FIN597: Special Topics – Empirical Asset Pricing Methods

Reading List & Coding Assignments

Presentation/Referee Reports Papers:

1. Chris Florackis, Christodoulos Louca, Roni Michaely, Michael Weber, 2022, Cybersecurity Risk
2. Jack Favilukis and Terry Zhang, 2022, Why momentum concentrates among overvalued stocks
3. Pat Akey, Adriana Robertson and Mikhail Simutin, 2021, Noisy Factors
4. Aditya Chaudhry, 2022, The Causal Impact of Macroeconomic Uncertainty on Expected Returns
5. Sicong (Allen) Li, Victor DeMiguel, and Alberto Martin-Utrera, 2022, Which Factors with Price-Impact Costs?
6. Alejandro Lopez-Lira1, Nikolai Roussanov, 2022, Do Common Factors Really Explain the Cross-Section of Stock Returns?

Week 1: March 16
Introduction; Logistics ; MATLAB Package Demo;

Background Readings:

This really is background material. I'll assume you know the basics and you have or will read the summary papers below).

1. Cochrane, J., 2011, Discount rates, Journal of Finance 66, 1047-1108.
2. Fama, E. F. (1970). "Efficient Capital Markets: A Review of Theory and Empirical Work". Journal of Finance.
3. Fama, E. F., 1976, *Foundations of Finance*, chapters 1-5
4. Fama, E. F., Efficient Capital Markets II, Journal of Finance, 46 (December 1991) 1575-1617.
5. Fama, E. F. (2013). "Two Pillars of Asset Pricing" (PDF). Prize Lecture for the Nobel Foundation.
6. Schwert, G. W. (2003). "Anomalies and market efficiency". Handbook of the Economics of Finance.

Coding Resource:

1. MATLAB for Economics and Econometrics: A Beginner's Guide by Frain

Useful links for PhD students:

These are links that I found helpful during my PhD years. I highly recommend you watch #1 (I found it quite funny) and all the interviews in #2 below. Lasse Pedersen's guide (#3) is also a must in my opinion. Thompson's guide (#8) is about econ PhD students, but it has some very valuable insights about navigating PhD life more generally.

1. Asset Pricing Theory Explained
2. AFA's Masters of Finance Interview series.
3. How to succeed in academia by Pedersen
4. Writing Tips for Ph.D. Students by Cochrane
5. How to avoid disaster in presentations by Piazzesi
6. What's Hot in Finance (2008-2012) by Bhattacharya
7. What's Hot in Finance (2011-2015) by Bhattacharya
8. Being a graduate student in economics by Thompson (Chapter will be posted on CANVAS)

Week 2: March 23
MATLAB Q&A; Cross-section of stock returns: CAPM to FF3;

Data exercise:

Generally speaking, whenever I ask you for replications, you should replicate the results qualitatively. For example, Black, Jensen, and Scholes (1972) uses 1926-1965 for their sample. If you start your sample in 1963, that's fine, as long as you run the same test for the latter sample.

1) Qualitatively replicate the main result in Black, Jensen, and Scholes (1972)
    a. The flat SML (Figure 1)
2) Explore the relation between size, valuations, and average returns.
    a. Qualitatively replicate the first three columns (that is, only the results with beta, ME and BE/ME on the RHS) of Table III from Fama and French (1992)
    b. Find something you didn't know (not necessarily a new result in the literature, just something new to you). Could be looking at different time periods, different types of stocks, alternative measures for value, etc.
3) GRS test
    a. Qualitatively replicate the result for J_1 for the full sample in CLM Table 5.3
    b. Estimate, report, and interpret a GRS test for the CAPM and FF3 using the 25 size-book-to-market portfolio from Fama and French (1993) as test assets (no need to add the bonds)
        i. Look at their Table 9c for reference

Presentation/Referee Report Paper:
1. Chris Florackis, Christodoulos Louca, Roni Michaely, Michael Weber, 2022, Cybersecurity Risk

- Presenter: Qiang; Discussant: Spencer

Required Readings:

1. Black, Fischer, Michael C. Jensen, and Myron Scholes. 1972. "The Capital Asset Pricing Model: Some Empirical Tests." In Studies in the Theory of Capital Markets, edited by M. C. Jensen. New York: Praeger.
2. Fama, Eugene F. and James D. MacBeth, 1973, Risk, Return, and Equilibrium: Empirical Tests, Journal of Political Economy 81, 607-636.
3. Chen, Nai-Fu; Roll, Richard; Ross, Stephen (1986). "Economic Forces and the Stock Market" (PDF). Journal of Business. 59 (3): 383–403.
4. Connor, Gregory and Korajczyk, Robert, (1988), Risk and return in an equilibrium APT: Application of a new test methodology, Journal of Financial Economics, 21, issue 2, p. 255-289.
5. Gibbons, M.R., S. A. Ross and J. Shanken, 1989, A test of the efficiency of a given portfolio, Econometrica 57, 1121-1152.
6. Shanken, Jay. (1992). On the Estimation of Beta-Pricing Models. Review of Financial Studies. 5. 1-33. 10.1093/rfs/5.1.1.
7. Fama, E. F.; French, K. R. (1992). "The Cross-Section of Expected Stock Returns". The Journal of Finance. 47 (2): 427.
8. Fama, E. F.; French, K. R. (1993). "Common risk factors in the returns on stocks and bonds". Journal of Financial Economics. 33: 3–56
9. Optionally: CLM Chapters 5-6

Relevant Readings:

1. Blume, Marshall E., and Irwin Friend. “A New Look at the Capital Asset Pricing Model.” The Journal of Finance, vol. 28, no. 1, 1973, pp. 19–33.
2. Black, Fischer, Capital Market Equilibrium with Restricted Borrowing, The Journal of Business, 1972, vol. 45, issue 3, 444-55
3. Mayers, D. (1972) Nonmarketable Assets and Capital Market Equilibrium under Uncertainty. In: Jensen, M.C., Ed., Studies in the Theory of Capital Markets, 223-248.
4. Merton, Robert C. “An Intertemporal Capital Asset Pricing Model.” Econometrica, vol. 41, no. 5, 1973, pp. 867–887.
5. Brennan, Michael J., Taxes, market valuation and corporate financial policy, National Tax Journal, vol. 23, no. 4, 1970, pp. 417–427.
6. Litzenberger, R. H. and K. Ramaswamy, 1979, The effects of personal taxes and dividends on capital asset prices: theory and empirical evidence, Journal of Financial Economics, 7, 163—195.
7. Solnik, B.H. (1974) An Equilibrium Model of the International Capital Market. Journal of Economic Theory, 8, 500-524.
8. John B. Long Jr, Stock prices, inflation and the term structure of interest rates, Journal of Financial Economics, 1 (no. 2) (1974)

9. The Demand for Risky Assets under Uncertain Inflation Irwin Friend, Yoram Landskroner and Etienne Losq, Journal of Finance, 1976, vol. 31, issue 5, 1287-97
10. P. Sercu, A Generalization of the International Asset Pricing Model, Revue de l'Association Francaise de Finance, 1 (1980), pp. 91-135
11. R. Stulz, A Model of International Asset Pricing, Journal of Financial Economics, 9 (1981), pp. 383-406
12. M. Adler, B. Dumas, International Portfolio Choice and Corporation Finance: a Synthesis, Journal of Finance, 38 (1983), pp. 925-984
13. STULZ, R.M. (1983), On the Determinants of Net Foreign Investment. The Journal of Finance, 38: 459-468.
14. Elton, E.J. (1999), Presidential Address: Expected Return, Realized Return, and Asset Pricing Tests. The Journal of Finance, 54: 1199-1220.
15. French, Kenneth, (1980), Stock returns and the weekend effect, Journal of Financial Economics, 8, issue 1, p. 55-69,
16. Roll, Richard, "Vas ist Das? The Turn-of-the Year Effect and the Return Premia of Small Firms," Journal of Portfolio Management, Winter 1983, 18–28
17. Reinganum, Marc R., "The Anomalous Stock Market Behavior of Small Firms in January: Empirical Tests for Tax-loss Selling Effects," Journal of Financial Economics, June 1983, 89–104.
18. Basu, S. (1977): “Investment Performance of Common Stocks in Relation to their Price-Earnings Ratios”, Journal of Finance, 32, 3, 663-682.
19. Ball, Ray, (1978), Anomalies in relationships between securities' yields and yield-surrogates, Journal of Financial Economics, 6, issue 2-3, p. 103-126
20. Jaffe, J., Keim, D.B. and Westerfield, R. (1989), Earnings Yields, Market Values, and Stock Returns. The Journal of Finance, 44: 135-148.
21. Banz, Rolf W., "The Relationship between Return and Market Value of Common Stock," Journal of Financial Economics, 1981, 9, 3–18.
22. Basu, S. (1983): “The relationship between earnings yield, market value, and return for NYSE common stocks: Further evidence”, Journal of Financial Economics, 12, 129-156.
23. De Bondt, Werner F. M. and Richard H. Thaler, "Does the Stock Market Overreact?" Journal of Finance, July 1985, 793–805.
24. Stattman, D. (1980): “Book Values and Stock Returns”, The Chicago MBA: A Journal Of Selected Papers, 4, 25-45.
25. Barr Rosenberg, Kenneth Reid, Ronald Lanstein, Persuasive evidence of market inefficiency, The Journal of Portfolio Management Apr 1985, 11 (3) 9-16
26. Bhandari, L.C. (1988), Debt/Equity Ratio and Expected Common Stock Returns: Empirical Evidence. The Journal of Finance, 43: 507-528.
27. Jegadeesh, N. (1990), Evidence of Predictable Behavior of Security Returns. The Journal of Finance, 45: 881-898.

28. Jegadeesh, N. and Titman, S. (1993), Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. The Journal of Finance, 48: 65-91.
29. Merton, R. (1973). An Intertemporal Capital Asset Pricing Model. Econometrica, 41(5), 867-887.
30. Ross, Stephen (1976). "The arbitrage theory of capital asset pricing". Journal of Economic Theory. 13 (3): 341–360.
31. Chamberlain, Gary and Michael Rothschild, "Arbitrage, Factor Structure, and Mean Variance Analysis on Large Asset Markets." Econometrica 51 (September 1983): 1281-1304.
32. Ingersoll, Jonathan E., Jr., "Some Results in the Theory of Arbitrage Pricing." Journal of Finance 39 (September 1984): 1021-1039.
33. Sun, Yeneng & Khan, Mohammed. (2001). Asymptotic Arbitrage and the APT With or Without Measure-Theoretic Structures. Journal of Economic Theory. 101. 222-251.
34. Bruce N. Lehmann and David M. Modest, The empirical foundations of the arbitrage pricing theory, Journal of Financial Economics, 1988, vol. 21, issue 2, 213-254
35. Jones, Christopher. (2001). Extracting factors from heteroskedastic asset returns. Journal of Financial Economics. 62. 293-325.
36. Daniel, Kent, and Sheridan Titman, 1997, Evidence on the Characteristics of the Cross Section of Expected Returns, Journal of Finance 52, 1-33.
37. Davis, James L., Eugene F. Fama, and Kenneth R. French, 2000, Characteristics, Covariances, and Average Returns: 1929 to 1997, Journal of Finance 55, 389-84.
38. Petkova, Ralitsa (2006). "Do the Fama–French Factors Proxy for Innovations in Predictive Variables?". Journal of Finance. 61 (2): 581–612.
39. Fama, Eugene F. and Kenneth R. French 1996, Multifactor Explanations of Asset Pricing Anomalies, Journal of Finance 51, 55-84

Week 3: March 30
Behavioral finance: technical predictors (anomalies based on past performance) & limited attention anomalies

Data exercise:

1) Are long-run reversals distinct from value and size? If not, which is subsumed and by what?
    a. May want to see the discussion in Fama and French (1996)
2) The standard momentum construction by now (e.g., FF's UMD factor) is last year's return skipping the most recent month. Novy-Marx (JFE, 2012) further decomposes that momentum signal into intermediate horizon past performance and recent past performance. Show which one of the two is stronger in the data.
3) Look at industry momentum, both short-horizon (1-month) and one year (12-2, like UMD). Which one works better? Are they distinct from momentum in the cross-section of US equities?
4) This exercise will be part of a minor project that you will have to do over the course of two weekly data exercises. This week's assignment will involve the following steps:
    a. Download the .csv file from this following dropbox link.
    This file contains data provided to me from Bizportal Ltd., a Bulgarian data vendor. They specialize in gathering, harmonizing, and selling data on government procurement contract awards from around the world. This .csv contains data on what they refer to as "forward-" and "backward-looking government receivables". These are dollar amounts of how much a company has received or is contracted to receive from US federal government contracts that it has won in the past.
    b. Import the data into Matlab and figure out how to merge it with the permno's that identify all the matrices that the cookbook creates. Hints:
        i. Use detectImportOptions() and readtable() to import the data.
        ii. Use some of the .csv files that the getCRSPData() function downloads to link this dataset to permno's.
    c. For all the variables in the .csv file (5 forward- and 5 backward-looking receivables), create monthly matrices that are the same size as the rest of the matrices with CRSP and COMPUSTAT data that the cookbook creates (number of months x number of stocks).
    d. Explore the data. You can do (but you're not limited to) any of the following:
        i. Look at percentiles of the distributions for the variables over time.
        ii. Compare those with the total receivables for the companies from COMPUSTAT.
        iii. Look for outliers. Any weird looking numbers?
        iv. Mess around with it. See if it makes sense. Pick a particular company, try to google what kind of contracts they won and see if you can link those to spikes in the receivables in the data.
    e. Notes:

i. For the next class (due 4/6), I'll ask you to find the best trading strategy based on the data. The assignment for this week (3/30) is to merge the data, try to describe it, and run some sanity checks.
ii. **DO NOT SHARE these data with anyone** under any circumstances without mine and the vendor's explicit permission. I have signed an NDA agreement and I have a verbal permission from the owners to share the data with you, but not with anyone outside of PSU.
iii. This assignment doesn't really have any "right answer". I've tested several hypotheses for trading strategies and found some interesting stuff, but none of the results struck me as strong enough to write a paper. If you find anything here, you are more than welcome to use that as a paper for the class and ideally as a chapter of your dissertation.

Presentation/Referee Report Paper:

1. Jack Favilukis and Terry Zhang, 2022, Why momentum concentrates among overvalued stocks
   - Presenter: Haowei; Discussant: Liu

Required Readings:

1. De Bondt and Thaler, 1985, Does the Stock Market Overreact? Journal of Finance 40, 793-805.
2. Narasimhan Jegadeesh and Sheridan Titman 2011, Momentum, Annual Review of Financial Economics 3, 493-509.
3. Asness, Moskowitz, and Pedersen, 2013, Value and Momentum Everywhere, Journal of Finance 68, 929-985.
4. Novy-Marx, R., 2012, Is momentum really momentum?, Journal of Financial Economics, 103 (3), 429-453
5. Moskowitz, T., & Grinblatt, M. (1999). Do Industries Explain Momentum? The Journal of Finance, 54(4), 1249-1290.

Relevant Readings:

1. Jegadeesh, N. (1990), Evidence of Predictable Behavior of Security Returns. The Journal of Finance, 45: 881-898.
2. Jegadeesh, N. and Titman, S. (1993), Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. The Journal of Finance, 48: 65-91.
3. Novy-Marx, Robert, 2015, Fundamentally, momentum is fundamental momentum, Working paper.
4. Daniel, Kent, and Tobias Moskowitz, 2016, "Momentum Crashes," Journal of Financial Economics 122, 221–247.
5. Cooper Michael, Roberto Gutierrez, and Allaudeen Hameed, 2004, "Market states and momentum," Journal of Finance 59, 1345–1365

6. Chan, L. K., N. Jegadeesh, and J. Lakonishok (1996). Momentum strategies. The Journal of Finance 51(5), 1681–1713.
7. Johnson, T. C., 2002. Rational momentum effects. Journal of Finance 57: 585-608.
8. Liu, L., and L. Zhang. 2008. Momentum profits, factor pricing and macroeconomic risk. Review of Financial Studies 21: 2417-48
9. Sadka R., 2006. Momentum and post-earnings-announcement drift anomalies: the role of liquidity risk. Journal of Financial Economics 80: 309-49.
10. Sagi, J., and M. Seasholes. 2007. Firm-specific attributes and the cross-section of momentum. Journal of Financial Economics 84: 389-434.
11. Cohen, L., K. Diether, and C. Malloy (2013a). Legislating stock prices. Journal of Financial Economics 110, 574–595.
12. Cohen, L., K. Diether, and C. Malloy (2013b). Misvaluing innovation. Review of Financial Studies 26, 635–666.
13. Cohen, L. and A. Frazzini (2008). Economic links and predictable returns. Journal of Finance 63, 1977–2011.
14. Cohen, L. and D. Lou (2012). Complicated firms. Journal of Financial Economics 104, 383–400.
15. Cohen, L., C. Malloy, and L. Pomorski (2012). Decoding inside information. Journal of Finance 67, 1009–1043.
16. Hirshleifer, D. and S. H. Teoh (2003). Limited attention, information disclosure, and financial reporting. Journal of Accounting and Economics 36, 337–386.
17. Hou, K. (2007). Industry information diffusion and lead-lag effect in stock returns. Review of Financial Studies 20, 1113–1138.
18. Korniotis, G. and A. Kumar (2013). State-level business cycles and local return predictability. Journal of Finance 68, 1037–1096.
19. Menzly, L. and O. Ozbas (2010). Market segmentation and cross-predictability of returns. Journal of Finance 65, 1555–1580.
20. Parsons, C., J. Sulaeman, and S. Titman (2017). Geographic momentum. Review of Financial Studies, Forthcoming

Week 4: April 6
Investment & Profitability; Factor wars

Data exercise:

1) Investigate the relation between value, profitability, and investment. Does it matter how you measure these? You can look at, for example:
    a. Annual vs quarterly rebalancing for the accounting variables
    b. ROE (as in Lu Zhang's papers) vs profitability
    c. For profitability, you can compare gross (Novy-Marx, 2013) vs operating (Fama-French, 2013) vs cash (Linnainmaa et al. 2016; Fama and French, 2018) profitability measures
    d. For book-to-market, you can compare annual updating of the market capitalization (Fama and French, 1993) vs monthly updating (Asness and Frazzini, 2013)
    e. For investment, you can compare asset growth (Cooper et al., 2008), investment (Chen et al, 2010), and net issuance (e.g., Fama and French, 2008)
2) Search for an anomaly using the government-receivables dataset. Get creative. What signals could be useful to predict cross-sectional returns?
    a. For the best trading strategy you can find, I want you to submit, at the very least, a table with these results:

Table 2: Time-Series Regressions
This table reports average excess returns, alphas, and Fama and French (2015) five-factor model loadings for portfolios sorted on oil-response forecasts. At the end of each quarter, we sort stocks into five portfolios based on their oil-response forecast using NYSE breakpoints. Equation 1 shows how to calculate oil-response forecast. Panel A reports average value-weighted quintile portfolio (L,2,3,4,H) returns in excess of the risk-free rate, the long-short extreme quintile portfolio (H-L) return, and alphas with respect to the CAPM, Fama and French (1993) three-factor model, Fama and French (1993) three-factor model augmented with the Carhart (1997) momentum factor, and Fama and French (2015) five-factor model. Panel B reports the factor loadings for the quintile portfolios and long-short extreme quintile portfolio in the Fama and French (2015) five-factor model. T-statistics are in brackets. The sample period is 01/1975 to 12/2017.

Panel A: Excess returns and alphas on oil-response forecast-sorted portfolios						
	(L)	(2)	(3)	(4)	(H)	(H-L)
r^e	0.50	0.55	0.54	0.69	0.96	0.46
	[2.25]	[3.09]	[3.24]	[3.85]	[4.29]	[3.69]
α^{CAPM}	-0.22	-0.02	0.00	0.12	0.25	0.47
	[-2.33]	[-0.27]	[0.03]	[1.42]	[2.39]	[3.71]
α^{FF3}	-0.22	-0.03	-0.02	0.08	0.22	0.44
	[-2.30]	[-0.32]	[-0.26]	[1.10]	[2.07]	[3.43]
$\alpha^{FF3+UMD}$	-0.18	-0.04	-0.02	0.13	0.35	0.53
	[-1.85]	[-0.53]	[-0.30]	[1.76]	[3.41]	[4.12]
α^{FF5}	-0.15	-0.09	-0.12	0.01	0.33	0.48
	[-1.51]	[-1.15]	[-1.66]	[0.12]	[3.10]	[3.63]
Panel B: Fama and French (2015) 5-factor model loadings for oil-response forecast-sorted portfolios						
β_{MKT}	1.03	0.89	0.86	0.90	0.99	-0.04
	[42.70]	[45.60]	[49.92]	[48.26]	[38.06]	[-1.10]
β_{SMB}	-0.08	-0.15	-0.15	-0.18	0.00	0.08
	[-2.19]	[-5.15]	[-5.87]	[-6.58]	[0.05]	[1.68]
β_{HML}	0.09	0.03	0.05	0.11	0.18	0.10
	[1.97]	[0.75]	[1.49]	[3.30]	[3.85]	[1.65]
β_{RMW}	-0.11	0.09	0.14	0.10	-0.14	-0.03
	[-2.40]	[2.50]	[4.43]	[2.96]	[-2.77]	[-0.45]
β_{CMA}	-0.13	0.11	0.16	0.10	-0.27	-0.14
	[-1.91]	[1.92]	[3.18]	[1.94]	[-3.61]	[-1.49]

The table doesn't have to necessarily have a quintile sort, but what I want is the average returns and all the alphas & loadings on the 5- or 6- factor model for your best strategy. If you can't find anything that yields significant returns, that's ok.

b. You still need to explain what signal you used and why you thought that signal should predict returns. As the most basic example, you could sort on the raw forward-looking government receivables. However, since larger firms are likely to have more and larger contracts, this sort would really act like a size sort and would not be very meaningful. Thus, you might want to scale the receivables or do some other transformation based on the descriptive analysis you did for the previous homework.

Presentation/Referee Report Paper:

1. Pat Akey, Adriana Robertson and Mikhail Simutin, 2021, Noisy Factors
   - Presenter: Liu; Discussant: Jennifer

Required Readings:

1. Zhang, Lu, 2005, Anomalies, NBER Working Paper 11322
2. Cooper, Gulen, and Schill, 2008. Asset Growth and the Cross-Section of Stock Returns, Journal of Finance 63, 1609-1651.
3. Novy-Marx, Robert, 2013. The Other Side of Value: The Gross Profitability Premium, Journal of Financial Economics 108(1), 1-28.
4. Hue, Xue, and Zhang, 2015. Digesting Anomalies: An Investment Approach. Review of Financial Studies (2015) 28 (3): 650-705.
5. Fama, Eugene F., and Kenneth R. French, 2015. A five-factor asset pricing model. Journal of Financial Economics 116(1), 1-22.
6. Francisco Barillas, Jay Shanken (2018), Comparing Asset Pricing Models. The Journal of Finance, 73: 715-754.
7. Detzel, Andrew, Robert Novy-Marx, and Mihail Velikov, 2021, Model Selection with Transaction Costs, Working Paper

Relevant Readings:

1. Cochrane, J.H. (1991), Production-Based Asset Pricing and the Link Between Stock Returns and Economic Fluctuations. The Journal of Finance, 46: 209-237
2. Cochrane, John, (1996), A Cross-Sectional Test of an Investment-Based Asset Pricing Model, Journal of Political Economy, 104, issue 3, p. 572-621.
3. Anderson, Christopher W., and Luis Garcia-Feijóo. "Empirical Evidence on Capital Investment, Growth Options, and Security Returns." The Journal of Finance, vol. 61, no. 1, 2006, pp. 171–194.
4. Yuhang Xing, Interpreting the Value Effect Through the Q-Theory: An Empirical Investigation, The Review of Financial Studies, Volume 21, Issue 4, July 2008, Pages 1767–1795
5. Titman, S., Wei, K., & Xie, F. (2004). Capital Investments and Stock Returns. The Journal of Financial and Quantitative Analysis, 39(4), 677-700.

6. Lyandres, E., L. Sun, and L. Zhang. 2008. Investment-based underperformance following seasoned equity offerings. Review of Financial Studies 21:2825–55.
7. Pontiff, J. and Woodgate, A. (2008), Share Issuance and Cross-sectional Returns. The Journal of Finance, 63: 921-945
8. Ball, Ray, Gerakos, Joseph, Linnainmaa, Juhani T. and Nikolaev, Valeri V., (2015), Deflating profitability, Journal of Financial Economics, 117, issue 2, p. 225-248.
9. Fama, Eugene F., and Kenneth R. French 2006, Dissecting Anomalies, Journal of Finance 63 (4) 1653-1678.
10. Fama, Eugene and Kenneth R. French, 2016, Dissecting Anomalies with a Five-Factor Model, Review of Financial Studies 29 (1): 69-103
11. Fama, Eugene and Kenneth R. French, 2018, Choosing Factors, Journal of Financial Economics 128(2): 234-252
12. Fama, Eugene and Kenneth R. French, 2017, International Tests of a Five-Factor Asset Pricing Model, Journal of Financial Economics 123 (3) 441-463
13. Fama, Eugene and Kenneth R. French, 2015, Incremental Variables and the Investment Opportunity Set, Journal of Financial Economics 117 (3) 470-488
14. Fama, Eugene and Kenneth R. French, 2019, Comparing Cross-Section and Time-Series Factor Models, Review of Financial Studies, Forthcoming
15. Asness, Clifford and Andrea Frazzini, 2013, The devil in HML's details, Journal of Portfolio Management 39 (4), 49-68
16. Li, Erica X. N., Dmitry Livdan, and Lu Zhang, 2009, Anomalies, Review of Financial Studies 22 (11), 4301-4334.
17. Liu, Laura Xiaolei, Toni M. Whited, and Lu Zhang, Investment-based expected stock returns, Journal of Political Economy 117 (6), 1105-1139
18. Chen, L., R. Novy-Marx, and L. Zhang. 2010. An alternative three-factor model, Working Paper.
19. Zhang, Lu, 2016, Factors war, Tsinghua Financial Review 37, 101-104
20. Zhang, Lu, 2017, The investment CAPM, European Financial Management 23 (4), 545-603.
21. Hou, Kewei, Haitao Mo, Chen Xue, and Lu Zhang, 2019, Which factors? Review of Finance 23 (1), 1-35.
22. Zhang, Lu, 2020, q-factors and investment CAPM, Oxford Research Encyclopedia of Economics and Finance, Forthcoming
23. Hou, Kewei, Haitao Mo, Chen Xue, and Lu Zhang, 2020, An augmented q-factor model with expected growth, Review of Finance, Forthcoming
24. Pastor, Lubos and Stambaugh, Robert, (2003), Liquidity Risk and Expected Stock Returns, Journal of Political Economy, 111, issue 3, p. 642-685.
25. Robert F. Stambaugh, Yu Yuan, Mispricing Factors, The Review of Financial Studies, Volume 30, Issue 4, April 2017, Pages 1270–1315,
26. Kogan, Leonid and Tian, Mary H., Firm Characteristics and Empirical Factor Models: A Data-Mining Experiment (2012). FRB International Finance Discussion Paper No. 1070.
27. Francisco Barillas, Jay Shanken, Which Alpha?, The Review of Financial Studies, Volume 30, Issue 4, April 2017, Pages 1316–1338
28. Kozah, Serhiy, Stefan Nagel, and Shrihari Santosh (2018), Interpreting Factor Models. The Journal of Finance, 73: 1183-1223

Week 5: April 13
Liquidity and FOMC announcements

Data exercise:

1) Pick one of the following tables from the three papers below to replicate. These papers are the three most cited papers on liquidity. The Critical Finance Review did a special replication issue for them. Take a look at those replication papers if you're struggling with your replication.
    a. Table 2 from Amihud (2002)
    b. Table 7 from Pastor and Stambaugh (2003)
    c. Table 4 from Acharya and Pedersen (2005)
2) Pick one of the following to replicate:
    a. Table 2, Panel A from Savor and Wilson (2013)
    b. Figure 1 from Savor and Wilson (2014)
    c. Figure 1 from Lucca and Moench (2015)

Presentation/Referee Report Paper:
1. Aditya Chaudhry, 2022, The Causal Impact of Macroeconomic Uncertainty on Expected Returns

- Presenter: Yifan; Discussant: Haowei

Required Readings:

1. CLM Chapter 3
2. Roll, R. 1985.A simple implicit measure of the effective bid-ask spread in an efficient market. Journal of Finance 39:1127–39
3. One of :
    a. Acharya, V. V. and L. H. Pedersen. 2005. "Asset Pricing with Liquidity Risk." Journal of Financial Economics. 77: 375–410.
    b. Amihud, Y. 2002. "Illiquidity and Stock Returns: Cross-Section and Time-Series Effects." Journal of Financial Markets. 5: 31–56.
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    a. Focus on Chapter 3 (Empirical Evidence) & equity piece in particular
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9. Amihud, Y., H. Mendelson, and R. Wood (1990), 'Liquidity and the 1987 stock market crash'. Journal of Portfolio Management 16, 65–69.
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11. Michael J. Brennan, Avanidhar Subrahmanyam, 1996, Market microstructure and asset pricing: On the compensation for illiquidity in stock returns, Journal of Financial Economics, 41 (3), 441-464,
12. Eleswarapu, V. R. (1997), 'Cost of transacting and expected returns in the Nasdaq market'. Journal of Finance 52, 2113–2127.
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29. Acharya, V. V. and L. H. Pedersen. 2019. "Economics with Market Liquidity Risk." Critical Finance Review. 8: 111–125.
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31. Drienko, J., T. Smith, and A. von Reibnitz. 2019. "A Review of the Return-Illiquidity Relationship." Critical Finance Review. 8: 127–171.
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35. Pástor, L. and R. F. Stambaugh. 2019. "Liquidity Risk After 20 Years." Critical Finance Review. 8: 277–299.
36. Li, H., R. Novy-Marx, and M. Velikov. 2019. "Liquidity Risk and Asset Pricing." Critical Finance Review. 8: 223–255.
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39. Anna Cieslak, Annette Vissing-Jorgensen, The Economics of the Fed Put, The Review of Financial Studies, Volume 34, Issue 9, September 2021, Pages 4045–4089, https://doi.org/10.1093/rfs/hhaa116

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45. Bernile, G., Hu, J., & Tang, Y. (2016). Can information be locked up? Informed trading ahead of macro-news announcements. Journal of Financial Economics, 121(3), 496-520.
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47. Kurov, A., Sancetta, A., Strasser, G., & Wolfe, M. H. (2019). Price drift before US macroeconomic news: Private information about public announcements?. Journal of Financial and Quantitative Analysis, 54(1), 449-479.
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53. Kroencke, T. A., Schmeling, M., & Schrimpf, A. (2021). The FOMC risk shift. Journal of Monetary Economics, 120, 21-39.
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56. Ozdagli, A., & Weber, M. (2017). Monetary policy through production networks: Evidence from the stock market (No. w23424). National Bureau of Economic Research.
57. Neuhierl, A., & Weber, M. (2019). Monetary policy communication, policy slope, and the stock market. Journal of Monetary Economics, 108, 140-155.
58. Ai, H., Han, L. J., Pan, X. N., & Xu, L. (2022). The cross section of the monetary policy announcement premium. Journal of Financial Economics, 143(1), 247-276.
59. Bradley, D., Finer, D. A., Gustafson, M., & Williams, J. (2020). When bankers go to hail: Insights into Fed-bank interactions from taxi data. Available at SSRN 3141240.
60. Chen, Z. (2022). Inferring Stock Duration Around FOMC Surprises: Estimates and Implications. Journal of Financial and Quantitative Analysis, 57(2), 669-703.

Week 6: April 20
Transaction Costs (& Defensive Equity)

Data exercise:

1) Pick one of the following figures to replicate. Each of these plots an effective spread estimate in the respective paper. All of these are used in the composite trading cost measure in Chen and Velikov (2020) and (optionally) created by the cookbook.
    a. Figure 3 from Hasbrouck (2009)
    b. Figure 2 from Corwin and Schultz (2012)
    c. Figure 8 from Abdi and Ranaldo (2017)
2) Try to replicate the gross and net returns to three anomaly strategies (pick whichever three you want) from Table 3 in Novy-Marx and Velikov (2016) with whichever trading cost measure you want (look at the cookbook trading costs code for hints).

Presentation/Referee Report Paper:
1. Sicong (Allen) Li, Victor DeMiguel, and Alberto Martin-Utrera, 2022, Which Factors with Price-Impact Costs?

- Presenter: Jennifer; Discussant: Yifan

Required Readings:

1. D. Keim, A. Madhavan, 1998. The cost of institutional equity trades, Financial Analyst Journal, 54, pp. 50-69
2. Hasbrouck, J. 2009. Trading costs and returns for U.S. equities: Estimating effective costs from daily data. Journal of Finance 64:1446–77.
3. Robert Novy-Marx, Mihail Velikov, A Taxonomy of Anomalies and Their Trading Costs, The Review of Financial Studies, Volume 29, Issue 1, January 2016, Pages 104–147
4. Chen, Andrew and Mihail Velikov, Accounting for the Anomaly Zoo: A Trading Cost Perspective, Journal of Financial and Quantitative Analysis, Forthcoming
5. Ang, A., Hodrick, R., Xing, Y., Zhang, X., 2006. The cross-section of volatility and expected returns. Journal of Finance 61, 259–299.

Relevant Readings:

1. Constantinides, G. M. (1986), 'Capital market equilibrium with transaction costs'. Journal of Political Economy 94, 842–862
2. Chen, Z., M.Watanabe, and W. Stanzl. 2005. Price impact costs and the limit of arbitrage, Working Paper.
3. Davis, M., and A. Norman. 1990. Portfolio selection with transaction costs. Mathematics of Operations Research 15:676–713.
4. Engle, R., R. Festenberg, and J. Russel. 2012. Measuring and modeling execution cost and risk. Journal of Portfolio Management 38:14–28.

5. Frazzini, A., R. Israel, and T. Moskowitz. 2015. Trading costs of asset pricing anomalies. Working Paper.
6. Grinblatt, M., and S. Titman. 1989. Portfolio performance evaluation: Old issues and new insights. Review of Financial Studies 2:393–416.
7. Hanna, J. D., and M. J. Ready. 2005. Profitable predictability in the cross section of stock returns. Journal of Financial Economics 78:463–505.
8. Keim, D. B., and A. Madhavan. 1997. Execution costs and investment style: an interexchange analysis of institutional equity trades. Journal of Financial Economics 46:265–92.
9. Korajczyk, R. A., and R. Sadka. 2004. Are momentum profits robust to trading costs? Journal of Finance 59:1039–82.
10. Lesmond, D. A., M. J. Schill, and C. Zhou. 2004. The illusory nature of momentum profits. Journal of Financial Economics 71:349–80.
11. Corwin, S.A. and Schultz, P. (2012), A Simple Way to Estimate Bid-Ask Spreads from Daily High and Low Prices. The Journal of Finance, 67: 719-760
12. Farshid Abdi, Angelo Ranaldo, 2017. A Simple Estimation of Bid-Ask Spreads from Daily Close, High, and Low Prices, The Review of Financial Studies, Volume 30, Issue 12, Pages 4437–4480,
13. DeMiguel, Victor and Martin-Utrera, Alberto and Nogales, Francisco J. and Uppal, Raman, 2019, A Transaction-Cost Perspective on the Multitude of Firm Characteristics, Review of Financial Studies, Forthcoming
14. Patton, Andrew and Brian Weller, 2019, What you see is not what you get: The costs of trading market anomalies, Journal of Financial Economics, Forthcoming
15. Black, Fischer, Capital Market Equilibrium with Restricted Borrowing, The Journal of Business, 1972, vol. 45, issue 3, 444-55
16. Frazzini, Andrea, and Lasse Pedersen, 2014. "Betting Against Beta," Journal of Financial Economics 111 (1), 1–25
17. Novy-Marx, Robert, and Mihail Velikov, 2022. "Betting Against Betting Against Beta," Journal of Financial Economics 143 (1), 80-106
18. Ang, A., Hodrick, R., Xing, Y., Zhang, X., 2006. The cross-section of volatility and expected returns. Journal of Finance 61, 259–299.
18. Bali, Turan G., Cakici, Nusret and Whitelaw, Robert F., (2011), Maxing out: Stocks as lotteries and the cross-section of expected returns, Journal of Financial Economics, 99, issue 2, p. 427-446.
19. Black, Fischer, 1993, Beta and Return, Journal of Portfolio Management 20, 8-18
20. Campbell, John, Martin Lettau, Burton Malkiel and Yexiao Xu, 2001, Have individual stocks become more volatile? An empirical exploration of idiosyncratic risk, Journal of Finance 56, 1-43.
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24. Blitz, D., Van Vliet, P., 2007. The volatility effect: Lower risk without lower return. Journal of Portfolio Management, 102–113

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26. Charles Cao, Timothy Simin, Jing Zhao, Can Growth Options Explain the Trend in Idiosyncratic Risk?, The Review of Financial Studies, Volume 21, Issue 6, November 2008, Pages 2599–2633
27. Bali, T., Brown, S., Murray, S., & Tang, Y. (2017). A Lottery-Demand-Based Explanation of the Beta Anomaly. Journal of Financial and Quantitative Analysis, 52(6), 2369-2397
28. Asness, Cliff & Frazzini, Andrea & Gormsen, Niels & Pedersen, Lasse. (2019). Betting against correlation: Testing theories of the low-risk effect. Journal of Financial Economics. 135.

Week 7: April 27
Skeptical evaluations and making sense of the anomaly zoo

Data exercise:

1) No data exercise this week.

Presentation/Referee Report Paper:

1. Alejandro Lopez-Lira1, Nikolai Roussanov, 2022, Do Common Factors Really Explain the Cross-Section of Stock Returns?
   - Presenter: Spencer; Discussant: Qiang

Required Readings:

1. Fama, Eugene F., and Kenneth R. French 2006, Dissecting Anomalies, Journal of Finance 63 (4) 1653-1678.
2. Campbell R. Harvey, Yan Liu, Heqing Zhu, … and the Cross-Section of Expected Returns, The Review of Financial Studies, Volume 29, Issue 1, January 2016, Pages 5
3. McLean, R. David and Jeffrey Pontiffs (2016), Does Academic Research Destroy Stock Return Predictability?. The Journal of Finance, 71: 5-32
4. Chen, Andrew Y. and Zimmermann, Tom, 2020, Publication Bias and the Cross-Section of Stock Returns, Review of Asset Pricing Studies, Forthcoming
5. Michael W. Brandt, Pedro Santa-Clara, Rossen Valkanov, Parametric Portfolio Policies: Exploiting Characteristics in the Cross-Section of Equity Returns, The Review of Financial Studies, Volume 22, Issue 9, September 2009, Pages 3411–3447
6. Novy-Marx, R. 2016. Backtesting strategies based on multiple signals. Working paper.

Relevant Readings:

1. Schwert, W. 2003. Anomalies and market efficiency. In Handbook of the economics of finance, vol. 1B, eds. Constantinides G. M., Harris M., and Stulz R. M., 939–74.
2. Huang, Jing-Zhi and Zhijian James Huang. 2013. “Real-Time Profitability of Published

Anomalies: An Out-of-Sample Test". Quarterly Journal of Finance 3.
3. Hou, Kewei, Chen Xue, and Lu Zhang, 2019, Replicating anomalies, Review of Financial Studies, Forthcoming
4. Serhiy Kozak, Stefan Nagel, Shrihari Santosh, 2020, Shrinking the cross-section, Journal of Financial Economics, Volume 135, Issue 2
5. Joachim Freyberger, Andreas Neuhierl, and Michael Weber, 2018. Dissecting Characteristics Nonparametrically, Review of Financial Studies, Forthcoming
6. Light, N., Maslov, D., Rytchkov, O. 2017. Aggregation of information about the cross section of stock returns. Review of Financial Studies, 30, 1339–1381.
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9. Shihao Gu, Bryan Kelly, Dacheng Xiu, 2019, Empirical Asset Pricing via Machine Learning, The Review of Financial Studies, Forthcoming
10. Feng, Guanhao, Stefano Giglio, and Dacheng Xiu (2020), Taming the Factor Zoo: A Test of New Factors. The Journal of Finance, Forthcoming
11. Tarun Chordia, Amit Goyal, Alessio Saretto, 2020, Anomalies and False Rejections, The Review of Financial Studies, Forthcoming
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13. Martin, I., and Nagel S.. (2019). Market efficiency in the age of big data. Working Paper, London School of Economics.
14. Harvey, C., and Liu Y.. (2019). False (and missed) discoveries in financial economics. Journal of Finance
15. Chen, A. 2019. Do t-stat hurdles need to be raised? Identification of publication bias in the cross-section of stock returns. Working Paper, Federal Reserve Board.
16. Chen, A. 2019, The Limits of P-Hacking: a Thought Experiment, Working Paper, Federal Reserve Board
17. DeMiguel, Victor and Martin-Utrera, Alberto and Nogales, Francisco J. and Uppal, Raman, 2019, A Transaction-Cost Perspective on the Multitude of Firm Characteristics, Review of Financial Studies, Forthcoming
18. Yan, X., and Zheng L.. (2017). Fundamental analysis and the cross-section of stock returns: A data-mining approach. Review of Financial Studies 30:1382–423.
19. Heiko Jacobs, Sebastian Müller, 2020, Anomalies across the globe: Once public, no longer existent?, Journal of Financial Economics, 135 (1), 213-230,
20. Chordia, Tarun, Subrahmanyam, Avanidhar, and Tong, Qing, 2014. "Have capital market anomalies attenuated in the recent era of high liquidity and trading activity?," Journal of Accounting and Economics, 58(1), 41-58.
21. Benjamin, D.J., Berger, J.O., Johannesson, M. et al. 2018. Redefine statistical significance. Nature Human Behaviour 2, 6–10.
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23. Engelberg, J., McLean, R.D. and Pontiff, J. (2018), Anomalies and News. Journal of Finance, 73: 1971-2001