

FIRN Corporate Finance Ph.D. Course
Finance, Intellectual Property (IP), and Sustainability
October 23, 24, 28, 2023

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Course Outline

This course aims to understand the role and impact of innovation activities and intellectual property (IP) in financial markets, manager decisions, and corporate operations. From an asset pricing perspective, the instructor will examine how financial market participants price various forms of technological innovation and intellectual property, such as R&D, patents, trademarks, innovation awards. From the perspective of corporate decisions, the instructor will discuss the determinants of country- and firm-level innovative capability and intellectual property development. In addition, the instructor plans to cover the role of corporate social responsibility, ESG, and green innovation in financial markets and corporate decisions. Finally, the instructor will share experience on research ideas, project choices, data collection, and empirical testing.

To enhance the learning experience and to facilitate the in-class discussion, students are strongly recommended to read all papers listed in each session before attending the lecture.

Session 1: Asset Pricing of IP

Monday, October 23. Lecture from 9am to 12pm and 1pm to 3pm; consultation office hour 3pm to 5pm

1.1 The pricing and expected returns of intellectual property

- Griliches, Z. (1981). Market value, R&D, and patents. *Economics letters*, 7(2), 183-187.
- Appendix B of Hsu, Po-Hsuan and Chaopeng, Wu, *Innovations, Intellectual Property Protection, and Financial Markets: Evidence from China* (July 29, 2010). Available at SSRN: <https://ssrn.com/abstract=1629331>
- Realized vs. expected returns
- Appendix of Hsu, Po-Hsuan, *Technological Innovation Spillovers and Stock Returns* (April 27, 2011). Available at SSRN: <https://ssrn.com/abstract=1458011>
- Expected returns: rational, behavioral, and information asymmetries

1.2 Aggregate-level pricing and return predictability

- Hsu, Po-Hsuan “Technological innovations and aggregate risk premiums,” *Journal of Financial Economics*, 94 (2), 264-279, November 2009.
- Hsu, Po-Hsuan, Huijun Wang and Wei Yang, “General purpose technologies as systematic risk in global stock markets” with *Journal of Money, Credit and*

Banking, 54(5), 1137-1564, August 2022.

- Hou, Kewei, Hsu, Po-Hsuan, Shiheng Wang, Akiko Watanabe, and Yan Xu, "Corporate R&D and stock returns: International evidence," *Journal of Financial and Quantitative Analysis*, 57(4), 1377-1408, June 2022.

1.3 Firm-level pricing and return predictability

- Hirshleifer, David, Po-Hsuan Hsu, and Dongmei Li "Innovative efficiency and stock returns," *Journal of Financial Economics*, 107 (3), 632-654, March 2013.
- Hirshleifer, David, Po-Hsuan Hsu, and Dongmei Li "Innovative originality, profitability, and stock returns," *Review of Financial Studies*, 31(7), 2553-2605, July 2018.
- Hsu, Po-Hsuan, Dongmei Li, Qin Li, Siew Hong Teoh, and Kevin Tseng, "Valuation of new trademarks," *Management Science*, 68(1):257-279, January 2022.
- Hsu, Po-Hsuan, Hsiao-Hui Lee and Tong Zhou "Patent thickets, stock returns, and conditional CAPM," *Management Science*, 68(11), 8343-8367, November 2022.
- Hsu, Po-Hsuan, Hsiao-Hui Lee, Alfred Zhu Liu, and Zhipeng Zhang, "Corporate innovation, default risk, and bond pricing," *Journal of Corporate Finance*, 35, 329-344, 2015.

1.4 Spillovers and other related topics

- Hsu, Po-Hsuan, *Technological Innovation Spillovers and Stock Returns* (April 27, 2011). Available at SSRN: <https://ssrn.com/abstract=1458011>
- Lee, C. M., Sun, S. T., Wang, R., & Zhang, R. (2019). Technological links and predictable returns. *Journal of Financial Economics*, 132(3), 76-96.
- What's next?

Session 2: IP in Corporate Decisions

Tuesday, October 24. Lecture 9am to 12pm and 1pm to 3pm; consultation office hour 3pm to 5pm

2.1 Identification using shocks

- Bhattacharya, Utpal, Po-Hsuan Hsu, Xuan Tian, and Yan Xu, "What affects innovation more: Policy or policy uncertainty?" *Journal of Financial and Quantitative Analysis*, 52 (5), 1869-1901, October 2017.
- Hsu, Po-Hsuan, Hsiao-Hui Lee, Shu-Cing Peng, and Long Yi, "Natural disasters, technology diversity, and operating performance," *Review of Economics and Statistics*, 100(4), 619-630, October 2018.

2.2 Policy evaluation: law and regulatory changes

- Gao, Huasheng, Hsu, Po-Hsuan, and Jin Zhang, "Pay transparency and inventor productivity: Evidence from state-level pay secrecy laws," https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3632849
- Hsu, Po-Hsuan, Yiqing Lu, Hong Wu and Yuhai Xuan, "Director job security and corporate innovation," *Journal of Financial and Quantitative Analysis*, forthcoming, 2022.
- Hsu, Po-Hsuan, I-Ju Chen and Yanzhi Wang, "Staggered boards and product innovations: Evidence from Massachusetts State Bill HB 5640," *Research*

Policy, 51(4), 104475, May 2022.

- Almeida, Heitor, Po-Hsuan Hsu, Dongmei Li, and Kevin Tseng, “More cash, less innovation: The effect of the American Jobs Creation Act on patent value,” *Journal of Financial and Quantitative Analysis*, 56(1), 1-28, February 2021 (lead article).
- Gao, Huasheng, Po-Hsuan Hsu, Kai Li (UBC), and Jin Zhang, “The real effect of smoking bans: Evidence from corporate innovation,” *Journal of Financial and Quantitative Analysis*, 55(2), 387-427, March 2020.
- Hsu, Po-Hsuan, Kyungran Lee, S. Katie Moon, and Seungjoon Oh, “Information disclosure and peer innovation: Evidence from mandatory reporting of clinical trials,”
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3459511

2.3 Other determinants of innovation and IP

- Bereskin, Frederick, Po-Hsuan Hsu, and Wendy Rotenberg, “The real effects of real earnings management: Evidence from innovation,” *Contemporary Accounting Research*, 35 (1), 525-557, March 2018.
- Gao, Huasheng, Hsu, Po-Hsuan, and Kai Li (UBC), “Innovation strategy of private firms,” *Journal of Financial and Quantitative Analysis*, 53 (1), 1-32, February 2018 (lead article).
- Mark P. Taylor, Zigan Wang, and Qi Xu, “Currency volatility and global technological innovation,” *Journal of International Economics*, 137, 103607, July 2022.
- Hsu, Po-Hsuan, Xuan Tian and Yan Xu, “Financial development and innovation: Cross-country evidence,” *Journal of Financial Economics*, 112 (1), 116-135, April 2014.

2.4 IP and innovation in China

- Hsu, David, Po-Hsuan Hsu and Qifeng Zhao, “Rich on paper? Chinese firms' academic publications, patents, and market value” *Research Policy*, 50(9), 104319, November 2021.
- Hsu, David, Po-Hsuan Hsu Kaiguo Zhou, and Tong Zhou, “Industry-university collaboration and commercializing Chinese corporate innovation,”
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3871101

Session 3: (1) ESG, Sustainability, and Green Innovation. (2) My Research Experience

Saturday, October 28. Lecture 9am to 12pm and 1pm to 3pm; consultation office hour 3pm to 5pm

3.1 Pollution in corporate decisions

- Hsu, Po-Hsuan, Hao Liang and Pedro Matos, “Leviathan Inc. and corporate environmental engagement,” *Management Science*, forthcoming, 2021.
- Chen, Jianqiang Pei-Fang Hsieh, Po-Hsuan Hsu & Ross Levine “Environmental Liabilities, Borrowing Costs, and Pollution Prevention Activities: The Nationwide Impact of the Apex Oil Ruling”
<https://www.nber.org/papers/w29740>
- Hsu, Po-Hsuan and Li, Kai and Pan, Yihui, The Eco Gender Gap in Boardrooms (April 3, 2023). European Corporate Governance Institute –

Finance Working Paper No. 861/2022, Available at SSRN:

<https://ssrn.com/abstract=4281479>

- Cordis, Adriana S. Hsu, Po-Hsuan and Zhang, Jin, Freedom of Information and Industrial Pollution (May 20, 2022). Available at SSRN:
<https://ssrn.com/abstract=3995477>

3.2 Pollution in asset pricing

- Hsu, Po-Hsuan, Kai Li (PKU) and Chi-Yang Tsou, “The pollution premium,” *Journal of Finance* 78(3), 1343-1392, June 2023.

3.3 My opinions on the future of sustainable finance

- Blue sea or red sea?
- The timeliness
- Unexplored areas

3.4 Experience sharing

- How to find your passion and direction
- Topic choice
- Data collection
- Data analyses
- Writing
- Presentation and circulation
- Journal selections