

**REPORT OF JEFFREY H. HARRIS, Ph.D.**  
**ON BEHALF OF ONLINE TRADING ACADEMY**

**PREPARED FOR THE FEDERAL TRADE COMMISSION**

**DECEMBER 19, 2019**

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**I. ASSIGNMENT**

1. I understand that the U.S. Federal Trade Commission (“FTC”) is investigating whether Online Trading Academy (“OTA”) is engaged in unfair or deceptive acts or practices through OTA’s marketing of financial education. FTC staff have indicated that they question the value and utility of the education provided by OTA and whether the education provided by OTA would enable a purchaser of that education to make more money trading than the student paid for the education.
2. I have been retained by OTA to assess whether the education provided by OTA provides utility to students and would enable students who follow the principles and use the techniques taught by OTA to make money through trading and investing.
3. More specifically, I have been asked to conduct the following analyses:
  - a. Provide an overview of OTA’s Core Strategy courses, four asset class courses, and their associated Extended Learning Track (“XLT”) courses that are offered by OTA. I understand that most OTA customers who wish to learn trading and investing skills purchase the Core Strategy course and at least one asset class along with the associated XLT;
  - b. Provide a description and independent assessment of OTA’s Core Strategy class and associated XLT;
  - c. Provide a description and independent assessment of OTA’s Stock Equities asset class and associated XLT;
  - d. Provide a description and independent assessment of OTA’s Futures asset class and associated XLT;
  - e. Provide a description and independent assessment of OTA’s Options asset class and associated XLT;

- f. Provide a description and independent assessment of OTA's Forex asset class and associated XLT;

## II. SUMMARY OF OPINIONS

4. Based on my review of available information and over twenty-five years of experience teaching finance, I have reached the following opinions and conclusions:

- a. OTA's educational materials and the principles underlying these courses are based on sound economic theories.
- b. OTA's educational materials represent significant content that ranges from rudimentary concepts of financial literacy through extensive financial education that is on par with advanced graduate work in finance.
- c. OTA's educational materials are voluminous, comprising of hundreds of hours of live courses, hundreds of online documents for student reference, hundreds of hours of recorded course offerings, dozens of student reference materials, including trade plans, trading worksheets, lesson plans, market data, and multiple daily hypothetical trades for educational training.
- d. OTA's educational materials are well organized from a pedagogical standpoint. Each course is structured on base material, followed by content that builds on this base, with checkpoints on student knowledge along the way. Materials also include live and recorded practice sessions for student-centered learning experiences. In this dimension, OTA materials compare well with more traditional university-level classroom educational experiences.
- e. OTA's educational materials (which are generally updated annually) remain available for students to reference indefinitely, well beyond the end of each class. This includes continued access to live XLT classes and unlimited retakes/views of other course content. In this regard, the OTA educational model exceeds the more traditional university-level classroom experience where course materials are generally available only for the duration of the term and retakes are generally not readily available.
- f. OTA's educational materials on Stock trading comport well with university-level investment courses.
- g. OTA's educational materials on Futures markets comport well with university-level futures/derivatives courses.

- h. OTA's educational materials on Options markets comport well with university-level options/derivatives courses.
  - i. OTA's educational materials on Forex markets, while geared toward traders and applied knowledge, comport well with the principles of forex topics presented in university-level courses.
  - j. The education provided by OTA provides significant utility to students and would enable students who follow the principles and use the techniques taught by OTA to make money through trading and investing.
5. My detailed findings, opinions, and conclusions follow in this report and its appendices and exhibits.

### **III. QUALIFICATIONS AND COMPENSATION**

#### **A. Summary of Qualifications**

6. I, Jeffrey H. Harris, am the holder of both the Gary Cohn Goldman Sachs Chair in Finance and the Finance and Real Estate Department Chair at the American University in Washington, D.C. From 2017 to 2018, I served as Chief Economist and Division Director of the Division of Economic and Risk Analysis (DERA) at the U.S. Securities and Exchange Commission. From 2011 to 2013, I served as the Dean's Chair in Finance at Syracuse University. Between 1995 and 2011, I have been a professor, an assistant professor, or a visiting assistant professor at the Ohio State University, the University of Notre Dame, Southern Methodist University, and the University of Delaware. During that period, I also served as a consultant and as Chief Economist of the U.S. Commodity Futures Trading Commission from 2006 to 2010. In 1999-2000, I was a visiting academic scholar at the U.S. Securities

and Exchange Commission and in 2000-2001, a visiting academic fellow at the NASDAQ Department of Economic Research.

7. My areas of research include financial markets, market microstructure, and regulatory issues. Over the course of my academic career, I have published scholarly articles in various journals including the *Journal of Finance*, *Journal of Futures Markets*, *Journal of Financial Economics*, *Journal of Financial and Quantitative Analysis*, *Journal of Investment Management*, and *Review of Financial Studies*, among others. I have co-written chapters in finance books such as “Equity Market Derivatives” in *Financial Derivatives: Pricing and Risk Management* (2009)<sup>1</sup> and co-edited the book “*Commodities: Markets, Performance and Strategies*” (2018).<sup>2</sup>
8. Importantly, with regard to this particular report, my research includes a number of papers that examine trader behavior (see my CV in Appendix A). While my research has generally focused broadly within financial markets, I have many papers that specifically examine trading data in stock markets, futures markets, and options markets. I have published papers on day trading, retail trading behavior, institutional trading behavior, and electronic trading and know these markets well.
9. I have taught courses ranging from the most basic to some of the most advanced topics in finance to students at various levels in the university. I have taught

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<sup>1</sup> Kolb, Robert W and Overdahl, James A., *Financial Derivatives: Pricing and Risk Management*, Robert W. Kolb Series, John Wiley and Sons, Inc., 2009.

<sup>2</sup> *Commodities: Markets, Performance and Strategies*, H. Kent Baker, Greg Filbeck, and Jeffrey H. Harris, editors, 2018, Oxford University Press.

general finance, empirical finance, financial institutions, investments, speculative markets, options, futures, and other derivatives at the undergraduate, masters, and doctoral levels.

10. In addition, I have experience delivering online material in a 10-week course on Managerial Economics. Through this course I gained experience in preparing and delivering course material via hybrid, online platforms (utilizing Adobe Connect, the same platform used with the OTA courses). I am familiar with the user interface, the student interface, and the live course environment experienced by OTA students. My experience encompasses many of the same wrinkles encountered during some OTA sessions that I viewed, including live questions and answers via text box, dropped audio and/or visual capabilities, and technical connectivity issues.
11. I formerly served as a director at the Eris Exchange, which clears swap contracts through the Chicago Mercantile Exchange. I have been a member of the Board of Directors for the Southern Finance Association and currently serve on the program committee for the European Finance Association and the Western Finance Association. I serve on the Editorial Advisory Board for the *Journal of Risk Finance* and have been an active referee for several finance and economics journals. I have also consulted with various organizations on finance-related issues and have provided testimony before the CFTC and U.S. Congress on numerous matters involving pricing and financial speculation.

12. My *curriculum vitae*, which provides greater detail of my qualifications, publications, and other professional activities, is attached as Appendix A. A list of matters in which I have testified in the last four years is attached as Appendix B.

**B. Compensation**

13. I am being compensated for my time and services in this matter at the hourly rate of \$950. My compensation is not contingent on the opinions that I express or the outcome of this matter.

**IV. DOCUMENTS AND MATERIALS CONSIDERED**

14. In preparing this report, I have drawn on the education, knowledge, and experience in various financial markets that I have developed over the past 25+ years. As noted above, I have also drawn on my experience teaching a myriad of financial economics courses to both undergraduate and graduate students. I have also relied upon documents and other materials produced in this investigation as well as various industry publications and other publicly available material. Examples of the types of information I have considered in this report include the following:

- a. Various supporting online documentation related to the economic and financial topics relevant to the current matter;<sup>3</sup>

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<sup>3</sup> See <https://www.tradingacademy.com/>.

- b. Various documentary evidence related to OTA's business and course offerings, including online course sessions;<sup>4</sup>
15. A list of documents and materials considered in the preparation of this report is set forth in Appendix G. I understand that these materials are provided by OTA to OTA students who have purchased the education courses that correspond to the related materials. As my work on this matter is ongoing, I may review additional materials produced subsequent to the issuance of this report and/or conduct further analysis. Accordingly, I reserve the right to update, refine or revise my opinions, or form additional opinions. I also reserve the right to respond to any expert opinions put forward by the FTC in response to the opinions presented in my report.

## **V. BACKGROUND**

16. Founded in 1997 in Irvine, California, the Online Trading Academy ("OTA") offers a number of financial education courses focused mainly on trading different financial instruments like stocks, futures, options, and foreign currency. The company has expanded to more than 40 locations worldwide and utilizes in-person and online/hybrid teaching mechanisms to reach students around the globe.<sup>5</sup>

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<sup>4</sup> See <https://www.tradingacademy.com/education>.

<sup>5</sup> Hybrid courses include live instructors who deliver course materials in live sessions across the internet. Online courses refer to pre-recorded classes available (after the hybrid course is recorded) through the OTA web site. For physical locations see <https://www.tradingacademy.com/locations.aspx>.

17. The U.S. Federal Trade Commission (“FTC,” a U.S. regulatory agency) is investigating whether OTA is engaged in unfair or deceptive acts or practices through OTA’s marketing of financial education. FTC staff have indicated that they question the value and utility of the education provided by OTA and whether the education provided by OTA would enable a purchaser of that education to make more money trading than the student paid for the education.

**VI. OVERVIEW OF FINANCIAL EDUCATION AND OTA’S MODEL**

18. In this section of the report, I discuss the basic characteristics of OTA’s education. OTA delivers financial education both in a physical classroom environment and, predominantly, through an online platform. Various OTA programs are delivered via live, in-person, interactive virtual classroom, via video archives of past live courses, and via live chat rooms.<sup>6</sup> OTA education is presented in various stages, moving students from some of the most basic, rudimentary financial concepts through fairly complex and complicated trading strategies. In my reviews and assessments in Sections VII through XI below, I consider and evaluate OTA’s Core Strategy, Stock Market, Futures Market, Options Market (along with ProActive Investor materials), and Forex Market education modules, respectively. While OTA educational programs also include materials on other investing topics, I have limited my expert opinions to the four main asset categories of stocks, futures, options and forex.

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<sup>6</sup> See <https://www.tradingacademy.com/>.

**A. Overview of Online Financial Education**

19. Business schools have been growing significantly this century. From 2000 to 2017 the number of member schools in the American Association of Collegiate Schools of Business (AACSB) nearly doubled from 800 to 1509.<sup>7</sup> AACSB-accredited schools grew from 400 to 800 over this same time frame. Indeed, more than 1.56 million students were enrolled in business programs in 2017.<sup>8</sup>
20. The bulk of business education growth has occurred outside of the U.S., and in 2013 the number of AACSB-accredited schools outside of the U.S. surpassed the number within the U.S.<sup>9</sup> As business education has blossomed worldwide, the demand for remote access to business programs has generated significant growth in online and hybrid educational delivery mechanisms as well. For instance, since 2008, for-profit 2U, Inc. has partnered with seven major universities to implement a cloud-based “software-as-a-service platform” to deliver graduate business programs. Similar to OTA in structure and delivery mechanisms, these initiatives leverage course materials and instructor expertise to bring business education to students around the globe.

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<sup>7</sup> Statistics in this paragraph taken from The 2017 Business School Data Guide accessed on September 23, 2019 at <https://www.aacsb.edu/-/media/aacsb/publications/data-trends-booklet/2017.ashx?la=en&hash=AE844695D43E07D71F49A14210EB491D2CBE52E5>.

<sup>8</sup> See The 2019 Business School Data Guide accessed on September 23, 2019 at <https://www.aacsb.edu/-/media/aacsb/publications/data-trends-booklet/2019.ashx?la=en&hash=84E51D3E6928ECADF6E8D51D41E64C0D58ED48B8>.

<sup>9</sup> See The 2017 Business School Data Guide accessed on September 23, 2019 at <https://www.aacsb.edu/-/media/aacsb/publications/data-trends-booklet/2017.ashx?la=en&hash=AE844695D43E07D71F49A14210EB491D2CBE52E5>.

21. Within business education, financial literacy and education has been a growing segment in higher education this century as well. This includes growth in various online educational venues in finance. For instance, Georgetown University launched an online Masters in Finance degree in 2013 (with technical partner Deltak, now part of Wiley Education Services). Similarly, 2U, Inc. has launched online business programs with seven different universities, including American University, University of Dayton, University of Denver, University of North Carolina, Pepperdine University, Rice University, and Syracuse University. These online business programs closely resemble the course offerings from OTA, combining live class sessions with accessible videos, documents, and past class recordings that students utilize to learn the subject matter.
  
22. As discussed below, I find that the course materials, delivery platform, and course content of OTA closely resemble these same features in university-based coursework. In particular, I find that the depth and breadth of OTA courses comport well with university course content. In addition, I find that the structure of course materials also comport well with, and provide some greater benefits than, university-based courses. The components of course structures that comport include the ability of students to interact with instructors in live sessions, the ability of students to access online course materials outside of live classes, the ability of students to access past course lectures, and the ability of students to self-test base knowledge components of the course before moving on to more advanced topics.

23. The ability to access past course materials and receive updated educational content well beyond the end of the course is particularly noteworthy. Most university-based courses end when the term ends. In the university context, even online and hybrid course materials are typically made available only while the student is enrolled in the particular course. In contrast, I understand that OTA course materials remain accessible to students indefinitely beyond the end of the formal class instruction, providing a wealth of available reference material to them. As part of the lifetime learning OTA offers, I also understand that OTA students can retake classes in-person at OTA centers as many times as they like. If students choose to retake courses, OTA provides existing (often updated) materials at no additional charge. In this way, OTA students are continuously exposed to updated content and live market settings with actual trading data.

**B. Structure of the OTA Financial Education Programs**

24. The OTA education program is presented in stages to walk students through various learning modules which often build upon each other. Once a new student joins, OTA provides an orientation with a brief online tour of the features of the program. Students are introduced to various learning methods, including the self-paced courses and assessment tools, online classes, and in-classroom courses that encourages students to seek out methods that work best for their own personal situations. The OTA orientation then reviews how students can access support teams and other resources that are available, including live chat, email, and phone

support.<sup>10</sup> Orientation also reviews the various eBook offerings on the site that can be used to search, annotate, and share information learned in OTA classes. Lastly, the OTA orientation reviews “My Pre-Essentials” quizzes that accompany each lesson to help prepare students prior to the start of a course.

25. Most U.S. universities that offer finance degrees build from a pre-requisite base that includes education in accounting, economics, and statistics. These are analogous to OTA’s “Pre-Essentials” which aim to ensure student readiness for the courses. In the more typical university setting, both undergraduate and graduate finance programs typically include a small set of required classes that span investments, corporate finance, financial institutions, and markets. Following these more general topics, students are typically offered more specialized elective coursework to target specific interests. These electives typically include coursework on fixed income, futures, options, risk management, and real estate, among others.
26. OTA course offerings are structured in a similar vein. In the free Half-Day Class, OTA first introduces prospective students to basic financial and economic concepts relevant to trading in financial markets such as supply and demand, the role of institutional traders, leverage, and risk management. These concepts are reiterated and expanded upon in OTA’s 3-day Market Timing Orientation (“MTO”) course. These offerings provide prospective students with basic financial

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<sup>10</sup> The OTA orientation also reviews basic computer tips, the OTA platform (highlighting features and workspaces), and the psychology of trading.

knowledge from rudimentary first steps, introducing terminology, reviewing supply and demand characteristics, and general financial markets knowledge. These offerings also review common trading mistakes and present a rules-based approach to trading that aims to help students avoid these mistakes.

27. OTA's MTO course focuses on supply and demand characteristics of the market and reviews differences between retail and institutional traders. Market timing attempts to discern why market prices change direction and how to predict these changes. The course notes that many factors (like global economic reports, corporate profits, etc.) contribute to prices changing direction and emphasizes that these predictions are not easy. The MTO reviews technical trading rules (which have been shown to be profitable in many markets)<sup>11</sup> and contrasts the OTA approach to these simple rules by emphasizing the supply/demand characteristics and human emotions that underlie patterns on historical price charts.
28. The MTO emphasizes that market timing aims to identify high probability trading opportunities. More specifically, the MTO reviews how OTA students can identify low risk/high reward/high probability entry points into markets. In this light, risk and reward are linked in the MTO and the course presents outcomes based on probabilities and not certainties. The underlying notion that financial market

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<sup>11</sup> See for instance, LeBaron, Blake, 1999, "Technical Trading Rule Profitability and Foreign Exchange Intervention," *Journal of International Economics* 49, 125-143, Brock, William, Josef Lakonishok and Blake LeBaron, 1992, "Simple Technical Trading Rules and the Stochastic Properties of Stock Returns," *Journal of Finance* 47, 1731-1864, and Bessembinder, Hendrik, and Kalok Chan, 1995, "The Profitability of Technical Trading Rules in the Asian Stock Markets," *Pacific-Basin Finance Journal* 3, 257-284.

trading involves probabilistic assessments, uncertainty, and a tradeoff between risk and expected return is completely consistent with solid financial education and comports well with what more traditional university finance courses teach.<sup>12</sup>

29. Following these more general course offerings, OTA introduces the Core Strategy course. After establishing a base knowledge of the Core Strategy, OTA then delivers specialized course materials for applying their Core Strategy toward trading stocks, futures, options, and forex (among others) through their Extended Learning Track courses. In this structure, OTA materials are organized in a sequence that resembles more standard financial education programs offered through U.S. colleges and universities, presenting more rudimentary information first and building on base knowledge in subsequent steps.
30. In terms of delivery mechanisms, OTA course offerings also resemble the emerging online coursework offered via U.S. colleges and universities. OTA's courses utilize Adobe Connect technology that is familiar to most online students and instructors in these more traditional institutions.<sup>13</sup> The user interface accommodates faculty-student interaction and allows for real-time, dynamic interaction between students and instructors. For instance, in OTA's live online courses, students are able to interrupt the instructor to ask questions, to request

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<sup>12</sup> See, for instance, Appendix C syllabus for American University's Technical Trading course that covers statistical analysis, Appendix D syllabus for American University's Investments course that reviews risk and return, and Appendix F syllabus for American University's Behavioral Finance course that covers prediction and the differences between individual and institutional traders.

<sup>13</sup> I personally utilized a similar Adobe Connect-based system to teach FIN605 Managerial Economics during the Fall 2015 term at American University.

further descriptions, or to interject with additional personal contributions, just as students are able to do in a similar university-based course.

31. Based on my experience teaching, the OTA program appears to be based on sound, time-proven, effective teaching methods. Each course builds on past course materials, regularly tying most concepts back to the Core Strategy that underlies the entire program. The sequence of courses allows for repetitive review of topics in an on demand, online setting even after the live course has been offered. In addition, both live and on demand courses provide students with multiple opportunities to practice the techniques and concepts presented in class. In this regard, the OTA program accommodates the strong character associated with experiential learning.<sup>14</sup>
32. The foundation of most financial economics is based on risk and return considerations. Within finance, the entire field of asset pricing focuses on how asset prices are determined. For equities (stocks) the Capital Asset Pricing Model (CAPM), Arbitrage Pricing Theory (APT), and other multi-factor pricing models dominate most university investment courses.<sup>15</sup> For derivatives such as futures,

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<sup>14</sup> Experiential learning has been shown to accelerate learning, increase student engagement, bridge the gap between theory and practice, and increase student retention. See Kolb, David A., 1984 "Experiential Learning: Experience as the Source of Learning and Development," (Englewood Cliffs, Prentice Hall).

<sup>15</sup> See, for instance, Campbell, John, Andrew Lo and Craig MacKinlay, 1993, "Chapter 5: The Capital Asset Pricing Model" and "Chapter 6: Multifactor Pricing Models" in *The Econometrics of Financial Markets*, Fama, Eugene and Kenneth French, 2004, "The Capital Asset Pricing Model: Theory and Evidence" *Journal of Economic Perspectives* 18, 25-46, Ferson, Wayne, 2002, "Tests of Multifactor Pricing Models, Volatility Bounds and Portfolio Performance," in *The Handbook of the Economics of Finance*, Constantinides, George M., Milton Harris, and Rene M. Stulz, (eds), North-Holland Publishers, and Cochrane, John, 2001, "Factor Pricing Models" Chapter 9 Asset Pricing, Princeton University Press.

options and swaps, the Black-Scholes Model, Binomial Pricing Model, the Black Model, the cost-of-carry model and various permutations of these models comprise most university courses related to derivatives and risk management.<sup>16</sup> In this research area, literally thousands of research papers attempt to discern whether market prices reflect “true” prices that these models predict.

33. The search for more accurate pricing models dominates most trading efforts as traders seek out “mis-priced” assets where model prices differ from market prices. When market prices exceed “true” prices, traders will go short, or sell the asset. When market prices are below “true” prices, traders will buy the asset. In both cases, the trader profits when the market eventually learns and adjusts to the “true” price.
34. Of course, trading profits rely on making an accurate assessment of “true” prices and also from the presumption that the market eventually will adjust to this “true” price. In fact, the accurate assessment of true prices often focuses on whether asset pricing models accurately reflect the true risk of an investment. In the CAPM, a stock’s beta represents risk. In the APT and other multi-factor models, risk can be represented by multiple betas (as sensitivities to various factors). In options pricing models, delta, gamma, theta, vega and rho can represent various

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<sup>16</sup> See, for example, Campbell, John, Andrew Lo and Craig MacKinlay, "Chapter 9: Derivative Pricing Models" in *The Econometrics of Financial Markets*.

dimensions of risk and capture the sensitivities of model prices to various model inputs.<sup>17</sup>

35. While asset pricing models are important for longer-term investors like portfolio managers, mutual funds, insurance companies, pension funds, university endowments, some hedge funds and other longer-term investors, more short-term trading models give greater emphasis to transaction costs and liquidity risk, two closely related considerations. Over long-term investment horizons, small transaction costs may be negligible, but for short-term strategies, small transaction costs might completely offset revenues from mispricing.
36. The financial economics field of market microstructure studies transaction costs and liquidity risk. While explicit transaction costs (like commissions, fees and the like) directly offset potential trading revenues, and therefore trading profits, they can also affect the propensity of market prices to revert toward “true” prices. For instance, a long-established construct in financial economics is the fact that stock market prices exhibit positive autocorrelation over 3- to 9-month trading horizons.<sup>18</sup> That is, stock prices exhibit relatively predictable returns over these horizons.

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<sup>17</sup> See, for example, Cox, John C. and Mark. Rubinstein, 1985, “Chapter 6 Options Markets”, Prentice Hall, Hull, John C., 2011, “Options, Futures and Other Derivatives,” 10th Edition, Pearson, and Bakshi, Gurdip, Charles Cao and Zhiwu Chen, 1997, “Empirical Performance of Alternative Option Pricing Models” *Journal of Finance* 52, 2003-2049.

<sup>18</sup> See Jegadeesh, Narasimhan, and Sheridan Titman, 1993, “Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency,” *Journal of Finance* 48, 65-91.

37. While the reasons behind this predictability have been debated extensively in the literature, the pattern has remained remarkably consistent over time. In fact, later work explores behavioral models that propose that these predictable momentum patterns are likely due to delayed overreactions that are eventually reversed – a similar message to that conveyed in OTA courses.<sup>19</sup>
38. Similar to the predictable stock price changes over time, many commodity markets also display strong seasonal trends that are predictable as well. For instance, seasonal growing and harvest patterns create predictable annual patterns in most agriculture markets and seasonal weather patterns create similarly predictable patterns in most energy markets. As described in more detail below, OTA courses are predicated on using these predictable patterns, coupled with other contextual information from each market, to uncover buying and selling opportunities for a disciplined retail trader.

### **C. Description of Financial Education within OTA's Model**

39. The OTA courses that I have reviewed first-hand contain a voluminous amount of material to assist in learning and retention. Most courses are offered both in person and online, and typically many online sessions are recorded and available for students to review at their leisure over and over again. As I understand the OTA model, students maintain course access on a permanent basis, well beyond any set time period that an online course might be available in more traditional university

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<sup>19</sup> See Jegadeesh, Narasimhan, and Sheridan Titman, 2001, "Profitability of Momentum Strategies: An Evaluation of Alternative Explanations," *Journal of Finance* 56, 699-720.

settings (where course materials are typically only available for the duration of the term that the student is enrolled). As part of the lifetime learning OTA offers, I also understand that OTA students can retake classes in-person at OTA centers as many times as they like. This permanent feature of the OTA educational model makes for a strong lifetime learning environment for those who take the courses.

40. OTA courses are also accompanied by a variety of written materials. The courses that I have reviewed each has written documents to support student learning. These documents include e-books, student guides, course manuals, student quizzes, worksheets, quick reference cards, and even student aptitude tests that help to support student success in the program.
41. The OTA trading model teaches traders to evaluate and understand supply and demand considerations for various financial assets. Of course, supply and demand considerations dominate most university courses in economics (and financial economics) as well. In the OTA model, price trends and price plateaus depend on large institutional investor trades. Generally, OTA's insight is that small, retail traders (who invest in small quantities) are not large enough to move market prices, but large, well-informed institutions are capable of moving market prices (up when demand is high and down when supply is high). This intuition is based on the simple observation that institutions have significantly larger resources to commit when they decide to invest in any particular asset.
42. The OTA model is implicitly predicated on the concept of price impact – the fact that large orders to buy (or sell) often move market prices up (or down) – that

leads to profitable trading opportunities.<sup>20</sup> Price impact can be permanent when information has driven the decision to buy or sell. With permanent price impact, buy orders move prices up and sell orders move prices down. Likewise, price impact might be temporary when the short-term demand to trade on one side of the market exceeds the liquidity available on the other side of the market. With temporary price impact, buy orders move prices up and sell orders move prices down, but subsequently prices revert—falling after the buy orders are filled and rising after the sell orders are filled. While OTA does not explicitly discuss these price impact terms, the OTA system implicitly discusses, uses, and teaches these concepts in the Core Strategy.

**VII. DESCRIPTION AND ASSESSMENT OF OTA’S CORE STRATEGY CLASS AND ASSOCIATED EXTENDED LEARNING TRACK**

43. The OTA Core Strategy is their step-by-step method for uncovering trading opportunities. The Core Strategy discusses methods for using financial charts to identify points in time for traders to enter buy or sell orders. More specifically, Core Strategy relies on patterns discerned from candlestick charts generated over various time horizons.<sup>21</sup> OTA explains that the Core Strategy can be applied to any

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<sup>20</sup> See, for instance, Campbell, John, Andrew Lo and Craig MacKinlay, “Chapter 3: Market Microstructure” in *The Econometrics of Financial Markets*, O’Hara, Maureen, 2003, “Presidential Address: Liquidity and Price Discovery,” *Journal of Finance* 58, 1335-1354, and Hou, Kewei, and Tobias J. Moskowitz, 2005, “Market Frictions, Price Delay and the Cross-Section of Expected Returns,” *Review of Financial Studies* 18(3), 981-1020.

<sup>21</sup> Candlestick charts are widely used for displaying financial markets data. For instance, each day the Wall Street Journal presents daily candlestick charts covering the past few months for the Dow Jones Industrial

market, including the stock, futures, options, and forex markets that I discuss in more detail below.

44. As discussed above, the existing literature on institutional and retail trading finds that institutions are a primary source of permanent price impact.<sup>22</sup> Some of the very first lessons within Core Strategy discuss the types of traders in the market, pointing out that institutions invest substantial resources into finding profitable investments. Following up on material presented in the MTO course, OTA presents the differences between small retail investors and large institutional investors early in the Core Strategy course, discussing these trader types in the context of supply and demand for financial assets. OTA's Core Strategy attempts to discern periods of time when institutional trades are dominating the market, for it is during these times that small retail traders using OTA's system might be able to better establish supply and demand that underlie the market dynamics.
45. Underlying the OTA system is the belief that supply and demand interact in financial markets to discover prices. In fact, price discovery is one of the central tenets of financial markets and "involves the incorporation of new information into asset prices" with the premise that "liquidity and price discovery are important dimensions of asset markets and,

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Average, the S&P 500 Index, and Nasdaq Composite Index to characterize stock market movements and trends.

<sup>22</sup> See Griffin, John M., Jeffrey H. Harris, and Selim Topaloglu, 2003, "The Dynamics of Institutional and Individual Trading," *Journal of Finance* 58, 2285-2320 and Griffin, John M., Jeffrey H. Harris, Tao Shu, and Selim Topaloglu, 2011, "Who Drove and Burst the Tech Bubble," 2011, *Journal of Finance* 66, 1251-1290, for instance.

by extension, of asset prices.”<sup>23</sup> A myriad of academic and industry studies have explored price discovery in a variety of markets.<sup>24</sup> In many of these studies, analogous to principles underlying the OTA model, both informed (institutions) and uninformed (retail) traders play a critical role in the price discovery process. As O’Hara (2003) notes, “[t]raders with superior information will move prices toward full information levels ... new information arrives, old information becomes stale, and even informed traders may face risks that their information is obsolete.” Without explicitly making these academic connections to students, OTA’s Core Strategy is completely consistent with financial theory.

46. Indeed, the changing nature of price discovery over time is reiterated by Yan and Zivot (2007), who note “Price discovery is one of the central functions of financial markets ... [P]rice discovery is dynamic in nature ... characterized by the fast adjustment of market prices from the old equilibrium to the new available market information to determine market prices.” These principles are also echoed in Core Strategy where asset price patterns yield clues to distinguishing periods where

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<sup>23</sup> See O’Hara, Maureen, 2003, “Presidential Address: Liquidity and Price Discovery,” *Journal of Finance* 58, 1335-1354.

<sup>24</sup> See, for example, Glosten, Lawrence, and Paul Milgrom, 1985, “Bid, Ask and Transaction Prices in a Specialist Market with Heterogeneously Informed Traders,” *Journal of Financial Economics* 14, 71-100, Kyle, Albert P., 1985, “Continuous Auctions and Insider Trading,” *Econometrica* 53, 1315-1336, Easley, David, and Maureen O’Hara, 1987, “Price, Trade Size, and Information in Securities Markets,” *Journal of Financial Economics* 19, 69-90, Easley, David, and Maureen O’Hara, 1992, “Time and the Process of Security Price Adjustment,” *Journal of Finance* 47, 577-605 and Holden, Craig W., and Avanidhar Subrahmanyam, 1992, “Long-lived Private Information and Imperfect Competition,” *Journal of Finance* 47, 247-270, among others.

information is impounded into prices (primarily by institutions) from periods where uninformed retail traders predominate.

47. Of course, financial markets have been also characterized as random, with inherent risk involved with trading securities.<sup>25</sup> Some of the very first lessons within the Core Strategy also address the uncertainty inherent in trading financial assets. The first lesson within Core Strategy discusses “The Probability Game” and how Core Strategy techniques can help “put the odds in your favor” as a trader. The course also consistently presents examples of failed (unprofitable) trades and encourages students to have a consistent plan so that students are able to learn from past mistakes in this structured setting.
48. This balance between risk and expected return is a hallmark of all university-based finance courses. Similarly, OTA’s Core Strategy shares the basic tenets of most financial economics work, acknowledging that risk and return are linked. As the adage goes, “there is no free lunch” and traders who wish to make high returns must also be willing to take on more risk.
49. Following the description of market participants and other base knowledge that help understand the objectives of trading, the Core Strategy course spends significant time on the assessment of candlestick charts, tools common to many technical trading strategies.<sup>26</sup> The Core Strategy instructional sessions then

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<sup>25</sup> See, most famously, Malkiel, Burton G., 1973, *A Random Walk Down Wall Street* (W. W. Norton & Company, Inc.).

<sup>26</sup> For a comprehensive view of topics covered in a university-based Technical Trading course, see American University’s syllabus in Appendix C.

provide context from supply and demand, describing how candlestick charts might be used to discern whether institutional orders have been completely filled or might remain unfilled.

50. The OTA Core Strategy links the concepts of underlying supply and demand to the formation of candlesticks over various time intervals. The course teaches that many retail traders fall victim to psychological factors like fear and greed that lead most investors to ignore or diminish supply and demand considerations in the market. These psychological factors often entice retail traders to buy after prices have run up and to sell after prices have fallen, two behaviors that diminish trading profits. Moreover, the Core Strategy course trains traders to remain focused on the underlying supply and demand for financial assets, a focus that can often take advantage of the trading mistakes made by other retail traders.<sup>27</sup> In this light, the OTA Core Strategy teaches how candlestick charts can be used for identifying periods where the amount of buying and selling are not balanced. Of course, when supply and demand differ at a given price, the excess of one or the other represent periods where prices are expected to change.
51. Once OTA students learn to identify periods for buying or selling, OTA trains traders to be disciplined in putting on a trade. More specifically, OTA preaches

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<sup>27</sup> Significant work demonstrates the trading mistakes made by retail traders. See, for instance, Barber, Brad and Terrance Odean, 1998, "Trading is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors," *Journal of Finance* 55, 1376-98, Barber, Brad and Terrance Odean, 1999, "Boys will be Boys: Gender, Overconfidence, and Common Stock Investment," *Quarterly Journal of Economics* 116, 261-292, and Barber, Brad and Terrance Odean, 1999, "Online Investors: Do the Slow Die First?," *Review of Financial Studies* 15, 455-488.

the SET system, wherein the trader first places a stop-loss order (the S), enters in a buy or sell order (the E), and pre-determines a target level for exiting the position established with the original order (the T). Underlying the SET system is the supply and demand concepts discussed above. The initial buy or sell order is intended to be entered when recent price trends indicate that temporary price impact is the dominant effect in the market (and prices are predicted to revert in the future). The target level is established to exit the market at a profit when prices subsequently revert and the stop-loss order is intended to exit the market should the trader be wrong (and prices do not revert, but rather continue on trend or stay stable – that is, when the price impact is permanent).

52. The SET system assists students in maximizing the return-risk ratio, a familiar concept to all financial markets (as discussed above). While not specifically discussed in terms of permanent or temporary price impact, the SET system trains traders to be disciplined with their approach to the market. Importantly, the target price for exiting a position is set at a multiple of the stop-loss price level. In this manner, a few small losses (where price impact is permanent) are more than offset by larger gains on successful positions (where prices revert after temporary impacts). In the terminology of more academic research, the SET system will succeed over time when traders can successfully discern when permanent or temporary price impacts will prevail in the market.

53. The SET system implicitly recognizes the risk in trading financial assets. That is, any system that intends to discern the underlying supply and demand

characteristics of the market is subject to risks. One inherent risk is that new information might, at any time, enter the market. If this information runs counter to the trader's position, existing positions are exposed to adverse market movements. For instance, if new negative information is revealed following the purchase of an asset, prices are likely to fall, resulting in losses. Similarly, if new bad information is revealed following the short sale of (or short position in) an asset, prices are likely to rise, also leading to losses.

54. In addition to being exposed to the arrival of new information, positions established under the Core Strategy are also subject to the risk that the trader was wrong in discerning the permanent or temporary price impact. That is, while the Core Strategy is intended to uncover periods where institutional trading dominates the market, actual institutional trading behavior is not directly observable. If the Core Strategy technique fails to accurately identify profitable trading periods—for instance, if a price trend represents permanent, rather than temporary price impacts—the strategy is subject to losses.
55. Implicitly, the SET system accounts for these risks. By initiating stop-loss orders at the same time that positions are entered, the SET system recognizes that prices may subsequently move against predictions made by the trader. The SET system builds in stop-loss orders which are intended to minimize losses should the market move against the established position. The stop-loss component of the SET system is presented clearly, repetitively, and consistently in the OTA educational materials that I viewed.

56. While market psychology is not explicitly stated in OTA's Core Strategy educational materials, the stop-loss component of the SET system represents an explicit recognition that traders often fall victim to psychological biases. With the explicit use of systematic stop-loss orders, OTA-trained traders are armed with the tools to avoid the well-known psychological bias of loss aversion—the fact that retail traders are averse to recognizing trading losses, so often fail to sell losing positions in a timely manner and thereby increasing their losses.<sup>28</sup>
57. In my view of OTA education materials, these risks are presented consistently and clearly throughout the course materials. On many occasions throughout the Core Strategy sessions, OTA re-iterates the return-risk ratio, emphasizing that taking positions in financial markets involves risk and that all positions will likely not be profitable. In fact, at a number of points in the OTA trading materials instructors explicitly show sequences of trades that result in losses. In these instances, OTA materials and instructors emphasize that over time, the goal of the Core Strategy is to manage losses so that the earnings from profitable trades more than offset the losses on losing trades.
58. In fact, the Core Strategy lessons include a section on “odds enhancers” which explicitly recognize that the strategy involves probabilistic estimates of determining the right price and time to execute trades. These odds enhancers are described as strength (how fast and how far recent prices have moved), time (how

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<sup>28</sup> See review of loss aversion in Thaler, Richard H., 2016, “Behavioral Economics: Past, Present, and Future,” *American Economic Review* 106, 1577-1600.

long it has been since prices have last significantly moved), and freshness (whether past price levels have been similar to current prices). These “enhancers” are each tied to expected supply and demand for the asset in the attempt to discern what unfilled institutional orders exist in the market.

59. The Core Strategy lessons also include a 6-step rubric for providing discipline to traders, scoring the odds enhancers using objective criterion. In addition, OTA defines trends and trend reversals that can also be scored to enhance the probability of successful (profitable) trading results. The Core Strategy reinforces discipline within trading strategies, a discipline which helps to avert common behavioral biases that plague the average retail trader.<sup>29</sup>
60. Overall, I find that the OTA course materials presenting Core Strategy concepts are on par with course materials presented in most basic finance classes presented in a university setting. While the focus of the OTA materials is on trading and applications of theory, university-based courses are more likely to focus more on the theoretical underpinnings. This is not to say that the OTA Core Strategy is inferior in any sense, but to recognize that the objectives of these courses are different. The underlying concepts of supply and demand, risk and return, and general financial market uncertainty are shared by both the OTA Core Strategy and more traditional university-based introductory finance courses.

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<sup>29</sup> For a recent comprehensive view of behavioral finance issues in context of the efficient markets view, see Lo, Andrew W., 2019, “Reconciling Efficient Markets with Behavioral Finance: The Adaptive Markets Hypothesis,” *Journal of Investment Consulting*, forthcoming.

61. The OTA Core Strategy XLT course supplements and adds to the significant educational materials presented in the basic Core Strategy course. The Core Strategy XLT reinforces the lessons taught in the basic Core Strategy course, including numerous “Learning Reinforcement” lessons that review strategies for short-term trades, passive income trades, candle charts, the SET trading process, and trade management, among other more specific topics. The Core Strategy XLT lessons provide a laboratory for experiential learning as students follow numerous examples of trade setups, execution, and management. These lessons are also couched in the OTA CliK education and trading platform, which is OTA’s new proprietary technology that OTA is making available to its students and using to teach in OTA classes.<sup>30</sup> In this regard, students will also learn how to effectively employ technology that serves to support the disciplined trading approach OTA teaches in its program.
62. The Core Strategy XLT reinforces the underlying economics behind Core Strategy and reviews many examples where candle charts purportedly reveal price trends and price plateaus driven by large institutional investor trades. These experiential learning opportunities serve to reinforce the underlying supply and demand forces that create different market dynamics. In the context of discerning patterns from charts the XLT reviews trading strategies when these dynamics appear to be more complicated (and were therefore passed over in the basic Core Strategy

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<sup>30</sup> I understand that CliK is technology that OTA developed to help students learn and apply OTA’s Core Strategy. I discuss CliK in further detail below.

course). For instance, the XLT reviews trades that involve short sales in a market that is trending upward and purchases in a market that is trending down.

63. As part of the experiential learning component of the XLT, I witnessed several instances where the instructor used impromptu examples from stocks that had been requested for review (by students in the class). In this regard, the interactive nature of the XLT lessons were not pre-canned or pre-ordained, but rather were student-directed and -focused. Instructors presented some specific examples, walking through the 6-step process of trading that was introduced in the basic Core Strategy class.
64. The Core Strategy XLT class also integrated the CliK front-end user interface in demonstrating the 6-step process of OTA's Core Strategy. The CliK system is programmed to automate the process as instructors walk students through the mechanics of setting up trades. The CliK system prompts students to complete each of the steps, automatically keeping track of the 6-step process. The CliK system adds a significant level of discipline to the OTA Core Strategy in that the system automates the entire process, including the SET (Stop, Entry, Target) components. CliK calculates and records the reward-to-risk ratios that each trading strategy entails. CliK also provides an electronic interface for recording the "odds enhancers" that frame each prospective trade. By providing CliK to students, and demonstrating trading strategies utilizing the CliK system, the Core Strategy XLT creates an electronic structure to assist in student learning. By

automating a number of (formally manual) tasks, the CliK system significantly simplifies the logistics involved in applying the Core Strategy.

65. In addition to simplifying the Core Strategy, the CliK system also reinforces considerations of the reward-to-risk ratios that are inherent in securities trading. In terms of risk management, the CliK system monitors each student's personal risk profile and compares prospective trades with these self-determined risk parameters. For instance, CliK will flag prospective trades that put too much money at risk in an individual trade and will warn the student that the trade would violate their own risk parameters. Given the OTA focus on risk management, this feature is an important automated form of enforcing trader discipline. By automating and simplifying the logistics of building a prospective trade with CliK, the Core Strategy XLT course is better able to focus student attention on the economics and logic behind prospective trades.
66. Beyond reinforcing and practicing the OTA methods for building prospective trades, OTA's Core Strategy XLT also reviews the prospects for making adjustments to existing trades and the mechanics of how to adjust trades that have been established previously. This component of the education reviews making adjustments to stop orders to break-even levels and how adjusting stop orders affects the reward-to-risk ratio. As with all of the various lessons in the XLT, the examples used in the classroom were primarily generated by student questions from the class.

67. As is the case with most other OTA courses I assessed, the Core Strategy XLT referenced the myriad other resources available to students apart from the live class sessions. These resources include Continuous Education quizzes that test students on “Pre-Essentials,” knowledge that students should bring to the class. These resources also include eBooks and recordings of past XLT class sessions made available via the OTA website before, during, and after the class is delivered. In sum, I find these pedagogical approaches comport well with more common university-based classroom experiences in that the XLT builds on prior knowledge, provides an experiential learning environment during the course, and supports learning objectives with permanent materials available to students (via OTA’s student portal “MyOTA”) even after the live course has ended.

**VIII. DESCRIPTION AND ASSESSMENT OF OTA’S STOCK ASSET CLASS AND ASSOCIATED EXTENDED LEARNING TRACK**

68. OTA’s Stock Asset class reviews basic terminology relevant to stock trading and provides an overview of using stocks to profit in rising or falling markets. The class provides an overview of stock market sectors, stock market indexes, and exchange-traded funds (ETFs) focusing on the correlations between and among different asset classes, stock sectors, ETFs, and individual stocks. These correlations are essential for portfolio risk management and for choosing assets with profit potential.<sup>31</sup> Overall, the Stock Asset class includes a

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<sup>31</sup> Correlations (and similarly, covariances) underlie most modern finance theory, including the Capital Asset Pricing Model, or CAPM. See, for instance, Campbell, John, Andrew Lo and Craig MacKinlay, 1993, “Chapter 5: The Capital Asset Pricing Model.” Correlations across international stock markets are studied in Hamao Yasushi, Ronald W. Masulis and Victor Ng, 1990, “Correlations in Price Changes and Volatility Across International Stock Markets,” *Review of Financial Studies* 3, 281-307.

large overlap with more traditional finance courses on investments (or securities analysis).<sup>32</sup>

69. The Stock Asset class also reviews stock selection techniques, highlighting the price, liquidity, and volatility considerations that can affect potential trading profits.<sup>33</sup> This focus on controlling costs goes beyond the more direct and visible bid-ask spreads and trading commissions by presenting the more subtle concept of liquidity: can a trader get into and out of a trading position at current market prices. Higher volatility implies that current prices are more subject to near term changes and low liquidity implies that current prices may not be available for the quantity desired. In fact, the interplay between market conditions, asset liquidity, and price changes can create substantial costs in terms of the price impact of potential trades.<sup>34</sup> The OTA Stock Asset class rightly introduces these concepts early in the course and revisits this theme throughout the curriculum.
70. The OTA Stock Asset class also reiterates the uncertainty present in trading stocks. In doing so, the class echoes the risk management theme from Core Strategy and emphasizes that stock trading is an “odds-based” business that is inherently risky. The course repeats the emphasis on trader discipline, sticking to a disciplined approach to trading that can enhance the odds of succeeding. More specifically, the course speaks directly to managing

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<sup>32</sup> For example, see course syllabus for the American University FIN672 Investments class in Appendix D.

<sup>33</sup> A number of academic works address trading costs and how they affect trading profits. See, for instance, Foster, Douglas, and S. Viswanathan, 1993, “Variations in Trading Volume, Return Volatility and Trading Costs,” *Journal of Finance* 48, 187-211 and Korajczyk, Robert, and Ronnie Sadka, 2004, “Are Momentum Profits Robust to Trading Costs?” *Journal of Finance* 59, 1039-1081.

<sup>34</sup> See, for instance, Chiyachantana, Chiraphol, Pankaj K. Jain, Christine Jiang, and Robert Wood, 2004, “International Evidence on Institutional Trading Behavior and Determinants of Price Impact,” *Journal of Finance* 59, 865-894 and Chiyachantana, Chiraphol, Pankaj K. Jain, Christine Jiang, and Vivek Sharma, 2017, “Permanent Price Impact Asymmetry of Trades with Institutional Constraints,” *Journal of Financial Economics* 36, 1-16.

risk through techniques like “trailing stops” (the process of moving stop orders toward current market prices in order to lock in profits) and adding options to portfolios to minimize risk. I find the emphasis on these risks and risk management tools to be rooted in solid economic grounds.

71. To enhance mastery of the Core Strategy and Stock Asset concepts, OTA education continues with a series of Extended Learning Tracks (XLTs) that delve deeper into specific financial markets. Given the popularity and liquidity present in the stock market (and likely because most novice traders likely understand stock markets better than other markets), many of the Core Strategy examples utilize stock market patterns for illustrative purposes. In this light, I will begin my discussion and assessment of the OTA XLT on Stock Trading.
72. Like most OTA lessons, the XLT for Stock Trading session begins by reviewing the basics for trading stocks, including a review of trading with margin and using leverage for trading stocks, calculating position sizes for stocks, reviewing stock risk management, reviewing order placement logistics, simplifying the process of scanning for stock trading opportunities, stock-specific “odds enhancers,” a review of exchange-traded funds (ETFs), issues with stock earnings reports, a review of the calendar of economic news announcements, a review of stock market trading sessions and times, and how stock splits affect trading strategies.
73. The OTA Stock XLT covers specialized topics related to day trading, trading around earnings announcements, trading around macroeconomic reports and utilizing options with stock positions. Each of these topics is presented in context of trading objectives—reiterating the risk and return linkage and offering students a number of examples for

review and practice. These topics are also well-studied in the financial literature.<sup>35</sup> In this regard, these are also topics that are likely reviewed in more traditional university-based finance courses in the investment sphere.

74. The bulk of the Stock XLT lessons focus on trading and analysis, with repetitive examples and practice sessions. These sessions focus on segmented topics related to passive income strategies or active income strategies, with a number of sessions geared toward reinforcing trade discipline. While the Stock XLT does not introduce a bulk of new content, this segment of the course sequence acts more as an intensive application of techniques taught in the Core Strategy class. In this regard the Stock XLT serves as a central part of the experiential learning component that exists throughout OTA's program.

**IX. DESCRIPTION AND ASSESSMENT OF OTA'S FUTURES ASSET CLASS AND ASSOCIATED EXTENDED LEARNING TRACK**

75. OTA's Futures Asset class reviews basic futures markets, products, and contract features relevant to traders in these markets. The class reviews terminology relevant to futures trading, including contract terms (like expirations, settlements, minimum tick sizes, contract sizes, price limits, circuit breakers, and delivery), market metrics (like volume and open interest), industry jargon (like front month, back month, and rollover), and product groupings (agricultural, metals, energy, currencies, equity indexes, and interest rates). These are all basic concepts that underlie the study of futures markets in a more traditional university classroom setting.<sup>36</sup>

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<sup>35</sup> For example, my own work examines day trading (see Harris, Jeffrey H., and Paul H. Schultz, 1998, "The Trading Profits of SOES Bandits," *Journal of Financial Economics* 50, 39-62) and earnings announcements (see Anderson, Kirsten L., Jeffrey H. Harris, and Eric So, 2007, "Liquidity Risk, Investor Flux and Post-Earnings Announcement Drift," working paper).

<sup>36</sup> For example, see my own course syllabus for Derivatives in Appendix E below.

76. OTA's Futures Asset class reviews important macroeconomic and company-specific news calendars that tend to make futures prices change rapidly. In this light, the class highlights the fact that futures prices are more prone to large price swings or jumps (relative to many stocks, for instance). In addition, the class re-emphasizes the SET system (stop-loss, entry, target) in the futures market context where price jumps, contract expirations, and contract rollovers are important considerations for traders.
77. The Futures Asset class reiterates the risk and reward connection that underlies all markets. In the futures context, the class reviews the leverage that futures provide, emphasizing that a small amount of capital can control larger positions. In this context, the class discusses margins, the risk of margin calls, the risk of hitting price limits, and the importance of liquidity (including volume, open interest, bid-ask spreads, and volatility) in managing the risk in futures trades. Moreover, the class reviews correlations in futures markets and the juxtaposition of technical analysis in these markets (where seasonality—in demand for energy markets or in supply for agricultural markets) is more likely to create predictable and profitable price patterns.
78. Similar to the Stock Asset class, OTA's Futures Asset class then links students back to lessons from Core Strategy. In this context, the Futures Asset class reiterates the importance of supply and demand in determining futures prices. The course emphasizes market trends and reversals, risk and return, and methods for enhancing the odds of profitable trading within a structured strategy for trading. This emphasis on market fundamentals and disciplined trading provides a consistent theme across the various OTA courses that is rooted in strong economic theory.

79. The XLT for Futures trading follows the similar structure of other XLTs in that students are first tested on the basics of the market and then introduced to additional market-specific information (in this case relating to futures products and markets). The XLT begins by discussing futures margins and how futures accounts provide leverage to traders. Similar to most university courses, the XLT presents the concept of margins and margin calls, using specific examples.
80. With an implicit focus on diversification (not putting all of a trader's eggs in one basket), the Futures XLT reviews limits on position sizes that are dictated primarily by margin considerations (and the trader's overall budget). The rule of thumb presented by OTA is to never risk more than 2% of the account in any one position. While these informal rules are not explicitly stated in more traditional university-based finance courses, the concepts of diversification and portfolio management are central to most investments or securities analysis classes.
81. Given the fact that margins (in futures markets and others) allow for positions greater than the trader's budget and vary across markets, the Futures XLT presents methods for calculating the maximum position size across various markets. This practical knowledge is essential to enable traders to manage their bottom line. In my own experience teaching derivatives classes, I have implemented an options trading game that uses a distilled set of margin rules as well.<sup>37</sup> Students in my class

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<sup>37</sup> The variety and complexity of margin calculations (for derivatives, in particular) can be overwhelming for students, so this aspect of OTA's Futures XLT is laudable.

learn that margins are related to the riskiness of a derivatives position and serve to effectively limit position sizes.

82. The Futures XLT then turns to risk management tools specific to the futures market. The risks discussed include time of day, liquidity, “gap,” volatility, and “black swan” risks. While some of these terms are not familiar to many academics, the descriptions provided in the XLT can be mapped to the academic literature. Both day and liquidity risks reference liquidity in the market. The term “day risk” is rooted in the liquidity available at various times during the trading day. Both “gap risk” and volatility refer to volatility in the markets, with “gap risk” related to jumps in prices and volatility related to the more common representations of price changes.
83. The Futures XLT also reviews “black swan” risk. The term “black swan” risk refers to the risk of tail events. Much financial theory is predicated on multivariate normal returns (and/or quadratic investor utility functions) that implicitly (or explicitly) use volatility as the appropriate measure of risk. However, many empirical studies have shown that volatility fails to fully describe risk in the market and kurtosis (fat tails) and skewness in financial returns are also priced in financial markets.<sup>38</sup> In this light, “black swan” risk is simply the risk that seemingly rare events are more likely to occur than when represented in a multivariate normal setting.

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<sup>38</sup> See, for instance, Chiang, Thomas C. and Jiandong Li, 2014, “Modeling Asset Returns with Skewness, Kurtosis, and Outliers,” in *Handbook of Financial Econometrics and Statistics*, 2177-2215.

84. “Black swan” (or rare event) risk is particularly important in commodity markets, since commodity supplies are particularly vulnerable to geopolitical events, cartel behavior, natural disasters, and other rare events. Given the fact that futures trade mainly on commodities, the Futures XLT correctly reviews how this risk is relevant for futures markets. While an advanced derivatives course at a university might mention these risks, only a full-term risk management course would likely tackle the topic with any degree of completeness. In this light, the Futures XLT presents important, advanced material to OTA students who should be well-versed in these risks if they expect to profit from futures (or options) trading.
85. The Futures XLT also includes essential coverage of issues that arise with futures expiration. Long-term futures positioning requires traders to roll over positions that are held from month to month. The XLT notes that the fact that other traders roll over positions each month is also an important consideration for traders that do not hold long-term positions. In fact, the rollover period each month has been shown to create liquidity changes of which shorter term traders should be aware.<sup>39</sup> In this regard, the Futures XLT presents relevant and practical knowledge that has been shown to affect trading profits.<sup>40</sup>

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<sup>39</sup> See Bessembinder, Hendrik, Al Carrion, Laura Tuttle, and Kumar Venkataraman, 2016, “Liquidity, Resiliency, and Market Quality around Predictable Trades: Theory and Evidence,” *Journal of Financial Economics* 121, 142-166.

<sup>40</sup> The Futures XLT also includes more specific risks that relate to liquidity, with such themes as the “Three Hour Trader” and the “Globex Trap” which are topics more likely to be given little emphasis in a more conceptual university futures course.

86. Consistent with OTA's emphasis on discerning how and when large, institutional traders are active in the market, the Futures XLT introduces education on interpreting the Commodity Futures Trading Commission's (CFTC's) Commitment of Traders (COT) Reports. The COT Reports represent the only public disclosure of trading positions by trader type—the reports segment commercial from non-commercial and non-reportable trader positions and are disseminated on a weekly basis via CFTC.gov. The Futures XLT emphasizes that the COT Reports can help to interpret which trader types are long/short, which trader types might have driven past price changes, and which trader types might be changing the size of their net long/short positions.
87. While data from COT Reports have not been demonstrated to provide significant forecasts of future price changes, the data from these reports have been shown to provide consistent lead and lag relations between trader position changes and other market variables. For instance, Brunetti, Buyuksahin, and Harris (2016) show that non-commercial trading activity can forecast future market volatility in many futures markets, lending credence to the value in understanding COT Reports from a trading perspective.<sup>41</sup>
88. At the macroeconomic level, the Futures XLT lessons also include a review of the various economic reports that might influence commodity futures markets. The XLT describes the various volatility, liquidity and volume patterns that surround

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<sup>41</sup> See Celso Brunetti, Bahattin Büyüksahin, and Jeffrey H. Harris, 2016, "Speculation, Prices and Market Volatility," *Journal of Financial and Quantitative Analysis* 51, 1545–1574.

macroeconomic reports, warning potential traders about the heightened risk that is inherent in periods where new information is disseminated to the market. In the context of tying these futures-relevant topics back to the Core Strategy, the XLT reiterates that risk can be elevated during periods when economic reports are released. In this vein, the Futures XLT course notes that informed institutional traders may trade prior to new releases while novice retail traders may be attracted to trade during periods following economic news releases, offering opportunities for disciplined counterparties to profit at their expense.<sup>42</sup>

89. The XLT on Futures trading delves deeply into important and essential concepts that every futures trader should know. The Futures XLT sheds light on the publicly-available information related to commercial and non-commercial traders presented in the CFTC's COT Reports. In this light, the Futures XLT melds well with the Core Strategy goals of discerning the probability that large institutional traders are active in the market. I find that this practical information goes even beyond most university-based courses on financial futures or general derivatives.

**X. DESCRIPTION AND ASSESSMENT OF OTA'S OPTIONS ASSET CLASS AND ASSOCIATED EXTENDED LEARNING TRACK**

90. The OTA Options Asset class first introduces terminology specific to the options markets (including calls, puts, strike price, expirations, premiums, intrinsic value, and time value). The class then reviews how options can be used to profit whether

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<sup>42</sup> See for instance Qian Li, Jiamin Wang, and Liang Bao, 2018, "Do Institutions Trade Ahead of False News? Evidence from an Emerging Market," *Journal of Financial Stability* 36, 98-113.

markets are rising, falling, or not moving at all. The class reviews the functionality of options in portfolios, including leverage available through options trading, how options can be used to hedge, and how options can diversify risk in a portfolio. The class reviews historical versus implied volatilities and how volatility of the underlying is a prime driver of options prices.

91. Given that options can be used for many flexible purposes, the OTA Options Asset class puts great emphasis on a relatively more complicated trade process for options involving methods to choose which underlying to target and which options to trade, among other dimensions. The process involves applying Core Strategy to options that can be sorted by implied volatility (as an “odds enhancer,” again reinforcing the notion that options trading is also a risky venture that requires a disciplined approach to trading). The process also includes a discussion of the importance of liquidity in options markets as described by volume, bid-ask spreads, and open interest. Consideration of these elements of liquidity (similar to stocks and futures described above) is essential for profitable options trading.
92. The OTA Options Asset class also includes a review of “the Greeks” (parameters of delta, theta, and vega, which describe an option’s price sensitivity to the underlying price, time, and volatility changes, respectively). OTA’s Options Asset class continues to review single options positions and payoffs followed by multiple options positions such as various vertical spreads constructed with calls and puts. These components are staples of more traditional university-based

options (or general derivatives) classes and serve as the basis of more complicated trading strategies reviewed in the Options XLT.

93. OTA's Options XLT starts by reviewing how to use options for various trading strategies – when the price of the underlying is expected to fall, when the price of the underlying is expected to rise, when the price of the underlying is expected to remain unchanged, or when the price of the underlying is expected to change, but the direction is indeterminant. The various lessons in this XLT span a variety of options trading strategies that are equivalent to, or exceed the strategies presented in most university-based options courses.
94. In addition to various options trading strategies, the Options XLT also re-iterates the problems that psychological biases cause for retail traders. More specifically, the Options XLT includes lessons on the “Emotional Freedom Technique,” a method devised to insulate traders from behavioral biases that might impact realized returns. (The Emotional Freedom Technique is an evidence-based self-help therapeutic method with over 100 studies demonstrating its efficacy.<sup>43</sup>)
95. The Options XLT also includes various lessons on the psychological aspects of trading, covering “the four fatal flaws,” the “altered states of consciousness,”<sup>44</sup> the “power of patterns and blessings of mindfulness,” the “power of beliefs,” and

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<sup>43</sup> See Bach, Donna, Gary Groesbeck, Peta Stapleton, Rebecca Sims, Katharina Blickheuser, and Dawson Church, 2019, “Clinical EFT (Emotional Freedom Techniques) Improves Multiple Physiological Markers of Health,” *Journal of Evidence-Based Integrative Medicine* 24.

<sup>44</sup> See P.V. Bundzen, K.G. Korotkov, L.E. Unestahl, 2002, “Altered States of Consciousness: Review of Experimental Data Obtained with a Multiple Techniques Approach,” *Journal of Alternative Complementary Medicine* 8, 153–65.

“framing.”<sup>45</sup> Each of these topics reinforce the basis for establishing an objective trading strategy that insulates traders from psychological biases that might affect trading behavior, and subsequently, trading profits.

96. Relatedly, the ProActive Investor course includes various basic concepts in investing, including active vs. passive investing strategies, compounding of returns, fees, taxes, and expenses related to various investment vehicles, account types, exchange-traded funds (ETFs), and various options markets topics. The ProActive Investor course also delves deeply into diversification strategies, volatility, and correlations—common themes among more standard university-based investments courses.
97. Given the fact that options trading involves significantly leveraged trades, the emphasis on active investing strategies and behavioral biases is understandable. While most university-based finance tracks do not directly address psychological factors and the psychology of investing, some more forward-looking programs have introduced these topics in an effort to bridge the gap between the pure efficient markets dogma and various unexplained anomalies in finance—many of which might be better explained using these psychological factors.<sup>46</sup>
98. In terms of strategy, the current and past Options XLT lessons go well beyond the more standard university-based descriptions of trading strategies. The Options

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<sup>45</sup> See Amos Tversky and Daniel Kahneman, 1981, “The Framing of Decisions and the Psychology of Choice,” *Science* 211, 453–58.

<sup>46</sup> See Appendix F for a syllabus for American University’s Behavioral Finance course.

XLT includes dozens of hours of material describing bear put spreads, bear call spreads, bull put spreads, bull call spreads, iron condors, diagonal call spreads, diagonal put spreads, long and short straddles, butterflies, put and call ratio spreads, put and call ratio backspreads, short and long strangles, and implied volatility strategies, among others. While many of these strategies are introduced in more standard university course settings, the OTA Options XLT dedicates significantly more time and attention to them.

99. In sum, I find that the OTA course materials related to Options markets, Options strategies, and Options trading generally meet, and more likely exceed, the education that is offered through more traditional university courses on options markets. Moreover, the applied nature of the OTA Options XLT course significantly exceeds the content that universities typically offer to their undergraduate and graduate students.

**XI. DESCRIPTION AND ASSESSMENT OF OTA'S FOREX ASSET CLASS AND ASSOCIATED EXTENDED LEARNING TRACK**

100. Stand-alone courses on foreign exchange (forex) are rare in the realm of standard university curricula. More typically, forex markets are reviewed within a broader course on international finance or derivatives markets. Within these courses, forex topics are typically framed within technical analysis and technical trading rules which, similar to the OTA Core Strategy, utilize price charts to guide trading

opportunities.<sup>47</sup> Most standard university finance curricula do not include technical trading courses either (although we at American University offer an elective course in technical trading designed to prepare students for the Chartered Market Technician®, or CMT, designation).

101. The OTA Forex Asset class first introduces a brief history of forex followed by important details about around the clock trading in a non-centralized (over-the-counter, or OTC) market. As in other markets, the OTA Forex Asset class reviews market-specific terminology. The class reviews currency pairs, discusses correlations and risk management opportunities with forex, how prices are quoted in terms of percentage in point (or pips), carry trades, forex regulations, and how interest rates (via currency interventions by central banks/sovereign countries) are fundamental drivers of forex prices.
102. The Forex Asset class reiterates how retail and institutional traders interact in an OTC market and reinforces lessons about identifying profitable trading opportunities (from the Core Strategy) in discerning when supply and demand might be driven by either group. The class also reviews reward-to-risk considerations, liquidity concerns, trading costs, margins, and managing risk through a disciplined approach and using stop orders to minimize downside risk. As in the Stock Asset class, this class also reviews “trailing the stop” or a “technical trail stop” technique that manages risk by moving stop orders following price

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<sup>47</sup> As OTA materials demonstrate, however, Core Strategy is not at all the same as technical analysis.

moves in order to lock in profits. Moreover, the class reiterates that risk can be limited in forex by avoiding large positions and volatile pairs, consistently using stop orders, and trading judiciously to minimize transaction costs. The class also introduces options on forex as a tool to manage risk.

103. Importantly, the Forex Asset class spends considerable time on other unique risks in forex trading. Since an OTC market has no consolidated feed by which to chart “last price” in the market, the class reviews how to use “bid” charts in place of (the more common) “last price” charts, how to add a buffer to stop orders placed to manage risk, how to manage price jumps (or gaps) in the OTC setting. The class also reviews the calendar for macroeconomic reports that can create price jumps or affect liquidity in forex markets, important considerations for profitable trading.
104. OTA’s Forex Asset class spends considerable time on correlations across markets, including correlations with commodities, futures, and spot currencies. As in other markets, correlations can drive risk higher or lower, depending on the trading strategy. The class emphasizes how correlations can be used as “odds enhancers” toward profitable trading.
105. OTA’s Forex XLT begins by reviewing the leverage provided by forex markets along with the margin rules that govern these markets. This XLT reviews initial margin requirements and then explains the logistics and causes of margin calls. Each of these topics represent essential background material for traders in these markets.

106. The Forex XLT continues by explaining how forex is traded in an OTC market. This fact is important to traders, since charts that display forex prices utilize bid prices rather than the prices of executed trades. Importantly, buy orders in an OTC market are executed against ask prices which are not utilized in creating the charts. The distinction between OTC and exchange markets is also something that is covered in most all finance curricula.
107. OTA's Forex XLT also covers various forex-specific risk factors, including the fact that forex prices are not always continuous and often jump up or down. These jumps can be caused by central bank interventions in currency markets, by fragmented order flow across dealers in the OTC setting, or by inactive trading (over the weekend, for instance). In any event, the risk presented by these jumps should be understood by all traders in the market. In my experience, OTA's coverage of risk factors serves to reinforce prior lessons (from Core Strategy, for instance) about the importance of managing risk while seeking higher returns from trading. Again, the repetitive link between risk and return reinforces trader discipline and is an underlying feature of most university-based finance courses as well.
108. The OTA Forex XLT also reviews a number of specialized topics related to the established forex markets. For instance, the XLT reviews recent trends and risks inherent in the nascent, and unregulated Bitcoin market. The XLT also reviews trading of binary options, another unregulated market segment that has grown out of forex markets. In both instances, the OTA XLT discourages traders from

entering these markets, noting that the unregulated and de-centralized nature of forex trading does not lend itself to profitable trading opportunities.

109. The majority of OTA's Forex XLT reviews and reinforces the basics of forex markets. The review includes the primary influences in forex prices—broadly speaking, the relative strength of economies and interest rates. Within the discussion of relative economic strength, the XLT reviews many macroeconomic metrics (exports, imports, gross domestic product, etc.) which are also standard topics (or even pre-requisites) in more traditional financial economics curricula. The Forex XLT reviews the role that central banks play in setting interest rates and also the growing role of China in these worldwide markets. These topics are standard fare in most university courses in international finance.<sup>48</sup>
110. The OTA Forex XLT also reviews the fundamental trading practice known as the carry trade. Carry trades are familiar to traders in both forex and futures markets, with a forex carry trade involving a long position in a relatively high-yield (interest rate) currency and a short position in a relatively low-yield currency. This popular strategy is also a staple in most international finance classes offered in a typical university setting.

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<sup>48</sup> The OTA Forex XLT also reviews essential background information about forex markets, including the times that forex markets are open and active, the calendar of economic information releases, and “odds enhancers” for these markets. While some of these specific facts may be presented briefly in a university-based course, they are much more essential for traders operating in these markets. Given this fact, my discussion focuses more on topics where the XLT and university courses intersect.

111. Relatedly, since carry trades are often implemented over long periods of time, OTA's Forex XLT also reviews the rules, mechanics, and risks involved with rolling over forex positions around settlement dates. The XLT also re-iterates the fact that brokers handle rollovers differently and cautions traders to learn and keep abreast of the practices that their individual broker implements, since these details can dramatically affect trading profits over the longer term.
112. As with other XLTs, the OTA Forex XLT provides students with numerous trading examples and opportunities to practice. The ability to practice enables students to create their own experiential learning environment, where "doing is learning."<sup>49</sup> The XLT also includes a review of setting up income and wealth workspaces. These procedures involve a review of the multiple timeframes used to chart data in order to implement the Core Strategy and pre-establishing criteria for currency pairs that are targeted to trade. The review of these fundamentals reinforces OTA's focus on instilling discipline into the education of their students.

## **XII. ANALYSIS AND CONCLUSIONS**

### **A. Well-accepted Economic and Financial Theory Underlies OTA's Core Strategy and Associated Extended Learning Track**

113. OTA'S Core Strategy is based on charting past stock price movements in an effort to discern the underlying supply and demand characteristics in financial markets. These supply and demand characteristics are the same as those taught in most

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<sup>49</sup> See Kolb, David A., 1984 "Experiential Learning: Experience as the Source of Learning and Development," (Englewood Cliffs, Prentice Hall).

university courses in economics, and, more specifically, financial economics. Core Strategy reviews how retail traders and institutional traders interact and applies this framework to discerning entry points to trade various securities.

114. The Core Strategy overlays a healthy dose of material that point out various risks in the markets and teaches a disciplined approach to trading that recognizes that trading is a risky endeavor. The course reviews the reward-to-risk ratio and emphasizes that managing the risk *at the time of order entry* provides good trade discipline. While most of the practical trading material is not covered extensively in a university course on investments, the risk and return link and the underlying supply and demand concepts are common to both OTA's Core Strategy as well as the more standard university investments course.
115. While the Core Strategy techniques, *per se*, are not covered in more standard university courses, the principles that underlie these techniques are rooted in the same economic principles that universities teach. OTA courses are aimed at providing practical trading material to students, while universities are more likely to emphasize more theoretical constructs. Technical trading has been shown to be profitable in many markets<sup>50</sup> and the OTA Core Strategy class goes beyond simple technical rules. In this light, I find that the OTA Core Strategy materials have value in learning how to trade.

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<sup>50</sup> E.g. in Brock, Lakonishok and LeBaron (1992), Bessembinder and Chan (1995), and LeBaron (1999).

116. OTA's Core Strategy XLT reinforces the supply and demand concepts that underlie the Core Strategy. In an environment based on experiential learning (with active student engagement and multiple opportunities to apply Core Strategy techniques), the XLT is presented utilizing the CliK user interface. OTA's CliK technology automates many of the Core Strategy principles and supports student learning by simplifying the logistics involved in initiating trades. CliK also incorporates and automates prudent risk management in the trading process. By facilitating student focus on supply and demand concepts, CliK technology in the Core Strategy XLT supports student learning and simplifies the trading processes. The focus on risk management and underlying market fundamentals makes the Core Strategy XLT more effective for identifying profitable trading opportunities for OTA students.

**B. Well-accepted Economic and Financial Theory Underlies OTA's Stock Asset Class and Associated Extended Learning Track**

117. As noted above, OTA's Stock Asset class and associated XLT on Stock Trading introduce important details about trading stocks and reinforces the lessons that underpin the Core Strategy course. Students are reminded that risk and return are linked as this course leads them through a variety of practice sessions in an applied setting. This reinforcement and learning by doing has a strong foundation in the experiential learning theory as described above. In this light, both university-based finance courses and OTA's Stock Trading XLT share a common element

where experiential learning assists in faster learning, greater retention, and better student outcomes.

**C. Well-accepted Economic and Financial Theory Underlies OTA's Futures Asset Class and Associated Extended Learning Track**

118. The OTA Futures Asset class and associated XLT on Futures trading present course material that is relevant to traders in this market. The Futures Asset class reviews important risk management considerations in futures markets that assist in developing profitable trading strategies. The Futures XLT highlights that public information related to commercial and non-commercial traders is presented in the CFTC's Commitment of Traders (COT) Reports and ties these reports to the Core Strategy distinctions between retail and institutional trading.
119. In addition, the Futures XLT reiterates the links between risk and return and covers important information related to margins on futures positions. Students learn that margins have real effects on the bottom line and limit position sizes. The practical information in the Futures XLT goes beyond most university-based courses on financial futures or general derivatives.

**D. Well-accepted Economic and Financial Theory Underlies OTA's Options Asset Class and Associated Extended Learning Track**

120. The Options Asset class and associated XLT present detailed information about the factors that affect option prices, overlapping greatly with economic underpinnings presented in university-based options (or more general derivatives) courses. Underlying this market-specific content is a reinforcement of the risk and return tradeoffs that matter to options markets. Given the flexibility

in using options in a variety of forward-looking scenarios, the XLT reviews how behavioral biases can offer trading opportunities to a disciplined trader. In this light, this particular XLT has a strong basis in the behavioral finance area and is consistent with university-based courses in behavioral finance as well.

**E. Well-accepted Economic and Financial Theory Underlies OTA's Forex Asset Class and Associated Extended Learning Track**

121. While forex is typically not covered as a stand-alone university course, forex markets are often reviewed within a derivatives course or international finance course on campus. In addition to providing deep knowledge about the operations of forex markets, the Forex Asset class and associated XLT point out differences between the over-the-counter forex markets and exchange-based markets. This important distinction is tied back to the methods presented in OTA's Core Strategy. In this regard, the supply and demand concepts, the distinction between retail and institutional trading, and the link between risk and return all serve as the basis for the Forex XLT as well. And, as with other OTA courses that I have reviewed, this XLT shares much in common with more standard university-based finance classes.

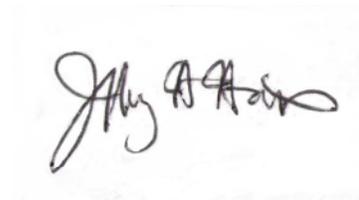
**F. Conclusions:**

122. Based on my expert experience built over 25+ years of teaching finance, I conclude that:

- a. The education provided by OTA provides utility to students and would enable students who follow the principles and techniques taught by OTA to make money through trading and investing;
- b. OTA's educational materials are based on sound economic theories;
- c. OTA's educational materials represent significant content that ranges from rudimentary concepts of financial literacy through significant financial education that is on par with advanced graduate work in finance;
- d. OTA's educational materials are voluminous, comprising of hundreds of hours of live courses, hundreds of online documents for student reference, hundreds of hours of past course offerings, dozens of student reference materials, including trade plans, trading worksheets, lesson plans, market data, and multiple daily hypothetical trades for educational training;
- e. OTA's educational materials are well organized from a pedagogical standpoint. Each course is structured on base material, followed by content that builds on this base, with checkpoints on student knowledge along the way. Materials also include live and recorded practice sessions for student-centered learning experiences. In this dimension, OTA materials compare well with more standard university-level classroom educational experiences;
- f. OTA's educational materials on Stock trading comport well with university-level investment courses;

- g. OTA's educational materials on Options markets comport well with, and in fact in many facets exceed, university-level Options courses;
- h. OTA's educational materials on Futures markets comport well with university-level Futures courses;
- i. OTA's educational materials on Forex markets comport well with university-level material presented in international finance and derivatives courses; and
- j. Overall, OTA's pedagogical approach and delivery methods comport well with widely accepted experiential learning techniques that provide valuable lifelong learning opportunities for OTA students.

Executed on December 19, 2019

A handwritten signature in black ink, appearing to read "Jeffrey H. Harris", is written over a light gray rectangular background.

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Jeffrey H. Harris, Ph.D.

## Appendix A: Curriculum Vitae

### JEFFREY H. HARRIS

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Washington, DC 20015  
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#### Education

Ph.D., Business Administration, Finance. The Ohio State University, 1995

M.B.A., Finance. The University of Iowa, 1987

B.A., Physics. Economics Minor. The University of Iowa, 1986  
Attended Luther College, 1982-84

#### Employment History

American University, Gary Cohn Goldman Sachs Chair in Finance, 2013-Present  
Finance and Real Estate Department Chair, 2014-Present

Syracuse University, Dean's Chair in Finance, 2011-2013

Southern Methodist University, James M. Collins Chair (Visiting), 2010-11

University of Delaware, Professor, 2006-11  
Associate Professor, 2003-06  
Assistant Professor, 2001-03

University of Notre Dame, Assistant Professor, 1995-2001

The Ohio State University, Visiting Assistant Professor, 1995-97

U.S. Securities and Exchange Commission,  
Director, Division of Economic and Risk Analysis and Chief Economist, 2017-18  
Visiting Academic Scholar, 1999-2000

U.S. Commodity Futures Trading Commission, Chief Economist, 2007-10  
Visiting Academic/Consultant, 2006-07

Nasdaq Department of Economic Research, Visiting Academic Fellow, 2000-01

## Professional Activities

### Testimony before Congress

“The Role of Speculative Investments in Energy Markets” before the United States Senate Subcommittee on Energy and Natural Resources, September 16, 2008.

“Financial Speculation in Commodity Markets: Are Institutional Investors and Hedge Funds Contributing to Food and Energy Price Inflation?” before the United States Senate Committee on Homeland Security and Governmental Affairs, May 20, 2008.

“The Influence of Speculative Traders in Commodity Markets” before the United States House of Representatives Agriculture Committee, May 15, 2008.

“The Influence of Non-commercial Institutional Investors on Oil Prices” before the United States Senate Committee on Energy and Natural Resources, April 3, 2008.

### Testimony before the Commodity Futures Trading Commission

“Price Discovery in Natural Gas Markets” before the United States Commodity Futures Trading Commission Hearing to Examine Trading on Regulated Exchanges and Exempt Commercial Markets, September 18, 2007.

"Price Convergence in Agricultural Markets" before the United States Commodity Futures Trading Commission Agricultural Markets Roundtable, April 22, 2008.

"On Position Limits" before the United States Commodity Futures Trading Commission [Open Meeting Regarding Proposed Position Limits Rule](#), January 14, 2010.

### Expert Reports and Testimony\*

In re: *United States Securities and Exchange Commission* v. Moises Saba Masri and Albert Meyer Sutton

In re: Sycamore Networks, Inc. *Initial Public Offering Securities Litigation*

In re: United States v. *Sergey Aleynikov*

In re: United States v. *George Holley*

In re: *Qimonda Richmond, LLC, et al.* Debtors, Chapter 11

In re: *U.S. Commodity Futures Trading Commission* v. Donald A. Newell and Quiddity, LLC

In re: European Commission Statement of Objections addressed to *Bank of America Corporation, Bank of America NA and Bank of America Securities*

In re: *National Australia Bank Ltd. and TSL (USA) Inc.* v. Goldman, Sachs & Co.

In re: United States Commodity Futures Trading Commission v. *Donald R. Wilson, Jr. and DRW Investments, LLC\**

In re: United States Commodity Futures Trading Commission v. *William Byrnes, Christopher Curtin and the New York Mercantile Exchange, Inc.*

### Keynote Address,

“Economic Analysis and the SEC” at the 2018 Baltimore Area Finance Association and 2018 Eastern Finance Association Annual Meeting.

- “Regulation and Financial Markets: A Look Ahead” at the 2017 Providence College Investment Forecast Forum.
- “Energy Markets: A View from Inside the Beltway” at the 2016 Oklahoma Bankers Chair and Center for Financial Studies Annual Meeting.
- “Index Trading and Speculation in Commodity Futures Markets” at the 2011 InVivo Paris Conference on Speculation in Agriculture Markets.
- “Energy Markets and Dodd-Frank: Where are we now?” at the 2012 Fulbright Jaworski/Cornerstone Research conference on Dodd-Frank’s Impact on the Energy Markets.
- “Financial Trading, Energy Markets and Dodd-Frank” at the 2012 Oklahoma State MSQFE Alumni Weekend.

Panelist,

- “Economic Analysis and the SEC” at the IOSCO International Regulator Panel, Boston, MA 2017.
- “The Forecast for Investments in 2017” at the Providence College Investment Forecast Forum, Providence, RI 2017.
- “Presidential Election Impact on the Business Landscape” at the Kogod School of Business, Washington, DC 2016.
- “The Financial Crisis’s Five-Year Mark: What Has Changed?” panel at American University, Washington, DC 2013.
- "Current Events in Commodity Markets" panel at the CME Group 2nd Annual Global Commodity Investment Roundtable, New York 2013.
- “Financial Trading, Derivative Markets and Commodities” presentation on “Interaction between Physical and Financial Commodity Markets—A Role for Regulators” panel at the Luxembourg IOSCO Member Meetings, Luxembourg 2013.
- “Commodity Market Regulation: Achieving Transparency while Maintaining Liquidity” panel at the Global Grain Conference, Chicago 2013.
- “IPOs and the JOBS Act” panel at the U.S. Securities and Exchange Commission 2013.
- "Dodd-Frank and Commodity Markets" panel at the Terrapinn World Commodities Week, London 2011.
- "Oil Prices--Rising Prices, Speculation and Regulation" panel at the Standard Chartered Bank Hong Kong Earth Resource Conference, 2011.
- "The Regulatory World of Market Manipulation" panel at the American Bar Association Antitrust and Consumer Law Issues in the Energy Industry Conference, Houston 2011.
- "Commodity Super-cycles" panel at Standard Chartered Bank New York Symposium, New York 2011.
- "Assessing Dodd-Frank" panel on current financial regulation, National Association of Business Economists, Washington, DC 2010.
- “What's Next?” panel on post-crisis regulation, Georgetown University, 2010.
- "Sovereign CDS Markets" discussion panel at Georgetown University, 2010.

**Publications**

- “Interconnectedness in the Interbank Market” with Celso Brunetti, Shawn Mankad, and George Michailidis, 2019, *Journal of Financial Economics* 133, 520-538.

“Speculation and Financialization in Commodity Markets: A Review” with Naomi Boyd and Bingxin Li, 2018, *Journal of Commodity Markets* 10, 91-104.

“Trading Networks” with Lada Adamic, Celso Brunetti and Andrei Kirilenko, 2017, *The Econometrics Journal* 20, S126–S149.

“CoMargin” with Jorge A. Cruz Lopez, Christophe Hurlin and Christophe Pérignon, 2017, *Journal of Financial and Quantitative Analysis* 52, 2183-2215.

“The Impact of Herding on Futures Market Prices” with Naomi Boyd, Bahattin Büyüksahin and Michael S. Haigh, 2016, *Journal of Futures Markets* 36, 671-694.

“Speculation, Prices and Market Volatility” with Celso Brunetti and Bahattin Büyüksahin, 2016, *Journal of Financial and Quantitative Analysis* 51, 1545–1574.

“Informed Trading and Market Structure” with Charlie X. Cai, Robert S. Hudson and Kevin Keasey, 2015, *European Financial Management* 21, 148-177.

“The Sound of Silence” with Mohsen Saad, 2014, *The Financial Review* 49, 203-230.

“Herding and Speculation in the Crude Oil Market” with Celso Brunetti and Bahattin Büyüksahin, 2013, *The Energy Journal* 34, 83-97.

“Who Drove and Burst the Tech Bubble?” with John M. Griffin, Tao Shu and Selim Topaloglu, 2011, *Journal of Finance* 66, 1251-1290.

“Clearing House, Margin Requirements, and Systemic Risk” with Jorge A. Cruz Lopez and Christophe Pérignon, 2011, *Review of Futures Markets* 19, 39-54.

“The Role of Speculators during Periods of Financial Distress” with Naomi Boyd and Arkadiusz Nowak, 2011, *Journal of Alternative Investments* 14, 10-25.

“Effects of Central Bank Intervention on the Interbank Market during the Subprime Crisis” with Celso Brunetti and Mario di Filippo, 2011, *Review of Financial Studies* 24, 2053-2083.

“Do Speculators Drive Crude Oil Futures Prices?” with Bahattin Büyüksahin, 2011, *The Energy Journal* 32, 167-202.

“Why to Maturing Futures and Cash Prices Diverge for Agricultural Commodities?” with Nicole Aulerich and Raymond P.H. Fishe, 2011, *Journal of Futures Markets* 31, 503-533.

“Why are IPO Investors Net Buyers through Lead Underwriters?” with John M. Griffin and Selim Topaloglu, 2007, *Journal of Financial Economics* 85, 518-551.

“How New Entry in Options Markets affected Market Making and Trading Costs” with Patrick DeFontnouvelle and Raymond P.H. Fishe, 2005, *Journal of Investment Management* 3, 24-40.

“The Development of Secondary Market Liquidity for NYSE-Listed IPOs” with Shane A. Corwin and Marc L. Lipson, 2004, *Journal of Finance* 59, 2339-2374, Awarded Outstanding Paper in Financial Institutions at the 2002 Southern Finance Association Meeting.

“The Dynamics of Institutional and Individual Trading” with John M. Griffin and Selim Topaloglu, 2003, *Journal of Finance* 58, 2285-2320. Nominated for the Smith-Breeden Prize.

“The Behavior of Bid-Ask Spreads and Volume in Options Markets During the Competition for Listings in 1999” with Patrick DeFontnouvelle and Raymond P.H. Fishe, 2003, *Journal of Finance* 58, 2437-2463. Nominated for the Smith-Breeden Prize.

“Nasdaq Trading Halts: The Impact of Market Mechanisms on Prices, Trading Activity and Execution Costs” with William G. Christie and Shane A. Corwin, 2002, *Journal of Finance* 57, 1443-1478.

“The Initial Listing Decisions of Firms that Go Public” with Shane A. Corwin, 2001, *Financial Management* 30, 35-55.

“The Effect of Nasdaq Market Reform on Trading Costs and Depths” with Michael J. Barclay, William G. Christie, Eugene Kandel, and Paul H. Schultz, 1999, *Journal of Finance* 54, 1-34. Nominated for the Smith-Breeden Prize.

“The Trading Profits of SOES Bandits” with Paul H. Schultz, 1998, *Journal of Financial Economics* 50, 39-62.

“The Importance of Firm Quotes and Rapid Executions: Evidence from the January 1994 SOES Rules Change” with Paul H. Schultz, 1997, *Journal of Financial Economics* 45, 135-166.

“Why Did NASDAQ Market Makers Stop Avoiding Odd-Eighth Quotes?” with Paul H. Schultz and William G. Christie, 1994, *Journal of Finance* 49, 1841-1860.

### **Edited Book**

“*Commodities: Markets, Performance and Strategies*” with H. Kent Baker and Greg Filbeck, editors, 2018, Oxford University Press.

### **Book Chapters/Articles in Books**

“The Changing Structure of Energy Futures Markets” with Bahattin Büyükşahin, Michael S. Haigh, James A. Overdahl and Michel A. Robe, 2009, in *Finance et Valeurs*, A. Corhay, G. Hubner and A. Miller, editors, ULg Press, Belgium.

“Equity Market Derivatives” with L. Mick Swartz, 2009, in *Financial Derivatives* (Robert W. Kolb Series in Finance), Bob Kolb and Jim Overdahl, editors, John Wiley and Sons, Inc.

“Tick Size, Market Structure and Trading Costs” with William G. Christie and Eugene Kandel, 2008, in *Stock Market Liquidity: Implications for Market Microstructure and Asset Pricing*, Francois-Serge L’habitant and Greg N. Gregoriou, editors, John Wiley and Sons, Inc., 173-197.

**Working Papers**

“Bank Holdings and Systemic Risk” with Celso Brunetti and Shawn Mankad.

“Loan Syndication Networks” with Edwin Hu and Ioannis Spyridopoulos.

“The Urgency to Borrow in the Interbank Market” with Celso Brunetti and Shawn Mankad.

“The Determinants of Open Interest in Option Markets” with Michael Shafer.

“The Ratio of Option Open Interest-to-Stock Outstanding” with Celso Brunetti and Michael Shafer.

“Option Open Interest around Seasoned Equity Offerings” with Michael Shafer.

“Crude Oil Price Movements and Institutional Traders” with Celso Brunetti and Bahattin Büyükşahin.

“Funding Constraints and Liquidity Contagion in U.S. Equity and Treasury Markets” with Christof W. Stahel.

“Fundamentals, Trader Activity and Derivative Pricing” with Bahattin Büyükşahin, Michael S. Haigh, James A. Overdahl and Michel A. Robe.

"Do Institutional Traders Predict Bull and Bear Markets?" with Celso Brunetti and Bahattin Büyükşahin.

“Off but Not Gone: A Study of Nasdaq Delistings” (formerly titled “From Pink Slips to Pink Sheets: Market Quality around Nasdaq Delisting”) with Venkatesh Panchapagesan and Ingrid M. Werner.

“Stepping Ahead of the Book” with Amy K. Edwards.

“Liquidity Risk, Investor Flux and Post-Earnings Announcement Drift” with Kirsten L. Anderson and Eric So.

“Investor Behavior Surrounding Earnings Announcements” with Kirsten L. Anderson and Selim Topaloglu.

**Work-In-Progress**

“Inferring Bank Portfolios with Balance Sheet Driven Matrix Factorization” with Celso Brunetti and Shawn P. Mankad

“Price Discovery in Crude Oil Futures Markets” with Bahattin Büyükaşahin.

“The Long and Short of Dealer Profits” with Jay F. Coughenour.

### **Teaching Experience**

Managerial Economics (MBA), 2015

Seminar, Empirical Finance (PhD), 2012

Theory of Finance (MSF), 2013, 2017

Introductory Managerial Finance (MBA), 2013

Investment Analysis (MBA), 2001-04, 2006, 2018

Portfolio Theory (MBA), 2010, 2012

Derivative Investments (MBA), 1996-97, 2005, 2010, 2012-13

Management of Financial Institutions (MBA), 1995-97

Student Managed Investment Fund, 2013-14

Options, Futures and Other Derivatives, 1994-97, 2005, 2012-13

Investments, 2001-06, 2010

Speculative Markets, 2010

Introductory Managerial Finance, 1997-99

Financial Institutions Management, 1997

### **Presentations**

“Bank Holdings and Systemic Risk”

Presented at American University, Auburn University and the U.S. SEC.

“Economic Analysis and the SEC”

Presented at the Wharton School.

“Regulation and Financial Markets”

Presented at the High Table Seminar, Oxford-Georgetown Summer Program.

“Interconnectedness in the Interbank Market” (formerly titled “The Breakdown of the Interbank Market during the Financial Crisis”)

Presented at Babson College, Cornell University, George Mason University, the University of Arkansas and the University of Hull.

“Crude Oil Price Movements and Institutional Traders”

Presented at the University of Oklahoma.

“Energy Markets: A View from Inside the Beltway”

Presented to the Oklahoma Bankers Chair and Center for Financial Studies.

“U.S. Monetary and Fiscal Policy”

Presented to Korean Government Delegation.

“LME and Aluminum”

Presented to the Metals Service Center Institute.

“Funding Constraints and Liquidity Contagion in U.S. Equity and Treasury Markets”  
Presented at Syracuse University.

"Do Institutional Traders Predict Bull and Bear Markets?"  
Presented at the New York Accounting and Finance Symposium and Syracuse University.

“Speculation, Prices and Market Volatility”  
Presented at the 2014 Canadian Economics Association, the University of Mississippi and the University of Delaware Economics Seminar.

“The Evolving Landscape for Derivative Regulation”  
Presented at Fulbright Jaworski Oil and Gas Compliance Seminar, HEC Paris, NasdaqOMX, the Università Politecnica delle Marche, Ancona, Italy, the Vanderbilt University Conference on Regulatory Change in the Global Financial System, at Cornerstone Research and the Platts Oil Trading and Risk Management Forum.

"Effects of Central Bank Intervention on the Interbank Market during the Sub-Prime Crisis"  
Presented at the Università Politecnica delle Marche, Ancona, Italy.

“Trading Networks”  
Presented at American University, George Washington University, Rutgers University, Southern Methodist University, Syracuse University, Temple University, the University of Central Florida, the University of Missouri-Columbia, the University of Tennessee and Villanova University.

“Improving Market Transparency”  
Presented at the 2009 CFTC Symposium for International Market Authorities.

“Abusive Conduct from an Economist’s Perspective”  
Presented at the 2009 CFTC Division of Enforcement International Regulators Conference.

“The Role of Speculators in the Crude Oil Futures Markets”  
Presented at the NYSE/Euronext Amsterdam & Tinbergen Institute Workshop on Liquidity and Volatility in Today’s Markets and the 2009 International Association of Energy Economists International Conference.

“Index Trading and Speculation in Commodity Futures Markets”  
Presented at the CFTC Agricultural Forum, the American Agricultural Economics Association Meeting, the Mid-Atlantic Farm Credit Board of Directors annual meeting, the Council on Food, Agriculture and Resource Economics, the Washington Area Finance Association, the U.S.-India Financial and Economic Forum, the U.S. Department of State Bureau of Economic and Business Affairs, the 2008 CFTC Symposium for International Market Authorities, the USDA/World Bank Food Panel, the 2008 IOSCO Conference on Speculation and Volatility in Commodity Markets, the Canadian Securities Administration, the Energy Information Administration (Department of Energy), the 2009 NCCC-134 Meeting on Applied Commodity Price Analysis, Forecasting and Market Risk Management, the Kansas City Federal Reserve Panel on

Agricultural Finance, the 2009 EIA Energy Conference, the American Petroleum Institute, the 2009 FIA Legal and Compliance Conference, HEC Paris, the 2009 Canadian Economics Association meeting and the 2011 InVivo Paris Conference on Speculation in Agriculture Markets.

“Increasing Internationalization of the Financial Markets”

Presented at the Chatham House, London

“Index Funds and Data Dissemination in Crude Oil Markets”

Presented at the 2008 International Energy Agency Expert Roundtable on Oil Price Formation and to the U. S. CFTC Energy Markets Advisory Committee.

“The Impact of Herding on Futures Market Prices”

Presented at the 2007 CFTC Symposium for International Market Authorities.

“Price Discovery in U.S. Natural Gas Futures Markets”

Presented to the U.S. CFTC.

“Market Growth, Trader Participation and Pricing in Energy Futures Markets”

Presented at the Arizona State University, the 2007 MIT Center for Energy and Environmental Policy Research Conference and Johns Hopkins University.

“Liquidity Risk, Investor Flux and Post-Earnings Announcement Drift”

Presented at the University of Toronto and the University of Arizona.

“The Sound of Silence”

Presented at the U.S. CFTC and University of Delaware Brown Bag seminar series.

“Off but Not Gone: A Study of Nasdaq Delistings” (formerly titled “From Pink Slips to Pink Sheets: Market Quality around Nasdaq Delisting”)

Presented at the University of Delaware, George Mason University and George Washington University.

“Why are IPO Investors Net Buyers through Lead Underwriters?”

Presented at American University, Case Western Reserve University, Drexel University, the University of Missouri—Columbia, Morgan State University and Temple University.

“Investor Behavior Surrounding Earnings Announcements”

Presented at the University of Delaware Brown Bag seminar series.

“Trading Behavior around the Rise and Fall of Nasdaq”

Presented at the University of Maryland and the University of Connecticut.

“The Effect of Decimals on Nasdaq Retail Trading”

Presented at the University of Delaware and 2002 Eastern Finance Association Meeting.

“The Development of Secondary Market Liquidity for NYSE-Listed IPOs”  
Presented at Nasdaq, 2001 Financial Management Association Annual Meeting, 2002 Southern Finance Association Meeting, the University of Miami and the University of Delaware.

“Competition for Market Making in NYSE IPOs”  
Presented at Nasdaq.

“Nasdaq Trading Halts: The Impact of Market Mechanisms on Prices, Trading Activity and Execution”  
Presented at the 2000 Western Finance Association Annual Meeting, 2000 NBER Microstructure Conference, 2000 Financial Management Association Annual Meeting, Penn State University, the Nasdaq Stock Market, George Washington University and American University.

“The Initial Listing Decisions of Firms that Go Public”  
Presented at the 1998 Financial Management Association Annual Meeting, the Nasdaq Stock Market, Syracuse University and Arizona State University.

“The Trading Profits of SOES Bandits”  
Presented at the University of Georgia and the 1997 Financial Management Association Annual Meeting.

“The Importance of Firm Quotes and Rapid Executions: Evidence from the January 1994 SOES Rules Change”  
Presented at The Ohio State University, University of Notre Dame and the 1997 American Finance Association Annual Meeting.

“Cost Components of the Bid-Ask Spread: An Intraday Analysis”  
Presented at the 1994 Financial Management Association Annual Meeting, University of Arizona, University of Houston, University of Iowa, University of Miami, Michigan State University and University of Notre Dame.

Referee,

*Applied Economics, The Accounting Review, Eastern Economic Journal, Empirical Economics, Energy Economics, The Energy Journal, Financial Management, Financial Review, International Review of Financial Analysis, Journal of Accounting and Public Policy, Journal of Banking and Finance, Journal of Business, Journal of Corporate Finance, The Journal of Economics and Business, Journal of Finance, Journal of Financial and Quantitative Analysis, Journal of Financial Economics, Journal of Financial Markets, Journal of Futures Markets, Journal of Money, Credit and Banking, North American Journal of Economics and Finance, The Quarterly Review of Economics and Finance and Review of Financial Studies.*

Boards,

Nasdaq Economic Advisory Board, 2017-Present  
Eris Exchange, 2011-2017  
Southern Finance Association, 2010-2013

Track Chair,

Markets and Microstructure, Financial Management Association 2002  
Markets and Microstructure, Midwest Financial Management Association 2003  
Derivatives/Other, Eastern Finance Association 2018

Conference Organizer,

Sovereign Wealth Funds (American University) 2014-18

Program Committee,

Asia/Pacific Financial Management Association 2013-16  
Asian Finance Association 2016-18  
European Finance Association 2006-11, 2014-19  
Financial Management Association 2002-10  
Midwest Finance Association 2014-16  
Southern Finance Association 2008  
Western Finance Association 2003-11, 2013-19

Session Chair,

Chicago Financial Institutions Conference 2017-19  
Finance Down Under 2016  
Financial Management Association 2002, 2004-05  
Southern Finance Association 2000, 2002, 2008  
Eastern Finance Association 2002, 2018

Discussant,

Allied Social Sciences Association 2007  
Canadian Economics Association 2014  
Finance Down Under 2013-15, 2017  
Financial Management Association 1996-97, 1999-2002, 2004-06  
Notre Dame/Nasdaq Dealer Market Conferences 1999-2000  
Ohio State Conference on Dealer Markets 1996  
SEC Third Annual Conference on Financial Market Regulation, 2016  
Southern Finance Association 2000, 2002, 2008  
Stanford Program on Energy and Sustainable Development, 2014  
Western Finance Association 2001, 2004  
Washington Area Finance Association 2000, 2002, 2004

Member,

American Finance Association  
Financial Management Association  
Southern Finance Association  
Western Finance Association

Advisor,

Lerner Finance Club (MBA) 2005-07

Syracuse Financial Management Association 2011-13

**Other Work Experience**

Copy Editor, *Journal of Finance*, 1992-93

MBA Advisor/Graduate Admissions Coordinator, University of Iowa College of Business Administration, 1988-1991

Executive Trainee/Distributor, MAY Corporation Venture Stores Division, 1988

**Honors and Awards**

Columbia University

Fellow, Law and Economics of Capital Markets Program, 2018-Present

Steering Committee, The New Special Study of the Securities Markets, 2018-Present

Kogod Faculty Award for Outstanding Research, 2016, 2017, 2019

Kogod Faculty Award for Outstanding Teaching, 2016

Kogod Faculty Award for Outstanding Service, 2016

Lerner College Outstanding Scholar Award, University of Delaware, 2008

Research Grants,

Institute for Financial Markets, 2010

Lerner College of Business and Economics, 2004, 2007

University of Delaware General University Research Grant, 2006

University of Delaware Department of Finance, 2005

University of Notre Dame Mendoza College of Business, 1996, 1998-99

Nominated for University of Delaware Lerner College Teaching Award, 2004, 2006

Nominated for University of Delaware Lerner College Advising Award, 2004

Cited as "Prominent Faculty" in 2008-10, 2012 Business Week Rankings of Undergraduate Business Schools

Member, Beta Gamma Sigma

**Appendix B: Expert Reports and Testimony over the Past 4 Years**

In re: United States Commodity Futures Trading Commission v. *Donald R. Wilson, Jr. and DRW Investments, LLC\** (Report and Testimony, December 2016)

In re: United States Commodity Futures Trading Commission v. **William Byrnes, Christopher Curtin and the New York Mercantile Exchange, Inc.** (Report in 2016)

Appendix C: American University's FIN496/685 Technical Trading Course Syllabus



FIN 496 002/ FIN 685  
Summer Semester 2019

**Faculty Name:** Vince Bui **Office Location:** TBD  
**Faculty E-mail** : cb3538a@american.edu **Phone:** 206-434-1415  
**Office Hours:** TTH 5:30-8:40 pm **Pref. contact:** Email  
**Class Time & Location:** T60

**Course description**

Technical analysis is a methodology for forecasting the direction of prices through the study of past market data, primarily price and volume. This course is designed around the core body of knowledge recommended by the Market Technicians Association that includes current, industry-relevant concepts and treatments of technical analysis in the context of modern portfolio management. Meets with FIN-685 003.

**Learning objectives**

To provide students with a comprehensive overview of technical analysis as a tool for investment decisions. Students will also learn how to incorporate technical research with fundamental, quantitative and macro-economic analysis methods for a better investment thesis.

This course will also prepare students for the Chartered Market Technician exam.

**Required and recommended reading**

Chartered Market Technician: An Introduction to Technical Analysis.  
ISBN-13: 978-1119222699

**Grading**

Quiz	30%
Final Exam (Comprehensive)	40%
Project	25%
Attendance/Participation	5%

**Student Responsibilities:**

We cover a large amount of material in a relatively short time and, as a consequence, the course moves fairly quickly. To keep pace you are expected: a) to attend class regularly, and b) complete reading assignments. This schedule is subject to change as deemed

necessary by the professor. The Professor reserves the right to call on any student for discussion on articles assigned and homework assignments.

**Examinations:**

With limited exceptions there will be no makeup exams in this course. If you missed an exam, your final exam grade will be your missed exam's grade.

**Business Etiquette--No-screens policy**

Because our screens are distracting, you may not use electronic devices during class sessions. All computers, cell phones, and other devices must be turned off and stored during sessions unless you get request permission from the Professor.

**Project:**

Students can team up (a group of no more than 3 people) or work on a project individually. The purpose of the project is to let students pick and develop an investment thesis based on technical analysis with the materials covered in class. You will run a virtual fund on the website [www.marketwatch.com](http://www.marketwatch.com) using Technical Analysis in all investment ideas or trading strategies. You must start trading no later than the 3<sup>rd</sup> class. You may use a variety of indicators to determine entry, exit, and risk reward for the trades. You must keep a detailed journal/ trading log which will be the basis for your research project which will be turned in at the end of the semester. The project consists of:

1. A journal/trading log of your trades. The journal should include: entry/exit, technical reason and risk/reward setup for each trade you make. Minimum 40 trades are required for each portfolio.
2. A 5-minute presentation of your experience in running a technical fund.

The link to the game will be provided

**Schedule of Topics and Assignments**

Class 1	Introduction to Technical Analysis Terms, Basic Information
Class 2	Chart Types, Set Ups
Class 3	<b>Quiz</b> Investment Strategies
Class 4	Statistical Analysis Live Trade Videos
Class 5	System Testing Chart Development Analysis
Class 6	<b>Quiz</b> Chart Development Analysis (Cont) Market Activities and Behavioral Finance

Class 7	Risk Management Ethics and Standards of Practice. Final Exam Q&A
Class 8	Presentations
Class 9	Final Exam

## Appendix D: American University's FIN672 Investments Course Syllabus



FIN 672: Investment Analysis/Portfolio Management      Fall 2018

**Professor:** Jeff Harris    208 Kogod    202-885-6669    jharris@american.edu

### **Course Objective:**

To learn the tools of security analysis and investment management. This course will cover market structure, trade execution, portfolio construction, asset allocation and security selection decisions, market efficiency, trading strategies, and basic derivatives contracts.

### **Expectations:**

Expect the course to help you *think* about investments and provide the necessary background to enter the investment industry or related fields. Students should be familiar with net present value and dividend discount models, accounting statements, and basic statistical methods (including regression analysis). I also expect everyone to download data from the web and analyze data in spreadsheets.

### **Grading:**

Grades are based on two midterm tests, three portfolio reports and the final exam. During the tests you may refer to one page (8 ½" x 11") of hand-written notes. Sample tests and problem sets (with answers) will be provided prior to the exams.

The portfolio project consists of 2 mid-semester reports and a final paper. The mid-semester reports are designed to give you experience creating, monitoring, and reporting on the performance of a portfolio. The final report will be your chance to apply course tools to make stock recommendations. Your final grade will be based on the final exam (20%), two midterm tests (20% each), a company summary report (5%), the historical portfolio returns report (15%) and a final portfolio report (20%). Assignments delivered late will lose 10% off full value for every day or fraction of a day late.

You are expected to take tests and quizzes at their scheduled times and hand in the midterm report on or before the scheduled dates. If an illness or other extenuating

circumstance will cause you to miss a test, please inform me immediately. Unexcused absence from a test produces a grade of zero on that test.

**Required Textbook:**

Investments, 11<sup>th</sup> Edition, by Bodie, Kane, and Marcus, 2017, McGraw-Hill.

I also suggest regular reading of the *Wall Street Journal*.

**Office Hours:** 3:00-4:45 on Mondays and by appointment.

**Course Schedule:**

I hope to maintain the following schedule. However, the schedule and the readings are subject to change.

Date	Topics	Readings	Assignment Due (% of grade)
M 8/27	<ul style="list-style-type: none"> <li>• Syllabus and Introduction</li> <li>• Orders &amp; Executions</li> </ul>	Chapters 1& 2	
M 9/3	No class – Labor Day		
<b>F 9/7</b>	<b>NYC Trip! Visit firms, meet alumni!</b>		
M 9/10	<ul style="list-style-type: none"> <li>• Quotes and Trading Costs</li> <li>• Mutual Funds and ETFs</li> </ul>	Chapters 3 & 4	Stock Selections
M 9/17	<ul style="list-style-type: none"> <li>• Measuring Risk and Return</li> </ul>	Chapter 5	
M 9/24	<ul style="list-style-type: none"> <li>• Optimal Risky Portfolios</li> </ul>	Chapters 6 & 7	Company Summaries (5%)
M 10/1	<b>TEST 1: Market Mechanics &amp; Portfolio Construction</b>		Midterm 1 (20%)
M 10/8	<ul style="list-style-type: none"> <li>• CAPM and Single Index Models</li> </ul>	Chapters 8 & 9	
M 10/15	<ul style="list-style-type: none"> <li>• APT and Multifactor Models</li> </ul>	Chapter 10	
M 10/22	<ul style="list-style-type: none"> <li>• Market Efficiency, Behavioral Finance and Technical Analysis</li> </ul>	Chapters 11 & 12	Historical Returns Report (15%)
M 10/29	<ul style="list-style-type: none"> <li>• Empirical Evidence on Stock Returns</li> <li>• Fixed Income</li> </ul>	Chapter 13 Chapter 14	
M 11/5	<b>TEST 2: CAPM, APT, Multifactor Models</b>		Midterm 2 (20%)
M 11/12	<ul style="list-style-type: none"> <li>• Fixed Income (continued)</li> </ul>	Chapters 15 & 16	
M 11/19	<ul style="list-style-type: none"> <li>• Security Analysis</li> </ul>	Chapters 17-19	
M 11/26	<b>No class – Portfolio Work Day</b>		
M 12/3	<ul style="list-style-type: none"> <li>• Futures and Options</li> </ul>	Chapters 20-22	Final Portfolio Report (20%)
Finals Week	<b>TEST 3: Comprehensive Final Exam</b>		Final Exam (20%)

## Appendix E: Syracuse University's FIN459 Introduction to Derivatives Course Syllabus

FIN459: Introduction to Derivatives      Syracuse University      Spring 2013

Prof. Jeff Harris  
Office: 624 Whitman  
voice: 443-4843  
e-mail: jhharr03@syr.edu

### Course Objective:

To learn the pricing and usage of derivative securities, including forward contracts, futures contracts, swaps, options, warrants, and convertible debt. This course covers derivative security pricing to provide a basis for understanding of derivative use in portfolio theory to manage risk or to optimize speculative positions.

### Expectations:

Expect the course to help you learn the way derivatives are priced in order to *think* about how risk management or optimal speculation might be achieved. The material in the class is structured to provide the necessary background to enter the hottest area of finance in the past few decades. Students should be familiar with net present value techniques and basic statistical methods (including regression analysis). I also expect everyone to work with data and to analyze data with spreadsheets.

### Grading:

Grades are based on two midterm tests, 8 weekly option portfolios, one final paper and the final exam. During the tests you may refer to one page (8 ½" x 11", one side) of hand-written notes.

The *University's Academic Integrity Policy* applies to this course. The University is also committed compliance with Section 504 and the Americans with Disabilities Act (see more information at the Office of Disability Services at 804 University Ave., Room 309, 315-443-4498 or 315-443-1371 (TDD only)).

Excuses for class absences for medical reasons will be given only if such absences are advised by a health care provider at the Health Center, based on clinical findings and prescribed treatment recommendations. Excused notes will not be given solely to confirm a visit to the Health Center. (Excerpt from the Revised Policy "Verification of Medical Conditions" February 25, 1993)

You are expected to take tests at their scheduled times and hand in the final paper on or before the scheduled date. If an illness or other extenuating circumstance will cause you to miss a test, please inform me immediately. Unexcused absence from a test

produces a grade of zero on that test. Option trading game portfolios delivered late will lose 10% off full value for every day or fraction of a day late (1:50 p.m. is time due on the assigned date).

**Required Textbook:**

Options, Futures and Other Derivatives, 8<sup>th</sup> Edition, by Hull, 2011, Pearson/Prentice Hall.

I also suggest regular reading of the *Wall Street Journal*.

**Office Hours:**

I will have regular office hours from 3:30-5 on Tuesdays and Wednesdays and you are always welcome to schedule an appointment at other times.

**Course Schedule:** I plan to maintain the following schedule, although this is subject to change.

Date	Topics	Readings	Assignment Due (% of grade)
T 1/15	• Syllabus and Introduction	Chapter 1	
Th 1/17	• Forward Pricing	Chapter 2	
T 1/22	• Forward and Futures Pricing	Chapter 5	
Th 1/24			
T 1/29	• Hedging with Futures	Chapter 3	
Th 1/31	• Interest Rate Futures	Chapter 6	
T 2/5	• Swaps	Chapter 7	
Th 2/7			
T 2/12			
Th 2/14	<b>TEST 1: Futures, Forwards &amp; Swaps</b>		<b>Midterm 1 (20%)</b>
T 2/19	• Introduction to Options Trading Game		
Th 2/21	• Introduction to Options	Chapter 9	
T 2/26	• Options Trading Strategies	Chapters 10 & 11	<b>Trading Game Portfolio 1 (2%)</b>
Th 2/28	• Options Trading Strategies (cont.)		
T 3/5	• Binomial Option Pricing	Chapter 12	<b>Trading Game Portfolio 2 (2%)</b>
Th 3/7	No class		
3/12-14	No class—Spring Break		
T 3/19	• Binomial Option Pricing (cont.)		<b>Trading Game Portfolio 3 (2%)</b>
Th 3/21			
T 3/26	• Black-Scholes Option Pricing	Chapter 14	<b>Trading Game Portfolio 4 (2%)</b>
Th 3/28	<b>TEST 2: Options Pricing</b>		<b>Midterm 2 (20%)</b>
T 4/2	• Index Options	Chapter 16	<b>Trading Game Portfolio 5 (2%)</b>
Th 4/4			
T 4/9	• Futures Options	Chapter 17	<b>Trading Game Portfolio 6 (2%)</b>
Th 4/11			
T 4/16	• Hedging with Options	Chapters 18 & 19	<b>Trading Game Portfolio 7 (2%)</b>
Th 4/18	• Interest Rate Options	Chapter 28	
T 4/23			<b>Trading Game Portfolio 8 (2%)</b>
Th 4/25	• Other Derivative Securities	Course Notes	<b>Trading Game Final Paper (14%)</b>
T 4/30	Review		
F 5/3	<b>TEST 3: Comprehensive Final Exam</b>	<b>10:15-12:15</b>	<b>Final Exam (30%)</b>

## Appendix F: American University's FIN461/661 Behavioral Finance Course Syllabus



BEHAVIORAL FINANCE 461 / 661

INSTRUCTOR: Dr. Timothy Timura, CFA

EMAIL: timura@american.edu

OFFICE: Kogod School of Business

OFFICE TELEPHONE: 202-885-1998

OFFICE HOURS: Before and after class and by appointment

### **COURSE DESCRIPTION:**

Developed through the lens of Shiller, Thaler, Shefrin, and Kindleberger, a deep dive into the theory, practice and application of behavioral finance.

### **COURSE OBJECTIVE:**

Behavioral Finance is the interaction and intersection of finance and psychology. The overriding objective of this course is to introduce the theory and practice of Behavioral Finance (BF) heuristics, biases, and anomalies and in doing so, to allow the student to gain an appreciation of the wide applicability of the subject in contemporary investment – and corporate finance – conversations. The linkage of the theory, practice and application of BF is stressed.

With the awarding of the Nobel Prize in Economics to Richard Thaler in 2017, Behavioral Finance is likely a future staple of the investment management profession, serving to modify and enhance our understanding of the behavior of individuals and institutions in the financial economic marketplace.

Issues that include BF-impacted markets & participants; heuristics; biases; and anomalies; and active BF investment and corporate decision-making among other topics will bring the student into the “contemporary Behavioral Finance investment conversation.” In addition, to provide a strong theoretical foundation, the seminal academic works of BF will be covered in depth.

Please note that a conceptual, working appreciation of the depth and breadth of the issues, questions, complexity, and controversy surrounding each topical area is the instructor’s ultimate goal for the student. A secondary objective is to provide the student the opportunity to think critically and evaluate arguments and problems related to complex, real world BF investment issues. The third objective is to allow the student to actively engage in written and oral exchanges of contemporary Behavioral Finance investment (and related) issues with the goal of addressing multiple

constituencies and topics. The fourth objective is to introduce and acquaint the student with the depth and breadth of the seminal BF academic literature as it pertains to the topical areas. Nobel Laureate Richard Thaler will lead this exercise through the employment of his readings book.

**COURSE DESIGN:**

By American University Kogod standards, this course entails a very, very heavy readings preparation for each session. Readings will be assigned from the five books and as appropriate, from supplemental sources (i.e., academic journal articles, Wall Street Research, professional papers, book summaries, etc.) that will be made known to the student in advance. Any remaining supplementary readings will be available via the AU Electronic Library or direct electronic links.

Importantly, throughout our time together, the instructor will serve as a guide for the material, outlining what - why - how each topic is contextually important.

In addition, to augment your learning and professional preparation, discussions of contemporary Behavioral Finance issues (generally from the WSJ, NYT, etc.) will be orchestrated before the lectures.

Realize also that this course will leverage knowledge from prior coursework and experience in psychology, finance, economics, history, accounting, sociology, philosophy, mathematics, and statistics. By its very nature, the study of BF (and investment and corporate decision making in general) is a multidisciplinary experience and this course, in particular, brings the multiplicity of your prior knowledge and experiences together to see the “big investment picture.”

Please note, neither blackboard nor mass email will be employed for instructor communications or for deliverables (i.e., the paper and the examinations).

**TEXTBOOKS:**

*(GF) Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing* by Shefrin (Oxford University Press, 2002)

*(IR) Irrational Exuberance* by Shiller (Revised and Expanded Third Edition, Princeton University Press, 2015)

*(TH) Advances in Behavioral Finance Volume 2* edited by Thaler (Princeton University Press, 2005)

*(MPC) Manias, Panics, and Crashes: A History of Financial Crises* by Kindleberger (Third Edition, John Wiley & Sons Publishing, 1996)

*(W) Why Smart People Make Big Money Mistakes and How to Correct Them: Lessons from the New Science of Behavioral Economics* by Belsky & Gilovich (Simon & Schuster Paperbacks, 1999)

**GRADING:**

There will be two exams (i.e., a mid-term and a final), three topical paper assignments (with presentations), and a seminal paper analysis with presentation. The topical papers will link our study of BF to today's marketplace.

Note also that history suggests that lagging behind on the readings will cause angst and consternation around exam time as the pages pile up rather quickly.

Mid Term	30%
Three Topical Papers (and Presentations)	15
Seminal Paper Analysis & Presentation	10
Final Examination	45
Total	100%

The Topical Paper assignments will be discussed in the first class. You will be assigned, at three points during the semester, an assignment that links the BF material to current market activity or events. One representative paper topical area will be Failed Mergers & Acquisitions.

The Mid Term and (non-cumulative) Final Examination examinations will include (but not limited to) a combination of True-False Short Statements and short answer essay questions.

The Seminal Paper Analysis & Presentation will be a Presentation as well as a Preparation for the material on the final examination. Note: The final exam essay questions will be selected from the seminal papers, notes of which will be provided by your peers.

"Deliverables-due" and "test dates" are designed to accommodate everyone and to keep the student - and most importantly, the learning - on our admittedly aggressive schedule. Unfortunately, no make-up or late dates will be arranged, owing to fairness to the other students.

Of course, any academic dishonesty or suspicions thereof - per University policy - will be immediately reported to the appropriate academic administrative unit.

**Final Grade Calculation:**

A	93%+
A-	90-92.9
B+	87-89.9
B	83-86.9
Etc.	

**COURSE OUTLINE:**

Any formal assignments - readings, examinations, or deliverables - due will be announced at least one week in advance.

The approximate text / readings sequencing appears below. From the experience of the instructor, we will complete the entire five texts during the semester. It is best to approximately think of the Topics as “weeks” in the semester.

Note, only the first class and the final examination can be penned with certainty. Importantly, due to intense reading nature of this course, please, do not get behind in the readings and assignments.

***TOPIC ONE - MARKET HISTORY***

- One:** (IR) The Stock Market in Historical Perspective
- Two:** (IR) The Bond Market in Historical Perspective
- Three:** (IR) The Real Estate Market in Historical Perspective
- Four:** (IR) Appendix – Nobel Prize Lecture: Speculative Asset Prices

***TOPIC TWO - WHAT IS BEHAVIORAL FINANCE:***

- Chapter 1:** (GF) Introduction
- Chapter 2:** (GF) Heuristic Driven Bias: The First Theme
- Chapter 3:** (GF) Frame Dependence: The Second Theme
- Chapter 4:** (GF) Inefficient Markets: The Third Theme

- Chapter 1:** (TH) A Survey of Behavioral Finance (Barberis & Thaler)

**Topical Paper ONE Due**

***TOPIC THREE - PREDICTION***

- Chapter 5:** (GF) Trying to Predict the Market
- Chapter 6:** (GF) Sentimental Journey: The Illusion of Validity
- Chapter 7:** (GF) Picking Stocks to Beat the Market
- Chapter 8:** (GF) Biased Reaction to Earnings Announcements

***TOPIC FOUR - INDIVIDUAL INVESTORS***

- Chapter 9:** (GF) Get Evenitis: Riding Losers Too Long
- Chapter 10:** (GF) Portfolio, Pyramids, Emotions, and Biases
- Chapter 11:** (GF) Retirement Saving: Myopia and Self-Control

**Topical Paper TWO Due**

***TOPIC FIVE - INSTITUTIONAL INVESTORS***

- Chapter 12:** (GF) Open-Ended Mutual Funds: Misframing, Hot Hands, and Obfuscation Games
- Chapter 13:** (GF) Closed End Funds: What Drives Discounts
- Chapter 14:** (GF) Fixed Income Securities: The Full Measure of Behavioral Phenomena

**Chapter 15:** (GF) The Money Management Industry: Framing Effects, Style, Diversification, and Regret

***MID TERM EXAMINATION ONE***

Will include materials from Topics One to Five, inclusive

***TOPIC SIX - WHY SMART PEOPLE MAKE BIG MONEY MISTAKES AS WITNESSED THROUGH THE LENS OF BELSKY AND GILOVICH***

- Chapter 1: (BG) Not All Dollars are Created Equal (Mental Accounting)
- Chapter 2: (BG) When Six of One Isn't Half a Dozen of the Other (Loss Aversion)
- Chapter 3: (BG) The Devil That You Know (Endowment Effect, etc.)
- Chapter 4: (BG) Number Numbness (Money Illusion)
- Chapter 5: (BG) Anchors Aweigh (Anchoring, Confirmation Bias, etc.)
- Chapter 6: (BG) The Ego Trip (Overconfidence)
- Chapter 7: (BG) Herd it Through the Grapevine (Information Cascades, etc.)
- Chapter 8: (BG) What Now?

***TOPIC SEVEN - STRUCTURAL, CULTURAL, AND PSYCHOLOGICAL FACTORS***

- Four: (IR) Precipitating Factors: The Internet, the Capitalist Explosion, and Other Events
- Five: (IR) Amplification Mechanisms: Naturally Occurring Ponzi Processes
- Six: (IR) The News Media
- Seven: (IR) New Era Economic Thinking
- Eight: (IR) New Eras and Bubbles around the World
- Nine: (IR) Psychological Anchors for the Market
- Ten: (IR) Herd Behavior and Epidemics

***TOPIC EIGHT - ATTEMPTS TO RATIONALIZE EXUBERANCE***

- Eleven: (IR) Efficient Markets, Random Walks, and Bubbles
- Twelve: (IR) Investor Learning - and Unlearning
- Thirteen: (IR) Speculative Volatility in a Free Society

Behavioral Finance: Theory & Evidence (Byrne & Brooks)

[https://www.cannonfinancial.com/uploads/main/Behavioral\\_Finance-Theories\\_Evidence.pdf](https://www.cannonfinancial.com/uploads/main/Behavioral_Finance-Theories_Evidence.pdf)

***TOPIC NINE - THE INTERFACE BETWEEN CORPORATE FINANCE AND INVESTMENT***

Behavioral Corporate Finance: A Current Survey (Baker & Wurgler)

<https://pdfs.semanticscholar.org/cf35/90036ec8c906dcb6637636d634da943a450d.pdf>

How to Make Better Decisions: Lessons Learned from Corporate Behavioral Finance  
(Nguyen & Schulbler)

<https://pdfs.semanticscholar.org/2e6b/cc30e53ba16d7f68e67a0f7a2f1bde322beb.pdf>

**Chapter 16:** (GF) Corporate Takeovers and the Winners Curse

**Chapter 17:** (GF) IPOs: Initial Underpricing, Long Term Underperformance, and Hot Issue Markets

**Chapter 18:** (GF) Optimism in Analysts' Earnings Predictions and Stock Recommendations

### **Topical Paper THREE Due (Failed Mergers & Acquisitions)**

### ***TOPIC TEN - OPTIONS, FUTURES, AND FOREIGN CURRENCY***

**Chapter 19:** (GF) Options: How They're Used, How They're Priced, and How They Reflect Sentiment

**Chapter 20:** (GF) Commodity Futures: Orange Juice and Sentiment

**Chapter 21:** (GF) Excessive Speculation in Foreign Exchange Markets

### ***TOPIC ELEVEN - SEMINAL PAPERS (VIA STUDENT PRESENTATIONS)***

There will be 18 Teams Formed

Chapter 2: (TH) The Limits of Arbitrage (Scheifer and Vishny)

Chapter 3: (TH) How Are Stock Prices Affected by the Location of the Trade

Chapter 4: (TH) Can the Market Add and Subtract? Mispricing in Tech

Chapter 5: (TH) Valuation Ratios ... (Campbell and Shiller)

Chapter 6: (TH) Myopic Loss Aversion ... (Benartzi and Thaler)

Chapter 7: (TH) Prospect Theory ... (Barberis, Huang, & Santos)

Chapter 8: (TH) Contrarian Investment ... (Lakonishok, Sheifer, & Vishny)

Chapter 9: (TH) Evidence on the Characteristics ... ((Daniel & Titman)

Chapter 10: (TH) Momentum (Jegadeesh & Titman)

Chapter 11: (TH) Market Efficiency ... (Michaely & Womack)

Chapter 12: (TH) A Model of Investor Sentiment (Barberis, Shleifer & Vishny)

Chapter 13: (TH) Investor Psychology.... (Daniel, Hirshleifer & Subrahmanyam)

Chapter 14: (TH) A Unified Theory ... (Hong & Stein)

Chapter 15: (TH) Individual Investors (Barber & Odean)

Chapter 16: (TH) Naïve Diversification (Benartzi & Thaler)

Chapter 17: (TH) Rational Capital Budgeting.... (Stein)

Chapter 18: (TH) Earnings Management.... (Degeorge, Patel & Zeckhauser)

Chapter 19: (TH) Managerial Optimism ... (Heaton)

### ***TOPIC TWELVE - MANIAS, PANICS AND CRASHES***

- 1 (MPC) Financial Crisis: A Hardy Perennial
- 2 (MPC) Anatomy of a Typical Crisis
- 3 (MPC) Speculative Manias
- 4-11 (MPC) Fueling the Flames to The International Lender of Last Resort
- 12 (MPC) Conclusion - The Lessons of History  
(MPC) Appendix A - Irrationality in Economics

***TOPIC THIRTEEN - REFLECTIONS OF A BEHAVIORAL INVESTMENT -  
CORPORATE ANALYST***

***FINAL EXAMINATION***

Final Exam will include material from Topics 6 - 13, inclusive. *The essay questions will be selected from the Seminal Papers.*

## Appendix G: Documents and Materials Considered in the Preparation of this Report

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Bach, Donna, Gary Groesbeck, Peta Stapleton, Rebecca Sims, Katharina Blickheuser, and Dawson Church, 2019, "Clinical EFT (Emotional Freedom Techniques) Improves Multiple Physiological Markers of Health," *Journal of Evidence-Based Integrative Medicine* 24.

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Chiyachantana, Chiraphol, Pankaj K. Jain, Christine Jiang, and Robert Wood, 2004, "International Evidence on Institutional Trading Behavior and Determinants of Price Impact," *Journal of Finance* 59, 865-894.

Chiyachantana, Chiraphol, Pankaj K. Jain, Christine Jiang, and Vivek Sharma, 2017, "Permanent Price Impact Asymmetry of Trades with Institutional Constraints," *Journal of Financial Economics* 36, 1-16.

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*Commodities: Markets, Performance and Strategies* (Oxford University Press), 2018, H. Kent Baker, Greg Filbeck, and Jeffrey H. Harris, editors.

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