

ECON 745 Advanced Topics in International Trade

Spring 2022

Instructor:

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Office hours: by appointment

Course delivery

- Delivery mode: In-person
- Class time: MW 9:30-10:45am
- Classroom: TYD 3100

Overview

The course is intended to consolidate the tools and models learned in ECON 742, and train students in frontier research methods. The course will cover topics related to trade and heterogeneous firms, quantitative general equilibrium trade models, multinationals and vertical specialization, trade and firm productivity, distributional effects of trade, and spatial economics. Students will learn empirical and quantitative skills to bring theoretical models to data. Successful students should be ready to start exploring potential dissertation topics in international trade by the end of the semester.

Students are expected to either have taken ECON 742. If you want to take this course but did not take or do not plan to take ECON 742, you need to talk with the instructor before registration.

Course Requirements and Grades

The main course requirements are: (a) problem sets and referee reports (30%); (b) in-class presentations (30%); and (c) paper proposal (40%). These requirements are important to develop the skills required to work on a dissertation in international trade. Class participation is very important. Students are expected to read assigned materials before they come to class and actively participate in class discussions.

(a) Problem sets and summary papers (30%)

There will be five to six problem sets over the semester. They include both analytic and quantitative exercises. For quantitative exercises, students are expected work with Matlab. Students can work together, but

each one should write own answer. Problem sets are due a week from the date when they are posted. I will assign four to five problem sets before the Spring break and one or two problem sets after the Spring break to allow more time for research during the second half of the semester.

Before every Monday class meeting, you should prepare a short referee report (up to two pages with at least 1.5 spacing) for one of the papers marked (*) on the reading list of that week. This report should summarize and critically assess the research question, contribution, main theoretic and quantitative findings of the reviewed paper. It also needs to relate the paper for which you write a report to the other assigned papers with marks (*) and (†) for the same class meeting. This requirement means that you have to read (at least) all marked papers, even though you can pick only one to write a report for. In your report, you should try to make constructive suggestions for the papers, if any. Reports are due at the 9:30 am on every Monday.

Problem sets and referee reports must be submitted to ELMS. No hard copy will be accepted. For a problem set with analytic questions, students must use LaTeX for their answers. No scanned copy of handwritten answers will be accepted.

(b) In-class presentations (30%)

There will be four different types of presentations throughout the semester. The main focus of presentations will be on learning essential communication skills.

First, in some classes, students will present one of the papers that are assigned for that class meeting. Each student will give this type of presentation several times over the semester, depending on the final class size. The instructor and students will agree on the schedule at the beginning of the semester. The presentation should be an extended version of the summary paper which is due every Monday and should be about 25-min long including general discussion.

Second, in the week of Mar 7, students will present their research idea. This presentation should include research question, motivation, related literature, and plans to complete the research proposal by the end of the semester. Students are expected to address the feedback received during the presentation in their first draft of the proposal that will be due right after the Spring break.

Third, on May 4, students will present one of the recent NBER working papers or recent job market papers in the field of international trade, which is closely related to the research proposal they are working on. Students must discuss which paper to present with the instructor by Apr 15. The presentation should clearly demonstrate how the selected paper is

related to the research proposal that will be presented in the following week.

Lastly, on May 9, students will present the final version of their research proposal. The length of each presentation will depend on the final class size. Students are expected to address the feedback during the presentation in their final draft of the research proposal.

(c) Paper proposal (40%)

Research proposals should include all of these elements: (1) your research question; (2) motivating evidence; (3) why we should care about it; (4) literature review; (5) what you want to add to the literature; and (6) tentative plan to further develop your idea.

This is a semester-long assignment. First, students should submit the first version briefly including all elements by Mar 28. The first version may be short (up to 5 pages.) After that, students should meet with me at least once to discuss how to proceed with their research idea toward the final proposal. That being said, handing in a proposal at the end of the semester without any prior discussion with me will never work. It is important to discuss your idea with me and keep me updated about your progress over the semester.

The final proposal is due on May 18. It should be no longer than 15 pages. A successful proposal will be ideally a great start point for your third-year paper.

Official University Policies towards Graduate Courses

<https://gradschool.umd.edu/course-related-policies>

Covid-19 Public Health Policy

All students must follow the current public health policy of the University of Maryland. **As of now, the university requires everyone wear a N95 or K95 mask in classrooms, regardless of vaccination status.** This policy will be strictly imposed. Everyone must wear a mask properly (i.e., covering over the nose and mouth) during in-person class meetings at all times. There are no exceptions. Eating or drinking during class is not allowed. If a student needs to eat or drink, s/he may leave the classroom to do so then come back. Students not wearing a mask will be given a verbal warning and asked to wear one, or will be asked to leave the classroom immediately. Students who have additional issues with the mask expectation after a first warning will be referred to [the Office of Student Conduct for failure to comply with a directive of University officials](#). In case there

is a student who receives a second warning for refusing to wear a mask after a first warning, the instructor will cancel the class meeting immediately to protect everyone else in the classroom.

If you feel unwell, do not come to class. If you test positive for Covid-19, follow the quarantine guideline of the university. For detailed information, visit the [HEAL line webpage](#).

The University of Maryland is committed to providing the best learning experience while keeping everyone in our community safe. In case a student or the instructor cannot come to campus for health reasons, the instructor may move the class to online for a short period of time.

Course Outline and Readings

There is no required textbook for this course. Classes will be based on lecture notes which will be posted after each class. For those who need some reference, I recommend the following manuscripts:

- J. Eaton and S. Kortum, *Technology in the Global Economy: A Framework for Quantitative Analysis*.
- T. Allen and C. Arkolakis, [Elements of Advanced International Trade](#).

(†) To be covered in lecture

(*) Prepare a summary paper of one of these articles every week

(##) Students will present this paper in class

A. Quantitative Framework for Gravity Trade Models

Lecture 1 Mon, 1/24 – Course overview, empirical evidence, and basic tools

- (†) Dixit, Avinash K., and Joseph E. Stiglitz. "Monopolistic Competition and Optimum Product Diversity." *The American Economic Review* 67, no. 3 (1977): 297–308.
- J. Tinbergen (Jan), and Erasmus School of Economics (ESE). *Shaping the World Economy; Suggestions for an International Economic Policy*. Twentieth Century Fund, New York, 1962.

Lecture 2 Wed, 1/26 – Armington model and Ricardian model: Love of variety and technological difference

- (+)(*) Anderson, James E. "A Theoretical Foundation for the Gravity Equation." *The American Economic Review* 69, no. 1 (1979): 106–116.
- (+)(*) Dornbusch, R, S Fischer, and P A Samuelson. "Comparative Advantage, Trade, and Payments in a Ricardian Model with a Continuum of Goods." *The American Economic Review* 67, no. 5 (December 1977): 823–839.
- (+)(*) Eaton, Jonathan, and Samuel Kortum. "Technology, Geography, and Trade." *Econometrica* 70, no. 5 (September 2002): 1741–1779.
- Anderson, James E., and Eric Van Wincoop. "Gravity with Gravitas: A Solution to the Border Puzzle." *The American Economic Review* 93, no. 1 (2003): 170–192.
- Eaton, Jonathan, and Samuel Kortum. "Putting Ricardo to Work." *Journal of Economic Perspectives* 26, no. 2 (Spring 2012): 65–90.
 - Online appendix:
https://assets.aeaweb.org/assets/production/articles-attachments/jep/app/2602_Eaton_Kortum_app.pdf
- Wilson, Charles A. "On the General Structure of Ricardian Models with a Continuum of Goods: Applications to Growth, Tariff Theory, and Technical Change." *Econometrica* 48, no. 7 (1980): 1675–1702.

Lecture 3 Mon, 1/31 - Quantifying multi-industry extensions of the Ricardian model

- (+)(*) Donaldson, Dave. "Railroads of the Raj: Estimating the Impact of Transportation Infrastructure." *American Economic Review* (Forthcoming).
- (+)Costinot, Arnaud, Dave Donaldson, and Ivana Komunjer. "What Goods Do Countries Trade? A Quantitative Exploration of Ricardo's Ideas." *The Review of Economic Studies* 79, no. 2 (September 28, 2011): 581–608.
- (*) Chor, Davin. "Unpacking Sources of Comparative Advantage: A Quantitative Approach." *Journal of International Economics* 82, no. 2 (November 2010): 152–67.
- Waugh, Michael E. "International Trade and Income Differences." *American Economic Review* 100, no. 5 (December 2010): 2093–2124.
- Fieler, Ana Cecília. "Nonhomotheticity and Bilateral Trade: Evidence and a Quantitative Explanation." *Econometrica* 79, 4 (July 1, 2011): 1069–1101.

Lecture 4 Wed, 2/2 - Monopolistic competition models

- (+)(*) Melitz, M J. "The Impact of Trade on Intra - Industry Reallocations and Aggregate Industry Productivity." *Econometrica* 71 (2003): 1695–1725.

- (+)(*) Chaney, Thomas. "Distorted Gravity: The Intensive and Extensive Margins of International Trade." *American Economic Review* 98, no. 4 (September 2008): 1707–21.
- (*) Krugman, Paul. "Scale Economies, Product Differentiation, and the Pattern of Trade." *American Economic Review* 70, no. 5 (December 1980): 950–959.
- Hopenhayn, Hugo A. "Entry, Exit, and Firm Dynamics in Long Run Equilibrium." *Econometrica* 60, no. 5 (1992): 1127–50.

Week of 2/7 - Schedule buffer and student presentations on the papers about firm heterogeneity models and extensions

- (##) Yeaple, Stephen Ross. "A Simple Model of Firm Heterogeneity, International Trade, and Wages." *Journal of International Economics* 65, no. 1 (January 2005): 1–20.
- (##) Bustos, Paula. "Trade Liberalization, Exports, and Technology Upgrading: Evidence on the Impact of MERCOSUR on Argentinian Firms." *American Economic Review* 101, no. 1 (March 2011): 304–40.
- (##) Melitz, Marc J., and Gianmarco I. P. Ottaviano. "Market Size, Trade, and Productivity." *The Review of Economic Studies* 75, no. 1 (January 1, 2008): 295–316.
- Helpman, Elhanan, Marc J. Melitz, and Stephen R. Yeaple. "Export versus FDI with Heterogeneous Firms." *The American Economic Review* 94, no. 1 (March 1, 2004): 300–316.
- (##) Bernard, Andrew B., Stephen J. Redding, and Peter K. Schott. "Comparative Advantage and Heterogeneous Firms." *The Review of Economic Studies* 74, no. 1 (January 1, 2007): 31–66.
- Bernard, Andrew B., Stephen J. Redding, and Peter K. Schott. "Multiproduct Firms and Trade Liberalization." *The Quarterly Journal of Economics*, 2011.

Lecture 5 Mon, 2/14 - Models with a variable markup

- (+)(*) Bernard, Andrew B, Jonathan Eaton, J Bradford Jensen, and Samuel Kortum, "Plants and Productivity in International Trade." *American Economic Review* 93, no. 4 (September 2003): 1268–1290.
- (*) Atkeson, Andrew, and Ariel Burstein. "Pricing-to-Market, Trade Costs, and International Relative Prices." *American Economic Review* 98, no. 5 (December 2008): 1998–2031.
- (*) Melitz, Marc J., and Gianmarco I. P. Ottaviano. "Market Size, Trade, and Productivity." *The Review of Economic Studies* 75, no. 1 (January 1, 2008): 295–316.

- Edmond, Chris, Virgiliu Midrigan, and Daniel Yi Xu. "Competition, Markups, and the Gains from International Trade." *American Economic Review* 105, no. 10 (October 2015): 3183–3221.
- De Loecker, Jan, Pinelopi K. Goldberg, Amit K. Khandelwal, and Nina Pavcnik. "Prices, Markups, and Trade Reform." *Econometrica* 84, no. 2 (March 1, 2016): 445–510.

Lecture 6 Wed, 2/16 - Firm Heterogeneity Models and Extensions

- (+)(*) Eaton, Jonathan, Samuel Kortum, and Francis Kramarz. "An Anatomy of International Trade: Evidence From French Firms." *Econometrica* 79, no. 5 (2011): 1453–1498.
- (+) Arkolakis, Costas. "Market Penetration Costs and the New Consumers Margin in International Trade." *Journal of Political Economy* 118, no. 6 (December 1, 2010): 1151–99.
- (*) Arkolakis, Costas, Svetlana Demidova, Peter J. Klenow, and Andres Rodriguez-Clare. "Endogenous Variety and the Gains from Trade." *American Economic Review Papers and Proceedings*, 98, no. 2 (May 2008): 444–50.

Lecture 7 Mon, 2/21 - General equilibrium of trade models: existence and uniqueness of equilibrium, and quantitative strategies

- (+)(*) Alvarez, Fernando, and Robert E. Lucas. "General Equilibrium Analysis of the Eaton–Kortum Model of International Trade." *Journal of Monetary Economics* 54, no. 6 (September 2007): 1726–68.
- (*) Allen, Treb, and Costas Arkolakis. "Trade and the Topography of the Spatial Economy." *The Quarterly Journal of Economics* 129, no. 3 (August 1, 2014): 1085–1140.
- Allen, Treb, Costas Arkolakis, and Xiangliang Li. "On the Existence and Uniqueness of Trade Equilibria." Working Paper, 2015.
- (+)(*) Allen, Treb, Costas Arkolakis, and Yuta Takahashi. "Universal Gravity." *Journal of Political Economy* (forthcoming).

Lecture 8 Wed, 2/23 - Taking model to the data: counterfactual experiments to quantify various trade effects

- (+)(*) Dekle, Robert, Jonathan Eaton, and Samuel Kortum. "Global Rebalancing with Gravity: Measuring the Burden of Adjustment." *IMF Staff Papers* 55, no. 3 (January 2008): 511–540.

- (+)(*) Caliendo, Lorenzo, and Fernando Parro. "Estimates of the Trade and Welfare Effects of NAFTA." *The Review of Economic Studies* 82, no. 1 (January 2015): 1-44.
- Costinot, Arnaud, and Andrés Rodríguez-Clare. "Trade Theory with Numbers: Quantifying the Consequences of Globalization." In *Handbook of International Economics*, edited by Gita Gopinath, Elhanan Helpman, and Kenneth Rogoff, Vol. 4, 2014.
- Head, Keith, and Thierry Mayer. "Gravity Equations: Workhorse, Toolkit, and Cookbook." In *Handbook of International Economics*, edited by Elhanan Helpman and Kenneth Rogoff Gita Gopinath, 4:131-95. *Handbook of International Economics*. Elsevier, 2014.
- Ossa, Ralph. "A 'New Trade' Theory of GATT/WTO Negotiations." *Journal of Political Economy* 119, no. 1 (February 1, 2011): 122-52.
- (*) Parro, F. "Capital-Skill Complementarity and the Skill Premium in a Quantitative Model of Trade." *American Economic Journal: Macroeconomics* 5, no. 2 (2013): 72-117.
- (*) Adao, Rodrigo, Arnaud Costinot, and Dave Donaldson. "Nonparametric Counterfactual Predictions in Neoclassical Models of International Trade." *American Economic Review*, 107.3 (2017): 633-89.

Lecture 9 Mon, 2/28 - Quantifying welfare gains from trade

- (+)(*) Arkolakis, Costas, Arnaud Costinot, and Andrés Rodríguez-Clare. "New Trade Models, Same Old Gains?" *American Economic Review* 102, no. 1 (February 2012): 94-130.
- (+)(*) Atkeson, Andrew, and Ariel Tomás Burstein. "Innovation, Firm Dynamics, and International Trade." *Journal of Political Economy* 118, no. 3 (June 1, 2010): 433-84.
- (+)(*) Melitz, Marc J., and Stephen J. Redding. "New Trade Models, New Welfare Implications." *American Economic Review* 105, no. 3 (March 2015): 1105-46.
- Broda, C, and D E Weinstein. "Globalization and the Gains from Variety." *The Quarterly Journal of Economics* 121 (2006): 541-585.
- Arkolakis, Costas, Arnaud Costinot, Dave Donaldson, and Andrés Rodríguez-Clare. "The elusive pro-competitive effects of trade." *The Review of Economic Studies* 86, no. 1 (2018): 46-80.
- Atkin, David. "Trade, Tastes, and Nutrition in India." *American Economic Review* 103, no. 5 (August 2013): 1629-63.

Lecture 10 Wed, 3/2 – Estimation of trade cost and trade elasticity

- (†)(*) Head, Keith, and John Ries. “Increasing Returns Versus National Product Differentiation as an Explanation for the Pattern of Us-Canada Trade.” *American Economic Review* 91, no. 4 (2001): 858–876.
- (†)(*) Simonovska, Ina, and Michael E. Waugh. “The Elasticity of Trade: Estimates and Evidence.” *Journal of International Economics* 92, no. 1 (January 2014): 34–50.
- Limão, Nuno, and Anthony J. Venables. “Infrastructure, Geographical Disadvantage, Transport Costs, and Trade.” *The World Bank Economic Review* 15, no. 3 (October 1, 2001): 451–79.
- Atkin, David, and Dave Donaldson. “Who’s Getting Globalized? The Size and Nature of Intranational Trade Costs.” Working Paper, 2015.
- Anderson, James E., and Eric van Wincoop. “Trade Costs.” *Journal of Economic Literature* 42, no. 3 (September 1, 2004): 691–751.
- Eaton, Jonathan, and Samuel Kortum. “Technology, Geography, and Trade.” *Econometrica* 70, no. 5 (September 2002): 1741–1779.
- (†) Caliendo, Lorenzo, and Fernando Parro. “Estimates of the Trade and Welfare Effects of NAFTA.” *The Review of Economic Studies* 82, no. 1 (January 2015): 1–44.
- Romalis, John. “NAFTA’s and CUSFTA’s Impact on International Trade.” *Review of Economics and Statistics* 89, no. 3 (July 12, 2007): 416–35.
- Donaldson, Dave. “Railroads of the Raj: Estimating the Impact of Transportation Infrastructure.” *American Economic Review* (Forthcoming).
- (*) Allen, Treb. “Information Frictions in Trade.” *Econometrica* 82, no. 6 (2014): 2041–83.
- Bergstrand, Jeffrey H., Peter Egger, and Mario Larch. “Gravity Redux: Estimation of Gravity-Equation Coefficients, Elasticities of Substitution, and General Equilibrium Comparative Statics Under Asymmetric Bilateral Trade Costs.” *Journal of International Economics* 89, no. 1 (January 2013): 110–21.
- Costinot, Arnaud, Dave Donaldson, and Ivana Komunjer. “What Goods Do Countries Trade? A Quantitative Exploration of Ricardo’s Ideas.” *The Review of Economic Studies* 79, no. 2 (September 28, 2011): 581–608.

Week of 3/7 – Schedule buffer and student presentations on the research idea

B. Distributional Effects of International Trade

Lecture 11 Mon, 3/14 – Distributional effects of trade in developed countries: traditional mechanism and factor contents story

- (†)(*) Wood, Adrian. "How Trade Hurt Unskilled Workers." *The Journal of Economic Perspectives* 9, no. 3 (July 1995): 57–80.
- (†)(*) Feenstra, R, and G Hanson. "Global Production Sharing and Rising Inequality: A Survey of Trade and Wages," 146. *Handbook of International Trade*, 2001.
- (*) Berman, Eli, John Bound, and Zvi Griliches. "Changes in the Demand for Skilled Labor within U.S. Manufacturing: Evidence from the Annual Survey of Manufacturers." *The Quarterly Journal of Economics* 109, no. 2 (May 1994): 367–397.
- Revenga, Ana L. "Exporting Jobs?: The Impact of Import Competition on Employment and Wages in U.S. Manufacturing." *The Quarterly Journal of Economics* 107, no. 1 (February 1992): 255–284.

Lecture 12 Mon, 3/16 - Distributional effects of trade in developed countries: relative gains from trade across industries, regions, and occupations

- (†)(*) Autor, David H., David Dorn, and Gordon H. Hanson. "The China Syndrome: Local Labor Market Effects of Import Competition in the United States." *American Economic Review* 103, no. 6 (2013): 2121–68.
- (*) Autor, David H., David Dorn, Gordon H. Hanson, and Jae Song. "Trade adjustment: Worker-level evidence." *The Quarterly Journal of Economics* 129, no. 4 (2014): 1799-1860.
- Autor, David H., David Dorn, and Gordon H. Hanson. "Untangling Trade and Technology: Evidence from Local Labour Markets." *The Economic Journal* 125, no. 584 (May 1, 2015): 621–46.
- (†)(*) Hummels, David, Rasmus Jørgensen, Jakob Munch, and Chong Xiang. "The Wage Effects of Offshoring: Evidence from Danish Matched Worker-Firm Data." *American Economic Review* 104, no. 6 (June 2014): 1597–1629.
- Ebenstein, Avraham, Ann Harrison, Margaret McMillan, and Shannon Phillips. "Estimating the Impact of Trade and Offshoring on American Workers Using the Current Population Surveys." *Review of Economics and Statistics* 96, no. 4 (2014): 581–95.
- Goos, Maarten, Alan Manning, and Anna Salomons. "Explaining Job Polarization: Routine-Biased Technological Change and Offshoring." *American Economic Review* 104, no. 8 (2014): 2509–26.

Week of 3/21 - Spring break

**Lecture 13 Mon, 3/28 - Distributional effects of trade in developed countries:
Quality specialization**

- (†) Schott, Peter K. "One Size Fits All? Heckscher-Ohlin Specialization in Global Production." *American Economic Review* 93, no. 3 (June 2003): 686–708.
- (*) Khandelwal, Amit. "The Long and Short (of) Quality Ladders." *Review of Economic Studies* 77, no. 4 (August 2010): 1450–1476.
- (*) Bloom, Nicholas, Mirko Draca, and John Van Reenen. "Trade Induced Technical Change? The Impact of Chinese Imports on Innovation, IT and Productivity." *The Review of Economic Studies* 83, no. 1 (January 1, 2016): 87–117.
- Pierce, Justin R., and Peter K. Schott. "The Surprisingly Swift Decline of US Manufacturing Employment." *American Economic Review* 106, no. 7 (July 2016): 1632–62.
- Schott, Peter K. "Across-Product Versus Within-Product Specialization in International Trade." *The Quarterly Journal of Economics* 119, no. 2 (May 1, 2004): 647–78.
- Kramarz, Francis. "Offshoring, Wages, and Employment: Evidence from Data Matching Imports, Firms, and Workers." *Working Paper*, 2008.
- Harrigan, James, Ariell Reshef, and Farid Toubal. "The March of the Techies: Technology, Trade, and Job Polarization in France, 1994 – 2007." *NBER Working Paper Series* 22110 (2016).

**Lecture 14 Wed, 3/30 - Distributional effects of trade in developing countries:
are we living in the Heckscher-Ohlin world?**

- (†)(*) Goldberg, Pinelopi Koujianou, and Nina Pavcnik. "Distributional Effects of Globalization in Developing Countries." *Journal of Economic Literature* 45, no. 1 (March 2007): 39–82.
- Goldberg, Pinelopi Koujianou, and Nina Pavcnik. "Trade, Inequality, and Poverty: What Do We Know? Evidence from Recent Trade Liberalization Episodes in Developing Countries." *Brookings Trade Forum, Globalization, Poverty, and Inequality*, January 2004, 223–269.
- (†)(*) Goldberg, Pinelopi Koujianou, and Nina Pavcnik. "Trade, Wages, and the Political Economy of Trade Protection: Evidence from the Colombian Trade Reforms." *Journal of International Economics* 66, no. 1 (May 2005): 75–105.
- Goldberg, Pinelopi, and Nina Pavcnik. "The Response of the Informal Sector to Trade Liberalization." *Journal of Development Economics* 72, no. 2 (December 2003): 463–496.

- Attanasio, Orazio, Pinelopi K. Goldberg, and Nina Pavcnik. "Trade Reforms and Wage Inequality in Colombia." *Journal of Development Economics* 74, no. 2 (August 2004): 331–66.
- Menezes-Filho, Naércio Aquino, and Marc-Andreas Muendler. "Labor Reallocation in Response to Trade Reform." *Working Paper*, 2011.
- (+)(*) Topalova, Petia. "Trade Liberalization, Poverty and Inequality: Evidence from Indian Districts." In *Globalization and Poverty*, 291–336. University of Chicago Press, 2007.
- (*) Dix-Carneiro, Rafael, and Brian K. Kovak. "Trade Liberalization and Regional Dynamics." *American Economic Review* 107, no. 10 (October 2017): 2908–46.
- Topalova, Petia. "Factor Immobility and Regional Impacts of Trade Liberalization: Evidence on Poverty from India." *American Economic Journal: Applied Economics* 2, no. 4 (October 2010): 1–41.

Lecture 15 Mon, 4/4 – New explanation on the distributional effects of trade in developing countries: quality upgrading, regional variation, etc.

- (+)(*) Verhoogen, Eric A. "Trade, Quality Upgrading, and Wage Inequality in the Mexican Manufacturing Sector ." *Quarterly Journal of Economics* 123, no. 2 (May 2008): 489–530.
- Amiti, Mary, and Donald R. Davis. "Trade, Firms, and Wages: Theory and Evidence." *The Review of Economic Studies* 79, no. 1 (January 1, 2012): 1–36.
- Bustos, P. "The Impact of Trade Liberalization on Skill Upgrading. Evidence from Argentina." *Working Paper*, 2011.
- Pavcnik, Nina. "Trade Liberalization, Exit, and Productivity Improvements: Evidence from Chilean Plants." *The Review of Economic Studies* 69, no. 1 (January 2002): 245–276.
- (*) Kovak, Brian K. "Regional Effects of Trade Reform: What Is the Correct Measure of Liberalization?" *The American Economic Review* 103, no. 5 (2013): 1960–76.
- Egger, Hartmut, and Udo Kreickemeier. "Firm Heterogeneity and the Labor Market Effects of Trade Liberalization." *International Economic Review* 50, no. 1 (February 1, 2009): 187–216.
- Helpman, Elhanan, Oleg Itskhoki, Marc-Andreas Muendler, and Stephen J. Redding. "Trade and Inequality: From Theory to Estimation." *The Review of Economic Studies* 0 (2016): 1–49.
- Davis, Donald R., and James Harrigan. "Good Jobs, Bad Jobs, and Trade Liberalization." *Journal of International Economics* 84, no. 1 (May 2011): 26–36.

- (+)(*) Porto, Guido G. "Using Survey Data to Assess the Distributional Effects of Trade Policy." *Journal of International Economics* 70, no. 1 (September 2006): 140–160.
- Dix-Carneiro, Rafael, and Brian K. Kovak. "Trade Liberalization and Regional Dynamics." *American Economic Review* 107, no. 10 (October 2017): 2908–46.

Lecture 16 Wed, 4/6 - Generalized Heckscher-Ohlin with assignment models

- (+)(*) Costinot, Arnaud, and Jonathan Vogel. "Matching and Inequality in the World Economy." *Journal of Political Economy* 118, no. 4 (August 1, 2010): 747–86.
- Romalis, John. "Factor Proportions and the Structure of Commodity Trade." *American Economic Review* 94, no. 1 (March 2004): 67–97.
- (*) Bernard, Andrew B., Stephen J. Redding, and Peter K. Schott. "Comparative Advantage and Heterogeneous Firms." *The Review of Economic Studies* 74, no. 1 (January 1, 2007): 31–66.
- (+)(*) Costinot, Arnaud, and Jonathan Vogel. "Beyond Ricardo: Assignment Models in International Trade." *Annual Review of Economics* 7, no. 1 (2015): 31–62.
- (*) Costinot, Arnaud. "An Elementary Theory of Comparative Advantage." *Econometrica* 77, no. 4 (July 1, 2009): 1165–92.

Lecture 17 Mon, 4/11 - Recent development in assignment models

- (*) Ohnsorge, Franziska, and Daniel Trefler. "Sorting It Out: International Trade with Heterogeneous Workers." *Journal of Political Economy* 115, no. 5 (October 1, 2007): 868–92.
- (*) Lagakos, David, and Michael E. Waugh. "Selection, Agriculture, and Cross-Country Productivity Differences." *American Economic Review* 103, no. 2 (2013): 948–80.
- Roy, Andrew Donald. "Some Thoughts on the Distribution of Earnings." *Oxford Economic Papers* 3, no. 2 (1951): 135–146.
- Teulings, Coen N. "Comparative Advantage, Relative Wages, and the Accumulation of Human Capital." *Journal of Political Economy* 113, no. 2 (2005): 425–61.
- Burstein, Ariel, Eduardo Morales, and Jonathan Vogel. "Changes in Between-Group Inequality: Computers, Occupations, and International Trade." *American Economic Journal: Macroeconomics* 11, no. 2 (April 2019): 348–400.

- Galle, Simon, A. Rodríguez-Clare, and Moises Yi. "Slicing the Pie: Quantifying the Aggregate and Distributional Effects of Trade." *Working Paper*, 2018.
- (†) Lee, Eunhee. "Trade, inequality, and the endogenous sorting of heterogeneous workers." *Journal of International Economics* 125 (2020): 103310.
- Hsieh, Chang-Tai, Erik Hurst, Charles I. Jones, and Peter J. Klenow. "The Allocation of Talent and U.S. Economic Growth." *Econometrica* 87, no. 5 (September 2019).
- (*) Adao, Rodrigo. "Worker Heterogeneity, Wage Inequality, and International Trade: Theory and Evidence from Brazil." *Working Paper* (2016.)

Lecture 18 Wed, 4/13 – Distributional effects of trade and the role of labor mobility

- (†)(*) Artuç, Erhan, Shubham Chaudhuri, and John McLaren. "Trade Shocks and Labor Adjustment: A Structural Empirical Approach." *American Economic Review* 100, no. 3 (June 2010): 1008–1045.
- (†)(*) Dix-Carneiro, Rafael. "Trade Liberalization and Labor Market Dynamics." *Econometrica* 82, no. 3 (May 1, 2014): 825–85.
- Cosar, A K. "Adjusting to Trade Liberalization: Reallocation and Labor Market Policies." *Working Paper*, 2013.
- Artuç, Erhan, and John McLaren. "Trade Policy and Wage Inequality: A Structural Analysis with Occupational and Sectoral Mobility." *Journal of International Economics* 97, no. 2 (November 2015): 278–94.
- Traiberman, Sharon. "Occupations and Import Competition: Evidence from Denmark." *American Economic Review* 109, no. 12 (2019): 4260-4301.
- (*) Caliendo, Lorenzo, Maximiliano Dvorkin, and Fernando Parro. "Trade and Labor Market Dynamics: General Equilibrium Analysis of the China Trade Shock." *Econometrica* 87, no. 3 (May 2019): 741–835.
- Adão, Rodrigo, Costas Arkolakis, and Federico Esposito. "Spatial Linkages, Global Shocks, and Local Labor Markets: Theory and Evidence." *NBER Working Paper Series* 25544 (February 2019).
- (†) Artuç, Erhan, Bastos, Paulo, Lee, Eunhee, "Trade, Jobs, and Worker Welfare." *Working paper* (2021).

Week of 4/18 – Schedule buffer and student presentations on a paper from the following lists

Firm-level analysis for the distributional effect of trade

- (+)(*) Helpman, Elhanan, Oleg Itskhoki, and Stephen Redding. "Inequality and Unemployment in a Global Economy." *Econometrica* 78, no. 4 (July 2010): 1239–1283.
- (+)(*) Helpman, Elhanan, Oleg Itskhoki, Marc-Andreas Muendler, and Stephen J. Redding. "Trade and Inequality: From Theory to Estimation." *The Review of Economic Studies* 0 (2016): 1–49.
- Postel-Vinay, Fabien, and Jean-Marc Robin. "Equilibrium Wage Dispersion with Worker and Employer Heterogeneity." *Econometrica* 70, no. 6 (2002): 2295–2350.
- (*) Grossman, Gene M., Elhanan Helpman, and Philipp Kircher. "Matching, sorting, and the distributional effects of international trade." *Journal of Political Economy* 125, no. 1 (2017): 224–264.
- Kambourov, Gueorgui. "Labour Market Regulations and the Sectoral Reallocation of Workers: The Case of Trade Reforms." *The Review of Economic Studies* 76, no. 4 (October 1, 2009): 1321–58.
- Amiti, Mary, and Donald R. Davis. "Trade, Firms, and Wages: Theory and Evidence." *The Review of Economic Studies* 79, no. 1 (January 1, 2012): 1–36.

Trade, technology, and inequality

- (##) Acemoglu, Daron. "Patterns of Skill Premia." *The Review of Economic Studies* 70, no. 2 (April 2003): 199–230.
- (##) Parro, F. "Capital-Skill Complementarity and the Skill Premium in a Quantitative Model of Trade." *American Economic Journal: Macroeconomics* 5, no. 2 (2013): 72–117.
- Monte, Ferdinando. "Skill Bias, Trade, and Wage Dispersion." *Journal of International Economics* 83, no. 2 (March 2011): 202–18.
- (##) Burstein, Ariel, and Jonathan Vogel. "International trade, technology, and the skill premium." *Journal of Political Economy* 125, no. 5 (2017): 1356–1412.
- Krusell, Per, Lee E. Ohanian, José-Víctor Ríos-Rull, and Giovanni L. Violante. "Capital-Skill Complementarity and Inequality: A Macroeconomic Analysis." *Econometrica* 68, no. 5 (2000): 1029–1053.
- (##) Burstein, Ariel, Javier Cravino, and Jonathan Vogel. "Importing Skill-Biased Technology." *American Economic Journal: Macroeconomics* 5, no. 2 (April 2013): 32–71.
- Buera, Francisco J., Joseph P. Kaboski, and Richard Rogerson. "Skill Biased Structural Change." *NBER Working Paper Series* 21165 (May 2015).
- Katz, Lawrence F., and Kevin M. Murphy. "Changes in Relative Wages, 1963–1987: Supply and Demand Factors." *The Quarterly Journal of Economics* 107, no. 1 (February 1, 1992): 35–78.

- Autor, David H., Frank Levy, and Richard J. Murnane. "The Skill Content of Recent Technological Change: An Empirical Exploration." *The Quarterly Journal of Economics* 118, no. 4 (November 1, 2003): 1279–1333.

C. More Topics in International Trade

Lecture 19 Mon, 4/25 - Multinationals

- (*) Brainard, S. Lael. "An Empirical Assessment of the Proximity-Concentration Trade-off Between Multinational Sales and Trade." *The American Economic Review* 87, no. 4 (1997): 520–44.
- (+)(*) Helpman, Elhanan, Marc J. Melitz, and Stephen R. Yeaple. "Export versus FDI with Heterogeneous Firms." *The American Economic Review* 94, no. 1 (March 1, 2004): 300–316.
- (+)(*) Ramondo, Natalia, and Andrés Rodríguez-Clare. "Trade, Multinational Production, and the Gains from Openness." *Journal of Political Economy* 121, no. 2 (April 1, 2013): 273–322.
- Garetto, Stefania. "Input Sourcing and Multinational Production." *American Economic Journal: Macroeconomics* 5, no. 2 (April 2013): 118–51.
- Irarrazabal, Alfonso, Andreas Moxnes, and Luca David Oromolla. "The Margins of Multinational Production and the Role of Intrafirm Trade." *Journal of Political Economy* 121, no. 1 (February 1, 2013): 74–126.
- Arkolakis, Costas, Natalia Ramondo, Andrés Rodríguez-Clare, and Stephen Yeaple. "Innovation and production in the global economy." *American Economic Review* 108, no. 8 (2018): 2128-73.

Lecture 20 Wed, 4/27 - Vertical specialization and offshoring

- (+) Helpman, Elhanan. "A Simple Theory of International Trade with Multinational Corporations." *Journal of Political Economy* 92, no. 3 (June 1, 1984): 451–71.
- (+)(*) Yi, Kei - Mu. "Can Vertical Specialization Explain the Growth of World Trade?" *Journal of Political Economy* 111, no. 1 (2003): 52–102.
- Hummels, David, Jun Ishii, and Kei-Mu Yi. "The Nature and Growth of Vertical Specialization in World Trade." *Journal of International Economics, Trade and Wages*, 54, no. 1 (June 2001): 75–96.
- Johnson, Robert C., and Guillermo Noguera. "Accounting for Intermediates: Production Sharing and Trade in Value Added." *Journal of International Economics* 86, no. 2 (March 2012): 224–36.

- Arkolakis, Costas, and Ananth Ramanarayanan. "Vertical Specialization and International Business Cycle Synchronization." *Scandinavian Journal of Economics* 111, no. 4 (December 1, 2009): 655–80.
- (+)(*) Grossman, Gene M., and Esteban Rossi-Hansberg. "Trading Tasks: A Simple Theory of Offshoring." *American Economic Review* 98, no. 5 (December 2008): 1978–97.
- (*) Rodríguez-Clare, Andrés. "Offshoring in a Ricardian World." *American Economic Journal: Macroeconomics* 2, no. 2 (April 2010): 227–58.
- (*) Antràs, Pol, and Alonso De Gortari. "On the geography of global value chains." *Econometrica* 88, no. 4 (2020): 1553-1598.
- (*) Lee, Eunhee, and Kei-Mu Yi. "Global value chains and inequality with endogenous labor supply." *Journal of International Economics* 115 (2018): 223-241.

Lecture 21 Mon, May 2 - Trade, R&D investment, and firm productivity

- (*) De Loecker, Jan. "Product Differentiation, Multiproduct Firms, and Estimating the Impact of Trade Liberalization on Productivity."
- Caliendo, Lorenzo, and Esteban Rossi-Hansberg. "The Impact of Trade on Organization and Productivity." *The Quarterly Journal of Economics* 127, no. 3 (August 1, 2012): 1393–1467.
- (+)(*) Aw, Bee Yan, Mark J. Roberts, and Daniel Yi Xu. "R&D investment, exporting, and productivity dynamics." *American Economic Review* 101, no. 4 (2011): 1312-44.
- Bøler, Esther Ann, Andreas Moxnes, and Karen Helene Ulltveit-Moe. "R&D, international sourcing, and the joint impact on firm performance." *American Economic Review* 105, no. 12 (2015): 3704-39.
- Bilir, L. Kamran, and Eduardo Morales. "Innovation in the global firm." *Journal of Political Economy* 128, no. 4 (2020): 1566-1625.
- Fan, Jingting, Lee, Eunhee, and Valerie Smeets. "High-skill Immigration, Offshore R&D, and Firm Dynamics." *Working Paper*, 2021.

Wed, May 4 - Student presentation (on recent papers related to the research proposal)

Mon, May 9 - Research proposal presentation

Extra - Recent development in spatial economy models

- (*) (+) Heblich, Stephan, Stephen J. Redding, and Daniel M. Sturm. "The making of the modern metropolis: evidence from London." No. w25047. *NBER Working Paper Series*, 2018.
- (*) Baum-Snow, Nathaniel. "Did highways cause suburbanization?." *The Quarterly Journal of Economics* 122, no. 2 (2007): 775-805.

- (*) (†) Ahlfeldt, Gabriel M., Stephen J. Redding, Daniel M. Sturm, and Nikolaus Wolf. "The economics of density: Evidence from the Berlin Wall." *Econometrica* 83, no. 6 (2015): 2127-2189.
- Donaldson, Dave, and Richard Hornbeck. "Railroads and American economic growth: A "market access" approach." *The Quarterly Journal of Economics* 131, no. 2 (2016): 799-858.
- Allen, Treb, and Costas Arkolakis. The welfare effects of transportation infrastructure improvements. No. w25487. *NBER Working Paper Series*, 2019.
- Redding, Stephen J., and Matthew A. Turner. "Transportation costs and the spatial organization of economic activity." In *Handbook of regional and urban economics*, vol. 5, pp. 1339-1398. Elsevier, 2015.