Pension literacy: contribution rate to statutory pension system

How high is the total contribution to the statutory pension system?	Obs	%
Don't know	544	38%
<10%	63	4%
>=10% & <15%	206	14%
>=15% & <19%	160	11%
>=19% & <=20%	380	27%
>20% & <=30%	45	3%
>30%	34	2%
Total	1432	100%

Source: own calculation based on SAVE 2009 and 2010, data is weighted and multiply imputed.

Table 14 provides an overview of the answers given to question 70. Around 48% provide the correct answer that current contributions to the statutory pension system are exclusively used for today's retirees as usually the case in a pay-as-you-go pension system. The fraction of correct answers is almost the double as for question 69.

Table 14: Pension literacy: For what are current contributions to the statutory pension system used?

For what are the contributions to the statutory pension system used?	Obs	%
For the future pensions of today's contributors	76	5%
Larger part for the future pensions and smaller part for the today's pensions	123	9%
Smaller part for the future pensions and larger part for the today's pensions	548	38%
Only for the pensions of today's retirees	685	48%
Total	1432	100%

Source: own calculation based on SAVE 2009 and 2010, data is weighted and multiply imputed.

The pension literacy index is equal to zero if both questions are not correctly answered. It is equal to one if one of the two questions is correctly answered and equal to two if both questions are correctly answered. Table 15 shows the pension literacy index used in the multivariate analysis. Around 41% of all household heads were unable to provide any correct answer. 44% answer one question correctly and 15% answer two questions correctly. As a robustness test a dummy variable is created which takes the value one if at least one question is correctly answered. The effects of the multivariate analysis remain unchanged.

Table 15: Pension literacy index

No. of correct answers	Obs	%
0	587	41%
1	624	44%
2	220	15%
Total	1432	100%

Source: own calculation based on SAVE 2009 and 2010, data is weighted and multiply imputed.

Appendix H: Participation decision to own a Riester contract

The explained variable is a dummy equal to one if the household had at least once a Riester contract or still has one. Table 16 reports the determinants of owning or having owned at least once a Riester contract. The probability to own a Riester contract increases with the number of children, and decreases with age. East German households are more likely to have a Riester contract. Moreover, an increased importance of the old-age saving motive or saving due to subsidies raises the likelihood to have a Riester. These effects are in line with the literature introduced above. Higher financial wealth as well as household net income increase the probability to own a Riester contract. Finally, higher pension literacy does not significantly increase the likelihood to own a Riester contract. The other financial literacy measures of basic and advanced financial literacy show no significant impact.

Table 16: Probit: Determinants of owning a Riester contract

This table reports the effect of the logarithm of household net income, the logarithm of financial wealth and pension literacy, and various covariates on having owned/owning a Riester contract. Marginal effects (ME) are calculated at the observation level and then averaged. Marginal effects and standard errors (SE) are calculated using five multiply imputed datasets according to Rubin's Rule (Rubin, 1987, 1996). (d) indicates the change of a dummy variable from 0 to 1. Ref. indicates the reference category if various dummies are used. N=1432.

	ME	SE
Male (d)	-0.001	0.027
Age <= 35 (d)	0.181	0.043 ***
35 < age <= 45 (d)	0.140	0.040 ***
45 < age <= 55 (d)	0.076	0.036 **
Age > 55 (d)	ref.	ref.
East Germany (d)	0.081	0.029 ***
Partner (d)	-0.041	0.035
No. of children in hh	0.084	0.015 ***
Basic education (d)	0.028	0.053
High education (d)	ref.	ref.
Undergrad. edu. (d)	-0.010	0.037
Grad. education (d)	0.009	0.036
Permanent contract (d)	-0.019	0.030
Log of hh net inc.	0.051	0.023 **
Log of financial wealth	0.011	0.003 ***
Home owner (d)	0.003	0.030
Saving motive subsidy	0.012	0.005 **
Saving motive pension	0.010	0.005 *
Pension literacy	0.026	0.019
Pseudo R2	7.52%	

Source: own calculation based on SAVE 2009 and 2010, data is multiply imputed.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Appendix I: Conditional Probit: Determinants of terminated or dormant Riester contracts

This table reports the effect of the logarithm of household net income, the logarithm of financial wealth and pension literacy, and various covariates on the probability of having terminated or dormant Riester contracts. A probit is estimated conditional on having owned/ owning a Riester contract. The explained variable is a dummy=1 if a Riester contract is terminated or dormant (specification (I) & (II)); the dummy=1 if a Riester contract is terminated or dormant due to product-related reasons (specification (III) & (IV)); the dummy=1 if a Riester contract is terminated or dormant due personal circumstances (specification (V) & (VI)). The equal numbered specifications exclude the logarithm of financial wealth from the original specification. Specification (III) & (IV) include as additional control a dummy variable whether a Riester contract is terminated/dormant due to personal circumstances. Specification (V) & (VI) include as additional control a dummy variable whether a Riester contract is terminated/dormant due product-related reasons. Marginal effects (ME) are calculated at the observation level and then averaged. Marginal effects and standard errors (SE) are calculated using 5 multiply imputed datasets according to Rubin's Rule (Rubin, 1987, 1996). (d) indicates the change of a dummy variable from 0 to 1. Ref. indicates the reference category if various dummies are used. N=769 (selected sample).

	All reasons			Product-related reasons			Personal reasons			
	(I)	(II)	(III)	(IV)	(V)	(VI)	(V)	(VI)	(VI)	
	ME	SE	ME	SE	ME	SE	ME	SE	SE	
Male (d)	0.016	0.030	0.021	0.030	-0.017	0.024	0.031	0.025	0.036	0.026
Age <= 35 (d)	0.054	0.049	0.059	0.049	0.101	0.043 **	-0.042	0.042	-0.038	0.042
35 < age <= 45 (d)	0.078	0.048	0.086	0.048 *	0.065	0.046	0.039	0.037	0.048	0.037
45 < age <= 55 (d)	0.077	0.043 *	0.086	0.044 *	0.075	0.050	0.023	0.034	0.031	0.034
Age > 55 (d)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
East Germany (d)	0.085	0.030 ***	0.092	0.030 ***	0.033	0.025	0.052	0.026 **	0.059	0.026 **
Partner (d)	-0.012	0.039	-0.017	0.040	-0.043	0.030	0.007	0.036	0.002	0.037
No. of children in hh	0.027	0.015 *	0.034	0.015 **	0.027	0.011 **	0.000	0.013	0.007	0.013
Basic education (d)	0.057	0.060	0.062	0.060	-0.022	0.046	0.082	0.045 *	0.086	0.045 *
High education (d)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Undergrad. edu. (d)	0.020	0.041	0.006	0.041	-0.004	0.034	0.014	0.032	0.000	0.033
Grad. education (d)	-0.012	0.041	-0.026	0.040	-0.015	0.031	0.008	0.035	-0.007	0.035
Permanent contract (d)	-0.009	0.032	-0.013	0.033	0.035	0.022	-0.035	0.027	-0.040	0.027
Log of hh net inc.	-0.023	0.034	-0.053	0.034	0.007	0.029	-0.027	0.029	-0.058	0.029 **
Log of financial wealth	-0.011	0.004 ***		0.003	0.001	0.003	-0.011	0.003 ***		
Home owner (d)	-0.028	0.032	-0.042	0.031	-0.026	0.024	0.004	0.027	-0.012	0.027
Saving motive subsidy	-0.003	0.005	-0.004	0.005	-0.006	0.003 *	0.001	0.005	0.001	0.004
Saving motive pension	-0.002	0.007	-0.003	0.007	-0.001	0.005	-0.003	0.005	-0.004	0.005
Pension literacy	-0.054	0.022 **	-0.057	0.022 ***	-0.016	0.016	-0.034	0.020 *	-0.036	0.020 *
Other reason (d)					0.108	0.029 ***	0.135	0.034 ***	0.136	0.034 ***
Pseudo R2	0.077		0.065		0.109		0.125		0.103	

Source: own calculation based on SAVE 2009 and 2010, data is multiply imputed.

* significant at 10%; ** significant at 5%; *** significant at 1%.