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HOW DO PRICE PRESENTATION EFFECTS INFLUENCE CONSUMER CHOICE? THE CASE OF LIFE INSURANCE PRODUCTS

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ABSTRACT

An attractive life insurance product design becomes increasingly important due to demographic change and a declining confidence in state-run pension schemes. Most life insurance contracts are often offered with investment guarantees embedded in the savings part of the product. In addition, regulatory authorities and consumers currently ask for more cost transparency with respect to product components (e.g., risk premium for death benefits, savings premium, cost of investment guarantee) including administration costs. In this regard, it is important for insurance companies and regulators to know to what extent the way of presenting the prices of an offer affects consumer choice. The aim of this paper is to measure the effects of different forms of presenting the price of life insurance contract components and especially of investment guarantees on consumer evaluation of this product. This is done by means of an experimental study and by focusing on unit-linked life insurance products. Our findings reveal that contrary to, for example, consumer products, there is no effect of price bundling and price optic on consumer evaluation and purchase intention for life insurance products. However, there is a significant moderating effect of consumer experience and price perception on this relationship.

Keywords: Behavioral Insurance, Investment Guarantees, Unit-linked Life Insurance, Price Presentation, Experimental Study

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1. INTRODUCTION

Due to a declining confidence in state-run pension schemes, as well as a considerable demographic change in most western countries, life insurance products offered by private insurance companies become increasingly important for old-age provisions. Besides a term life insurance component paying a death benefit, most life insurance contracts contain investment guarantees in the savings part of the product. In particular, investment guarantees in unit-linked life insurance policies typically assure that a minimum amount is remunerated to the consumer, even if the value of the mutual fund falls below a predefined guarantee level. Such investment guarantees can be of substantial value, especially regarding the riskiness of the underlying fund and the duration of the contract. Hence, risk adequate pricing and risk management of this kind of options are crucial from the viewpoint of an insurance company. Furthermore, current regulatory efforts in most countries of the European Union expect insurance companies to provide a more detailed price presentation, including administration costs, to their consumers. Hence, the aim of this paper is to derive information about possible changes in the consumers' willingness to purchase insurance whenever a detailed price presentation of life insurance contracts is provided by the insurer.

In this paper, we examine whether different forms of price presentations – i.e. a single up-front payment for the guarantee, monthly payments, or the guarantee price defined as an annual percentage of the value of the mutual fund – will influence consumers' choice to purchase an investment guarantee. Furthermore, we allow for different levels of product bundling. In this context, identical products are offered to the participants of our experimental study, showing the total price of the product versus viewing the prices of all individual product components (i.e., term life insurance costs, investment guarantee costs, and administration costs). This way, we are able to investigate to what extent the different price presentations, namely price bundling and price optic, exert an influence on consumers' decisions and on their evaluation of the product.

The experimental analysis has been conducted using an online survey for a Swiss panel, in the German and French speaking part of Switzerland that is representative with regard to region and gender. The survey was divided into three parts. In the first part, a product card has been shown to the participants for evaluation. Using a 3x4 factorial between-subject design, every participant received only one (of the twelve) product offers for evaluation, such that each card was answered by around 55 respondents. Based on this representative sample, we tested four hypotheses. First, we examine whether positive consumer evaluations of an investment product augment in relation to the price information being bundled or abstract. Second, we study the moderating effect of consumers' experience with insurance or investment products on the relationship between price presentation and consumer evaluation. The third hypothesis tests whether the purchase intention of the consumers increases in relation to the price information being abstract or bundled. The fourth hypothesis investigates the predictive power of consumer experience and price perception on their purchase intention.

To test these hypotheses regarding consumer evaluation, in a first study, we apply multivariate analyses of variance (MANOVA) models, based on consumer satisfaction and likelihood of recommending. In the second study, we enhance this relationship by a moderated model, using consumer experience with insurance or investment products as a moderator and have a closer look at the basic principles of this relationship. In the third analysis, we use logistic regressions in order to assess the impact of several factors on consumers' purchase intention. In addition, principal component analyses are conducted with respect to the "Consumer Experience" moderating variable and the "Price Perception" factor.

The paper is structured as follows. Section 2 provides a survey of the relevant literature and theoretical background, based on which we derive four hypotheses as laid out in Section 3. The pricing framework of the unit-linked life insurance contract is presented in Section 4, using actuarial and financial concepts for pricing the different contract

component and including mortality risk. Section 5 presents the framework of the experimental study and details regarding the representative sample for Switzerland. The results and hypothesis tests are presented in Section 6, and the conclusions are presented in Section 7.

2. LITERATURE OVERVIEW

Behavioral insurance

The focus of the previous literature stream on behavioural insurance is mainly on the effects of insurance company insolvency risk on consumers' willingness to pay (WTP). We extend this research by investigating consumer choice of a unit-linked life insurance product and a minimum interest rate guarantee, under different price presentation effects. Based on research examining WTP for insurance products with default probability (e.g., Wakker, Thaler, and Tversky, 1997; Zimmer, Gründl, and Schade, 2008; Zimmer, Schade, and Gründl, 2009) and on the WTP for guarantees in unit-linked life insurance contracts in general (Gatzert, Huber, and Schmeiser, 2011), we assume that price presentation has a substantial impact on consumer evaluation of unit-linked life insurance products.

Prospect theory, framing, and mental accounting

Depending on the perspective in view, the value of guarantees in unit-linked life insurance contracts may differ: While an insurer calculates the price for an investment guarantee assuming a duplication of future cash flows (e.g., using risk-neutral valuation techniques), consumers may not be able to replicate future cash flows (here: individual claims) to the same extent as the insurer and may thus assess the value of investment guarantees based on individual time and state preferences. Thus, when it comes to evaluating different insurance product offers, consumer evaluation may be quite different

from financial theory. To elicit consumer evaluation and purchase intention, we conduct an experimental study, explained below.

When making decisions, particularly regarding risky or probabilistic choices, individuals use different mental models, which often contradict the basic principles of expected utility theory. The literature stream based on the theoretical breakthrough of Kahneman and Tversky's prospect theory (Kahneman and Tversky, 1979) examined this phenomenon in detail and detected many biases and heuristics (for an overview, see, for instance Camerer and Loewenstein, 2003). Especially the purchase of insurance products leads to a substantial amount of irrational behavior, evoked by several mental models, inter alia: loss aversion, i.e., losses loom larger than corresponding gains (Tversky and Kahneman, 1991), overconfidence, for example by overestimating own knowledge and ability to control events while underestimating risks (Barberis and Thaler, 2005), risk perception (Slovic, 1972; Slovic et al., 1977), or an overestimation of probabilities (Johnson et al., 1993).

In the case of presenting price information, especially framing, i.e., the reliance on how information is presented (Tversky and Kahneman, 1981, 1986; Kahneman and Tversky, 1984), and mental accounting, i.e., the dividing of current and future assets into separate, non-transferable portions (Thaler, 1999), play an important role in the evaluation of product offers. Framing the same problem differently leads to different perceptions of the decision problem and evaluation of probabilities and outcomes (Tversky and Kahneman, 1981). This irrational behavior also proves true in the financial decision making process with risky or probabilistic choices (Johnson et al. 1993, Wakker et al. 1997). Thus, presenting price information of the components of an insurance contract differently may lead to a different evaluation of the product, even though all products have identical present values.

Furthermore, mental accounting plays an important role in consumer evaluation of price information. Mental accounting builds up on the properties of prospect theory and its value function, introduced by Kahneman and Tversky's prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1991, 1992). According to its value function *v*, which is concave for $x > 0$ ($v''(x) < 0$), convex for $x < 0$ ($v''(x) > 0$), steeper for losses than for gains, and steepest at the reference point (hence, $v'(x) < v'(-x)$ for $x \geq 0$), it predicts that gains (losses) have a higher (lower) value if separately presented, instead of in a combination (Thaler, 1985, 1999). Thus, the following two inequalities specify how consumers mentally account for multiple gains (1) and multiple losses (2)

$$[v(x)+v(y)] > [v(x+y)] \qquad \text{for all } x, y > 0, \tag{1}$$

$$[v(-x)+v(-y)] < [v(-(x+y))] \qquad \text{for all } x, y > 0, \tag{2}$$

where *x* and *y* are gains (respectively losses), and $v(x)$ and $v(y)$ are the value of the gains (respectively losses) (Thaler, 1985). The two arguments show that in the case of gains (Equation (1)), where the value function is concave and more flat, consumers prefer to separate two positive events, thus obtaining several small gains rather than uniquely the whole sum. In the case of losses (Equation (2)), where the value function is convex and steeper, consumers prefer one single loss rather than several small losses of the same amount. Particularly, Equation (2) has to be considered in our model framework, since we assume that premiums paid for insurance contracts (and especially for investment guarantees) are perceived more as losses than as gains or savings. This implies that consumers' evaluation of the product offers should be more positive for products with a bundled price presentation than for products with a debundled price information, i.e., one showing the prices of the several contract components.

Price presentation and price bundling

Consumers are generally sensitive to price presentation effects and the framing of price information (partitioned vs. consolidated prices), see, for example, Chakravarti et al, 2002; Drumwright, 1992; Johnson et al., 1999; Puto, 1987; Yadav and Monroe, 1993. Thus, price presentation plays an important role in pricing policies regarding the subjective perception of consumers (Diller, 2000; Diller and Herrmann, 2003).

Bundling, i.e., packaging two or more services or products, often for a special price (Guiltinan, 1987), is used in many industries as a successful marketing strategy. Academic literature investigated mainly how products and services can be optimally combined (Hanson and Martin, 1990; Bell, 1986; Guiltinan, 1987). Furthermore, psychological aspects have been examined, particularly regarding the evaluation process of bundled products, such as, for example, anchoring and adjusting models (see for example, Gaeth et al, 1991; Yadav, 1994). The theoretical basis for the psychological research stream builds up on the above explained prospect theory and mental accounting and uses reference price concepts. Additionally, academic literature emphasizes the consumer's evaluation of bundled offers and the importance of price presentation and framing effects (Johnson et al. 1999; Mazumdar and Jun, 1993; Yadav and Monroe, 1993; Yadav, 1994).

However, the research stream on price bundling often focuses on the effect of embedded price discounts and the perceived savings (for an overview, see, for example, Krishna et al. 2002). Chakravarti et al. (2002) and Morwitz et al. (1998) investigate the effects on consumers’ evaluation of partitioned prices, i.e., of separate prices for each component (vs. consolidated prices, i.e., a single, equivalent price) and show that there is a lower price perception and a higher repurchase intention if price information is partitioned. Contradictory to these studies are the results of Beshears et al. (2010). Investigating retirement saving products, they find that an increase of cost transparency, which

corresponds to partitioned price information, does not affect portfolio choice. Thus, the above findings may differ in the case of long-term saving products, such as, for example, life insurance products.

Aside from this study, little research has been conducted to investigate the role of price presentation and price bundling in long-term saving products, and particularly in unit-linked life insurance products and their effect on consumer evaluation. An overview of heuristics and biases for these products is presented by Benartzi and Thaler (2007). Thus, in our study, we aim to investigate whether or not consumers' evaluations vary if the price information of a life insurance contract is differently presented and the sum of the bundled components and the total price are exactly equivalent. Hence, we analyze whether there is a price presentation format (regarding price framing, price bundling) that consumers prefer in the case of long-term saving products.

3. MODEL AND HYPOTHESES

Based on the previously presented literature and theoretical background, we derive the following model framework (see Figure 1) and deduce several hypotheses. Our experimental framework aims to measure whether the presentation of the price information (bundle vs. optic) has an influence on consumer evaluation and purchase intention. In doing so, we provide three studies: The model setup for Study 1 consists of two independent variables and one dependent variable. The independent variables are bundling of price information (bundled; partially bundled; debundled price) and price optic. The price optic factor ranges from a "no-additional-costs version" (since the product offer contains no guarantee for comparative reasons) to a single up-front guarantee payment, monthly guarantee payments, and guarantee costs as a percentage of the annual fund value. Thus, the price optic variable becomes increasingly more abstract. These two independent variables constitute the product offers that the participants of the survey received for evaluation. Thus, the basis for the model framework is a 3x4 factorial

design. The dependent variable is consumer evaluation of the offer, which is measured with two different items (see, e.g., Johnson et al., 1999), both on a five point scale, namely:

a) The perceived satisfaction with a product
b) The perceived likelihood of recommending the product to others

In the second study, we enhance the examination of this relationship with a moderated model, using consumers' experience with insurance or investment products as a moderator. To gain a deeper understanding of the basic relationship, we thereby only focus on the two extreme categories, namely bundled vs. unbundled price presentation and without guarantee vs. with guarantee.

The model set-up for Study 3 consists of four predictors, including the above described price bundling and price optic factors of Study 1, as well as two additional predictors, namely the consumers' experience with insurance or investment products and the consumers' price perception of the offer. The dependent variable is the consumers' purchase intention of the product, measured on a binary scale. Thus, we use logistic regressions to assess the impact of the predictors on consumers' purchase intention.

In this context, the following hypotheses are assumed and the model is illustrated in Figure 1:

H1a: Positive consumer evaluations of an investment product augment as price information is bundled. This comprises i) the perceived satisfaction with the product and ii) the perceived likelihood of recommending the product to other people.

H1b: Positive consumer evaluations of an investment product augment as price information is abstract. This comprises i) the perceived satisfaction with the

product and ii) the perceived likelihood of recommending the product to other people.

The alternative hypotheses predict that the bundling or abstracting of price information have no effect on consumer evaluations.

H2a: Consumer experience with insurance or investment products moderates the effects of bundling on consumer satisfaction. Specifically, experienced consumers are more satisfied if prices are presented as a bundle and less satisfied if the prices are presented unbundled, whereas less experienced consumers do not show different reactions to different price bundling presentations.

H2b: Consumer experience with insurance or investment products moderates the effects of guarantees on consumer satisfaction. Specifically, experienced consumers are more satisfied if no investment guarantee is embedded and less satisfied if an investment guarantee is embedded, whereas less experienced consumers do not show different reactions to different price optic presentations.

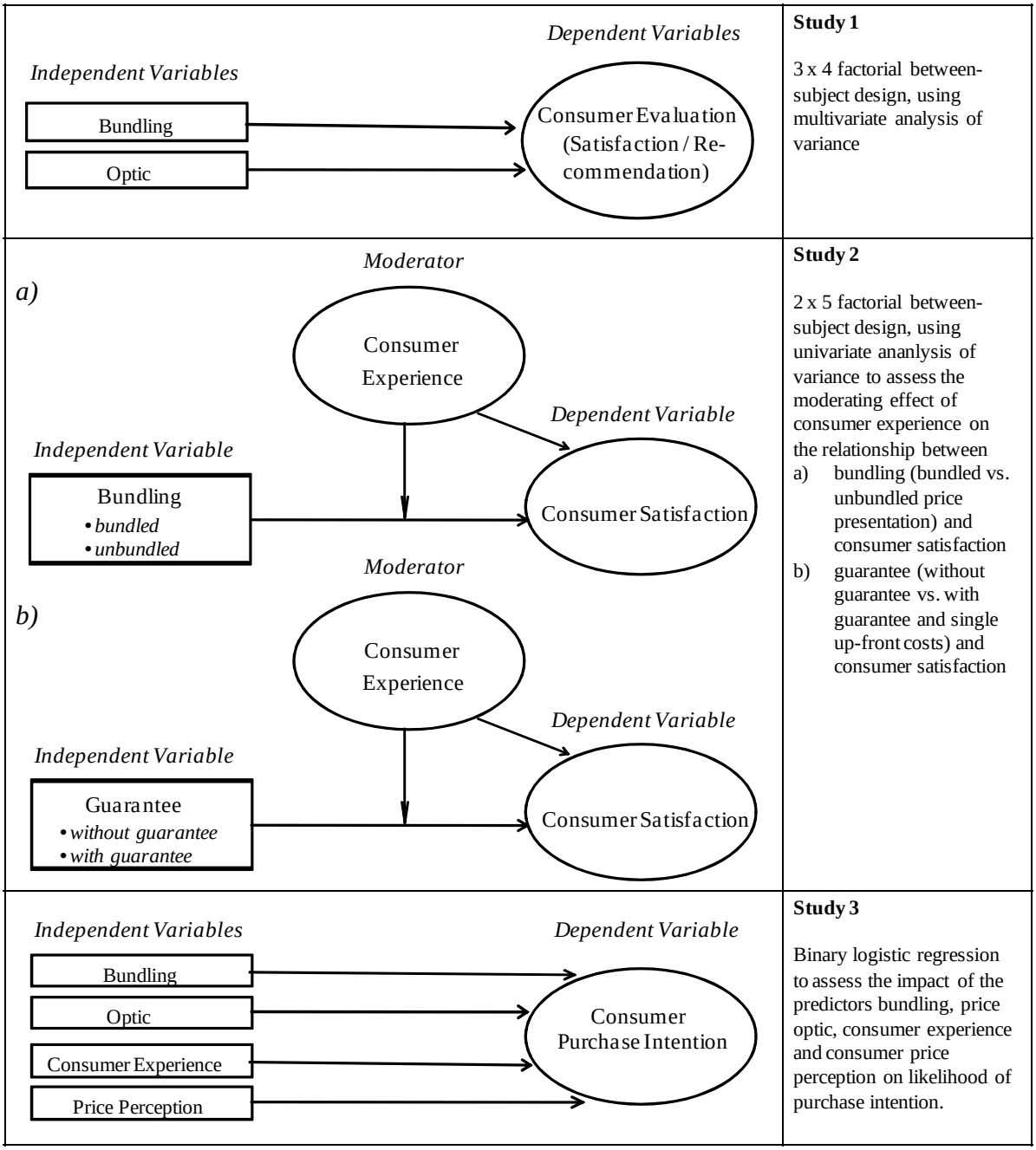
The alternative hypotheses predict that experience has no moderating effect.

H3a: Consumer purchase intention of an investment product augments as price information is bundled.

H3b: Consumer purchase intention of an investment product augments as price information is abstract.

The alternative hypotheses predict that the bundling or abstracting of price information have no effect on consumer purchase intention.

Figure 1: Model framework



H4a: The more experienced consumers are, the more likely they are to purchase the product.

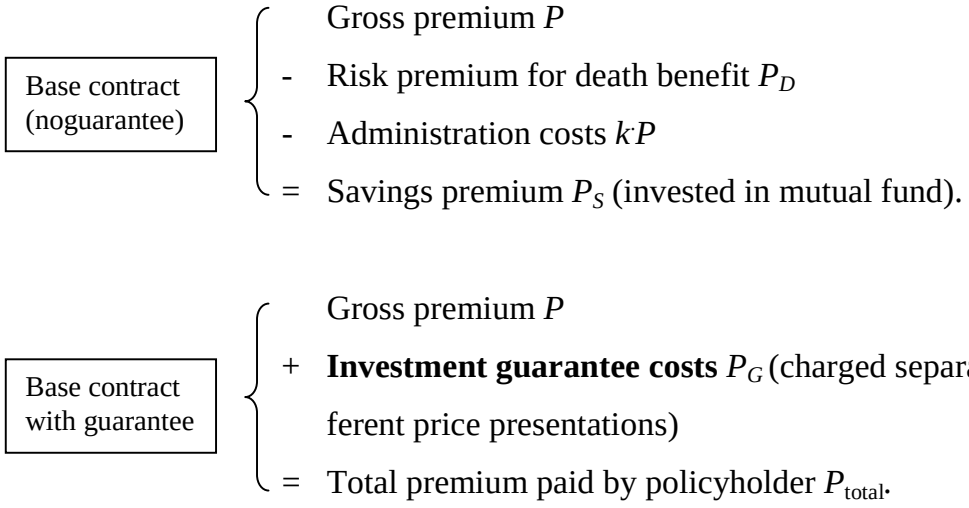
H4b: The lower consumers perceive the price of the product, the more likely they are to purchase the product.

The alternative hypotheses predict that the experience or price perception have no effect on consumer purchase intention.

4. Unit-Linked Life Insurance Contracts

To determine different price optic and bundling of investment guarantees in unit-linked life insurance policies, we first model a unit-linked base contract without guarantee that contains a savings part invested in a mutual fund and a fixed death benefit D that is paid out if the policyholder dies during the term of the contract. In case of survival until maturity T, the policyholder receives the value of the mutual fund, which yields a stochastic payoff at maturity in the base contract. For administration costs, a percentage k of the gross premium P is charged. The risk premium for the death benefit payment is denoted by P_D and subtracted from the gross premium. The remainder constitutes the savings part and is invested in the mutual fund. To ensure a minimum survival payoff, the base contract is then extended to further offer a constant guaranteed minimum payoff G_T for an additional guarantee price P_G. The total premium paid into the contract including the additional costs for an investment guarantee can thus be split up into four components as laid out in Figure 2.

Figure 2: Premium decomposition of base contract with and without guarantee



In the following, we first describe the dynamics and contract features as well as pricing for the base contract without guarantee and then show how to determine the additional guarantee costs. We thereby ensure that the guarantee costs are the same and only the price presentation differs (absolute costs as single and annual premium and annual percentage fee of the fund value) to isolate the effect of the price presentation on consumer choice.

4.1 The base contract

Calculation of the risk premium for the death benefit

The risk premium for the death benefit payment is determined using an actuarial pricing approach. The one-year table probability of death of an $x+t$-year old male policyholder is given by q_{x+t}, $t = 0,\ldots,T-1$, and ${}_t p_x$ denotes the probability that an x-year old male policyholder will survive t years. For the mortality rates, the table of the German Actuarial Association DAV 2008 T is used.

In case of death during policy year t (i.e., between time $t-1$ and t), the death benefit D is paid in arrears at the end of the year, i.e., at time $t \in \{1,\ldots,T\}$. According to a standard actuarial valuation (see, for example, Bowers et al., 1997), the premium is determined based on the equivalence principle and hence based on the actuarial assumptions of a constant annual actuarial interest rate r_d (which henceforth corresponds to the discrete riskless interest rate) and probabilities of death according to the mortality table. For an insured age x at inception of the contract, the annual and single premiums are thus given by

$$P_D^{annual} \cdot \sum_{t=0}^{T-1} {}_t p_x \cdot (1+r_d)^{-t} = D \cdot \sum_{t=0}^{T-1} {}_t p_x \cdot q_{x+t} \cdot (1+r_d)^{-(t+1)},$$

$$P_D^{single} = P_D^{annual} \cdot \sum_{t=0}^{T-1} {}_t p_x \cdot (1+r_d)^{-t}. \qquad (1)$$

Modeling the mutual fund

For the underlying mutual fund, we refer to the model framework as described in Gatzert and Schmeiser (2009). In the case of constant annual savings premium payments P_S^{annual} at time $t = 0,...,T-1$, premiums are invested in a mutual fund and yield a stochastic payoff in $t_N = T$. The unit price of the mutual fund at time t is given by S_t. The development of the unit price is modeled by a geometric Brownian motion with a constant average rate of return and constant standard deviation. Hence, under the objective measure $\mathbb{P}$, the development of S_t is described by the following stochastic differential equation,

$$dS_t = S_t(\mu dt + \sigma dW_t),$$

with $S_0 = S(0)$, a drift μ, volatility σ, and a standard $\mathbb{P}$-Brownian motion (W_t) with $0 \le t \le T$ on a probability space $(\Omega, \mathcal{F}, \mathbb{P})$,where $(\mathcal{F}_t)$, $0 \le t \le T$, denotes the filtration generated

by the Brownian motion. The solution of the stochastic differential equation yields (see, for example, Björk, 2004)

$$\begin{aligned} S_t &= S_{t-1} \cdot e^{\left(\mu-\sigma^2/2\right)+\sigma\left(W_t-W_{t-1}\right)} \\ &= S_{t-1} \cdot e^{\left(\mu-\sigma^2/2\right)+\sigma Z_t} = S_{t-1} \cdot R_t, \end{aligned}$$

where Z_t are independent standard normally distributed random variables. In this context, the continuous one-period return $r_t = \ln\left(R_t\right)$ is normally distributed with an expected value of $\mu - \sigma^2/2$ and standard deviation σ.

After subtracting the costs for administrative expenses and death benefit payment from the gross premium in the base contract, the savings premium

$$P_S^{annual} = P \cdot \left(1-k\right) - P_D^{annual}$$

is invested in the fund and the value of the investment in *t*, F_t, is given by

$$F_t = \left(F_{t-1} + P_S^{annual}\right) \cdot \frac{S_t}{S_{t-1}} \tag{2}$$

and thus, at time *T*, we have

$$F_T = P_S^{annual} \cdot \sum_{t=0}^{T-1} \frac{S_T}{S_t}.$$

In the case of a single up-front premium, the savings premium is analogously invested as follows:

$$P_S^{single} = F_T \cdot \frac{S_0}{S_T}. \tag{3}$$

The payoff to the policyholder depends on the fund's development over time, and, thus, the terminal value of the investment can fall below a certain threshold (e.g., the sum of gross premium payments). To avoid such a situation, unit-linked life insurance contracts may include a guarantee providing a minimum payoff G_T of the investment at maturity *T*. In the presence of an additional investment guarantee, the policyholder's terminal payoff L_T^G consists of the value of the underlying fund at time *T* plus a put option on this value with strike price G_T:

$$L_T^G = \max\left(F_T, G_T\right) = F_T + \max\left(G_T - F_T, 0\right). \tag{4}$$

4.2 Calculation of guarantee costs and price presentations

Without an investment guarantee, the survival payoff of the base contract is given by the value of the investment fund and no additional costs will be charged. If an investment guarantee is included in the contract, the guarantee costs must be paid by the policyholder in addition to the ongoing premium payments, and the provider must invest them in risk management measures, such as hedging strategies, equity capital, or reinsurance. Its risk-adequate price is determined using risk-neutral valuation and in the empirical survey presented in different ways. First, a fixed single guarantee price is determined, second, an annual premium is calculated based on the single premium derived in the first step, and, as a third price presentation, a fixed percentage fee α is subtracted from the fund value at the end of each year.

Absolute premium for the guarantee costs

In the case of a "conventional fund" (i.e., a fund with given average rate of return and standard deviation for the contract term), prices for investment guarantees at time $t = 0$ will be obtained under the unique equivalent martingale measure $\mathbb{Q}$ (see Harrison and Kreps, 1979), where the drift of the unit price process changes to the riskless rate of return r, leading to

$$dS_t = S_t\left(rdt + \sigma dW_t^{\mathbb{Q}}\right),$$

where $W^{\mathbb{Q}}$ is a standard $\mathbb{Q}$-Brownian motion. The value of the investment guarantee at time $t = 0$ is then given as the difference between the present value of the contract's payoff and the present value of the premiums paid. The present values are determined by the expected values of the payoffs under the risk-neutral measure $\mathbb{Q}$, discounted with the continuous riskless interest rate r. According to Equation (4), this implies that the cost of the investment guarantee is the price of a European put option value on the mutual fund at maturity, with strike G_T, weighted with probability of survival until maturity. Thus, the single up-front premium for the guarantee P_G^{single} is given by

$$P_G^{single} = E^{\mathbb{Q}}\left(e^{-rT} \cdot {}_T p_x \cdot \max\left(G_T - F_T, 0\right)\right)$$

Using the Black-Scholes option pricing formula, closed-form solutions can only be derived in the case of a single up-front gross premium (see Equation (3)):

$$\begin{aligned} P_G^{single} &= e^{-rT} \cdot {}_T p_x \cdot E^{\mathbb{Q}}\left(\max\left(G_T - F_T^{single}, 0\right)\right) \\ &= {}_T p_x \cdot \left(G_T \cdot e^{-rT} \cdot N\left(-d_2\right) - P_S^{single} \cdot N\left(-d_1\right)\right) \end{aligned} \tag{5}$$

where

$$d_1 = \frac{\ln\left(\frac{P_S^{single}}{G_T}\right) + \left(r + \frac{\sigma^2}{2}\right) \cdot T}{\sigma \cdot \sqrt{T}}, \; d_2 = d_1 - \sigma \cdot \sqrt{T} \; .$$

The annual guarantee costs are thus, analogously to Equation (1), given by annuitizing the single payment,

$$P_G^{annual} = \frac{P_G^{single}}{\sum_{t=0}^{T-1} {}_t p_x \cdot \left(1 + r_d\right)^{-t}} \; .$$

Annual percentage fee for guarantee costs

Alternatively, guarantee costs can be charged by means of an annual percentage fee of the fund value at the end of each year. To make the case of an absolute guarantee premium and the annual percentage fee comparable, the same total annual premium is assumed to be paid by the policyholder, as in the case where guarantee costs are paid separately and in addition to the gross premium of the base contract, i.e., $P_{total}^{annual} = P^{annual} + P_G^{annual}$. Hence, the adjusted savings premium invested in the mutual fund is residually given by

$$P_S^{annual,\alpha} = P_{total}^{annual} \cdot \left(1 - k\right) - P_D^{annual} = \left(P^{annual} + P_G^{annual}\right) \cdot \left(1 - k\right) - P_D^{annual} \; .$$

Thus, the sum of annual premium payments for the contract with guarantee, when subtracting a percentage fee, is the same as in the first price presentation when guarantee costs are charged in addition to the gross premium.

Let $F_{t,-}^{\alpha}$ denote the value of the investment fund at the end of the *t*-th year *before* subtracting the fee and $F_{t,+}^{\alpha}$ the value of the investment fund *after* subtracting the fee (after the first year for the first time), i.e.,

$$F_{t,+}^{\alpha} = F_{t,-}^{\alpha} \cdot (1-\alpha),\ t = 1,...,T. \tag{6}$$

Thus, the development of the fund is described analogously to Equation (2) by

$$F_{t,-}^{\alpha} = \left(F_{t-1,+}^{\alpha} + P_S^{annual,\alpha}\right) \cdot \frac{S_t}{S_{t-1}} = \left(F_{t-1,-}^{\alpha} \cdot (1-\alpha) + P_S^{annual,\alpha}\right) \cdot \frac{S_t}{S_{t-1}}. \tag{7}$$

Due to the annual subtraction of the percentage fee, the fund value is reduced, which in turn has an impact on the value of the investment guarantee (still fixed at G_T). From the insurer's perspective, α must be calibrated in such a way that the present value of the fee income

$$I_G^{\alpha} = E^{\mathbb{Q}}\left(\sum_{t=1}^{T} \alpha \cdot F_{t,-}^{\alpha} \cdot {}_t p_x \cdot (1+r_d)^{-t}\right) = \sum_{t=1}^{T} \alpha \cdot {}_t p_x \cdot (1+r_d)^{-t} \cdot E^{\mathbb{Q}}\left(F_{t,-}^{\alpha}\right)$$

equals the value of the guarantee at time $t = 0$, i.e.,

$$P_G^{\alpha} = E^{\mathbb{Q}}\left({}_T p_x \cdot (1+r_d)^{-T} \cdot \max\left(G_T - F_{T,+}^{\alpha}, 0\right)\right).$$

Hence, the following must hold for the calibrated value of α:

$$P_G^{\alpha} \overset{!}{=} I_G^{\alpha}.$$

Thus, for both price presentations of the guarantee costs (absolute and percentage fee) the policyholder pays the same annual premium.

4.3 Calibration of the model

For the empirical survey, the model is calibrated as follows: Contract duration T = 10 years, age of the male insured x = 30 years, the gross premium P = 100, administrative costs k = 8%, the guarantee G_T= 12,000 (sum of gross premiums), which in the present setting, corresponds to a guaranteed interest rate of 1.68% on the savings premium. Regarding the underlying mutual fund, we follow Gatzert, Huber, and Schmeiser (2011) (medium-risk fund) and assume that σ = 8.61%, that there is a continuous riskless rate of return of r = 2.15%, and that the corresponding discrete riskless rate is $r_D = \exp(r) - 1 = 2.17\%$. To enhance the understandability of the product, we provide monthly premiums in the questionnaire approximated by $P^{monthly} = P^{annual}/12$. The resulting prices for different types of price optic and price bundling are laid out in Table 1.

Table 1: Calibrated premiums for empirical survey (payments per month if not stated differently)

PRICE BUNDLING FACTOR		**PRICE OPTIC FACTOR**			
		No Guarantee	*Guarantee level: 12,000*		
Bundling (P)		100	644 first month then 100	105	105 1% p.a.
Partial bundling					
	Base contract(P)	100	100	100	105
	Inv. guarantee costs (P_G, α)	0	544 up-front	5	1% p.a.
No bundling					
	Risk premium(P_D)	1	1	1	1
	Savings premium(P_S)	91	91	91	96
	Administrative costs(kP)	8	8	8	8
	Inv. guarantee costs (P_G, α)	0	544 up-front	5	1% p.a.

5. EXPERIMENTAL STUDY

Experimental design for variations in price presentation

To test the hypotheses and to examine under which price presentation conditions an additional interest rate guarantee is chosen, we conducted an experimental study using variations of price presentations of a unit-linked life insurance offer with a guarantee level of 12,000 at the end of the contract term. The offers only differed in the price presentation of the additional guarantee, varying along three levels of price bundling and three levels of price optic (see Table 1). The *bundling factor* consists of a single bundled price for the unit-linked life insurance product and the investment guarantee, a partially bundled price with separate prices for the base contract and the guarantee, and a debundled price presentation with separate prices for the guarantee, the risk premium, the savings premium, and the administration costs. The *optic factor* consists of a product without any guarantee (and thus, no guarantee costs; this product serves as contrast product), a product with an investment guarantee presented as single up-front guarantee cost, a product with monthly guarantee costs, and a product with guarantee costs as a % of the annual fund value. Thus, we find a 3 (bundling: bundled price vs. partially bundled price vs. debundled price) x 4 (price optic: no guarantee vs. guarantee with single up-front costs vs. guarantee with monthly cost vs. guarantee with costs in percent of the annual fund value) between-subject design, consisting of twelve different variations of price information. Table 2 summarizes the variation of the product cards, corresponding to Table 1.

Table 2: Product offers (No. 1 to No. 12)

PRICE BUNDLING FACTOR	**PRICE OPTIC FACTOR**			
	No Guarantee	*Guarantee level: 12,000*		
	No guarantee costs	Single up-front guarantee costs	Monthly guarantee costs	Guarantee costs in % of the annual fund value
Bundled (combined price for unit-linked life insurance and guarantee)	Offer 1	Offer 4	Offer 7	Offer 10
Partially bundled (prices for unit-linked life insurance and guarantee are separately presented)	Offer 2	Offer 5	Offer 8	Offer 11
Debundled (prices for unit-linked life insurance, split up into risk premium, savings premium and fees, and guarantee are separately presented)	Offer 3	Offer 6	Offer 9	Offer 12

To every participant, one single product card has been given for evaluation. The product cards are identical over all offers and differ only in the price presentation. They have been pretested from May 3, 2010 to May 4, 2010 in a small Swiss panel (n = 106) regarding the understandability of the product card and the used termini. Accordant adjustments have been made, for example, avoidance of technical terms or definitions to explain inevitable technical terms.[1]

Sample and survey procedure

The overall experimental design consisted of an online survey (originally in German and French) in which the evaluation of the product cards has been embedded. Within a five day period from May 14, 2010 to May 17, 2010 the questionnaire has been answered by a Swiss panel. The sample of n = 647 is representative for Switzerland regarding gender

[1] For the pretest, we gave the participants one product card (in this case, Offer 9) for evaluation. The evaluation included a question where participants evaluated the product regarding its overall understandability on a 7-point scale from 1 = not at all understandable to 7 = absolutely understandable, a list of the used words where the participants had to mark the words they did not understand, comprehension questions where the participants had to mark the right answers, as well as open questions where participants could address criticism and suggestions.

and region (here only focusing the German and the French speaking part of Switzerland). Thus, there is a subsample of around n = 55 for each product card.

The survey was divided into three sections. In the first section, a product card has been shown to the participants for evaluation. Every subsample only received one product card for evaluation. The consumer evaluation included three dependent variables (in dependence on Johnson et al., 1999):

- the perceived satisfaction with the offer, measured on a 5 point scale from 1 (not satisfied) to 5 (satisfied),
- the likelihood of recommending the offer, measured on a 5 point scale from 1 (disagree) to 5 (agree),
- and the purchase intention, measured on a binary scale from 0 (no) to 1 (yes).

In the second section of the survey, the moderating variable “consumers’ experience with financial and insurance products” has been measured, including multiple measures regarding:

- expertise in general using the items of Mishra, Umesh, and Stem (1993),
- expertise on a personal level using the items of Mitchell and Dacin (1996),
- expertise regarding the product prices using the items of Kopalle and Lindsay-Mullikin (2003).

These items have been adjusted to the insurance and financial product context and the scales have been unified to a five-point scale ranging from 1 (disagree) to 5 (agree). Additionally, we measured participants’ price perception of the product using the items of Adaval and Monroe (2002) and Suri and Monroe (2003), which includes three five-point semantic differentials.

In the third section of the survey, sociodemographic and socioeconomic attributes have been measured, using age, gender, living region, working situation, family status, household income (net), number of children under 18 years, and educational level. Regarding the age of the participants, we concentrated on 25 to 35 year olds.

6. Results of the Empirical Survey

Descriptive statistics

Table 3 displays the descriptive statistics and shows that the sample of this age group (25-35 years) is representative for Switzerland regarding gender and region, whereby the quota for region only focused on the German and French speaking part of Switzerland, due to proportions. Most of the participants have an apprenticeship (44.2%) or even a university degree (37.4%) as their highest educational level, work at a fulltime job (60.0%), are married (34.2%) or live in a relationship (30.6%), and have no children under 18 years of age living in their household (64.5%). In addition, most participants have a net household income between CHF 3,000 and CHF 5,000 (32.1%) and between CHF 5,000 and CHF 7,000 (30.4%) per month. To summarize, most of our respondents have a solid educational background, a full-time job, and live with a partner (marriage or relationship) without children.

To test our hypotheses, we conducted two studies as shown in Figure 1: Study 1 uses multivariate analyses of variance (MANOVA) models to test the hypotheses regarding consumer evaluation, based on consumer satisfaction and likelihood of recommending, as is done by, for example, Bauer et al. (2006) or Johnson et al. (1999). Study 2 uses logistic regressions to test the hypotheses regarding consumer evaluation, based on their purchase intention. Furthermore, a principal component analysis is conducted in order to reveal the experience factor, our moderating variable, and the price perception factor.

Table 3: Descriptive statistics

						Total
Gender						
Male	Female					
327 (50.5%)	320 (49.5%)					647 (100%)
Age						
25–35 years						
647 (100%)						647 (100%)
Region (of Switzerland)						
German speaking part	French speaking part	Italian speaking part	Other			
456 (70.5%)	185 (28.6%)	2 (0.3%)	4 (0.6%)			647 (100%)
Highest educational degree/diploma						
Elementary School	Apprenticeship	Secondary School	University / Technical College	Other		
38 (5.9%)	286 (44.2%)	69 (10.7%)	242 (37.4%)	12 (1.9%)		647 (100%)
Current Job Situation						
Full-time Job	Part-time Job	Jobless	Retired	Homemaker	Student (full-time)	
388 (60.0%)	138 (21.3%)	19 (2.9%)	4 (0.6%)	56 (8.7%)	42 (6.5%)	647 (100%)
Household income per month (net, in TCHF)						
Under 3	3 - < 5	5 - < 7	7 - < 9	9 - < 12	Over 12	
92 (14.2%)	208 (32.1%)	197 (30.4%)	84 (13.0%)	51 (7.9%)	15 (2.3%)	647 (100%)
Family status						
Married	In a Relationship	Divorced / Widowed	Single			
221 (34.2%)	198 (30.6%)	27 (4.2%)	201 (31.1%)			647 (100%)
Children (under 18 years) living in the household						
No child	1 child	2 children	3 or more children			
417 (64.5%)	121 (18.7%)	89 (13.8%)	20 (3.1%)			647 (100%)

Table 4 provides a first insight regarding the cell means across product cards and illustrates that consumer evaluation of the 12 different product cards differs only marginally. For example, looking at the satisfaction with the offer, consumer evaluation ranges between 3.19 (Offer 8, partially bundled - monthly guarantee costs) and 2.58 (Offer 12, debundled price - guarantee cost as a %). The same result can be observed with regard to the likelihood of recommending and the purchase intention. Even the average across the dimensions shows little variance of the means, which suggests that the presentation of price information has only a marginal impact on consumer evaluation. However, further analyses are needed in order to test the hypotheses.

Table 4: Cell means across product cards regarding satisfaction with the offer

		PRICE OPTIC FACTOR				
		No Guarantee	*Guarantee level: 12,000*			Average
PRICE BUNDLING FACTOR			Single up-front guarantee costs	Monthly guarantee costs	Guarantee costs as a % of the annual fund value	
Bundled (Combined Price for Unit-Linked Life Insurance and Guarantee)	Satisfaction	2.61	2.90	2.89	2.69	2.77
	Likelihood of Recommending	2.43	2.56	2.63	2.47	2.52
	Purchase Intention	0.24	0.27	0.30	0.33	0.29
Partially Bundled (Prices for Unit-Linked Life Insurance and Guarantee are separately presented)	Satisfaction	2.95	2.61	3.19	2.76	2.88
	Likelihood of Recommending	2.56	2.30	2.92	2.54	2.58
	Purchase Intention	0.35	0.25	0.33	0.29	0.31
Debundled (Prices for Unit-Linked Life Insurance, split up into risk premium, savings premium and fees, and Guarantee are presented separately)	Satisfaction	2.95	2.59	2.81	2.58	2.73
	Likelihood of Recommending	2.61	2.44	2.54	2.33	2.48
	Purchase Intention	0.35	0.26	0.31	0.23	0.29
Average	Satisfaction	2.84	2.70	2.96	2.68	
	Likelihood of Recommending	2.53	2.43	2.70	2.45	
	Purchase Intention	0.31	0.26	0.31	0.28	

Principal component analysis

As the basis for the two studies and to test the four hypotheses stated in Section 3, we first conduct two principal component analyses to derive factors to describe consumer experience (Study 1 and 2) and price perception (Study 2). Results of the first principle component analysis with orthogonal rotation on the ten collected items that relate to the participants' experience with insurance and financial products are displayed in Table 5.

Table 5: Principal component analysis, rotated factor loadings

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; Rotation converged in 3 iterations	Factor Loading	
	Experience (direct)	Experience (indirect)
I am well informed about insurance or investment products.	**.775**	.375
I have a clear idea in regard to which insurance or investment products I need.	**.767**	.106
I am familiar with insurance or investment topics.	**.763**	.400
I have a clear idea about which features I need in an insurance or investment product contract.	**.752**	.294
I am inexperienced in insurance or investment products. (Rotated)	**.728**	.287
I know very little about insurance or investment products. (Rotated)	**.712**	.274
I enjoy telling people how much they may expect to pay for different insurance or investment products.	.172	**.798**
My family and friends seek my advice in insurance or investment product purchase situations.	.292	**.771**
I am considered somewhat of an expert when it comes to knowing the price of insurance or investment products.	.264	**.753**
My friends think of me as a good source of price information regarding insurance or investment products.	.435	**.753**
Eigenvalue	5.562	1.105
% of variance	37.464	29.212
Cronbach's α	.889	.842

The Kaiser-Meyer-Olkin measure, KMO = .917, verified the sampling adequacy for the analysis, and all KMO values for individual items were greater than .89. Bartlett's test of sphericity resulted in χ^2 = 3656.802, df = 45, $p < .001$, and shows that correlations of items were sufficiently large. We retained two factors with an Eigenvalue greater than one (5.562, 1.105), explaining in combination 66.68 % of the variance. The component loadings are presented in Table 5. We call the first factor "Consumer Experience (direct)"

since these items ask for consumers' experience with insurance or investment products in a direct way. Factor 2 is called “Consumer Experience (indirect)” due to the indirect measurements. We will use these two factors as moderator variable in our model to test Hypothesis 3.

The results of the second principal component analysis with orthogonal rotation on the three collected items that relate to participants’ price perception of the product are displayed in Table 6. The Kaiser-Meyer-Olkin measure, KMO = .678, verified the sampling adequacy for the analysis, and all KMO values for individual items were greater than .64. Bartlett's test of sphericity resulted in $\chi^2 = 800.789$, df = 3, $p < .001$, and shows that correlations of items were sufficiently large. We retained one factor with an Eigenvalue of 2.225 and thus greater than one, explaining 74.16 % of the variance, which we call “Price Perception” that will be used as a predictor variable for the logistic regression with component loadings presented in Table 6.

Table 6: Principal component analysis

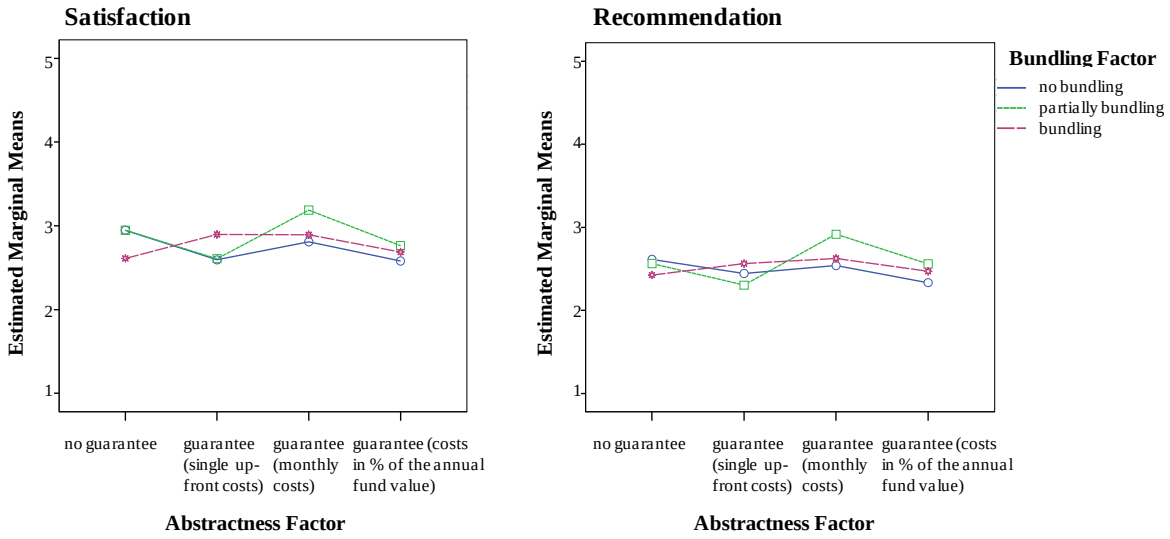
Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization	Factor Loading
	Price Perception
The price for this product was: low/high	**.898**
I felt that the product was: cheap/expensive	**.895**
The price for the product hurts little / a lot to pay	**.785**
Eigenvalue	2.225
% of variance	74.155
Cronbach's α	.817

Study 1: Basic model using MANOVA

In the first study, we use multivariate analyses of variance (MANOVA) models to test the hypotheses regarding consumer evaluation, based on consumer satisfaction and likelihood of recommending. Hypothesis 1a predicts that consumer evaluation of the product augments as price information being bundled. Looking at the average satisfaction (Figure 3, left graph) or average likelihood of recommending (Figure 3, right graph) across

conditions, no clear trend of an increase or decrease of consumer satisfaction or likelihood of recommending can be observed. Additionally, there is only a low variance of means and a centred tendency in the response behaviour. MANOVA analyses confirm this observation. Using Pillai's trace criterion, there was no significant effect of the price bundling dimension on consumer evaluation, as $F(df = 4, errof\ df = 1270) = 0.363$, $p = .835$. This implies that there are no significant differences between bundled, partially bundled, and debundled price conditions regarding the satisfaction with the product and the likelihood of recommending. Thus, Hypothesis 1a has to be rejected. Positive consumer evaluation of an investment product does not augment when price information is bundled.

Figure 3: Average satisfaction (left graph) and average likelihood of recommendation (right graph) across conditions



Hypothesis 1b predicts that positive consumer evaluations of an investment product augment as price information being abstract. Again, the cell means of Table 4 do not show any trend, but a strong centred tendency in the response behaviour. This can be confirmed by MANOVA. Pillai's trace does not show any significant differences between no guarantee cost, the initial up-front premium, monthly guarantee costs or guarantee

costs as a percentage, regarding the satisfaction with the product and the likelihood of recommending, F(df=6, error df = 1270) = 0.859, p = .525. Therefore, Hypothesis 1b must be rejected as well. Furthermore, there is no interaction between price bundling and price optic, F(df=12,error df = 1270) = 0.727, p = .726, using Pillai's trace. The between-subject effects are displayed in Table 7, showing no significant effect.

Table 7: MANOVA-based multivariate tests of significance, between-subject effects

Factor	Dependent Variable	Between groups sum of squares	Between groups mean square	df	F-statistic	p
Optic	Satisfaction	8.442	2.814	3	1.453	.226
	Likelihood to recommend	6.465	2.155	3	1.126	.338
Bundling	Satisfaction	2.405	1.203	2	0.621	.538
	Likelihood to recommend	1.186	0.593	2	0.310	.734
Interaction	Satisfaction	9.724	1.621	6	0.837	.542
	Likelihood to recommend	7.137	1.189	6	0.622	.713

Study 2: Moderated models

To understand the key drivers of different forms of price presentations on consumer evaluation, we reduced our model to its most basic components. Thus, for the independent variables, the "bundling" factor is reduced to the two extreme categories, namely 1 = unbundled price presentation and 2 = bundled price presentation. Similarly, we reduce the optic factor to its two extreme categories, i.e. 1 = without guarantee and 2 = with guarantee (using the single up-front guarantee costs) and henceforth denote this factor as "guarantee". Consumer satisfaction with the product serves as the dependent variable. Thus, we provide a 2 (bundling: unbundled vs. bundled) x 2 (guarantee: without guarantee vs. with guarantee) between-subject factorial design on consumer satisfaction.

The results from this analysis are displayed in Table 8 and indicate that the guarantee factor (without guarantee vs. with guarantee) has no statistically significant effect on consumer satisfaction with the product ($F_{Guaranteec}$(df = 1) =0.034, p = .85); similarly for

the bundling factor (unbundled vs. bundled) with $F_{Bundling}$(df = 1) = 0.008, p = .93. However, there is a statistically significant interaction between the bundling and the guarantee factors with $F_{Interaction}$ (df = 1) = 2.825, p = .09).

Table 8: ANOVA-based univariate tests of significance, between-subject effects of the two factors, guarantee and bundling, on the dependent variable consumer satisfaction

Factor	Between groups sum of squares	Between groups mean square	df	F-statistic	p
Guarantee	0.065	0.065	1	0.034	.854
Bundling	0.014	0.014	1	0.008	.931
Interaction	5.423	5.423	1	2.825	.094

To gain further insight into the relationship between price presentation and consumer satisfaction, we extended this model using the "Experience (direct)" factor as a moderator (see Table 5) and recoded this factor on a five-point scale from 1= 'less experienced' to 5 = 'very experienced'. Hypothesis 2a predicts that consumer experience with insurance or investment products will moderate the effects of bundling on consumer satisfaction. Specifically, experienced consumers will be more satisfied if prices are presented as a bundle and less satisfied if prices are presented unbundled, whereas less experienced consumers will not show different reactions to different price bundling presentations.

Table 9 shows the results from this analysis, which reveal a statistically significant interaction between the bundling factor and the moderator experience ($F_{Interaction}$ (df = 4) = 2.58, p = .04), thus confirming a moderating effect of experience on the relationship between bundling and consumer satisfaction. In addition, a simple effect analysis allows an assessment of the interaction term (see Table 10). Looking at the significant values for each simple effect, we find that there is a significant difference between experienced and less experienced consumers for the unbundled price presentation (F (df = 4) = 2.23, p = 07) and no significant difference for the bundled price presentation (F (df = 4) = 1.6, p = .17). Similarly, a difference in consumer satisfaction between bundled and unbundled

price presentation can be observed at levels 1, 3 and 5 of experience. Looking at the left graph of Figure 4, this finding reflects the fact that the mean satisfaction for very experienced consumers is considerably lower for unbundled price presentation than for bundled price presentation, confirming Hypothesis 2a.

Table 9: ANOVA-based univariate tests of significance, between-subject effects of the moderated model on the dependent variable consumer satisfaction using the "Experience (direct)" moderator

Factor	Between groups sum of squares	Between groups mean square	df	F-statistic	p
Bundling	2.14	2.14	1	1.15	.285
Experience	10.48	2.62	4	1.4	.233
Interaction	19.31	4.83	4	2.58	.037

Table 10: Simple effects analysis

Factor	Between groups sum of squares	Between groups mean square	df	F-statistic	p
Experience WITHIN					
Bundling (1)	16.71	4.18	4	2.23	.065
Bundling (2)	11.97	2.99	4	1.6	.174
Bundling WITHIN					
Experience (1)	5.53	5.53	1	2.95	.087
Experience (2)	0.05	0.05	1	0.03	.864
Experience (3)	5.2	5.2	1	2.77	.097
Experience (4)	2.5	2.5	1	1.33	.249
Experience (5)	6.44	6.44	1	3.43	.065

Note: The categories for bundling are 1=unbundled and 2=bundled and for experience reaching from 1=less experienced to 5=very experienced

Hypothesis 2b predicts that consumers experience with insurance or investment products will moderate the effects of guarantees on consumer satisfaction. Specifically, experienced consumers will be more satisfied if no investment guarantee is embedded and less satisfied if an investment guarantee is embedded, whereas less experienced consumers will not show different reactions to different price optic presentations. Our

results from this analysis, displayed in Table 11, reveal a statistically significant main effect of the guarantee factor, $F_{Guarantee}$ (df = 1) = 8.09, p = .005, a non-significant main effect of the moderator experience, $F_{Experience}$ (df = 4) = 2.39, p = .28, and a statistically significant interaction between the guarantee factor and the experience moderator with $F_{Interaction}$ (df = 4) = 2.39, p = .05, thus confirming a moderating effect of experience on the relationship between guarantee and consumer satisfaction.

Table 11: ANOVA-based univariate tests of significance, between-subject effects of the moderated model on the dependent variable consumer satisfaction using the "Experience (direct)" moderator

Factor	Between groups sum of squares	Between groups mean square	df	F-statistic	p
Guarantee	15.26	15.26	1	8.09	0.005
Experience	9.54	2.38	4	1.26	0.284
Interaction	18.06	4.52	4	2.39	0.051

We further conducted simple effect analyses to assess the interaction term in more detail. Looking at the values for each simple effect, displayed in Table 12, we find that there is only a significant difference between the product without an investment guarantee and with an investment guarantee for the very experienced consumers, F (df = 1)= 8.11, p = .005). Consulting the right graph of Figure 4, this finding reflects the fact that the mean satisfaction for very experienced consumers is considerably lower for products with an embedded guarantee and single up-front costs, than for products without an embedded investment guarantee, thus confirming Hypothesis 2b.

The results of the moderated model indicate that the presentation of price information, particularly bundled versus unbundled, and the fact of embedding an additional investment guarantee, generally do not have any predicting power to impact the likelihood of consumer satisfaction with the product. However, consumer experience with insurance or investment products contributes significantly to this relationship.

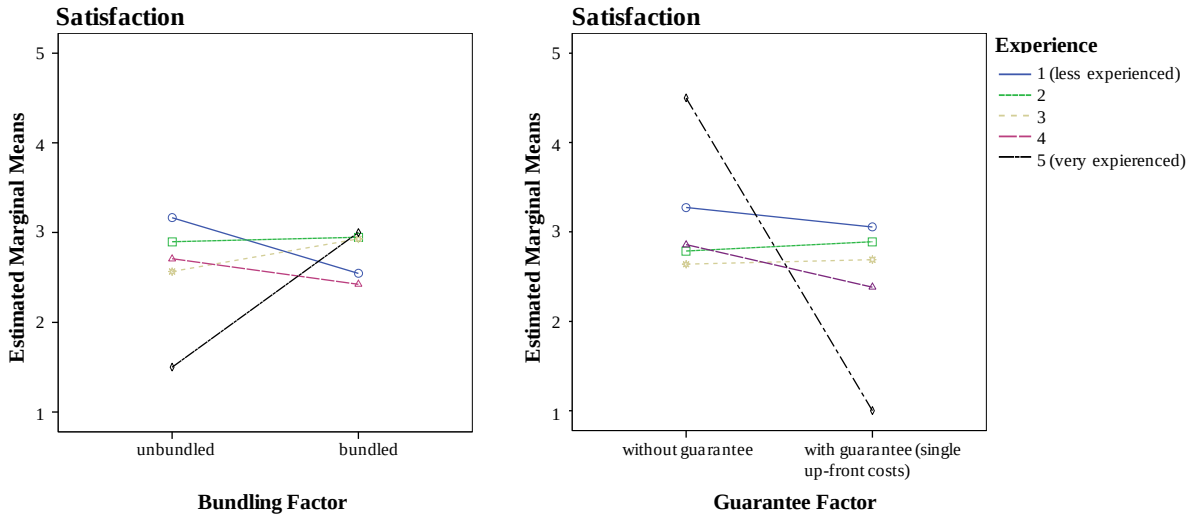
Particularly, very experienced consumers are less satisfied with the product if prices are presented unbundled or additional investment guarantees are embedded.

Table 12: Simple effects analyses

Factor	Between groups sum of squares	Between groups mean square	df	F-statistic	p
Experience WITHIN					
Guarantee (1)	4.62	1.15	4	0.6	.664
Guarantee (2)	9.54	2.38	4	1.24	.295
Guarantee WITHIN					
Experience (1)	0.88	0.88	1	0.47	.495
Experience (2)	0.26	0.26	1	0.13	.714
Experience (3)	0.08	0.08	1	0.04	.84
Experience (4)	3.75	3.75	1	1.98	.16
Experience (5)	15.35	15.35	1	8.11	.005

Note: The categories for guarantee are 1=without guarantee and 2=with guarantee (single up-front guarantee costs) and for experience reaching from 1=less experienced to 5=very experienced

Figure 4: Average satisfaction across conditions



Study 3: Logistic Regression

In the third study, we use binary logistic regressions to test the impact of bundling and price optic on the likelihood of consumers' purchase intention of the product. Our

hypotheses predict that consumer purchase intention of a product with investment guarantee augments when price information is bundled (H3a), and respectively when price information is abstract (H3b). Furthermore, we included consumers' experience (indirect) and consumers' purchase intention as predictors in the model to test Hypotheses 4a and 4b. Hypothesis 4a predicts that the more experienced consumers are, the more likely they are to purchase the product. Hypothesis H4b predicts that the lower consumers perceive the price of the product, the more likely they are to purchase the product.

The full model containing all predictors (bundling, optic, experience and price perception) is statistically significant, χ^2 (7, N=647) = 52.37, $p < .001$, indicating that the model is able to differentiate between participants purchasing and not purchasing the product. The model as a whole with the deviance-2LL=729.259 explains between 7.8% (Cox and Snell R^2) and 11.1% (Nagelkerke R^2) of the variance in purchase intention. Table 13 shows that the factors bundling and optic have no significant effect on the model and thus, Hypothesis 3a and Hypothesis 3b must be rejected. However, the two independent variables "Experience" and "Price Perception" contribute significantly to the model.

Looking at the Odds Ratios of Experience (Wald = 6.264, $p = .012$), we find that the more people are experienced with insurance or investment products, the more likely it is that they will purchase the product. This confirms Hypothesis 4a. Additionally, the odds ratio of 0.55 for "Price Perception" is less than 1, indicating that for every unit that the price is regarded as too expensive, participants were 0.55 times less likely to purchase the product, controlling for other factors in the model. This confirms Hypothesis 4b.

The results of the logistic regression indicate that the presentation of price information, particularly price bundling—no bundling, partially bundling, bundling—and price optic—no guarantee, guarantee with single up-front cost, guarantee with monthly costs or guarantee with costs in percent of the annual fund value) do not have any predicting power to impact the likelihood of consumers' purchase intention of the product. However,

consumers experience with insurance or investment products as well as consumers' price perception of the product contribute significantly to whether participants purchase or do not purchase the product.

Table 13: Binary logistic regression, predicting likelihood of participants' purchase intention of the product

	β	Std. Error	Wald	df	p	Odds Ratio	95% C.I. for Odds Ratio	
							Lower	Upper
Bundling								
no bundling			0.011	2	.994			
partially bundled	-0.016	0.220	0.005	1	.944	0.985	0.640	1.514
bundled	-0.023	0.223	0.011	1	.918	0.977	0.631	1.514
Optic								
no guarantee			1.309	3	.727			
guarantee (single up-front costs)	-0.189	0.258	0.540	1	.462	0.827	0.499	1.372
guarantee (monthly costs)	0.103	0.251	0.169	1	.681	1.109	0.678	1.813
guarantee (costs in % of the annual fund value)	-0.058	0.250	0.054	1	.816	0.943	0.578	1.541
Experience	0.226	0.090	6.264	1	.012	1.253	1.050	1.496
Price Perception	-0.599	0.096	39.149	1	.000	0.549	0.455	0.663
α	-0.969	0.093	108.338	1	.000	0.379		

7. IMPLICATIONS AND SUMMARY

In this paper, we examine whether consumer evaluation (satisfaction and recommendation) and purchase intention for investment guarantees embedded in unit-linked life insurance products depends on different forms of price presentation (bundling and optic) of the guarantee costs by means of an experimental study for a representative Swiss panel. We calculated the prices for the guarantees using risk-neutral valuation and interpret the fair price as a reservation price for an insurance company offering these kinds of guarantees to their consumers. We then analyze whether different forms of price presentations (i.e., single up-front payment for the guarantee; monthly payment; guarantee price as a

percentage of the value of the mutual funds) influence consumers' decision and evaluation of the contract. In addition, we allow for different forms of product bundling with respect to the price presentation. Here, products with identical present values are offered to the participants of the experimental study showing the overall price of the product versus viewing the pricing of the different product components (term life insurance with risk premium and savings premium, investment guarantee in the savings part, administration costs).

In regard to price presentation, it turned out from the empirical analysis that neither price bundling nor price optic had a statistically significant effect on consumer evaluation, or on consumer purchase intention of the product. No statistically significant differences between the bundled, partially bundled and debundled pricing forms can be confirmed in this analysis. In addition, combinations of different forms of price optic (guarantee prices in different absolute and relative terms) had no substantial impact on the decisions of the participants. Hence, our findings differ in relation to the outcomes of similar empirical studies in the area of consumer goods (see, for example, Johnson et al., 1999). One interpretation is that insurance products are very complex and therefore, differences in the price presentation are not a relevant part of the consumers' decision processes. Another reason could be that at least the participants in our sample turned out to be very rational decision makers and, in principle, used a present value calculation, in such a way that no differences in the products were noted. In any case and taking into account the fact that detailed price information may not be costless for the consumers, current regulatory efforts in many countries in the European Union that expect insurance companies to provide such kind of information to their consumers may be reconsidered and subject to further empirical studies to confirm or reject the usefulness of such requirements. For insurance companies, the possibility of obtaining new consumers through product bundling and price presentation seems rather limited against the background of the first findings of this study.

However, while the typical marketing mix strategy of different price presentation in the case of unit-linked life insurance products, contrary to typical consumer goods, does not show any statistically significant effects, the results of our empirical analysis show that especially other factors enhance consumer evaluation. Particularly, consumers' experience with insurance or investment products or consumers' price perception of the product turned out to be highly statistically significant predictors for explaining the relationship between the product offer with its price presentation and consumer evaluation or purchase intention of the product. Particularly, very experienced participants were less satisfied with a product if prices were presented unbundled or if additional investment guarantees were embedded, whereas the differences in product offer evaluations of less experienced participants were not significant. On the one hand, this finding confirms that consumers generally prefer bundled price presentations, which is in accordance with the stream of mental accounting literature. However, this only proved true for very experienced consumers. Thus, on the other hand, the finding approves the above mentioned interpretation of the high complexity of insurance products, making less experienced consumers not even register the differences in price presentation for their decision process. Even though further research is needed and other predictors could be additionally examined, it can be tentatively concluded that, in the case of life insurance products, insurance companies should set a stronger focus on more consumer-oriented and more emotionally charged factors, along with a reduction of complexity, rather than on different price presentation formats, when intending to obtain new consumers.

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