

Research Statement

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1 Introduction

I study household finance, with a particular focus on three areas: saving for retirement, financial advice, and consumption. To address fundamental questions in these areas, I strive to combine careful econometrics with thoughtful consideration of both traditional and behavioral economic theory. Instead of allowing the available data to dictate my research agenda, I generally start from interesting questions and then proactively "hunt" for the right data with which to address them. As a result, many of my papers use novel and unique datasets.

Retirement wealth, financial advice, and consumption choices all play a critical role in the economy. In 2017, retirement assets in the United States amounted to \$28.2 trillion (ICI, 2018). A growing fraction of these assets—currently at 60%—is invested either in defined contribution plans or individual retirement accounts. In these retirement plans, workers have great autonomy in deciding how much to save and how to invest their retirement wealth. This autonomy is even larger after retirement when investors can decide how much to withdraw and the extent to insure, if at all, against the longevity risk by using annuities. As a consequence, there is a wide and increasing dispersion in retirement wealth and spending rates after retirement. What drives these differences is largely debated among academics and has profound welfare consequences.

Financial advice is pervasive among American households. According to the latest Survey of Consumer Finances by the Federal Reserve Board (2016), nearly half of U.S. households have sought financial advice. Given that many households lack adequate financial sophistication, advisors can, in principle, help their client to navigate complex savings and investment decisions. Nonetheless, advisors are often compensated through commissions based on the products they sell. These incentives generate agency conflicts and could compromise the quality of advice. Policymakers worldwide (e.g., Australia, UK, or U.S.) have taken actions to address these conflicts of interests by either banning commissions or mandating that advisors act as fiduciaries and place clients' interests ahead of their own. Do financial advisors help their clients? Are these policies needed? Will they be effective? The answers to these questions could have profound welfare implications for households.

Turning to consumption choices, household spending is typically around 60% of gross domestic product (GDP) (OECD, 2015), and is an essential variable for macroeconomic analyses. Academics have studied for years the dynamics of household consumption. Nonetheless, how corporations influence consumer choices is a topic that is less investigated. For example, private equity (PE) firms have raised more than \$3 trillion in capital over the last five years and exercise a growing influence on the daily purchases of millions of consumers¹. Despite this growing influence, we know very little about how PE firms influence consumers and if they significantly increase prices. The media and policy makers have raised similar concerns about the recent trend in M&As that could potentially reduce competition in consumer products. Therefore, understanding how corporations affect product markets (prices, competition, and availability of consumer products) is increasingly relevant.

¹A series of articles published by the New York Times, titled "This is Your Life, Brought to You by Private Equity" 12/24/16, highlights the extensive influence of Private Equity on consumers.

2 Major themes in my research

2.1 Saving for Retirement and Annuities

Employees from traditional, defined benefit pension plans would generally receive lifetime income payments in the form of an annuity. In defined contribution plans—the most common retirement plans today, such as 401k plans—employees have great autonomy but directly bear the risk of outliving their retirement assets. Annuities are a straightforward way to insure against this longevity risk. While academics have studied annuities for over 60 years, the low take-up rate of these products remains puzzling. In a series of co-authored papers, we incorporate insights from behavioral finance and psychology to empirically investigate the determinants of the decision to annuitize. These findings have the potential to inform the design of policies that promote annuitization. With over 31 million Americans expected to retire within the next ten years, understanding annuitization is of great academic and practical interest.

In [1] "Annuitization Puzzles" (with S. Benartzi and Richard H. Thaler, *Journal of Economic Perspectives*, 2011), we investigate the psychological barriers that prevent annuitization. We provide novel evidence that lessens the extent of the puzzle. In some retirement plans, annuities are easily available as an in-plan payout option. In other words, employees can elect to receive their retirement benefits as an annuity by just checking one box in a retirement form. In this setting, almost half of employees choose annuities, confirming that inertia and the availability bias could also influence retirement payout choices. Moreover, we document that annuitization rates critically depend on the way the retirement benefits are framed or presented. When benefits are presented as retirement income (instead of total retirement wealth), then employees are more likely to select an annuity.

In my research, I have further investigated this idea that framing matters for annuitization. Annuities are generally framed as an investment product, more than an insurance against the longevity risk. If investors perceive annuities as a mere investment vehicle, then

the external market conditions are likely to influence the take-up of annuities. I empirically test this conjecture in [2] "Stock Market Returns and Annuitization" (*Journal of Financial Economics*, 2014). Using a novel dataset with over 100,000 actual payout decisions, I document a strong negative relation between recent stock returns and annuitization. Additional analyses support extrapolation from past returns as the most likely explanations for this relation. After negative stock returns, investors believe that the stock market will continue to decline and find annuities—essentially a fixed income product—more appealing. Elderly investors are influenced even more strongly by recent returns in their annuitization decisions. This evidence is consistent with findings in the psychology literature that elderly tend to rely more heavily on recent information. These findings provide insights into the determinants of annuitization and at the same time shed light on how beliefs are formed in old age.

In [7] "Saving for retirement, Annuities and Procrastination" (with Jeffrey R. Brown, working paper, 2019), we investigate if personality traits—namely the tendency to procrastinate—can explain differences in the accumulation and decumulation of retirement wealth. Analyzing data from defined contribution plans, we document that procrastinators (in health care elections) take longer to begin saving for retirement, after joining save less, and are more likely to choose the default asset allocation. Using payout data from defined benefits plans, we document that procrastinators retire one year earlier and are more likely to prefer lump sum to annuities, even more so when the lump sum is made more salient. From back-of-the-envelope calculations, we estimate that procrastinators could experience a reduction between 20% and 30% of their retirement wealth. Additional tests confirm that our procrastination measure likely captures present-biased preferences more than reflecting liquidity constraints, financial naivete, busyness, or rationally delaying decisions.

My research on retirement savings and annuitization support the view that behavioral factors (such as framing, extrapolation from stock market returns, and present-biased preferences) are key elements in understanding the documented, large variation in retirement savings and spending rates after retirement.

2.2 Financial Advice and Investment Decisions

How to allocate savings across risky assets is an inherently complicated problem. It would require a careful understanding of risk preferences, investment horizons, and the relation between asset returns and labor income. Therefore, it is not surprising that many households seek the help of investment advisors. Despite the pervasive use of advisors is, there are very few academic studies that investigate whether and how advisors add value. Lack of data has been a major limitation in conducting research in this area.

To overcome this data limitation, I was able to collect a novel proprietary database from three Canadian financial institutions (mutual fund dealers). For the period 1999-2013, I have access to all the holdings and trades for their one million clients, served by roughly 10,000 financial advisors. I have used these data in a series of co-authored papers to provide new and important insights about the costs and benefits of financial advice. We have studied advisors' role in facilitating risk-taking and tailoring asset allocation to clients' preferences, and the relevance of agency conflicts for the quality and cost of financial advice.

In [4] "Retail Financial Advice: Does One Size Fit All?" (with S. Foerster, Juhani T. Linnainmaa, and Brian T. Melzer, *Journal of Finance*, 2017) we show that financial advisors strongly influence their clients' asset allocations, but fail to provide significant customization. Advisor fixed effects explain substantially more variation in clients' portfolio riskiness than a broad set of client attributes such as risk tolerance, income, and financial knowledge. Even when we control flexibly for unobserved heterogeneity through investor fixed effects, the advisor effects remain important. The major determinant of these advisor fixed effects is an advisor's own asset allocation. In other words, advisors recommend to their clients an asset allocation that is similar to the one in their own personal portfolios. This one-size-fits-all advice is also expensive: advised portfolios cost 2.6% per year, or 1.6% more than lifecycle funds.

A common view of retail finance is that conflicts of interest contribute to this high cost of advice. In [5] "The Misguided Beliefs of Financial Advisors" (with Juhani T. Linnainmaa

and Brian T. Melzer, *Journal of Finance*, forthcoming) we challenge this common view. Using our Canadian data, we find that advisors make many of the same investment mistakes that their clients make. They trade frequently, chase past returns, underdiversify, and prefer expensive, actively managed funds. As a result, advisors' net returns are negative and very similar to their clients' net returns. We rule out the possibility that advisors strategically hold expensive portfolios only to convince clients to do the same by showing that advisors' behavior does not change after they leave the industry. This evidence suggests that advisor misguided beliefs substantially lower the quality of financial advice.

The poor performance of advised portfolios suggests that households could be unaware of the costs of such advice. Alternatively, they must gain other substantial benefits from having an advisor. In [9] "Financial Advisors and Risk-Taking" (with Juhani T. Linnainmaa, Brian T. Melzer, and S. Foerster, working paper, 2019) we investigate whether financial advisors provide benefits by encouraging stock market participation and risk-taking. We show that financial advisors increase stock market participation and risk-taking. We first exploit a regulatory change in Canada that restricted the supply of financial advisors in all provinces except Quebec. Our estimates suggest that having a financial advisor increases stock market participation and reduces investments in cash accounts. We also use micro-level data on financial advisory accounts to document that the length of the advisor-client relationship—a measure of trust—increases clients' willingness to take financial risk. Using exogenous shocks to advisor-client pairings as an instrument for the relationship length, we find that clients who started with a new advisor before the 2007–2009 financial crisis were less likely to remain invested in the stock market throughout the crisis.

In recent years, the rise of robo-advisers has provided a new and potentially more cost-effective approach for offering financial advice. In [8] "Robo-advisers and Investor Behavior" (with B. Loos, S. Scheurle, and A. Hacketal, invited for submission by the *Review of Financial Studies*, 2019) we use unique data from a large German retail bank to investigate the effects of robo-advisers on clients' portfolios. We find that after joining a robo-advising service,

clients increase financial risk-taking, hold more diversified portfolios with a larger fraction of index funds, exhibit lower home bias, and increase their (buy) turnover. We also document spill-over effects and learning between robo and non-robo advised accounts. Our research has the potential to provide key insights into the trade-offs associated with using robo-advisers.

In previous work, I have also investigated the effect of biology on the complex lifecycle asset allocation problem. In [3] "The Fetal Origins Hypothesis in Finance: Prenatal Environment, the Gender Gap, and Investor Behavior" (with H. Cronqvist, S. Siegel, and R. White, *Review of Financial Studies*, 2016) we investigate if prenatal conditions affect investment decisions. We find that a higher exposure to prenatal testosterone, the most potent sex hormone in humans, leads to the masculinization of financial behavior, that is an increase in financial risk-taking and trading in adulthood. We also examine birth weight, which is a summary measure of prenatal conditions. We document that individuals with higher birth weight are more likely to participate in the stock market. Lower birth weight individuals, instead, have portfolios with higher volatility and skewness, consistent with compensatory behaviors. Our results confirm that the role of the prenatal environment in shaping outcomes later in life extends also to financial decisions.

Overall my research in this area provides novel evidence on the drivers of investment decisions, being these biological factors or the influence of financial advisors. In particular, my major contribution is to increase the understanding on the value added by, and the limitations of using, financial advisors. Perhaps not surprisingly, advisors have a substantial effect on their clients. More surprisingly, advisors often invest as they instruct their client to invest. Therefore, misguided beliefs—and not only conflicts of interest—are to blame for the poor quality of financial advice. Regulatory interventions aimed at improving the screening of financial advisors and their level of financial education appear promising. Given the competition from robo-advisers, the financial advisory industry also has strong incentives to improve its standards.

2.3 Corporations and Consumers

A third area of my research investigates how corporations and corporate actions influence household consumption. In this area, I have two co-authored papers that investigate: i) the effects of private equity firms on consumer products; and ii) how households' consumption changes with different corporate payout policies (dividends versus capital gains).

In [6] "Barbarians at the Store? Private Equity, Products, and Consumers" (with C. Fracassi and A. Sheen, second round revision at the *Journal of Finance*, 2019) we investigate the effects of private equity on product markets. Using detailed price and sales data for an extensive number of consumer products, we show that in the years following a buyout, target firms increase sales by 53% compared to matched control firms. Price increases do not drive this growth; instead, the growth is driven by the launch of new products and geographic expansion. Additional analyses reveal that private equity firms achieve this higher growth by alleviating financial constraints and by providing managerial know-how for their target firms. Our findings question the common view that private equity substantially increases prices, harming consumers. To the extent that consumers place a high value on variety, they might actually be better off after the private equity deals.

In [11] "Revenue Synergies in M&A: Evidence from Consumer Products" (with C. Fracassi and A. Sheen, work in progress) we plan to document the effects of mergers and acquisitions on product markets and consumers. When addressing why firms merge, prior literature has focused on cost efficiencies and market power. This paper plans to provide novel evidence on potential revenue enhancement synergies. Whether consumers are ultimately harmed by M&As critically depends on the price and the variety of the products that they can find on the shelves after the deals. Our research has the potential to quantify these effects.

Financial wealth constitutes a substantial and increasing fraction of household wealth. Therefore, how investors adjust their consumption in response to fluctuations in financial wealth is likely to have important macroeconomic effects. In [10] "The Consumption Re-

sponse to Realized Capital Gains: Evidence from Mutual Fund Liquidations” (with S. Meyer and M. Pagel, working paper, 2019) we investigate how households’ consumption respond to realized capital gains. Toward this goal, we use novel data from a German retail bank with information on their clients’ security trades and holdings, income, and spending. Our identification strategy exploits mutual fund closures, which are arguably exogenous to individual characteristics. We basically ask: what happens when a mutual fund is liquidated and investors are forced to divest and receive their money back? We estimate that the marginal propensity to consume (MPC) out of one dollar received from a forced sale event is approximately 11% within 30 days. Standard life-cycle portfolio-choice models would predict this MPC to be much closer to zero. Our evidence suggests that standard models would need to incorporate non-standard (i.e., behavioral) factors to explain actual household behaviors.

3 Future research projects

My most recent research projects are in the area of financial technology (also called ”fintech”) and try to investigate the role of new technologies on financial prices and investor behavior. In this area, I have two co-authored projects that investigate: i) the effect of tweets from automated account (Twitter bots) on financial prices; and ii) how trading via smart-phones could shape investor portfolios.

Social media play an increasing role in shaping public opinions and beliefs. With more than 321 million active users worldwide as of the end of 2018, Twitter is one of the biggest social networks worldwide. Computer scientists have recently investigated the possibility that automated Twitter accounts—called bots—can manipulate public opinion. For example, there is mounting evidence that, during the 2016 U.S. presidential election, bots might have misled many human users into spreading misinformation.

Given that a sizable fraction of bot-generated tweets are related to business news, we plan to investigate the effects of bot-generated tweets on stock prices. Specifically, in [12] ”Twit-

ter Bots, Corporations and Financial Markets” (with J. Linnainmaa, W. Wang, F. Menczer, and K. Wang, in progress) we study the extent to which corporations use automated Twitter accounts (bots) to strategically spread positive information, increase investor attention and, ultimately, inflate stock prices. In this effort we partner with computer scientists from Indiana University. In practice, we use the Botometer, a machine learning-based tool developed by the Observatory on Social Media (OSoMe) at Indiana University. Armed with this tool, we have built a time series of bot-generated tweets for large listed corporations based on millions of tweets. Our objective is to test whether bot-generated tweets increase around important corporate events and, specifically, at times when corporations or managers can benefit from higher valuations. We plan to investigate events such as mergers and acquisitions (M&As), initial public offerings (IPOs), secondary offerings, earnings announcements, and the expiration of executive stock options. Preliminary evidence on M&As seems to confirm our intuition. We find a higher volume of bot-generated tweets for the bidder firms during the negotiation period of stock mergers. This higher tweets volume translates into (temporary) higher bidder prices and, therefore, cheaper acquisitions of target firms.

Investors more frequently rely on mobile devices—smartphones and tablets—to place their trades. It is estimated that in the US the volume of such trades could reach 25% of total online trades by the end of the year (CNBC). In other countries such as Hong Kong and Singapore this number is already close to 40%. Research in marketing documents that consumers are more likely to make impulse purchases when they use mobile devices and, for example, more likely to order unhealthy food. In [13] ”Smart(phone) Investing?” (with B. Loos and A. Kalda, in progress), we plan to investigate the effect of mobile technologies on investors trading behavior. Using data from two large German banks that introduced mobile trading apps, we plan to investigate the effects of mobile devices on financial risk-taking and investment mistakes, such as trading too often, under-diversification or chasing hot investments. Our data have two promising and unique features. First, we could compare trades done by the same investors across different platforms such as, for example, computer

desktops and mobile devices. Second, we could control for the precise timing of the trades to disentangle the effects of greater trading accessibility (e.g., placing trading orders during after-work hours) from the effects of trading via mobile devices.

Both research projects have the potential to provide insights on how new technologies could impact finance, from the diffusion of corporate news to household investment decisions.

4 Impact and visibility of my research

My work contributes to our understanding of how households make financial decisions, from retirement decisions to annuitization, from investment decisions using financial advisors to consumption choices.

My research has started to have an impact among academics, practitioners, and policy makers. I currently have 599 Google Scholar citations, with an pronounced increase in citations in the last two years (249 citations). My papers have been downloaded 5,282 times from the Social Science Research Network (SSRN) and I have been in the top 10% of SSRN authors by monthly downloads for the past two years.

I have personally presented my research or discussed others researchers' papers a total of 82 times (excluding the talks in the job market year). I have presented and discussed papers at several leading conferences such as the American Finance Association, the American Economic Association, the Western Finance Association, the European Finance Association, the SFS Cavalcade, and FIRS. I have also presented my work at several NBER meetings (Behavioral Finance, Household Finance, and Aging). I have given seminars at several universities, including Columbia University and UT Austin. I have presented my work also at prestigious specialized conferences hosted by, among the others, Harvard Business School and MIT Sloan.

My solo-authored paper "Stock Market Returns and Annuitization" has received the Northern Finance Association (NFA) Best Paper in Capital Markets Award and was the

finalist for the 2015 TIAA-CREF Paul A. Samuelson Award. For my research in related to retirement, I have been nominated a Faculty Research Fellow of the National Bureau of Economic Research (NBER) for the Aging Group since 2016.

My paper "Retail financial advice: Does one size fit all?" received the CFA Society Canadian Investment Research Award. The paper was published as a leading article in the top-tier Journal of Finance. It also received the prestigious 2017 Amundi Smith Breeden Distinguished Paper Prize, awarded annually for the top three papers in the Journal of Finance in any area other than corporate finance.

My research on financial advisors has been mentioned and used by the Ontario Security Commission (OSC). I have also presented this research to the US Security and Exchange Commission (SEC) and the Italian Security and Exchange Commission (Consob).

My studies have also been covered in the popular press such as—among the others—the Wall Street Journal, the New York Times, and Money Magazine.