Enhanced Annuities: Drivers and Barriers of Supply and Demand

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Abstract

Enhanced annuities pay higher pensions than standard annuities in case of a reduced life expectancy and are very prominent in the UK insurance market but not in other markets. The aim of this paper is to study drivers and barriers of supply and demand for enhanced annuities as well as potential market implications of their introduction, including implications for the standard immediate and deferred annuity markets, annuitization rates, and the so-called cannibalization effect, which may arise within the portfolio of standard annuities due to the enhanced annuity offering. The analysis is based on a comprehensive literature review and an empirical survey in the German life insurance market, which is also intended to offer insight for other industrialized countries with a similar situation in regard to the demographic development and an increasing need for private pensions.

1. Introduction

Enhanced annuities are immediate annuities which at the time of contract conclusion in addition to policyholder age and gender (in countries where this is still allowed) use further pricing factors[1], which lead to an enhancement of the annuity payments because of a reduced life expectancy. Suitable pricing factors can be smoking status, body-mass-index, postcode, diabetes, heart attack, cancer, stroke, multiple sclerosis or long-term care. In the US, the market share of enhanced annuities[2] of the entire immediate annuity market has increased from 2% to 10% between 2000 and 2004 with eleven providers in 2006.[3] According to an industry expert, the US and Canadian enhanced annuity markets are currently still very small with only few carriers that are active or interested in this market. In the UK, in contrast, enhanced annuities have become very prominent. After their introduction in 1995, they have experienced a significant growth, with currently twelve providers who offer enhanced annuity payments based on health and lifestyle factors and a market share of 28% of all sold annuity

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1 Also referred to as risk or underwriting factors.

2 In the US usually referred to as substandard annuities.

3 LIMRA (2006, pp. 16-17).

policies in Q4 2014.[4] A major driver of the market size of annuities and the success of enhanced annuities was compulsory annuitization of defined contribution pensions.[5] In Germany, for instance, the situation strongly differs. Compulsory annuitization is still very rare and, to the best of our knowledge, only four providers offer enhanced annuities, whereby the market share of enhanced annuities (with about 800 policies[6] sold since their introduction in 1999) is negligible. However, this situation may significantly change when government-subsidized *Riester* and *Ruerup* products[7] with compulsory annuitization as well as private standard deferred annuities sold after 2004 mature.[8]

The aim of this paper is to address this issue by analyzing the drivers and barriers of supply and demand for enhanced annuities as well as potential market implications of introducing them. This is done based on a literature review and a comprehensive survey among market participants of the life insurance market in Germany. The topic is of particular relevance against the background of the demographic development and the increasing need for private pensions, as the German population within the age band "65 and older" is expected to increase by 40% between 2011 and 2040.[9] As this situation is similar for many other industrialized countries, a study of the drivers of supply and demand for enhanced annuities as well as the results of the survey for the German market will provide valuable insight for other countries with an increasing need for private pensions. Our survey for the German market focuses on the analysis of market entry barriers, distribution barriers, medium-term market potential, implications for the deferred annuity market, competitive pressure, annuitization rates[10], and the so-called cannibalization effect[11].

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4 Dahlke (2011, p. 1), ABI (2014a, p. 4), ABI (2015, p. 1).

5 E.g., Brown and McDaid (2003, p. 24), LIMRA (2006, p. 6), Ridsdale (2012, p. 5).

6 Number of policies sold derived from interviews with current and former enhanced annuity providers (as of May 2014).

7 *Riester* and *Ruerup* products are government-subsidized deferred annuity products with compulsory annuitization components (for *Riester* products, at least 70% of the accumulated capital has to be converted into an immediate annuity or put into a withdrawal plan to be converted into an immediate annuity at a policyholder age of 85 (see Dus et al. (2005) for further details). *Ruerup* products do not include a lump-sum option. *LV 1871* (the only enhanced annuity provider at that time) indicated that the introduction of these new rules has resulted in increased sales of *Riester* annuities, whereas the sales of enhanced and standard immediate annuities have not been influenced. With 10.8 million *Riester* contracts and 1.8 million *Ruerup* contracts in-force in December 2013, these products make up a large part of the total annuity market (39.8 million contracts) (GDV (2014, p. 33))).

8 Surminski (2012, 2014). The Retirement Income Act ("Alterseinkünftegesetz") introduced a strong tax incentive for annuitization of deferred annuities sold after 2004.

9 GDV (2013, p. 84). According to estimates of the OECD, the German annuity market has the potential to become one of the world's largest annuity markets (Rusconi (2008)).

10 The share of accumulated capital of savings products (incl. *Riester* and *Ruerup* pension plans, other deferred annuities with and without lump-sum option, endowment insurance with and without the option to convert accumulated capital into a life annuity) that are converted into a life annuity after the deferral phase / accumulation period.

The existing literature on enhanced annuities primarily deals with market characteristics of enhanced annuities, implications of their introduction, and underwriting and risk classification with respect to the more advanced enhanced annuity markets in the UK, the US, and Canada. The literature on *market characteristics* includes development, size, products, customer behavior, key success factors/drivers of profitable business, underwriting methods and processes in the UK and the US/Canada (see, e.g., Ainslie (2000); Banthorpe (2013); Becker and Hurley (2011); Cooperstein et al. (2004); LIMRA (2006); Richards and Jones (2004); Ridsdale (2012)). Furthermore, a large part of the literature is dedicated to the *implications of introducing enhanced annuities* on insurer's profits, the standard annuity market (e.g., a potential cannibalization effect, standard annuity pricing), distribution channels, reinsurance, the so-called annuity puzzle, adverse selection, and the demand for annuities (e.g., Fong (2014); Hoermann and Russ (2008); Kling et al. (2014); Steinorth (2012)). Another strand of the literature focuses on *pricing and underwriting techniques*, potential pricing factors, and risk classification within the product segment of enhanced annuities (e.g., Brown and McDaid (2003); Charrington (2013); Christiansen (1983); Gatzert et al. (2012); Hauser and Palloni (2011); Horgby et al. (1997); Kwon and Jones (2006); Meyricke and Sherris (2013)).

This paper contributes to the existing literature by analyzing the key drivers and barriers of supply and demand via a comprehensive study of the existing academic and practitioner-oriented literature. Based on this, we then conduct a survey with focus on the German market, which comprises 75 market participants (45 standard annuity providers, 21 broker pools, 5 reinsurers, and 4 enhanced annuity providers), which represent 81% of the pure standard annuity providers (according to new business premium volume) and 100% of enhanced annuity providers. Our results suggest that while in the short and medium term, the market potential for enhanced annuities is expected to be limited, competitive pressure will be the key driver of supply in the market, and that especially in the long run, the relevance of enhanced annuities may considerably increase. In particular, annuitization rates are expected to strongly increase and an additional enhanced annuity offering could considerably amplify this effect. Many reinsurers have already prepared for this development by enlarging their enhanced annuity service offering within the last few years. In general, the introduction of enhanced annuities would allow formerly uninsurable persons to acquire a private annuity, which in turn might benefit the society overall (see also Gatzert et al. (2012)). However, as emphasized by our study, major risks remain as well.

[11] A potentially increasing price level necessary to maintain the level of profitability (from the established insurer's perspective) in the own immediate standard annuities business, which may occur due to the enhanced annuity offering (higher average life expectancy in the standard annuity portfolio) (e.g. Ainslie (2000), Hoermann and Russ (2008)).

The remainder of this paper is structured as follows. Section 2 reviews the literature and Section 3 describes pricing factors and the market development of enhanced annuities for the case of UK as the most relevant market for enhanced annuities. Section 4 focuses on the results of the empirical survey on drivers and barriers of demand and supply for enhanced annuities for the German market as well as potential market implications. The paper concludes with a summary and an outlook in Section 5.

2. Determinants of Supply and Demand for Enhanced Annuities: Insight from the Literature

Definition of enhanced annuities

Enhanced annuities are immediate annuities which at the time of contract conclusion in addition to gender (in countries where this is still allowed) and policyholder age use further pricing factors, which lead to an enhancement of the annuity payments because of a reduced life expectancy.[12] This definition includes enhancements due to reasons other than the insured's health status, e.g. related to location of living or lifestyle. So-called *lifestyle annuities, postcode annuities, impaired annuities,* and *immediate needs annuities,* which fulfill the conditions above, will thus be considered as a form of enhanced annuities. Suitable pricing factors can for example include smoking status, body-mass-index (*lifestyle annuities*), postcode (*postcode annuities*), diabetes, heart attack, cancer, stroke, multiple sclerosis (*impaired annuities)* or long-term care (*immediate needs annuities*).

Determinants of supply for enhanced annuities

The literature on enhanced annuities identifies several drivers and barriers of supply as laid out in Table 1. As can be seen in Table 1, the predominant barrier for introducing enhanced annuities discussed in the literature is related to the costs and risks of *underwriting and pricing* (Ainslie (2000); Brown and Scahill (2010); Cooperstein et al. (2004); Gatzert et al. (2012); LIMRA (2006); Murray and Klugman (1990); Richards and Jones (2004)). Furthermore, a potential *cannibalization effect* could prevent established insurers from introducing enhanced annuities (e.g., Ainslie (2000); Fong (2014); Murray and Klugman (1990)). The cannibalization effect here refers to a potentially increasing price level necessary to maintain the level of profitability (from the established insurer's perspective) in the own immediate standard annuities business, which may occur due to the enhanced annuity offering (higher average life expectancy in the standard annuity portfolio) (e.g. Ainslie (2000),

[12] Even though "substandard annuities" is the more general term (Gatzert et al. (2012)), in what follows we use the term "enhanced annuities" for most types of substandard annuities as is typically the case in the UK and in insurance practice.

Hoermann and Russ (2008)), thus potentially diminishing sales and possibly profits of standard annuities in a given insurance company in case the price level cannot be achieved at the market, for instance.

Table 1: Overview of selected literature on potential drivers (+) and barriers (-) of *supply* for enhanced annuities

Authors	*Approach*	*Implied barriers and drivers of supply*
Ainslie (2000)	Descriptive: Focus on UK Based on author's opinion	- Potential cannibalization effect for established players; underwriting risk (pp. 3, 42) + New player with potential to take business from established players; market potential; lack of "household name" provider (pp. 3, 12, 45)
Becker/Hurley (2011)	Descriptive: Based on authors' opinion	+ Global pressures on insurers to be fair to customers; market potential (increasing numbers of people in defined contribution plans) in many countries
Brown/McDaid (2003)	Descriptive: Focus on US/Canada Based on authors' opinion	+ Change of social security system towards individual accounts; market potential; profit situation; being a new player; mandatory annuitization (pp. 24-25, 41)
Brown/Scahill (2010)	Descriptive: Discussion of reasons for low degree of risk classification in the US/Canada Based on indications of industry sources and authors' opinion	- Underwriting costs; reserving requirements (p. 5) + Profit situation (p. 8)
Cooperstein et al. (2004)	Descriptive: Focus on US Based on authors' opinion	- Underwriting costs; underwriting risk (p. 13) + Market potential; potential future regulatory changes with respect to compulsory annuitization (pp. 12-13)
Fong (2014)	Theoretical model: Examines impact of pricing factors beyond age and gender on annuities Mortality heterogeneity and proportional hazards framework	- Cannibalization effect (in the sense that finer-grained pricing leads to gains for shorter-lived annuitants (in financial and utility-adjusted terms), whereas longer-lived annuitants experience losses) (p. 1) + Adverse selection; competitive advantage; market potential (pp. 1, 31-32)
Gatzert et al. (2012)	Theoretical model: Optimal risk classification For given price-demand dependencies study effect of classification costs and costs of underwriting risk on insurer's profitability	- Underwriting risk, classification costs (analytical analysis); regulatory issues regarding privacy requirements; risk of future mortality improvement (descriptive) (pp. 481-483) + Market potential (increase in total insured population); strong distribution; adverse selection; early market engagement with benefits of competitive advantage (descriptive, pp. 482-483)
Hoermann/Russ (2008)	Theoretical model: Propose model to address effect of enhanced annuities on insurer's profit situation and study impact of adverse selection on insurers that do not offer enhanced annuities Mortality heterogeneity based on frailty model	+ Profit situation; adverse selection; risk profile (p. 156)

Kling et al. (2014)	Theoretical model: Effects of introducing enhanced annuities on insurer's profitability Mortality heterogeneity based on frailty model	+ Profit situation; adverse selection (pp. 554-555)
Kwon/Jones (2006)	Theoretical model: Impact of several pricing factors on annuities Mortality model (data from Canadian National Population Health Survey) using discrete time Markov chain	+ More efficient management of longevity risk (p. 287)
LIMRA (2006)	Descriptive / survey: Focus on US Literature review, industry survey of nine enhanced annuity providers, interviews with their employees and distributors	- Low-volume business; low placement ratios; low awareness among customers; risk appetite; distributor limitations; underwriting limitations; competition from other financial products (p. 22) + Market potential; competitive advantage (p. 21)
Murray/Klugman (1990)	Descriptive/survey: Focus on US Survey with senior underwriting officers of 25 US life insurers	- Underwriting difficulties (21/6)[13]; lack of adequate data for pricing (19/3); lack of a market (17/5); adverse selection (17/0); potential for life extending advances (16/0); resulting uncompetitive rates on standard annuities (15/4); reserving requirements (15/0); limited profit potential (14/0); moral hazard (5/0) (p. 52)
Richards/Jones (2004)	Descriptive: Discussion of major risks in enhanced annuities in the UK Based on authors' opinion	- Underwriting risk and potential improvement of life expectancy (p. 22)
Surminski (2012, 2014)	Descriptive: Focus on Germany Based on author's opinion	- Reputation risk (p. 495); potential cannibalization effect (2014, p. 14) + Growing annuity market; tax incentives; mandatory annuitization components (in government-subsidized *Riester* and *Ruerup* products); increasing deferred annuity sales; attracting new customer segment (p. 495); competitive advantage (2014, p. 14)
Weinert (2006)	Descriptive: Focus on UK Based on author's opinion	- Lack of sufficient expertise (for non-UK resident insurers); lack of innovative and customer-needs-orientated product features; lack of sound distribution system; lack of high level of service; lack of ability to react quickly to market changes; lack of ability to create market awareness; capital requirements; longevity and interest rate risks (p. 495)

On the other side, the existing market potential (including a potentially increasing total insured population) as well as positive implications for the profit situation are seen as *major drivers* of enhanced annuity supply (Ainslie (2000); Becker and Hurley (2011); Cooperstein et al. (2004); Fong (2014); Gatzert et al. (2012); LIMRA (2006)). In the US, 25 years ago this was seen very different, since "lack of a market" was considered as one of the top three barriers of enhanced annuity supply (Murray and Klugman (1990)). Thus, a *lack of market potential* can turn into a major barrier. In addition, being a new player is seen as an advantage for an enhanced annuity launch due to the opportunity to take over business from established

13 This means that 21 participants marked this barrier and 6 participants listed it as most important.

players or competitors (Ainslie (2000); Brown and McDaid (2003)) or due to early market engagement benefits (Gatzert et al. (2012)). In addition, a potentially increasing *adverse selection* effect regarding the standard annuity book of business may represent a driver for the supply when enhanced annuities reach a relevant market share (Fong (2014); Hoermann and Russ (2008); Kling et al. (2014)).

Regulation, e.g. with respect to mandatory annuitization, capital requirements, reserving requirements, customer treatment, and social security system can both be a driver and a barrier of enhanced annuity supply, depending on the configuration (Becker and Hurley (2011); Brown and McDaid (2003); Brown and Scahill (2010); Cooperstein et al. (2004); Murray and Klugman (1990); Weinert (2006)).

Determinants of demand for enhanced annuities

The review of the (overall rather scarce) literature on the demand of enhanced annuities reveals a high degree of diversity as shown in Table 2. Several *customer-related barriers* are mentioned, such as lack of familiarity with the product, preference for instant cash instead of future annuity payments, lack of awareness of possibilities to protect themselves against longevity risk, personal wealth of individuals, improved education (of the population), and objections to single premium immediate annuities (Brown and Scahill (2010); LIMRA (2006); Weinert (2006)). On the other hand, improved product awareness and product familiarity/understanding are seen as drivers of demand (LIMRA (2006); Weinert (2006)), along with the fact that shorter-lived annuitants can gain substantially in financial and utility-adjusted terms if more pricing factors are employed (Fong (2014)).

On the *distributor side*, identification and targetization of customers, unfavorable compensation structures, and objections to single premium immediate annuities are considered as the biggest obstacles for more demand (Brown and Scahill (2010); LIMRA (2006)). However, the use of portal systems (i.e., underwriting systems that can be used by distributors to directly calculate prices of enhanced annuities depending on different enhancement factors), increased awareness and understanding of the products, liability risk in case of inadequate advice, and distributors who arrange premium financing deals and arbitrage structures are considered as demand drivers (Becker and Hurley (2011); LIMRA (2006); Surminski (2012)).

In addition, there are *external barriers*, such as strong competition with other financial products, the low interest rate environment, increasing house prices, increasing longevity, and rising stock markets (Becker and Hurley (2011); LIMRA (2006); Weinert (2006)), while external developments such as increasing divorce rates can be a driver of enhanced annuity demand (Weinert (2006)).

Table 2: Overview of the literature on drivers (+) and barriers (-) of *demand* for enhanced annuities

Authors	*Approach*	*Implied barriers and drivers of demand*
Becker/Hurley (2011)	Descriptive: Based on authors' opinion	- Substitute/competing products - (annuitization in general): Increasing longevity; falling bond yields; rising stock market + (depending on configuration): Capital and reserving requirements; commission rules; compulsory annuitization + Portal systems to simplify underwriting; pressure on financial advisers to do their best for their clients
Brown/Scahill (2010)	Descriptive: Based on authors' opinion	- (annuity demand): Personal wealth of individuals; identification and targetization of mid-income individuals, which lack expertise to evaluate and compare annuities (p. 6) + Enhanced annuities as market standard (p. 6)
Fong (2014)	Theoretical model: See Table 1	+ Enhanced annuities as market standard; shorter-lived annuitants can gain substantially in financial and utility-adjusted terms if more pricing factors are employed (pp. 1, 32)
Kling et al. (2014)	Theoretical model: See Table 1	+ Tax incentives; enhanced annuities as market standard (pp. 535, 554)
LIMRA (2006)	Descriptive/survey: See Table 1	- (US)[14]: Customers' lack of familiarity with product; competition with other financial products; unwillingness to convert liquid assets; unfamiliarity with longevity risk/longevity risk-transfer products; unfavorable compensation structures for distributors; low interest rate environment (pp. 6, 11-12) + (US): If insurers overcome consumer and distributor objections to single premium immediate annuities and thus expand market; social security reform, in particular individual accounts and mandatory annuitization; distributors arranging premium financing deals and arbitrage structures; increase of marketing to distributors and consumers to improve awareness and familiarity (pp. 8-9) + (UK): Mandatory partial annuitization of retirement accounts (p. 6)
Surminski (2012)	Descriptive: Focus on Germany Based on statement from LV 1871	+ Liability risk of brokers (p. 495)
Weinert (2006)	Descriptive: Focus on UK Based on author's opinion	- Increasing house prices (p. 22) + Improved education (population); product awareness of customers; product understanding of customers; rising divorce rates (pp. 22-23)

[14] With regards to immediate standard annuities; however, the authors mention that immediate standard annuities and enhanced annuities are similar and have many advantages and disadvantages in common.

Furthermore, developments in the field of *regulation* are deemed as highly relevant for the demand of enhanced annuities. Most important areas according to the literature include mandatory annuitization, capital requirements or reserving requirements (which can impact the price), commission rules, as well as an increasing pressure on financial advisers in regard to an adequate information of their clients (Becker and Hurley (2011); LIMRA (2006)). Furthermore, tax incentives for annuitizing and the availability of the product itself are considered as relevant drivers of enhanced annuity demand (Brown and Scahill (2010); Kling et al. (2014)).

3. Pricing Factors and Market Development of Enhanced Annuities: The Case of UK

We next describe pricing factors and the development of enhanced annuities using the UK market as an example due to its high share of enhanced annuities. Enhanced annuities were introduced in the UK around 1995[15] and experienced a strong growth during the last decade as exhibited in Figure 1. Sales increased from GBP 0.4 billion in 2001 to GBP 3.8 billion in 2013, while the share of enhanced annuities (as a proportion of all annuities) increased from 2% in 2003 to 28% in Q4 2013/2014. According to ABI (2014a), twelve providers offer enhanced annuities based on health or lifestyle factors. The open market for enhanced annuities is concentrated with three providers having a 79% market share.[16] 14 providers offer annuities in the open market.[17] According to FCA (2014, p. 21), 10 out of 22 insurers that offer annuities offer their existing pension customers enhanced annuities as well.

Enhanced annuities in the UK are based on enhancements that make use of factors related to lifestyle, health, postcode, and long-term care. The used lifestyle factors contain smoking behavior, occupation, body mass index, level and source (personal wealth vs. compulsory purchase annuity fund investment) of the premium, and marital status.[18] In the segment of health factors, more than 1,000 medical conditions are used for pricing.[19] Furthermore, long-term care (measured by so-called *Activities of Daily Living* (ADLs)) can also qualify for enhanced rates.[20]

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[15] Ridsdale (2012, p. 1).

[16] Measured by estimated premiums in 2012 (FCA (2014, p. 21)).

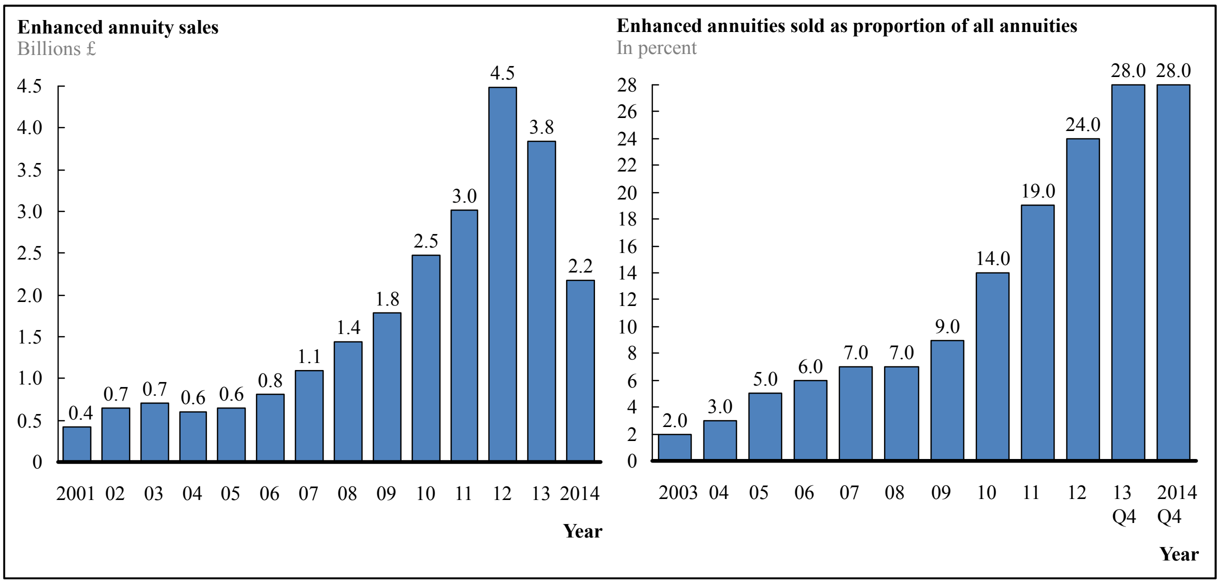
[17] ABI (2014b, p. 1).

[18] Brown and Scahill (2010, p. 6), Weinert (2006, p. 9).

[19] Weinert (2006, p. 9).

[20] Brown and Scahill (2010, p. 7). In the UK, these are referred to as *immediate needs/care annuities*.

Figure 1: Development of demand for enhanced annuities in the UK[21]



Several authors discuss further possible factors for annuity pricing in the UK. According to Banthorpe (2013), insurers are looking for impairments which are not yet covered in the market to refine their pricing structures. Woo (2013) states that the current pricing structures still have a too narrow view on mortality. By referring to several longitudinal studies of cognitive, psychological, and social factors, which have recently been published, he suggests to refine pricing of enhanced annuities by including so-called "positive human factors that sustain and extend life, and help to make individuals resilient." He further suggests that the dependency of survival on resilience increases when people get older, which implies a particular relevance of resilience for annuity pricing. Charrington (2013) believes that predictive underwriting could be useful for annuity underwriters and refers to the potential pricing factors gym membership, food shopping trends, and online computer gaming hours. Furthermore, Charrington (2013) states that pricing factors such as postcode and occupation are becoming less relevant due to an increasing frequency of house moves and job changes, and that recreational drug use could replace the lifestyle factor smoking.[22]

In March 2014, the chancellor announced substantial changes in the 2014 Budget. From April 2015 on, with some interim changes in between, people are no longer obliged to annuitize their defined contribution pensions. Towers Watson (2014) expects that providers respond to these changes with significant innovations across the pensions decumulation market. According to Banthorpe (2013), standard annuities may even disappear and all annuities will become enhanced annuities.

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[21] Sources: Towers Watson (2014, 2015), ABI (2014b, 2015).

[22] Hauser and Palloni (2011) found that ranks in US high school strongly positively correlate with subsequent survival rates.

After the budget announcement in 2014, enhanced annuity sales dropped considerably (left graph, Figure 1). Towers Watson (2015) quantifies this drop by 44% (2014 sales compared to 2013 sales) and 65% (Q4 2014 compared to Q4 2013). The market share of enhanced annuities remained unchanged at 28%.

4. Empirical Survey for the German Annuity Market

Based on the drivers and barriers of supply and demand identified in the literature review in Section 2 as well as the current and potential future pricing factors laid out in Section 3, we conducted a survey for the German annuity market to determine the potential relevance of enhanced annuities for Germany as a country with a situation similar to other industrialized countries and an increasing need for private pensions.

4.1 Background and design of the survey

Current market environment in Germany

Regarding the German annuity market structure, we identified 77 annuity providers out of 90 primary life insurers and 18 life insurers with "EEA-branch".[23] Key players include Allianz (market share of 16%), R+V, AachenMünchener, Generali, Zurich, Debeka, ERGO, Cosmos, NÜRNBERGER, and Bayern-Versicherung (market shares between 5% and 3%).[24] The sales[25] of new annuity[26] policies amounts to EUR 17.5 billion and consists of EUR 1.7 billion regular premiums and EUR 15.8 billion single premiums[27] (GDV (2014)). The demographic development in Germany with the high proportion[28] of people in the age band of 45-59 will be beneficial for increasing annuity sales in the medium term. However, this might change in the long run due to the lower proportion[29] of currently younger people. The types of available products can be characterized by the type of premium payment, waiting period, number of insured lives, nature of payouts, allocation of investment risk, and type of participation.[30]

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23 BaFin (2014a, 2014b).

24 Insurance Information Institute (2015, p. 43). Market share measured by gross written life premiums 2012.

25 New business premiums in 2013.

26 Both immediate and deferred annuities (individual business only). Figures include unit-linked annuities, but no endowment products.

27 A significant proportion of these single premiums relate to immediate annuities (http://www.gdv.de/2013/12/sofortrente-private-vorsorge-gegen-einmalzahlung/).

28 http://populationpyramid.net/de/deutschland/2015/.

29 http://populationpyramid.net/de/deutschland/2015/.

30 Von Gaudecker and Weber (2004, pp. 396-399).

Both supply and demand for enhanced annuities in Germany are very limited. There are currently four life insurers offering enhanced annuities.[31] Three of them[32] offer immediate needs annuities with enhanced annuity payments for long-term care customers, whereas one insurer[33] offers an impaired annuity with one additional lifestyle factor.

In 1999, *LV 1871* launched the first enhanced annuity product in the German insurance market with *eXtra-Rente als Sofortrente*. Besides policyholder age, pricing factors include smoking behavior, body height, body weight, blood pressure, cholesterol level, diabetes, heart diseases, cancer, Parkinson's disease, Alzheimer's disease and further diseases (e.g. stroke, cerebral hemorrhage, multiple sclerosis, kidney failure, liver ailment, chronic breathing difficulties). In 2009, *Provinzial NordWest* introduced *SofortRente Pflege*, the first immediate annuity with enhanced payments for customers with long-term care level one or higher.[34] The policy targets both new and existing customers. In 2012, *Basler* and *HanseMerkur* followed with similar products without explicit product names. *Basler* offers existing deferred annuity customers enhanced annuity payments shortly before the decumulation phase in case they exhibit long-term care level one or higher.[35] *HanseMerkur* offers enhanced annuities to both new and existing customers and uses a company-specific definition of long-term care.[36] All current enhanced annuity providers in this product segment work with a reinsurer.

In total, all current and former enhanced annuity providers sold approximately 800 policies since 1999.[37] Compared to 1.8 million annuities sold[38] (individual business only) in the German life insurance market in the year 2013, the enhanced annuities sales thus have a negligible market share,[39] even though the proportion of the population that could qualify for enhanced annuities is actually quite large. E.g., the total lifetime prevalence of diabetes mellitus is 21.9% for age band 70-79 and 13.8% for age band 60-69, and 25.6% (23.2%) of the male (female) population within the age band 45-64 smoke daily, while additional 4.6% (4.7%) smoke occasionally.[40]

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[31] Between 2005 and 2012, one further insurer (Quantum Leben) offered an enhanced annuity product in Germany based on health and lifestyle factors. 13 factors were thereby used for pricing, including smoking behavior, body height, body weight, blood pressure, and cholesterol level.

[32] Basler, Provinzial NordWest, HanseMerkur.

[33] LV 1871.

[34] First according to §§ 14 and 15 of *Sozialgesetzbuch XI* (2007 version); currently based on the 2012 version.

[35] According to §§ 14 and 15 of *Sozialgesetzbuch XI* (2011 version).

[36] The customer is in long-term care, if he/she is not able to perform at least two of six ADLs (described in the ADL catalogue).

[37] The estimated number of policies sold is based on the interviews with all current and former enhanced annuity providers (as of May 2014).

[38] Sum of annuities (both traditional and unit-linked) and pensions.

[39] GDV (2014, p. 10).

[40] Lampert et al. (2013, p. 805), Heidemann et al. (2013, p. 671).

Design and aim of the survey

The aim of this study is to analyze drivers and barriers of supply and demand for enhanced annuities and potential market implications of their introduction as well as current and potential future pricing factors. Toward this end, we conducted a computer-based survey with multiple choice questions (with the option to add additional answers), open-response questions, and in case of the multiple choice questions asked the participants to weight their responses by distributing 100 points to the selected answers. Similar answers of open-response questions were thereby aggregated to a common category. The survey was divided into four parts. Each of the four participant groups (pure standard annuity providers, enhanced annuity providers, reinsurers, broker pools) obtained a separate part of the survey with a varying number of questions depending on their answers.[41]

The questionnaire is based on the literature review of drivers and barriers of supply and demand for enhanced annuities (see Section 2), the relevant pricing factors (see Section 3), and interviews with all current enhanced annuity providers and two reinsurers. Pretests were conducted from July 1 to July 24, 2014, with the mentioned interview participants and one broker pool representative, amongst others.

Sample and survey procedure

Of the 77 life insurers (see above), 49 (45 pure standard annuity providers and 4 enhanced annuity providers) agreed to participate in the survey and the heads of life product development/product management were personally asked to fill out the questionnaire. With regards to reinsurers, out of the 29 reinsurers with business activity and 6 that have an "EEA-branch", to the best of our knowledge 9 of them offer services in the segment of non-group-internal life reinsurance.[42] We invited the heads of life product development/product management of these reinsurers with 5 agreeing to participate in the survey. In addition, we invited the heads of the division life insurance of 23 large broker pools listed in the "Maklerpool-Hitliste 2013"[43] and 13 further large broker pools. Of the 36 broker pools, 21 participated. The link to the online questionnaire was sent to the participants via a personal email invitation that contained a unique login code. After a 15-week period from July 25, 2014 to November 6, 2014, all 75 companies had completed the survey. This constitutes a completion rate of 62% for the group of pure standard annuity providers, 100% (to the best of our knowledge) for the group of enhanced annuity providers, 56% for the group of reinsurers,

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41 Primary insurers: 12-17; reinsurers: 10-11; broker pools: 8-9.

42 BaFin (2014a, 2014b).

43 www.cash-online.de/cash-hitlisten/maklerpools/maklerpool-hitliste-2013 (information about broker pools with the highest commission revenues).

and 58% for the group of broker pools (of which 52% offer enhanced annuities). In terms of new premium volume of life insurance business in 2013, the above numbers change to 81% (pure standard annuity providers) and 100% (enhanced annuity providers).[44]

For anonymization purposes, the group of pure standard annuity providers was divided into three groups (large, medium, and small size in terms of new business premium volume 2013) such that each group consists of the same number of participants (resulting ranges were a new business premium volume of less than EUR 48 million, above EUR 350 million, and in between).

4.2 Barriers of supply for enhanced annuities

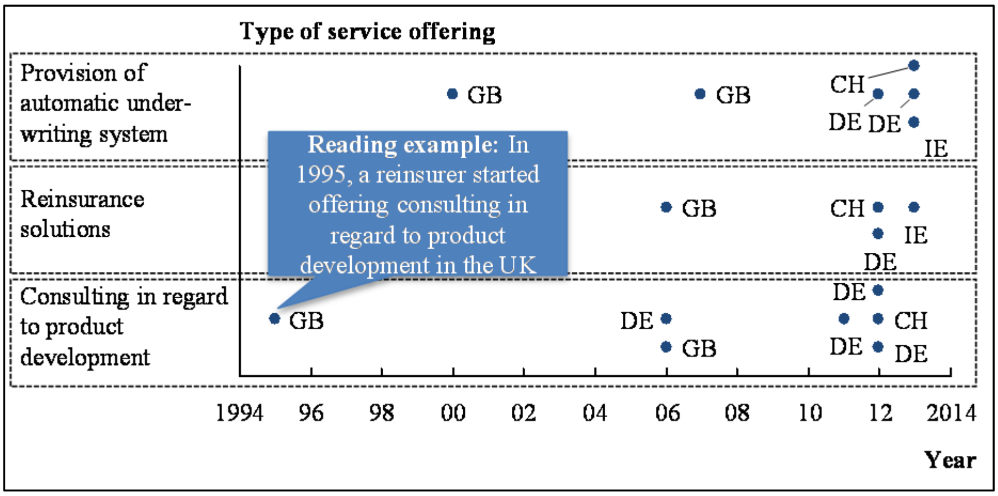
Reinsurance support

Since costs and risks associated with underwriting and pricing were named among the predominant barriers of supply in the literature (see Section 2), we asked the participating reinsurers which types of services they provide in the enhanced annuity segment, since when, and in which country. The results are displayed in Figure 2 and show that after an initial focus on the UK, in recent years reinsurers began introducing services with regards to enhanced annuities in European countries other than the UK with focus on Germany. Currently, all five reinsurers offer services in this product segment. Furthermore, two indicated that they wrote business in the UK. One reinsurer wrote business in Germany and the same applies to Ireland. Therefore, one reason for the limited number of enhanced annuity providers in Germany (at least in the past) might be that reinsurers only recently began to offer support.

To identify the most relevant barriers of supply, we asked the current pure standard annuity providers where they stand in the product development process in regard to enhanced annuities and why they have not introduced them so far. The results demonstrate that 98% have at least informed themselves about enhanced annuities. This number divides into 24% who have informed themselves about enhanced annuities but did not consider an introduction, 38% who have considered the introduction but have not systematically analyzed it and 36% who have systematically analyzed an introduction.

[44] Based on annual reports 2014. For Canada Life Assurance Europe Limited Niederlassung für Deutschland, no data on new business volume 2013 was available.

Figure 2: Introduction of enhanced annuity service offerings of four[45] participating reinsurers by type of service offering, year, and country



Notes: GB = United Kingdom, DE = Germany, CH = Switzerland, IE = Ireland

Barriers of supply from the perspective of pure standard annuity providers

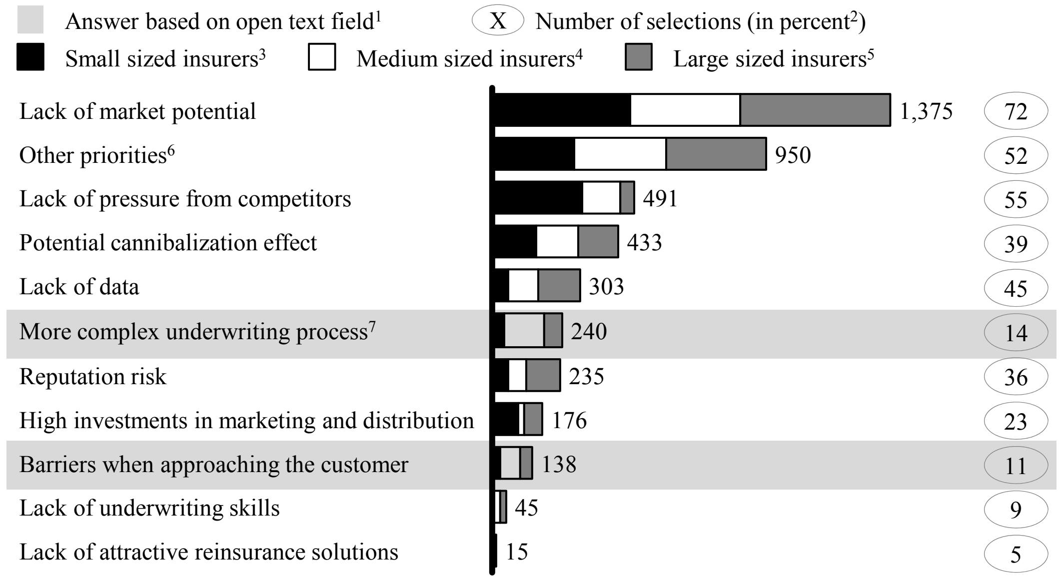
Figure 3 shows the results of the survey regarding the barriers of supply depending on the insurers' size. The two most selected reasons (according to the *number* of selections, circle on the right) are *lack of market potential* and *lack of pressure from competitors* (also related to adverse selection effects). A view at the weighted responses (points, left bar) reveals that *other priorities* is the second most important barrier. Further major obstacles are *potential cannibalization effect* (see definition in Section 2) and *lack of data*. A *lack of attractive reinsurance solutions* is not considered as a problem, which is in line with the findings in Figure 2, even though reinsurers only recently started offering support in Germany. The availability of reinsurance support in underwriting and consulting may also explain why the *costs and risk of underwriting* – in contrast to the expectations in the literature (see Section 2) – are not among the most relevant reasons against introducing enhanced annuities. One starting point for reinsurers to speed up innovation processes could be an enhanced support in product development or legal implementation requirements (see barrier *other priorities* in Figure 3).

The results above are mostly consistent with what we found in the literature, except that the second most important barrier according to our survey *other priorities*, which includes the implementation of new comprehensive legal requirements (e.g., preparations for Solvency II starting in 2016, the EU unisex-tariff requirement since December 2012, the new life insurance reform act in Germany in 2014 with new rules regarding the participation of policyholders in hidden reserves etc.), has only been mentioned in the context of regulatory barriers in the literature, while the impact of the insurers' size has not been considered at all

45 One reinsurer did not respond to this question.

so far. In particular, we find that for small insurers, the *lack of pressure from competitors* and *high investments in marketing and distribution* were more important barriers than for large insurers.

Figure 3: Reasons for not introducing enhanced annuities from the perspective of pure standard annuity providers; in points[46]



1 Instead of pre-specified answer
2 Of total number of participating pure standard annuity providers
3 New business premium volume 2013 < 48mn EUR
4 New business premium volume 2013 > 48mn EUR and < 350mn EUR
5 New business premium volume 2013 > 350mn EUR
6 The most mentioned other priorities are other product developments and legal implementation requirements, e.g., LVRG (German "Life Insurance Reform Act"), Unisex (European Union banned the use of the pricing factor "Gender")
7 Incl. barriers for contract conclusion due to health questions

Focus on supply side barriers (1): Cannibalization effect

We next investigate three barriers of supply more closely, namely *potential cannibalization effect, lack of pressure from competitors*, and *lack of market potential*. These three barriers have been shown to be of substantial relevance not only in the literature, but also in the survey results as the three most important barriers as laid out in the previous subsection.

To obtain a more comprehensive picture of the *potential cannibalization effect*, we first asked the current enhanced annuity providers if they have actually experienced a cannibalization effect in their own immediate (individual) annuity business. Two of the four enhanced annuity providers have not experienced a cannibalization effect, whereas the other two providers have not studied this effect so far, which may also be due to the low number of contracts sold so far (see description of the German market in Section 4.1).

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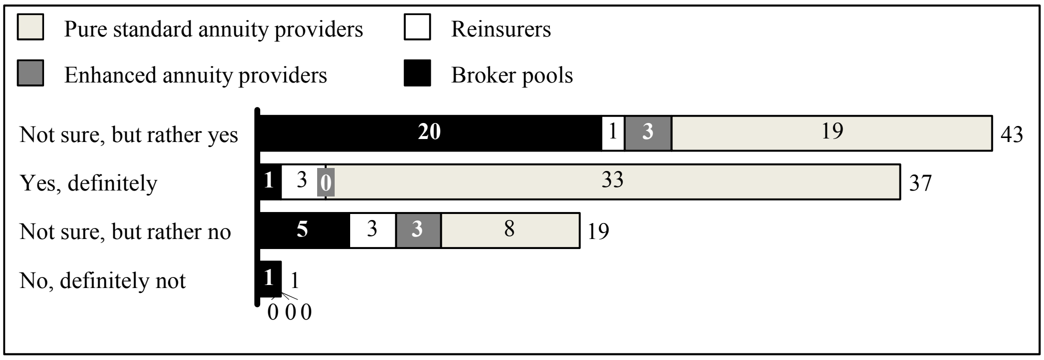
[46] Each participant who at least had informed themselves about enhanced annuities had to allocate 100 points to the reasons for not introducing enhanced annuities.

The next two questions regarding a potential cannibalization effect were based on an underlying artificial scenario[47] in which all standard annuity providers were assumed to offer enhanced annuities, i.e., enhanced annuities are a market standard. We asked all four participant groups whether – given this scenario – they would expect a cannibalization effect in their own immediate annuities business (primary insurers) or in the German immediate annuity market in general (reinsurers, broker pools). The results are displayed in Figure 4, which shows that most participants do expect the occurrence of a cannibalization effect (80%, see first two bars) and that especially pure standard annuity providers are convinced that this effect will take place.

Figure 4: Occurrence of a cannibalization effect (in percent of all 75 participants)



We next asked the participants to quantify the expected size of the cannibalization effect in this scenario by indicating how much the price level for standard annuities would have to be increased on average (in their own immediate standard annuities business) in order to maintain the profitability in this business segment for the first three years after enhanced annuities become a market standard (whereby the increase in the price level would become necessary due to the new enhanced annuity offering and the corresponding higher average life expectancy in the standard annuity portfolio). As shown in Table 3, this effect is estimated within a range of 2%-11% (arithmetic average) (0%-10% (median)) depending on the respective group of participants. Broker pools and pure standard annuity providers expect this effect to be larger than reinsurers and enhanced annuity providers. In general, these values should be interpreted as an upper bound, since the underlying scenario assumes that all standard annuity providers would also offer enhanced annuities.

47 "From tomorrow on, all immediate annuity providers additionally offer enhanced annuities in terms of an immediate needs annuity for long-term care customers and an impaired annuity (consideration of health factors). Furthermore, the possible barriers for the distribution of enhanced annuities (in regard to distributors and customers) are identical with the barriers for immediate standard annuities. This particularly concerns the level of awareness, the level of familiarity, and possible hesitations to talk about enhanced annuities during the sales process."

Table 3: Estimated size of the cannibalization effect by participants (in terms of the expected percentage increase in the price level of standard annuities due to selection effects) assuming that enhanced annuities are a market standard

Participant group (number of responses in brackets)	**Arithmetic average**	**Median**	**Standard deviation**
Pure standard annuity providers (27)	7%	5%	7%
Enhanced annuity providers (4)	3%	3%	3%
Reinsurers (3)	2%	0%	2%
Broker pools (19)	11%	10%	13%

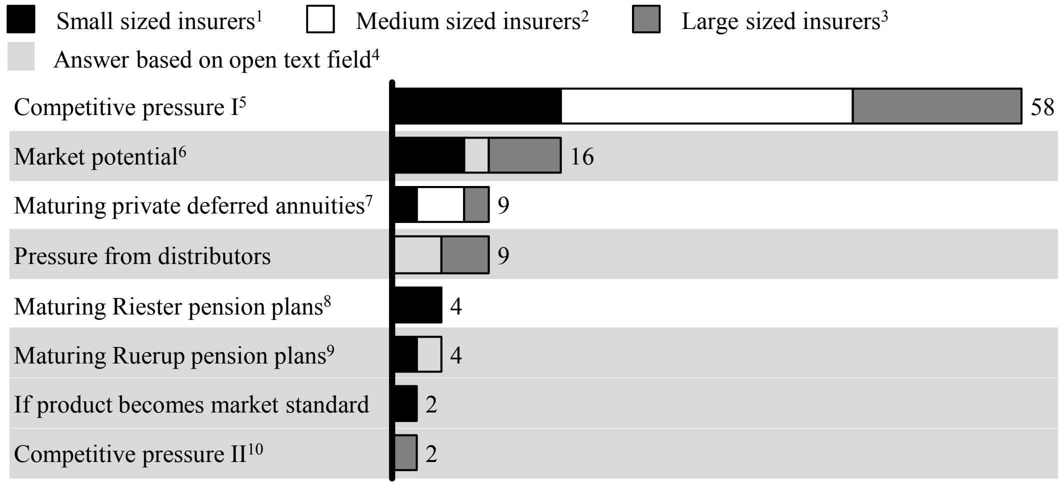
Focus on supply side barriers (2): Lack of competitive pressure

We next focus on the next most relevant barrier of supply for enhanced annuities in Figure 3, the *lack of pressure from competitors*, by asking the pure standard annuity providers regarding their current plans regarding a potential product launch within the next three years and in which situations they would definitely introduce enhanced annuities.

The survey results demonstrate that most insurers currently do not plan an introduction within the next three years, with 22% stating that they will definitely not introduce enhanced annuities. However, the majority (74%) is not sure ("not sure, but rather no" (67%); "not sure, but rather yes" (7%)), and 2% definitely plan an introduction.[48] Figure 5 shows that this situation is likely to change significantly in case of competitive pressure, since 58% of the pure standard annuity providers would introduce enhanced annuities in case three of the five largest life insurers start offering enhanced annuities. Against the background of the 9% insurers who will certainly or probably introduce enhanced annuities, it is thus not clear yet if enhanced annuities will remain a small niche product in the German market or if a trigger point of competitive pressure will be met, which would lead to a significant market movement. This is also consistent with the literature, which expects negative adverse selection effects for pure standard annuity providers in a situation where other insurers introduce enhanced annuities.

[48] 2% did not respond.

Figure 5: Situations in which insurers would definitely introduce enhanced annuities; in percent of the total number of responses by pure standard annuity providers



1 New business premiums 2013 < 48mn EUR 2 New business premiums 2013 > 48mn EUR and < 350mn EUR
3 New business premiums 2013 > 350mn EUR 4 Rather than pre-specified answer possibilities
5 When three of the five largest life insurers (measured by new business premium volume) introduce enhanced annuities
6 When it appears that there is a large market potential
7 When a large proportion of the after 2004 sold standard private deferred annuities matures
8 When a large proportion of government-subsidized Riester pension plans matures
9 When a large proportion of government-subsidized Ruerup pension plans matures
10 When two direct competitors introduce enhanced annuities

Focus on supply side barriers (3): Lack of market potential

Figure 3 revealed that *lack of market potential* is the most important obstacle for pure standard annuity providers to launch enhanced annuities. To analyze this issue in more depth, the four participant groups were asked regarding their expectations of the future development of the immediate, deferred, and enhanced annuity market in the medium run (five years) (Table 4) as well as future annuitization rates in the long run (Table 5) in case of two scenarios: Scenario A, which assumes the current market situation, and Scenario B, where enhanced annuities are assumed to be a market standard, i.e., all current pure standard annuity providers are assumed to additionally offer enhanced annuities (see previous subsection on cannibalization effect).

The results displayed in Table 4 are in line with the participants' assessment regarding a lack of market potential, since pure annuity providers expect the *immediate annuity market* to merely increase from 7% to 11% (arithmetic average) in total within the next five years if enhanced annuities were a market standard (compare Scenario A and B), but thereby still indicate that additional customers can be attracted by means of enhanced annuities. Reinsurers expect a similar development, whereas the other two participant groups are considerably more optimistic with respect to the positive effects of a market-wide introduction of enhanced annuities. Broker pools expect that the total market growth of immediate annuities in five years increases from 13% to 29% on average, and enhanced annuity providers expect an increase from 15%/10% to 104%/13% (arithmetic mean/median). However, the standard deviation of all participant groups, but especially the one for enhanced annuity providers, shows a high degree of uncertainty with respect to the future immediate annuity market in both scenarios.

Table 4: Expectations regarding the future development of the immediate, deferred, and enhanced annuity market (individual business only) in five years (arithmetic mean/median (standard deviation))

Participant group (number of responses in brackets)	**Scenario A** (“today’s market situation”)	**Scenario B** (“everyone offers enhanced annuities”)
Expected development of the *immediate annuity market*		
Pure standard annuity providers (37)	7% / 5% (8%)	11% / 10% (11%)
Enhanced annuity providers (4)	15% / 10% (22%)	104% / 13% (171%)
Reinsurers (5)	7% / 5% (7%)	12% / 15% (7%)
Broker pools (19)	13% / 7% (21%)	29% / 15% (33%)
Expected development of the *deferred annuity market*		
Pure standard annuity providers (37)	5% / 5% (10%)	7% / 5% (11%)
Enhanced annuity providers (4)	2% / -1% (10%)	8% / -1% (25%)
Reinsurers (5)	-1% / -3% (10%)	2% / 1% (11%)
Broker pools (19)	-9% / -10% (11%)	8% / 10% (16%)
Expected *share of enhanced annuities* of immediate annuity market		
Pure standard annuity providers (39)		10% / 5% (15%)
Enhanced annuity providers (4)		22% / 10% (25%)
Reinsurers (5)		11% / 15% (5%)
Broker pools (18)		20% / 15% (17%)

A look at the expectations regarding the *deferred annuity market* shows a similar picture. All participant groups expect that the introduction of enhanced annuities as a market standard would be beneficial in regard to the sales of deferred annuities. However, this positive effect for the deferred annuity market is considerably less pronounced than in case of the immediate annuity market according to most participant groups. Finally, the average estimates of the four groups with respect to the *market share of enhanced annuities* (of the immediate annuity market) in five years in case of a market-wide product launch lie between 10%-22%, whereby enhanced annuity providers and brokers expect a share of 22% and 20%, respectively, while pure standard annuity providers and reinsurers expect 10% and 11%, respectively.

The expected long-term development of *annuitization rates* looks quite different (Table 5). We first asked the participants to estimate the current annuitization rates in 2013 (of own business in case of primary insurers; the German life insurance market in case of reinsurers and broker pools). Secondly, we asked them about their expectations regarding the future development of these annuitization rates against the background of new tax regulations and the introduction of *Riester* and *Ruerup* products with compulsory annuitization components (see Introduction), which contribute to the expected increasing annuity business in both scenarios in Table 4. Table 5 shows that the average estimated annuitization rates for 2013 lie between 17% (reinsurers) and 29% (broker pools) and are expected to increase within the next ten years to 29% and 38% given today's market. Furthermore, all groups of survey participants expect that enhanced annuities as a market standard would considerably contribute to increasing annuitization rates up to 37% (reinsurers), 40% (annuity providers), or 50% (broker pools) (on average).

Table 5: Estimated annuitization rates (own business (primary insurers)/German life insurance market (reinsurers, broker pools)) (arithmetic mean/median (standard deviation))

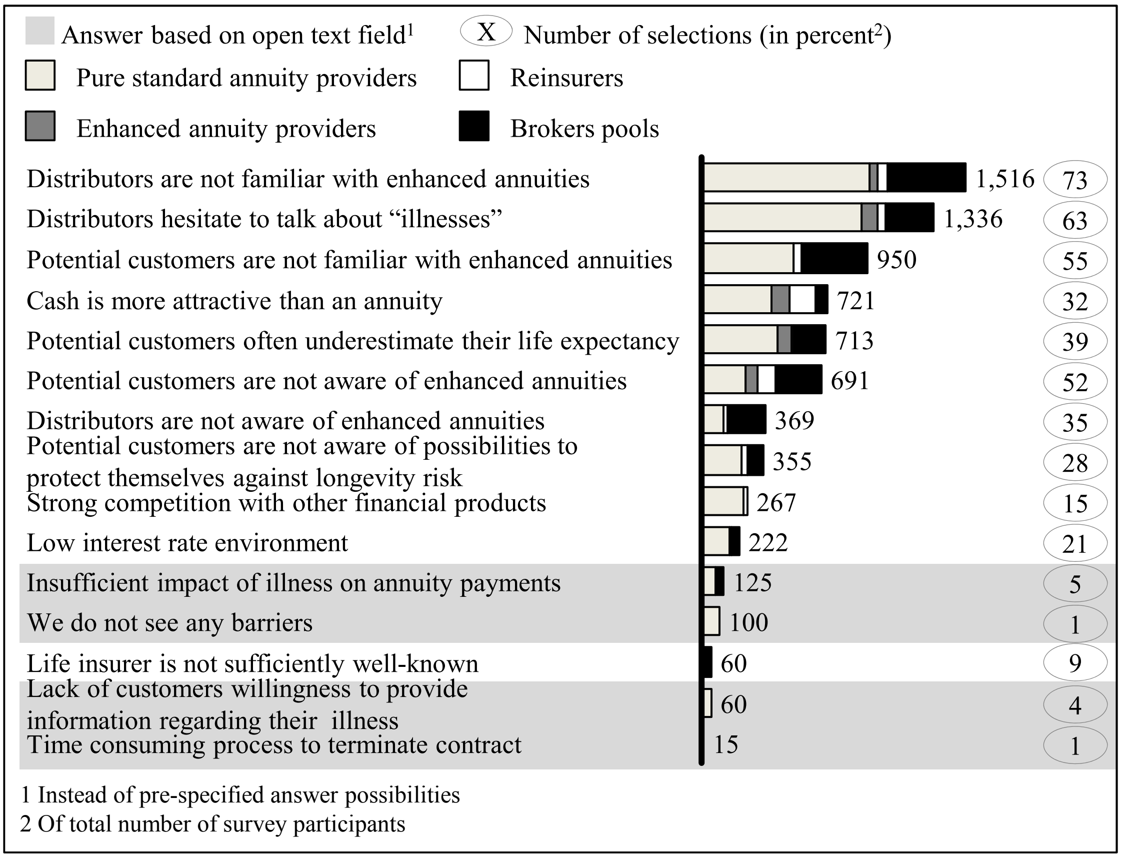
Participant group (number of responses in brackets)	**2013**	**Scenario A 2023** ("today's market situation")	**Scenario B 2023** ("everyone offers enhanced annuities")
Pure standard annuity providers (33)	24% / 25% (17%)	33% / 25% (16%)	40% / 35% (18%)
Enhanced annuity providers (4)	20% / 25% (9%)	32% / 35% (11%)	40% / 45% (17%)
Reinsurers (5)	17% / 15% (4%)	29% / 25% (5%)	37% / 35% (12%)
Broker pools (19)	29% / 25% (23%)	38% / 35% (23%)	50% / 55% (21%)

4.3 Barriers of demand for enhanced annuities

Following the analysis regarding barriers of supply, we further investigated barriers regarding the demand and the distribution based on the literature review. Figure 6 shows that from an aggregated perspective, the two most relevant barriers are distributor-related, followed by customer-related barriers. This particularly concerns the familiarity with the product and the hesitation to speak about the illnesses with their clients.[49] However, we also observe differences in the responses depending on the participant group. Reinsurers, for instance, see the largest barriers on the customer side (*cash is more attractive than an annuity* and *potential customers are not aware of enhanced annuities*).

[49] The latter might be a German phenomenon and can have a different degree of importance in other countries/cultures.

Figure 6: Barriers for the demand and distribution of enhanced annuities[50] from the perspective of pure standard annuity providers, in points[51]



4.4 Current and future pricing factors

Finally, focus is laid on current and potential future pricing factors on the supply side and thus the question how the future enhanced annuity market might look like. With respect to the present situation in Germany where only few pricing factors are used (Section 4.1) as compared to the UK (Section 3), the survey shows that most enhanced annuity providers have informed themselves about further pricing factors (75%), but none has systematically analyzed it. The predominant reason is *lack of market potential* (273 out of 300 points[52]), while *lack of data* (20 points) and *lack of competitive pressure* (7 points) are considered as minor obstacles.

To provide an outlook regarding potential future pricing factors, we further asked the pure standard annuity providers, which factors they would use in case of introducing enhanced

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50 Expected barriers in own business (pure standard annuity providers/broker pools which do not distribute enhanced annuities), observed barriers in own business (enhanced annuity providers/broker pools which distribute enhanced annuities), general barriers (reinsurers).

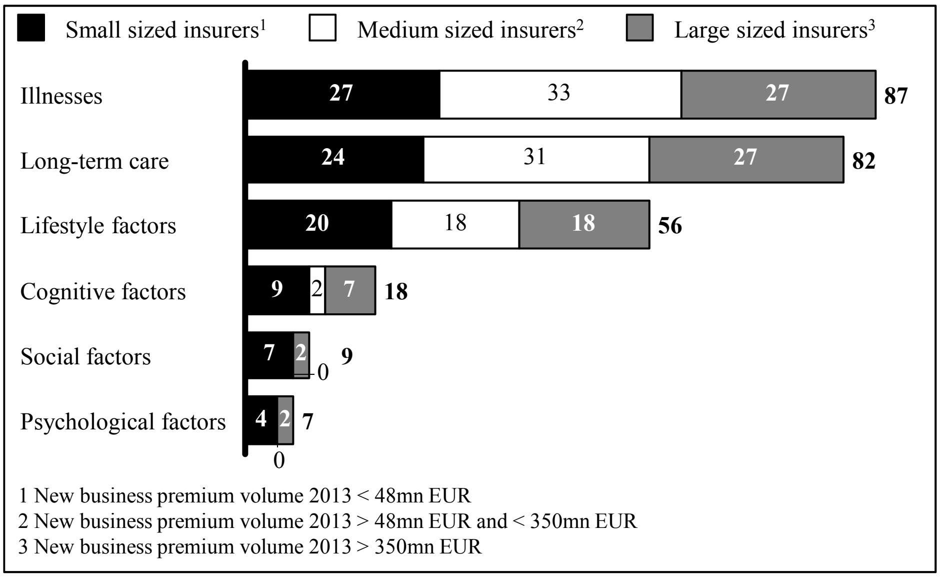
51 Each participant had to allocate 100 points to the barriers.

52 Each participant who at least had informed themselves about further pricing factors had to allocate 100 points to the reasons for not introducing further pricing factors.

annuities. Figure 7 shows that most insurers would use *illnesses*[53] (87%) and *long-term care* (82%). 56% would include *lifestyle* factors, and a considerable portion would use the innovative *cognitive* (18%), *social* (9%), and *psychological* (7%) factors. The largest share of the categories *cognitive*, *social*, and *psychological* stems from small sized insurers. Small sized insurers thus appear to be more open to innovation. This is also consistent with what has happened both in the UK and in Germany, where small sized insurers entered the enhanced annuity market first.[54] Such first-/early-mover strategies in regard to enhanced annuity market entries offer several potential advantages for insurers, e.g., the ability to earn economic profits (Lieberman and Montgomery (1988, p. 41)), market share (McShane et al. (2012, p. 1137)) or by taking business from established players. This could also be a driver of supply despite the current "wait-and-see" strategy of most insurers (see Section 4.2), as an industry expert indicated that the enhanced annuity providers with the currently highest market shares in the UK entered the market early.

The predominant usage of *illnesses*, *long-term care,* and *lifestyle* factors is consistent with the observations in the UK and the German market (Sections 3 and 4.1).

Figure 7: Pricing factors potentially used by standard annuity providers in case of introducing enhanced annuities



53 "Illnesses" can encompass a wide range of medical conditions, which are not limited. In the UK, e.g., more than 1,000 medical conditions (mainly cancer, heart disease, stroke, kidney failure, major organ transplant) qualify for enhanced annuities (Weinert (2006, p. 9)).

54 The newly founded Pension Annuity Friendly Society (PAFS) in the UK; the rather small insurer LV 1871 (less than one percent life market share in 2013 (measured by new business volume)) in Germany.

5. SUMMARY AND OUTLOOK

The aim of this paper is to contribute to the literature by studying drivers and barriers of supply and demand for enhanced annuities and to investigate potential implications of a market-wide introduction of enhanced annuities with focus on the standard immediate and deferred annuity business, annuitization rates, and a potential cannibalization effect. The analysis is based on a comprehensive literature review as well as an empirical survey for the German market.

We find that while the literature points out various drivers and barriers of supply and demand for enhanced annuities, it is still rather scarce. Moreover, there is a lack of empirical studies dealing with the impact of enhanced annuities on the standard annuity business, for instance. Mostly, descriptive approaches are used and only few articles use theoretical models to examine demand and supply or the impact of enhanced annuities. Our empirical survey for the German market confirms several of the barriers while others are not as pronounced as described in the literature. For instance, we find that the two predominant barriers of supply are the perceived lack of market potential and other priorities (related to other product developments and new legal requirements), whereas the literature mainly focused on the risk of underwriting and pricing, which is possibly perceived as a minor barrier due to the available support by reinsurance companies. Further important barriers of supply are a potential cannibalization effect and a lack of competitive pressure.

With respect to barriers of demand, we find that distributor-related barriers are most relevant from the participants' perspective, followed by several customer-related barriers, which is mostly in line with the (scarce) descriptive literature. The most important barriers relate to the insufficient familiarity with the product, the hesitation of distributors to talk about the topic "illness", and that cash is more attractive for consumers than a lifelong annuity, which is also in line with customers' underestimation of their own life expectancy.

In regard to potential market implications, the survey indicated that a market-wide introduction of enhanced annuities could contribute to a stronger growth of the overall annuity market in the medium run and even imply a considerable increase in annuitization rates in the long run as compared to the situation of today with only few enhanced annuities providers.

Several initiatives from both the regulators and the insurers could facilitate the sales of enhanced annuity products and help to achieve growth in this market segment. In regard to regulatory requirements, further mandatory annuitization requirements and a lower intensity of legal implementation requirements for product development departments (see Sections 3 and 4.2) would likely contribute to a stronger growth. In regard to insurers, further introductions of enhanced annuities (potentially with enhanced support by reinsurers), could initiate a chain reaction in regard to further launches by other insurers (see Section 4.2). Furthermore, insurers could intensify distributor trainings in order to overcome the major barriers of enhanced annuity demand (see Section 4.3) and develop further innovations in the decumulation phase. Whether enhanced annuity products will ever achieve the same prominence in the German insurance market as in the UK market will strongly depend on these factors, and first observations will be possible once larger portions of *Riester* contracts reach the annuitization phase. Early movers may thereby benefit from competitive advantages.

Future research should further analyze the market potential of enhanced annuities, e.g., by focusing on the consumers' perspective, and also focus on price-demand relationships for both the enhanced annuity risk classes and the resulting standard annuities. In addition, possible cultural differences should be taken into account as potential barriers for the demand of enhanced annuities, as customers and distributors in certain countries may be more reluctant to talk about health issues or submit their health record for underwriting purposes. Furthermore, the potential cannibalization effect should be further investigated empirically or theoretically to gain deeper insight, also regarding the consequences for the standard annuities market. Moreover, future research could examine potential first-/early-mover advantages for insurers in regard to enhanced annuity market entries, which could be an important further driver of supply.

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