M.J. del Rio Olivares, Kristina Wittkowski, Jaakko Aspara, Tomas Falk, & Pekka Mattila

Relational Price Discounts: Consumers' Metacognitions and Nonlinear Effects of Initial Discounts on Customer Retention

Practitioners increasingly employ relational price discounts by granting initial discounts to new customers with the goal of building sustainable relationships. However, extant research has provided mixed findings on the long-term effects of initial discounts on customer retention. The current research aims to reconcile this mixed evidence by exploring nonlinear effects of initial discounts on customer retention. Drawing on marketplace metacognition theory, the authors hypothesize that moderate initial discounts (5%–35%) have positive effects on customer retention, whereas low (<5%) and high (>35%) discounts have negative effects. Two large-scale field studies in an insurance company's car insurance branch and property insurance branch provide empirical support for the hypothesized patterns. An additional laboratory experiment tests the psychological mechanism underlying the nonlinear effects. When compared with low and high discounts, moderate initial discounts lead customers to form higher expectations of future relational benefits provided by the firm, as well as to lower their expectations of future discounts. Finally, this research offers customer lifetime value implications based on the depicted findings.

Keywords: relational price discounts, marketplace metacognition, customer retention, nonlinear effects, price promotions

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Besides generating temporary sales boosts for individual products and services, firms are increasingly using discounts to build long-term relationships with customers. Indeed, companies in various industries, ranging from financial services (Cadenas 2015; Gard and Eyal 2012) to digital music (Shaffer 2015), strive to build sustainable customer relationships by granting customers initial discounts at the beginning of the relationship. With such a "relational price discount" strategy, firms aim to retain customers as buyers of their core product even after the initial discount expires. This stands in stark contrast to other discount strategies, such as the loss leader strategy (Li, Gu, and Liu 2013), the network discount strategy (Xiong and Hu 2010), or the switching cost strategy (McCardle, Rajaram, and Tang 2004). Rather than attracting fickle "bargain hunters" with a cheap noncore product (loss leader strategy) or locking customers into the relationship by enacting exit barriers (network and switching cost strategies), the relational discount strategy involves building "true," voluntary customer loyalty. It is therefore a high-interest strategy for established market leaders, too, which do not need to aggressively acquire new customers by whatever means but rather prefer strategies that not only attract new customers but also retain them in the long run.

However, whereas practitioners increasingly seem to acknowledge the potent role of discounts as a relationship-building tool, academic research on the matter is sparse. The few studies focusing on the long-term customer retention effects of discounts have provided mixed results. Some conceptual (e.g., Blattberg, Briesch, and Fox 1995; Lewis 2005; Mela, Gupta, and Lehmann 1997) and empirical (e.g., Papatla and Krishnamurthi 1996) studies have suggested negative effects of initial discounts on customer retention primarily because discounts may make customers more price sensitive. Other research has found that initial discounts may also encourage repurchase behavior, with potentially positive effects on customers' habit building and loyalty (e.g., Freimer and Horsky 2008; Guadagni and Little 1983; Pauwels, Hanssens, and Siddarth 2002). Thus, with this divergent empirical evidence, the issue of whether discounts at the beginning of a customer relationship are truly effective in establishing lasting customer relationships remains unresolved. Addressing this question is important not only for academics but also for practitioners, as discounts are a costly marketing tool and represent a major part of many firms' marketing expenditures (Hardesty and Bearden 2003). Therefore, to make initial discounts "part of a strategic plan to drive customer lifetime value" (Murphy

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2015), it is critical for marketing executives to know whether they can count on discounts' positive long-term effects and how to precisely set the right discount levels to retain customers in an optimal way.

In examining these issues, this research contributes to the literature on the relationship-building effects of discounts in three ways. First, we provide empirical and theoretical reconciliation of prior studies' mixed results (e.g., Neslin and Shoemaker 1989; Pauwels, Hanssens, and Siddarth 2002) by theorizing and empirically demonstrating that the long-term effects of discounts on customer retention are essentially nonlinear. We reveal the nonlinear long-term effects of initial discounts on customer retention in a large-scale field study, analyzing a comprehensive data set on 191,165 car insurance customers of a market-leading European insurance company. More precisely, we identify the following pattern of nonlinear effects: a low discount leads to lower customer retention than no discount, a moderate discount increases customer retention, and a high discount again decreases retention rates. Furthermore, with an additional data set on 216,431 customers of another insurance product of the same firm, we replicate these empirical findings.

Second, we newly theorize and confirm the psychological mechanism underlying the effects of different levels of initial discounts. To explain the nonlinear pattern, in which only moderate initial discounts lead to positive effects on customer retention, we draw on the recently evolved metacognitive theory on consumers' marketplace behavior (Craig et al. 2012; Wright 2002). This theory posits that consumers are influenced not only by their direct cognitive exposure to a marketing action (e.g., an initial discount) but also by metacognitively processed information related to the firm's presumed motives for implementing the action. This metacognitive reflection shapes their expectations of the future economic and relational benefits (Friestad and Wright 1994; Pillai and Kumar 2012) provided by the firm. In line with the notion that especially moderate discounts stimulate metacognitive information processing (e.g., Chen, Monroe, and Lou 1998; Grewal, Marmorstein, and Sharma 1996), we are able to predict the positive effects of moderate-level initial discounts on customer retention. In addition to the insurance field study, we test this prediction in a laboratory experiment across two product contexts (insurance and video-on-demand services). The results of the experiment corroborate the assumed metacognitive expectation formation.

Third, we also proffer a contribution with high managerial relevance by investigating which exact levels of initial discounts will yield the highest customer retention rates and customer lifetime revenues. Extending previous studies (e.g., Lewis 2006), which have not primarily focused on the nonlinear effects of initial discounts on customer retention, we show that moderate initial discounts (15%–20%) rather than low or high discounts tend to yield the highest customer lifetime revenues.

Research Background

Long-Term and Nonlinear Effects of Discounts on Customer Behavior

For exploring the effects of initial discounts on customer retention, two streams of research are particularly relevant: (1) studies on the long-term effects of discounts on customer behavior and (2) studies on the potential nonlinear effects of discounts (whether short- or long-term). Table W1 in the Web Appendix provides an overview of these studies and shows that the current research is the first to focus on nonlinear long-term effects of initial discounts.

Long-term effects of discounts. In general, discounts—which are observable to customers, for example, on the price tag, sales promotion, or product offer—are temporary reductions in the purchase price of a product (Diamond and Campbell 1989). Traditionally, the bulk of pricing research has focused on the short-term effects of discounts on purchase behavior, in terms of increased purchases of the discounted product during the temporary discount period (e.g., Blattberg, Briesch, and Fox 1995; Blattberg and Neslin 1989).

A growing research stream on the longer-term effects of discounts has also documented customer retention and repurchase behavior *after* the temporary discount period has ended. However, the findings therein have been inconclusive (e.g., Neslin and Shoemaker 1989; Pauwels, Hanssens, and Siddarth 2002). On the one hand, several studies have indicated that long-term effects of discounts are nonexistent; that is, after the discount period expires, customers' purchase behavior returns to prediscount levels (e.g., Pauwels, Hanssens, and Siddarth 2002). On the other hand, other studies have found that discounts have either positive or negative effects on customer retention and repurchases. Regarding the former effect, some studies have reported that discounts increase customers' repurchases of the same brand even after the discount period, due to positive purchase habit formation (Blattberg and Neslin 1989; Freimer and Horsky 2008; Guadagni and Little 1983; Pauwels, Hanssens, and Siddarth 2002). Regarding the latter effect, some studies have reported a variety of detrimental long-term effects of discounts, such as reduced product quality perceptions (Ashworth, Darke, and Schaller 2005), increased price sensitivity and future discount requirements (Kalwani and Yim 1992), opportunistic behavior (e.g., delaying repurchases until the next discount; e.g., Blattberg, Briesch, and Fox 1995; Lewis 2005; Mela, Gupta, and Lehmann 1997), and reduced attitudinal brand loyalty (Papatla and Krishnamurthi 1996). Given the inconclusive findings on the long-term consequences of discounts, we propose that the effects of initial discounts on customer retention may be discrete and nonlinear in nature. That is, an initial discount may not yield unilaterally positive or negative linear effects on customers' long-term retention behavior; instead, the direction of the effects may vary depending on the discount level.

Nonlinear effects of discounts. In general, the literature classifies discounts into those that are low (<5%; Inman, Peter, and Raghubir 1997), moderate (5%–40%), and high (>40%) (Andrews et al. 2014; Lewis 2006). Building on such a classification of discounts, some studies have explored nonlinear short-term effects of different discount levels on customer behavior. Yet, to the best of our knowledge, no prior research has primarily focused, theoretically or empirically, on the potential nonlinear long-term effects of discounts on customer retention.

At any rate, from the literature on the nonlinear short-term effects of discounts, the most important insight for the current research is that consumers may react with entirely different

information-processing strategies when exposed to discounts of different sizes (Andrews et al. 2014; Grewal, Marmorstein, and Sharma 1996; Palazon and Delgado-Ballester 2009). In the range of low discounts, consumers will not process information related to the provider and the deal extensively, because the discount makes little difference with its small monetary value (Grewal, Marmorstein, and Sharma 1996). Correspondingly, with high discounts, consumers will also not reflect on information extensively, as the economic merits of the deal are unquestionable. In a cause marketing context, for example, high discounts led customers to ignore other cause-related benefits of a price promotion offer (Andrews et al. 2014). In contrast, moderate discounts trigger more uncertainty about the nature and benefits of the deal, which invites consumers to engage in more elaborate information processing (Grewal, Marmorstein, and Sharma 1996). Accordingly, nonlinear effects may arise on information processing and, ultimately, on purchase intentions, when moving from low to moderate to high discounts (Grewal, Marmorstein, and Sharma 1996; Palazon and Delgado-Ballester 2009). These important insights notwithstanding, the long-term ramifications of varying discount levels on consumer behavior remain unexplored. We next introduce the theory on consumers' metacognitions to shed further light on the link between discount levels, information processing strategies, and long-term consumer behavior.

Nonlinear Long-Term Effects of Discounts: A Metacognition Perspective

Consumers' marketplace metacognitions (Craig et al. 2012; Wright 2002) provide the primary theoretical lens for our research. Metacognition theory focuses on the indirect effects of marketing stimuli on consumer behavior, which result from consumers' mental reflections on the marketing stimuli, above and beyond their direct cognitive and behavioral reactions to those stimuli. In other words, metacognition theory proposes that the inferences consumers make about the potential motives underlying the marketer's actions (e.g., granting initial discounts) will significantly affect their current and future responses to the marketing action (Wright 2002).[1] Specifically, by metareflecting on the firm's action, a customer may form expectations about, for example, the degree to which the firm values its relationship with him or her (Craig et al. 2012). This perception of the firm's current actions is then projected onto expectations of the benefits that the relationship with the firm may yield in the future (Wright 2002). For example, the more the customer perceives the firm to be interested in building a relationship in the present, the more likely (s)he is to expect the relationship to yield relational benefits in the future (Friestad and Wright 1994).

Thus, the theory on metacognition contrasts with traditional pricing literature, which emphasizes customers' immediate, short-term perceptions of the economic benefits of a transaction (Blattberg, Briesch, and Fox 1995). Conversely, metacognition theory corresponds to the general assumptions of relationship marketing literature, according to which customers' considerations to engage in long-term relationships with firms depend on their expectations of future (non)economic benefits provided by the firm (Gwinner, Gremler, and Bitner 1998). Therefore, the metacognitive perspective allows for integrating insights from the literature on customer relationship benefits (Bolton, Lemon, and Verhoef 2004; Gwinner, Gremler, and Bitner 1998) with the aforementioned insights into the nonlinear effects of discounts on customers' cognitive information-processing tendencies (DelVecchio, Henard, and Freling 2006; Grewal, Marmorstein, and Sharma 1996).

In summary, through the metacognition perspective, we conjecture that customers may undergo different degrees of metacognitive information processing when confronted with varying levels of initial discounts. If so, they may form differential expectations of the future benefits of the relationship with the discount-offering firm (Gwinner, Gremler, and Bitner 1998; Wright 2002). Furthermore, in accordance with relationship marketing literature, we distinguish between customer expectations of noneconomic, relational benefits provided by the firm in terms of effectively responding to customer needs and economic benefits provided by the firm in the form of future discounts (Bolton, Kannan, and Bramlett 2000).

Hypothesis Development

Effects of Low Initial Discounts Compared with No Discounts

In general, low discounts lead to little information processing because of their negligible monetary value to customers (Grewal et al. 1998; Grewal, Marmorstein, and Sharma 1996; Palazon and Delgado-Ballester 2009). Accordingly, a customer who receives a low initial discount will most likely engage in only little or even no metacognitive processing. Consequently, with regard to expectations about the future relational benefits provided by the company, a low initial discount is not likely to foster enhanced expectations compared with a situation wherein no initial discount is granted.

Likewise, with regard to expectations about future economic benefits, a low initial discount should also prompt only little metacognitive reflection on the firm's motives in granting the initial discount in economic terms (Pillai and Kumar 2012). If so, customers may simply await similar discounts from the firm in the future, too. However, such inflated discount expectations may provoke disappointment with the focal firm after the expiration of the initial discount, when customers realize that the initial discount is discontinued in the long run. In turn, such unmet discount expectations will intensify customers' search for alternative bargains after the initial discount expires, leading to lower customer retention (Blattberg, Briesch, and Fox 1995).

Taken together, we conjecture the following:

H_1: Low initial discounts have a negative effect on customer retention after the expiration of the initial discount (when compared with no discount).

[1]Metacognition theory also advances the notion that consumers' metacognitive expectations may be partly linked with their "persuasion knowledge" (Friestad and Wright 1994; Pillai and Kumar 2012). However, whereas metacognitive expectations are situationally elicited by exposure to a marketing tactic (e.g., a discount), persuasion knowledge is acquired through repeated exposure to the same or similar marketing stimuli and reflects more stable attitudes and assumptions that the consumer holds about such stimuli (Friestad and Wright 1994).

Effects of Moderate Initial Discounts Compared with Low Initial Discounts

Compared with low discounts, we anticipate that moderate discounts will increase customer retention. Moderate discount levels can increase customer uncertainty about the nature and value of the initial deal and therefore will lead to more information processing in general (Grewal, Marmorstein, and Sharma 1996) and metacognitive reflection in particular. With enhanced metacognitive processing, customers are likely to use more "social intelligence," especially when reflecting on the potential relationship-building motives of the firm (Craig et al. 2012). As such, they might interpret the moderate discount as a token of genuine relationship-building efforts by the firm (Fazal e Hasan et al. 2014). Consequently, customers expect the firm to be dedicated to strengthening the relationship by providing increased relational benefits in the future. At the same time, the enhanced metacognitive reflection is likely to make customers adjust their expectations of future discounts. Specifically, the augmented customer expectations of relational benefits are likely to make expectations of future economic benefits less pressing (Gwinner, Gremler, and Bitner 1998). In summary, this substitutive pattern of future benefit expectations should enhance customer retention (Ravald and Grönroos 1996) even when the initial economic discount expires. Thus,

H_2: Moderate initial discounts have a positive effect on customer retention after the expiration of the initial discount (when compared with low discounts).

H_3: (a) Higher customer expectations of future relational benefits and (b) lower customer expectations of future discounts mediate the positive effect of moderate initial discounts on customer retention (when compared with low discounts).

Effects of High Initial Discounts Compared with Moderate Initial Discounts

In contrast with moderate discounts but similar to low discounts, high initial discounts are unlikely to trigger intensive metacognitive reflection and expectation adjustment. Indeed, in the case of high initial discounts, the economic merit of the discount is so self-evident and overwhelming (Andrews et al. 2014; Grewal, Marmorstein, and Sharma 1996) that metacognitive processing may remain limited (Palazon and Delgado-Ballester 2009). Similar to low discounts, this lack of metacognitive processing is likely to hinder customers from forming enhanced expectations of future relational benefits the firm may provide (Neslin 2002). Compared with moderate discounts, customers are thus likely to anticipate relatively lower relational benefits in the long run, eliciting a negative effect on customer retention.

In turn, without further metacognitive reflection, customers will not adjust their expectations of future discounts, either, and may simply assume that the firm will continue to offer high discounts (Chen, Monroe, and Lou 1998; Kalwani and Yim 1992). Therefore, because the company does not meet such high discount expectations after the expiration of the initial discount, customers will likely search for financially more attractive deals elsewhere. The ensuing disappointment will reinforce the negative effect of the initial high discount on customer retention (e.g., DelVecchio, Krishnan, and Smith 2007). Thus,

H_4: High initial discounts have a negative effect on customer retention after the expiration of the initial discount (when compared with moderate discounts).

H_5: (a) Lower customer expectations of future relational benefits and (b) higher customer expectations of future discounts mediate the negative effect of high initial discounts on customer retention (when compared with moderate discounts).

Figure 1 illustrates the overall nonlinear effect pattern predicted in H_1–H_5. From no discount to low discount, we anticipate the customer retention likelihood to drop in a discrete step (H_1). Then, we propose that the effect of discount level on customer retention follows an inverted U-shape (H_2–H_5).

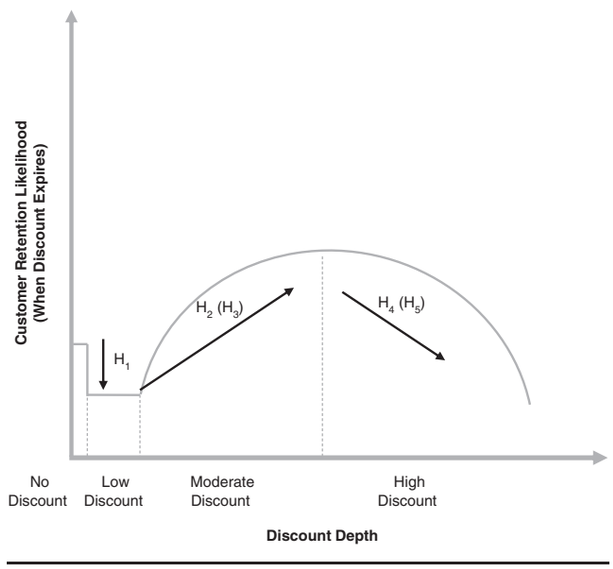
Field Study

Method

Sample. The data used in this study are from a market-leading insurance company in a midsize European country. The primary data set consists of the entire population of household customers acquired by the company for its car insurance product (n = 191,165) during a four-year period (2008–2011). The unit of analysis is the relationship between the customer and the company's car insurance branch. At the beginning of their relationship with the car insurance branch, a small percentage of these customers (9.4%) were also customers of other insurance branches of the company, while the majority (90.6%) were newly acquired customers. We control for this variable in the analyses.

In addition to the primary data on car insurance holders' relationships with the firm, we replicate our analyses with another product of the company: property insurance (i.e., insurance for homes and real estates). This sample includes 216,431 new customers (10.2% new customers for the property insurance; 89.8% new customers for the company altogether).

FIGURE 1
Hypothesized Main Effects of Initial Price Discounts on Customer Retention Likelihood



Overall study design. To examine our hypotheses, the analyses focus on the likelihood that customers who received an initial discount at the beginning of their relationship with the car insurance branch in a customer-specific year y_0 were retained as customers in year $y_0 + 1$ and beyond. We compare the retention likelihood of customers who received some level of initial discount (13.9% of customers) with the customer retention likelihood of customers who did not receive an initial discount in year y_0. We do this by analyzing data of customers' observed defection versus retention at the individual customer level using survival analysis.

The unit of time used in all the analyses is one year, because the initial discounts granted expired after the first year, and the standard subscription period for the company's insurance products is one year. The contract setting is such that the contract is valid until further notice. In other words, the customer needs to notify the company to terminate the contract; otherwise, the contract continues after the expiration of the initial discount at a nondiscounted regular price.

Note that the discounts we focus on are explicit discounts granted to customers in person when they called or visited the insurance company for an offer or when they received an offer at a car dealership reselling the company's insurance. By "explicit" discounts, we mean that the discounts were granted independent of any implicit discounts on the insurance fee/premium due to low riskiness of the customer (e.g., safe driving history). In the focal country, these implicit discounts are called "bonuses," not discounts. Thus, the explicit discounts studied herein are analogous to price promotions used in other industries and do not refer to the insurance industry–specific reductions on insurance fees/premiums.

Finally, owing to the nature of our data as noncontrolled field study data, the likelihood that a given customer received an initial discount is, in part, an endogenous variable (i.e., not randomly assigned by us). To control for potential biases arising from this endogeneity, we estimate the likelihood of a customer to receive the discount on the basis of his or her background variables. Thus, we conduct our analyses in two stages, first estimating the likelihood that a given customer was granted an initial discount (and the respective discount level) and then controlling for this likelihood when modeling his or her customer retention.

First-stage model with control function approach: likelihood to receive an initial discount. As mentioned previously, we cannot directly compare the retention rates of customers who received discounts with those who did not, because the assignment of the initial discount and the discount level was unlikely to be fully random. That is, both the initial discount (as a dummy variable) and the initial discount level (as a continuous variable) are partly endogenous. Failing to account for this endogeneity could bias the parameter estimates of the effect of the initial discount on customer retention (Villas-Boas and Winer 1999). To control for this, we first model (1) the customer's likelihood of receiving a discount and (2) the discount level received in two control function regressions (Petrin and Train 2009). Then, we insert the residuals of these regressions as additional control variables when estimating customer retention in the second-stage model.

To model the customer's likelihood of receiving the initial discount, we use binary logistic regression. As predictors, we include the available background data on the customer for the period before purchasing the specific insurance product: customer's age, a dummy for new-to-company (vs. new-to-car-insurance) customers, and customer tenure (length of prior relationship with other branches of the firm). To proxy the inherent damage proneness of the customer, we include the total number of insurance claims in other insurance categories from the previous year (see Honka and Chintagunta 2017). In addition, we add the total number of communication contacts between the customer and the company from the previous year to account for prior interactions. Finally, we include a dummy variable that indicates whether the customer had already concentrated most of his or her insurance contracts within the company as an inverse proxy for proneness to competitors' offers.

We use a similar approach to model the level of initial discount received, but instead of binary logistic regression, we use a Tobit regression (Tobin 1958). This is due to the nature of the variable: the discount level is a continuous variable censored at 0% and 100%. As predictors, we use the same variables as previously. Tables W2 and W3 in the Web Appendix present summary statistics for the variables used in the first-stage models of the likelihood and level of discount received by the customer.

Table 1 presents the results of the first-stage regression models of likelihood to receive a discount and the respective discount level. The results indicate the importance of controlling for potential endogeneity issues, as the background variables have effects on both the likelihood to receive a discount and the discount level. The regression coefficients indicate, for example, that older customers and customers new to the firm were granted initial discounts more often (as well as higher discounts), while customers with higher damage proneness (i.e., previous damage claims) were granted fewer discounts. Company managers confirmed that this had been the practice during the years of study.

Second-stage survival model of customer retention/defection: overview. To estimate the effect of initial discounts on customer retention at the second stage, we employed survival analyses as our main modeling approach. Survival analysis is a set of statistical methods in which the dependent variable represents the incidence and time until an event occurs, such as customer defection (see Nitzan and Libai 2011).

There are nonparametric, parametric, and semiparametric survival models (Allison 2010; Cleves et al. 2010). In this study, we employ the two latter models. As a semiparametric model, we use a continuous Cox proportional hazard (PH) model (Cox 1972), and as a parametric model, we use the exponential model (Feigl and Zelen 1965). We do not use nonparametric models because they do not allow for statistical tests of the effects of predictor variables. Regardless of the type of model, the two functions of interest are the survivor function and the hazard function. The survivor function, S(t), represents the probability of surviving (e.g., customer retention) beyond time t. The survivor functions for the jth subject in the Cox (Equation 1) and exponential (Equation 2) models are given by

TABLE 1
Field Study Results: First-Stage Regression Models on Likelihood to Receive an Initial Discount and Level of Discount Received

	Car Insurance		Property Insurance	
	Likelihood of Discount	Level of Discount	Likelihood of Discount	Level of Discount
Age	.0191*** (.0004)	.3818*** (.0072)	.0081*** (.0005)	.2088*** (.0209)
Entirely new-to-company customer	.4063*** (.0408)	7.4552*** (.7466)	.1903*** (.0572)	6.2578*** (2.1425)
Previous damage claims	–.2996*** (.0623)	–4.8449*** (1.0480)	–.3318*** (.0861)	–11.7101*** (3.1131)
Previous communications contacts by company	.2471*** (.0074)	5.0533*** (.1375)	.1934*** (.0100)	8.2279*** (.4219)
Previous communications contacts by customer	.1488*** (.0061)	2.4940 *** (.0989)	.0821*** (.0074)	2.3240*** (.2180)
Previously concentrated customer	–.5115*** (.0469)	–8.5501*** (.8444)	.0766 (.0615)	5.7051* (2.3371)
Previous customer tenure	.5122*** (.0227)	9.2611*** (.4234)	.3229*** (.0290)	12.2577*** (1.1359)
Constant	–3.1986 *** (.0446)	–63.8942 *** (.8808)	–3.7478*** (.0614)	–162.4650 *** (2.7879)
Sigma		35.1010 (.1880)		83.5836*** (.7718)
LR $\chi^2(7)$	6,060.14	6,625.21	1,090.46	925.91
Log-likelihood	–74,175.55	–179,148.21	–38,100.38	–80,751.29

*$p \leq .05$.
**$p \leq .01$.
***$p \leq .001$.

$$S(t|x_j) = S_0(t)^{\exp(x_j\beta_x)}, \text{ and} \quad (1)$$

$$S(t|x_j) = \exp\{-\exp(\beta_0 + x_j\beta_x)t\}. \quad (2)$$

The hazard function, h(t), reports the failure rate (e.g., customer defection), given that the failure event has not yet occurred. In both the Cox PH and the exponential model, the hazard function for the jth subject follows the same general form:

$$h(t|x_j) = h_0(t)\exp(x_j\beta_x), \quad (3)$$

where $h_0(t)$ is the baseline hazard, x_j is a vector of covariates, and β_x is a vector of regression coefficients. The difference between the models rests on how $h_0(t)$ is defined. In the Cox PH model, $h_0(t)$ is given no parametrization and is left unspecified. In parametric models, $h_0(t)$ takes a functional form. Specifically, in the exponential model, $h_0(t)$ is assumed to be constant over time (i.e., the failure rate is independent of time) and considered a scale parameter or intercept term (Allison 2010; Cleves et al. 2010; Feigl and Zelen 1965). Thus, the hazard function for the jth subject in the exponential model is

$$\begin{aligned} h(t|x_j) &= h_0(t)\exp(x_j\beta_x) \\ &= \exp(\beta_0)\exp(x_j\beta_x) \\ &= \exp(\beta_0 + x_j\beta_x). \end{aligned} \quad (4)$$

In the exponential model, the parameter estimates are obtained with maximum likelihood, in which the likelihood function is given by

$$L(\beta) = \prod_{j=1}^{n} S(t|x_j\beta_x, \beta_0)\{h(t|x_j\beta_x, \beta_0)\}^{d_j}. \quad (5)$$

In survival models, time t refers to the time to the occurrence of an event (i.e., customer defection) for the jth subject. However, similar to survival models in general, for many subjects, the event of customer defection does not occur during the observation period of the study (2008–2011), but only afterward. That is, the jth subject can either defect at t (i.e., anytime during the study period) or be retained until at least the end of the period of the study (t = 2011). The latter case is known as right-censoring (Cleves et al. 2010). In particular, d_j in Equation 5 reflects whether the jth subject defects during the observation period ($d_j = 1$) or whether (s) he has not defected by the end of the period covered by the study (i.e., the subject is right-censored) ($d_j = 0$). Thus, a right-censored subject contributes $S(t|x_j\beta_x)$ to the likelihood function—that is, the probability of surviving (i.e., being retained) for longer than the end of the entire study period, at the end of 2011.

For the Cox semiparametric model, we estimate the partial likelihood. Owing to the tied failures in our data (i.e., more than one customer naturally defects per period), we use Breslow's (1974) approximation to estimate the partial likelihood. This is given by

$$L_p(\beta) \approx \prod_{j=1}^{k}\left(\frac{\exp(s_j\beta)}{\sum_{i\in R_j}\exp(x_i\beta)^{d_j}}\right), \quad (6)$$

where R_j corresponds to the risk set (i.e., subjects at risk of failure) at time t_j, j indexes the k observed failure times, and S_j is the sum of the xs over all the d_j customers who defect at t_j.

Second-stage survival model of customer retention/defection: specifications. When conducting the survival analyses, the dependent variable represents the failure event of customer defection (i.e., the inverse of customer retention). We model

customer defection instead of customer retention because a distinctive characteristic of survival analysis is that the dependent variable is the time until the failure event occurs (Cleves et al. 2010).

Corresponding to the length of the initial discount period, the unit of time is yearly. Because our data cover a four-year period and some of the variables included in the analysis are time varying, we set up the data such that each customer can have up to four observations (one per year from year y_0 to $y_0 + 3$) and, thus, up to four instances of defecting (failure event) as well.[2] We assign the value of the failure variable for each observation at the end of the year, depending on whether the customer still subscribed to the insurance the following year (0 = customer was retained; 1 = customer defected). As we have mentioned, right-censored customers are those for whom the failure event of customer defection has not yet occurred by the end of the entire observation period (end of 2011). Right-censoring is incorporated in our models through d_j in Equations 5 and 6.

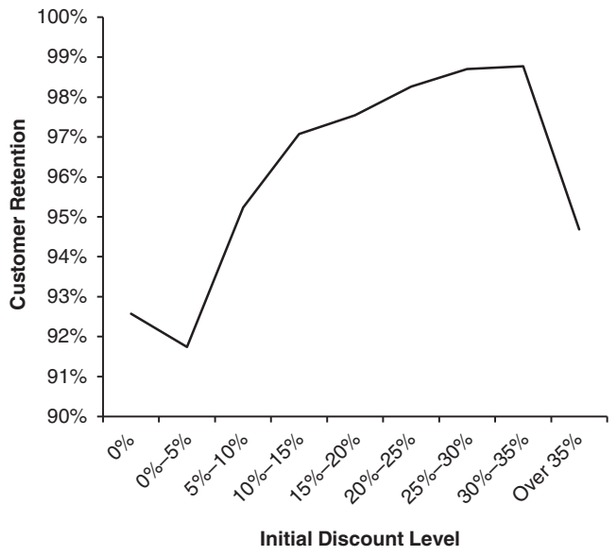
As key predictors of the second-stage survival model, we first include a discount dummy, identifying customers who obtained an initial discount, to test for a discrete effect of low discount versus no discount (H_1). Then, we include the level of discount granted and its quadratic term to account for the hypothesized U-shaped effect from low to moderate to high discounts (H_2 and H_4). In addition, we add the same covariates as in the first-stage model, but with the current-year, time-varying values, as well as the control function residuals from the first-stage models. Thus, our survival models specify the hazard rate (Equation 3) for the jth subject in the data as

$$
\begin{aligned}
(7)\quad h_j(t|x_{jt}) = h_0(t)\exp\big(&\beta_{\text{Discount\_Dummy}}\text{Discount\_Dummy}_j \\
&+ \beta_{\text{Discount\_Level}}\text{Discount\_Level}_j \\
&+ \beta_{\text{Discount\_Level}^2}\text{Discount\_Level}_j^2 + \beta_{\text{Age}}\text{Age}_{j,t} \\
&+ \beta_{\text{Newtofirm\_Customer}}\text{Newtofirm\_Customer}_j \\
&+ \beta_{\text{Claims}}\text{Claims}_{j,t} \\
&+ \beta_{\text{Comm\_Company}}\text{Comm\_Company}_{j,t} \\
&+ \beta_{\text{Comm\_Customer}}\text{Comm\_Customer}_{j,t} \\
&+ \beta_{\text{Concentrates\_Insurance}}\text{Concentrates\_Insurance}_{j,t} \\
&+ \beta_{\text{Tenure}}\text{Tenure}_{j,t} \\
&+ \beta_{\text{Res\_No\_Discount}}\text{Res\_No\_Discount}_j \\
&+ \beta_{\text{Res\_Discount\_Level}}\text{Res\_Discount\_Level}_j\big).
\end{aligned}
$$

We use robust standard errors clustered on the individual customer to address autocorrelation at the customer level across years. Tables W4 and W5 in the Web Appendix present summary statistics and correlations for the variables used in the second-stage models. We use the specification in Equation 7 for the main modeling approaches, the semiparametric Cox PH and parametric exponential model. In additional analyses, we address the issue of unobserved heterogeneity with further model specifications.

[2]That is, for a customer whose relationship with the firm began in $y_0 = 2011$, there is one observation of customer defection versus retention for 2012, registered at the end of 2011. For a customer acquired in $y_0 = 2008$, there might be up to four observations of customer retention versus defection, each registered at the end of the year.

FIGURE 2
Field Study, Model-Free Evidence: Observed Shares of Customer Retention in the Year After Initial Discount Expires



Results

Model-free evidence. We first provide model-free evidence of customer retention rates at different levels of discount. For this purpose, Figure 2 plots the observed shares of car insurance customers who remained customers of the firm (at $y_0 + 1$) after the initial discount expired across different initial discount-level groups. As the figure illustrates, customer retention indeed differs by levels of initial discount received. After one year of relationship, the retention rate of customers who obtained a low (.01%–5%) discount is lower than that of customers who did not receive any discount. This finding preliminarily supports H_1. In contrast, retention rates consistently increase when the level of initial discount is in the moderate discount range, between 5% and 35%. This constitutes preliminary support for H_2. At higher levels of initial discount, over 35%, the retention rate decreases compared with moderate discount levels, in support of H_4.

Tests of hypotheses: the effects of initial discounts on customer retention in car insurance. We formally test H_1, H_2, and H_4 using survival analysis. Because we model customer defection in the survival models, the effect signs should be interpreted as inverse from the hypothesized effects on customer retention.

Table 2 reports the results of both the Cox PH model and the exponential model. The discount dummy has a significant, positive effect on customer defection in the full Model 3 (Cox:

TABLE 2
Field Study Results: Second-Stage Survival Model on Customer Retention After the Expiration of the Discount in Car Insurance

	Cox			Exponential		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Entirely new-to-company customer	.0933*** (.0208)	.0878*** (.0226)	.0845*** (.0226)	.0391 (.0206)	.0460* (.0225)	.0440 (.0225)
Damage claims	−.0868*** (.0136)	−.0895*** (.0136)	−.0898*** (.0136)	−.0817*** (.0135)	−.0870*** (.0136)	−.0875*** (.0136)
Communications contacts by company	−.1097*** (.0064)	−.1043*** (.0065)	−.1041*** (.0065)	−.1187*** (.0064)	−.1076*** (.0065)	−.1072*** (.0065)
Communications contacts by customer	.0303*** (.0022)	.0312*** (.0024)	.0312*** (.0024)	.0296*** (.0021)	.0312*** (.0024)	.0312*** (.0023)
Concentrated customer	−1.2749*** (.0107)	−1.2627*** (.0109)	−1.2607*** (.0109)	−1.2671*** (.0107)	−1.2481*** (.0108)	−1.2464*** (.0108)
Age	−.0173*** (.0003)	−.0142*** (.0007)	−.0142*** (.0007)	−.0176*** (.0003)	−.0129*** (.0007)	−.0129*** (.0007)
Customer tenure	.2324*** (.0058)	.2096*** (.0063)	.2068*** (.0063)	.1688*** (.0047)	.1510*** (.0048)	.1497*** (.0048)
Discount (dummy)		.1329* (.0620)	.3229*** (.0593)		.0546 (.0601)	.2770*** (.0601)
Discount level		−.0244*** (.0036)	−.0559*** (.0050)		−.0286*** (.0037)	−.0650*** (.0051)
Discount level^2			.0008*** (.0001)			.0009*** (.0001)
Residual from first-stage model on likelihood to receive discount		−.3829 (.2956)	−.3846 (.2954)		−.5870 (.3026)	−.5837 (.3021)
Residual from first-stage model on discount level		.0269 (.0162)	.0270 (.0162)		.0409* (.0165)	.0407* (.0165)
Constant				−1.1661*** (.0248)	−2.4241*** (.3859)	−2.4147*** (.3853)
Log-likelihood	−410,465.5	−410,383.1	−410,359.8	−80,483.1	−80,303.6	−80,272.6
AIC	820,944.9	820,788.3	820,743.6	160,982.3	160,631.1	160,571.1
BIC	821,021.7	820,909	820,875.3	161,070.1	160,762.8	160,713.8

*$p \leq .05$.
**$p \leq .01$.
***$p \leq .001$.

$\beta = .32$, SE = .06, $p < .001$[3]; exponential: $\beta = .28$, SE = .06, $p < .001$). This result, together with the results on the discount level (discussed next), suggests that customer defection at low discount levels is significantly higher than when the customer did not receive any discount. That is, in support of H_1, low discounts have a negative effect on customer retention compared with no discounts, as also indicated by the drop in customer retention from no discount to low discount in the model-free results (Figure 2). Furthermore, Model 3 shows that discount level has significant linear ($p < .001$) and quadratic ($p < .001$) effects on customer defection. The coefficient for discount level is negative (Cox: $\beta = -.06$, SE = .005, $p < .001$; exponential: $\beta = -.07$, SE = .005, $p < .001$), while that for the squared term is positive (Cox: $\beta = .001$, SE = .0001, $p < .001$; exponential: Cox: $\beta = .001$, SE = .0001, $p < .001$). These results suggest a U-shaped relationship between initial discount level and the customer's likelihood to defect and, thus, an inverted U-shaped relationship between initial discount level and customer retention likelihood. Taken together, these linear and quadratic effects lend support to H_2 and H_4, suggesting that in the range of moderate discounts, the effect of discount level on customer retention is positive, but this effect turns negative at high discount levels.

Regarding the control variables (Table 2), being an entirely new customer to the company (in addition to being new to the car insurance branch) has a positive effect on customer defection (Cox: $\beta = .08$, SE = .02, $p < .001$; exponential: $\beta = .04$, SE = .02, $p > .05$). This is intuitive, considering that preexisting customers to the company's other products are more likely to stay as customers to the newly acquired car insurance product as well. The number of insurance damage claims filed by a customer has a significant, negative effect on customer defection (Cox: $\beta = -.09$, SE = .01, $p < .001$; exponential: $\beta = -.09$, SE = .01, $p < .001$). Although claims might lead to an increase in insurance premiums and thus might also decrease customer retention, this result shows, on the contrary, that the more value-for-money customers have obtained for their insurance, in the form of damage claims reimbursed, the more likely they remain as customers. Company-initiated contacts (e.g., to offer a new service) have a negative effect on customer defection (Cox: $\beta = -.10$, SE = .01, $p < .001$; exponential: $\beta = -.11$, SE = .01, $p < .001$); in contrast, customer-initiated contacts have a positive effect on customer defection (Cox: $\beta = .03$, SE = .002, $p < .001$; exponential: $\beta = .03$, SE = .002, $p < .001$). This is logical insofar as customers may initiate contacts with the company mainly out of dissatisfaction (e.g., to complain). Concentrating all insurance within the firm has a negative effect on customer defection (Cox: $\beta = -1.26$, SE = .01, $p < .001$; exponential: $\beta = -1.25$, SE = .01, $p < .001$), which again implies that purchasing several insurance products from the firm is a switching barrier. Age also has a negative effect on customers' propensity to defect (Cox: $\beta = -.01$, SE = .001, $p < .001$; exponential: $\beta = -.01$, SE = .001, $p < .001$), whereas customer tenure has a positive effect (Cox: $\beta = .21$, SE = .01, $p < .001$; exponential: $\beta = .15$, SE = .005, $p < .001$).

Additional analyses: latent class analysis to control for unobserved heterogeneity. While the previous results account for the effects of several observed control variables vis-à-vis the main predictor variables of initial discounts, a question remains whether the effects of initial discounts on customer retention are robust to the presence of unobserved heterogeneity across customers. To partially control for this, we conduct a latent class analysis (LCA) (McCutcheon 1987) on the background variables of customers and rerun our main model (Model 3 of Table 2, exponential specification) by (1) including random-effects specification for customers' latent class membership scores and (2) incorporating the latent class membership as an additional control variable and moderator of the key parameters.

In the LCA, we select a solution of three latent classes because of the substantial improvement in information criteria (Bayesian information criterion [BIC] and Akaike information criterion [AIC]) that occurs when moving from a solution of two classes to three classes. Table W6 in the Web Appendix presents the characteristics of the latent classes. The results reveal three distinct segments of customers in our data set: Segment 1 (9% of the customers) contains existing customers of the company's other insurance products. Segment 2 (41% of the customers) comprises new customers who maintain frequent communication contacts with the company, compared with the other segments. New customers who keep limited contact with the company compose Segment 3, which represents 50% of the customers. We name these segments "cross-buying existing customers," "interactive new customers," and "passive new customers," respectively.

We use the resulting latent class membership scores to estimate an exponential parametric model with latent class random effects. The results in Table W7 of the Web Appendix show that the estimated frailty variance in this model ($\hat{\theta} = .70$) is statistically significant ($p < .001$). This result provides evidence of unobserved heterogeneity among the customer segments. Yet even when we account for the random effects of these latent classes, the linear and quadratic effects of initial discounts remain robust and statistically significant, as in our main models without LCA random effects.

Furthermore, we estimate a model that incorporates the latent class memberships as a control variable and moderator of the key parameters (discount dummy, discount level, and discount level^2). These results, also available in Table W7, indicate that the linear ($\beta = -.09$, SE = .02, $p < .001$) and quadratic ($\beta = .001$, SE = .0002, $p < .001$) effects of initial discounts on customer defection remain significant and with the expected signs. Nevertheless, the effects of discounts on customer defection versus retention differ somewhat across customer segments. Specifically, for the "interactive new customers" group, the quadratic effect of discount level on customer defection is reinforced ($\beta = .0007$, SE = .0003, $p < .05$). This suggests that for "interactive new customers," the effect of initial discounts on customer retention peaks at a somewhat lower level of moderate discounts than for the other segments, especially compared with the "cross-buying existing customers" group. However, overall, the results of the LCA-informed survival models suggest that, despite some

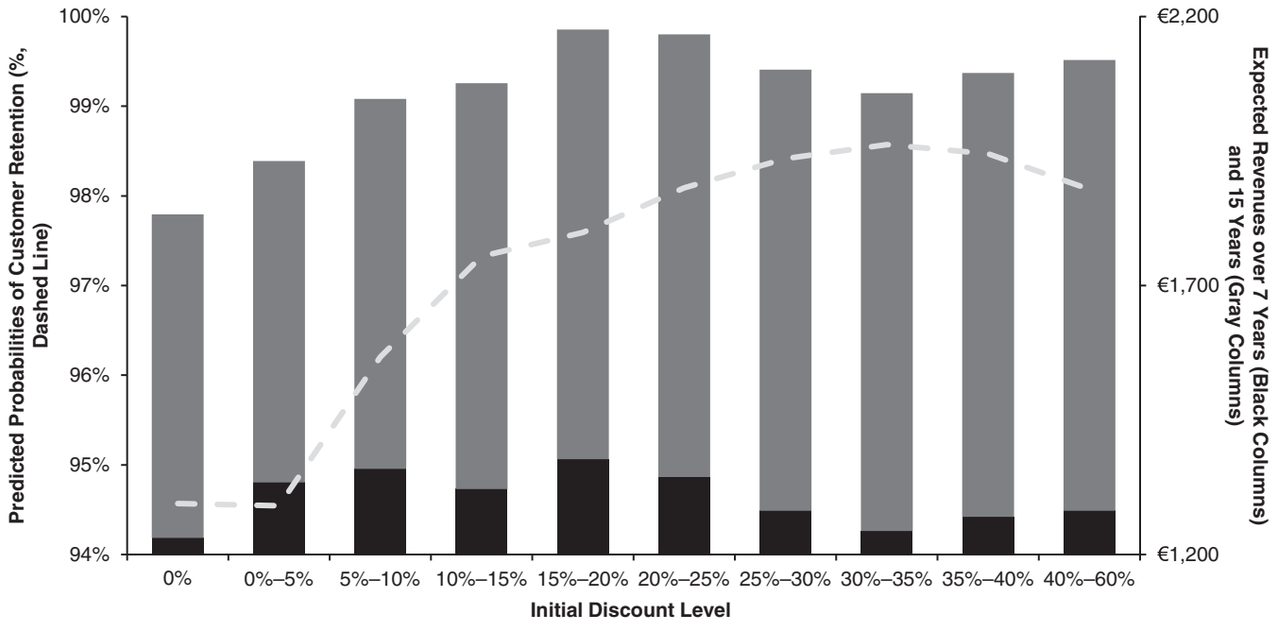
[3]When testing the hypotheses with the Cox PH model, we assessed the assumption of proportional hazards based on the Schoenfeld residuals (Grambsch and Therneau 1994; Schoenfeld 1982). The results show that the hazard ratio of the discount-level variable ($\rho = -.0055$; $\chi^2(1) = .93$; $p > .05$) does not interact with time (i.e., the hazard ratio is constant over time for this variable). Therefore, the use of the Cox PH model is justified in this study.

heterogeneity across customer segments, the same nonlinear patterns of initial discounts on customer retention are manifested in all three segments.

Predicted probabilities of customer retention and customer lifetime revenues. To assess the optimal discount levels from the firm's perspective, we calculate the predicted probabilities of customer retention on the basis of the exponential survival Model 3 (Table 2). We first assess the predicted probability of customer retention for year $y_0 + 1$ (after the initial discount expires) as a function of the initial discount received by the customers at year y_0. The dashed line in Figure 3 depicts the median retention likelihood of customers receiving an initial discount in different discount brackets. The curve shows that customer retention culminates at the higher end of the moderate discount range, such that a relational discount in the range of 30%–35% optimizes customer retention. In turn, low discounts of below 5% yield the lowest retention probabilities. Notably, the predicted retention probabilities of Figure 3 closely follow the pattern of the observed customer retention rates in Figure 2. This indicates that our prediction model has a good fit with the actual data and that the initial discounts indeed have a considerable ability to predict customer retention. We further evaluate the fit of our main model with the initial discount predictors by plotting the observed retention rates against the predicted customer probabilities (Figure W1a in the Web Appendix). The dots in this graph (see Steyerberg et al. 2010) fall reasonably close to the diagonal of the figure—the diagonal indicates perfect fit with the observed retention rates. As a comparison, a similar graph for predicted customer retention rates from a model *without* the initial discount as a predictor (Model 1, Table 2) is presented in Figure W1b. The dots in Figure W1b are scattered substantially farther from the diagonal than in Figure W1a, which further supports the ability of initial discounts to predict customer retention. Furthermore, the overall fit statistics (log likelihood, AIC, and BIC) of the model that includes initial discounts are consistently better than those of the control model without initial discounts (see Table 2).

Nevertheless, granting an initial discount to attract customers naturally has an adverse effect on these customers' first-year revenues. Thus, the optimal discount rate from a retention likelihood standpoint may not necessarily generate the highest revenues over a customer's lifetime. Therefore, we further assess the optimal discount rates with respect to customer lifetime revenues (see Lewis 2006), considering two alternative long-term time horizons (Mela, Gupta, and Lehmann 1997): 7 and 15 years. To this end, we first estimate the revenues (i.e., insurance premium) for each customer's first year y_0 using his or her background variables as regressors and then use this estimated customer-specific revenue as a proxy for projecting revenues for the entire 7-year (15-year) time frame ($y_0 \ldots y_0 + 6 \ldots y_0 + 14$). For year y_0, we deduct the actual initial discount that the customer received from this estimated revenue. For the rest of the years $y_0 + 1 \ldots y_0 + 6$ ($y_0 + 1 \ldots y_0 + 14$), we multiply the estimated revenue with the customer's predicted retention probability (based on Model 3; see Table 2 and Figure 3) to obtain the customer-specific expectancy values of revenues for those future years. We discount these future-year expectancy revenues to net present value using an interest rate of 7%. Then, we sum these net present value–discounted estimated revenues over the 7-year (15-year) period, to arrive at an estimated value of lifetime revenues of each customer. Finally, we assess the median lifetime revenues for different groups of customers on the basis of their initial discount percentage range. The columns in Figure 3 show the results.

FIGURE 3
Field Study Results: Predicted Probabilities of Customer Retention and Expected Lifetime Revenues over Seven and Fifteen Years



In Figure 3, we find a similar nonlinear pattern for the lifetime revenues (columns) as for customer retention (dashed line). However, ensuing from the deduction of the first-year discount of the revenues, we find that the highest lifetime revenues are generated at somewhat lower moderate discounts of 15%–20% than the 30%–35% discount maximizing customer retention. Thus, from a lifetime revenue standpoint, relational discounts at around 15%–20% would be optimal for both a 7- and a 15-year time frame. That is, our results are not highly sensitive to the time horizon considered for the calculations.

Furthermore, we separately assess the lifetime revenues for the latent segments of customers identified in the LCA (Table W8 in the Web Appendix). We find that the optimal discount level remains in the moderate discount range (15%–20%) for all customer segments. Yet some differences emerge across groups, especially in terms of the precise level of a high initial discount at which lifetime revenues drop below those of the customer group receiving no initial discount at all. For the "passive new customers," lifetime revenues do not drop below those of the no-discount group until the initial discount granted exceeds 60%. In contrast, for the segments "cross-buying existing customer" and "interactive new customer," the lifetime revenues essentially drop below those of the no-discount group already at moderate discount levels of 30%. These results are consistent with Lewis's (2006) findings.

Replication: property insurance. To replicate the results on car insurance, we estimate the same survival models with additional data (n = 216,431) obtained from the same firm in the property insurance category. The results show the same patterns we found in car insurance (Table 2) for property insurance.

The initial discount dummy has a significant, positive effect on customer defection in the full Model 3 (Cox: $\beta = 1.62$, SE = .11, $p < .001$; exponential: $\beta = 1.51$, SE = .11, $p < .001$). In turn, the discount level has significant linear (Cox: $\beta = -.09$, SE = .01, $p < .001$; exponential: $\beta = -.10$, SE = .01, $p < .001$) and quadratic (Cox: $\beta = .001$, SE = .0001, $p < .001$; exponential: $\beta = .001$, SE = .0001, $p < .001$) effects on customer defection, thus indicating a similar U-shaped relationship between the initial discount level and customers' likelihood to defect as in the car insurance data set. Overall, the results of the property insurance category lend additional empirical support to H_1, H_2, and H_4. That is, a low initial discount has a negative (positive) effect on customer retention (defection), as compared with no discount (H_1); in the range of moderate discounts, an initial discount has a positive (negative) effect on customer retention (defection); and in the range of high discounts, the effect of discount level on customer retention (defection) turns negative (positive) again. We also find similar effects of the control variables as in the car insurance data set (see Table W9 in the Web Appendix).

Laboratory Experiment

Method

Design, sample, and procedure. A laboratory experiment tests the psychological mechanism underlying the nonlinear effects of initial discounts on customer retention (i.e., the mediation hypotheses H_3 and H_5). Moreover, we pursue replication of the results across a different product context than insurance. Thus, the experiment has a 3 (discount levels: low vs. moderate vs. high) × 2 (product context: car insurance vs. video-on-demand service) between-subjects design. We recruited 284 respondents through a human intelligence task posted on Amazon Mechanical Turk in the United States (M_{age} = 38.5 years; 51.9% male). Respondents were randomly assigned to one of the six treatments. Depending on the product context, respondents were first presented with a scenario in which they were asked to imagine having signed a contract with either a car insurance or a video-streaming platform. Regarding the three discount conditions, the scenario indicated that the respondent had signed the contract at a 5% (low), a 20% (moderate), or a 40% (high) discount. Then respondents had to imagine that one year had elapsed, that the initial discount was expiring, and that they now had to decide whether to renew the contract for another year at regular price.

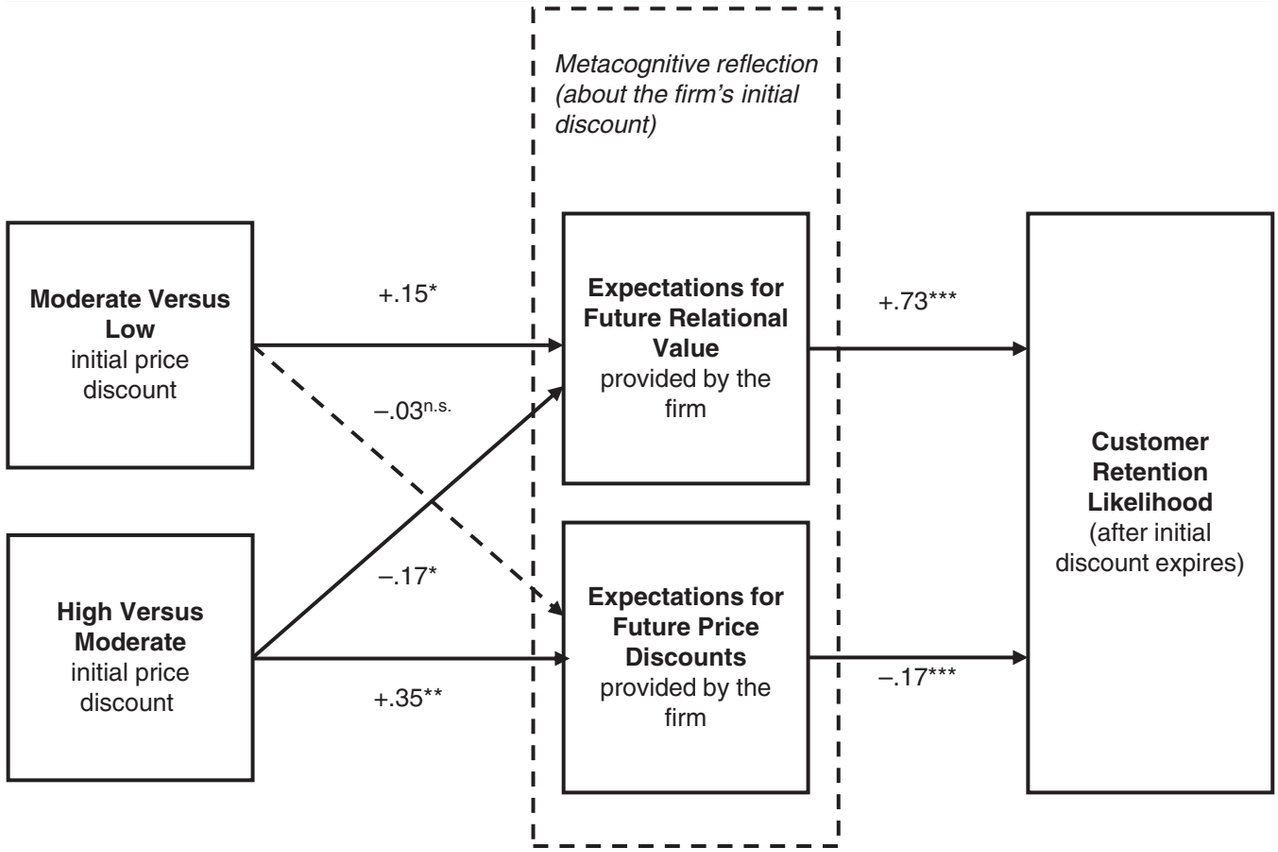
Measures. As the dependent variable measure, respondents indicated how likely they were to "extend their contract for another year" at the regular price (1 = "very unlikely," and 7 = "very likely"). After some filler questions, we assessed the key mediating variables. We measured expectation of future relational benefits provided by the firm with three items based on Gwinner, Gremler, and Bitner (1998) (1 = "fully disagree," and 7 = "fully agree"): "Firm X is better than other providers because they know what I want," "Firm X is superior to other providers because they know me better," and "Firm X is the best provider because they are aware of my needs." The item "What discount do you expect to receive on your next car insurance [video-streaming subscription] in the following year?" captured the expectation of future economic benefits provided by the firm. The response alternatives were "none," "1%–5%," "5%–10%," "10%–15%," and so on, through "over 40%."

For the control variables, we measured consumer traits of price-deal proneness, price consciousness, and variety-seeking tendency. We assessed price-deal proneness with seven items adopted from Pillai and Kumar (2012) (e.g., "If a product is offered at a discount, that's a reason for me to buy it"). We measured price consciousness with five items from Alford and Biswas (2002) (e.g., "I am willing to go to extra effort to find lower prices"). Finally, we measured variety-seeking tendency with three items from Helm and Landschulze (2009) (e.g., "I think it is boring to always buy the same brands even if they are all right").

Results

We apply partial least squares (PLS) path modeling (Fornell and Cha 1994) to test the mediation hypotheses. Specifically, we employ SmartPLS (Ringle, Wende, and Becker 2015), which allows for simultaneous testing of multiple effects while enabling single- and multi-item measurement. As a structural equation modeling technique, the PLS path modeling has an advantage over stepwise mediation analysis approaches (cf. Baron and Kenny 1986), particularly in cases such as ours, in which multiple mediation effects need to be simultaneously estimated (Leth-Steensen and Gallitto 2016).

FIGURE 4
Lab Experiment Results: Psychological Mechanism between Initial Discount Levels and Customer Retention



*$p \leq .05$.
**$p \leq .01$.
***$p \leq .001$.

Figure 4 depicts the path model results in a simplified form. The paths from the two key mediating variables to the dependent variable of customer retention likelihood (i.e., repurchase intention) are significant and of the expected signs. Specifically, expectations of future relational benefits provided by the firm have a significant, positive main effect on customer retention likelihood ($\beta = .73$, $p < .001$), while expectations of future economic benefits have a significant, negative effect on repurchase likelihood ($\beta = –.17$, $p < .001$). The latter effect implies that with higher expectations of continued discounts, the customer becomes disappointed when the initial discount expires and is therefore less likely to repurchase. These effects are as anticipated in H_3 and H_5.

Furthermore, as we hypothesized in H_{3a} and H_{5a}, a moderate initial discount enhances consumers' expectations of future relational benefits, as compared with a low discount ($\beta = .15$, $p < .05$), while, compared with a moderate discount, a high initial discount again decreases those expectations ($\beta = –.17$, $p < .05$). In turn, in support of H_{5b}, a high initial discount enhances expectations of future discounts by the firm, compared with a moderate discount ($\beta = .35$, $p < .01$). Yet the effect of moderate initial discounts on expectations of future discounts remains nonsignificant compared with low discounts ($\beta = –.03$, $p > .2$). Thus, while all other mediating hypotheses (i.e., H_{3a}, H_{5a}, and H_{5b}) receive support, H_{3b} does not, suggesting that moderate initial discounts do not lead customers to have lower (albeit not higher, either) future discount expectations than customers who received low discounts.

Notably, the results are the main and mediating effects from a PLS model that also includes the moderating effects of product context (car insurance vs. video streaming) and the control variables. Because we find the key main and mediating effects to hold in different product contexts,[4] the effects and their related signs can be generalized across the product contexts. In addition, the effects of the consumer trait control

[4]The effect sizes vary across product contexts. In particular, the moderating effects of the video-streaming context on the effect of a high discount (vs. a moderate discount) on relational benefit expectations and on the effect of a moderate discount (vs. a low discount) on future discount expectations are significant ($p < .05$). These results suggest that high discounts decrease relational benefit expectations less in the video-streaming than in the insurance context, while moderate discounts enhance discount expectations somewhat more in the video-streaming context.

variables on customer retention all remain nonsignificant: price deal proneness ($\beta = .06$, $p > .10$), price consciousness ($\beta = -.06$, $p > .10$), and variety-seeking tendency ($\beta = -.07$, $p > .05$). This suggests that consumers' predispositions to actively search for alternative offers do not substantially affect customer retention likelihood beyond the metacognitive expectations shaped by the initial discounts.

Finally, we estimate another PLS model, with four alternative mediating variables, representing alternative mechanisms that might explain the effects of initial discounts on customer retention likelihood: gratitude toward the firm, perceived benevolence of the firm, perceived reciprocity with the firm (Pervan, Bove, and Johnson 2009), and search intentions for competing offers (Palazon and Delgado-Ballester 2009). The results (Figure W2 in the Web Appendix) indicate that none of paths from the alternative mediators to customer retention likelihood are statistically significant (<.05) . In contrast, we find that, also in this model, expectations of future relational benefits and of future discounts mediate the effects of initial discounts on customer retention likelihood.

Additional Laboratory Experiment

Neither the field study nor the main lab experiment accounts for the potential influence of competition on customer retention, or for confounding effects of competing price offers. To make up for this shortcoming, we conduct an additional lab experiment with 214 participants in the context of homeowners insurance. In this lab experiment, we used a 3 (focal company's initial discount level: low vs. moderate vs. high) × 2 (competitor's later price levels: competitor offering the renewal of insurance at the same price vs. at a lower price) between-subjects design. As the dependent variable, the experiment measured consumers' intent to look for the lowest-price offer in the market ("Before making a purchase decision, I would still check whether insurance companies other than [the focal insurance provider] or [the competitor] offer similar types of insurance at a lower price"; Biswas et al. 1999).

Otherwise, the setup was similar to the main lab experiment. That is, participants were first asked to imagine considering purchasing homeowners insurance at a certain price and discount level. The level of discount varied depending on the discount condition. Then, participants were asked to imagine that they had signed the initial contract with the focal insurance provider and that this contract was now about to expire. At this point, they were further told (unlike in the previous experiment) that another firm would be offering the same insurance product. Depending on the experimental condition, the price of the competitor's offer was described to be the same as of the focal company's product or 7% lower.

The results show that, compared with a moderate initial discount, a low ($\beta = .11$, $p < .05$) and a high ($\beta = .14$, $p < .05$) initial discount lead to a higher intent to look for the lowest-price offer in the market. This finding supports the notion that moderate-level initial discounts lead to a greater predisposition to remain with the focal company after the initial discount expires. More importantly, we find that these effects are not accounted for ($\beta = .01$, $p > .1$) or moderated by a competitor offering the same insurance product at a lower price (high focal company initial discount × lower competitor price: $\beta = -.03$, $p > .1$; low focal company initial discount × lower competitor price: $\beta = .03$, $p > .1$). Overall, these results corroborate our previous empirical findings, even in the presence of a competition variable.

Discussion

Despite the growing body of research on the long-term effects of discounts (e.g., DelVecchio, Henard, and Freling 2006), findings on the effectiveness of a relational price discount strategy have been inconclusive to date. This study set out to reconcile existing evidence, as well as to provide a systematic empirical examination of the conditions under which initial discounts are effective in building long-term customer relationships. The results of the large-scale field studies reveal nonlinear effects of initial discounts on customer retention, which have previously gone unidentified. Specifically, moderate initial discounts are effective relational discounts; they enhance customer retention rates and lifetime revenues, whereas high and low discounts undermine the two.

Premised on metacognition theory (e.g., Craig et al. 2012; Wright 2002), a laboratory experiment identifies customers' metacognitive processing as the psychological mechanism underlying the nonlinear effects of initial discounts on customer retention. In particular, when customers receive a moderate relational discount, they form higher expectations of future relational benefits but lower expectations of future discounts. In turn, enhanced relational benefit expectations increase customer retention after the initial discount expires, as does the lowered expectation of future discounts.

Theoretical Implications

First, this research adds to literature on pricing by reconciling prior inconclusive results on the long-term effects of discounts. Prior empirical studies suggest that price promotions have positive (Blattberg and Neslin 1989), negative (Mela, Gupta, and Lehmann 1997), or no (Pauwels, Hanssens, and Siddarth 2002) long-term effects on customer retention or repurchase behavior. Furthermore, the meta-analytical study of DelVecchio, Henard, and Freling (2006) only implicitly suggests that the inconclusive results may be due to nonlinear effects of discounts. Lewis (2006) adds a quadratic term to some of his empirical models but does not theoretically focus on the nonlinear effects. We extend these works by empirically revealing substantial nonlinear effects of initial discounts on customer retention and by developing a theoretical rationale based on consumers' marketplace metacognition for predicting these effects. We find that only moderate initial discounts increase customer retention in the long run while low and high discounts decrease it.

Notably, in specific comparison with Lewis (2006), who focuses on the negative linear effect of initial discounts on customer lifetime revenues, our findings are partly contrasting for two reasons. First, our study separately models a discrete drop in customer retention likelihood when just a small initial discount is provided (i.e., .01%–5% discount), compared with no initial discount (which Lewis does not separately model).

Second, it unpacks the nuances of the nonlinear, inverted U-shaped effect of initial discounts on customer retention, in the full range of discounts from 0% to over 60% (whereas Lewis's discount range ends at 35%–40%). Thus, the effect of discounts on customer retention indeed increases in the moderate discount range (5%–35%), before decreasing again with higher discounts, as Lewis finds. Still, consistent with Lewis's results, initial discounts higher than 30% lead to lower customer lifetime revenues than no discounts among customers who engage in cross-buying and those that regularly interact with the firm.

Our findings also complement Anderson and Simester's (2004) work on the positive effects of discounts on repeat purchases of catalog marketing customers. In particular, whereas their study highlights the (linear) effect of the presence versus absence of a deep discount, our research covers the full continuum of discounts from 0% to over 60% and reveals the nonlinear effects of different discount levels. Unlike Anderson and Simester, who show that discounts encourage repeat purchases of other, less pricey products from the same provider, we demonstrate that moderate discounts even encourage repurchases of the same product.

Second, we extend research on the metacognitive information processing that customers engage in when assessing the actions of marketers in general (e.g., Campbell and Kirmani 2000; Friestad and Wright 1994) and discount actions in particular (e.g., Pillai and Kumar 2012). According to previous research, consumers' information-processing predispositions and prior knowledge may affect their assessment of and immediate reactions to marketing and pricing stimuli (Friestad and Wright 1994). Extending this, our research offers theoretical rationale and empirical evidence according to which an initial pricing stimulus may shape consumers' information-processing tendencies, their formation of future expectations, and, consequently, their nonimmediate, longer-term response to the stimulus. These findings also empirically support Grewal, Marmorstein, and Sharma's (1996) conceptual suggestions regarding varying degrees of information processing caused by different discounts. According to the present theory, moderate relational discounts elicit the most intense metacognitive information processing, leading customers to enhance their expectations of future relational benefits and decrease their expectations of future economic discounts. These findings shed new light on the black box mediating initial discounts and customers' subsequent repurchase decisions.

Third, our research adds to the broader discourse on marketing resource allocation between customer acquisition and customer retention, in terms of marketing actions in general (e.g., Reinartz, Thomas, and Kumar 2005) and pricing actions in particular (Lewis 2006). For this discourse, the current research underscores the importance of considering the discrete and nonlinear effects of marketing resource allocations on long-term customer responses. Furthermore, because the highest customer retention rates occurred at the 30%–35% level of initial discounts and the highest customer lifetime revenues occurred at the 15%–20% level of initial discounts, we add to previous literature suggesting that the objective of maximizing customer retention is aligned with, but not one-to-one to, the objective of maximizing customer lifetime revenues (Reinartz and Kumar 2000).

Managerial Implications

From a managerial perspective, our study confirms that the relational price discount strategy—fostering long-term customer relationships through initial discounts—is an effective strategy if implemented cautiously. In brief, this study suggests that marketers should consider a relational discount strategy with moderate initial discount levels of approximately 15%–20% to maximize customer lifetime revenues. To optimize customer retention, the initial discount can be somewhat higher—up to 35%. Nonetheless, because lifetime revenues constitute the most relevant decision criterion from the standpoint of firm profitability, the lower initial discounts of 15%–20% are recommendable. At any rate, managers should refrain from using high initial discounts of 40%–60% or more because this results in even lower customer lifetime revenues than not granting any initial discounts at all.

In using the relational price discount strategy of moderate initial discounts, managers should pay further attention to the psychological mechanisms at play. The positive effect of relational discounts on customer retention relies on customers' superior relational benefit expectations. So as not to disappoint customers and to live up to these expectations, managers adopting the moderate relational discount strategy should dedicate extra efforts to ensure high product/service quality to these customers as well as engage in further customization activities that make the customer feel recognized and valued in the relationship (Gwinner, Gremler, and Bitner 1998).

Our findings also imply that managers wanting to establish long-term customer relationships should give no discounts at all rather than high discounts (>40%–60%). Thus, our findings are also useful for managers in cautioning them not to overspend on attracting customers through too-high discounts. Notably, if granting moderate-level discounts is not possible for one reason or another (e.g., fear of price war), managers should reallocate resources previously used for high discounts into implementing nonprice marketing tactics, which may better enhance customer retention. For example, the field study's results indicate that firm-initiated customer communications increase customer retention. Thus, if moderate-level discounts cannot be granted, managers may instead want to invest money in enhancing the overall level of service and communication interaction with customers.

Limitations and Directions for Further Research

The limitations of this study pinpoint avenues for further research. First, our field study data set has certain limitations. Most notably, it does not include competition-related variables, such as competitors' price offers or customers' search costs. As these variables are additional drivers of customer retention, particularly in the insurance industry (Honka 2014), future research should compile data on them. For example, the availability of competitors' price offers could represent another input variable to the customers' consideration process, which may diminish the relative role of the initial discount in influencing customer retention or increase customers' sensitiveness to the best bargains in general. Yet note that including a competitive offer variable in the additional lab experiment of the present research did not significantly confound the overall

pattern of results. This increases our confidence in the robustness of the field study's results, despite the unavailability of such variables therein.

Another restriction of our field data is the unavailability of customer psychographic variables. As such, we could not explicitly control for the effects of heterogeneity resulting from these variables. Further research could gather field survey data or use larger sample sizes in laboratory to address the potential moderating effects of psychographic variables, such as price sensitivity or customer inertia (e.g., Chen, Monroe, and Lou 1998; Gijsbrechts, Campo, and Goossens 2003; Honka 2014; Yoon and Tran 2011). Although our lab experiment suggests that price consciousness, for instance, does not significantly moderate the effects of initial discounts on customer retention, results of a larger field survey might show that the retention effect of moderate initial discounts is pronounced for price-sensitive consumers, as they may be particularly attentive to the relational value signals sent by moderate price discounts. Alternatively, the retention effect of moderate discounts could be dampened for price-sensitive consumers, as they might have a lower appreciation of the relational value signals (as opposed to economic value signals) and/or be more disappointed economically when the moderate discount ends.

In addition, the time span of our field data does not allow us to compare actual and predicted customer lifetime revenues over the long run. Comparing these values would be important for assessing the accuracy of long-term value models (see Venkatesan and Kumar 2004). However, in our case, a comparison between actual and predicted lifetime revenues would have necessitated observed data for each customer for more than a decade, as the average customer lifetime duration is approximately 15 years. Because the maximum number of observations for an individual customer's revenues in our data set is four (i.e., a maximum of four years of customer relationship for nondefecting customers), we lack a comprehensive baseline of actual revenues with which the predicted lifetime revenues for 15 years could be compared. However, note that the predicted lifetime revenue calculations are derived, fundamentally, from the predicted customer retention probabilities after the initial discount expires. Thus, the high fit between the predicted customer retention probabilities and the actual customer retention rates (Figures 2, 3, and W1) increases our confidence in a reasonable match between the predicted and actual customer lifetime revenue patterns as well. In any case, to directly compare predicted and actual lifetime revenue patterns, future research should strive to obtain customer revenue data that extend, timewise, for (at least) the average customer lifetime in the context studied.

Furthermore, beyond limitations resulting from data unavailability, our field study focused on relational discounts in the financial service industry context and insurance products therein. Our lab experiment results also provide evidence that the field study's findings are generalizable to other contexts than insurance, such as video-on-demand services. Nevertheless, future research could examine the generalizability of our findings in the context of durable goods or fast-moving consumer goods.

Finally, our study theorizes customer expectations of future relational and economic benefits as the mediators underlying the effects of initial discounts on customer retention. Future studies could further explore which specific relational benefits (e.g., preferential treatment, intense personal communications) customers tend to expect from the company. Relatedly, future studies could also detail how expectations of future economic and relational benefits might affect search costs and search strategies (e.g., for competing offers) at different stages of customer relationships (see Honka and Chintagunta 2017), or vice versa.

Conclusion

With complementary evidence from large-scale field data in the insurance industry and laboratory experiments, this research reveals that firms may profitably employ the relational price discount strategy: that is, granting new customers initial discounts not only to attract them but also to enhance their probability of remaining as customers after the discount expires. The results of our empirical studies consistently show that such relational discounts should be moderate in size (e.g., 15%–20%) to yield greater customer retention and maximal lifetime revenues. In light of these findings, we encourage future research to focus on integrating various pricing models and strategies into firms' customer relationship management strategies and processes. This includes exploring the effects of pricing strategies on maintaining, strengthening, or revitalizing customer relationships at different stages of a customer life cycle, beyond customer attraction and the relationship initiation stage.

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