

AEM 4545/ECON 3545

Money and Finance in the Digital Age

Fall 2024

Professor Eswar Prasad

This course will provide an overview of new financial technologies (Fintech), cryptocurrencies, central bank digital currencies, and decentralized finance (DeFi). The implications of these novel technologies for the future of financial markets, central banking, and international finance will be examined. The course will also cover basic analytical models in open economy macroeconomics and international finance, focusing on capital flows and exchange rate dynamics. This will highlight the evolving roles of China, India, and other emerging markets in the world economy. *Students will be required to write an independent research paper.*

Prerequisites:	Intermediate-level courses in macroeconomics, international economics, and econometrics/statistics.
Lecture room, time:	Kennedy Hall 213; Wednesdays 8:30 a.m. – 11:00 a.m.
Grading:	Letter grade only (no S/U option). Grade will be based on assignments, final research paper, and class participation. Class attendance in person is mandatory.
Credits:	3
Teaching Assistant:	Sharan Banerjee (sb2436)
TA Office Hours:	Wed: 2:30 p.m. – 3:30 p.m. Thu: 11:00 a.m. – 12:00 p.m.
Course Support:	Karin Steigerwald (ks2455)
Prof's Office Hours:	By appointment (through Karin Steigerwald)

COURSE SCHEDULE

Topic 1: Growth, New World Economic Order

IMF World Economic Outlook, April 2024: Chapters 1 and 2

World Bank Global Economic Prospects, June 2024: Chapters 1 and 2

OECD Economic Outlook, June 2024

Bosworth, Barry, and Susan M. Collins, 2008, "Accounting for Growth: Comparing China and India," *Journal of Economic Perspectives*, Vol. 22:1, pp. 45-66.

"China's Economic Rise: History, Trends, Challenges, and Implications for the United States," Congressional Research Service Report, 2019.

Clark, Hunter, Maxim Pinkovskiy, and Xavier Sala-i-Martin, 2018, "China's GDP Growth May be Understated," *China Economic Review*.

Dynan, Karen, and Louise Sheiner, 2018, "GDP As a Measure of Economic Well-being," Hutchins Center Working Paper#43, Brookings Institution.

Jones, Charles, 2016, "The Facts of Economic Growth," Chapter 1, *Handbook of Macroeconomics*, Editors: John B. Taylor, Harald Uhlig, Volume 2, 3-69.

O'Neill, Jim, 2021, "Is the Emerging World Still Emerging?" *Finance & Development*.

Nodari, Gabriela, Daniel Rees, and Phurichai Rungcharoenkitkul, 2022, "Global Growth: Drivers and Post-pandemic Prospects," *BIS Quarterly Review*, Bank for International Settlements.

Prasad, Eswar, 2023, "Has China's Growth Gone from Miracle to Malady?" *Brookings Papers on Economic Activity*, Spring.

Prasad, Eswar, 2023, "China's Bumpy Path," *Finance & Development*, December.

Summers, Lawrence H., 2016, "The Age of Secular Stagnation," *Foreign Affairs*, Vol. 95:2.

Topic 2: Review of Basic Concepts in Money and Finance

Barajas, Adolfo, Martin Cihak, and Ratna Sahay, 2017, "A Broader Reach," *Finance & Development*, Vol. 54:1, pp 34-36.

Bernanke, Ben S., 2020, "The New Tools of Monetary Policy," *American Economic Review*, Vol. 110:4, pp. 943-83.

Bodenhorn, Howard, 2018, “Two Centuries of Finance and Growth in the United States, 1790-1980,” *Handbook of Finance and Development*, Chapter 4, pp. 107-147.

Cerutti, Eugenio, and Maurice Obstfeld, 2019, “China’s Bond Market and Global Financial Markets,” in *The Future of China’s Bond Market* edited by Alfred Schipke, Markus Rodlauer, and Longmei Zhang, IMF, March 2019: Chapter 2.

Rule, Garreth, 2015, “Understanding the Central Bank Balance Sheet,” *Handbook No. 32*, Centre for Central Banking Studies.

McLeay, Michael, Amar Radia, and Ryland Thomas, 2014, “Money Creation in the Modern Economy”, *Bank of England Quarterly Bulletin*, 2014: Q1

Williams, John C., 2017, “Three Questions on R-star,” FRBSF Economic Letter, Federal Reserve Bank of San Francisco. <https://www.frbsf.org/economic-research/files/el2017-05.pdf>

Hands-on Training Session on Data Presentation Using Excel and Stata

Topic 3: Balance of Payments, Exchange Rates

The Dollar Trap: Chapter 5, pages 63-67. Chapter 4.

Adler, Gustavo, and others, 2020, “Dominant Currencies and External Adjustment,” IMF Staff Discussion Note No. 20/05.

Borio, Claudio and Piti Disyatat, 2011, “Global Imbalances and the financial crisis: Link or no link?”, *BIS Working Papers*, No. 346, May 2011

Callen, Timothy, 2018, “Purchasing Power Parity: Weights Matter,” *Finance & Development*, <https://www.imf.org/external/pubs/ft/fandd/basics/42-real-exchange-rates.htm>.

Catao, Luis, 2018, “What Are Real Exchange Rates,” *Finance & Development*, <https://www.imf.org/external/pubs/ft/fandd/basics/42-real-exchange-rates.htm>.

Engel, Charles, and John H. Rogers, 1996, “How Wide is the Border?” *The American Economic Review*, Vol. 86:5, pp. 1112-1125.

Mankiw, Gregory, N., 2002, *Macroeconomics*, fifth edition, Worth Publishers. Section 5.3, pp. 127-141. [On reserve at the library]

Pakko, Michael R., and Patricia S. Pollard, 1996, “For Here or To Go? Purchasing Power Parity and the Big Mac,” *Federal Reserve Bank of St. Louis Review*, Vol. 78(1), pp. 3-22

Topic 4: Monetary Policy, Exchange Rate Regimes

“A Day in the Life of the FOMC: An Inside Look at the Federal Reserve’s Monetary Policymaking Body,” Blog, Federal Reserve Bank of Philadelphia.

<https://www.philadelphiafed.org/education/a-day-in-the-life-of-the-fomc>

Bernanke, Ben S., 2020, “The New Tools of Monetary Policy,” *American Economic Review*, Vol. 110:4, pp. 943-83.

Brandao-Marques, Luis, Gaston Gelos, Thomas Harjes, Ratna Sahay, and Yi Xue, 2020, “Monetary Policy Transmission in Emerging Markets and Developing Economies,” IMF Working Paper No. 20/35.

Goodfriend, Marvin, and Eswar Prasad, 2007, “A Framework for Independent Monetary Policy in China,” *CESifo Economic Studies*, Vol. 53:1, pp. 2-41.

Ihrig, Jane E., Ellen E. Meade, and Gretchen C. Weinbach, 2015, “Monetary Policy 101: A Primer on the Fed’s Changing Approach to Policy Implementation,” Finance and Economics Discussion Series 2015-04.

Labonte, Marc, 2020, “Monetary Policy and the Federal Reserve: Current Policy and Conditions,” Congressional Research Service Report.

<https://fas.org/sgp/crs/misc/RL30354.pdf>

Lubik, Thomas A., and Christian Matthes, 2015, “Calculating the Natural Rate of Interest: A Comparison of Two Alternative Approaches,” FRB Richmond Economic Brief 15-10 (October).

Prasad, Eswar, 2010, “After the Fall: Central Banking in the Aftermath of the Financial Crisis,” *Finance & Development*, Vol. 47:2, pp. 22-26.

Rule, Garreth, 2015, “Understanding the Central Bank Balance Sheet,” Handbook No. 32, Centre for Central Banking Studies.

Williams, John C., 2017, “Three Questions on R-star,” FRBSF Economic Letter, Federal Reserve Bank of San Francisco. <https://www.frbsf.org/economic-research/files/el2017-05.pdf>

Topic 5: New Financial Technologies (Fintech)

The Future of Money: Chapter 3.

Carriere-Swallow, Yan, Vikram Haksar, and Manasa Patnam, 2021, “Stacking Up Financial Inclusion Gains in India,” *Finance & Development*.

IMF and World Bank, 2019, “Fintech: The Experience So Far,” Policy Paper No. 19/024.

Lagarde, Christine, 2018, “A Regulatory Approach to Fintech,” *Finance & Development*, Vol. 55:2, pp. 9-10.

Mention, Anne-Laure, 2020, “The Age of FinTech: Implications for Research, Policy and Practice,” *The Journal of FinTech*, Vol. 01, No.01, 2050002.

Philippon, Thomas, 2016, “The Fintech Opportunity,” NBER Working Paper No. 22476.

Sahay, Ratna, Ulric Eriksson von Allmen, Amina Lahreche, Purva Khera, Sumiko Ogawa, Majid Bazarbash, and Kimberly Beaton, 2021, “The Promise of Fintech: Financial Inclusion in the Post COVID-19 Era”, IMF Discussion Paper No. 20/09.

Schindler, John, 2017, “FinTech and Financial Innovation: Drivers and Depth,” Federal Reserve Board Finance and Economics Discussion Series, 2017-081.

Carstens, Augustin, Stijn Claessens, Fernando Restoy and Hyun Song Shin, 2021, “Regulating Big Techs in Finance,” BIS Bulletin No 45, 2021-08.

Dubey, Tamanna Singh and Amiyatosh Purnanandam, 2023, “Can Cashless Payments Spur Economic Growth?” Manuscript, University of Michigan.

Topic 6: Bitcoin and Blockchain

The Future of Money: Chapter 4.

Adriano, Andreas, 2018, “A Short History of Crypto Euphoria,” *Finance & Development*, Vol. 55:2, pp. 20-21.

Benos, Evangelos, Rodney Garratt, and Pedro Gurrola-Perez, 2017, “The Economics of Distributed Ledger Technology for Securities Settlement,” Bank of England Working Paper No. 670.

Bouveret, Antoine, and Vikram Haksar, 2018, “What Are Cryptocurrencies?” *Finance & Development*, Vol. 55:2, pp. 26-27.

James, Harold, 2018, “Lucre’s Allure,” *Finance & Development*, Vol. 55:2, pp. 17-19.

Nakamoto, Satoshi, 2008, “Bitcoin: A Peer-to-Peer Electronic Cash System,”
<https://bitcoin.org/bitcoin.pdf>

Prasad, Eswar, 2022, “After the Fall: Bitcoin’s True Legacy May Be Blockchain Technology,” *Bulletin of the Atomic Scientists*, July 2022.

Prasad, Eswar, “Don’t Get Fooled Again by Crypto,” *New York Times*, August 9, 2024

Schilling, Linda, and Harald Uhlig, 2019, “Some Simple Bitcoin Economics,” *Journal of*

Monetary Economics, Pages 16-26.

Topic 7: Other Cryptocurrencies, Decentralized Finance

The Future of Money: Chapter 5.

Cong, Lin and Prasad, Eswar S. and Rabetti, Daniel, “Financial and Informational Integration Through Oracle Networks” (June 29, 2023). <https://ssrn.com/abstract=4495514>

Carter, Nic and Jeng, Linda, DeFi Protocol Risks: The Paradox of DeFi (June 14, 2021). “Regtech, Suptech and Beyond: Innovation and Technology in Financial Services” RiskBooks – Forthcoming 3Q 2021. <https://ssrn.com/abstract=3866699>

Harvey, Campbell R. and Ramachandran, Ashwin and Santoro, Joseph, “DeFi and the Future of Finance” (April 5, 2021). <https://ssrn.com/abstract=3711777>

Zetzsche, Dirk Andreas, Douglas W. Arner and Ross P. Buckley, 2020, “Decentralized Finance”, *Journal of Financial Regulations*, Pages 172-203

Topic 8: Central Bank Digital Currencies

The Future of Money: Chapters 6 and 7.

Agustín, Carstens, 2018, “Money in the Digital Age: What Role for Central Banks,” Bank for International Settlements Speech.

Allen, Sarah, Srdjan Capkun, Ittay Eyal, Giulia Fanti, Bryan Ford, James Grimmelmann, Ari Juels, Kari Kostiaainen, Sarah Meiklejohn, Andrew Miller, Eswar Prasad, Karl Wüst, and Fan Zhang, 2020, “Design Choices for Central Bank Digital Currency: Policy and Technical Considerations,” NBER Working Paper No. 27634.

Andolfatto, David, 2018, “Assessing the Impact of Central Bank Digital Currency on Private Banks,” Working Paper No. 2018-26B, Federal Reserve Bank of St. Louis.

Bech, Morten, and Rodney Garratt, 2017, “Central Bank Cryptocurrencies,” *Bank for International Settlements Quarterly Review*, pp. 55–70.

BIS Annual Economic Report, 2021, Chapter 3: CBDCs: An Opportunity for the Monetary System.

Committee on Payments and Market Infrastructures, 2015, “Digital Currencies,” Bank for International Settlements Publication. <https://www.bis.org/cpmi/publ/d137.pdf>

Committee on Payments and Market Infrastructures, 2018, “Central Bank Digital Currencies,” Bank for International Settlements Publication. bis.org/cpmi/publ/d174.pdf

Engert, Walter, and Ben S.C. Fung, 2017, “Central Bank Digital Currency: Motivations and Implications,” Bank of Canada Staff Discussion Paper No. 2017-16.

Fung, S.C. Ben, and Hanna Halaburda, 2016, “Central Bank Digital Currencies: A Framework for Assessing Why and How,” Bank of Canada Staff Discussion Paper No. 2016-22.

Griffoli, Tommaso Mancini, Maria Soledad Martinez Peria, Itai Agur, Anil Ari, John Kiff, Adina Popescu, and Celine Rochon, 2018, “Casting Light on Central Bank Digital Currencies,” Staff Discussion Notes No. 18/08, IMF.

Monetary Authority of Singapore, 2023, “Purpose Bound Money (PBM) Technical Whitepaper.” <https://www.mas.gov.sg/-/media/mas-media-library/development/fintech/pbm/pbm-technical-whitepaper.pdf>

Prasad, Eswar, “A New Era For Money,” *Finance & Development*, September 2022.

Prasad, Eswar, “Money Is About to Enter a New Era of Competition,” *MIT Technology Review*, May 2022.

Prasad, Eswar, “Central Banks Must Not Be Blind to the Threats Posed by CBDCs,” *Financial Times*, July 23, 2023

Prasad, Eswar, “Thailand May Tell Us a Great Deal About the Future of Money”, *Financial Times*, August 5, 2024

Schnabel, Isabel, and Hyun Song Shin, 2018, “Money and Trust: Lessons from the 1620s for Money in the Digital Age,” Bank for International Settlements Working Paper No. 698.

Bech, Morten, Codruta Boar, Daniel Eidan, Philipp Haene, Henry Holden, and Wee Kee Toh, 2022, “Using CBDCs across borders: lessons from practical experiments”, BIS Innovation Hub. <https://www.bis.org/publ/othp51.pdf>

Topic 9: The International Monetary System

The Dollar Trap: Chapters 12-15.

Gaining Currency: Chapters 2, 5-6.

The Future of Money: Chapter 9.

Brummer, Chris, 2017, “The Renminbi and Systemic Risk,” *Journal of International Economic Law*, Vol. 20:3, pp. 447–507.

“Central Bank Digital Currencies for Cross-border Payments,” 2021, Joint report to the G20 by the Committee on Payments and Market Infrastructures, the BIS Innovation Hub, the International Monetary Fund (IMF) and the World Bank.
<https://www.bis.org/publ/othp38.pdf>

Eichengreen, Barry and Domenico Lombardi, 2017, “RMBI or RMBR? Is the Renminbi Destined to Become a Global or Regional Currency?” *Asian Economic Papers*, MIT Press, Vol. 16: 1, pp. 35-59.

Kroeber, Arthur, 2011, “The Chinese Yuan Grows up Slowly: Fact and Fiction about China’s Currency Internationalization,” Policy Paper. Washington: New America Foundation.

Lardy, Nicholas, and Patrick Douglass, 2011, “Capital Account Liberalization and the Role of the Renminbi,” *China’s New Role in the World Economy*, pp. 165-182.

Ocampo, José Antonio, 2017, “A Brief History of the International Monetary System Since Bretton Woods,” in *Resetting the International Monetary (Non)System*, pp 1 - 44.

Prasad, Eswar, 2018, “The Slow, Uneven, Rise of the Renminbi,” *Cato Journal*, Vol. 38:2.

Prasad, Eswar, 2022, “Enduring Preeminence: The Dollar Might Slip, But It Will Continue to Rule,” *Finance & Development*, June 2022.

Prasad, Eswar, 2024, “Top Dollar: Why the Dominance of America’s Currency is Harder Than Ever to Overturn,” *Foreign Affairs*, July/August 2024.

Yu, Yongding, 2012, “Revisiting the Internationalization of the Yuan,” ADBI Working Paper No. 366.

Guest Lectures

October 2: Robin Brooks, Brookings Institution (former Chief Economist, Institute for International Finance; former Chief Currency Strategist, Goldman Sachs)

October 30: John Wu, President, Ava Labs (Dyson School alum!)

BACKGROUND READINGS & REFERENCE MATERIALS

REQUIRED:

The Future of Money: How the Digital Revolution is Transforming Currencies and Finance, Eswar Prasad, Harvard University Press, 2021.

RECOMMENDED:

Gaining Currency: The Rise of the Renminbi, Eswar Prasad, Oxford University Press, October 2016.

The Dollar Trap: How the U.S. Dollar Tightened its Grip on Global Finance, Eswar Prasad, Princeton University Press, 2014.

COURSE ASSIGNMENTS AND REQUIREMENTS

Common Points about Formatting, Submission of Assignments

1. All text double-spaced (except footnotes and references to be single-spaced).
2. Use Times New Roman 12-point font or other similar-sized font (important: assignments with smaller font size won't be accepted), at least 1" margins all sides. Use the same font across the entire submission.
2. Follow formatting instructions for tables and figures.
3. Put your name at the top right corner on the front page of each assignment.
4. Submit the assignments in pdf format through Canvas.
5. Naming convention for pdf file: Lastname_Firstname_Assignment#.pdf

Grade Allocation

Assignment I (GDP):	5 percent
Assignment II (FX):	5 percent
Assignment III (Interest Rates):	5 percent
Assignment IV (Fintech):	5 percent
Assignment V (News Note):	5 percent
[Top four grades of assignments I-V will be used to determine final grade (<i>20 percent</i>)]	
Assignment VI (Data Note):	10 percent
Assignment VII (Research Note):	15 percent
Assignments VIII-X (Research Proposal, First Draft, Final Draft):	50 percent (10+15+25)
Class Participation (attendance, discussions, presentations):	5 percent

Assignment Schedule

Number	Description	Handed out	Due date / time
I.	GDP	Aug. 28	Sept. 3 / 10 a.m.
II.	FX Rates, Markets	Sept. 4	Sept. 9 / 10 a.m.

[Hands-on Training Sessions on Excel, Stata: 3rd + 5th Sept, 6:00 PM – 7:30, Location: TBD]

III.	Interest Rates	Sept. 11	Sept. 16 / 10 a.m.
IV.	Fintech	Sept. 18	Sept. 23 / 10 a.m.
V.	News Note	Sept. 25	Sept. 30 / 10 a.m.
VI.	Data Note	Oct. 2	Oct. 7 / 10 a.m.
VII.	Research Note	Oct. 9	Oct. 21 / 10 a.m.
VIII.	Research Proposal	Oct. 16	Nov. 4 / 10 a.m.

[Proposal presentations: Special sessions on Oct. 29-30 @ 8:00-10:00 p.m.]

IX.	First Draft	Oct. 23	Nov. 22 / 10 a.m.
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[Econometrics review: Special sessions: TBD]

X.	Final Draft	Nov. 20	Dec. 9 / 10 a.m.
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