

Managing Climate, Cyber, Geopolitical, Pandemic and Financial Risks: An Integrated Approach

FINC-GB 2375 70 Summer 2023 Professor Richard Berner

Course overview

Businesses and governments now face a growing and immediate array of risks, including climate-related, cyber and operational, geopolitical, and pandemic risks. Precisely because these critical risks are hard to measure and analyze, firms are putting both new and old resources – AI, data, people and money – to work to anticipate, manage and mitigate them. To address cybersecurity risks, for example, JP Morgan alone has 4000 employees and spends \$600 million annually. Firms are only starting to grapple with existential climate-related and other risks. The Russian invasion of Ukraine and the evolution of the U.S.-China relationship have changed the geopolitical landscape. The pandemic and other health-related issues and their consequences appear to be here to stay. And regulators and Congress are beginning to contemplate how to identify, measure, and formulate policies to mitigate them.

This course will study these risks alongside financial risks. It will outline frameworks for measuring, assessing and analyzing them, and for actions needed to meet them. We will examine case studies of climate, cyber, geopolitical, pandemic and financial risks, including from current events. We will assess the spillovers among these risks, and why an integrated (e.g. enterprise-wide or system-wide) approach helps to manage them. Finally, we will study whether and how the information in financial markets can both inform the assessment of these risks and potentially provide tools to transfer, insure against or hedge them. The course content mirrors the work we are doing the [NYU Stern Volatility and Risk Institute](#), and students are encouraged to explore our website to learn more.

Starting with an overview of enterprise risk management, the course will present an assessment framework. We will then examine each of the five pillars of risk discussed above -- cyber, climate-related, geopolitical, pandemic and financial – in five modules. One or more classes in each of those modules will include expert practitioners such as risk managers or policymakers. Finally, we will study the interplay among and compounding of these risks, the data and new tools needed to assess them, and policy implications.

Learning outcomes

The goal of this course is to equip students with an understanding of the 21st century risk management practices firms now demand. Students will learn the strengths and weaknesses of risk management tools and operational and financial resilience planning. Students will also learn the interdisciplinary nature of these activities, as teamwork across firms is important in business. Student class participation will be stressed. Reflecting that approach, the course is designed to be accessible for undergraduates, full-time and part-time MBAs, and to students in law, public policy and other schools at NYU.

Schedule.

FINC-GB 2375 30 meets *online* on **Tuesdays and Thursdays from 6-9PM** beginning **July 6, 2023** and ending on **August 15, 2023**. We have an exception to University policy that classes are to be held in person. Students who are not able to come to a particular class should notify me and our Teaching Fellow, Meghna Ghosh; see below.

Materials.

NB: *The understanding of, management of, literature about, and policy actions being taken to address these risks are all evolving quickly. Consequently the materials and approaches in what follows will change, and class visitors are TBD. This is exciting -- Stay tuned!*

There is no textbook required for the course, but a few are recommended, and some readings will be found in the following texts (they are on reserve at Bobst Library if you are on campus): James Lam, [Enterprise Risk Management: From Incentives to Controls](#) (Wiley Finance) 2nd Edition, 2014. (The Third edition is coming; we will use it if available). Amazon [rents](#) the book for around \$43; an e-book is available.

You should obtain Joseph Romm, [Climate Change: What Everyone Needs to Know](#), Oxford, 3rd Ed., 2022 in paperback. The bookstore lists it as required.

John Hull, [Risk Management and Financial Institutions \(5th Edition\)](#). Amazon rents the book [here](#) for \$42; an e-book is available.

Stephen G. Cecchetti and Kermit L. Schoenholtz, [Money, Banking and Financial Markets \(5th Edition\)](#); ISBN 978-1259746741), McGraw-Hill Irwin, 2017. Amazon currently rents the book ([here](#)) for about \$30 per semester or in electronic format on Amazon.

These books may also prove useful:

Geoffrey Miller, [The Law of Governance, Risk Management and Compliance](#), for [rent](#) on Amazon for \$45. There is an eBook; we will investigate other cheaper sources.

Richard Apostolik and Christopher Donohue, [Foundations of Financial Risk: An Overview of Financial Risk and Risk-based Financial Regulation](#), 2nd Edition, (Wiley Finance). Amazon [rents](#) the book here for \$36. It's on Kindle and we will investigate other cheaper sources.

John Armour, Dan Awrey, Paul Davies, Luca Enriques, Jeffrey N. Gordon, Colin Mayer, and Jennifer Payne, [Principles of Financial Regulation](#), Oxford Scholarship Online, 2016

Other readings will be found in other books, as noted below. ***All texts and other books are on reserve at Bobst Library, digitally, and the NYU bookstore should have availability as well.***

You should have completed a basic course (or demonstrate some proficiency) in each of macroeconomics, finance and statistics. *In addition, prior to the course*, if you are unfamiliar with or want a review of financial Instruments, financial Markets, and financial Institutions, you should read or at least browse chapters 1-3 of Cecchetti and Schoenholtz.

Required readings appear below (aside from the readings noted above and those found on [GARP](#) and [Risk.Net](#); the latter is available through NYU library (bobcat) access). **Required readings should be completed before class.** **Recommended/optional readings** are found below those required. These provide additional, extensive background for interested students. Do not feel compelled to read all of them!

Students are expected to keep abreast of major risk management, financial and policy developments, using resources like various websites from regulators and GARP, *The Economist*, the *FT*, and the *WSJ*. Access to these publications is available to students at heavily discounted rates.

Course Requirements: Assignments, Class Discussion, and Grades.

We will not have exams in this course. Instead, there will be individual and possibly group projects. Given the timetable for your course project, it will be prudent for you to start thinking about topics for and researching projects shortly after we start classes. Both the topics we consider in our class discussions (see below) and those from your experience likely will provide input for the projects.

Here is a [rubric template](#) that outlines criteria for project success and evaluation. The first three criteria – integration of knowledge, topic focus and depth of discussion- will count for 75% of the project grade. I'll go over more details on projects in class.

There will also be a take-home, ungraded practice assignment for your benefit. I may provide you with additional take home assignments on request.

In addition, each week, we will choose one or more topics, drawn from the readings listed here and in the Lessons tab on NYU Brightspace, and be prepared to discuss it/them in class. We will use these as material for discussion during class.

Attendance online is required. Both attendance and class participation will influence the course grade; participation will count for 20%, modify grades in the case of (good or bad) outliers, and will serve as tiebreakers. Participation includes thoughtfully asking and responding to questions, engagement in discussion including in breakout rooms, and posing and answering questions in the chat.

There will be no make-ups for the project, which are required of all students. Any failure to submit a project without prior written approval from the professor constitutes a failure (a grade of zero). The only valid reason for seeking to be excused is a serious (documented) illness or the equivalent.

Course grade weights for each component are:

Practice Assignment	Take home; Ungraded, for your benefit
Attendance & class participation:	20% and influences tie-breaks and outliers (good and bad)
Project Outline	10% (5% if grade is less than project draft score)
Project Draft	30% (35% if draft score exceeds project outline score)
Final Project	40%

Please note the following key (but still tentative) dates in your calendars:

Practice Assignment	July 13
Project Outline	July 20
Project Draft	July 31
Final Project	August 15

NYU Brightspace

Aside from the selections from the textbooks, and the links below, everything you need for this course will be posted on NYU Brightspace: readings, assignments, slides, and links to information sources.

Teaching Fellow

Meghna Ghosh is our TF. She will help you with any questions, help me grade and assess attendance and participation. Meghna is a candidate for an MA in Economics in the Faculty of Arts and Sciences. She can be reached by email at mg7389@nyu.edu.

Communication

The key to any successful relationship is good communication. I plan to use the announcements section of NYU Classes extensively. In return, I expect you to share your comments and observations in the Discussion Section of Brightspace and with me and/or Meghna. You may email me (rberner@stern.nyu.edu), or catch me before or after class. Your ideas and feedback can make a big contribution to the course.

Help

If you need help, please contact me or Meghna. Online office hours are by appointment and can be arranged by email. We will try to reply to email quickly (if you don't hear from us within 24 hours, please try again).

Visitors

We'll have several visitors – practitioners and thought leaders – come to our classes. Their names are on the weekly schedule and on the summary schedule at the end. We have tried to align their visits precisely with the material in class, but in a couple of cases scheduling created slight disconnects. Schedules can be fluid, so we'll keep you informed about any changes.

PROFESSIONAL BEHAVIOR

In the interest of providing everyone with the best classroom – virtual or actual -- experience, I ask that you:

- Join at least five minutes before class
- Display your name in every class/Please use video in Zoom
- Put smartphones away before class (their use in class is not permitted)
- Be prepared and engaged

ACADEMIC INTEGRITY

We take pride in our well-rounded education and approach our academics with honesty and integrity. Indeed, integrity is critical to all that we do here at NYU Stern. As members of our community, all students agree to abide by the NYU Stern Student Code of Conduct, which includes a commitment to:

- Exercise integrity in all aspects of one's academic work including, but not limited to, the preparation and completion of exams, papers and all other course requirements by not engaging in any method or means that provides an unfair advantage.
- Clearly acknowledge the work and efforts of others when submitting written work as one's own. Ideas, data, direct quotations (which should be designated with quotation marks), paraphrasing, creative expression, or any other incorporation of the work of others should be fully referenced.
- Refrain from behaving in ways that knowingly support, assist, or in any way attempt to enable another person to engage in any violation of the Code of Conduct. Our support also includes reporting any observed violations of this Code of Conduct or other School and University policies that are deemed to adversely affect the NYU Stern community.

The entire Stern Student Code of Conduct applies to all students enrolled in Stern courses and can be found here: www.stern.nyu.edu/uc/codeofconduct

To help ensure the integrity of our learning community, prose assignments you submit to NYU Classes will be submitted to Turnitin. Turnitin will compare your submission to a database of prior submissions to Turnitin, current and archived Web pages, periodicals, journals, and publications. Additionally, your document will become part of the Turnitin database.

GENERAL CONDUCT & BEHAVIOR

Students are also expected to maintain and abide by the highest standards of professional conduct and behavior. Please familiarize yourself with Stern's Policy in Regard to In-Class Behavior & Expectations (<http://www.stern.nyu.edu/portal-partners/current-students/undergraduate/resources-policies/academic-policies/index.htm>) and the NYU Student Conduct Policy (<https://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/university-student-conduct-policy.html>).

Note: Evidence of cheating on quizzes, exams or graded assignments will result in a course grade of F without appeal.

GRADING GUIDELINES

Grading Information for Stern Elective Courses

At NYU Stern, we strive to create courses that challenge students intellectually and that meet the Stern standards of academic excellence. To ensure fairness and clarity of grading, the Stern faculty have agreed that for elective courses the individual instructor or department is responsible for determining reasonable grading guidelines.

STUDENT ACCESSIBILITY

If you will require academic accommodation of any kind during this course, you must notify me at the beginning of the course (or as soon as your need arises) and provide a letter from the Moses Center for Student Accessibility (212-998-4980, mosescsa@nyu.edu) verifying your registration and outlining the accommodations they recommend. For more information, visit the CSA website: <https://www.nyu.edu/students/communities-and-groups/student-accessibility.html>

STUDENT WELLNESS

Classes can get stressful. I encourage you to reach out if you need help. The NYU Wellness Exchange offers mental health support. You can reach them 24/7 at [212 443 9999](tel:2124439999), or via the “NYU Wellness Exchange” app. There are also drop-in hours and appointments. Find out more at: <http://www.nyu.edu/students/health-and-wellness/counseling-services.html>

NAME PRONUNCIATION AND PRONOUNS

NYU Stern students now have the ability to include their pronouns and name pronunciation in Albert. I encourage you to share your name pronunciation and pronouns this way. Please utilize this link for additional information: [Pronouns & Name Pronunciation](#)

RELIGIOUS OBSERVANCES AND OTHER UNIQUE SITUATIONS

NYU’s [Calendar Policy on Religious Holidays](#) states that members of any religious group may, without penalty, absent themselves from classes when required in compliance with their religious obligations. You must notify me in advance of religious holidays or observances that might coincide with exams, assignments, or class times to schedule mutually acceptable alternatives. Students may also contact religiousaccommodations@nyu.edu for assistance.

NYU Stern is committed to ensuring an equitable educational experience for all students regardless of identity or circumstances and strives to recognize the obligations its students have outside of Stern. Please review all class dates at the start of the semester and review all course requirements to identify any foreseeable conflicts with exams, course assignments, projects, or other items required for participation and attendance. If you are aware of a potential conflict, please contact me as soon as possible to discuss any potential conflicts to determine whether/how they can be accommodated.

This course strives to support and cultivate diversity of thought, perspectives, and experiences. The intent is to present materials and activities that will challenge your current perspectives with a goal of understanding how others might see situations differently. By participating in this course, it is the expectation that everyone commits to making this an inclusive learning environment for all.

Tentative Class Schedule

Topics, Readings and Assignments

Session 1 Introduction to Risk Management (July 6)

- Risk Topics
- Risk assessment framework
- Enterprise Risk management and regulation
- System-wide risk assessment
- Why regulation?

Required Reading

Park K.F., Shapira Z. [Risk and Uncertainty](#). In: Augier M., Teece D. (eds) [The Palgrave Encyclopedia of Strategic Management](#), Palgrave Macmillan, London.

James Lam, [Enterprise Risk Management: From Incentives to Controls](#) (Wiley Finance) 2nd Edition, 2014, Ch's 1, 4

Hull, [Risk Management and Financial Institutions](#), Fifth Edition, Ch 1

JP Morgan [2022 Annual Report](#), pp 81-85

Eurasia Group's [Top Risks For 2023](#), January 3, 2023, Foreword, pp 2-3

Video: [The Big Short trailer \(and following\)](#)

Optional reading :

Peter L. Bernstein, [Against the Gods: The Remarkable Story of Risk](#), Ch's 12, 13

World Economic Forum, [The Global Risks Report 2023 18th Edition](#), January 11, 2023, Executive Summary, 7-10

The Institute of Internal Auditors, [The IIA's Three Lines Model: An update of the Three Lines of Defense](#), 2020

René M. Stulz, [Six Ways Companies Mismanage Risk](#), Harvard Business Review (March 2009)

Robert Kaplan and Anette Mikes, "[JP Morgan's Loss: Bigger than 'Risk Management'](#)", Harvard Business Review, May 23, 2012

James Lam, [Enterprise Risk Management: From Incentives to Controls](#) (Wiley Finance) 2nd Edition, 2014, Ch's 2,3

Hull, [Risk Management and Financial Institutions](#), Fifth Edition, Ch's 27, 29

Aswath Damodaran, [Risk Management: A Corporate Governance Manual](#), SSRN 2010

Practice assignment, July 13

Sessions 2 and 3 Financial risks (July 11 and 13)

- Types of Financial Risk: Market, Credit, Liquidity, Contagion
- Volatility and risk
- Venues: Firms, Markets and Instruments, System, Cross border
- Risk management tools

- Portfolio construction, hedging, risk transfer

Class visitors: *Craig Broderick, Former CRO Goldman Sachs, July 11*

Colin Teichholtz, Element Capital, July 13

Required Reading:

Session 2

James Lam, [Enterprise Risk Management: From Incentives to Controls](#) (Wiley Finance) 2nd Edition, 2014, Ch 12, p 175-180; 187-189; Ch 13, p 209-224.

Cecchetti and Schoenholtz, Ch 7 (Interest rate risk)

Bookstaber, [The Volatility Paradox](#)

Shleifer, A., and Vishny, R.W., "[The Limits of Arbitrage](#)," *Journal of Finance*, Vol. 52, No. 1., at least pp. 35-38

Session 3

[OFR 2012 Annual Report](#), Chapter 2, pp. 10 – 12, and Box B

Jorion 2009, [Risk Management Lessons from the Credit Crisis](#), p. 1-10

Bao, J., David, J., and Han, S. "[The Runnables](#)," *FEDS Notes, September 3, 2015*

Kodres, "[What is shadow banking?](#)"

R Herring and T Schuermann, [Objectives and Challenges for Stress Testing](#), January 2020, esp. pp 25-31

FSOC, [2022 Annual Report](#), Executive Summary, pp 7-15

Optional reading:

Session 2

Hull, Ch 8 (hedging; p 161-174); 10 (Volatility-213-220; 222-228), 11 (Correlations-243-248), 12 (VaR and ES-269-283), 19 (Credit-431-439); Ch 22 (Stress tests – 497-511); Ch 24 (Liquidity – 537-562)

JP Morgan [2022 Annual Report](#), pp 86-155

Edward Altman, [Covid-19 and the credit cycle](#), *Journal of Credit Risk*, 16(2), 1–28

Session 3

Hauser, [From lender of last resort to market maker of last resort via the dash for cash - why central banks need new tools for dealing with market dysfunction](#), Thomson Reuters

Newsmaker, London 7 January 2021

Hauser, "[Looking through a glass onion: lessons from the 2022 LDI intervention](#)," March 3, 2023

FDIC, [Options for Deposit Insurance Reform](#), May 1, 2023

Marco Cipriani, Michael Holscher, Patrick McCabe, Antoine Martin, and Richard Berner,

[Mitigating the Risk of Runs on Uninsured Deposits: the Minimum Balance at Risk](#), Liberty Street Economics, April 14, 2023

Bank of England, [Financial Stability Report – December 2022](#)

Federal Reserve, [Dodd-Frank Act Stress Test Publications](#), February 22, 2023

Cecchetti and Schoenholtz, [SEC Money Market Fund Reform Proposals Fall Far Short, Again](#),

January 28, 2022

Cipriani, Martin and McCabe, [Pricing Liquidity without Preemptive Runs](#), Liberty St Economics, Jan 31, 2022

Brownlees, Christian T. and Robert F. Engle, "[SRISK: A Conditional Capital Shortfall Measure of Systemic Risk](#)," *The Review of Financial Studies*, vol. 30, no. 1, p. 48-79, January 2017.

Eugene Fama and Kenneth French [The Cross-Section of Expected Stock Returns](#), *Journal of Finance* 1992

John Cochrane, Fishing https://www.youtube.com/watch?v=3J_uV1TLoQo

Cochrane, Factor Mimicking Portfolios and Fishing

https://www.youtube.com/watch?v=2Od0cpN5_vo

Project outline due July 20

Session 4 and 5 Cyber/operational and fintech risks (July 18 and July 20)

- Cyber on firms
- Cyber on governments
- Other op risks: Financial crime, supply chain
- Data: Big and otherwise
- Fintech and Digital Assets: Benefits and Risks
- Portfolio construction, hedging, risk transfer

Class visitor: Judi Germano, NYU Law and Germano Law July 18

Required Reading

Cyber/Operational Risks

RiskNet, [Top 10 Operational Risks for 2023](#)

James Lam, [Enterprise Risk Management: From Incentives to Controls](#) (Wiley Finance) 2nd Edition, 2014, Ch 14

FS ISAC, "[Strengthen Your Firm's Defenses Against Ransomware](#)"

Sasha Romanosky, Lillian Ablon, Andreas Kuehn, Therese Jones, [Content analysis of cyber insurance policies: how do carriers price cyber risk?](#) *Journal of Cybersecurity*, Volume 5, Issue 1, 2019, tyz002, p. 21-31

Big Data/Fintech/Digital Assets/Crypto

Haldane, [Will Big Data Keep its Promise?](#) 19 April 2018

Brainard, "[The Opportunities and Challenges of Fintech;](#)" 2016

Berner, et. al., [Investor Protection, Market Integrity, and Financial Stability in Digital Finance](#), October 12, 2022

Money and Banking.com, [Tales from the Crypt\(o\)](#), November 15, 2022.

Optional reading

Cyber/Operational Risks

Phil Venables blog <https://www.philvenables.com/>

[Phil Venables: Risk Management is not only about Reducing Risk - Updated.](#)

[VRI Cyber Resilience Conference](#) April 2020; see in particular, Hilary J. Allen, "[Payments Failure](#)," SSRN, [Video](#)

White House Fact Sheet: "[Ongoing Public U.S. Efforts to Counter Ransomware.](#)"

Steve Silberstein, CEO of FS-ISAC. [Think global to fight cyber crime](#)

Federal Reserve, [Information Technology Guidance](#)

Bank of England, [Financial Sector Continuity](#), including CBEST

Big Data/Fintech/Digital Assets/Crypto

Brainard, [What Are We Learning about Artificial Intelligence in Financial Services?](#), November 2018

IMF, [Powering the Digital Economy: Opportunities and Risks of Artificial Intelligence in Finance](#), 2021

FT, Adena Friedman, [Harness the power of AI to tackle financial crime](#), May 18, 2023

FinRegLab, [FAQs: AI in Financial Services](#), 2020

MIT Technology Review, [Geoffrey Hinton tells us why he's now scared of the tech he helped build](#), May 2, 2023

BIS, [Central bank digital currencies: foundational principles and core features](#), October 2020

BIS, 2021 Annual Report Ch III, [CBDCs: an opportunity for the monetary system](#), June 2021

CRS, [Central Bank Digital Currencies: Policy Issues](#) July 21, 2021

Senate Banking Committee, "[Stablecoins: How Do They Work, How Are They Used, and What Are Their Risks?](#)" Hearings, December 14, 2021

Money, Banking and Financial Markets, [Crypto-assets and Decentralized Finance: A Primer](#), May 13, 2022

....., [TradFi and Defi: Same Problems, Different Solutions](#), May 30, 2022

, [Stablecoin: The Regulation Debate](#). December 13, 2021

....., [Central bank digital currency: The battle for the soul of the financial system](#) 08 July 2021

Wharton Blockchain and Digital Asset Project, [DeFi Beyond the Hype: The Emerging World of Decentralized Finance](#), May 2021

House Financial Services Committee Hearing, "Investigating the Collapse of FTX, Part I," [Committee Memo](#), December 13, 2022

Senate Banking Committee, [Crypto Crash: Why the FTX Bubble Burst and the Harm to Consumers](#), December 14, 2022, esp. Testimony of Prof Hilary Allen

Session 6 and 7 Climate-related risks (July 25 and 27)

- Climate science basics
- Risk management

- Disclosure and ESG
- Case studies
- Portfolio construction, hedging, risk transfer

Class visitor: Catherine Wolfram, Harvard, July 27

Required Reading

Session 6

Joseph Romm, [Climate Change: What Everyone Needs to Know](#), Ch's 1, 3.

CFTC, [Managing Climate Risk in the U.S. Financial System: Report of the Climate-Related Market Risk Subcommittee, Market Risk Advisory Committee of the U.S. Commodity Futures Trading Commission](#), Executive Summary, i-ix

FSOC, [Report on Climate-Related Financial Risk](#), October 21, 2021, Executive Summary, 3-9

Jean Pisani-Ferry, [Climate Policy is Macroeconomic Policy, and the Implications Will Be Significant](#), August 2021

Task Force on Climate-related Financial Disclosures, [2022 Status Report](#), Executive Summary 2-6.

Session 7

IMF, [Climate Change Dashboard](#)

Giglio, Stefano and Kelly, Bryan T. and Stroebel, Johannes, [Climate Finance](#) (see conference videos in VRI link below)

Deloitte, [Executive Summary of the SEC's Proposed Rule on Climate Disclosure Requirements](#) (March 21, 2022; Last Updated March 29, 2022)

Four Twenty Seven, [Using Climate Data](#), April 2018

Center for Sustainable Business [ROSI™ Methodology](#)

Optional reading

[GARP's climate website](#) provides useful information; see [Climate Survey](#)

Joseph Romm, [Climate Change: What Everyone Needs to Know](#), Ch's 2, 4.

IPCC, [Managing the Risks of Extreme Events, and Disasters to Advance Climate Change Adaptation: Special Report of the Intergovernmental Panel on Climate Change](#), 2012, Summary for Policymakers (pp. 3-21)

IPCC, [Climate Change 2021, Sixth Assessment, The Physical Science Basis, Summary for Policymakers](#), 4-6

VRI conference, "[A Financial Risk Framework For Climate Change: Portfolio Construction, Stress Testing, and Risk Transfer](#)" Friday, April 30, 2021

Diego Kanzig, [The Unequal Economic Consequences of Carbon Pricing](#), January 2022

George Metcalf, [On the Economics of a Carbon Tax](#), *Brookings Papers on Economic Activity*, Spring 2019

Congressional Research Service, [Attaching a Price to Greenhouse Gas Emissions with a Carbon Tax or Emissions Fee: Considerations and Potential Impacts](#) March 22, 2019

Kent D. Daniel, Robert B. Litterman and Gernot Wagner, [Applying Asset Pricing Theory to Calibrate the Price of Climate Risk](#), NBER Working Paper 22795

SEC Commissioner Lee, [Climate, ESG, and the Board of Directors: “You Cannot Direct the Wind, But You Can Adjust Your Sails”](#), June 28, 2021

Tensie Whelan, [How to Quantify Sustainability’s Impact on Your Bottom Line](#), HBR, 2017

Kevin Eckerle, Tensie Whelan, Bryan DeNeve, Sameer Bhojani, John Platko. Rebecca Wisniewski, [Using the Return on Sustainability Investment \(ROSI\) Framework to Value Accelerated Decarbonization](#), *Journal of Applied Corporate Finance*, June 2020

Robert Engle, Stefano Giglio, Heebum Lee, Bryan Kelly, Johannes Stroebel, [Hedging Climate Change News](#), *Review of Financial Studies*, March, 2020

Brainard, [Financial Stability Implications of Climate Change](#), 2021

Prudential Regulatory Authority, [Enhancing banks’ and insurers’ approaches to managing the financial risks from climate change](#) April 2019 Supervisory Statement | SS3/19

Bank of England, Discussion Paper, [The 2021 biennial exploratory scenario on the financial risks from climate change](#), December 2019

[Federal Reserve Board announces that six of the nation’s largest banks will participate in a pilot climate scenario analysis exercise designed to enhance the ability of supervisors and firms to measure and manage climate-related financial risks](#)

Patrick Bolton and Marcin Kacperczyk, [Global pricing of carbon-transition risk](#), 2021

PRA [Climate Change Adaptation Report 2021 - Climate-related financial risk management and the role of capital requirements](#), Executive Summary, vi-xi

FT, [‘Green’ funds warned of hazardous grey areas](#)

CRS, [Carbon Capture and Sequestration \(CCS\) in the United States](#)

[ESG fund boom masks mispricing dangers for investors](#)

[Treasury’s Federal Insurance Office Takes Important Step to Assess Climate-related Financial Risk – Seeks Comment on Proposed Data Call](#)

[Climate, war and inflation jolt reinsurers into action](#)

[Reinsurance: a microcosm featuring catastrophes, inflation and capital flight](#)

Project Draft due July 31

Session 8 Geopolitical risks (August 1)

- Many facets to geopolitical risk
- What to do about it?
- Geopolitical vs. Political vs. Sovereign Risk
- Combatting the Financing of Terrorism (CFT)
- Case studies
- Portfolio construction, hedging, risk transfer

Class Visitors: Daleep Singh, PGIM, August 1

Required Reading

Eurasia Group, [Top Risks 2023](#), Overview

BlackRock [Geopolitical Risk Dashboard](#)

IMF, [Anti-Money Laundering/Combating the Financing of Terrorism \(AML/CFT\)](#)

[Remarks by National Security Advisor Jake Sullivan at the Special Competitive Studies Project Global Emerging Technologies Summit](#)

Optional reading

Dario Caldara, Matteo Iacoviello, Patrick Molligo, Andrea Prestipino, and Andrea Raffo, [Does Trade Policy Uncertainty Affect Global Economic Activity?](#) Feds Notes, 2019

Bryan Kelly, Leland Bybee, Asaf Manela, Dacheng Xiu, [“The Structure of Economic News,”](#) September 2019

Robert F Engle and Susana Martins [“What are the events that shake our world? Measuring and hedging global COVOL,”](#) *Journal of Financial Economics*, Volume 147, Issue 1, January 2023, Pages 221-242

Geoffrey Miller, *The Law of Governance, Risk Management and Compliance*, Second Ed. Wolters Kluwer, Chapters 4 and 14 (at Bobst)

Scott R. Baker, Nicholas Bloom, Steven J. Davis, [Measuring Economic Policy Uncertainty](#), *The Quarterly Journal of Economics*, Volume 131, Issue 4, November 2016, Pages 1593–1636
[Economic Policy Uncertainty Index](#)

[Sigma Ratings](#)

White House, [Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth](#), pp 1-18

Martin Wolf, FT [Geopolitics is the biggest threat to globalisation](#), Nov 2022

WSJ, [The majority of Americans support continuing aid to Ukraine, but support is becoming a partisan issue as Republican opposition to helping the country grows](#)

FT, [The scramble for rare earths carries big geopolitical risks](#), September 2022

FT, [Lazard sets up geopolitical risk unit to capitalise on global volatility](#)

[Sir Paul Tucker on Is the UK suffering a sovereign debt crisis?](#)

Session 9 and 10: Pandemic Risks (August 3 and August 8)

- History: Evolution, Public Health and Resilience, Health Economics
- Macroeconomic and Financial Impact and Policy Responses
- Planning for the future – Improving Public Health, Vaccination, Pandemic Stress Tests

Class Visitor Sherry Glied, Dean, Wagner School, August 8

Required Reading

CRS, [U.S. Health Care Coverage and Spending](#), January 2021

WHO, [Coronavirus Disease](#)

Johns Hopkins, Coronavirus Research Center, <https://coronavirus.jhu.edu/>

Sergio Correia, Stephan Luck, and Emil Verner, "[Fight the Pandemic, Save the Economy: Lessons from the 1918 Flu](#)," Federal Reserve Bank of New York *Liberty Street Economics*, March 27, 2020.

Julian Kozlowski, [COVID-19: Scarring Body and Mind](#), St Louis Fed, 2020

NYT, [Delta Variant Widens Gulf Between 'Two Americas': Vaccinated and Unvaccinated](#), July 14, 2021

Jose Maria Barrero, Nicholas Bloom, and Steven J. Davis, [Don't Force People to Come Back to the Office Full Time](#), HBR, August 24, 2021

Celine Gounder, [The Problem With Our Boost-Boost-Boost COVID Strategy](#)
_____, [Winters with Covid, the flu and R.S.V. may be our new normal.](#)

Optional Reading

Correia, Sergio and Luck, Stephan and Verner, Emil, [Pandemics Depress the Economy, Public Health Interventions Do Not: Evidence from the 1918 Flu](#) (June 5, 2020).

Ford Foundation, [Reimagining a Sustainable Restaurant Industry in New York WHERE ALL STAKEHOLDERS THRIVE](#), Executive Summary

CEPR, [Covid Economics: Vetted and Real Time Papers](#)

Viral V. Acharya and Sascha Steffen, "[Stress Test](#)" for Banks as Liquidity Insurers in a time of [COVID](#), March 2020

EY, [How COVID-19 impacted supply chains and what comes next](#), 2021

Thomas Wright and Colin Kahl, [Aftershocks: Pandemic Politics and the End of the Old International Order](#), Brookings 2021

Katie Bach, [New data shows long Covid is keeping as many as 4 million people out of work](#), August 24, 2022

Session 11: Interplay (August 10)

- Interconnectedness, contagion and spillovers
- Causal - Interplay among the five pillars of risk
- Compound Risks
- Case studies

No visitor this session

Required Reading

Yellen, Janet L., "[Interconnectedness and Systemic Risk: Lessons from the Financial Crisis and Policy Implications](#)," speech at the American Economic Association/American Finance Association Joint Luncheon, San Diego, California, January 4, 2013.

Kara, Gazi, Mary Tian and Margaret Yellen, "[Taxonomy of Studies on Interconnectedness](#)," FEDS Notes, July 31, 2015.

Darrell Duffie and Josh Younger, "[Cyber Runs](#)," Hutchins Center Working Paper #51, June 2019

Jason Healey, Patricia Mosser, Katheryn Rosen, Alexander Wortman, [The Ties that Bind: A Framework to Assess the Linkage Between Cyber Risk and Financial Stability](#), December 2018

NGFS, [Macroeconomic and financial stability Implications of climate change](#), July 2019, Introduction 3-4

Schwebel, Michael, [Is There a Link Between Climate Change and Global Pandemics?](#), GARP, August 18, 2020

Optional reading

DTCC, [Interconnectedness Revisited](#), May 2022

Bernanke, Ben, "[Clearinghouses, Financial Stability, and Financial Reform](#)," At the 2011 Financial Markets Conference, Stone Mountain, Georgia, April 4, 2011

Allen, Franklin and Douglas Gale, "[Financial Contagion](#)," *Journal of Political Economy*, vol. 108, no. 1, p. 1-33, February 2000.

Glasserman, Paul and H. Peyton Young, "[Contagion in Financial Networks](#)," *Journal of Economic Literature*, American Economic Association, vol. 54, no 3, September 2016, pages 779-831.

Bell, Sarah and Henry Holden, "[Two defaults at CCPs, 10 years apart](#)," *BIS Quarterly Review*, December 2018.

Berner, Cecchetti and Schoenholtz, "Stress Testing Networks: The Case of Central Counterparties," in [Handbook of Financial Stress Testing](#), Farmer, Kleinnijenhuis, Schuermann, and Wetzler, ed., Cambridge University Press, 2022; [NBER Working Paper No. 25686](#), Issued in March 2019; [SSRN](#)

Obstfeld, Maurice and Alan Taylor, [International Monetary Relations: Taking Finance Seriously](#), *Journal of Economic Perspectives*—Volume 31, Number 3—Summer 2017—Pages 3–28

Obstfeld, Maurice, [The global capital market reconsidered](#), *Oxford Review of Economic Policy*, Volume 37, Number 4, 2021, pp. 690–706

Kovner, Thomas M. Eisenbach and Michael Junho Lee, [Cyber Risk and the U.S. Financial System: A Pre-Mortem Analysis](#) Number 909 January 2020

Steven Cecchetti and Kim Schoenholtz, [Cyber Risk, Financial Stability and the Payments System](#), July 26, 2020

Patrick Bolton, Morgan Despres, Luiz Awazu Pereira Da Silva, Frédéric Samama, Romain Anna Svartzman, [The green swan: Central banking and financial stability in the age of climate change](#), Banque de France, January 2020

Session 12 Policy Implications (August 15)

- Resilience
- Crisis Fighting
- Other risks: Fintech, Cryptocurrencies, Conduct and Culture

- Who should address these risks?

Class Visitor: Carolyn Wilkins, Princeton and BOE, August 15

Required reading

Resilience: Macropru, OLA, incentives:

Brookings, [Report of the Task Force on Financial Stability](#), June 2021, Introduction, 6-20
G30, [U.S. Treasury Markets: Steps Toward Increased Resilience](#), July 2021, Introduction, 1-7
Benoît Cœuré, [The known unknowns of financial regulation](#), PIIE, October 2017

Crisis Fighting:

Geithner, "[Are We Safer? The Case for Strengthening the Bagehot Arsenal.](#)"

Monetary Policy: Ben S. Bernanke, [Monetary Policy in a New Era](#), Brookings Institution October 2, 2017

Money and Banking.com, [Fed communications and its link to monetary policy.](#)

Conduct and Culture: Dudley, [Strengthening Culture for the Long Term](#)
Stulz, [Risk Management, Governance, Culture, and Risk Taking in Banks](#), FRBNY Economic Policy Review / August 2016

Optional reading:

Hanson, Kashyap and Stein, "[A Macroprudential Approach to Financial Regulation](#)," 2011

Hubbard and Kohn, [Brookings Report of the Taskforce on Financial Stability](#), June 2021

G30, [U.S. Treasury Markets: Steps Toward Increased Resilience](#), July 1, 2021

Lorie Logan, [Liquidity Shocks: Lessons Learned from the Global Financial Crisis and the Pandemic](#), August 11, 2021

Don Kohn, [Building a more stable financial system: Unfinished business](#), August 27, 2021

Berner, [Financial Stability: Still Unfinished Business](#), October 6, 2022

Gruenberg and Tucker, [FT op-ed](#) (2012);

FSB, [Framework for Post-Implementation Evaluation of the Effects of the G20 Financial Regulatory Reforms](#)

Nellie Liang, "[Higher capital is not a substitute for stress tests](#)" Brookings

Adrian et al, "[Macroprudential Policy: Case Study from a Tabletop Exercise](#);"

Powell, [Relationship Between Regulation and Economic Growth](#);

Tobias Adrian, Federico Grinberg, Nellie Liang, Sheheryar Malik, [The Term Structure of Growth-at-Risk](#), Brookings December 2019

Dan Awrey and Kathryn Judge, [Why Financial Regulation Keeps Falling Short](#), February 2020
[GAO Financial Technology Report](#); pp 3-12;

[The Goals and Strategies of Financial Regulation](#), Chapter 3 in Armour, et al

Anna Kovner, Thomas Eisenbach, Andrew Haughwout, Beverly Hirtle, David Lucca, and

Matthew Plosser, "[Supervising Large, Complex Financial Institutions: What Do Supervisors Do?](#)"
[Economic Policy Review](#), 2017 Issue 23-1, pp. 57-77

AIR, [A Regtech Manifesto](#); Redesigning Financial Regulation for the Digital Age, Introduction 5-12

FSB, [Strengthening Governance Frameworks to Mitigate Misconduct Risk: A Toolkit for Firms and Supervisors](#), April 2018;

Group of 30, [Banking Conduct and Culture: A Call for Sustained and Comprehensive Reform](#), 2015

[Treasury Market Practices Group: 10 Years of Best Practices](#)

Richard Berner, William Coen, and Carolyn Wilkins, [Addressing Governance Issues in the Crypto Ecosystem](#), Bretton Woods Committee, April 19, 2023

Tentative Class Schedule

Sessi on	Date	Topic	Visitor	Assignments
Pre- class	June	Review		Complete online survey
1	July 6	Introduction to Risk Management		
2	July 11	Financial risks	Craig Broderick	<i>Take home Practice assignment</i>
3	July 13	Financial risks	Colin Teichholtz	
4	July 18	Cyber/operational/fi ntech risks	Judi Germano	
5	July 20	Cyber/operational/fi ntech risks		<i>Project Outline due</i>
6	July 25	Climate-related risks		
7	July 27	Climate-related risks	Catherine Wolfram	Project Draft Due 7/31
8	August 1	Geopolitical risks	Daleep Singh	
9	August 3	Pandemic Risks		
10	August 8	Pandemic Risks	Sherry Glied	
11	August 10	Interplay		
12	August 15	Policy Implications	Carolyn Wilkins	
	August 15			<i>Final Project due</i>