ARE/ECN 215B: Macroeconomics of Development

1 Administration

- **Instructor:**
  Ashish Shenoy (shenoy@ucdavis.edu, SSH 3104)
  OH: by appointment

- **Lectures:**
  Tuesday and Thursday 2:10–4PM
  Location: Olson 6
  Zoom Room: 935 6135 8695
  Password: ARE215B

- **Course website:**
  `https://canvas.ucdavis.edu/courses/649758`

2 Course Description

The goal of this course is to provide an overview of large-scale questions in development economics and economic geography as well as an introduction to non-experimental empirical methods. Even if you do not directly study the topics from this course in your research, I hope it will provide context to understand the broader implications of micro studies.

This course generally addresses the question of why some countries are rich and others are poor. We will start with cross-country comparisons in the stock of human capital, geography, and institutional quality. We will then turn to the allocation of land, capital, production, and labor within countries, focusing on how capital is allocated across firms through credit markets and how labor is allocated across sectors and locations. We will pay particular attention to how the distribution of workers by sector follows a regular pattern as countries get richer. Finally, the course will address household finance and the allocation of risk in general equilibrium.

The literature in this course will use a mix of reduced form and structural empirical methods. Due to the scale of the topics, it is generally infeasible to run randomized evaluations or find natural experiments. Some of the empirical work will use models to generate testable predictions in data. Other papers will use data to estimate structural parameters of a model. I hope you will come away from the course with an expanded tool set to answer questions when experiments are not possible.

This course is designed for second-year Ph.D. students in ARE and Economics. Prerequisites for this course are 200C and 215A or the equivalent. Please see the instructor if you have not completed these courses.

3 Notice of the Academic Code of Conduct and Additional Student Resources

This course is bound by the university's Code of Academic Conduct. Note that it is a violation of the Code to post materials from this course on other websites or forums without the permission of the professor. Full text of the Code can be found at `https://sja.ucdavis.edu/files/cac.pdf`.

Additional student resources related to academic support, health & wellness, career options, and the campus community are available at `https://ebeler.faculty.ucdavis.edu/resources/faq-student-resources`, also linked from the course website.

4 Course Requirements

Over the course of this quarter, there will be four written assignments designed to help you formulate a research idea for your prospectus. In addition, there will be regular assignments related to the readings and a final exam designed to test your understanding of the topics covered, as well as. Your final grade will be determined by your performance on the assignments, the final exam, and in-class participation.

5 Readings

There is no main textbook for this class. Readings for each topic are listed below. You are requested to carefully read the double-starred reading and be familiar with each of the starred readings in advance of the lecture topic, and many times there will be a short written assignment related to the readings. Other references are suggested for further understanding.

5.1 Measurement

Acemoglu, D., S. Johnson, and J. Robinson. 2002. "Reversal of Fortune: Geography and Institutions in The Making of the Modern World Income Distribution," *Quarterly Journal of Economics* 117(4): 1231–94.

Aguiar, M. and E. Hurst. 2005. "Consumption versus Expenditure," *Journal of Political Economy* 113(5): 919–48.

Angrist, N., P. K. Goldberg, and D. Jolliffe. 2021. "Why is Growth in Developing Countries So Hard to Measure?" *Journal of Economic Perspectives* 35(3): 215–42.

Chetty, R. and A. Looney. 2006a. "Consumption smoothing and the welfare consequences of social insurance in developing economies," *Journal of Public Economics* 90: 2351–6.

Chetty, R. and A. Looney. 2006b. "Income risk and the benefits of social insurance: Evidence from Indonesia and the United States," NBER Working Paper 11708.

*Deaton, A. 2005. "Measuring poverty in a growing world (or measuring growth in a poor world)," *Review of Economics and Statistics* 87(1): 1–19.

Deaton, A. 2010. "Price indexes, inequality, and the measurement of world poverty," *American Economic Review* 100(1): 5–14.

Deaton, A. and A. Heston. 2010. "Understanding PPPs and PPP-based national accounts," *American Economic Journal: Macroeconomics* 2(4): 1–35.

Dollar, D. and A. Kraay. 2002. "Growth is good for the poor," Journal of Economic Growth, 7(3): 195–225.

Henderson, J., A. Storeygard, and D. Weil. 2012. "Measuring Economic Growth from Outer Space," *American Economic Review* 102(2): 994–1028.

Jerven, M. 2013. "Comparability of GDP estimates in Sub-Saharan Africa: The effect of revisions in sources and methods since structural adjustment," *Review of Income and Wealth* 59(SI): S16–36.

Jerven, M. 2014. "The political economy of agricultural statistics and input subsidies: Evidence from India, Nigeria and Malawi," *Journal of Agrarian Change* 14(1): 129–43.

Johnson, S., W. Larson, C. Papageorgiou, and A. Subamanian. 2013. "Is newer better? Penn World Table Revisions and their impact on growth estimates," *Journal of Monetary Economics* 60: 255–74.

*Ligon, E. 2019. "Estimating Welfare from Disaggregate Expenditures," mimeo.

Meyer, B.D., W.K.C. Mok, and J.X. Sullivan. 2015. "Household surveys in crisis," *Journal of Economic Perspectives* 29(4): 199–226.

*Pinkovsky, M. and X. Sala-i-Martin. 2016. "Lights, camera...income! Illuminating the national accounts–household surveys debate," *Quarterly Journal of Economics* , 131(2): 579–631.

Ravallion, M. 2001. "Growth, inequality and poverty: Looking beyond averages," *World Development* 29(11): 1803–15.

Ravallion, M. 2003. "Measuring aggregate welfare in developing countries: How well do national accounts and surveys agree?" *Review of Economics and Statistics* 85(3): 645–52.

Sen, A. 1976. "Poverty: An ordinal approach to measurement," *Econometrica* 44(2): 219–31.

Srinivasan, T.N. 1994. "Data base for development analysis: An overview," *Journal of Development Economics* 44: 3–27.

*Young, A. 2012. "The African growth miracle," *Journal of Political Economy* 120(4): 696–739.

Zheng, B. 1997. "Aggregate poverty measures," *Journal of Economic Surveys* 11(2): 123–62.

5.1.1 External Validity

*Allcott, H. 2015. "Site Selection Bias in Program Evaluation," *Quarterly Journal of Economics* 130(3): 1117–65.

*Al-Ubaydli, O., J. List, and D. Suskind. 2019. "The Science of Using Science: Towards an Understanding of the Threats to Scaling Experiments," Becker Friedman Institute Working Paper 2019–73.

Andrews, I. and M. Kasy. 2019. "Identification of and Correction for Publication Bias," *American Economic Review* 109(8): 2766–94.

Banerjee, A., S. Chassang, and E. Snowberg. 2017. "Decision Theoretic Approaches to Experiment Design and External Validity," in A. Banerjee and E. Duflo, eds., *Handbook of Economic Field Experiments Vol. 1*, Elsevier Press: 141–74.

Bold, T., M. Kimenyi, G. Mwabu, A. Ng'ang'a, and J. Sandefur. 2018. "Experimental evidence on scaling up education reforms in Kenya," *Journal of Public Economics* 168: 1–20.

Broderick, T., R. Giordano, and R. Meager. 2020. "An Automatic Finite-Sample Robustness Metric: Can Dropping A Little Data Change Conclusions?," mimeo.

Cunha, J., G. de Giorgi, and S. Jayachandran. 2019. "The Price Effects of Cash versus In-Kind Transfers," *Review of Economic Studies* 86: 240–81.

Chassang, S., G. Padó I Miquel, and E. Snowberg. 2012. "Selective Trials: A Principal-Agent Approach to Randomized Controlled Experiments," *American Economic Review* 102(4): 1279–1309.

*DellaVigna, S. and E. Linos. 2022. "RCTs to Scale: Comprehensive Evidence from Two Nudge Units," *Econometrica* 90(1): 81–116.

Dhaliwal, I. and R. Hanna. 2017. "The devil is in the details: The successes and limitations of bureaucratic reform in India," *Journal of Development Economics* 124: 1–21.

Egger, D., J. Haushofer, E. Miguel, P. Niehaus, and M. Walker. 2021. "General Equilibrium Effects of Cash Transfers: Experimental Evidence from Kenya," NBER Working Paper 26600.

Muralidharan, K. and P. Niehaus. 2017. "Experimentation at Scale," *Journal of Economic Perspectives* 31(4): 103–24.

*Meager, R. 2019. "Understanding the Average Impact of Microcredit Expansions: A Bayesian Hierarchical Analysis of Seven Randomized Experiments," *American Economic Journal: Applied Economics* 11(1): 57–91.

Pritchett, L. and J. Sandefur. 2015. "Learning from Experiments When Context Matters," *American Economic Review* 105(5): 471–75.

**Rosenzweig, M. and C. Udry. 2020. "External validity in a stochastic world: Evidence from low-income countries," *Review of Economic Studies* 87(1): 343–81.

Usmani F., M. Jeuland, and S. Pattanayak. 2018. "NGOs and the effectiveness of interventions," WIDER Working Paper Series 2018-59.

Vivalt, E. 2020. "How Much Can We Generalize From Impact Evaluations?," *Journal of the European Economic Association* 18(6): 3045–89.

5.2 Development Accounting

**Caselli, F. 2005. "Accounting for cross-country income differences" in P. Aghion and S.N. Durlauf, eds., *Handbook of Economic Growth Vol. 1,* Elsevier Press: 679–741.

Caunedo, J. and E. Keller. 2021. "Capital Obsolescence and Agricultural Productivity," *Quarterly Journal of Economics* 136(1): 505–61.

Hanushek, E. and D. Kimko. 2000. "Schooling, Labor Force Quality, and the Growth of Nations," *American Economic Review* 90(5): 1184–208.

Hanushek, E. and L. Woessmann. 2012. "Do better schools lead to more growth? Cognitive skills, economic outcomes, and causation," *Journal of Economic Growth* 17: 267–321.

Johnson, P. and C. Papageorgiou. 2020. "What Remains of Cross-Country Convergence?," *Journal of Economic Literature* 58(1): 129–75.

Jones, B.F. 2014. "The human capital stock: A generalized approach," *American Economic Review* 104(11): 3752–77.

Kehrig, M. and N. Vincent. 2021. "The Micro-Level Anatomy of the Labor Share Decline," *Quarterly Journal of Economics* 136(2): 1031–87.

Klenow, P.J. and A. Rodriguez-Clare. 1997. "The neoclassical revival in growth economics: Has it gone too far?" in Bernanke, B.S. and J.J. Rotemberg, eds., *NBER Macroeconomics Annual 1997, Vol. 12* NBER Books: 73–103.

Kremer, M. 1993. "The O-ring theory of economic development," *Quarterly Journal of Economics* 108(3): 551–75.

*Lagakos, D., B. Moll, T. Porizo, N. Qian, and T. Schoellman. 2018. "Life-cycle wage growth across countries," *Journal of Political Economy* 126(2): 797–849.

Mankiw, N.G., D.N. Romer, and D. Weil. 1992. "A contribution to the empirics of economic growth," *Quarterly Journal of Economics* 107(2): 407–37.

Patel, D., J. Sandefur, and A Subramanian. 2021. "The new era of unconditional convergence," *Journal of Development Economics* 152.

Weil, D.N. 2014. "Health and economic growth," in P. Aghion and S.N. Durlauf, eds., *Handbook of Economic Growth Vol. 2,* Elsevier Press: 623–82.

Young, A. 1995. "The Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience," *Quarterly Journal of Economics* 110: 641–80.

5.2.1 Estimating Production Functions

Ackerberg, D.A., K. Caves, and G. Frazer. 2015. "Identification Properties of Recent Production Function Estimators," *Econometrica* 83(6): 2411–51.

*Gandhi, A., S. Navarro, and D. Rivers. 2020. "On the Identification of Gross Output Production Functions," *Journal of Political Economy* 128(8): 2973–3016.

J. Levinsohn and A. Petrin. 2003. "Estimating Production Functions Using Inputs to Control for Unobservables," *Review of Economic Studies* 70(2): 317–41.

G.S. Ollie and A. Pakes. 1996. "The Dynamics of Productivity in the Telecommunications Equipment Industry," *Econometrica* 64(6): 1263–97.

Shenoy, A. 2021. "Estimating the Production Function under Input Market Frictions," *Review of Economics and Statistics* 103(4): 666–79.

5.3 History and Institutions

**Acemoglu, D., S. Johnson, and J.A. Robinson. 2001. "The colonial origins of comparative development: An empirical investigation," *American Economic Review* 91(5): 1369–401.

*Acemoglu, D., S. Naidu, P. Restrepo, and J. Robinson. 2019. "Democracy Does Cause Growth," *Journal of Political Economy* 127(1): 47–100.

Banerjee, A.V. and L. Iyer. 2005. "History, institutions, and economic performance: The legacy of colonial land tenure systems in India," *American Economic Review* 95(4): 1190–213.

Besley, T. and Persson, T. 2009. "The origins of state capacity: Property rights, taxation and politics," *American Economic Review* , 99(4): 1218–44.

Bukowski, P. 2019. "How history matters for student performance: Lessons from the Partitions of Poland," *Journal of Comparative Economics* 41(1): 136–75.

*Dell, M. 2010. "The persistent effects of Peru's mining mita," *Econometrica* 78(6): 1863–903.

Dell, M., N. Lane, and P. Querubin. 2015. "State capacity, local collective action, and economic development in Vietnam," *Econometrica* 86(6) 2083–121.

Gennaioli, N. and I. Rainer. 2007. "The modern impact of precolonial centralization in Africa," *Journal of Economic Growth* 12: 185–234.

Guiso, L., P. Sapienza, and L. Zingales. 2016. "Long-Term Persistence," *Journal of the European Economics Association* 14(6): 1401–36.

Hall, R.E. and C.I. Jones. 1999. "Why do some countries produce so much more output per worker than others?", *Quarterly Journal of Economics* 114(1): 83–116.

*Jones, B.F. and B.A. Olken, 2005. "Do leaders matter? National leadership and growth since World War II," *Quarterly Journal of Economics* 120(3): 835–64.

Lowes, S. and E. Montero. 2021. "Concessions, Violence, and Indirect Rule: Evidence from the Congo Free State," *Quarterly Journal of Economics* 136(4): 2047–91.'

Lowes, S. and E. Montero. 2021. "The Legacy of Colonial Medicine in Central Africa," *American Economic Review* 111(4): 1284–1314.

Michalopoulos, S. and E. Papaioannou. 2013. "Pre-colonial ethnic institutions and contemporary African development," *Econometrica* 81(1): 113-52.

Nunn, N. 2008. "The long-term effects of Africa's slave trades," *Quarterly Journal of Economics* 123(1): 139–76.

Oto-Peralias Romero-Avila. 2014. "The distribution of legal traditions around the world: A contribution to the legal origins theory," *Journal of Law and Economics* 57(3): 561–628.

5.3.1 Management and Governance

Acemoglu, D., T. Reed, and J. Robinson. 2014. "Chiefs: Economic Development and Elite Control of Civil Society in Sierra Leone," *Journal of Political Economy* 122(2): 319–68.

Bloom, N., B. Eifert, A. Mahajan, D. McKenzie, and J. Roberts. 2013. "Does Management Matter? Evidence from India," *Quarterly Journal of Economics* 128(1): 1–51.

Bloom, N., A. Mahajan, D. McKenzie, and J. Roberts. 2020. "Do Management Interventions Last? Evidence from India," *American Economic Journal: Applied Economics* 12(2): 198–219.

*Bloom, N. and J. van Reenen. 2007. "Measuring and Explaining Management Practices across Firms and Countries," *Quarterly Journal of Economics* 122(4): 1351–408.

Bloom, N. and J. van Reenen. 2010. "Why do Management Practices Differ across Firms and Countries?" *Journal of Economics Perspectives* 24(1): 203–24.

Kosfeld, M. and D. Rustagi. 2015. "Leader Punishment and Cooperation in Groups: Experimental Field Evidence from Commons Management in Ethiopia," *American Economic Review* 105(2): 747–83.

5.4 Geography

Alsan, M. 2015. "The Effect of the TseTse Fly on African Development," *American Economic Review* 105(1): 382–410.

*Berman, N., M. Couttenier, D. Rohner, and M. Thoenig. 2017. "This Mine Is Mine! How Minerals Fuel Conflicts in Africa," *American Economic Review* 107(6): 1564–610.

Blattman, C., J. Hwang, and J. Williamson. 2007. "Winners and losers in the commodity lottery: The impact of terms of trade growth and volatility in the Periphery 1870–1939," *Journal of Development Economics* 82: 156–79.

Bleakley, H. 2007. "Disease and development: Evidence from hookworm eradication in the American South," *Quarterly Journal of Economics* 122(1): 73–117.

**Bleakley, H. 2010. "Malaria eradication in the Americas: A retrospective analysis of childhood exposure," *American Economic Journal: Applied Economics* 2: 1-45.

Burke, M., S.M. Hsiang, and E. Miguel. 2015. "Global non-linear effect of temperature on economic production," *Nature* 527: 235–39.

Caselli, F. and G. Michaels. 2013. "Do Oil Windfalls Improve Living Standards? Evidence from Brazil," *American Economic Journal: Applied Economics* 5(1): 208–38.

Crivell, E. and S. Gupta. 2014. "Resource blessing, revenue curse? Domestic revenue effort in resource-rich countries," *European Journal of Political Economy* 35: 88–101.

Dal Bó, E. and P. Dal Bó. 2011. "Workers, Warriors, and Criminals: Social Conflict in General Equilibrium," *Journal of the European Economic Association* 9(4): 646–77.

*Dell, M., B.F. Jones, and B.A. Olken. 2012. "Temperature shocks and economic growth: Evidence from the last half century," *American Economic Journal: Macroeconomics* 4(3): 66–95.

Dell, M., B.F. Jones, and B.A. Olken. 2014. "What do we learn from weather? The new climate-economy literature," *Journal of Economic Literature* 52(3): 740–98.

Dube, O. and J. Vargas. 2013. "Commodity Price Shocks and Civil Conflict: Evidence from Colombia," *Review of Economic Studies* 4(1): 1384–421.

Frankel, Jeffrey A. 2012. "The natural resource curse: A survey of diagnoses and some prescriptions," HKS Faculty Research Working Paper Series RWP12-014.

Harari, M. and E. La Ferrara. 2018. "Conflict, Climate, and Cells: A Disaggregated Analysis," *Review of Economics and Statistics* 100(4): 594–608.

Martinez, L. 2021. "Natural Resource Rents, Local Taxes and Government Performance: Evidence from Colombia ," mimeo.

*McGuirk, E. and M. Burke. 2020. "The Economic Origins of Conflict in Africa," *Journal of Political Economy* 128(10): 3940–97.

Sachs, J. and A. Warner. 1999. "The Big Rush, Natural Resource Booms and Growth," *Journal of Development Economics* 29(1): 43–76.

*Sanchez de la Sierra, R. 2020. "On the Origin of the State: Stationary Bandits and Taxation in Eastern Congo," *Journal of Political Economy* 128(1).

5.4.1 Two-Way Fixed Effects

Abadie, A. 2021. "Using Synthetic Controls: Feasibility, Data Requirements, and Methodological Aspects," *Journal of Economic Literature* 59(2): 391–425.

Arkhangelsky, D., S. Athey, D. Hirshberg, G. Imbens, and S. Wagner. 2021. "Synthetic Difference in Differences," *American Economic Review* 111(12): 4088–118.

Callaway, B. and P. Sant'Anna. 2021. "Difference-in-Differences with Multiple Time Periods," *Journal of Econometrics* 225(2): 200–230.

*de Chaisemartin, C. and X. D'Haultfœuille. 2020. "Two-Way Fixed Effects Estimators with Heterogeneous Treatment Effects," *American Economic Review* 110(9): 2964–96.

Goodman-Bacon, A. 2021. "Difference-in-Differences with Variation in Treatment Timing," *Journal of Econometrics* 225(2): 254–77.

Sun, L. and S. Abraham. 2021. "Estimating dynamic treatment effects in event studies with heterogeneous treatment effects," *Journal of Econometrics* 225(2): 175–99.

5.5 Capital Allocation

5.5.1 Misallocation

Asker, J., A. Collard-Wexler, and J. de Loecker. 2014. "Dynamic Inputs and Resource (Mis)Allocation," *Journal of Political Economy* 122(5): 1013–1063.

Asker, J., A. Collard-Wexler, and J. de Loecker. 2019. "(Mis)Allocation, Market Power, and Global Oil Extraction," *American Economic Review* 109(4): 1568–615.

Banerjee, A.V. and E. Duflo. 2005. "Growth theory through the lens of economic development," in P. Aghion and S.N. Durlauf, eds., *Handbook of Economic Growth Vol. 1,* Elsevier Press: 473–552.

Baqaee, D. and E. Farhi. 2020. "Productivity and Misallocation in General Equilibrium," *Quarterly Journal of Economics* 135(1): 105–63.

Bau, N. and A. Matray. 2021. "Misallocation and Capital Market Integration: Evidence From India," mimeo.

Bils, M., P. Klenow, and C. Ruane. 2020. "Misallocation or Mismeasurement?" NBER Working Paper 26711.

*Caselli, F. and J. Feyrer. 2007. "The marginal product of capital," *Quarterly Journal of Economics* 122(2) 535–68.

Hopenhayn, H.A. 2014. "Firms, misallocation, and aggregate productivity: A review," *Annual Review of Economics* 6: 735–70.

**Hsieh, C. and P.J. Klenow. 2009. "Misallocation and manufacturing TFP in China and India," *Quarterly Journal of Economics* 124(4) 1403–48.

*Hsieh, C. and P.J. Klenow. 2014. "The life cycle of plants in India and Mexico," *Quarterly Journal of Economics* 129(3): 1035–84.

Hsieh, C. and B.A. Olken. 2014. "The missing 'missing middle,' " *Journal of Economic Perspectives* 28(3): 89-108.

Jones, C.I. 2011. "Intermediate goods and weak links in the theory of economic development," *American Economic Journal: Macroeconomics* 3: 1–28.

Rotemberg, M. and T. White. 2021. "Plant-to-Table(s and Figures): Processed Manufacturing Data and Measured Misallocation," mimeo.

5.5.2 Financial Development

Aghion, P., P. Howitt, and D. Mayer-Foulkes. 2005. "The effect of financial development on convergence: Theory and evidence," *Quarterly Journal of Economics* 120(1): 173–222.

*Balboni, C., O. Bandiera, R. Burgess, M. Ghatak, and A. Heil. 2021. "Why do Poor People Stay Poor?" *Quarterly Journal of Economics* forthcoming.

Banerjee, A., E. Breza, E. Duflo, and C. Kinnan. 2019. "Can Microfinance Unlock a Poverty Trap for Some Entrepreneurs?" NBER Working Paper 26346.

Banerjee, A., E. Breza, R. Townsend, and D. Vera-Cossio. 2019. "Access to Credit and Productivity: Evidence from Thai Villages," mimeo.

Banejee, A.V. and E. Duflo. 2014. "Do firms want to borrow more? Testing credit constraints using a directed lending program," *Review of Economic Studies* 81: 572–607.

*Banerjee, A.V. and B. Moll. 2010. "Why does misallocation persist?" *American Economic Journal: Macroeconomics* 2(1): 189–206.

Bertrand, M., A. Schoar, and D. Thesmar. 2007. "Banking deregulation and industry structure: Evidence from the French banking reforms of 1985," *Journal of Finance* 62(2): 597–628.

**Buera, F.J., J.P. Kaboski, and Y. Shin. 2011. "Finance and development: A tale of two sectors," *American Economic Review* 101: : 1964–2002.

Buera, F.J., J.P. Kaboski, and Y. Shin. 2015. "Entrepreneurship and Financial Frictions: A Macrodevelopment Perspective," *Annual Review of Economics* 7: 7409–36.

Carlson, M., S. Correia, and S. Luck. 2022. "The Effects of Banking Competition on Growth and Financial Stability: Evidence from the National Banking Era," *Journal of Political Economy* 130(2): 462–520.

de Mel, S., D. McKenzie, and C. Woodruff. 2088. "Returns to capital in microenterprises: Evidence from a field experiment," *Quarterly Journal of Economics* 123(4): 1329–72.

Midrigan, V. and D. Xu. 2014. "Finance and Misallocation: Evidence from Plant-Level Data," *American Economic Review* 104(2): 422-58.

Moll, B. 2014. "Productivity Losses from Financial Frictions: Can Self-Financing Undo Capital Misallocation?," *American Economic Review* , 104(10): 3186—221.

Pawasutipaisit, A. and R. Townsend. 2011. "Wealth accumulation and Factors accounting For Success," *Journal of Econometrics* 161(1): 56–81.

5.6 Land Distribution

Adamopoulos, T., L. Brandt, J. Leight, and D. Restuccia. 2021. "Misallocation, Selection and Productivity: A Quantitative Analysis with Panel Data from China," NBER Working Paper 23039.

*Adamopoulos, T. and D. Restuccia. 2014. ""The Size Distribution of Farms and International Productivity Differences," *American Economic Review* 104(6): 1667–97.

Adamopoulos, T. and D. Restuccia. 2022. "Geography and Agricultural Productivity: Cross-Country Evidence from Micro Plot-Level Data," *Review of Economic Studies* forthcoming.

Chari, A., E. Liu, S. Wang, and Y. Wang. 2021. "Property Rights, Land Misallocation, and Agricultural Efficiency in China," *Review of Economic Studies* 88(4): 1831–62.

Chen, C. 2017. "Untitled Land, Occupational Choice, and Agricultural Productivity," *American Economic Journal: Macroeconomics* 9(4): 91–121.

de Janvry, A., K. Emerick, M. Gonzalez-Navarro, and E. Sadoulet. 2015. "Delinking Land Rights from Land Use: Certification and Migration in Mexico," *American Economic Review* 105(10) 3125–49.

Foster, A. and M. Rosenzweig. 2011. "Are Indian Farms too Small? Mechanization, Agency Costs, and Farm Efficiency," mimeo.

**Foster, A. and M. Rosenzweig. 2022. "Are There Too Many Farms in the World? Labor-Market Transaction Costs, Machine Capacities, and Optimal Farm Size," *Journal of Political Economy* 130(3): 636–80.

*Gollin, D. and C. Udry. 2021. "Heterogeneity, Measurement Error, and Misallocation: Evidence from African Agriculture," *Journal of Political Economy* 129(1): 1–80.

Jayne, T., J. Chamberlin, L. Traub, N. Sitko, M. Muyanga, F. Yeboah, W. Anseeuw, A. Chapoto, A. Wineman, C. Nkonde and R. Kachule. 2016. "Africa's changing farm size distribution patterns: the rise of medium-scale farms," *Agricultural Economics* 47(S1): 197–214.

Lowder, S., K. Skoet, and T. Raney. 2016. "The Number, Size, and Distribution of Farms, Smallholder Farms, and Family Farms Worldwide," *World Development* 87: 16–29.

*Maue, C., M. Burke, and K. Emerick. 2020. "Productivity Dispersion and Persistence among the World's Most Numerous Firms," NBER Working Paper 26924.

5.7 Transportation and Trade

Allen, T. 2014. "Information frictions in trade," *Econometrica* 82(6): 2014–83.

Arkolakis, C., A. Costinot, and A. Rodríguez -Clare. 2012. "New Trade Models, Same Old Gains?"' *American Economic Review* 102(1): 94–130.

Asher, S. and P. Novosad. 2020. "Rural Roads and Local Economic Development," *American Economic Review* 110(3): 797–823.

Atkin, D. 2013. "Trade, tastes, and nutrition in India," *American Economic Review* 103(5): 1629-63.

*Atkin, D. and D. Donaldson. 2015. "Who's getting globalized? The size and implications of intra-national trade costs," NBER Working Paper 21439.

Brancaccio, G., M. Kalouptsidi, and T. Papageorgiou. 2020. "Geography, Transportation, and Endogenous Trade Costs," *Econometrica* 88(2): 657–691.

*Costinot, A. and D. Donaldson. 2016. "How large are the gains from economic integration? Theory and evidence from U.S. agriculture, 1880-1997," NBER Working Paper 22946.

Costinot, A., D. Donaldson, and C. Smith. 2016. "Evolving Comparative Advantage and the Impact of Climate Change in Agricultural Markets: Evidence from 1.7 Million Fields around the World," *Journal of Political Economy* 124(1): 205–48.

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Donaldson, D. 2015. "The gains from market integration," *Annual Review of Economics* 7(6): 16–47.

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