Research Statement

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1 Background

My experience as a visiting PhD student in the University of California Los Angeles's finance department profoundly influenced my career. During this time, I learned to appreciate the value of academic research and its challenges and rewards. After returning to my PhD program at the University of Lecce, I was dissatisfied with my research agenda and my research skills. After completing my PhD, I was awarded the IRI Foundation Scholarship that allowed me to return at UCLA as a postdoctoral fellow.

During my postdoctoral fellowship, I strengthened my training and sharpened my empirical research skills. I attended PhD courses in finance, behavioral sciences, and econometrics. I also I embarked on my new research agenda on retirement savings and annuities, working on the FINRA Foundation grant *"How do households hedge the longevity risk? The role of annuities"*, under the guidance of my mentor, Shlomo Benartzi.[1] To study annuitization, I secured a novel dataset with payout decisions for thousands of employees at retirement age. I have since used this data in multiple projects, including my job market paper on annuities and stock market returns.

The years that I spent at UCLA shaped my approach to academic research, allowing me to create a framework for future research projects. Never allow available data to dictate your research agenda. Proactively "hunt" for the right data to address relevant but understudied research questions. When analyzing the data, strive to combine careful econometric

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[1]My PhD dissertation thesis at University of Lecce was, in fact, centered on understanding how information gets incorporated into stock prices, using data from UK listed soccer teams.

techniques with insights from economic theory. These are the pillars on which I have built all my research projects.

2 Major themes in my research

I study household finance, with a particular focus on: retirement savings, financial advice, and consumption. Choices in these three areas all play a critical role in the economy. Using novel and unique datasets, I aim to address central questions in these topics.

In 2018, retirement assets in the United States amounted to $27.1 trillion (Investment Company Institute, 2019). 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. Investors can decide how much to withdraw from their wealth and if to use annuities to hedge against the longevity risk. 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 welfare consequences for retirees.

Financial advice is pervasive among American households. According to the 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 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. What happens to consumer products when manufacturers change their ownership? For example, private equity firms have acquired several consumer product firms and exercise a growing influence on the daily purchases of millions of consumers.[2] Despite this growing influence, we know very little about how private equity firms influence consumers and if they significantly increase prices. The media and policy makers have raised similar concerns about the recent trend in mergers and acquisitions (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.

2.1 Retirement Savings and Annuities

Employees in defined benefit pension plans have historically received lifetime income payments in the form of an annuity after retirement. The most common retirement plans today are defined contribution plans, such as 401k plans. In these plans, employees have greater 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.

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

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[2]A 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.

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can elect to receive their retirement benefits as an annuity by simply checking one box in a retirement form. In this setting, almost half of employees choose annuities, confirming that inertia and the availability bias could 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 further investigated this idea that framing matters for annuitization. Annuities are generally framed more as an investment product 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 my solo-authored paper [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 explanation for this relation. After negative stock returns, investors believe that the stock market will continue to decline and find more appealing annuities, which are essentially fixed income products. The influence of past returns is stronger for elderly investors. This evidence is consistent with findings in the psychology literature that the elderly tend to rely more heavily on recent information. This paper provides insights into the determinants of annuitization and sheds light on how beliefs are formed in old age.

In [7] *Saving for retirement, annuities and procrastination*" (with Jeffrey R. Brown, working paper, 2020, under review), we investigate if a personality trait, such as the tendency to procrastinate, can explain differences in the accumulation and decumulation of retirement wealth. Empirically, we define as procrastinators those employees that make their annual health care elections on the deadline. Analyzing data from defined contribution plans, we document that procrastinators take longer to join a retirement saving plan, save less after joining, 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 a lump sum payment to annuities, especially 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, low financial sophistication, 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. Moreover, these findings have the potential to inform the design of policies promoting retirement savings and annuitization. With over 31 million Americans expected to retire within the next ten years, understanding these behaviors remains of great academic and practical interest.

In the future, I plan to continue my work in this area by investigating the effects on retirement decisions of: i) financial advisors, and ii) household leverage. For example, in [15] *"Are parents paying their childrens dues? The effect of student loan debt on retirement choices"* (with A. Kalda, work in progress), we plan to investigate to what extent student debt affects retirement decisions for borrowers parents or relatives. Student debt has experienced a staggering growth in the last decade, reaching $1.5 trillion in 2018 (NYFED, 2018). Survey evidence documents that 25 percent of private student loan cosigners in the age group 50 and above made a loan payment because the student borrower failed to do so. Using data from Equifax on childrens student debt burden and their parents liabilities and retirement decisions, we plan to investigate if household leverage is contributing to the recent trend of increasing retirement age.

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, there are 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 collected a novel proprietary database from three Canadian financial institutions (mutual fund dealers). For the period 1999-2013, I accessed all the holdings and trades for over one million clients, served by roughly 10,000 financial advisors. I used these data in a series of co-authored papers to provide new insights about the costs and benefits of financial advice. For example, we have studied advisors' role in facilitating risk-taking and tailoring asset allocation to clients' preferences, or the relevance of advisors' own beliefs for the quality of financial advice.

In [4] "*Retail financial advice: Does one size fit all?*"(with S. Foerster, Juhani Linnainmaa, and Brian 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 determine this high cost of advice. In [5] "*The misguided beliefs of financial advisors*" (with Juhani Linnainmaa and Brian Melzer, *Journal of Finance*, forthcoming), we provide evidence that complement this common view. Using our Canadian data, we find that advisors make many of the same investment mistakes as their clients. 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

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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, households must gain other benefits from having an advisor. In [9] "*Financial advisors and risk-taking*" (with Juhani Linnainmaa, Brian Melzer, and S. Foerster, working paper, 2019), we document that financial advisors provide benefits by encouraging 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 our micro-level data on advised 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*, 2020), 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 my previous work, I investigated the effect of biology on investor behavior. 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 a masculinization of financial behavior in adulthood, resulting in an increase in financial risk-taking and more trading. 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 prenatal environment shapes outcomes later in life, including financial decisions.

Overall my research investigates the drivers of investment decisions, such as biological factors or financial advisors. Perhaps not surprisingly, financial advisors have a substantial effect on their clients. More surprisingly, advisors often invest as they instruct their client to invest. Therefore, advisors' misguided beliefs can contribute to the poor quality of financial advice. Regulatory interventions aimed at improving the screening of financial advisors and their level of financial education could help address these misguided beliefs. The traditional financial advisory industry faces strong incentives to improve its standards, given also the competition from robo-advisers.

2.3   Corporations and Consumers

A third area of my research investigates how corporations 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*, 2020), we investigate the effects of private equity on product markets. To address this research question we merge the standard databases with information on Private Equity deals with the Nielsen retail scanner data that reports detailed price and sales information for millions of consumer products. We find that in the years following a buyout, target firms increase sales by 50% 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 for public vs. private targets, during and after the financial crisis, and in industries that vary in structure suggest private equity tailors strategies to the environment, eases financial constraints, and provides expertise to manage growth. 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 private equity deals.

In [12] "*Revenue synergies in M&As: Evidence from consumer products*" (with C. Fracassi and A. Sheen, work in progress), we plan to document the effects of mergers and acquisitions (M&As) on product markets and consumers. When addressing why firms merge, previous studies have focused on cost efficiencies and market power. This project plans to provide novel evidence on potential revenue enhancement synergies. Using Nielsen data from over 50,000 unique consumer products sold by targets and acquirers in over 400 mergers between 2004 and 2017, we plan to test if mergers achieve revenue synergies by: i) gaining access to new partners' geographies and distribution channels; 2) extending their product lines; or iii) selectively eliminating target firm's competition. Whether consumers benefit or not by mergers and acquisitions 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 shed light on 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 response to realized capital gains: Evidence from mutual fund liquidations*" (with S. Meyer and M. Pagel, working paper, 2020), we investigate how households' consumption responds to realized capital gains. Toward this goal, we use novel data from a German retail bank with information on their clients' portfolio trades and holdings, income, and spending. Our identification strategy exploits exogenous mutual fund closures. We essentially 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 Projects on Fintech and Social Media

My most recent research projects are in the area of financial technology (also called "fintech") and investigate the role of new technologies and social media on investor behavior and stock markets. In this area, I have three co-authored projects that investigate: i) how trading via smart-phones influence investor portfolios; and ii) the effect of tweets from automated accounts (Twitter bots) on financial prices.

New technologies can change the way households make economic decisions from labor supply, to borrowing, to investor behavior. Smartphones represent one of the most widely used technologies with over 250 million devices in the U.S. alone (Statista, 2020). Ease of use, ubiquitous access to the web, and speed of execution make smartphone-based apps the preferred platform for many economic transactions. However, the increased convenience of using smartphones might come at a cost. For example, consumers are more inclined to make impulsive purchases such as ordering more unhealthy food when using mobile devices (source: Benartzi and Lerner, 2015). Large online brokers report that over 25% of all retail investor annual trades have been executed using mobile devices and estimate this percentage to double in the next few years (Ameritrade, 2019). Despite this trend, we know very little about how this technology affects investor behavior. In [11] *Smart(phone) investing?* (with A. Kalda, B. Loos, and A. Hacketal, working paper, 2020), we use transaction-level data from two large German retail banks to study the effects of trading using smartphones. To account for selection effects into smartphone usage, we compare trades done by the

same investor in the same month across different platforms. We find that smartphone trades increase the probability of buying risky assets, lottery-type assets, and the tendency to chase past returns. Using smartphones to buy different asset classes or to trade during different hours does not fully explain our results. Smartphone trades do not substitute other trades. After starting to trade using smartphones, investors also buy riskier and more lottery-type investments on other platforms. The effects of smartphones are not transitory. Overall, our evidence suggests that trading using a smartphone could exacerbate investment mistakes such as buying lottery-type stocks and chasing past returns.

Social media plays an increasing role in shaping public opinions and beliefs. With more than 321 million active users as of the end of 2018, Twitter is one of the biggest social networks. 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 [13] "*Twitter bots, corporations, and financial markets*" (with J. Linnainmaa, W. Wang, and F. Menczer, 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 earnings announcements, mergers and acquisitions (M&As), and the expiration of executive stock options. Preliminary evidence around earning announcements appears to confirm our intuition. A

high volume of bot-generated tweets in the five days before the announcement can predict earning surprises above and beyond the usual predictive variables used in other studies. In a related project, [14] "*Twitter bots and cryptocurrencies manipulation*" (with C. Fracassi, A. Shams, and K. Wang, in progress), we plan to investigate to what extent bot-generated tweets are used to manipulate cryptocurrencies, to provide price support after a decline in currency prices, or to create hype and volume around currencies and exchanges.

These future research projects have the potential to provide insights on how the interaction between new technologies, social media, and finance can shape household investment decisions, stock prices around relevant corporate events, and the valuation of cryptocurrencies.

4   Impact and Visibility of Research

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

My research has started to have an impact among academics, practitioners, and policy makers. I currently have 708 Google Scholar citations, 569 of which in the last five years (since 2015). My papers have been downloaded 5,683 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 papers a total of 85 times (excluding the talks in the job market year). I have acted as a presenter or discussant at several leading conferences such as the American Finance Association, the American Economic Association, the Western Finance Association, the European Finance Association, the Society of Financial Studies (SFS) Cavalcade, and the Financial Intermediation Research Society (FIRS). I have also presented my work at several National Bureau of Economic Research (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 at prestigious specialized conferences hosted by, among others, Harvard Business School and MIT Sloan School of Management.

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 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 Council of Economic Advisers (CEA) and the Ontario Security Commission (OSC). I have also presented this research to the U.S. Security and Exchange Commission (SEC), the Chicago Fed, and the Italian Security and Exchange Commission (Consob).

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

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