

Earmarking Risk: Relational Investing and Portfolio Choice

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Ordinary individuals are increasingly charged with making investment decisions not only for themselves but also for close others. A child's college savings account and a spouse's retirement savings are instances where investing has become unmistakably *relational*. In this paper, we posit a theory of relational investing that extends Zelizer's relational perspective from the domain of transactions to that of financial risk-taking. Through two original survey experiments, we demonstrate that (1) individuals are less risky with dollars earmarked for others, (2) risk tolerance varies as a function of for whom the dollars are earmarked, and (3) labeling accounts for culturally significant life-stage events (such as retirement or college) also shapes risk tolerance. Because allocation decisions determine financial returns achieved by portfolios invested in the market, our framework and findings have important implications for understanding potential drivers of wealth inequality as well as for the study of culture and economic behavior.

Introduction

More than ever, ordinary individuals find themselves responsible for making financial decisions pertaining to the allocation of investment portfolios (Hacker 2019). As financialization permeates the household (Fligstein and Goldstein 2015), market exposure comes to be a practical consideration for financial decisions made in retirement savings and other self-directed investment accounts (Ghilarducci and James 2018). Moreover, individuals are increasingly tasked with investing money not only for their own benefit but also for the benefit of close others. A child's college savings account (e.g., 529 plans) and a partner's retirement (e.g., 401(k) plans) are familiar examples where the practice of

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investing becomes unmistakably *relational*. While there is a small sociological literature that examines lay investors as an object of study (Roscoe 2015; Preda 2017), little is still known about how individuals invest on behalf of their social ties and how those relations subsequently influence financial risk-taking (but see, Bandelj, Wherry, and Zelizer 2017; Zaloom 2019).

This leads us to ask the following: How do people make investment decisions on behalf of various others? Do people invest their, for example, children's or partner's money differently from their own? Does financial risk tolerance differ when investing on behalf of a nephew versus your own child? What does this tell us about the nature of these relationships? Does that risk calculus change when the investment is designated for a culturally meaningful life event like college or retirement?

The answers to these questions do not simply bear on socioeconomic theory—a relational approach to investing can have important real-world implications involving nontrivial sums. Take the case of college savings accounts, the most popular of which is the 529 plan in the United States. The amount of assets found in 529 plans grew to a record \$352 billion as of mid-2019, with the number of accounts rising to more than 14 million.¹ And, relational investing extends beyond just custodial accounts for minors. Studies of household financial management find couples often designate one spouse to make joint financial decisions (see Himmelweit et al. 2013 for a review), including investing for retirement (Coile 2004). This suggests that some fraction of the nearly \$26.8 trillion currently held in 401(k) plans and individual retirement accounts (IRAs) is invested relationally.²

Extending Zelizer's (1989, 2012) framework, in this paper we propose a theory of *relational investing* wherein tolerance for economic risk—and consequent portfolio allocation—differs as a function of whether and for whom the invested dollars are “earmarked.” In particular, we adopt Zelizer's (2012, 146) position that “[f]or each distinct category of social relations, people erect a boundary, mark the boundary by means of names and practices, establish a set of distinctive understandings that operate within that boundary, designate certain sorts of economic transactions as appropriate for the relation, [and] bar other transactions as inappropriate. I call that process relational work.” Following Zelizer's use of categorical distinctions that fit with labels like “friend,” “lover,” or “parent” (Ibid., 151), we show how distinct relational roles prime different negotiated meanings for investment monies that, in turn, inform risk behavior.

Earmarking imbues money with relational content that “assign different meanings and designate separate uses for particular kinds of monies... *Not all dollars are equal*” (Zelizer 1989, 343; emphasis added). Zelizer and others have demonstrated myriad ways in which earmarked dollars are treated differently in the context of spending and consumption. For example, Sykes et al. (2015) show how low-income families earmark earned income tax credits (EITCs) for special purchases such as gifts for family members, and Stellar and Willer (2014) find that ill-gotten money (earmarked as “morally tainted”) is spent more carelessly than dollars earned through legitimate means. Bandelj, Wherry, and Zelizer

(2017, 7) observe that people are more reluctant to spend money saved for a child's education because "these funds represent and reinforce meaningful family ties – the earmarking is relational" (see also Zaloom 2019). Similarly, individuals are less likely to spend from emergency savings when those dollars are earmarked for someone else (Sussman and O'Brien 2016; for several more examples of earmarking, see Zelizer 2012).

Only investment monies—unlike spending, consumption, or production monies—are held in such a way that risk considerations bear directly on how that money is treated in situ. Indeed, *investment* monies by definition are uniquely oriented to the future. Goals and expectations that people have that carry shared meaning and moral weight will, too, bear on earmarked investment choices. Wherry (2016, 134–135) advances a theory of *relational accounting* that accommodates the microlevel relational work involved both with specific earmarks and with collectively held codes that correspond to ritually marked moments or rites of passage. Financial goals such as retirement and college savings are thus morally fixed and structured. As a result, we would predict, for instance, that a retirement account or college fund would be allocated to a more conservative portfolio that coincides with the cultural meanings of those life events (Hayes 2019). Indeed, the specific investment choices made on behalf of close others would be attuned to both relational roles and meaningful purpose (i.e., a child's [relation] college fund [purpose]). Accordingly, a theory of relational investing is a sociological intervention into long-standing debates in economics that deal with financial decisions made under conditions of uncertainty, known as *portfolio choice*.³

Integrating insights from economic sociology, social psychology, and behavioral economics, we use a set of original vignette survey experiments to test how relational earmarking impacts financial risk-taking in two disparate contexts: gambling and investment portfolio choice. By documenting how relational categories and culturally salient life-stage events shape financial risk-taking, we reveal yet another instance where culture and economic action are mutually constitutive. That is, when people invest relationally, they systematically deviate from what the standard model of economics would predict in ways that are best explained sociologically.

Our findings could have important implications for uncovering unseen drivers of wealth disparities across individuals and between groups. If, for example, parents are systematically more risk-averse when investing on behalf of their children—particularly for a culturally meaningful life moment such as college—then these dollars may be underinvested and therefore less likely to generate sufficient returns to achieve their stated goal. Additionally, if some people treat earmarked dollars with higher levels of risk aversion than others—for example, women relative to men (Eckel et al. 2008)—then such differences may result in divergent wealth accumulation over longtime horizons (for instance, over one's working life until retirement). Our findings, and the concept of relational investing more broadly, are therefore of interest to policymakers and household finance professionals alike, as well as to scholars of culture, inequality, and the economy.

In what follows, we first introduce some background on the economic importance of portfolio choice followed by the social-psychological literature that examines generalized self-other risk-taking before linking these two literatures to the process of “earmarking” relational content and symbolic value. Next, we describe our empirical method and elaborate on the results of two survey experiments that test our hypotheses. Finally, we engage in a general discussion of our results and their implications before concluding.

A Theory of Relational Investing

Portfolio Choice

The way that investors allocate funds among risky assets—that is, portfolio choice—is an important and ongoing empirical question which bears on the economic security of individuals, especially as they take responsibility of their own financial futures. In this vein, scholars have long asked how people choose investments and the associated risk selected for an investment portfolio. This recurring theme in the finance literature begins with the advent of modern portfolio theory (Markowitz 1952) nearly 70 years ago, which has earned James Tobin, William Sharpe, and Harry Markowitz Nobel Prizes in economics for their contributions to portfolio theory. Choosing a portfolio’s allocation, as Sharpe (1970) explained, is primarily concerned with making decisions involving outcomes that cannot be predicted with complete certainty—in other words, decisions involving risk. While economic sociology has certainly provided important insights regarding economic action under risk and uncertainty broadly (Beckert 1996), the specific matter of portfolio choice has thus far been left to the economists. As a result, we lack an understanding of how risk decisions are patterned by relational work. What we argue here is that Zelizer’s relational economic sociology can provide a generative framework as it applies to risk-taking for defined financial goals associated with investments made on behalf of others.

Indeed, the question of portfolio choice is ripe for sociological intervention. The standard model of economics presumes that investors are instrumentally rational actors who routinely reach optimal decisions by considering expected returns and variances of assets, choosing the portfolio that maximizes expected return for a given risk tolerance (Markowitz 1952). As such, earmarks would be irrelevant from the perspective of mainstream economic theory. In recent years, a large body of empirical work from behavioral finance demonstrates that investors in fact exhibit glaring departures from the predictions made by mainstream theory. In particular, this research leverages cognitive psychology to find evidence of systematic biases leading to poorer returns than would otherwise be obtained by a rational actor (Charness and Gneezy 2010). When it comes to allocating investment portfolios, the behavioral economics concept of “mental accounting” (Thaler 1999) has been put forward to explain the fact that 401(k) plan participants fail to recognize their retirement contributions as

a component of their overall portfolio of wealth (Choi et al. 2009). Instead, individuals compartmentalize money intended for particular practical purposes, rendering those funds non-fungible: “Money in one mental account is not a perfect substitute for money in another” (Thaler 1999, 185). In terms of financial risk-taking and mental accounting, Zhoua and Pham (2004) show that respondents are more willing to invest in a risky business venture with money originating from a stock trading account than with money originating from an IRA, indicating that the mental account for retirement savings is assigned a greater degree of risk aversion than the one for general investing (see also Prelec and Lowenstein 1998). Given that risk tolerance can vary between one’s *own* mental accounts, it seems reasonable that it should also vary across relational accounts.

Expanding the way that people use mental accounting, Shefrin and Statman (2000) propose behavioral portfolio theory (BPT) as an alternative approach to the standard theory of portfolio choice. Rather than optimizing asset class means and variances, BPT investors choose portfolios by considering subjective evaluations of expected wealth, desire for security, aspiration levels, and probabilities of achieving those potential levels (Ibid., 128). While BPT better reflects how individuals actually construct portfolios for themselves, the model does not make any predictions about how one would invest money earmarked for another. Polman and Wu (2019, 204), in a review of this literature, agree that contemporary accounts fall short: “put simply, decision making for others is not incorporated in standard economic and psychology models despite the fact that, from a practical perspective these decisions are often made.”

“Self” versus “Other” Risk-Taking

Recent scholarship shows that people frequently make transactional decisions on behalf of close others. According to Wu et al. (2019), over one-quarter of individuals report making 2–3 consumption-related choices for others in a given week, and by another account nearly a quarter of purchase decisions that people make involve friends and families (Garcia-Rada, Anik, and Ariely 2019). Largely concentrated in the fields of social psychology and consumer choice, a literature on “self-other risk-taking” considers whether a surrogate decision-maker would be more or less risk-seeking when making choices about their own versus another in domains such as romantic relationships, medical outcomes, or games of chance. On the whole, the findings in this literature are mixed (Polman and Wu 2019; Polman and Kaiyang 2019). When presented with a gamble, Stone et al. (2002) found no self-other differences in risk-taking behavior across a set of experiments using both hypothetical and real-world outcomes. Further, they found that behavioral errors that occurred in personal financial decisions (e.g., regret or loss aversion) held equivalently when the decisions were made for another person (see also Polman 2012). However, Borresen (1987) came to an opposing conclusion when respondents were asked to imagine they were either the beneficiary of a financial settlement or else an advisor to that beneficiary. He found that “when making a conclusion to support the decision of another,

subjects are more economically conservative than when making a decision for themselves” (Ibid., 1302).

Two comprehensive literature reviews attempt to integrate this scholarship. Colby (2010, 4–5) summarizes that “[t]he main thrust of results in research on risky financial decision making for others has been that, as long as the other is a specific, non-abstract individual, people have the same risk preferences when choosing for others as they do when choosing for themselves.” Polman and Wu (2019), in a meta-study of 71 self-other risk-taking papers (across several domains), conclude that risk-taking can favor a risky shift when people choose for others, but the direction and effect size will vary based on the particular context involved. For instance, choices that could influence a child’s health or safety will register more cautious decisions than those that parents make for themselves (Dore et al. 2014). However, this contextualization also predicts that the level of risk-taking for close others will tend to increase in domains where taking risk is socially or culturally desirable, such as taking greater romantic risks for others than one’s self (Stone and Allgaier 2008). Polman and Wu (Op cit., 208) conclude, “Thus, when risky behavior corresponds to a valued characteristic (e.g., if taking a risky bet is viewed as desirable), then people are more likely to choose riskier, less cautious options for others than for themselves.” (See table 1 for a summary of theories of portfolio choice.)

Earmarking Risk

The self-other risk-taking literature is ambiguous. At first glance it supposes that, from a social-psychological perspective, decisions made by parents on behalf of a child could be more cautious—but since investing for the future and “providing” financially for one’s child are seen as socially desirable, there could also be the tendency to make riskier decisions.

A relational approach that recognizes investments made on behalf of close others as “earmarked” will instead take account of the relational work and symbolic content embodied by those investments, drawing a logical distinction between “earmarking” and “mental accounting” (Zelizer 2012; Wherry 2016, 2017; Bandelj et al. 2017; cf. Thaler 1999). The crucial difference between the two concepts, Zelizer (2012) argues, is that the focus of mental accounting remains on the individual where relations may appear as context, *but not as explanation*. A relational (earmarked) account, on the other hand, emerges from social interaction, the content of which depends on the relational work behind those interactions. Mental accounting can thus be construed as a special type of earmark where money is set aside for various purposes *for one’s own self*.

An earmark, however, shifts the focus from individuals to relations. Zelizer’s (Ibid., 160) point is that “the relative value assigned in mental accounts...should therefore vary depending on the consequences of that accounting for relations to others. When we earmark money for our child’s college fund, for instance, we are affirming our parental relationship to that child. On the other hand, by gambling the money away we would seriously undermine that connection.” Such an affirmation should therefore manifest empirically in a risk-taking position

that opposes gambling (i.e., it should be lower risk), where particular relations come into view as causal explanations for practical differentiations in risk-taking for investment monies.

Scholarship on earmarking to date has emphasized how relational work affects financial *transactions* (e.g., expenditures, payments, loans) and *transfers* of wealth (e.g., monetary gifts, inheritances). In other words, the focus of earmarking has been to understand who or what we *spend* particular money on. We suggest that relational work occurs in *non*-transactional financial evaluations as well. To illustrate this distinction, consider dollars that have been endowed for a child's higher education. To spend those dollars for anything but tuition would be deemed inappropriate; however, the relational work does not stop there. What we argue is that it would be equally inappropriate to invest those monies with a risk profile that could put going to college in jeopardy.

In their chapter on mental accounting, marketing scholars [Soman and Ahn \(2011, 67\)](#) tell the following story of “an acquaintance, an economist, who once borrowed a sum of money at very high interest rates to fund a home renovation when in fact he had that sum of money in a money market account earning a fairly small interest rate. The catch was that the money market account had been designated as his son's (who was 3 years old) education account.” In the end, this father could not come to terms with “breaking into” that account and opted for the high-interest loan—a seemingly irrational decision. [Bandelj et al. \(2017, 7\)](#) point out that Soman and Ahn misattribute the moral of this story to the emotional content of a mental account rather than the symbolic value of a relational earmark. However, they, too, overlook an equally important (and arguably “irrational”) detail of this story: The child's college fund—with 15 years to go—is allocated to an incredibly low-risk, low-yield money market account.

Based on the framework we have developed here, we motivate a set of hypotheses for how relational earmarking could influence financial risk-taking:

Hypothesis 1: Individual tolerance for financial risk will be generally greater with dollars earmarked for one's self relative to dollars earmarked for close others.

We expect earmarked dollars to carry less risk than dollars intended for one's self, but how should they vary among relational earmarks and to what degree? Without a doubt, different social ties will carry unique bundles of relational content and context that should create differences in relative risk-taking. In a series of experiments, [Polman et al. \(2018\)](#) find that people increasingly discount the value of other's money as social distance increases. [Jones and Rachlin \(2006\)](#) similarly describe a “social discounting” whereby people were willing to forgo a larger sum of money in order to give \$75 to another person as a function of perceived social closeness. [Ziegler and Tunney \(2012\)](#), on the other hand, show that people make more impulsive decisions involving money when the beneficiary is a closer tie to the decision-maker. Social distance, it seems, is likely to play some role in risk-taking for others, but is once again ambiguous.

Specific relational roles, on the whole, instead correspond to rich relational packages that come to be valorized in commonly patterned ways. As Wherry (2016, 137) points out, “categorical relations come with corresponding obligations.” For instance, in *Pricing the Priceless Child*, Zelizer (1985) recounts how the relational category of “parent-child” has shifted from a time when it was a child’s obligation to contribute (economically) to the family to modern logics of a binding and important obligation of the parent to the child. Ishizuka (2019, 31) shows that cultural norms of child-centered, time-intensive parenting are now pervasive across a range of social classes, pointing to high contemporary standards for parental investments in children (see also Wherry 2016; Zaloom 2019). The parent-child relationship has thus become paradigmatic of a fairly universal relational package of considerable gravity. As a result, we believe that investments made by a parent on behalf of a child will be the most guarded compared to other relations.

Other earmarks do not present such clear-cut cases, since the relational work involved in maintaining categories of “friend,” “lover,” or “spouse” is far more varied and conditional. Because of this, and due to methodological limitations inherent in the experiments used to test our hypotheses, we are only interested in showing central tendencies rather than capturing the more textured, nuanced, and iterated aspects of an individual earmark. Still, even this blunt approach is useful and instructive in demonstrating that relational earmarking does change risk behavior in systematic ways. While we expect risk-taking for non-child others to be lower than for one’s self, we hesitate to speculate on a specific pecking order:

Hypothesis 2: Individual tolerance for financial risk will vary depending on for whom the dollars are earmarked.

Hypothesis 2a: Financial risk tolerance will be lowest for investments earmarked for a child.

The Work of Meaningful Labels on Earmarked Accounts

Hypotheses 2 and 2a suggest that relational earmarks could have a conservative effect on risk-taking for close others. The addition of meaningful labels like “retirement” or “college savings” to investment monies, however, invokes a further set of shared meanings that transcends dyadic relational categories. Therefore, we draw on the concept of relational accounting, which extends the process of earmarking by encompassing “the set of cultural and social processes used by individuals and households to organize, evaluate, justify and keep track of financial activities” (Wherry 2016, 132). In particular, Wherry (2016, 2017, 59) highlights relational accounting’s role in assigning symbolic value to economic activity located in lifecycle transitions that are “culturally meaningful and collectively enforced and in overarching moral structures.” Retirement and college are good examples of such transitions.

As with earmarking, the operative distinction from mental accounting here is both important and subtle. Mental accounting is a *cognitive* process whereby

people budget their own money into distinct expense categories (e.g., gas money, bills, vacation jar), presumably as a heuristic strategy for self-control that prevents excess spending (Henderson and Peterson 1992; Thaler 1999). With mental accounting, these arbitrary categories subjectively frame transactions in one's mind, which subsequently determines the utility they expect to receive from spending certain dollars. As Wherry (Ibid.) puts it, "relational accounting represents the sociological counterpoint to mental accounting in that it uses cultural, moral, and relational processes to develop an interpretive science of choice and decision making." Moral considerations are not only private and individually held but are also collective and mutually shared. Accordingly, investments earmarked for rites of passage like college, retirement, a wedding or buying a first home will fall under the purview of relational accounting. As mental accounts are particular to specific individuals, we would expect a great deal of heterogeneity in the way that cognitively labeled funds are invested. However, the intersubjectively shared meaning and symbolic value of a relational account like "college" or "retirement" should produce a prevailing tendency.

So far, initial support for relational accounting has been found in the context of charitable donations (Bandelj et al. 2017) and with informal lending and borrowing (Wherry 2017; Wherry, Seefeldt, and Alvarez 2019). Extending this concept to the domain of investing, Hayes (2019) shows that retirement savers, in aggregate, orient to durably conservative portfolios following market losses, while at the same time ordinary investment accounts that do not contain the shared symbolic meaning of "retirement" remain exposed to far greater market risk. Like retirement, going to college shares a collective meaning among American households, designating it a consequential milestone in one's personal and professional development. Zaloom (2018), among others, argues that attending college is an *imperative* of the middle class in the United States today, based on extensive ethnographic study (see also Grodsky and Jones 2007; Manly et al. 2017; Zaloom 2019). Highlighting the relational work involved with college planning, Napolitano, Pacholok, and Furstenberg (2014) further explain how the concurrence of rising parental aspirations and rising tuition costs poses an important dilemma as parents work to provide their children with the necessary financial backing to gain educational credentials.

Thus, in addition to a college fund representing markers of the distinct parent-child relationship, we suggest that such an investment portfolio will *also* take account of the collective meaning of college as an important event in the life course. We would therefore expect an account labeled with "retirement" or "college savings" to have relatively lower portfolio risk due to the additional cultural weight and meaning endowed unto those financial accounts. As a result, we propose a third hypothesis:

Hypothesis 3: Individual tolerance for risk will be lower when the dollars are labeled for a culturally meaningful life-stage goal such as retirement or college.

Table 1. Overview of Theories of Portfolio Choice and Investment Risk

	Concept	Cite	Emphasis	Risk implications for investing on behalf of others
<i>Standard economic theory</i>	Modern portfolio theory (MPT)	Markowitz (1952)	Individual—rational choice	None. Investors are self-interested utility maximizers that optimize portfolio risk vs. return; all wealth is fungible
<i>Behavioral economics</i>	Mental accounting	Thaler (1999)	Individual—cognitive budgeting and categorization of expenditures	Low. Individuals subjectively compartmentalize their <i>own</i> money intended for particular purposes, rendering those funds non-fungible to that person. Predicts nothing about risk-taking for others
	Behavioral portfolio theory	Shefrin and Statman (2000)	Individual—purposive goals (needs vs. wants); each goal is put into its own <i>mental account</i>	Low. Layered allocation structure where needs are invested more conservatively than wants. Each mental account is optimized by the mean-variance procedure using MPT. As with mental accounting, it predicts nothing about others
<i>Sociological approaches (relational investing)</i>	Earmarking	Zelizer's (1989, 2012)	Relational—relational categories (e.g., parent-child)	High. Emerges from social interaction, the content and context of which render funds non-fungible. Risk-taking reduced when confronted by relational categories
	Relational accounting	Wherry (2012, 2016)	Cultural—intersubjectively shared meaning	High. Uses cultural, moral, and relational processes, particularly highlighting salient life-stage transitions. Risks for investments earmarked for such transitions are reduced by the additional weight of its collectively held symbolic value

Empirical Analyses

Overview of Studies

We test our hypotheses using two original vignette experiments (Finch 1987; Aguinis and Bradley 2014; Schilke and Rossman 2018). Study 1 first explores how respondents treat earmarked dollars in the context of a gambling scenario. Our aim with Study 1 is to establish that relational earmarks shape risk preferences in a simple context with predictable odds and an immediate time horizon. We then turn to investing behavior in Study 2; here our aims are two-fold: first, to test whether relational earmarking of investment accounts impacts portfolio allocation across stocks, bonds, and cash (Hypotheses 1 and 2) and, second, to test whether labeling the account with the intended purpose of the funds—that is, retirement or college—further influences portfolio allocations (Hypothesis 3). Both studies utilize a between-subjects design (see table 2 for a breakdown of respondents per condition).

Respondents for each of our studies were solicited using Amazon’s Mechanical Turk (AMT), an online platform where individuals can complete tasks—such as taking a survey—for modest financial compensation.⁴ AMT respondents do differ from a nationally representative sample in that they tend to be younger, more female, more liberal, and more educated than the general US population (Paolacci et al. 2010; Berinsky et al. 2012). Nevertheless, AMT samples have repeatedly been shown to produce highly reliable data for social science research (Shank 2016; Weinberg et al. 2014). To increase response quality, we restricted our sample to US-based adults with a positive track record of successfully completing tasks on the platform (at least a 98% positive feedback rating with a

Table 2. Experimental Conditions

Study 1: Gambling	
Self	<i>N</i> = 232
Child	<i>N</i> = 245
Nephew	<i>N</i> = 246
Spouse/partner	<i>N</i> = 225
Study 2: Investing	
Self	<i>N</i> = 304
Self-retirement	<i>N</i> = 348
Child	<i>N</i> = 313
Child’s college	<i>N</i> = 303
Nephew	<i>N</i> = 333
Nephew’s college	<i>N</i> = 321
Spouse/partner	<i>N</i> = 336
Spouse/partner retirement	<i>N</i> = 330

minimum of 500 tasks already completed). In addition, we included an attention check at the beginning of each study (Oppenheimer et al. 2009), although we note Paolacci et al. (2010) have shown that respondents on AMT pay greater attention than samples obtained through more traditional methods.

Study 1: earmarking risk in gambling

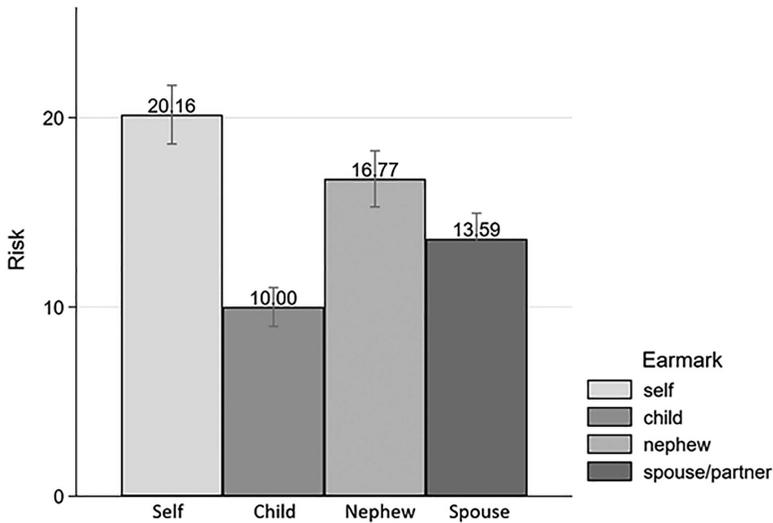
Study Participants: Study 1 had a total of 948 participants. Approximately 57% of the sample was female, 61% reported having at least a four-year college degree, and 75% identified as white, and the median age is between 35 and 44. A statistical test for balance confirms participants were randomly sorted across experimental conditions (see table A1 in the online Appendix).

Study 1 Procedures and Materials: In this study, respondents were asked to imagine they had earmarked \$100 for a special gift, which was randomly assigned as intended for either your “self,” “spouse,” “child,” or “nephew.” Respondents were then told to imagine they were at a casino and had the opportunity to gamble with the earmarked dollars in the hopes of increasing the amount available for the special gift. Respondents were given three options: placing a bet on a single number in roulette, a high-risk (and high-reward) game; betting on a card game with a 50% chance of doubling one’s bet, a moderate-risk (and moderate-reward) game; and playing no game at all (no-risk, no-reward). Respondents were then asked to allocate the \$100 across these three options. See the Appendix online for the full text of the vignette.

To examine whether relational earmarks influenced risk-taking behavior, we summarized respondent allocations to the high-risk game, moderate-risk game, and cash/no-game options using the following equation to construct a heuristic index of risk: percentage roulette + $\frac{1}{4}$ * percentage card game + 0 * percentage no game. This formula is used for analytical purposes only and provides a summary measure of the overall riskiness of the money played at the casino based on the fact that the standard deviation of outcomes for a standard single-number bet placed in a game of roulette is roughly four times larger than the standard deviation of a game with a 50% chance of doubling one’s wager.⁵ Results are substantively similar if we instead look only at the percentage played on roulette or if we use the difference between roulette and no games as our measure.

Study 1 Results: Figure 1 presents the average level of risk-taking in the gambling study (y-axis) for each of our four earmark conditions (x-axis). Consistent with Hypothesis 1, we find that respondents are generally riskier with dollars earmarked for themselves than with those earmarked for others—the difference between “self” and the (pooled) average across the non-self-conditions is 6.70 ($p < 0.001$). Table 3 shows the mean difference and associated test statistic for each pairwise comparison. As illustrated in figure 1, respondents express a greater aversion to risk with dollars earmarked for their spouse (6.57 difference, $p < 0.05$) and even more for a child (10.16 difference, $p < 0.001$) than with money put aside for themselves, supporting Hypothesis 2a.

The distinction between investing on behalf of one’s self versus someone else is not the only contrast of note in figure 1. Consistent with Hypothesis 2, we also

Figure 1. Study 1 Results—mean gambling risk by earmark.

Note: $N = 948$. This figure depicts the mean gambling risk assigned to dollars earmarked for a gift by each experimental condition, where each column represents a particular relation (from left to right): self; child; nephew; and spouse/partner. Error bars indicate standard errors.

Table 3. Pairwise Comparisons of Average Gambling Risk across Experimental Conditions (Study 1)

	Self	Child	Nephew
Child	-10.16*** (1.86)	—	
Nephew	-3.39 (2.15)	6.77*** (1.81)	—
Spouse/partner	-6.57** (2.07)	3.59* (1.71)	-3.18 (2.02)

Notes: Figures in cells correspond to differences in means for conditions listed in left-hand column relative to conditions across top row (e.g., “child” condition risk score is 10.16 points less than “self” risk score). Standard errors of the differences appear in parentheses using two-tailed t-tests for significance. See figure 1 for individual earmark means.

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

see statistically significant differences in average risk tolerance across the three “non-self” conditions ($F_{2,713} = 6.89, p < 0.01$). Specifically, we find respondents are more conservative with dollars earmarked for their child relative to those earmarked for their spouse or nephew (spouse-child difference 3.59, $p < 0.05$; nephew-child difference 6.77, $p < 0.01$). This indicates that individuals are

responding not only to whether the dollars *are* earmarked but are considering *who* the dollars are earmarked for in assessing risk tolerance.

Study 1 demonstrates that relational earmarking shapes risk-taking in a setting with predictable odds and an instantaneous time horizon. Respondents in this stylized scenario were more reluctant to gamble with dollars earmarked for a close social relation—and moreover, this impact varied across relational earmarks. Our finding is suggestive that the same social forces may also be at work in the more likely and consequential domain of investing. We examine this below.

Study 2: earmarking risk in investment portfolios

Having established that earmarks influence risk tolerance in the context of gambling, we now move to examine how relational earmarking and labeling accounts for culturally salient life course events shapes risk tolerance in investment portfolio allocations.

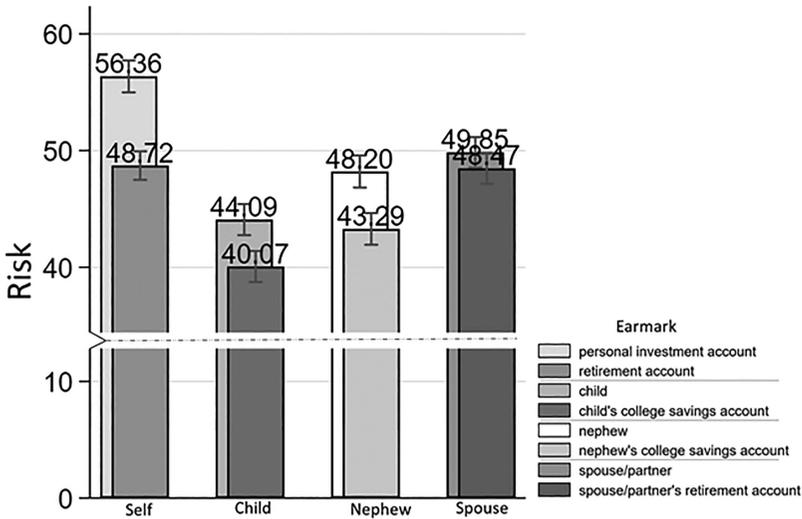
Study 2 Participants: Study 2 had a total of 2,588 participants. Approximately 46% of the sample was female, 60% reported having at least a four-year college degree, and 76% identified as white, and the median age was between 35 and 44. A test for balance confirms participants were randomly sorted across experimental conditions (see table A2 in the online Appendix).

Study 2 Procedures and Materials: All respondents were told to imagine they had been tasked with investing \$5,000 for a period of 10 years. Respondents were then randomly assigned to one of the eight treatment conditions. Four conditions indicated the money was to be invested in either “your personal investment account” or on behalf of “your spouse,” “your child,” or “your nephew.” Other than the relational earmark assigned, these four conditions included no other information about the intended use of the funds.

To examine whether additional information as to the intended use of the funds influenced risk-taking, we included four additional conditions that specified the funds would be used for retirement (for self and spouse/partner) and college (for child and nephew).⁶ This yields a total of eight experimental conditions: self, self-retirement, spouse, spouse’s retirement, nephew, nephew’s college, child, and child’s college (see table 2).

Respondents were asked to allocate the \$5,000 in the earmarked account across three investment options: stocks (high-risk, high-reward); corporate bonds (moderate-risk, moderate-reward); and cash (no-risk, no-reward). To help make sure the different earmarks did not unwittingly signal different time horizons for investment (and by extension, implied risk tolerance), the vignette explicitly tells respondents the money will not be withdrawn for a period of 10 years (see the Appendix online for full vignette text).

As in Study 1, to examine how relational earmarking influences risk tolerance in investing, we converted respondent’s portfolio allocations in stocks, bonds, and cash into a risk index using the following formula: percentage stocks + $\frac{1}{4}$ * percentage bonds + 0 * percentage cash. This formula provides us with

Figure 2. Study 2 Results—mean portfolio risk by earmark.

Note: $N = 2,588$. This figure depicts the mean portfolio risk assigned to investment dollars earmarked by each experimental condition. Labeled earmarks appear in front of and to the right of unlabeled earmarks, and each pair of columns represents a particular relation (from left to right): self; child; nephew; and spouse/partner. Error bars indicate standard errors.

a summary measure for analyzing the overall riskiness of each portfolio. The rationale for this heuristic is based on the fact that over the past 15 years, the standard deviation of returns for stocks has been approximately four times greater than that for bonds, where portfolio standard deviation has been demonstrated to be a valid proxy for total financial risk (Fama and MacBeth 1973).⁷ Our results are substantively similar if we use only percentage of stocks as our general standard of riskiness or if we use the difference between stocks and cash as our measure.

Study 2 Results: Figure 2 presents the mean portfolio risk for our relational earmarks. Unlabeled earmarks (self, child, nephew, spouse/partner) appear to the left and slightly behind the corresponding labeled account conditions (i.e., retirement or college). Table 4 provides a summary of pairwise contrasts between each condition.

We first consider the unlabeled accounts. Comparing across the earmark conditions, we see respondents are more risk tolerant when investing for their own sake than when investing on behalf of others—the difference between self and the (pooled) average across the non-labeled relational conditions is 8.90 ($p < 0.001$).⁸ This is consistent with our finding in Study 1 that individuals are more willing to gamble with dollars earmarked for themselves than with dollars earmarked for others, lending additional support to Hypothesis 1. We also see substantive and statistically significant differences in mean risk tolerance

Table 4. Pairwise Comparisons of Average Portfolio Risk across Experimental Conditions (Study 2)

	Self	Self-retirement	Child	Child-college	Nephew	Nephew-college	Spouse/partner
Self-retirement	-7.67*** (1.85)	—					
Child	-12.27*** (1.92)	-4.63* (1.82)	—				
Child's college	-16.29*** (1.92)	-8.65*** (1.82)	-4.02* (1.85)	—			
Nephew	-8.16*** (1.95)	-0.52 (1.85)	4.11* (1.92)	8.13*** (1.92)	—		
Nephew's college	-13.07*** (1.94)	-5.43** (1.84)	-0.80 (1.91)	3.22 (1.92)	-4.91* (1.94)	—	
Spouse/partner	-6.51** (1.90)	1.13 (1.80)	5.76** (1.87)	9.78*** (1.87)	1.65 (1.90)	6.56** (1.89)	—
Spouse/partner retirement	-7.89*** (1.92)	-0.25 (1.82)	4.38* (1.89)	8.40*** (1.89)	0.27 (1.92)	5.18** (1.91)	-1.38 (1.87)

Notes: Figures in cells correspond to differences in means for conditions listed in the left-hand column relative to conditions across top row (e.g., “Self-retirement” risk score is 7.67 points less than “Self” risk score). Standard errors of the differences appear in parentheses using two-tailed t-tests for significance. See [figure 2](#) for individual earmark means.

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

across the three relational conditions ($F_{2,979} = 4.80, p < 0.01$). Turning to the pairwise comparisons, we find respondents make riskier portfolio allocations when investing on behalf of their spouse/partner and nephew compared to their child (nephew-child difference 4.11, $p < 0.05$; spouse-child difference 5.76, $p < 0.01$). This again is consistent with our findings in Study 1 and provides additional evidence in support of Hypotheses 2 and 2a. Financial risk-taking is shaped by not only whether the invested funds are earmarked but also by who those funds are earmarked for. One point to note in Study 2 is the intermediate position of “nephew,” which may speak to moral obligation or degree of dependence. While a spouse is (often) a closer relation than a nephew, an extended family member who is a minor is implicitly more reliant on a respondent’s investment choices.

Next, we examine whether designating the invested funds for a specific purpose—retirement for the self and spouse/partner conditions and college for the child and nephew conditions—further influences risk tolerance. Pooling across conditions, we find that respondents are more conservative with dollars in labeled accounts relative to those in unlabeled accounts (difference $-4.25, p < 0.001$). Turning to the pairwise comparisons in table 4, we find that within each relational earmark, labeling the account with its intended use further reduces risk-taking. For example, respondents choose less risky portfolio allocations for themselves when told the funds are to be invested for their retirement as opposed to not specifying the intended use (difference $-7.64, p < 0.001$). Respondents are also more conservative when told the funds they are investing on behalf of their child or nephew will be used for college (child’s generic vs. child’s college difference $-4.02, p < 0.05$; nephew’s generic vs. nephew’s college difference $-4.91, p < 0.05$). Labeling the account with a culturally salient and symbolic life course event reduces one’s tolerance for risk; this provides initial evidence in support of Hypothesis 3.

It is interesting to note that general risk-taking across all conditions is noticeably lower in the gambling study than with investing. Casino games carry a negative expected return (the house has an advantage), while investing typically carries a positive expected return. That respondents are generally more risk-averse in Study 1 implicitly indicates some understanding of that fact. What is noteworthy is that relative risk differences between earmarks are preserved when the study is carried over to the domain of investing. People who opt out of casino games could be construed as rational in the face of a negative expected return (greater than one-third of respondents wagered nothing at all); however, to forgo an investment with a positive expected return (greater than half of respondents allocated $> 15\%$ to cash) appears to be a deviation from rational expectations that may in itself be evidence of the value and power of social relations.⁹

Extensions: risk-taking and respondent characteristics

Although ours is not a representative sample, we did want to provisionally explore (1) whether financial risk-taking varies as a function of respondent characteristics such as income, age, and gender and (2) whether the effect

Table 5. Financial Risk-Taking (Pooled) by Respondent Characteristics

Male	10.415*** (0.910)
Married	-0.688 (1.000)
College graduate	5.830*** (0.958)
Age	0.229*** (0.038)
Household income (log)	4.356*** (0.673)
Non-white	-0.413 (1.078)
Constant	-9.248 (7.268)
N	2,550
R ²	0.14

Notes: Robust standard errors in parentheses. OLS model also adjusts for experimental conditions (not shown in the table); eight respondents are missing information for one or more demographic variables, removed by listwise deletion.

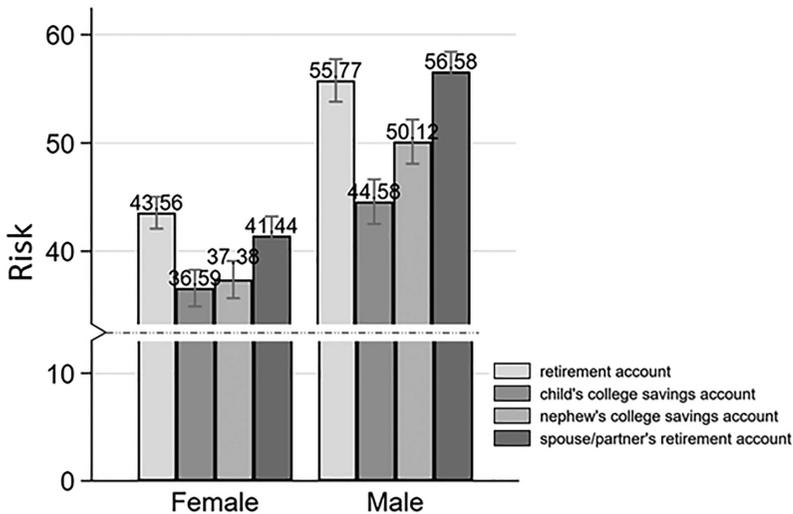
*** $p < 0.001$

of relational earmarking on risk-taking differs across these sociodemographic groups.

To investigate question 1, we estimated an OLS model predicting portfolio choice, pooling across experimental conditions (results presented in table 5). Consistent with extant literature in finance and economics, we find that risk tolerance is positively correlated with income and education in our sample (Riley, William, and Chow 1992). We also find that age is modestly but positively correlated with risk-taking (Wang and Hanna 1997) and that male respondents have considerably greater risk tolerance than female respondents, which is also consistent with the literature (Dwyer et al. 2002; Eckel and Grossman 2008).

To explore question 2, we estimated a series of OLS models wherein we interacted the experimental conditions with respondent characteristics (results available upon request). Notably, we did not find evidence of interactive or multiplicative effects between respondent characteristics and relational earmarks in the present study, although we think this potential should be investigated directly and more thoroughly in future research using a representative sample or different study design.

It is nevertheless important to appreciate the magnitude of the additive effects of the experimental conditions and respondent demographics, in particular gender which presents the largest main effect. Given that the average female respondent is markedly less risk tolerant than males—and that females and males are both less risk tolerant with earmarked dollars—the combination of these effects may lead women to more significantly “underinvest” when making allocation decisions on behalf of others. This, over time, may lead to meaningful disparities in wealth accumulation as lower-risk portfolios correspond to lower

Figure 3. Study 2—mean portfolio risk by labeled earmark and respondent sex

Note: This figure depicts the mean portfolio risk, broken down by respondent sex, assigned to investment dollars earmarked by each labeled experimental condition. Columns represent a particular labeled earmark (from left to right): self-retirement; child's college savings; nephew's college savings; and spouse/partner's retirement. Error bars indicate standard errors.

expected returns (Fama and MacBeth 1973). Figure 3 illustrates the mean portfolio risk for labeled account conditions separately for male and female respondents.¹⁰

Discussion

Retirement security, the ability to afford a college education, and even the funds available to pay for healthcare can all be tied now in some way to the success of the markets. But, it is not only our *own* lives and livelihoods that are at stake; also at stake is the financial well-being of our loved ones and family members on behalf of whom we have little choice but to invest in risky assets. Soaring college costs and the disappearance of defined benefit pensions have made saving for college and retirement not only practical necessities but also culturally salient norms. What we have shown for the first time in this paper is that the influence of relational earmarks complicates investing on behalf of others and in ways that may be detrimental to those beneficiaries.

Here is how this could work: Over any 10-year period going back to at least 1926, stocks have outperformed bonds on an average annualized basis (Damodaran 2019), and stocks in general carry higher expected returns to compensate for their greater degree of risk (the so-called equity risk premium [Mehra and Prescott 1985]). Using historical returns for stocks and bonds from 1926 to 2018,¹¹ we estimate that if a hypothetical \$5,000 investment had been made

to a *personal investment account* according to the average portfolio allocation of our study respondents, it would have grown to approximately \$10,175 over the following 10 years. Had those funds instead been invested according to the portfolio allocation of the *child college savings account* condition, the balance would have grown to just \$8,575 over the same period—a disparity of nearly 20%.¹² Over a 30-year period and given the same average historical returns, the personal investment account would grow to be worth twice as much.¹³ Our findings thus reveal a potential and previously unnoticed problem in that certain investors may be losing money due to earmarking, a problem which compounds over longer time horizons.

Of course, this monetary disadvantage stems from decisions that deviate from instrumental rationality. Our findings certainly suggest “value-rational” tendencies where people do not seek to maximize returns but instead prioritize conservation of funds that have been relationally earmarked. In Weber’s (1978 [1922]) terminology, value-rational action always involves “commands” or “demands” which, in the actor’s opinion, are binding on him or her. It seems plain from this study that relational roles and meaningful labels each place binding demands on investors. But as Weber (Ibid., 26) notes, and what is detrimental to relational investors in practice, “from the perspective of instrumental rationality, value-rationality is always irrational.”

A key contribution of this study is that it extends Zelizer’s (1989, 2012) relational economic sociology from the domain of transactions and exchange to that of risk-taking. Our gambling study (Study 1) shows that people are far less willing to wager at the casino with dollars that have been earmarked for a close other’s gift. Importantly, it is the *earmark* that reorients one toward being more conservative with investment monies—the dollars in question have not been given away or promised to anybody else, nor have they been appropriated for any other purpose. Indeed, the level of gambling risk associated with a spouse/partner’s earmark is found in our first study to be one-third lower, and a child’s earmark more than twice as conservative, than with one’s own dollars. Our investing study (Study 2) shows that the same forces are at work in the context of relational investing.

Dollars earmarked generically for a child are invested with far less risk than those earmarked for one’s self, speaking to the importance of the parent-child relationship. Through the “concerted cultivation” (Lareau 2003) of their children, Ishizuka (2019) shows that contemporary cultural norms around parenting are demanding in terms of both time and money. Children since the twentieth century have indeed become recognized as “emotionally priceless” dependents (Zelizer 1985, 209). When something is “priceless,” it is treasured, cherished, and safeguarded. And so, the treatment of priceless things tends to be oriented toward preservation and security, that is, low-risk behaviors.

A child’s college savings account is moreover found to be the *most* conservative portfolio, averaging one-third less risk than a personal investment account among our respondents. Indeed, a relation’s earmark is inflected merely by labeling it a college fund, which reduces risk-taking by an additional 10% from either a child’s or nephew’s non-specific investments in our study. Zaloom

(2019, 2) explains that for working- and middle-class families, the promise of giving their children a college education carries with it a dependence both on finance and on family, often involving enormous sacrifices—but, “parents believe their children are worth the price.” Zaloom makes the argument that 529 plans transcend their utilitarian purpose to “embody ideals of parental responsibility and promote the virtue of being good managers of family finances. These financial mechanisms are tools of moral instruction” (Ibid., 31). Thus, the relational content of a “child” or “nephew” earmark is augmented by the symbolic value of the “college savings” moniker—and in both cases, this “value” is transformed into an aversion to risk that suits its moral obligation.

Likewise, money invested in one’s retirement account is, all else equal, more than 15% less risky than personal investments not earmarked for such a purpose in our experiment. If an individual is unwilling or unable to save enough for retirement, it is seen as irresponsible. As with education, “retirement saving” carries important cultural and moral significance, lest one experience downward mobility in old age. By the same token, retirement funds are inherently relational since a shortfall can lead one to become a burden on one’s family or dependent on state assistance (Weiss 2005). By selecting a more conservative portfolio, retirement savers seem to misconstrue being responsible for being risk-averse. Interestingly, we find only a subtle difference between portfolio risk assigned to one’s partner/spouse and to their partner/spouse’s retirement money, as well as with one’s *own* retirement account. We believe this could be because families tend to commingle retirement money with the expectation of a joint retirement (Ho and Raymo 2009), where one’s own retirement funds would be indistinguishable from their partner’s and so the “retirement” label does the same risk-reduction work for either condition. We instead see the relational influence of the spouse/partner earmark for the investments made generically on their behalf.

In addition to our main findings, we see some differences in overall risk-taking by respondent characteristics in our pooled results, with the starkest difference being that between men and women. This is consistent with the previous work in economics that shows women are generally more risk-averse than men across a number of financial and nonfinancial domains (Dwyer et al. 2002; Eckel and Grossman 2008). Here, we show that such differences in portfolio risk are preserved when relational earmarks are present as well. Imagine a single mother putting money away for her child’s college education. On average, her child could be subject to a portfolio that is nearly a quarter less risky than if it were a single father making the investment choices. Even if both the mother and the father in this example contribute exactly the same dollar amount each year to the respective college fund, the mother’s child could see a lower account value by age 18 as the more conservative investments would be expected to produce more modest returns over time.

In demonstrating that risk tolerance is influenced not only by whether one is investing on behalf of “another” but by *who* that person is and *why* the money is being invested, we show that the social meaning of money is far richer and wide-reaching than has been revealed in the literature thus far. Until now, the subject

of market risk has been primarily the domain of finance and economics (but cf. Hayes 2019); however, those disciplines tend to downplay the influence of social relations and have completely overlooked the influence of cultural and symbolic value stemming from account labels on financial risk-taking. As a result, we see this study as just the first in a broader research program in the social studies of finance that extends not only theories of economic sociology but those of mainstream and behavioral economics too.

Future work should more closely examine differences by sociodemographic characteristics such as race/ethnicity, immigration status, age, education, and so forth—including characteristics of beneficiaries *as well as* respondents. Moreover, the effect of specific cases of relational *work* should be examined as a logical extension of this study (e.g., Do we become more conservative with funds designated for a relation who has provided reciprocal financial assistance in the past or riskier with funds set aside for a relation who has fallen out of favor due to a long-standing quarrel?). Additionally, the studies in this paper only consider initial portfolio choice. While there is evidence that people typically “forget” about their investments and do not reallocate (Benartzi and Thaler 2007), future work should examine how earmarking influences other investment behaviors—for instance, by asking how relational portfolios are reallocated following a major loss or gain, in conversation with behavioral economics where losses have been shown to weigh heavier than gains (Kahneman and Tversky 1979).¹⁴

To be sure, the findings we have presented are exploratory and derive from a stylized experiment and do not necessarily translate neatly to the real world. Yet they do demonstrate the existence of a real and previously unrecognized social phenomenon at play in making investment decisions. Given the prevalence of relational investing, future work should also look for opportunities to examine how earmarks shape risk-taking in real-world settings and propose solutions that minimize potentially detrimental effects.

Conclusion

In this paper we use a set of vignette experiments to extend Zelizer’s (1989, 2012) concept of earmarking from the domain of transactions to that of risk-taking in the context of relational investing. In positing such a theory, we try to consider the implications—for individual behavior, for financial cultures, for the economy, and for potential inequality—of a society wherein individuals make investment decisions not only for their own benefit but for that of close others as well. A partner’s retirement account, a child’s college savings fund, and an adult child managing the estate of an elderly parent are all real examples of this phenomenon. Due to the relational content of these social ties as well as the shared meaning of labels designating culturally significant life-stage events (e.g., retirement or going to college), our experiments show that risk-taking is attenuated in ways that vary with each earmark. In addition to extending economic sociology to the domain of financial risk-taking, our work has important implications for understanding potentially disparate

outcomes based on the level of financial risk undertaken to meet subjective future goals.

Supplementary Material

Supplementary material is available at *Social Forces* online, <http://sf.oxfordjournals.org/>.

About the Authors

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Notes

1. <https://www.collegesavings.org/529-plan-data/>, Accessed March 5, 2020
2. https://www.ici.org/research/stats/retirement/ret_19_q3, Accessed March 5, 2020
3. For the broader importance of portfolio choice, see Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, 1990. <<https://www.nobelprize.org/prizes/economic-sciences/1990/summary/>>, Accessed March 5, 2020.
4. Survey experiments built using Qualtrics. AMT respondents were paid \$0.20 upon completing the survey.
5. For an American roulette wheel with both "0" and "00", $sd = 5.26$. For a game with a 50% chance of doubling the bet or losing it all, $sd = 1.50$.
6. For respondents in either "nephew" condition, we additionally indicate in the vignette that the respondent is their godparent to realistically justify why one would be investing money on their behalf.
7. Stock market 15-year standard deviation of returns based on the Vanguard total stock market index (ticker: VTSMX) is $\sim 14\%$. Bond market 15-year standard deviation of returns based on the Vanguard total bond market

index (VBMFX) is $\sim 3.2\%$. Cash is a risk-free asset and has zero risk. Source: [Morningstar.com](#).

8. Unlabeled accounts only $N = 1,286$
9. Many financial advisors recommend 5–10% of portfolio assets in cash for purposes of liquidity. Holding cash can accrue negative real returns due to inflation. In investing, “cash” is often equivalent to money market funds, which earn the risk-free rate of return. Research suggests ordinary investors look at nominal return rather than accounting for inflation when evaluating investment performance (Campbell and Vuolteenaho 2004). Indeed, if people took inflation into account, it would make cash an even *less* attractive option among respondents—that we see people choosing cash in earmarked accounts signals the importance of relationships on risk-taking.
10. We show only labeled accounts here for clarity. Unlabeled earmarks are all similarly lower risk for women than men.
11. Between 1926 and 2018, the historical average annualized return for bonds was 5.29% and stocks 10.09%. <<https://advisors.vanguard.com/VGApp/iip/advisor/csa/analysisTools/portfolioAnalytics/historicalRiskReturn>>, Accessed 2/3/2020.
12. We imagine each portfolio received \$5,000 earning historical average returns for stocks and bonds (see endnote 12). Portfolio A was allocated to 50% stocks, 40% bonds, and 10% cash (roughly the mean portfolio risk for the “personal investment” condition in our experiment). Portfolio B was allocated to 30% stocks, 40% bonds, and 20% cash (corresponding approximately to a “child’s college savings”). We assume cash in a money market earned the average rate of inflation, 2%. Taking the weighted average asset class returns, we compute the performance of each: The riskier portfolio A earned a hypothetical average annualized return of 7.36%; the more conservative portfolio B achieved just 5.54%.
13. The past performance is no guarantee of future returns.
14. In particular, *prospect theory* states that people evaluate outcomes in comparison with certain benchmarks rather than final wealth; people are more sensitive to losses than gains; and people overweight small probabilities and underweight large probabilities.

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