

TOAN PHAN (Phan Vũ Toàn)

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(Updated May 2024)

PROFESSIONAL EXPERIENCE

Federal Reserve Bank of Richmond

Senior Economist, May 2019 - present

Economist, July 2017 - Apr 2019

Office of Financial Research, Department of the Treasury

Visiting scholar under Intergovernmental Personnel Act, Aug 2021 - present

Assistant Professor in Economics, UNC Chapel Hill, July 2012 - June 2017

Research areas: Climate Economics, Climate Finance, Macroeconomics, International Economics

EDUCATION

Ph.D. in Economics, Northwestern University, Illinois, June 2012

Committee: Martin Eichenbaum, Lawrence Christiano, Matthias Doepke, Alessandro Pavan

M.A. in Economics, Northwestern University, IL, June 2007

B.A. in Mathematics (with minor in Studio Art), Bucknell University, PA, May 2006, *summa cum laude*

BIBLIOGRAPHY

Working papers

1. Severe Weather and the Macroeconomy, with Hee Soo Kim and Christian Matthes, conditionally accepted at *American Economic Journal: Macroeconomics*
2. Leveraging the Disagreement on Climate Change: Theory and Evidence, with Laura Bakkensen and Russell Wong, revise and resubmit at the *Journal of Political Economy*
3. Climate Defaults and Financial Adaptation, with Felipe Schwartzman, revise and resubmit at the *European Economic Review*
4. Credit Rationing in Unsecured Debt Markets, with V. Filipe Martins-da-Rocha and Yiannis Vailakis, submitted
5. Bank Competition and Strategic Adaptation to Climate Change, with Dasol Kim and Luke Olson
6. Does information about flood risk increase willingness to migrate?, with Laura Bakkensen, Quynh Nguyen and Paul Schuler

Peer-reviewed academic publications

1. Long-term Effects of Redlining on Environmental Risk Exposure, with Arianna Salazar-Miranda, Clare Conzelmann, and Jeremy Hoffman, forthcoming at *Nature Cities*
2. Race and Environmental Worries, with Ranie Lin and Lala Ma, forthcoming at *Land Economics*
3. The Transmission of Quasi-Sovereign Default Risk: Evidence from Puerto Rico, with Ryan Leary and Anusha Chari, *IMF Economic Review*, 2024. <https://doi.org/10.1057/s41308-023-00233-8>
4. 5th National Climate Assessment, Ch. 19: Economics, Hsiang, S., S. Greenhill, J. Martinich, M. Grasso, R.M. Schuster, L. Barrage, D.B. Diaz, H. Hong, C. Kousky, T. Phan, M.C. Sarofim, W. Schlenker, B. Simon, and S.E. Sneeringer, 2023: *U.S. Global Change Research Program*
5. Bubbly Recessions, with Sid Biswas and Andrew Hanson, *American Economic Journal: Macroeconomics*, 12(4), 2020, pp. 33-70
6. Temperature and Growth: A Panel Analysis of the United States, with Riccardo Colacito and Bridget Hoffmann, *Journal of Money Credit and Banking*, 51 (2-3), 2019, pp. 313-368
Mentioned in: Congress Joint Economic Committee's 2019 Economic Report to the President, House Committee on the Budget hearing on the Costs of Climate Change, Wall Street Journal (3), Bloomberg (2), CNN, CBS, the Guardian, Business Insider, VoxEU, Think Progress, DevDis-course, FRB SF Economic Letters, Governors' Wind & Solar Energy Coalition
7. Asset Bubbles and Global Imbalances, with Daisuke Ikeda, *American Economic Journal: Macroeconomics*, 11(3), 2019, pp. 209-251

8. Regressive Welfare Effects of Housing Bubbles, with Andrew Graczyk, *Macroeconomic Dynamics*, 2019, pp. 1-26. doi:10.1017/S1365100519000981
9. Asset Pledgeability and Endogenously Leveraged Bubbles, with Julien Bengui, *Journal of Economic Theory*, 177, 2018, pp. 280-314
10. Bubbles, Wage Rigidity, and Persistent Slumps, with Andrew Hanson, *Economic Letters*, 151(2), 2017, pp. 66-70
11. Nominal Sovereign Debt, *International Economic Review*, 58 (4), 2017, pp. 1303-1316
12. Sovereign Debt Signals, *Journal of International Economics*, 104, 2017, pp. 157-165
13. A Model of Sovereign Debt with Private Information, *Journal of Economic Dynamics and Control*, 83, 2017, pp. 1-17
14. Toxic Asset Bubbles, with Daisuke Ikeda, *Economic Theory*, 61(2) (special issue on Bubbles, Multiple Equilibria, and Economic Activities), 2016, pp. 241-271
15. Information, Insurance and the Sustainability of Sovereign Debt, *Review of Economic Dynamics*, 22, 2016, pp. 93-108
16. Roots of the Derivative of the Riemann-Zeta Function and of Characteristic Polynomials, with Dueñez E., Farmer D., Froehlich S., Hughes C., and Mezzadri F. *Nonlinearity*, IOP Publishing, 2010, vol 23, no 10

Federal Reserve publications

17. How Does Market Competition Affect Banks' Adaptation to Changes in Flood Risks?, FRB Richmond *Economic Brief*, 2024
18. A New Look at the Effects of Weather Shocks Over Time, FRB Richmond *Economic Brief*, 2023
19. Historical Redlining and Unequal Environmental Risks, FRB Richmond *Economic Brief*, 2022
20. Are Some Homebuyers Strategically Transferring Climate Risks to Lenders? FRB Richmond *Economic Brief*, 2022
21. Pricing and Mispricing of Climate Risks in U.S. Financial Markets, FRB Richmond *Economic Brief*, 2021
22. Climate Change and Financial Stability? Recalling Lessons from the Great Recession, FRB Richmond *Economic Brief*, 2021
23. Time-Varying Skewness and Real Business Cycles, with Lance Kent, *Economic Quarterly*, The Federal Reserve Bank of Richmond, 105(2), 2019, pp. 59-103
24. The Impact of Higher Temperatures on Economic Growth, with Riccardo Colacito, Bridget Hoffmann, Tim Sablik, FRB Richmond *Economic Brief*, 2018
25. The Roots of 'Bubbly' Recessions, with Helen Fessenden, FRB Richmond *Economic Brief*, 2018

Other publications

26. The impact of rising temperature on U.S. Economic Growth, with Riccardo Colacito and Bridget Hoffmann. *World Science Encyclopedia of Climate Change: Finance, Economics and Policy*, World Scientific, 2020
27. Social vulnerability to climate change in Cambodia, Lao PDR and Vietnam, with Nguyen Huu Ninh, Luong Quang Huy, Philip Michael Kelly. *Sustainable Development: Asia-Pacific Perspectives*, Cambridge University Press, 2023

Dormant projects

Country Size and Sovereign Debt, with Mark Wright
 Political Consequences of Sovereign Default, with Igor Livshits and Christoph Trebesch
 Risky Bubbles, Public Debt and Monetary Policy, with Daisuke Ikeda and Tomohiro Hirano

PROFESSIONAL SERVICE

Presentations/Discussions(†)/Keynotes

2024

Conferences: System Climate Meeting, Vietnam Global Leaders Forum†, SFS Cavalcade*
Seminars: FRB Philadelphia, OCC, Federal Reserve Board

- 2023:
Conferences: Stanford Institute for Theoretical Economics, Banco de Chile annual conference†, Research Handbook of Macropudential Policy Conference at King’s College London, Sveriges Riksbank’s conference on climate change and the financial system, Bundesbank Spring Conference on climate change†, Cowles Conference on General Equilibrium and its Applications at Yale University, Midwest Financial Association Meeting, ASSA†, Effects of Climate on the Business Cycle and the Economy conference at FRB SF*, Richmond Fed Climate Economics Miniconference
Seminars: Bank of Canada, Office of Financial Research, FRB Richmond brown bag
- 2022:
Keynote: Vietnam Symposium in Banking and Finance, Annual Meeting of Hawaii State Bar Association
Conferences: Society for Economic Dynamics, Stanford Institute for Theoretical Economics, PHBS Sargent Institute Macro-Finance Workshop, OCC Symposium on Climate Risk in Banking and Finance, UVA-Duke-Richmond Fed jamboree, AERE Summer Conference, 2022 Asian Meeting of the Econometric Society, BOJ-IMES†, FRB System Climate Meeting†, Asian Meeting of the Econometric Society, European Commission’s Sustainable Finance Research Forum launch event
Seminars: San Francisco Fed Virtual Seminar on Climate Economics, IMF Sovereign Debt Workshop, Associations of Vietnamese Scientists and Experts, Notre Dame University, Virtual East Asia Macroeconomic Seminar Series, FRB Chicago
- 2021:
Conferences: Cambridge University Mini-conference on Climate Change, Econometric Models of Climate Change Conference, UCLA Climate Adaptation Symposium, China Meeting of the Econometric Society, IMF Climate-Related Natural Disasters: Macroeconomic Effects and Policy Responses†, International Banking, Economics and Finance Association (IBEFA) Summer Meeting†
Seminars: FRB NY, FRB SF, FRB Richmond brown bag
- 2020:
Conferences: IMF OAP MOF PRI, GIC Drexel, IMF annual macro-financial research conference†, FRB Richmond Sovereign Debt Workshop, FRB Richmond Climate Economics Workshop
Seminars: FRB Richmond brown bag, Osaka University ISER, FRB CREST, Federal Reserve System brown bag
- 2019:
Conferences: Third Interdisciplinary Sovereign Debt Research and Management Conference (DebtCon 3), System Committee on International Economics Analysis†, Society for Economic Dynamics (SED)
Seminars: Georgetown University, Sao Paulo School of Economics (FGV), Office of Financial Research, FRB Richmond brown bag
- 2018:
Conferences: Society for Economic Dynamics (SED), Conference in honor of Carlstrom and Fuerst at University of Notre Dame, China International Conference in Macroeconomics (CICM), Tsinghua Workshop in Macroeconomics†, American Economics Association, Northwestern Macro Conference, Society for Nonlinear Dynamics and Econometrics, Southern Economic Association (SEA) meeting, North American Summer meeting, NBER IFM
Seminars: University of Virginia, Bucknell University
- 2017:
Conferences: Canon Institute for Global Studies (CIGS) conference on Macroeconomic Theory and Policy 2017, CIGS End of Year Macroeconomics Conference, 19th Tokyo Annual Macroeconomics Conference, UCSB LAEF Conference on Bubbles, Midwest Finance Association Meeting, Federal Reserve Bank of Richmond and University of Virginia Jamboree, Midwest Macro, Interdisciplinary Sovereign Debt Research and Management Conference (DebtCon)
Seminars: University of Southern California, University of California Santa Cruz, University of Tokyo, Osaka University, Osaka Institute of Social and Economic Research (ISER), University of Texas A&M, Virginia Tech, Santa Clara University

- 2016:
Conferences: Barcelona GSE Summer Forum, American Economic Association meeting, Association of Environmental and Resource Economists, Econometric Society, Southern Economic Association
Seminars: Federal Reserve Bank of St Louis, Federal Reserve Bank of Richmond, University of Tokyo, Kobe University, University of Illinois at Urbana Champaign, International Monetary Fund, University of Montreal
- 2015:
Conferences: American Economics Association, Econometric Society World Congress, NBER Summer Institute (EFBGZ)
Seminars: Triangle Dynamic Macro at Duke, Amherst College, Triangle Resource and Environmental Economics (TREE), University of Illinois at Chicago Finance Department, University of Hawaii, University of Washington in Seattle, University of North Carolina
- 2014:
Conferences: Barcelona GSE Summer Forum, American Economics Association meeting, Chicago Fed Summer Workshop on Money Banking Payments and Finance, Vietnam Economist Association Meeting, Institute for New Economic Thinking†
Seminars: University of Montreal, Duke University (political economy seminar)
- 2013:
Conferences: Asia Pacific Conference on Economic Dynamics, Vietnam Economist Association Meeting, Midwest Macroeconomics, Southern Economics Association
Seminars: Federal Reserve of Chicago, Federal Reserve Bank of Atlanta, Duke University, Princeton University (political science lunch seminar), Toulouse School of Economics, University of Munich, Collegio Carlo Alberto, Université Evry Val d'Essonne, Bank of Japan, University of Tokyo, National University of Singapore
- 2012:
Conference: Vietnam Economist Association Meeting
Seminars: University College of London, University of North Carolina, North Carolina State University, College of William and Mary, Ryerson University, Northwestern University
- 2011:
Conference: Stony Brook Game Theory Festival
Seminars: Federal Reserve Bank of Chicago, Northwestern University

Conference (co)organizer

[Virtual Seminar on Climate Economics](#) series (2020-present), hosted by San Francisco Fed
 System Climate Meeting (2022 and 2023), hosted by San Francisco Fed
[Climate Miniconference](#) (2023), hosted by Richmond Fed
[OFR Climate Implications for Financial Stability](#) (2022), hosted by Office of Financial Research
[Climate Change Economics](#) conference (2020), hosted by Richmond Fed

Professional journals refereed

Journal of Political Economy, Econometrica, American Economic Review, American Economic Review: Insights, Journal of Monetary Economics, Journal of Environmental Economics and Management, American Economic Journal: Economic Policy, Economic Journal, International Economic Review, Journal of Economic Theory, Review of Economic Dynamics, Journal of Development Economics, Journal of International Economics, Management Science, Journal of Economic Growth, Journal of Economic Dynamics and Control, Economic Theory, Journal of Money Credit and Banking, Economic Letters, Journal of Banking and Finance, Economic Theory Bulletin, Macroeconomic Dynamics, Journal of Macroeconomics, Journal of Public Economic Theory, Contemporary Economic Policy, Economics of Governance, Japanese Economic Review, Economics of Transition, Emerging Markets Finance and Trade, Economic Quarterly

Previous short-term academic visits

Einaudi Institute for Economics and Finance (EIEF, June 2016), University of Tokyo (Oct 2013 and Oct 2016), Kobe University (July 2016), Federal Reserve Bank of St. Louis (Aug 2016), Federal Reserve Bank of Chicago (Sept 2013)

COVERAGE IN MEDIA AND POLICY DISCUSSIONS

1. Climate change and the cost of inaction, *VoxEU.org*, 10/28/2016
2. The bulk of Houston's clean energy innovation comes from oil and gas, *Houston Chronicle*, 4/26/2017
3. Climate Change May Deeply Wound Long-Term U.S. Growth, *The Wall Street Journal*, 5/2/2018
4. Global warming will depress economic growth in Trump country, *The Guardian*, 5/8/2018
5. Trump voters hurt most by Trump policies, new study finds, *Think Progress*, 5/9/2018
6. Climate change may hurt U.S.'s long-term growth — Fed study, *Governors' wind and solar coalition*, 5/4/2018
7. Climate change could reduce the US growth of economy by one third, *Devdiscourse*, 5/5/2018
8. El cambio climático podría reducir la economía norteamericana en un tercio, *El Espectador*, 5/3/2018
9. Il riscaldamento globale rallenta la crescita economica, *Quoted Business – Pillole di Economia Internazionale*, 6/7/2018
10. Benefits of curbing climate change far outweigh costs, *Bulletin of the Atomic Scientists*, 6/10/2018
11. US could lose a third of growth to climate change, *Central Banking*, 8/8/2018
12. Richmond Fed says climate change could dampen economic growth, *Washington Examiner*, 8/8/2018
13. Summer's record-high temperatures threaten to scorch the economy, *CBS Money Watch*, 8/13/2018
14. Scorching Summers Melt Away America's Growth, *Financial Advisor*, 8/14/2018
15. Scorching Summers Melt Away America's Growth, *Bloomberg*, 8/14/2018
16. Economics of Climate Change: three recent takes, *BBN Times*, 8/15/2018
17. Superhot Summers Are Hurting U.S. Businesses, *Barron's*, 8/15/2018
18. Most economic forecasts have a big blind spot: Climate change, *CNN Money*, 8/17/2018
19. El cambio climático impacta no solo al medioambiente sino también a la economía, *Expansion*, 8/12/2018
20. The Economic Impact of Climate Change Rattles the Oil Industry, *Capital & Main*, 8/28/2018
21. We Can No Longer Afford A Fossil Fuel Economy – OpEd, *EurAsia Review*, 9/10/2018
22. Francis X. Diebold's blog: Interesting papers of the moment, *No Hesitations*, 9/10/2018
23. PG&E May Be the Business World's Biggest Climate-Change Casualty Yet, *Bloomberg*, 1/15/2019
24. Climate Change and the Federal Reserve, *Federal Reserve Bank of San Francisco Economic Letter*, 3/25/2019
25. Fed Policy Makers Take Notice of Climate Change's Implications for Economic Outlook, *The Wall Street Journal*, 4/17/2019
26. Following in the Climate Footsteps of Global CEOs, *ClearPath*, 4/19/2019
27. Default Risk Dangers: The Effect of Downgrades in Public Credit on the Economy, *Chicago Policy Review*, 2/4/2019
28. 2019 Economic Report to the President, Congress Joint Economic Committee, 7/18/2019
29. Statement of Solomon Hsiang, presented to the US House Committee on the Budget, hearing on The Costs of Climate Change: Risks to the US Economy and the Federal Budget, 6/10/2019

PERSONAL INFORMATION

Married with one child and two dogs
Languages: Vietnamese (native); English (fluent)
Part-time *mangaka*