

Financial Innovations for Economic Development

Course 55721

Prof. Glenn Yago

glenn@jerusalemstitute.org.il

02.563.0175 ext. 34

Office Hours: By Appointment

October 30, 2019 – January 22, 2020

18:30-21:00

Jerusalem Graduate School of Business Administration, Hebrew University

COURSE DESCRIPTION

This course will focus on the means and methods of finance applied to social, economic, and environmental challenges. Financial innovations give rise to **new intermediaries** (e.g., community venture capital, revolving loan funds, social investment banks, business development companies, venture investment trusts), **new types of instruments** (e.g., structured finance, microfinance, social, environmental and development impact bonds, green bonds, diaspora bonds, catastrophic risk bonds, royalty trusts, community investment notes, and risk pooling finance mechanisms and facilities), and **new services, platforms or techniques** (e.g., ETFs, impact investing, public-private partnerships, international finance facility for immunization, product development partnerships, value-chain financing) to create jobs, build communities, and enable capital formation and economic growth.

OBJECTIVES

The course will unpack the basic procedures and application of the financial toolkit required to build capital structures to finance business and social enterprises and projects. These sessions will survey the application of innovative financing emerging through new products and services, new processes and operations and organizational forms in addressing problems as diverse as entrepreneurial finance, renewable energy, environmental finance, global health, accelerating medical solutions, regional development, affordable housing, urban revitalization and infrastructure. Students will discover why capital structure matters in aligning diverse interests into new business models for sustainable social and economic change. Students will work through problem sets for innovative financing structures for development projects and enterprises. Students will acquire and apply data gathering, economic, and financial analytical skills to identify specific market failures in developing economies enabling them to apply appropriate financial tools to bridge capital gaps for project and enterprise finance. This would include the ability to identify innovation-led growth targets (e.g., increased crop yields, reduction of disease incidence, lower credit access costs), choose a coherent, time and risk-balanced portfolio of development initiatives required to meet a measurable and tangible development target (e.g., prevention, diagnostics, treatment for global health; job creation and sustainable income and wealth formation); differentiate business, market and technological opportunities for a development target (e.g., on-grid, off-grid, and/or undergrid renewable energy); evolve, accelerate, extend and scale sustainable development business models; and identify criteria for replication (capitalizing external networks, motivate and reward repeating positive-sum economic development strategies). We will discover why capital structure matters in aligning diverse interests into new business models for social and economic change to address [Sustainable Development Goals](#) for 2030. Students will research practical applications to financing challenges for economic development.

EVALUATION

1) Final paper (60%)

Requirements:

- Students are requested to choose a topic and submit a one-page outline in class on November 27, 2019
- Upon approval of the topic and the outline, students are required to compose 15-20 pages (double-spaced) and submit the final paper no later than **February 1, 2020**.
- Late papers will not be accepted.
- Final papers may be submitted in English or Hebrew

- 2) **Completion of case study write-ups and readings presentations:** You will be asked to review and present case studies and/or readings related to the course from those listed below. Students will be asked to choose their presentation groups by the end of the first class. **(20%)**
- 3) **Class room participation and attendance (20%)**

Based on Performance in this course. Students will have the opportunity to register during the second semester for 2 additional credits for directed research in this area of innovative finance (Course 55680: Directed Research in Financial Innovation)

COURSE UNIT OVERVIEW

- I. **Introduction to Finance and Financial Innovations**
- II. **Structural Changes in Capital Markets and Corporate/Public Finance**
 - a. Global Changes
 - b. Israel Capital Markets
- III. **Entrepreneurial Finance**
 - a. Business Finance and Capital Structure
 - b. SMEs
- IV. **Social Finance**
- V. **Financing Ideas: Science and Tech Finance**
- VI. **Urban Revitalization**
 - a. Public / Municipal Finance
 - b. Housing
 - c. Community Development
- VII. **Regional Development and Project Finance**
 - a. Infrastructure
 - b. Regional Development
 - c. Heritage and Tourism
- VIII. **Environmental Finance**
 - a. Solid Waste
 - b. Rivers
 - c. Biodiversity and Ecosystem Services
- IX. **Global Development Finance**
 - a. Blended Finance
 - b. Energy
 - c. Ag-Food-Water
 - d. Global Health

SESSION OVERVIEW

1	October 30, 2019	Introduction to Finance Toolkit and Innovative Finance
2	November 6, 2019	Structural Changes in P3 (Public-Private Partnerships)- Nexus of Corporate/Public Finance
3	Nov. 13, 2019	Entrepreneurial Finance Lifecycle of Finance Business Finance and Capital Structure Equity, Debt finance, and Hybrid Debt Instruments SME Financing

4	Nov. 20, 2019	Impact Investing and Social Finance
5	Nov. 27, 2019	Financing Ideas: Science and Technology
6	Dec. 4, 2019	Urban Revitalization, Regional Development, Heritage and Tourism
7	Dec. 11, 2019	Regional Development—Infrastructure, Culture, Tourism
8	Dec. 18, 2019	Environmental Finance Biodiversity and Ecosystem Services Solid Waste River/Watershed Revitalization
9	December 25, 2019	Christmas Holiday (No Class)
10	January 1, 2020	Global Development Finance: Blended Finance
11	January 8, 2020	Global Development Finance: Energy
12	January 15, 2020	Global Development Finance: Food and Water
13	January 22, 2020	Global Development Finance: Global Health

I. Introduction to Finance and Financial Innovations – October 30

****Required Readings for Lectures**

***For Student Presentations**

1. **Allen, Franklin and Yago, Glenn. *"Financing the Future: Market-Based Innovations for Growth"*. Upper Saddle River, New Jersey: Pearson/Wharton School Publishing, 2010:
 - a. **Chapter 1:** The Evolution of Finance;
 - b. **Chapter 2:** A Framework for Financial Innovation: Managing Capital Structure.
2. **Madsberg, S. and Keohane, G., Rockefeller Foundation (eds.), [The Innovative Finance Revolution, Special Issue of Foreign Affairs](#), February 2017.
3. Shiller, Robert, ["Tackling the World Economy,"](#) Harvard Business Review (January – February 2012).
4. **Barton, D. & Wiseman, M. (2013). ["Focusing capital on the long term."](#) *Harvard Business Review*, January-February, pp. 48-55.
5. Myers, Stewart. ["Capital Structure,"](#) *Journal of Economic Perspectives*. 15/2 Spring 2001:81-102.
6. *Kerr, William R. and Nanda, Raman ["Financing Innovation,"](#) *Annual Review of Financial Economics*, 7/1:445-462.
7. **"Integrating nature and knowledge into economics," [Popular Science Background](#), Nobel Prize in Economic Sciences, 2018.
8. Levine Aghion, Peter Howitt, and Ross Levine, ["Financial Development and Innovation-Led Growth,"](#) in T. Beck and R. Levine, *Handbook of Finance and Development*, London: Elgar, 2018
9. [Economic Growth, Technological Change, and Climate Change](#), Scientific Background Paper, Economic Sciences. Nobel Prize, 2018.

II. Structural Changes in Capital Markets— November 6

1. **Yago, Glenn and Steven Zecher, ["Reinventing Israeli Capital Markets,"](#) *Financial Innovations Lab Report*, Milken Institute, 2014.
2. Yago, Glenn, Steven Zecher, and David Denker, ["Israel's Bridge to Developing Economies: Financing Innovation for Sustainable Development,"](#) Policy Brief, Jerusalem Institute for Policy Research-Milken Innovation Center, January 2018.
3. Barder, Owen and Talbot, Theodore, ["Guarantees, Subsidies, or Paying for Success? Choosing the Right Instrument to Catalyze Private Investment in Developing Countries,"](#) *Working Paper 402*, Center for Global Development, May 2015
4. Patrick Bolton and Frederic Samama, ["Capital Access Bonds: Contingent Capital with an option to Convert,"](#) *Economic Policy*, April, 2012.
5. Gustafsson-Wright, Emily, .et.al., ["Impact Bonds in Developing Countries,"](#) Brookings and Convergence Finance, September 2017.
6. *Biau, Carole, ["Common Capital Market Infrastructure for East Africa: Options for Way Forward,"](#) Milken Institute, Center for Financial Markets, January 2018.
7. *Schellhase, John and Woodsome, Jim ["SMEs and Public Equity Financing: A New Dataset of SME Boards in Emerging Market and Developing Economies,"](#) Milken Institute, August 2, 2017.
8. **Siobhan Cleary, and Alderighi, Stefano, et.al., ["Small and Medium-Sized Enterprises and SME Exchanges,"](#) World Federation of Exchanges and Milken Institute, July 2017.

III. Entrepreneurial Finance – Why Capital Structure Matters – November 13

1. **Allen, Franklin and Yago, Glenn. *"Financing the Future: Market-Based Innovations for Growth"*. New Jersey: Wharton School Publishing, 2010:
 - a. **Chapter 3:** Innovations in Business Finance;
 - b. **Appendix:** The Black-Scholes Formula.
2. *Alibhai, Salman; Bell, Simon; Conner, Gillette. 2017. ["What's Happening in the Missing Middle?: Lessons from Financing SMEs."](#) World Bank, Washington, DC.
3. Irving, Jaqueline, Schellhase, John and Woodsome, Jim ["Can Stock Exchanges Support the Growth of Small and Medium-Sized Enterprises? Lessons from India, South Africa, and Jamaica,"](#) Milken Institute, July 2017.
4. *Nassr, I K. and Wehinger, G., ["Unlocking SME Finance through Market Based Debt: Securitization, Private Placement and Bonds,"](#) *OECD Journal*, Volume 2014/2: 90-105.

5. Yago, Glenn, "Development Finance Case Studies: Innovative Finance for Sustainable Development Goals," *Milken Innovation Center-Jerusalem Institute*, 2018:
 - a. **Case Study 1: Aspada, India & Bangladesh**
6. "[Stimulating Investment in Emerging-Market SMEs](#)," *Financial Innovations Lab Report*, Milken Institute, 2009.
7. Chu, Michael, and Tahilyani, Rachna, "[Aspada: In Search of the Right Structure for Impact Investing](#)," *Harvard Business School Case 314-099*, April 2014 (Revised July 2014).

IV. **Impact Investing and Social Finance – November 20**

1. ****[Building a Social Capital Market in Israel](#)**. *Financial Innovations Lab Report*, Milken Institute, Dec 2012.
 2. ****Gray, Jacob et. al.**, "[Great Expectations: Mission Preservation and Financial Performance in Impact Investing](#)," Wharton Social Impact Initiative, Wharton School, University of Pennsylvania, October 7, 2015.
 3. [The Financial Performance of Impact Investing through Private Debt](#), Symbiotics/GIIN, April 2018: 4-16;61-68
 4. ***A Fraser, et.al.**, Evaluations of the Social Impact Bond Trailblazers in Health and Social Care, Final Report, Policy Innovation Research Unit, July 2018: 51-79.
 5. Friede, Gunnar, et al., "[ESG and Financial Performance: Aggregated Evidence from more than 200 Empirical Studies](#)," *Journal of Sustainable Finance and Investment*, 5:4, 210 – 233, 2015
 6. .
 7. ****Gustafson-Wright, Emily, Gardner, Sophie and Putucha, Vidya** "[The Potential and Limitations of Impact Bonds: Lessons from the First Five Years](#)," Brookings Institution, Global Economy and Development, July 9, 2015.
 8. "[Working Towards a Harmonized Framework for Impact Reporting for Social Bonds](#)," International Capital Market Association, June 2018.
 9. ***Quelch, John A., and Rodriguez, Margaret L.**, "[Fresno's Social Impact Bond for Asthma](#)," *Harvard Business School Case 515-028*, September 2014 (**Case Study**).
- A. Measuring Impact
1. "[Green and Social Bonds: A High-Level Mapping to the Sustainable Development Goals](#)," International Capital Market Association, June 2018. (N. B. See and click on Spreadsheet Supplement for full Mapping)
 2. Addy, Chris, et. al., [Calculating the Value of Impact Investing](#), *Harvard Business Review*, January-February, 2019.
 3. [Practical Impact: GIF's approach to impact measurement](#), Global Innovation Fund, June 2019.
 4. [Financial Innovation Lab Case Summaries](#), Milken Innovation Center-Jerusalem Institute.

V. **Financing Ideas: Science and Tech Finance – November 27**

1. ****Allen, Franklin and Yago, Glenn.** "**Financing the Future: Market-Based Innovations for Growth**". Upper Saddle River, New Jersey: Pearson/Wharton School Publishing, 2010:
 - a. **Chapter 7: Financing Cures.**
2. ****[Fixes in Financing: Financial Innovations for Translational Research](#)**, *Financial Innovations Lab Report*, 2012.
3. Hull, John C. and Lo, Andrew W. and Stein, Roger, Funding Long Shots (October 25, 2017). Rotman School of Management Working Paper No. 3058472. Available at SSRN: <https://ssrn.com/abstract=3058472> or <http://dx.doi.org/10.2139/ssrn.3058472>
4. Saul Lach, et.al., Government financing of R&D: a Mechanism Design Approach, Centre for Economic Policy Research, January 2019.
5. ***Gaddy, Benjamin, Sivaram, Varun, and O'Sullivan, Francis**, "[Venture Capital and Cleantech: The Wrong Model for Clean Energy Innovation](#)," *MIT Energy Initiative Working Paper*, July 2016.
6. *****"New Biomedical Financial Models,"** *Financial Innovations Lab Report*, Milken Innovation Center-Jerusalem Institute, 2018 (**forthcoming**).
7. ****Lo, Andrew W. and Pisano, Gary P.** "[Lessons From Hollywood: A New Approach to Funding R&D](#)," *MIT Sloan Management Review*, Winter 2016.

8. **Forman, Sandra M., Lo, Andrew W., Shilling, Monica and Sweeney, Grace K. "[Funding Translational Medicine via Public Markets: The Business Development Company](#)," *Journal of Investment Management*, 13/4 (2015): 9-32.
9. **Fagnan, David, N., Yang, Nora, McKee, John C. and Lo, Andrew W. 2015, "[Financing translation: Analysis of the NCATS rare-diseases portfolio](#)," *Science Translational Medicine* 7, 263 – 276 (**Case Study**).
10. Fagnan, David E., Fernandez, Jose Maria, Lo, Andrew W., and Stein, Roger M. "[Can Financial Engineering Cure Cancer](#)," *American Economic Review*, 2013, 103(3): 406-411.
11. * Debonneuil, Edouard, Eyraud-Loisel, Anne and Planchet, Fredirc, "[Can Pension Funds Partially Manage Longevity Risk by Investing in a Longevity Megafund?](#)," *Risks*, July 8, 2018: 2-27.
12. *Lo, Andrew W. and Naraharisetti, Sourya, 2014, "[New Financing Methods in the Biopharma Industry: A Case Study of Royalty Pharma, Inc.](#)," *Journal of Investment Management* 12, 4-19 (**Case Study**).
13. Jorring, Adam, Lo, Andrew W., Philipson, Tomas J., Singh, Manita, and Thakor, Richard T., 2017, "[Sharing R&D Risk in Healthcare via FDA Hedges](#)," *Working Paper, MIT Financial Engineering Laboratory*.
14. Isakov, Leah, Lo, Andrew W. and Montazerhodjat, Vahid, "[Is the FDA Too Conservative or Too Aggressive?: A Bayesian Decision Analysis of Clinical Trial Design](#)," *Journal of Econometrics*.

VI. Urban Revitalization – December 4

Public Finance Innovations

1. ***"[The Public Wealth of Cities: How to Turn Around Cities Fortune by Unlocking Public Assets](#)," *Citi GPS: Global Perspectives and Solutions*, March 2018.
2. **Huxley, Joe, "[Value Capture Finance, Making Urban Development Pay Its Way](#)," Urban Land Institute, 2009.
3. *Satterhwaite, David "[The Impact of Urban Development on Risk in Sub-Saharan Africa's cities with a focus on small and intermediate Urban Centers](#)," *International Journal of Disaster Risk Reduction*, 26 (2017) 16-23.
4. ***"[New Perspectives on Climate Finance for Cities: Finance Solutions for New and Emerging Infrastructure Approaches to Urban Climate Mitigation and Adaptation](#)," Siemens-Citi-C40 Cities..
5. **Case Study**: "Hartford County Metropolitan District," *Moody's Credit Opinion*, July 2018.

Housing

1. **Allen, Franklin and Yago, Glenn. "**Financing the Future: Market-Based Innovations for Growth**". New Jersey: Wharton School Publishing, 2010:
 - a. Chapter 4: Innovations in Housing Finance.
2. **Allen, Franklin, James R. Barth, and Glenn Yago, **Fixing the Housing Market: Financial Innovations for the Future**:
 - a. Chapter 1, "Housing Crises Go Global: The Boom, The Bust and Beyond," 1-68;
 - b. Chapter 4: "Housing in Emerging Markets," 103-138;
 - c. Chapter 5: "Future Innovations in Housing Finance," 139-170, New Jersey: Wharton School Publishing/Pearson, 2012.
3. ***"[Toward Affordable Housing in Israel](#)," *Financial Innovations Lab Report*, Milken Innovation Center-Jerusalem Institute, October 2013.
4. ***"[Financing Green Building in Residential Development](#)," *Financial Innovations Lab Report*, Milken Innovation Center-Jerusalem Institute, March 2017.

Community Development

1. ***"[Capital Access in Israel's Underserved Market](#)," *Financial Innovations Lab Report*, Milken Innovation Center-Jerusalem Institute, March 2015.
2. "[Expanding the Market for Community Investment in the United States](#)". Milken Institute, USSIF, Initiative for Responsible Investment, July 2013.

VII. Regional Development and Project Finance – Infrastructure, Culture, Tourism—December 11

Infrastructure

1. Arezki, Rabbah, et.al., "[From Global Savings Glut to Financing Infrastructure](#)," *Economic Policy*, April 2017: 221-261.
2. **Chou, Ben, et.al., "[State Revolving Funds to Build Climate-Resilient Communities](#)," *NRDC Issue Paper*, June 2014.
3. ***[Innovative Finance to Address Africa's Infrastructure Needs](#)," *Financial Innovations Lab*, Milken Institute, May 2016.
4. ***[New Models for Financing Infrastructure in Asia](#)," *Financial Innovations Lab*, Milken Institute, April 30, 2017.
5. *Hansen, Kenneth and Molle, Anthony, "[World Bank Guarantees for Private Projects](#)," Norton Rose Fulbright, April 12, 2016.
6. ***Case Study**: "Hartford County Metropolitan District," *Moody's Credit Opinion*, July 2018.
7. **Yago, Glenn and Zecher, Steven, "[Strengthening Israel's Regions: Creating New Capital Sources for Economic Development in Israel in the Negev and Galilee](#)," Milken Innovation Center-Jerusalem Institute, 2015.
8. NEED Jerusalem Tourism Tax District
9. "[Financial Innovations for Economic Recovery and Development in Northern Israel](#)". *Financial Innovations Lab Report*, Milken Institute, 2007.
10. *Stanish, Charles S. and Levy, Thomas "[Cyber-Archaeology and World Cultural Heritage](#)," *American Academy of Arts and Sciences*, Spring 2013.
11. *Licciardi and Amitahmasebi, Rana (eds.) "[The Economics of Uniqueness: Investing in Historic City Cores and Cultural Heritage Assets for Sustainable Development](#)," World Bank, 2012: Chapter 4—Economic Valuation of Cultural Heritage: 75-106.

VIII. Environmental Finance – December 18

Environmental Finance

1. **Allen, Franklin and Yago, Glenn. *Financing the Future: Market-Based Innovations for Growth*. New Jersey: Wharton School Publishing, 2010:
 - a. Chapter 5: Environmental Finance: Innovating to Save The Planet.
2. **Sandor, Richard, et.al., *Sustainable Investing and Environmental Markets: Opportunities in a New Asset Class*, World Scientific Publishing, 2014, [Forward](#).
 - a. Chapter 1: [A Brief Survey of Environmental Asset Classes](#).
3. **Mazzucato, Mariana and Semieniuk, Greg, "[Financing renewable energy: Who is financing what and why it matters](#)," *Technological Forecasting and Social Change*, May 2017.
4. *Bisoont, Jean and Samama, Frederic, "[Climate Change: A Policy Making of Capital Markets' Mobilization for Public Good](#)," June 2017, *Working Paper*.
5. *Andersson, Mats, Bolton, Patrick and Samama, Frederic, "[Hedging Climate Risk](#)," *Financial Analysts Journal*, 72/3 (2016): 13-32.
6. *Lee, Thomas, "[Fossil Fuel Stranded Assets: Efficient Market or Carbon Bubble?](#)" *Wharton Public Policy Initiative*, April 12, 2017.
7. *Litterman, Bob "[What is the Right Price for Carbon Emissions?](#)" *Regulation*, Summer 2013: 38-43:
 - a. Litterman, Bob, "[A Pragmatic Approach to Climate Change](#)," April 19, 2016;
 - b. Jones, Peyton, "[Selling Stranded Assets: Profit, Protection and Prosperity](#)," *International Endowments Network*, June 17, 2015.
8. **Quesnel, Kim, Ajami, Naushua K. and Wyss, Noemi, "[Tapping into Alternative Ways to Fund Innovation and Multipurpose Water Projects: A financing Framework from the Electricity Sector](#)," *Stanford Woods Center for the Environment*, Stanford University, February 2016.
9. *McNally, John, Andermahr-Sharp, Natacha, "[IFC, Amundi Successfully Close World's Largest Green Bond Fund](#)," *International Finance Corporation at the World Bank Group*, March 2018.
10. (**Case Study**): [Danish Climate Investment Fund](#), September 2017 (KIF and Convergence).
11. Jamison, Eliot "From Innovation to Infrastructure Financing First Commercial Clean Energy Projects," *CalCEF Innovations*, June 2010.
12. Jamison, Eliot "[Insuring Innovation: Reducing the Cost of Performance Risk for Projects Employing Emerging Technology](#)," *CalCEF Innovations*, October 2011 (**Case Study**).

13. [\(CASE STUDY\) Growing the U. S. Green Bond Market, Volume 2: Actionable Strategies and Solutions](#), August 7, 2018.

Solid Waste

1. *Blass, Vered, Heffer, Shiri, Yago, Glenn and Zecher, Steven, "[Financing Solid Waste Disposal in Israel](#)," *Financial Innovations Lab Report*, Milken Institute, November 2012.

River Revitalization and Watershed Management

1. **["Financing Kidron/Wadi El Nar River Revitalization"](#), *Financial Innovations Lab Report*, Milken Institute, July 2013 (**Case Study**).
2. **["Revolving Fund for River Restoration"](#). *Financial Innovations Lab Report*, Milken Institute, December 2009.
3. *Maclean, Caitlin and Yago, Glenn, "[Financial Innovations for Freshwater Revitalization: Transboundary Project Finance in Israel, Jordan, and the Palestinian Authority](#)," *Financial Innovations Lab Report*, Milken Institute, December 2009.

Biodiversity

1. **Yago, Glenn, "[Biodiversity Conservation in Israel](#)," *Financial Innovations Lab Report*, Milken Institute, July 2012.
2. **Maclean, Caitlin, [Creating Mechanisms for Conservation Finance in Southeast Asia](#), *Financial Innovations Lab Report*, Milken Institute, September 2015 (**Case Study**).
3. Braüer, Ingo, et. al, "[The Use Market Incentives to Preserve Biodiversity](#)," Final Report, A project under the Framework contract for economic analysis, Ecologic, July 2006.

IX. Global Development Finance – Blended Finance, December 18

1. **Yago, Glenn and Allen, Franklin "[Financing the Developing World](#)," *World Financial Review*, September-October 2011:44-48
2. [Designing an Israeli Development Financing Platform: Towards Sustainable Development Goals](#), *Financial Innovations Lab Report*, June 2019.
3. Kamstra, Mark and Shiller, Robert J., "[The Case for Trills: Giving the People and their Pension Funds a Stake in the Wealth of Nations](#)," *Cowles Foundation Discussion Paper, No.1717*, August 2009.
4. "[Risk Informed Finance for Development](#)," UNDP, July 12, 2015.
5. **Denker, David, Yago, Glenn, and Zecher, Steven, "[Israel's Bridge to Developing Economies: Financing Innovation for Sustainable Development](#)," *Policy Brief*, Jerusalem Institute for Policy Research-Milken Innovation Center, January 2018.
6. Lee, Chris, Aron Betru and Paul Horrocks, "[Guaranteeing the Goals: Adapting Public Sector Guarantees to Unlock Blended Financing for the U. N. Sustainable Development Goals](#)," Milken Institute and OECD, April 2018.
7. "[Innovative Financing for Development: Scalable Business Models that Produce Economic, Social and Economic Outcomes](#)," *Global Development Incubator*, September 2014.
8. Sachs, Jeffrey D., Schmidt-Traub, Guido, "[Financing Sustainable Development: Implementing SDGs through Effective Investment Strategies and Partnerships](#)," Working Paper, *Sustainable Development Futures Network*, June 2015.
9. *Gustafsson-Wright, Emily, .et.al., "[Impact Bonds in Developing Countries](#)," Brookings and Convergence Finance, September 2017.
10. *Barber, Owen and Talbot, Theodore, "[Guarantees, Subsidies, or Paying for Success? Choosing the Right Instrument to Catalyze Private Investment in Developing Countries](#)," *Working Paper 402*, Center for Global Development, May 2015.
11. *Betru, Aaron, Huang, Ziyi, and Mueller, Jackson, "[Leaving Transferred Money on the Table: Will Remittance-Linked Financial Products Add Value to Development Finance?](#)", *Viewpoints*, Milken Institute, March 2017.
12. **[Scaling the Use of Guarantees in U. S. Community Investment](#)," *GIIN Issue Brief*, April 27, 2017.
13. *Akkoyunlu, Sule and Stern, Maximilian "[An Empirical Analysis of Diaspora Bonds](#)," Graduate Institute-Geneva, Research Paper 3, 2012.

14. [**“New Horizons in African Finance: Reducing Risk and Mobilizing Financing on a New Scale,”](#) IFC, 2016, (**Case Studies**).

No Class – Christmas Holiday, December 25

X. Global Development Finance – Energy, January 1

1. *Tonknogy, Bela et.al., [“Blended Finance in Clean Energy: Experiences and Opportunities,”](#) Climate Policy Initiative, January 2018.
2. Fuchs, Alan, Gertler, Paul J., Shelef, Ori, and Wolfram, Catherine D., [“The Demand for Energy-Using Assets among the World's Rising Middle Classes,”](#) *American Economic Review*, Jun 2016, Vol. 106, No. 6: 1366-1401.
3. **“Case Study: Crossboundary Energy,”** Convergence, October 2016.
4. Lee, Kenneth et.al., [“Electrification for ‘Under Grid’ households in Rural Kenya,”](#) *Development Engineering*, Vol 1. (June 2016): 26-35.

Case Studies for Catastrophic Risk and Climate Change

1. [“Financial Innovations for Catastrophic Risk: Cat Bonds and Beyond,”](#) Milken Institute, *Financial Innovations Lab Report*, Milken Institute, April 2008.
2. **Syroka, Joanna and Wilcox, Richard, [“Rethinking International Disaster Aid Finance,”](#) *Journal of International Affairs*, Spring/Summer 2006, 59/2.
3. Beavogui, Mohamed, [“Building Resilience Against Climate Change: African Risk Capacity,”](#) *Africa Policy Review*, 2018.
4. **Yago, Glenn (ed.), “Development Finance Case Studies: Innovative Finance for Sustainable Development Goals,” Milken Innovation Center-Jerusalem Institute, 2017:
 - a. **Case Study 3:** *Ignite Power, Rwanda;*
 - b. **Case Study 5:** *Gigawatt Global, Rwanda;*
 - c. **Case Study 6:** *Sustainable Water Finance in California and Israel: Financing Tech Transfer.*

Case Studies for Energy

1. Bonner, Dale, MacLean, Caitlin, [“Public-Private Infrastructure Financing Solutions,”](#) *Financial Innovations Lab Report*, Milken Institute, November 2014.
2. **MacLean, Caitlin, Olderman, Katie [“Innovative Financing Models for Energy Infrastructure in Africa,”](#) *Financial Innovations Lab Report*, Milken Institute, May 2015.
3. *Hansen, Ulrich Elmer.,et.al., [“Review of Solar PV market development in East Africa,”](#) *UNEP Riso Center*, Technical University of Denmark, 2014.

XI. Global Development Finance-Agriculture/Food/Water – January 8

Case Studies for Food /Agriculture/Water

1. **Scherer, Jill, Yago, Glenn, and Zeidman, Betsy [“Feeding the World’s Hungry: Fostering an Efficient and Responsive Food Access Pipeline”.](#) *Financial Innovations Lab Report*, Milken Institute, 2009.
2. ***[“Paying for Outcomes—Protecting Human and Animal Health in Sub-Saharan Africa,”](#) *Financial Innovations Lab Report*, Milken Institute, February 2011.
3. [FAO Task Force Report on Innovative financing Mechanisms for Agriculture, Food Security and Nutrition,](#) 2012.
4. [Pay for Results in Development: A Primer for Practitioners,](#) USAID/Palladium, 2018
5. **Yago, Glenn, “Development Finance Case Studies: Innovative Finance for Sustainable Development Goals,” Milken Innovation Center-Jerusalem Institute, 2017:
 - a. **Case Study 4:***The Case of Aflatoxin and Maize Production Pay-for-Outcomes;*
 - b. **Case Study 2:** *Financing Kidron/Wadi El Nar Revitalization-Waste Water; Treatment and Regional Agriculture and Tourism Development.*

6. *Du, X., Lu, L., Reardon, T. and Zilberman, D., "[The Economics of Agricultural Supply Chain Design: A Portfolio Selection Approach](#)," *American Journal of Agricultural Economics*, 98/5 (10 October 2016):1377-1388.
7. **Hartig, Peter, Jainzik, Michael and Pfeiffer, Klaus, "[The Potential of Structured Finance to Foster Agricultural Lending in Developing Countries](#)," in D. Koehn (ed.), *Finance for Food: Toward New Agricultural and Rural Finance*, 2014.
8. ***"[Financial Models for Water Sustainability](#)," *Financial Innovations Lab Report*, Milken Innovation Center-Jerusalem Institute, April 2016.
9. **"[Conducting A Feasibility Study for a Financing Facility for Cocoa Smallholders in Ghana](#)," Convergence, Rabo Bank, Rainforest Alliance, May 2018 (**Case Study**).
10. **"[Financing Fisheries Reform: Blended capital approaches in support of sustainable wild-capture fisheries](#)," Environmental Defense Fund and Duke Nicholas Institute for Environmental Policy Solutions, January 18, 2018 (**Case Study**).
11. **"[Financing Sustainable Land Use: Unlocking business opportunities in sustainable land use with blended finance](#)," KOIS Invest and Blended Finance Taskforce, January 2018 (**Case Study**).
12. Elliot, K.A. "[Pulling Agricultural Innovation and the Market Together](#)". Center for Global Development, Working Paper # 215, June 2010.
13. *Fenichel, E.P., et. al., "[Measuring the Value of Groundwater and other forms of Natural Capital](#)," Proceedings of the National Academic of Science, December 31, 2015 (**Case Study**).
14. Revich, Jerry, et.al., "[Precision Farming: Cheating Malthus with Digital Architecture](#)," Goldman Sachs Equity Research, July 13, 2016.
15. *Global Knowledge Initiative and the Rockefeller Foundation, "[Reducing Global Food Waste and Spoilage](#)," May 2014.
16. Rayner, Cynthia Schweer, "[A Tale of Two African Agricultural Funds](#)," Skoll Center, Said School of Business, Oxford University/ Bertha Centre, University of Cape Town Business School, 2015 (**Case Study**).

XII. Global Development Finance—Global Health – January 15

Case Studies for Global Health

1. **MacLean, Caitlin, "[Innovative Financing for Global Health R&D](#)," *Financial Innovations Lab Report*, Milken Institute, 2012.
2. Lorcan Clarke, et.al., "[Development Impact Bonds Targeting Health Outcomes](#)," Center for Global Development 133, December 2018
3. ***"[Financing the Control of Tuberculosis](#)," *Financial Innovations Lab Report*, Milken Institute, 2015.
4. **Chng, Belinda, MacLean, Caitlin, Singh, Harlin, "[New Models for Financing Vaccination Programs in Southeast Asia](#)," *Financial Innovations Lab Report*, Milken Institute, 2016.
5. Grace, Cheri, "[Developing New Technologies to Address Neglected Diseases: The Role of Product Development Partnerships and Advanced Market Commitments](#)," DFID, 2012.
6. **"[The Utkrisht Impact Bond Case Study](#)," Convergence: Blending Global Finance: January 2018 (**Case Study**).
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