



Doctoral School in Finance and Economics

Sustainable Finance I

1. Course details

Semester:	Fall
Credits:	1 ECTS /15TU
Pre-requisite(s):	
Lecturer(s):	Prof. Michael Halling, Prof. Francois Koulischer
Administrator:	Roswitha Glorieux
Tutor(s):	N.A.
Seminar times and rooms:	To be defined
Tutorial times and rooms:	No tutorials planned
Communications	E-mails (university addresses only)
Mode of assessment:	Closed-book exam
Examination Periods:	January
Course WebPage:	Moodle.uni.lu

2. Aims and objectives

Aims

The goal of this course is to teach students state-of-the-art thinking and core economic concepts in sustainable finance and to enable them to engage in research projects in this area. Sustainable finance or, more broadly speaking, the role of financial markets and investors in the transition towards a more sustainable economic framework is one of the most important topics in finance today. We have seen tremendous developments in this area during the last 5 to 10 years and more is expected to come. Those developments affect all areas of finance including corporate finance, asset management and financial markets. They also have important consequences on reporting standards and regulatory as well as legal frameworks. The course covers both theoretical as well as empirical aspects. It builds on the foundation courses in finance and economics to introduce students to the latest advances in sustainable finance.

Learning Objectives

After successfully completing this course, students will have acquired the following skills and expertise:

- Students will understand the main challenges in sustainable finance, both from a sustainability (e.g., important thresholds and milestones to achieve the transition to more sustainable economies) as well as a finance perspective (e.g., the role of finance in that transition and alternative, macro-level views --- market-based solution versus taxes/regulatory solutions, shareholder versus stakeholder view).
- Students will master important theories that explain how sustainability and finance interact (e.g., how do aspects of sustainability affect or not affect main financial theories such as the CAPM or mean-variance optimality).
- Students learn (a) about common techniques to incorporate sustainability in investment decisions, and (b) about specific financial instruments that focus on sustainable investing and allow investors to manage ESG-related risks.

3. Plan of semester

(*) September 30, 9.00 – 12.00: François

(*) October 7, 9.00 – 12.00: François

(*) October 14, 9.00 – 12.00: Michael

(*) October 21, 9.00 – 12.00: Michael

(*) Final Exam: Nov. 11th, 9.00 - 12.00

Room BLF 2.13

4. Course details (by topics)

Session 1 [Koulischer]

The economics of climate change: the energy challenge and the drivers of climate change. Economic models of limited resources and climate change. Integrated Assessment Models. Environmental policy.

Session 2 [Koulischer]

Climate finance: from environmental to financial regulatory policy. Physical risks: evidence from the real estate, insurance and food-product markets. Transition risks in the financial system.

Session 3 [Halling]

Sustainability and Asset Pricing (e.g., the relation between sustainability and expected stock returns as well as between sustainability and credit spreads in debt and loan markets).

Session 4 [Halling]

ESG-Related Risk Management (e.g., physical versus transitional risks, climate stress tests).

5. Reference list/ Bibliography

- Baldauf, M., Garlappi, L., & Yannelis, C. (2020). Does Climate Change Affect Real Estate Prices? Only If You Believe In It. *The Review of Financial Studies*, 33(3), 1256–1295.
- Barrage, L., Greenstone, M., & Metcalf, G. E. (2020). Climate Change Economics. In *AEA Continuing Education*.

- Baker, M., Bergstresser, D., Serafeim, G., & Wurgler, J. (2019). *Financing the response to climate change: The pricing and ownership of US green bonds*.
- Becker, G. S., Murphy, K. M., & Topel, R. H. (2011). On the economics of climate policy. *The BE Journal of Economic Analysis & Policy*, 10(2).
- Bernstein, A., Gustafson, M. T., & Lewis, R. (2019). Disaster on the horizon: The price effect of sea level rise. *Journal of Financial Economics*, 134(2), 253–272.
- Bolton P, Kacperczyk M. 2020. Do investors care about carbon risk? Tech. rep., National Bureau of Economic Research.
- Bolton, P., & Kacperczyk, M. (2021). Global Pricing of Carbon-Transition Risk. *National Bureau of Economic Research Working Paper Series, No. 28510*.
- Carleton, T. A., Jina, A., Delgado, M. T., Greenstone, M., Houser, T., Hsiang, S. M.,..., Zhang, A. T. (2020). Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits. *National Bureau of Economic Research Working Paper Series, No. 27599*.
- Chava, S. 2014. "Environmental Externalities and Cost of Capital." *Management Science* 60 (9): 2223–47.
- Cheema-Fox, A., B.R. LaPerla, G. Serafeim, D. Turkington, and H.S. Wang. 2019. "Decarbonization Factors." Working paper (18 November). Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3448637.
- Dimson, E., O. Karakas, and X. Li. 2015. "Active Ownership." *Review of Financial Studies* 28 (12): 3225–68.
- ECB. (2021). ECB's economy-wide climate stress test. *Occasional Paper Series*, (281), 1–90.
- Edmans, A. 2011. "Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices." *Journal of Financial Economics* 101 (3): 621–40.
- Engle, R. F., Giglio, S., Kelly, B., Lee, H., & Stroebel, J. (2020). Hedging Climate Change News. *The Review of Financial Studies*, 33(3), 1184–1216.
- Flammer, C. 2015. "Does Corporate Social Responsibility Lead to Superior Financial Performance? A Regression Discontinuity Approach." *Management Science* 61 (11): 2549–68.
- Flammer, C. 2019. "Green Bonds: Effectiveness and Implications for Public Policy." NBER Working Paper No. w25950 (17 June). Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3405137.
- Gabaix, X., & Koijen, R. S. J. (2020). In search of the origins of financial fluctuations: The inelastic markets hypothesis. *Available at SSRN 3686935*.
- Gibson, R., P. Krueger, N. Riand, and P.S. Schmidt. 2019. "ESG Rating Disagreement and Stock Returns." Working paper (22 December). Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3433728
- Gros, D., Lane, P. R., Langfield, S., Matikainen, S., Pagano, M., Schoenmaker, D., & Suarez, J. (2016). *Too late, too sudden: Transition to a low-carbon economy and systemic risk*. Reports of the Advisory Scientific Committee.
- Halling, Michael and Yu, Jin and Zechner, Josef, Primary Corporate Bond Markets and Social Responsibility (January 7, 2021). Swedish House of Finance Research Paper No. 20-13, Available at SSRN: <https://ssrn.com/abstract=3681666> or <http://dx.doi.org/10.2139/ssrn.3681666>
- Hartzmark, S.M., and A.B. Sussman. 2019. "Do Investors Value Sustainability? A Natural Experiment Examining Ranking and Fund Flows." *Journal of Finance* 74 (6): 2789–837.
- Heinkel, R., A. Kraus, and J. Zechner. 2001. "The Effect of Green Investment on Corporate Behavior." *Journal of Financial and Quantitative Analysis* 36 (4): 431–49.
- Hoepner, A., I. Oikonomou, Z. Sautner, L. Starks, and X. Zhou. 2019. "ESG Shareholder Engagement and Downside Risk." Working paper (31 July). Available at <https://ssrn.com/abstract=2874252>.
- Hong, H., and M. Kacperczyk. 2009. "The Price of Sin: The Effects of Social Norms on Markets." *Journal of Financial Economics* 93 (1): 15–36.
- Hong, H., Li, F. W., & Xu, J. (2019). Climate risks and market efficiency. *Journal of Econometrics*, 208(1), 265–281.
- Hotelling, H. (1931). The Economics of Exhaustible Resources. *Journal of Political Economy*, 39(2), 137–175.
- Issler, P., Stanton, R., Vergara-Alert, C., & Wallace, N. (2019). Mortgage markets with climate-change risk: Evidence from wildfires in California. *Available at SSRN 3511843*.
- Krueger, P., Z. Sautner, and L.T. Starks. 2020. "The Importance of Climate Risks for Institutional Investors." *Review of Financial Studies* 33 (3): 1067–111.
- Lins, K.V., H. Servaes, and A. Tamayo. 2017. "Social Capital, Trust, and Firm Performance: The Value of Corporate Social Responsibility during the Financial Crisis." *Journal of Finance* 72 (4): 1785–824.
- Lioui, Abraham, Is ESG Risk Priced? (November 15, 2018). Available at SSRN: <https://ssrn.com/abstract=3285091> or <http://dx.doi.org/10.2139/ssrn.3285091>

- MacKay, D. (2009). *Sustainable Energy-without the hot air*. UIT Cambridge.
- Masulis, R.W., and S.W. Reza. 2015. "Agency Problems of Corporate Philanthropy." *Review of Financial Studies* 28 (2): 592–636.
- Matos, Pedro, ESG and Responsible Institutional Investing Around the World: A Critical Review, CFA Institute Research Foundation.
- Murfin, J., & Spiegel, M. (2020). Is the Risk of Sea Level Rise Capitalized in Residential Real Estate? *The Review of Financial Studies*, 33(3), 1217–1255.
- Nofsinger, J., and A. Varma. 2014. "Socially responsible funds and market crises." *Journal of Banking & Finance*, Volume 48, 180-193.
- Nordhaus, W. (2018). Evolution of modeling of the economics of global warming: changes in the DICE model, 1992–2017. *Climatic Change*, 148(4), 623–640.
- Weitzman, M. L. (2009). On Modeling and Interpreting the Economics of Catastrophic Climate Change. *The Review of Economics and Statistics*, 91(1), 1–19.
- Pastor, L., R.F. Stambaugh, and L.A. Taylor. 2019. "Sustainable Investing in Equilibrium." Working paper (19 December). Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3498354.
- Pedersen, L.H., S. Fitzgibbons, and L. Pomorski. 2019. "Responsible Investing: The ESG-Efficient Frontier." Working paper, AQR Capital Management, LLC (18 October). Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3466417.
- Weitzman, M. L. (1974). Prices vs. Quantities. *The Review of Economic Studies*, 41(4), 477–491.

6. Further information about assessment

Examination(s)	1	
Weighting:	Final Exam	
Date:	January	
Length:	2 hours	
Structure:	Pass/Fail	