

## *The Hebrew University of Jerusalem*

### *Syllabus*

### *Financial Innovations - 55721*

*Last update 03-09-2018*

*HU Credits: 3*

*Degree/Cycle: 2nd degree (Master)*

*Responsible Department: Business Administration*

*Academic year: 0*

*Semester: 1st Semester*

*Teaching Languages: English*

*Campus: Mt. Scopus*

*Course/Module Coordinator: Prof. Glenn Yago*

*Coordinator Email: [glenn@jiis.org.il](mailto:glenn@jiis.org.il)*

*Coordinator Office Hours: 18:30-21:15*

*Teaching Staff:*

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Prof Glenn Yago

Course/Module description:

The course focuses on the means and methods of innovative finance applied to social, economic, and environmental challenges of development. Financial innovations gives rise to new intermediaries (e.g., community venture capital, revolving small business loan funds, social investment banks, business development companies, venture investment trusts), new types of instruments (structured finance, microfinance, social, environmental and development impact bonds, green bonds, diaspora bonds, catastrophic risk bonds, Bowie bonds and royalty trusts, community investment notes), and new services, platforms or techniques (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. This course will review the application of innovative financing to these new products and services, new processes and operations and organizational forms in addressing problems as diverse as entrepreneurial finance, alternative energy infrastructure, environmental finance, accelerating medical solutions, regional development, affordable housing, urban revitalization and archaeological conservation and discovery. We will discover why capital structure matters in aligning diverse interests into new business models for social and economic change. Students will research practical applications to financing challenges for economic development.

Course/Module aims:

Working knowledge of innovative finance models for global, regional and local economic development.

Learning outcomes - On successful completion of this module, students should be able to:

Working knowledge of the means and methods for building capital structures for SME development, environmental finance, agriculture and food, water, climate change, river restoration, culture and eco-tourism and other project finance development including urban revitalization

Attendance requirements(%):

100

Teaching arrangement and method of instruction: Lectures by professor and

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student presentation based on literature and case study reviews.

Course/Module Content:

- 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

Required Reading:

- I. Introduction to Finance and Financial Innovations – October 16

**\*\*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.

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3. United Nations, *The Global Sustainable Development Report, Chapter 3: Perspectives of Scientists and Technology and the SDGs*, 2016.
  4. Acemoglu, Daron "The World Our Grandchildren Will Inherit: The Rights Revolution and Beyond," National Bureau of Economic Research, Working Paper 17994, April 2012.
  5. Shiller, Robert, "Tackling the World Economy," *Harvard Business Review* (January – February 2012).
  6. \*\*Barton, D. & Wiseman, M. (2013). "Focusing capital on the long term." *Harvard Business Review*, January-February, pp. 48-55.
  7. \*"Green and Social Bonds: A High-Level Mapping to the Sustainable Development Goals," International Capital Market Association, June 2018.
  8. "Development-impact bonds are costly, cumbersome, and good," *The Economist*, June 12, 2018.
  9. Myers, Stewart. "Capital Structure," *Journal of Economic Perspectives*. 15/2 Spring 2001:81-102.
  10. \*Kerr, William R. and Nanda, Raman "Financing Innovation," *Annual Review of Financial Economics*, 7/1:445-462.
  11. Levine, Ross, Laeven, Luc and Michalopoulos, Stelios, "Financial Innovation and Endogenous Growth," *Journal of Financial Intermediation*, 2015, January, 24(1):1-24
  12. \*Mazzucato, M. and Semieniuk, G., "Public financing of innovation: new questions," *Oxford Review of Economic Policy*, (January 2017) 33/1, 22-48.
  13. \*Blended Finance Taskforce, "Better Finance, Better World": Consultation Draft of the Blended Finance Taskforce, Business and Sustainable Development Commission, 2017.

## II. Structural Changes in P3 (Public-Private Partnerships) Finance: Nexus of Corporate/Public/Project Finance—October 23

1. \*\*Yago, Glenn and Steven Zecher, "Reinventing Israeli Capital Markets," *Financial Innovations Lab Report*, Milken Institute, 2014.
2. \*Biau, Carole, "Common Capital Market Infrastructure for East Africa: Options for Way Forward," *Milken Institute, Center for Financial Markets*, January 2018.
3. \*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.
4. \*\*Siobhan Cleary, and Alderighi, Stefano, et.al., "Small and Medium-Sized Enterprises and SME Exchanges," *World Federation of Exchanges and Milken Institute*, July 2017.

October 30 (No Class – Jerusalem Municipal Elections)

## III. Entrepreneurial Finance – Why Capital Structure Matters – November 6

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;

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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. Lerner, Josh, Schoar, Antoinette, Sokolinski, Stanislav, and Wilson, Karen, "The Globalization of Angel Investments: Evidence Across Countries," Harvard Business School Working Paper, No. 16-072, December 2015 (Revised February 2016).
4. \*Suominen, Kati and Lee, Jessica A., "Bridging Trade Finance Gaps: State-Led Innovations to Bolster Exporting by SMEs," Brookings Institute: Project on State and Metropolitan Innovations, January 2015.
5. 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.
6. \*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.
7. 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
8. "Stimulating Investment in Emerging-Market SMEs," Financial Innovations Lab Report, Milken Institute, 2009.
9. 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 13

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. 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.
4. \*\*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.
5. "Working Towards a Harmonized Framework for Impact Reporting for Social Bonds," International Capital Market Association, June 2018.
6. \* Mudaliar, Abihilash, Schiff, Hannah and Bass, Rachel "Annual Impact Investor Survey, 2018," Global Impact Investing Network, USAID and UKAID, May 2018.
7. \*Quelch, John A., and Rodriguez, Margaret L., "Fresno's Social Impact Bond for Asthma," Harvard Business School Case 515-028, September 2014 (Case Study).
8. Mobilizing Capital for Maximum Impact (Wharton Bellagio Report).

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## V. Financing Ideas: Science and Tech Finance – November 20

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. \*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.
4. "Accelerating Medical Solutions in Israel: Building a Global Life Science Industry". Financial Innovations Lab Report, Milken Institute, May 2008.
5. \*\*"New Biomedical Financial Models," Financial Innovations Lab Report, Milken Innovation Center-Jerusalem Institute, 2018 (forthcoming).
6. \*\*Lo, Andrew W. and Pisano, Gary P. "Lessons From Hollywood: A New Approach to Funding R&D," MIT Sloan Management Review, Winter 2016.
7. \*\*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.
8. \*\*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).
9. 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.
10. \* 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.
11. \*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).
12. 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.
13. 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 – November 27

### 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.

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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. \*Kanuri, C., Revi, A., Espey, J., & Kuhle, H., "Getting Started with the SDGs in Cities: A Guide for Stakeholders," *SDSN Flagship Report*. New York: SDSN, 2016.
  5. \**"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.*
  6. *"Financing Models for Smart Cities," European Commission, Finance Working Group, 2013.*
  7. Merk, O., Saussier, S., Staropoli, C., Slack, E., Kim, J-H (2012), "Financing Green Urban Infrastructure," *OECD Regional Development Working Papers 2012/10*.
  8. \**"Urban Innovation and Investment: The Role of International Financial Institutions and Investment Banks."* London: Future Cities Catapult, 2014.

## *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 4*

### *Infrastructure*

1. McKinsey Global Institute, "Bridging Global Infrastructure Gaps," June 2016.

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2. \*\*Chou, Ben, et.al., "State Revolving Funds to Build Climate-Resilient Communities," NRDC Issue Paper, June 2014.
  3. Bradley D. Belt and Nimmo, Joshua, "Catalyzing Pension Fund Investment in the Nation's Infrastructure: A Roundtable Discussion," April 2013.
  4. \*\*"Innovative Finance to Address Africa's Infrastructure Needs," Financial Innovations Lab, Milken Institute, May 2016.
  5. \*\*"New Models for Financing Infrastructure in Asia," Financial Innovations Lab, Milken Institute, April 30, 2017.
  6. \*Hansen, Kenneth and Molle, Anthony, "World Bank Guarantees for Private Projects," Norton Rose Fulbright, April 12, 2016.
  7. \*Case Study: "Hartford County Metropolitan District," Moody's Credit Opinion, July 2018.

### *Regional Development*

1. \*\*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.
2. Assli, Abed. "Northern Israel Tourism Improvement District," Milken Institute, Israel Center, Publication No. 35, July 2009.
3. \*"The Impact of Taxes on the Competitiveness of European Tourism," Final Report, PWC, November 2017.
4. "Financial Innovations for Economic Recovery and Development in Northern Israel". Financial Innovations Lab Report, Milken Institute, 2007.
5. \*Stanish, Charles S. and Levy, Thomas "Cyber-Archaeology and World Cultural Heritage," American Academy of Arts and Sciences, Spring 2013.
6. \*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 11*

#### *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. \*Bisoonot, Jean and Samama, Frederic, "Climate Change: A Policy Making Case Study of Capital Markets' Mobilization for Public Good," June 2017, Working Paper.



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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. "Green Investing: Policy Mechanisms to Bridge the Financing Gap". *World Economic Forum*, January 2010.

## *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.

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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. 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.
3. "Risk Informed Finance for Development, UNDP, July 12, 2015.
4. \*\*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.
5. 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.
6. "Innovative Financing for Development: Scalable Business Models that Produce Economic, Social and Economic Outcomes," Global Development Incubator, September 2014.
7. 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.
8. \*Gustafsson-Wright, Emily, .et.al., "Impact Bonds in Developing Countries," Brookings and Convergence Finance, September 2017.
9. \*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.
10. \*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.
11. \*"Scaling the Use of Guarantees in U. S. Community Investment," GIIN Issue Brief, April 27, 2017.
12. \*Akkoyunlu, Sule and Stern, Maximillian "An Empirical Analysis of Diaspora Bonds," Graduate Intitute-Geneva, Research Paper 3, 2012.
13. \*"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*

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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, Orie, 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. \*\*Yago, Glenn, "Development Finance Case Studies: Innovative Finance for

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*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.*
- 4. \*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.*
- 5. \*\*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.*
- 6. \*\*"Financial Models for Water Sustainability," Financial Innovations Lab Report, Milken Innovation Center-Jerusalem Institute, April 2016.*
- 7. \*"Conducting A Feasibility Study for a Financing Facility for Cocoa Smallholders in Ghana," Convergence, Rabo Bank, Rainforest Alliance, May 2018 (Case Study).*
- 8. \*"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).*
- 9. \*"Financing Sustainable Land Use: Unlocking business opportunities in sustainable land use with blended finance," KOIS Invest and Blended Finance Taskforce, January 2018 (Case Study).*
- 10. Elliot, K.A. "Pulling Agricultural Innovation and the Market Together". Center for Global Development, Working Paper # 215, June 2010.*
- 11. \*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).*
- 12. Revich, Jerry, et.al., "Precision Farming: Cheating Malthus with Digital Architecture," Goldman Sachs Equity Research, July 13, 2016.*
- 13. \*Global Knowledge Initiative and the Rockefeller Foundation, "Reducing Global Food Waste and Spoilage," May 2014.*
- 14. 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. \*\*"Financing the Control of Tuberculosis," Financial Innovations Lab Report, Milken Institute, 2015.*
- 3. \*\*Chng, Belinda, MacLean, Caitlin, Singh, Harlin, "New Models for Financing Vaccination Programs in Southeast Asia," Financial Innovations Lab Report, Milken Institute, 2016.*
- 4. Grace, Cheri, "Developing New Technologies to Address Neglected Diseases: The*

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*Role of Product Development Partnerships and Advanced Market Commitments,” DFID, 2012.*

5. *\*“The Utkrisht Impact Bond Case Study,” Convergence: Blending Global Finance: January 2018 (Case Study).*

6. *\*\*“Healthy Markets for Global Health: A Market Shaping Primer,” Washington, USAID, 2014.*

*Additional Reading Material:*

*Course/Module evaluation:*

*End of year written/oral examination 0 %*

*Presentation 20 %*

*Participation in Tutorials 20 %*

*Project work 60 %*

*Assignments 0 %*

*Reports 0 %*

*Research project 0 %*

*Quizzes 0 %*

*Other 0 %*

*Additional information:*

*SESSION OVERVIEW*

*1 October 16, 2018 Introduction to Finance Toolkit and Innovative Finance*

*2 October 23, 2018 Structural Changes in P3 (Public-Private Partnerships)- Nexus of Corporate/Public Finance*

*October 30, 2018 Jerusalem Municipal Elections-No Class*

*3 Nov. 6, 2018 Entrepreneurial Finance*

*Lifecycle of Finance*

*Business Finance and Capital Structure*

*Equity, Debt finance, and Hybrid Debt Instruments*

*SME Financing*

*4 Nov. 13, 2018 Impact Investing and Social Finance*

*5 Nov. 20, 2018 Financing Ideas: Science and Technology*

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*6 Nov. 27, 2018 Urban Revitalization,  
Regional Development, Heritage and Tourism*

*7 Dec. 4, 2018 Regional Development—Infrastructure, Culture, Tourism*

*8*

*Dec. 11, 2018*

*Environmental Finance  
Biodiversity and Ecosystem Services  
Solid Waste*

*River/Watershed Revitalization*

*9 December 18, 2018 Global Development Finance: Blended Finance*

*December 25, 2018 Christmas Holiday (No Class)*

*10 January 1, 2019 Global Development Finance: Energy*

*11 January 8, 2019 Global Development Finance: Food and Water*

*12 January 15, 2019 Global Development Finance: Global Health*