# A penny saved is a penny earned? Differences in male and female savings and consumption tradeoffs on online retail platforms 

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#### Abstract

Online retailers in Asia are increasingly offering interest paying accounts to their users. Based on temporal discounting theory, however, customers might consider tradeoffs in opportunities to save money (offered yield by the online retailer $\times$ the account balance) versus withdrawing money from the account for online purchases. Based on a sample of 1.95 million transactions from 24,591 customers, when short-term savings opportunities (7-day annualized yield $\times$ account balance) are greater, customers withdraw less money for purchase. Relative to females, males tend to withdraw less money for purchase from their account when long-term savings opportunities (1-year annualized yield $\times$ account balance) are higher. The findings have implications for temporal discounting behavior in online retail saving opportunities versus purchase transactions, and implications for online retailers who may cannibalize online sales by offering higher yields to online customers.


## 1. Introduction

Consumer's decision to purchase is at the heart of retail management. While there are numerous elements involved in the decision making process, temporal discounting is one of the prominent factors related to this activity (Foxall, 2010). Temporal discounting is a psychological phenomenon where rewards received at later times are perceived to have lower value, whereas rewards received sooner are perceived as having higher value (Bambauer-Sachse and Grewal, 2011). Evidence suggests that temporal discounting can have a substantial influence on consumer's decision making processes (Soman et al., 2005; Foxall, 2003), and as such it has been suggested that temporal discounting is an essential component to models of consumer behavior (Foxall, 2010). Furthermore, the rate at which individuals discount future returns can vary substantially for short- versus long-run rewards. According to the hyperbolic consumption model, discount rates change at a much pace greater in the short run than in the long run (Angeletos et al., 2001), which suggests that factors that influence short-term investments could be more volatile than those related to long-term investments. Additionally, increasing financial innovation has been shown to potentially increase liquidity, thereby reducing savings rates and driving a greater propensity for short-term consumption (Laibson,
1997). However, recent research in neuroeconomics suggests that individuals can exercise considerable cognitive control with regards to consumption-savings decisions based off individual goals and specific threshold rules regarding the control process (Benhabib and Bisin, 2005). To better understand how concurrent savings accounts are associated with online purchasing behavior, we apply temporal discounting to examine a recent and growing phenomenon - how savings accounts offered by online retailers could relate to individual con-sumption-savings patterns.

A new form of savings option is emerging on online shopping platforms in Asia, where online retailers concurrently offer savings accounts to their online customers. In this new system, customers have an option to pay for their purchases through traditional payment modes and/or by withdrawing money from their savings account on the platform. ${ }^{2}$ While researchers in both retailing and economics have studied the tradeoffs between savings and consumption, recent developments in retailing call for a closer look into this phenomenon. Although evidence on the savings-consumption tradeoff suggests that intrinsic factors such as personality and cultural traits can influence buying behavior (Badgaiyan and Verma, 2014), relatively less attention has been given to the potential influence that differences in temporal discounting rates might have when considering savings possibility at

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the time of purchasing. Additionally, since temporal discounting can be a key influence on individual self-control, and recent research indicates that self-control mechanisms can develop and evolve differently from one individual to another (Ayadi et al., 2013), it is important to understand how differences in temporal discounting are associated with consumer saving-purchase preferences. Furthermore, contextual factors, such as the presence of a concurrent savings account, can influence consumers' temporal discounting (Bambauer-Sachse and Massera, 2015).

The goal of this study is to extend our knowledge of the relationships between consumer purchasing behavior, options for online savings, and gender. Compared to traditional models of purchasing where customers' savings-consumption tradeoffs are studied analytically or based on self-reports (Campbell and Mankiw, 1991), in the current sample we exploit indirectly observable saving and directly observable consumption data in real-life purchase transactions. We draw on data from an online retail portal in China, where customers have an option to make purchases from the interest earning balances they hold with the online retailer. Using a sample of 1.95 million online purchase transactions in China from 24,591 customers on the Yu'E Bao platform, we assess the influence of saving opportunities (based on account balance multiplied by short- or long-term interest yields) on the amount of withdrawal from the account to make a purchase.

Our results suggest that retailers that are considering such programs should ensure that they incorporate key economic information and projections into the decision process. For retailers considering such an option, it will be important to understand the current economic conditions within which they exist, as well as projected future savings rates, to best predict the potential positive or negative impact that employing such programs might have on consumer purchasing behavior. Additionally, it will be important to consider the demographic composition of the retailer's core customer base as well, since our results suggest that gender can influence the relationship between temporal discounting and purchasing behavior within these contexts. The structure of the paper is as follows. We begin by reviewing the current literature regarding temporal discounting and decision making, providing our hypotheses as well as relevant support from the existing literature. In the next section, we detail the research method utilized, followed by our analyses and findings of the study. Finally, we provide a discussion of our findings, their implications, limitations of our study, as well as areas for future research.

## 2. Theory and hypotheses

### 2.1. Temporal discounting and purchase behavior

The purchasing process involves a trade-off between immediate gratification and potential future benefits from savings in the current period, and a key component to this decision making process is the amount of temporal discounting applied to future gains based on current endowments (Soman et al., 2005). Indeed, the proclivity for individuals to place lower value on temporally distant payouts, while simultaneously assigning greater value to more immediate rewards, has been argued to be a key component to all models of consumer behavior (Foxall, 2010). Moreover, the influence of discounting is becoming even more prominent with the growth of e-commerce as a preferred means of consumer purchasing (Hantula and Bryant, 2005). Online retailing has afforded consumers the means to satisfy their desire for products that might override short-term saving preferences (Hoch and Loewenstein, 1991).

However, while discount rates have been shown to be particularly high for short- versus long-term decisions (Laibson, 2005), evidence suggests that these discount rates can decrease if the amount of the future reward increases (Green et al., 1997). When current (short-term savings potential) and future (long-term savings potential) rewards are made more salient, by varying the short and long-term yield rates,
respectively, individuals' temporal attention can be altered from seeing the situation as "more now and less later" to "less now but more later", which can effectively result in reduced discounting (Radu et al., 2011). By increasing the value of temporally proximal payoffs (available balance multiplied by short-term yield), individuals' desire to engage in immediate purchases could be reduced, and their will to forego instant gratification in order to obtain delayed benefits could increase, which would have a negative effect on purchasing rates (Hoch and Loewenstein 1991). Based on this reasoning we predict the following:
Hypothesis 1a. Higher short-term savings [short-term gains: 7-day yield $\times$ balance] are negatively associated with amount withdrawn from savings account for making purchases.

Continuing from earlier arguments for Hypothesis 1a, while increases in short-term savings might reduce individuals' purchasing, this effect might not hold constant for increases in long-term savings. Indeed, research indicates that separate neural systems are involved in valuing immediate versus delayed monetary rewards (McClure et al., 2004). As the temporal distance to future gains increases, so too does the likelihood that the level of discounting will increase as well (Foxall, 2003). This is particularly salient given the fact that gains are discounted more steeply than losses (Han and Takahashi, 2012). Furthermore, evidence suggests that discounting is dependent upon the content of active information, such that when self-control is activated preference for immediate indulgence is reduced (Laran, 2010). From this perspective, long-term savings (i.e. current balance multiplied by long-term yield) could be seen as a reward that requires substantial levels of self-control, and as such could actually enhance the likelihood for individuals to engage in purchasing. Based on this reasoning we predict the following:

Hypothesis 1b. Higher long-term savings [long-term gains: 1-year day yield $\times$ balance] are positively associated with amount withdrawn from savings account for making purchases.

### 2.2. Gender and temporal discounting

Whereas potential gender effects on the influence of temporal discounting on purchasing decisions have been relatively understudied, there exists a substantial amount of literature within the fields of psychology (Eagly, 1995) and economics (Stotsky, 2006) that suggests the presence of such effects. Just as contextual factors can influence discounting levels (Laran, 2010), it is possible that individual characteristics can play a role in the discounting and purchasing processes. While evidence has shown that factors such as age, income, and education can influence discounting (Green et al., 1999; Reimers et al., 2009), relatively little attention has been given to how gender might influence this process.

Males have been shown to exhibit greater impulsivity (Chapple and Johnson, 2007), higher levels of sensation seeking (Ball et al., 1984), and lower self-control (Lagrange and Silverman, 1999). Conversely, females are more averse to punishment (Crosset al., 2011), less likely to take risks (Harris et al., 2006), and more likely to forego immediate gratification and save for future events (Seguino and Sagrario, 2003). From a purchasing perspective, males and females have been shown to differ substantially with respect to both the affective and cognitive components of the purchasing process (Coley and Burgess, 2003), and specifically in respect to online purchasing females perceive a higher level of risk associated with this activity than males (Slyke et al., 2002; Garbarino and Strahilevitz, 2004). Because males are more likely to apply larger discount rates, and engage in impulsive purchasing behaviors, whereas females are more likely to resist impulsive purchasing in order to save for the future (Seguino and Sagrario, 2003), changes in savings rates are more likely to alter male purchasing patterns than they are female purchasing patterns. This change in purchasing behavior for males could be particularly salient for short-term savings opportunities,

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    ${ }^{1}$ The authors contributed equally, and are listed alphabetically by their last names.
    ${ }^{2}$ There are an increasing number of firms in China offering a savings account option on online shopping platforms. Source: https://www.nytimes.com/2014/03/03/business/ international/web-banks-offering-high-interest-rates-rise-in-china.html?_r=0.

