

Category Marketing-Finance

Title: Heuristics and Financial Product Valuation

Supervisor: Thomas Post (t.post@maastrichtuniversity.nl)

Short text: Starting Date: immediately

It is well-known that the average investor or consumer of a financial products uses shortcuts and heuristics to make financial decisions. Often, those heuristics induce behavior that leads to financial mistakes and individual welfare losses. While many papers have looked at decision-making heuristics and biases already (hyperbolic discounting, overconfidence, trend extrapolation...) the current topic is about valuation heuristics. That is, given a certain financial product, what "back-of-the-envelope" mathematical models do normal people apply when they try to value a financial product (e.g. an annuity) to get an idea about of the product is worth the price. The results of such a study are highly relevant as understanding decision making processes and valuation heuristics is key to design smart interventions to improve consumer financial decision making (and a test of an idea could be part of the thesis).

Literature, especially from the literature on mathematics education, will be provided as a jump off point.

Contact Dr. Thomas Post well in advance before the thesis skill period to discuss and narrow down the concrete topic and research design.

Title: Interventions in Long-Term Decision Making and Pension Communication

Supervisor: Thomas Post (t.post@maastrichtuniversity.nl)

Short text: Starting Date: immediately.

Recent evidence shows that the majority of Dutch pension plan participants is poorly informed about their employer-sponsored pensions. This is striking as information on (for example) prospective benefits is personally relevant (it provides the most significant stream of overall pension income) and benefits are expected to change (due to current reforms). Such is information is (according to standard theories of economic behavior) necessary to decide on potentially building up additional private savings. Moreover, the ignorance of most pension plan members is even more striking as receiving the information is fairly easy, that is, often just two mouse clicks away. This topic includes researching the relevant theories and testing various ways to manipulate pension communication in order to increase awareness (and potentially action) among pension plan members.

Note, this topic is very broad in terms of research angle, method, and data. Regarding research strategies, focus, and interventions it includes, for example:

- textual manipulation of messages
 - website, visuals, and tool design
 - communication channel (direct, via employer, ...; online, offline, social media, ...)
- and timing (life events) interventions
- emotional triggers
 - design of default options and products
 - as well as big data approaches (data and text mining).

Therefore, contact Dr. Thomas Post well in advance before the thesis skill period to discuss and narrow down a concrete topic.

Title: Experience-Based Learning in Finance**Supervisor: Dr. Peiran Jiao** (p.jiao@maastrichtuniversity.nl)

Short text: Personal experiences influence subsequent decisions. For instance, people who lived through negative events, such as economic downturns and financial crises, tend to make consumption and/or investment decisions consistent with either elevated risk aversion or pessimistic beliefs about future economic conditions (e.g. Malmendier and Nagel, 2011, Malmendier et al. 2011, Giannetti and Wang, 2016, Knüpfer et al., 2017). In particular, attaching too much weight on the payoff component in experience can lead to biases (Kaustia and Knüpfer, 2008, Choi et al., 2009), even when payoffs are just the result of luck (Anagol et al., 2015). Learning based on personal experiences can be either rational (improving investors' skills and reducing their biases) or irrational (naively repeating previously successful actions). Payoffs from personal experiences can influence subsequent preferences and/or beliefs (Jiao, 2017). This project will rely on a combination of theoretical, empirical and experimental approaches to investigate the effects of personal experiences and experienced payoffs in repeated decision-making under uncertainty with feedback. The hope is to also disentangle the preference- and belief-based channels of these potential effects, and to generate useful implications for marketing and financial decision-making.

References:

- Anagol, S., Balasubramaniam, V., & Ramadorai, T. (2015). The Effects of Experience on Investor Behavior: Evidence from India's IPO Lotteries.
- Choi, J. J., Laibson, D., Madrian, B. C., & Metrick, A. (2009). Reinforcement learning and savings behavior. *The Journal of finance*, 64(6), 2515-2534.
- Giannetti, M., & Wang, T. Y. (2016). Corporate scandals and household stock market participation. *The Journal of Finance*, 71(6), 2591-2636.
- Jiao, P. (2017). Payoff-Based Belief Distortion. Working Paper. Available on SSRN: <https://ssrn.com/abstract=2964289>
- Kaustia, M., & Knüpfer, S. (2008). Do investors overweight personal experience? Evidence from IPO subscriptions. *The Journal of Finance*, 63(6), 2679-2702.
- Knüpfer, S., Rantapuska, E., & Sarvimäki, M. (2017). Formative experiences and portfolio choice: Evidence from the Finnish great depression. *The Journal of Finance*, 72(1), 133-166.
- Malmendier, U., & Nagel, S. (2011). Depression babies: do macroeconomic experiences affect risk taking? *The Quarterly Journal of Economics*, 126(1), 373-416.
- Malmendier, U., Tate, G., & Yan, J. (2011). Overconfidence and early-life experiences: the effect of managerial traits on corporate financial policies. *The Journal of finance*, 66(5), 1687-1733.
-

Title: Emotional reaction to tweets from Arts and Cultural Institutions**Supervisor: Rachel Pownall** (r.pownall@maastrichtuniversity.nl)

Short text: This topic involves an empirical study into the evaluation of how sentiment influences share prices. In particular looking at periods of economic and financial crises. How do the creative and cultural industries respond to social media?

References:

- Fang, L., & Peress, J. (2009). Media coverage and the cross-section of stock returns. *The Journal of Finance*, 64(5), 2023-2052.
- Tetlock, P. C. (2007). Giving content to investor sentiment: The role of media in the stock market. *The Journal of Finance*, 62(3), 1139-1168.

Requirements: Statistical proficiency, using R or Stata.

Title: Individual investors' beliefs and socially responsible investment**Supervisor: Bin Dong** (b.dong@maastrichtuniversity.nl)

Short Text: ESG (environmental, social and governance) factors increasingly attract huge amount of capital and investors' attention. A rational decision of investment is affected by both investors' beliefs and their preferences. However, research of SRI investment decision almost solely rely on investors' preferences, which would ignore the investors' beliefs and leads to limited understanding about SRI investment. We investigate the investors' formation and updating of beliefs towards ESG, and their adjustment of ambiguity attitudes towards ESG. We propose an experimental design to elicit investors' beliefs for testing the fundamental differences in behavioural decisions driven by ESG factors. We will examine the following hypothesis: (1) Individual investors' beliefs are more optimistic towards ESG stocks/funds. (2) Individual investors relatively underweight negative new information when updating their beliefs of return towards SRI investment. (3) Individual investors dislike ambiguity in the stock market and the ESG label help to resolve some ambiguity. This paper's findings will help policy makers to better understand individual investors' beliefs and reason for investing in ESG, so they can design more appropriate SRI portfolios.

References:

- Auer, B. R. & Schuhmacher, F. (2016). Do socially (ir)responsible investments pay? New evidence from international ESG data. *The Quarterly Review of Economics and Finance*, 59 (2016), 51-62.
- Bauer, R. & Smeets, P. (2015). Social identification and investment decision. *Journal of Economic Behavior & Organization*, 117 (2015), 121-134.
- Hartzmark, S. M., & Sussman, A. B. (Forthcoming). Do investors value sustainability? A natural experiment examining ranking and fund flows. *Journal of Finance*.
- Riedl, A., & Smeets, P. (2017). Why do investors hold socially responsible mutual funds? *The Journal of Finance*, 72(6), 2505-2550.
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210-233.
- Cai, L., & He, C. (2014). Corporate environmental responsibility and equity prices. *Journal of Business Ethics*, 125(4), 617-635.
- Benabou, R., and Tirole, J. (2010). Individual and corporate social responsibility. *Economica*, 77(305), 1-19.
- Gillan, S., Hartzell, J., Koch, A., Starks, L., (2010). Firms' environmental, social and governance (ESG) choices, performance, and managerial motivation. Unpublished working paper. University of Georgia, University of Texas at Austin, and University of Pittsburgh.
- Baillon, Aurélien. (2008). "Eliciting Subjective Probabilities through Exchangeable Events: An Advantage and a Limitation." *Decision Analysis*, 5(2): 76-87.
- Jiao, P. (2019). Payoff-Based Belief Distortion. Working Paper.

Title: The Resilience of Socially Responsible Investment under the Outbreak of COVID-19**Supervisor: Bin Dong** (b.dong@maastrichtuniversity.nl)

Short text: ESG (environmental, social, and governance) factors increasingly attract vast capital and investors' attention. But research in the field of the resilience of socially responsible investment (SRI) is limited. The literature almost focuses on the performance of this non-conventional approach to investment during the financial crisis. Nevertheless, a more systemic approach has been neglected. Times of instability can be originated from an economic system. Meanwhile, it can also stem from a non-economic system, such as wars and health emergencies, which can indirectly affect the economic system. The resilience of SRI should be evaluated under both economic and non-economic context. However, most

research on the resilience of SRI is set under a background of the financial crisis, which would ignore the non-financial factors and leads to a vague understanding of SRI investment. This topic aims to compare the resilience between stocks with environmental, social and governance (ESG) integration and conventional (non-ESG) stocks, and to illustrate the role of ESG factors in the performance of stocks under the outbreak of emergency originated from non-financial departments, e.g., healthy emergency. We investigate the resilience of ESG stocks' performance during the period following the outbreak of COVID-19. Furthermore, over this timeframe, we also examine the rates of performances on environmental, social, and governance dimensions separately. By the comprehensive approach in bear market conditions resulting from an exogenous emergency, we shed light on SRI's resilience (ESG screening) in practice.

References:

- Auer, B. R. & Schuhmacher, F. (2016). Do socially (ir)responsible investments pay? New evidence from international ESG data. *The Quarterly Review of Economics and Finance*, 59 (2016), 51-62.
- Galbreath J. (2013). ESG in focus: the Australian evidence. *Journal of Business Ethics* 118(3): 529–541 (2013).
- Ortas, E., Moneva, J.M., Burritt, R. et al (2014). Does Sustainability Investment Provide Adaptive Resilience to Ethical Investors? Evidence from Spain. *J Bus Ethics* 124, 297–309.
- Erragragui, E.; Hassan, M.K.; Peillex, J.; Khan, A.N.F (2018). Does Ethics Improve Stock Market Resilience in Times of Instability? *Econ. Syst.*, 42, 450–469.
- Fiksel, J., (2006). Sustainability and resilience: toward a systems approach. *Sustainability: Science Practice and Policy*, 2 (2), 14–21.
- Nofsinger, J. R. and Varma, A. (2014) Socially responsible funds and market crises, *Journal of Banking & Finance*, 48, 180–93.
- D. Ashraf, N. Mohammad (2014). Matching perception with the reality - performance of Islamic equity investments. *Pac. Basin Finance J.*, 28 (2014), pp. 175-189.
- Daniel, K., M. Grinblatt, S. Titman, and R. Wermers. 1997. Measuring mutual fund performance with characteristic-based benchmarks. *Journal of Finance* 52:1035–58.
- Chen, H.; P. De; Y. Hu; and B. H. Hwang. " Wisdom of Crowds: The Value of Stock Opinions Transmitted Through Social Media." *Review of Financial Studies* 27 (2014): 1367– 403.

Title: Identifying anomalies in futures and options markets

Supervisor: Joost Pennings (joost.pennings@maastrichtuniversity.nl)

Short Text: Regulators are confronted with ever-increasing challenges as markets (market platforms) become faster, more complex, fragmented, interconnected and driven by computer algorithms that constantly interact, change and improve themselves over time.

Legal scholars note that these developments give rise to practices that could or should be qualified as market manipulation. However, these scholars typically refrain from providing an in-depth analysis of why and how these practices should be regarded as market manipulation. There is a knowledge gap in how (often) manipulation occurs, how it evolves, how regulation affects the behaviour of manipulators and how the market microstructure can provide protection. Econometric and rule-based techniques do not take full advantage of the rich (message driven) data.

The project complements and extends current literature by providing new insights in market manipulation, developing new methodologies that take full advantage of the rich data available.

References:

- Egginton, Jared F., Bonnie F. Van Ness, and Robert A. Van Ness (2016) "Quote Stuffing." *Financial Management* 45(3): pp. 583–608. <http://doi.wiley.com/10.1111/fima.12126>.

FSB (2017) "Artificial Intelligence and Machine Learning in Financial Services: Market Developments and Financial Stability Implications". <http://www.fsb.org/wp-content/uploads/P011117.pdf>.

Menkveld, A. J., & Yueshen, B. Z. (2019). The flash crash: A cautionary tale about highly fragmented markets. *Management Science*, 65(10), pp. 4470-4488.

O'Hara, M., Yao, C., & Ye, M. (2014). What's not there: Odd lots and market data. *The Journal of Finance*, 69(5), pp. 2199-2236.

Du, S., & Zhu, H. (2017). What is the optimal trading frequency in financial markets? *The Review of Economic Studies*, 84(4), pp. 1606-1651.
http://www.mit.edu/~zhuh/DuZhu_frequency_Restud.pdf

Myklebust, T. (2020) "Fairness and Integrity in High-Frequency Markets – A Critical Assessment of the European Regulatory Approach", *European Business Law Review*, 31 (1): pp. 33-76

O. Cosme Jr. (2019), "Regulating High-Frequency Trading: The Case for Individual Criminal Liability", 109 *Journal of Criminal Law and Criminology* p. 365

Aquilina, M., Budish, E. B., & O'Neill, P. (2020). Quantifying the High-Frequency Trading "Arms Race": A Simple New Methodology and Estimates. *SSRN Electronic Journal*.
<https://doi.org/10.2139/ssrn.3636323>

Brogaard, J., Carrion, A., Moyaert, T., Riordan, R., Shkilko, A., & Sokolov, K. (2018). "High frequency trading and extreme price movements." *Journal of Financial Economics*, 128(2), pp. 253–265.

Putniņš, T. J. (2012) "Market Manipulation: A Survey". *Journal of Economic Surveys*, 26(5), pp. 952–967. <https://doi.org/10.1111/j.1467-6419.2011.00692.x>

Additional Information: This research project is part of the UM, WUR, and CERN collaboration on understanding market behavior in futures and options markets using high frequency (LOB) data. This project capitalizes on state-of-the-art methods developed in particle physics in cooperation with CERN. For more information on this research please visit:

<https://kt.cern/article/applying-physics-financial-markets>

<https://www.wur.nl/en/Research-Results/Research-Institutes/Economic-Research/show-wecr/WUR-CERN-and-CORMEC-join-forces-to-protect-commodity-and-financial-markets.htm>

Title: Financial Risk Management Innovations: Water Futures

Supervisor: Joost Pennings (joost.pennings@maastrichtuniversity.nl)

Short Text: On September 17, 2020 the largest exchange in the World, the CME Group announced to launch CME First-Ever Water Futures Based on Nasdaq Veles California Water Index. In this research project we take a Marketing-Finance Approach to understand whether such an innovation will be successful. Both the demand side (modelling adoption process of potential users) as well as the “technical” side of the design process (specification of contract) will be examined.

References:

https://www.cmegroup.com/media-room/press-releases/2020/9/17/cme_group_to_launchfirst-everwaterfuturesbasedonnasdaqvelescalif.html

Pennings, J.M.E. (2004), “A Marketing-Finance Approach towards Industrial Channel Contract Relationships: A Model and Application,” *Journal of Business Research*, 57 6(June): 601-609.

Pennings, J.M.E., M.J.J.M. Candel and T.M. Egelkraut (2003), “A Behavioral Decision Making-Modeling Approach Towards Hedging Services,” *Journal of Behavioral Finance*, 4(2): 71-84.

Pennings, J.M.E. (2002), “Pulling the Trigger or Not: Factors Affecting Behavior of Initiating a Position in Derivatives Markets,” *Journal of Economic Psychology*, 23(April): 263-278.

Pennings, J.M.E., M.G.M. Wetzels, and M.T.G. Meulenberg (1999), “The Marketing-Finance Interface Towards Financial Services: with Special Reference to New Services Provided by Futures Exchanges,” *European Journal of Marketing*, 33(5/6): 531-547.

Pennings, J.M.E. (1998), “The Information Dissemination Process of Futures Exchange Innovations: A Note,” *Journal of Business Research*, 43 (3): 141-145.

Title: Analyzing market liquidity in futures and options markets using an unique data set obtained from the Chicago Mercantile Exchange

Supervisor: Joost Pennings (joost.pennings@maastrichtuniversity.nl)

Short text: Market liquidity is an important characteristic of markets as it drives amongst other execution costs and hedging effectiveness. Liquidity consists of four dimensions (Kyle, 1985): immediacy (i.e. the ability to trade quickly), tightness (i.e. the cost of a round-trip position), depth (i.e. the size of an order flow needed to change prices) and resiliency (i.e. the ability of the market to bounce back from price effects not related to fundamentals and the speed at which it does so) (Hasbrouck, 2017; Kyle, 1985).

The shift to electronic trading platforms fundamentally changed market dynamics and high frequency order book data allows for more comprehensive measurements. For example, previous liquidity measurements take into account only one or two dimensions of liquidity whereas Limited Order Book (LOB) data allows us to measure multiple liquidity dimensions simultaneously (Rösch & Kaserer, 2013). In this study we wish to review existing liquidity

measures and empirically test how they relate (and capture the various dimensions) using LOB data.

References:

Brogaard, J., & Garriott, C. (2019). High-Frequency Trading Competition. *Journal of Financial and Quantitative Analysis*, 54(4), 1469–1497.

Title: Can Land Price Volatility in be Managed?

Supervisor: Joost Pennings (joost.pennings@maastrichtuniversity.nl)

Short Text: "I would rather own all the farmland in the US than all the gold in the world." Warren Buffett (Seeking Alpha, n.d.).

Physical land can be an attractive investment for retail and institutional investors. As a atypical and relative new investment class (alternative real asset), investing in land has gained a lot of attention from the financial industry and academics. Investing in land can be risky. This risks stems amongst others from *specific pricing characteristics of land* and the *structure of land markets*. During the last financial crises parties that invested in land (such as developers, local governments, private equity) have been exposed to high volatility in land values (see media coverage in FD and FT as examples). In this thesis the central question is: why has there not been an effective risk management instrument available to manage that risk? Studying the pricing of land and the land market structure may be a start to answer this question. The student is expected to: 1) study the rich literature on Land pricing and markets, 2) to engage with stakeholders in land markets, 3) and engage with new trading platforms such as IPSX, acretrader etc. that are changing the landscape of property markets and in particular land markets.

Reference:

Fabozzi, F.J., R.J. Shiller and R.S.Tunaru (2020), A 30 Years Perspective on Property Derivatives: What can be done to tame Property Price Risks? *Journal of Economic Perspectives*, Vol.34. nr. 4. 121-145.

Bruce Bjornson (1995), "The Impacts of Business Cycles on Returns to Farmland Investments," *American Journal of Agricultural Economics*, Vol. 77, No. 3. (Aug., 1995), pp. 566-577.

Patrick Lecomte and Will McIntosh (2006), "Designing Property Futures Contracts and Options Based on NCREIF Property Indices, *Journal of Real Estate Portfolio Management*; May-Aug 2006; 12, 2; ABI/INFORM Global pg. 119

Richard E. Just; John A. Miranowski, "Understanding Farmland Price Changes," *American Journal of Agricultural Economics*, Vol. 75, No. 1. (Feb., 1993), pp. 156-168.

Title: Carbon Credit Finance Markets: What is the Future or Futures?

Supervisor: Joost Pennings (joost.pennings@maastrichtuniversity.nl)

Short text: "The future of carbon finance; Looking ahead, carbon finance is set to drive two main streams of innovation: 1) the decarbonization of financial assets relating to the transition of carbon-intensive economic activities to low-carbon alternatives, in line with climate scenarios well below a 2°C temperature rise; and 2) the design and functioning of a sustainable financial system where economic growth is compatible with the socioeconomic changes necessary to mitigate climate emergencies and enable a balanced cycle of production and consumption of natural resources." *PineBrigde investments 2020*.

"The financial sector is increasingly confident that you can put a market price on carbon emissions. The segment edged closer to the financial mainstream last week with the New York Stock Exchange debut of the KFA Global Carbon ETF, an exchange-traded fund that aims to track the performance of the world's three most liquid markets for carbon credits." *Financial Times August 3, 2020*.

In this thesis three questions will be answered: 1) how can one price carbon credits? 2)

How is this related to the various carbon credit markets (market-micro structure) and the relationships between stakeholders in these markets? 3) can carbon credit markets be viable and an attractive (alternative) investment class? The student is expected to use the finance literature on market microstructure and asset pricing to gain a general understanding of pricing "credits" (work in this area is extensive) and subsequently apply and extend these frameworks to carbon credit markets. In addition the student is expected to engage with stakeholders in these markets.

References:

Robert Stavins 2020, "The Future of U.S. Carbon-Pricing Policy WORKING PAPER 25912 DOI 10.3386/w25912 ISSUE DATE May 2019, <https://www.nber.org/papers/w25912>
EU Regulation 2019/631. (Effective 1 January 2020). CO2 emission performance standards for new passenger cars and for new light commercial vehicles. Retrieved from: https://ec.europa.eu/clima/policies/transport/vehicles/cars_en
EU Commission. (26 October 2018). Report From The Commission To The European Parliament And The Council. EU and the Paris Climate Agreement: Taking stock of progress at Katowice COP. Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0716>
ICAP. (2019). Emissions Trading Worldwide: Status Report 2019. Berlin: ICAP
FOEN. (n.d). Linking the Swiss and EU emissions trading schemes. Retrieved from: www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/climate-policy/emissions-trading/linking-the-swiss-and-eu-emissions-trading-schemes.html
Zhang, Y., Harris, J., Li, J. (April 2018). China's Carbon Market: Accelerating a Green Economy in China and Reducing Global Emissions. GDAE Working Paper No. 18-01, Tufts University.
Quemin, S., Trotignon, R. (Jan. 2019). Intertemporal emissions trading and market design: an application to the EU ETS, Grantham Research Institute on Climate Change and the Environment Working Paper No. 316 ISSN 2515-5717 (Online).
World Bank Group. (2020). State and Trends of Carbon Pricing 2020. Washington, DC: World Bank.

Thesis Topic: Stereotypes and beliefs about advisor quality

Supervisor: Marten Laudi (m.laudi@maastrichtuniversity.nl)

Short text: A decision maker forms expectations about others based on stereotypes. Belief-formation based on stereotypes cause belief distortions. For example, Bordalo and colleagues (2016), beliefs about political groups are distorted in the direction of representative types.

In the context of finance, financial advisors form beliefs about clients based on stereotypes. For example, stereotypes based on gender are used by advisors to form expectations about financial literacy of a client. As a result, advisors charge different fees and recommend different products to men than to women. An interesting extension of this literature would be to investigate how individual investors form expectations about advisor quality and trustworthiness, based on stereotypes. This may influence how investors form beliefs about the future performance of assets selected by these advisors. Students are expected to design and run an experiment to isolate the effect of advisor stereotypes on clients' beliefs and expectations.

References:

Bhattacharya, U., Kumar, A., Visaria, S., & Zhao, J. (2020). Do women receive worse financial advice? Working Paper.
Bordalo, P., Coffman, K., Gennaioli, N., & Shleifer, A. (2016). Stereotypes. *The Quarterly Journal of Economics*, 131(4), 1753-1794.
Bucher-Koenen, T., Hackethal, A., Koenen, J., & Laudenbach, C. (2019). Do seemingly smarter people get better advice? Working Paper.

Thesis Topic: Bayesian Adaptive Designs – Applications in Experimental Economics

Supervisor: Marten Laudi (m.laudi@maastrichtuniversity.nl)

Short text: Bayesian adaptive designs (BADs) are an incredibly interesting innovation in medicine and psychology research to increase the efficiency of randomized control trials (RCTs). The main difference, compared to RCTs, is that in BADs newly sampled participants are not randomly allocated, but have a higher probability to be included into well-performing treatments. Economists have suggested some applications in experimental economics, for example in development economics. Students come up with concrete examples, where BADs may be used in experimental economics to generate benefits, for example by saving costs or by improving in-sample outcomes.

References:

Kasy, M., & Sautmann, A. (2021). Adaptive treatment assignment in experiments for policy choice. *Econometrica*, 89(1), 113-132.