

ASSET MANAGEMENT AND QUANTITATIVE INVESTMENT 2025: PROJECT

KE WU

This project accounts for 30% of your final grade. You should work in groups and a common grade will be assigned to each group. The project asks you to construct a trading strategy based on one or multiple market anomalies using portfolio sorting or regression approaches, report its average return, standard deviation, t-statistics, Sharpe ratio, information coefficient, maximum drawdown, or other related statistics you think are important, and to evaluate its abnormal performance against classical factor models, such as [Liu, Stambaugh, and Yuan \(2019\)](#)'s CH-3 or CH-4 factor models. Both equal- and value-weighting schemes should be reported.

Below I list some well-known anomalies and related papers for your reference. The main objective is to get you familiar with financial data and apply empirical methods you learned to conduct investment research.

The group presentation is scheduled on Dec 8 and Dec 15, 2025. After the in-class presentation, each group is required to turn in your presentation slides, programming codes, and a document that discusses your strategy and its performance.

RESEARCH TOPICS AND PAPERS

I provide a sample Chinese stock market data (in Stata format) with several firm characteristics that matched to the stock return variable following conventions of Fama and French (1992). The data set contains 13 variables and is organized in monthly frequency. The variable definition is as follows:

stkcd: Chinese A share stock ID number

year, month: year and month stock returns are recorded

ret: monthly stock excess returns

size: market capitalization in thousands of RMB

r11: 12-2 month momentum

bm: book-to-market ratio

ep: earnings-to-price ratio

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roe: return on equity

ivff: idiosyncratic volatility based on the FF 3-factor model

beta: CAPM beta

tur: monthly turnover ratio

srev: short-term reversal (t-1 monthly return)

The sample period is from 2001 to 2010. You may construct your investment strategy based on this data set or use GTA CSMAR, Wind, or RESSET databases (or any other available data source) to extend the sample period and add in more variables. You may also construct your own data using difference time frequency.

(1) Systematic and Idiosyncratic Risks

(a) Idiosyncratic Volatility Puzzle

[Ang et al. \(2006\)](#); [Ang et al. \(2009\)](#); [Fu \(2009\)](#); [Huang et al. \(2010\)](#); [Hou and Loh \(2016\)](#); [Li, Sullivan, and Garcia-Feijoo \(2016\)](#); [Rachwalski and Wen \(2016\)](#)

(b) Betting Against Beta Anomaly

[Fama and French \(1992\)](#); [Frazzini and Pedersen \(2014\)](#); [Cederburg and O'Doherty \(2016\)](#); [Bali et al. \(2018\)](#); [Liu, Stambaugh, and Yuan \(2018\)](#)

(c) Estimation of Systematic Risk

[Avramov and Chordia \(2006\)](#); [Lewellen and Nagel \(2006\)](#); [Cosemans et al. \(2016\)](#)

(d) Factor Models

[Fama and French \(1996\)](#); [Hou, Xue, and Zhang \(2015\)](#); [Fama and French \(2015\)](#); [Fama and French \(2016\)](#); [Fama and French \(2018\)](#); [Hou et al. \(2019\)](#)

(2) Firm Characteristics and Expected Stock Returns

(a) High-order Moments

[Harvey and Siddique \(2000\)](#); [Chen, Hong, and Stein \(2001\)](#); [Mitton and Vorkink \(2007\)](#); [Boyer, Mitton, and Vorkink \(2010\)](#); [Amaya et al. \(2015\)](#); [Dittmar \(2002\)](#); [Langlois \(2020\)](#); [Jondeau and Zhang \(2019\)](#)

(b) Momentum and Reversals

[Jegadeesh \(1990\)](#); [Jegadeesh and Titman \(1993\)](#); [Moskowitz, Ooi, and Pedersen \(2012\)](#); [Asness, Moskowitz, and Pedersen \(2013\)](#); [Daniel and Moskowitz \(2016\)](#); [Gao et al. \(2018\)](#); [Lo and MacKinlay \(1990\)](#)

(c) Lottery Preference Related Anomaly

Bali, Cakici, and Whitelaw (2011); Conrad, Kapadia, and Xing (2014)

(d) Machine Learning Methods

- Lewellen (2015); Green, Hand, and Zhang (2017); Giglio and Xiu (2019)
- Kelly, Pruitt, and Su (2017); Kelly, Pruitt, and Su (2019); Kozak, Nagel, and Santosh (2018); Kozak, Nagel, and Santosh (2020); Feng, Giglio, and Xiu (2020)
- Ao, Li, and Zheng (2018); DeMiguel et al. (2019)
- Han et al. (2018); Freyberger, Neuhierl, and Weber (2020); Gu, Kelly, and Xiu (2020)
- Chen, Pelger, and Zhu (2019)

(3) Other recent asset pricing papers published in Chinese top Fin/Econ journals.

REFERENCES

- Amaya, D., P. Christoffersen, K. Jacobs, and A. Vasquez. 2015. Does realized skewness predict the cross-section of equity returns? *Journal of Financial Economics* 118:135–67.
- Ang, A., R. J. Hodrick, Y. Xing, and X. Zhang. 2006. The cross-section of volatility and expected returns. *The Journal of Finance* 61:259–99.
- . 2009. High idiosyncratic volatility and low returns: International and further US evidence. *Journal of Financial Economics* 91:1–23.
- Ao, M., Y. Li, and X. Zheng. 2018. Approaching Mean-Variance Efficiency for Large Portfolios. *Review of Financial Studies* forthcoming.
- Asness, C. S., T. J. Moskowitz, and L. H. Pedersen. 2013. Value and momentum everywhere. *The Journal of Finance* 68:929–85.
- Avramov, D., and T. Chordia. 2006. Asset pricing models and financial market anomalies. *Review of Financial Studies* 19:1001–40.
- Bali, T. G., S. Brown, S. Murray, and Y. Tang. 2018. A lottery demand-based explanation of the beta anomaly. *Journal of Financial and Quantitative Analysis* forthcoming.
- Bali, T. G., N. Cakici, and R. F. Whitelaw. 2011. Maxing out: Stocks as lotteries and the cross-section of expected returns. *Journal of Financial Economics* 99:427–46.
- Boyer, B., T. Mitton, and K. Vorkink. 2010. Expected idiosyncratic skewness. *The Review of Financial Studies* 23:169–202.

- Cederburg, S., and M. S. O'Doherty. 2016. Does it pay to bet against beta? on the conditional performance of the beta anomaly. *The Journal of Finance* 71:737–74.
- Chen, J., H. Hong, and J. C. Stein. 2001. Forecasting crashes: Trading volume, past returns, and conditional skewness in stock prices. *Journal of financial Economics* 61:345–81.
- Chen, L., M. Pelger, and J. Zhu. 2019. Deep learning in asset pricing. *Available at SSRN 3350138* .
- Conrad, J., N. Kapadia, and Y. Xing. 2014. Death and jackpot: Why do individual investors hold overpriced stocks? *Journal of Financial Economics* 113:455–75.
- Cosemans, M., R. Frehen, P. C. Schotman, and R. Bauer. 2016. Estimating Security Betas Using Prior Information Based on Firm Fundamentals. *Review of Financial Studies* 29:1072–112.
- Daniel, K., and T. J. Moskowitz. 2016. Momentum crashes. *Journal of Financial Economics* 122:221–47.
- DeMiguel, V., A. Martin-Utrera, F. J. Nogales, and R. Uppal. 2019. A transaction-cost perspective on the multitude of firm characteristics. *Available at SSRN 2912819* .
- Dittmar, R. F. 2002. Nonlinear pricing kernels, kurtosis preference, and evidence from the cross section of equity returns. *The Journal of Finance* 57:369–403.
- Fama, E. F., and K. R. French. 1992. The cross-section of expected stock returns. *the Journal of Finance* 47:427–65.
- . 1996. Multifactor explanations of asset pricing anomalies. *The Journal of Finance* 51:55–84.
- . 2015. A five-factor asset pricing model. *Journal of Financial Economics* 116:1–22.
- . 2016. Dissecting anomalies with a five-factor model. *Review of Financial Studies* 29:69–103.
- . 2018. Choosing factors. *Journal of Financial Economics* 128:234–52.
- Feng, G., S. Giglio, and D. Xiu. 2020. Taming the factor zoo: A test of new factors. *The Journal of Finance* 75:1327–70.
- Frazzini, A., and L. H. Pedersen. 2014. Betting against beta. *Journal of Financial Economics* 111:1–25.
- Freyberger, J., A. Neuhierl, and M. Weber. 2020. Dissecting characteristics nonparametrically. *The Review of Financial Studies* 33:2326–77.
- Fu, F. 2009. Idiosyncratic risk and the cross-section of expected stock returns. *Journal of Financial Economics* 91:24–37.

- Gao, L., Y. Han, S. Z. Li, and G. Zhou. 2018. Market intraday momentum. *Journal of Financial Economics* 129:394–414.
- Giglio, S., and D. Xiu. 2019. Asset pricing with omitted factors. *Chicago Booth Research Paper* .
- Green, J., J. R. Hand, and X. F. Zhang. 2017. The characteristics that provide independent information about average us monthly stock returns. *The Review of Financial Studies* 30:4389–436.
- Gu, S., B. Kelly, and D. Xiu. 2020. Empirical asset pricing via machine learning. *The Review of Financial Studies* 33:2223–73.
- Han, Y., A. He, D. Rapach, and G. Zhou. 2018. What Firm Characteristics Drive US Stock Returns? *Available at SSRN 3185335* .
- Harvey, C. R., and A. Siddique. 2000. Conditional skewness in asset pricing tests. *The Journal of Finance* 55:1263–95.
- Hou, K., and R. K. Loh. 2016. Have we solved the idiosyncratic volatility puzzle? *Journal of Financial Economics* 121:167–94.
- Hou, K., H. Mo, C. Xue, and L. Zhang. 2019. Which factors? *Review of Finance* 23:1–35.
- Hou, K., C. Xue, and L. Zhang. 2015. Digesting Anomalies: An Investment Approach. *Review of Financial Studies* 28:650–705.
- Huang, W., Q. Liu, S. G. Rhee, L. Zhang, et al. 2010. Return Reversals, Idiosyncratic Risk, and Expected Returns. *The Review of Financial Studies* 23:147–68.
- Jegadeesh, N. 1990. Evidence of predictable behavior of security returns. *The Journal of Finance* 45:881–98.
- Jegadeesh, N., and S. Titman. 1993. Returns to buying winners and selling losers: Implications for stock market efficiency. *The Journal of Finance* 48:65–91.
- Jondeau, E., and Q. Zhang. 2019. Average Skewness Matters. *Journal of Financial Economics* 134:29–47.
- Kelly, B. T., S. Pruitt, and Y. Su. 2017. Instrumented principal component analysis. *Available at SSRN 2983919* .
- . 2019. Characteristics are covariances: A unified model of risk and return. *Journal of Financial Economics* 134:501–24.
- Kozak, S., S. Nagel, and S. Santosh. 2018. Interpreting factor models. *The Journal of Finance* .
- . 2020. Shrinking the cross-section. *Journal of Financial Economics* 135:271–92.

- Langlois, H. 2020. Measuring Skewness Premia. *Journal of Financial Economics* forthcoming.
- Lewellen, J. 2015. The Cross-section of Expected Stock Returns. *Critical Finance Review* 4:1–44.
- Lewellen, J., and S. Nagel. 2006. The conditional CAPM does not explain asset-pricing anomalies. *Journal of Financial Economics* 82:289–314.
- Li, X., R. N. Sullivan, and L. Garcia-Feijoo. 2016. The Low-Volatility Anomaly: Market Evidence on Systematic Risk vs. Mispricing. *Financial Analysts Journal* 72:36–47.
- Liu, J., R. F. Stambaugh, and Y. Yuan. 2018. Absolving Beta of Volatility’s Effects. *Journal of Financial Economics* forthcoming.
- . 2019. Size and Value in China. *Journal of Financial Economics* 134:48–69.
- Lo, A. W., and A. C. MacKinlay. 1990. When are contrarian profits due to stock market overreaction? *The Review of Financial Studies* 3:175–205.
- Mitton, T., and K. Vorkink. 2007. Equilibrium underdiversification and the preference for skewness. *Review of Financial Studies* 20:1255–88.
- Moskowitz, T. J., Y. H. Ooi, and L. H. Pedersen. 2012. Time series momentum. *Journal of Financial Economics* 104:228–50.
- Rachwalski, M., and Q. Wen. 2016. Idiosyncratic risk innovations and the idiosyncratic risk-return relation. *The Review of Asset Pricing Studies* 6:303–28.

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