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The Impact of Price Display on Financial Decisions

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Credit decisions play an important role for the economic wellbeing of households. However, the complexity of products and varying price information display makes it hard for consumers to navigate this field. Empirical evidence has important implications for consumer protection policies, as many people fail to make optimal choices for themselves and struggle to understand credit cost information. Presenting additional information on absolute fees can help consumers to make more informed choices. This article reviews the literature on the impact of price display on financial decisions. Research from marketing and other fields provides related evidence.

Background

The behavioral industrial organization literature suggests that consumers sometimes fail to make optimal credit decisions for themselves. For example, Agarwal et al. (2015) analyze an experiment conducted by a major US bank that presented consumers with a decision between two credit card contracts, one with an annual fee and a lower interest rate and one with no annual fee but a higher interest rate. By investigating the account holders' contract decisions and their subsequent borrowing behavior, the authors show that about 40 percent of consumers choose the suboptimal option. Based on representative data of cardholders in Mexico, Ponce, Seira & Zamarripa (2017) provide evidence that credit card users owning multiple cards do not allocate their credit card debt to lower interest rate cards. Instead, consumers assign a sizable fraction of their debt to high interest rate cards, acquiring costs 31 percent above the minimum, perhaps due to limited attention or mental accounting. Lunn, McGowan & Howard (2018) support the view that consumers struggle to evaluate total credit costs. Their review of evidence on consumer credit decisions concludes that many credit card fees are not taken on consciously and decisions are influenced by superficial features of credit offers.

There are concerns that financial product providers may have incentives to exploit consumers' misjudgment in credit decisions; for example, when households fail to comprehend complex price structures (Carlin, 2009). Bar-Gill and Warren (2008) present evidence that credit products intending to take advantage of consumers' lack of understanding are sold in the US. They stress the importance of regulating credit-product safety. In this context, research on borrowing behavior is important to inform policymakers and motivate consumer protection policies.

Using data from the US Survey of Consumer Finances, Frank (2011) reports that, on average, consumers underestimate the interest rate charged on their credit card by 30-33 percent. As credit choices play an important role for households' economic lives, individual financial decision-making is the subject of a large strand of literature, focusing on how financial product features influence credit decisions, including, for example, promotional content (Bertrand et al., 2010) or aesthetic design of documents (Townsend & Shu, 2010), thus illustrating the need for regulation (e.g. Campbell et al., 2011).

This article discusses the literature on the impact of price displays on credit decisions, in particular percentage versus absolute formats. This is relevant as it is customary for many credit costs to be displayed as interest rates in percentage points. In addition, this article presents findings on price display effects from related domains, namely consumption and investment decisions. An overview of the literature is provided in Table 1.

Absolute versus relative price display in credit decisions

Bertrand & Morse (2011) provide evidence suggesting that additional information on absolute fees helps consumers to understand credit costs more clearly. In a randomized field trial, they examine how different price displays of payday loans influence consumers' choices. Through access to data of a large payday lending company in the US, the researchers are provided with data on all transactions people performed before and after receiving different information treatments. The results indicate that customers who are provided with information on accumulated fees in absolute monetary terms are 11 percent less likely to take on a payday loan in the following pay cycles and reduce their amounts borrowed by 23 percent on average. To stimulate consumers to consider their credit decisions in more depth, Bertrand & Morse (2011) recommend information disclosure as a policy measurement.

In Ireland, Lunn, Bohacek & Rybicki (2016) show that credit choices are highly dependent on the information provided to consumers. Engaging in 39 trials in each of the four experimental runs, respondents must decide on one of the two loans differing in annual percentage rate and loan duration. The authors either provide no extra information or additional information on monthly repayments and/or total cost. They find that when presented with information on total cost, consumers choose shorter loan terms.

In an independent groups experiment involving 241 UK account holders, McHugh, Ranyard & Lewis (2011) ask participants to decide on a loan when presented with nine different pairs of loans. Each pair includes a loan with shorter and longer duration. The short-term loan is always accompanied by higher monthly repayment and lower total costs, and it is assigned to a higher annual percentage rate in six out of nine pairs. The study then employs different information treatments for each random group, varying whether annual percentage rate and total cost are displayed in addition to loan duration and monthly repayment. The findings suggest inconsistencies in consumers' choices. When APR and total cost information is provided, participants more likely choose a loan with shorter duration. The authors speculate that the moderating effect of total cost information may be rather small in magnitude because other information, like monthly repayment rates, was also provided. Nonetheless, they conclude that clear total cost information is important to allow consumers to make informed credit decisions.

The framing of price discounts

A broad range of marketing literature explores the impact of different price framing strategies on consumer perceptions. One line of research focuses on comparative price advertisements. Here, the absolute amount off and the percentage off framings are commonly compared. Empirical findings suggest different effects of varying the price discount display in this way. This may have implications for a firm's pricing decisions, but less clear implications for consumer welfare. Nonetheless, this research is valuable for understanding again how price display may affect financial choices.

In this context, Della Bitta, Monroe & McGinnis (1981) conduct a choice experiment with 400 undergraduate students in the US and provide evidence on how consumers value price discounts. The study findings suggest that consumers appear to respond differently to discounts when expressed in percentage terms rather than in absolute monetary terms. Displaying the regular price and the absolute amount off creates a higher mean of value for money than presenting the regular price and the percentage off. The authors, however, do not find any apparent reasons for these differences.

In another experimental study in the US, DelVecchio, Shanker Krishnan & Smith (2007) explore the effects of percentage off versus cents off discounts on price expectations. They find that 64.5 percent of respondents undervalue high-depth discounts when displayed as percentage off, compared to only 3.8 percent for an amount off promotion, presumably due to the cognitive costs of processing discounts in percentage formats. The paper concludes that consumers oftentimes lack the motivation to assess and interpret percentage off discounts correctly.

González et al. (2016) study this topic separately for higher and lower priced products. They show that, for higher-priced products, consumers have again higher perceptions of value and purchase intentions for savings presented in monetary terms rather than percentage terms. However, for low-priced products, the results suggest contradictory but not significant outcomes. Chen, Monroe & Lou (1998) present similar evidence from US undergraduate students indicating that a price reduction framed in dollar terms is perceived as more significant for more expensive products, but the opposite applies for low-priced products.

In contrast to other results, a study of 96 staff members from an American state university by Hardesty & Bearden (2003) finds that promotions displayed in relative amounts are valued higher compared to promotions in absolute amount formats when high promotional benefit levels are employed. Furthermore, there is some research suggesting no impact of discount framing on perceived value. For example, Nusair et al. (2010) ask 118 US university students to respond to different scenarios varying in discount format, discount level, and service industry. The authors find that display of price discounts is not an influential aspect on perceived value of the discount in lower cost service industries. However, the last two studies discussed may lack external validity due to their small and specific samples.

To conclude, the presented studies indicate that consumers often respond in an economically non-rational manner to price discounts because they are influenced by different price displays. The results further suggest that, on average, they are more likely to understand absolute compared to relative price discounts. Despite the ambiguous findings for low priced products and the lower cost service industry, the general evidence suggests that many consumers are unable to interpret discount information in percentage terms accurately.

Price displays in investment and health plan choices

Existing research on investment choices and health plan decisions may carry implications for the influence of price display in financial settings.

There is some evidence suggesting that different price displays impact investment fund decisions. In an information experiment, 763 participants in Mexico's privatized social security system are presented with hypothetical investment fund choices in different formats. Hastings & Tejeda-Ashton (2008) find that financially illiterate workers pay more attention to fees when they are displayed in monetary terms instead of percentages. Displaying absolute fees rather than relative amounts resulted in a 25-55 percent increase in demand elasticity for investment fund choices in the experiment. In addition, Newall & Parker (2019) conduct an experiment among 503 US participants and show that displaying a 10-year dollar cost equivalent instead of annual percentage fees improves investors' fee sensitivity in mutual fund investment decisions. As a result of the intervention, the number of participants minimizing their fees more than doubled for funds with high past returns.

Schmitz & Ziebarth (2017) present field evidence on how price framing affects consumer behavior in health plan decisions. In 2009, a German health plan reform changed the price framing rules for health plans. While health plan premiums were expressed in percentage points of gross wages before, the reform introduced a standardized contribution rate for all health plans and price deviations from this standard price must be stated in absolute monetary terms. Using individual-level and aggregated health plan-level panel data, the authors find that consumers become more price sensitive. Specifically, the initial demand elasticity quadruples post-reform, probably due to greater salience of price differences.

These studies suggest that price sensitivity for other financial decisions can be also improved with absolute price display, especially among the less financially literate who tend to be more vulnerable.

Table 1: Studies on the impact of price display

Study	Sample & Country	Independent Variable	Dependent Variable	Product type
Credit decisions				
Bertrand & Morse (2011)	1441 payday borrowers, USA	Price information (APR information, dollar information, refinancing information), display of savings planner	Borrowing behavior	Payday loans
Lunn, Bohacek & Rybicki (2016), Study 1	25 participants, Ireland	Price information (APR and term information, additional information on monthly repayment, additional information on total cost, full information)	Loan choice	Loans
McHugh, Ranyard & Lewis (2011), Study 3	241 personal account customers from a high street bank, UK	Price information (monthly repayment and term information, additional information on APR, additional information on total cost, full information)	Loan choice	Loans
Price discounts				
Chen, Monroe & Lou (1998)	119 under-graduate business students, USA	Product price level (high, low); promotion type (coupon, discount); presentation forms (dollar, percent)	Perceived significance of savings; purchase intentions	Floppy disk and computer
Della Bitta, Monroe & McGinnis (1981)	400 under-graduate marketing students, USA	Product price level (50$, 120$); price reduction level (10%, 20%, 30%, 40%, 50%); display of price information (sale price, regular price, percentage off, dollar amount off)	Perception of offer value; interest in the product/brand; intent to search for information on alternative choices	Calculator
Del-Vecchio, Shanker Krishnan & Smith (2007), Study 3	123 university students, USA	Discount level (high, low); discount frame (percent off, cents off)	Choice for focal brand; price expectations post-promotion; perceived promoted price	Spaghetti sauce
González et al. (2016)	151 students, Mexico	Product price level (low, high); discount frame (amount off, percentage off)	Perceived value of discount; purchase intentions	Balloons and Jacket

Hardesty & Bearden (2003), Study 3	96 university staff members, USA	Discount frame (dollar, percentage); discount level (moderate, high); promotion type (price discount, bonus pack)	Product choice	Tooth-paste, trash bags, detergent, and hand lotion
Nusair et al. (2010)	118 under-graduate hospitality and tourism students, USA	Discount format (dollar off, percentage off); discount level (20%, 40%, 60%, 80%); service industry (restaurants, hotels, mailing, retail)	Perceived service quality; perceived offer value; purchase intention; word of mouth advertising	Low-cost service industries (mailing, retail, hotels, and restau-rants)
Health plan and investment choices				
Hastings & Tejeda-Ashton (2008)	763 participants in Mexico's privatized social security system, USA	Information on investment funds (fees in percentage, fees in pesos per year, fees as 10-year total fees in pesos, account balance after 10 years, fees with 1 year past returns, fees with 1- and 3-year past returns)	Investment fund choice	Invest-ment funds
Newall & Parker (2019), Study 2	503 participants, USA	Fee frame (percentage, dollar), past return (low, high)	Mutual fund choice	Mutual funds
Schmitz & Ziebarth (2017)	10,552 sickness fund enrollees, Germany	Potential savings through switching (pre- and post-reform); realized savings through switching (pre- and post-reform)	Decision to switch health plans	Health plans

Potential reasons for price display effects

Several researchers examine the topic of how credit information is processed, which is critical for understanding why price display has an influential impact on credit decisions. In this context, Bertrand et al. (2011) stress the relevance of cognitive misunderstanding in credit decisions, particularly payday borrowing.

Ranyard et al. (2006) investigate how annual percentage rate and total cost information affect credit decisions in situations where these cost displays may conflict. The authors ask 28 UK participants to choose between specific loan offers in nine different scenarios, in which some options have a lower annual percentage rate but higher total costs. Afterwards, they provide written answers to questions about how they made their decisions. The results imply that adding information on total costs completely cancels out the influence of annual percentage rate information in credit decisions. Thus, the borrowers seem to prefer to focus on absolute price information and assess credit cost in terms of total mental accounts. Likewise, Elliehausen & Lawrence (2001) suggest that consumers have greater awareness of the total costs for a credit than annual percentage rate in payday loan decisions.

Elliehausen (2009) continues along this line of literature and provides survey evidence on consumers' understanding of payday loan costs. He concludes that only a few US payday loan customers can recall the annual percentage rate displayed accurately while most are aware of the borrowing costs in monetary terms, suggesting that annual percentage rate information is not considered useful enough to retain in memory.

Furthermore, Ranyard & Craig (1993) investigate consumers' capability to estimate flexible loan durations in the UK. Their estimation proves to be more accurate when consumers are equipped with information on average monthly interest charges rather than information on annual percentage rates. The paper concludes that interest rate information is not necessarily helpful when estimating the duration of flexible loans, supporting the view that consumers misunderstand annual percentage rates. Overton & MacFadyen (1998) report similar results from a study with 151 Canadian undergraduate students.

Conclusion

Whether information is displayed in relative versus absolute amounts can influence (credit) decisions. Some studies show a reduction in payday borrowing and preferences for shorter loans because of absolute cost information disclosures. Insights from marketing research on price discount promotions show that cost reductions framed in absolute terms rather than percentage terms lead to different buying behavior and perceptions of value. Highlighting absolute monetary costs in addition to percentage amounts is further shown to result in an increase in demand elasticity for investment fund and health plan choices.

The findings have important implications for policymakers, particularly for regulatory requirements for financial institutions. They underline the need to inform consumers clearly about credit costs and that mandatory additional information on the total costs of loans may serve consumer interests. As this is a rather new field of research, it is critical to further comprehend and assess the impact of price display on credit decisions in large and representative experiments. In addition, exploring consumers' processing of (credit) price information is important for further understanding the underlying explanations.

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