

Boston College
Department of Economics
Econ 8871: International Trade

Fall 2018, TTh 10:30, Maloney 330

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Course Description

This course provides an overview of some of the key theoretical ideas and empirical findings in the field of international trade. It aims to strike a balance between covering the core foundations and discussing the recent advances on the frontiers of the field. Two main themes of the course are 1) explaining the observed patterns of trade across countries and regions, and 2) assessing the welfare effects of barriers to trade (or lackthereof). The other core theme of the field, which is the study of trade policy, will be covered in the second part of the sequence.

The course also aims to introduce the students to recent theoretical and empirical tools that have found broad interest outside the field of international trade. In particular, we will give special attention to the recent advances in quantitative methods that allow us to account for economic interlinkages among large numbers of spatial units, e.g., countries, regions, or cities. We will also cover recent theoretical and empirical advances in accounting for heterogeneity in patterns of demand, across different categories of goods or different consumers. These technical tools are increasingly used across a number of other disciplines in economics such as Economic Development, Macroeconomics, and Labor Economics.

The course is structured in seven parts. The first four parts cover a number of foundational ideas that have shaped the history of thought in the discipline in chronological order. These parts include:

- I. Neoclassical Trade Theory: Factors, Technology, and Tastes,
- II. New Trade Theory: Returns to Scale, Market Structure, and Product Differentiation,
- III. Quantitative Trade: Trade Costs and Trade Flows,
- IV. New New Trade: Heterogeneity among Firms.

The first part sets up the neoclassical foundations of trade theory and discusses the empirical evidence for and against the drivers of trade suggested by this framework. In particular, this framework provides a benchmark for thinking about international exchange in a world characterized by perfect competition, constant returns to scale, no frictions in markets for international commodity exchange, and perfect *barriers* for the mobility of factors of production across countries. The neoclassical benchmark also assumes representative consumers and firms, and effectively implies that the technology of production may be invariant to the changes in the patterns of trade.

Parts II-IV of the course each consider one set of deviations from this benchmark framework: Part II studies increasing returns and imperfect competition, Part III studies imperfect mobility of goods across countries, and Part IV shows how trade influences patterns of production when we account for heterogeneity among firms.

The remaining three parts of the course discuss topics on the frontiers of the field. These parts include:

- V. Trade and Inequality: Heterogeneity among Workers and Consumers,
- VI. Multinationals and Global Supply Chains,
- VII. Trade, Ideas, and Growth.

Part V studies the issues of inequality, which arise once we deviate from a unitary view of consumption and labor supply in our models. We cover the frontiers in the study of the effects of trade on regional labor markets, as well as the accounting for the distributional aspects of the consumption-side welfare gains from trade. The last two parts of the course study substantive ways in which production technologies may be shaped by trade. Part VI in particular studies the fragmentation of supply chains as the result of the trade and the rise of multinational firms. Part VII studies the dynamic effects of trade on the patterns of comparative advantage and income through the impacts of trade on R&D, innovation, and the cross-country diffusion of ideas and technologies.

Sources and Textbooks

Most of the readings in the course are based on journal articles and recent working papers (see the reading list below). However, we will use the following three textbooks for a number of lectures.

[HK] Elhanan Helpman and Paul R Krugman. *Market Structure and Foreign Trade*. MIT Press, Cambridge, MA, 1985

[Feenstra] Robert C Feenstra. *Advanced International Trade*. Princeton University Press, Princeton, NJ, 2nd edition, 2016

[DN] Avinash Dixit and Norman Victor. *Theory of International Trade: A Dual, General Equilibrium Approach*. Cambridge University Press, 1980

Note that the reading list is subject to change throughout the semester. Please refer to the most recent version of the reading list to find the material before each lecture.

Requirements

Readings: The effectiveness of lectures covering advanced topics greatly hinges on whether the students prepare for the material corresponding to each lecture beforehand. The required material is identified on the reading list by a solid square sign (■) before them, and the other material to be covered is identified by a square sign (□). The papers on the list for the same class are closely related to each other. Therefore, after a close reading of the required papers, you will find it easier to briefly review the rest of the papers and identify their core contributions. During the first few sessions, we will dedicate some time to discussing a number of strategies for directed and effective skimming of academic papers in economics.

Class preparation and participation (5%): PhD-level courses aim to engage class participants in constructive and lively discussions of the material covered. Therefore, it is important that everyone prepares the materials beforehand and participates in the discussions. Your contribution to class discussions will be evaluated in each class.

Referee Reports (15%): You are required to submit three referee reports on the due dates specified on the course schedule (see below). For each due date, you can choose *one* of the readings among those corresponding to the lecture before the due date that is identified by a star sign (★). Instructions on the expected structure of the referee reports will be posted on the course website.

Problem Sets (30%): The course has three problem sets that cover a range of theoretical and empirical topics.

Final Paper (50%): The students are required to write a final research paper related to the topics covered in the course. Throughout the semester, a number of specific ideas will be suggested to the students as potential subjects for the final paper. The students can alternatively choose to write the final paper on a topic of their choice. Collaboration on the final paper is strongly encouraged.

Important Dates

See the course schedule below.

Policies

Phones and Laptops: Please refrain from using your phones during the class. You are allowed to bring your laptops to the class and take notes on them. However, please note that you are expected to participate and be engaged while in class and not surf the web or check your email. Remember that your class participation is evaluated in every class.

Correspondence: I will try to reply to your emails within 24 hours if you email me during the work week, and by the next Monday if you email me over the weekend. Please make sure to include "ECON8871" in the subject line of any e-mails you send me. If your question cannot be answered in one brief paragraph, or requires a longer exchange, please arrange to discuss it with me in person instead.

Formatting: For the referee reports, please use double-spaced, 12 point Times New Roman font, one-inch margins for all the referee reports. For the problem sets, please use latex (or LyX). Please submit all the assignments via e-mail. Please include "ECON8871 - Assignment" in the subject line of your e-mail.

Late assignments: Missing the due date for each assignment results in losing half of the grade for the assignment. Please let me know in advance if serious or unforeseen circumstances arise.

Academic integrity: Please refer to Boston College's policy on academic integrity (<http://www.bc.edu/integrity>). You are encouraged to discuss the material and assignments together, but any work you turn in must be your own. If you use any sources or outside help, whether from classmates, internet, or other published work, you must acknowledge them. Failure to follow this basic rule will have very serious consequences for you. If in doubt, always come and talk to me.

Course Outline and Reading List¹

1 Introduction–Trade Facts and Concepts

Broad empirical facts and key concepts of international trade; Overview of the course; Foundations of Neoclassical Trade Theory

- DN Ch. 2 (pp. 31–36, 59–64), Ch. 3 (pp. 65–79), Ch. 4 (pp. 94–96)
- Gordon H Hanson. The Rise of Middle Kingdoms: Emerging Economies in Global Trade. *Journal of Economic Perspectives*, 26(2):41–64, 2012
- Robert C Feenstra. Integration of Trade and Disintegration of Production in the Global Economy. *Journal of Economic Perspectives*, 12(4):31–50, 1998
- John S Chipman. A Survey of the Theory of International Trade: Part 1, The Classical Theory. *Econometrica*, 33(3):477–519, 1965

Part I

Neoclassical Trade Theory: Factors, Technology, and Tastes

In this part of the course, we provide an overview of the main ideas of the benchmark neoclassical theory of international trade. In this framework, patterns of trade are driven by autarky prices, which are in turn determined by factor endowments, technology, or tastes. We discuss the theories behind each of these three different drivers in the three lectures in this part of the course.

2 Factor Endowment Theory of Comparative Advantage

Neoclassical trade theory; Integrated world equilibrium; Heckscher-Ohlin-Vanek (HOV) theory; Empirical tests of HOV theory.

Core Ideas/Models:

- HK Ch. 1 (pp. 11–29).
- Feenstra Ch. 1 (pp. 25–82).

Empirical Tests:

- Daniel Trefler. International Factor Price Differences: Leontief was Right! *Journal of Political Economy*, 101(6): 961, 1993
- Daniel Trefler. The Case of the Missing Trade and Other Mysteries: Reply. *American Economic Review*, 92(1): 405–410, 2002

¹Please note that the reading list is subject to change throughout the semester.

- Donald R Davis and David E Weinstein. An Account of Global Factor Trade. *American Economic Review*, 91(5):1423–1453, 2001
- James Harrigan. Factor Supplies, and International Specialization: Estimating the Neoclassical Model. *American Economic Review*, 87(4):475–494, 1997
- Peter K Schott. One Size Fits All? Heckscher-Ohlin Specialization in Global Production One Size Fits All? Heckscher-Ohlin Specialization in Global Production. *American Economic Review*, 93(203):686–708, 2003
- Anna Maria Mayda and Dani Rodrik. Why are some people (and countries) more protectionist than others? *European Economic Review*, 49(6):1393–1430, aug 2005
- John Romalis. Factor proportions and the structure of commodity trade. *American Economic Review*, 94(1):67–97, 2004
- Peter M Morrow. Ricardian-Heckscher-Ohlin comparative advantage: Theory and evidence. *Journal of International Economics*, 82(2):137–151, 2010
- Peter Morrow and Daniel Trefler. Endowments, Factor Prices, and Skill-Biased Technology: Importing Development Accounting into HOV. 2017

3 Ricardian Theory of Comparative Advantage

Ricardian model; D-F-S model; Multi-country extensions of D-F-S; Assignment models; Empirical tests of the Ricardian framework; Drivers of comparative advantage.

Core Ideas/Models:

- Jonathan Eaton and Samuel Kortum. Putting Ricardo to Work. *Journal of Economic Perspectives*, 26(2):65–90, 2012 (pp. 65–74)
- Rudi Dornbusch, Stanley Fischer, and Paul A Samuelson. Comparative Advantage, Trade, and Payments in a Ricardian Model with a Continuum of Goods. *American Economic Review*, 67(5):823–839, 1977

Multi-country extensions:

- Arnaud Costinot. An Elementary Theory of Comparative Advantage. *Econometrica*, 77(4):1165–1192, 2009
- Ronald W Jones. Comparative advantage and the theory of tariffs: a multi-commodity model. *The Review of Economic Studies*, 28(3):161–175, 1961
- Charles A Wilson. On the General Structure of Ricardian Models with a Continuum of Goods: Applications to Growth, Tariff Theory, and Technical Change. *Econometrica*, 48(7):1675, 1980
- Rodrigo Adao, Arnaud Costinot, and Dave Donaldson. Nonparametric counterfactual predictions in neoclassical models of international trade. *American Economic Review*, 107(3):633–689, 2017

Assignment models:

- Arnaud Costinot. An Elementary Theory of Comparative Advantage. *Econometrica*, 77(4):1165–1192, 2009
- Arnaud Costinot and Jonathan Vogel. Matching and Inequality in the World Economy. *Journal of Political Economy*, 118(4):747–786, 2010

Empirical Tests:

- Daniel M Bernhofen and John C Brown. A Direct Test of the Theory of Comparative Advantage: The Case of Japan. *American Economic Review*, 112(1):48–67, 2004
- Daniel M Bernhofen and John C Brown. An Empirical Assessment of the Comparative Advantage Gains from Trade: Evidence from Japan. *American Economic Review*, 95(1):208–225, 2005
- Arnaud Costinot and Dave Donaldson. Ricardo’s Theory of Comparative Advantage: Old Idea, New Evidence. *American Economic Review: Papers & Proceedings*, 102(3):453–458, 2012

Drivers of Comparative Advantage:

- Nathan Nunn and Daniel Trefler. Domestic Institutions as a Source of Comparative Advantage. In Gita Gopinath, Elhanan Helpman, and Kenneth S Rogoff, editors, *Handbook of International Economics*, volume 4, pages 263–315. Elsevier B.V., 2014
- Kiminori Matsuyama. Credit Market Imperfections and Patterns of International Trade and Capital Flows. *Journal of the European Economic Association*, 3(2):714–723, 2005
- Nathan Nunn. Relationship-specificity, incomplete contracts, and the pattern of trade. *Quarterly Journal of Economics*, 122(2):569–600, 2007
- Andrei A. Levchenko. Institutional Quality and International Trade. *Review of Economic Studies*, 74(3):791–819, 2007
- Daron Acemoglu, Pol Antràs, and Elhanan Helpman. Contracts and technology adoption. *American Economic Review*, 97(3):916–943, 2007
- Alejandro Cuñat and Marc J. Melitz. Volatility, labor market flexibility, and the pattern of comparative advantage. *Journal of the European Economic Association*, 10(2):225–254, 2012

4 Demand-side Drivers of Trade

Linder’s hypothesis; Nonhomotheticity of demand; Price indices

- Juan Carlos Hallak. The product-quality view of the Linder hypothesis. *Review of Economics and Statistics*, 92(3):693–713, 2010
- James R. Markusen. Putting per-capita income back into trade theory. *Journal of International Economics*, 90(2):255–265, 2013
- Feenstra App. A and B (pp. 403–429).
- Kiminori Matsuyama. A Ricardian Model with a Continuum of Goods under Nonhomothetic Preferences : Demand Complementarities , Income Distribution , and North-South Trade. *Journal of Political Economy*, 108(6):1093–1120, 2000
- Staffan B Linder. *An Essay on Trade and Transformation*. Almqvist & Wiksells, Uppsala, 1961

Part II

New Trade Theory: Returns to Scale, Market Structure, and Product Differentiation

In this part of the course, we discuss the so-called “new trade theory,” which swept across the field starting in the 1980s. This framework deviated from the neoclassical theory by introducing new forces and mechanisms into

the toolbox of trade economists, namely, the variations in returns to scale, imperfect competition, and product differentiation. In the first lecture, we will discuss these three forces. In the second lecture, we focus on the Krugman model of trade that ended up becoming a workhorse model capturing the key insights of the new trade theory. In the last lecture, we will discuss the advances that were made in the 1990s and 2000s in empirically measuring the importance of the forces highlighted by new trade theory.

5 Increasing Returns to Scale and Market Structure

- HK Ch. 2–5 (pp. 25–82).

6 Krugman Model of Monopolistic Competition

Krugman model; Home Market Effect (HME); Preferences with variable markups

- HK Ch. 2–5 (pp. 25–82).
- Paul R. Krugman. Increasing returns, monopolistic competition, and international trade. *Journal of International Economics*, 9(4):469–479, 1979
- Paul Krugman. Scale Economies, Product Differentiation, and the Pattern of Trade. *American Economic Review*, 70(5):950–959, 1980
- Evgeny Zhelobodko, Sergey Kokovin, Mathieu Parenti, and Jacques-François Thisse. Monopolistic Competition: Beyond the Constant Elasticity of Substitution. *Econometrica*, 80(6):2765–2784, 2012
- Costas Arkolakis and Monica Morlacco. Variable Demand Elasticity, Markups, and Pass-Through, 2017 (pp. 3–19) http://www.econ.yale.edu/~ka265/teaching/Notes/Arkolakis%20Morlacco_08_2017.pdf

7 Empirics of New Trade Theory

Feenstra correction; Estimation of the elasticity of substitution.

- Robert C Feenstra. *Product variety and the gains from international trade*. MIT Press, Cambridge, MA, 2010
- Robert C Feenstra. New Product Varieties and the Measurement of International Prices. *American Economic Review*, 84(1):157–77, 1994
- Christian Broda and David E Weinstein. Globalization and the Gains from Variety. *Quarterly Journal of Economics*, 121(2):541–585, 2006
- Peter K. Schott. Across-Product Versus Within-Product Specialization in International Trade. *The Quarterly Journal of Economics*, 119(2):647–678, 2004
- Anson Soderbery. Estimating import supply and demand elasticities: Analysis and implications. *Journal of International Economics*, 96(1):1–17, 2015

Part III

Quantitative Trade: Trade Costs and Trade Flows

In this part of the course we will cover the recent advances in bringing the theories of international trade to speak directly to the available data on, first, global commodities flows, and, more recently, inter-regional flows

of goods and factors of production. These advances can be traced to two sources: 1) the long-standing line of empirical work on gravity equations in trade, which (first lecture in this section), and 2) the 2002 paper by Jon Eaton and Sam Kortum that provided a quantitative Ricardian theory capable of generating the gravity equation (second lecture in this section). In the third lecture, we discuss an application of this framework to the study of the demand-side drivers of trade. The quantitative framework has also allowed trade theorists to account for insights from the empirical studies of trade costs, which we discuss in lecture 4. Finally, lecture 5 provides an overview of the extensions of the quantitative trade models to the study of economic geography and the mobility of goods and factors of production over space.

8 Gravity Equation

Sources of data on trade flows; Gravity equation; Estimation of gravity equations

- Keith Head and Thierry Mayer. Gravity Equations: Workhorse, Toolkit, and Cookbook. In *Handbook of International Economics*, pages 131–195. 2014
- James E Anderson. The Gravity Model. *Annual Review of Economics*, 3:133–160, 2011
- James E Anderson and Eric van Wincoop. Gravity with Gravitas: A Solution to the Border Puzzle. *American Economic Review*, 93(1):170–192, 2002
- James E Anderson. A Theoretical Foundation for the Gravity Equation. *American Economic Review*, 69(1): 106–116, 1979
- Joao Santos Silva and Silvana Tenreyro. The log of gravity. *Review of Economics and Statistics*, 88(4):641–658, 2006
- Russell H Hillberry and David Hummels. Trade responses to geographic frictions: A decomposition using micro-data. *European Economic Review*, 52(3):527–550, 2008
- James E. Rauch. Networks versus markets in international trade. *Journal of International Economics*, 48(1): 7–35, 1999

9 Eaton-Kortum Model of Ricardian Comparative Advantage

EK model; Trade elasticity; Hat algebra; Intermediate inputs in EK model

- Jonathan Eaton and Samuel S Kortum. Technology, Geography, and Trade. *Econometrica*, 79(5):1–45, 2002
- Fernando Alvarez and Robert E. Lucas. General equilibrium analysis of the Eaton-Kortum model of international trade. *Journal of Monetary Economics*, 54(6):1726–1768, 2007
- Arnaud Costinot, Dave Donaldson, and Ivana Komunjer. What Goods Do Countries Trade? A Quantitative Exploration of Ricardo's Ideas. *The Review of Economic Studies*, 79(2):581–608, sep 2011
- Lorenzo Caliendo and Fernando Parro. Estimates of the Trade and Welfare Effects of NAFTA. (November 2014):1–53, 2012
- Robert Dekle, Jonathan Eaton, and Samuel Kortum. Global Rebalancing with Gravity: Measuring the Burden of Adjustment. 2008
- Robert Dekle, Jonathan Eaton, and Samuel Kortum. Unbalanced Trade. *American Economic Review*, 97(2): 351–355, 2007
- Michael E Waugh. International Trade and Income Differences. *American Economic Review*, 100(5): 2093–2124, 2010
- Ina Simonovska and Michael E. Waugh. The elasticity of trade: Estimates and evidence. *Journal of International Economics*, 92(1):34–50, 2014

10 Revisiting Demand-side Drivers of Trade

Income elasticities; Quality and unit values

- Ana Cecília Fieler. Nonhomotheticity and Bilateral Trade: Evidence and a Quantitative Explanation. *Econometrica*, 79(4):1069–1101, 2011
- Justin Caron, Thibault Fally, and James R Markusen. International trade puzzles: a solution linking production and preferences. *Quarterly Journal of Economics*, 129(3):1501–1552, 2014
- Jonathan Eaton and Cecília Fieler. The Gravity of Unit Values. (July), 2017
- Juan Carlos Hallak. Product quality and the direction of trade. *Journal of International Economics*, 68(1): 238–265, 2006
- Ahmad Lashkaripour. International Market Power and Markups: The Role of Within-Industry Specialization. 2018
- Robert C Feenstra and John Romalis. International prices and endogenous quality. *Quarterly Journal of Economics*, 129(May):477–527, 2014

11 Trade Costs and Frictions

Transportation costs; Information frictions; Intermediation; Matching frictions

- James E Anderson and Eric van Wincoop. Trade Costs. *Journal of Economic Literature*, 42(3):691–751, 2004
- David Hummels. Transportation Costs and International Trade in the Second Era of Globalization. *Journal of Economic Perspectives*, 21(3):131–154, 2007
- Daniel M. Bernhofen, Zouheir El-Sahli, and Richard Kneller. Estimating the effects of the container revolution on world trade. *Journal of International Economics*, 98:36–50, 2016
- Treb Allen. Information Frictions in Trade. *Econometrica*, 82(6):2041–2083, 2012
- James Feyrer. Trade and Income – Exploiting Time Series in Geography. *Ssrn*, (603):1–43, 2009
- Pol Antràs and Arnaud Costinot. Intermediated trade. *Quarterly Journal of Economics*, 126(3):1319–1374, 2011
- ★ Giulia Brancaccio, Myrto Kalouptsidi, and Theodore Papageorgiou. Geography, Search Frictions and Endogenous Trade Costs. 2017
- ★ Woan Foong Wong. The Round Trip Effect: Endogenous Transport Costs and International Trade. 2017
- ★ Meredith Startz. The value of face-to-face: Search and contracting problems in Nigerian trade. 2018

12 Factor Mobility and Economic Geography

Agglomeration externalities; Market access; Remoteness

- Dave Donaldson. Railroads of the Raj: Estimating the Impact of Transportation Infrastructure. *American Economic Review*, 108(4-5):899–934, 2018
- D R Davis and D Weinstein. Bones, Bombs, and Breakpoints: The Geography of Economic Activity. *American Economic Review*, 92(5):1269–1289, 2002

- Costas Arkolakis. Advancements in Gravity Models of Spatial Economics, 2017
http://www.econ.yale.edu/~ka265/teaching/Lectures/Advancements_in_Gravity_models_of_Spatial_Economics_Arkolakis.pdf
- Treb Allen and Costas Arkolakis. Trade and the Topography of the Spatial Economy. *Quarterly Journal of Economics*, 129(3):1085–1140, 2014
- Richard B Freeman. People Flows in Globalization. *Journal of Economic Perspectives*, 20(2):145–170, 2006
- Paul Krugman. Increasing returns and economic geography. *Journal of Political Economy*, 99(3):483–499, 1991
- Stephen J Redding and Daniel M Sturm. The Costs of Remoteness : Evidence from German Division and Reunification. *American Economic Review*, 98(5):1766–1797, 2008
- Michael Greenstone, Richard Hornbeck, and Enrico Moretti. Identifying Agglomeration Spillovers: Evidence from Winners and Losers of Large Plant Openings. *Journal of Political Economy*, 118(3):536–598, 2010
- Gabriel M. Ahlfeldt, Stephen J. Redding, Daniel M. Sturm, and Nikolaus Wolf. The Economics of Density: Evidence From the Berlin Wall. *Econometrica*, 83(6):2127–2189, 2015
- H. Bleakley and J. Lin. Portage and Path Dependence. *The Quarterly Journal of Economics*, 127(2):587–644, apr 2012

Part IV

New New Trade: Heterogeneity among Firms

Much of the discussions so far have treated production and consumption in each country at the unitary level, relying on representative firm and consumer arguments. In this part of the course, we will discuss the forces that emerge when we study heterogeneity among units of production within a given country.

13 Facts of Firm Heterogeneity

Creative destruction; Firm-level productivity heterogeneity; Productivity estimation; Entry and exit; Market selection

- Andrew B Bernard, J. Bradford Jensen, Stephen J Redding, and Peter K Schott. Firms in International Trade. *Journal of Economic Perspectives*, 21(3):105–130, 2007a
- Andrew B. Bernard, J. Bradford Jensen, Stephen J. Redding, and Peter K. Schott. The Empirics of Firm Heterogeneity and International Trade. *Annual Review of Economics*, 4(1):283–313, 2012
- Mark J Roberts and James R Tybout. The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs. *American Economic Review*, 87(4):545–564, 1997
- Andrew B. Bernard, Jonathan Eaton, J. Bradford Jensen, and Samuel Kortum. Plants and productivity in international trade. *American Economic Review*, 93(4):1268–1290, 2003
- Nina Pavcnik. Trade Liberalization, Exit, and Productivity Improvements: Evidence from Chilean Plants. *The Review of Economic Studies*, 69:245–276, 2002
- Alla Lileeva and Daniel Trefler. Improved access to foreign markets raises plant-level productivity... for some plants. *Quarterly Journal of Economics*, 125(3):1051–1099, 2010

- Bee Yan Aw, Xiaomin Chen, and Mark J Roberts. Firm-level evidence on productivity differentials and Turnover in Taiwanese manufacturing. *Journal of Development Economics*, 66(1):193–217, 2001
- Jonathan Eaton, Samuel S Kortum, and Francis Kramarz. An Anatomy of International Trade: Evidence From French Firms. *Econometrica*, 79(5):1453–1498, 2011
- Colin J Hottman, Stephen J Redding, and David E Weinstein. Quantifying the sources of firm heterogeneity. *Quarterly Journal of Economics*, 131(3):1–50, 2016

14 Melitz Model of Firm Heterogeneity

Melitz model; Selection; Fixed costs

- Marc J Melitz. The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica*, 71(6):1695–1725, 2003
- Marc J. Melitz and Stephen J. Redding. *Heterogeneous Firms and Trade*, volume 4. Elsevier B.V., 2015a
- Andrew B. Bernard, Stephen J. Redding, and Peter K. Schott. Comparative advantage and heterogeneous firms. *Review of Economic Studies*, 74(1):31–66, 2007b
- Andrew B. Bernard, Stephen J. Redding, and Peter K. Schott. Multiproduct firms and trade liberalization. *Quarterly Journal of Economics*, 126(3):1271–1318, 2011
- Thierry Mayer, Marc J. Melitz, and Gianmarco I P Ottaviano. Market size, competition, and the product mix of exporters. *American Economic Review*, 104(2):495–536, 2014
- Timothy Kehoe and Kim Ruhl. How Important Is the New Goods Margin in International Trade? *Journal of Political Economy*, 121(2):358–392, 2013

15 Firm Heterogeneity, Gravity, and Gains from Trade

Gravity with firm heterogeneity; Pareto distribution; ACR formula; ACR debate; Revisiting gains from trade in quantitative settings

- Robert C. Feenstra. Alternative Sources of the Gains from International Trade: Variety, Creative Destruction, and Markups. *Journal of Economic Perspectives*, 32(2):25–46, 2018
- Thomas Chaney. Distorted gravity: The intensive and extensive margins of international trade. *American Economic Review*, 98(4):1707–1721, 2008
- Costas Arkolakis, Arnaud Costinot, and Andrés Rodríguez-clare. New Trade Models, Same Old Gains? *American Economic Review*, 102(1):94–130, 2012b
- Marc J Melitz and Daniel Trefler. Gains from Trade when Firms Matter. *Journal of Economic Perspectives*, 26(2):91–118, 2012
- Elhanan Helpman, Marc J Melitz, and Yona Rubinstein. Estimating trade flows: trading partners and trading volumes. *Quarterly Journal of Economics*, 121(2):351–397, 2008
- Arnaud Costinot and Andrés Rodríguez-Clare. Trade Theory with Numbers: Quantifying the Consequences of Globalization. In *Handbook of International Economics*, volume 4, pages 197–261. Elsevier B.V., 2015
- Marc J Melitz and Stephen J Redding. New Trade Models, New Welfare Implications. *American Economic Review*, 105(3):1105–1146, 2015b
- Treb Allen, Costas Arkolakis, and Yuhta Takahashi. Universal Gravity. 2014
- Thomas Chaney. The Network Structure of International Trade. *American Economic Review*, 104(11):3600–3634, 2014

16 Firm Heterogeneity, Competition, and Costs

Pro-competitive effects of trade; Variable markups and heterogeneous firms; Market penetration

- Swati Dhingra and John Morrow. The Impact of Integration on Productivity and Welfare Distortions Under Monopolistic Competition. 2012
- Costas Arkolakis, Arnaud Costinot, and Dave Donaldson. The elusive of pro-competitive effect of trade. *Mimeo*, 2012a
- Marc J. Melitz and Gianmarco I. P. Ottaviano. Market Size, Trade, and Productivity. *Review of Economic Studies*, 75(1):295–316, jan 2008
- Costas Arkolakis. Market penetration costs and the new consumers margin in international trade. *Journal of Political Economy*, 118(6):1151–1199, 2010
- Ina Simonovska. Income differences and prices of tradables: Insights from an online retailer. *Review of Economic Studies*, 82(4):1612–1656, 2010
- Haichao Fan, Yalo Amber Li, Sichuang Xu, and Stephen R Yeaple. Quality, variable markups, and welfare: a quantitative general equilibrium analysis of export prices. 2017
- Robert C Feenstra and David E Weinstein. Globalization, Markups and U.S. Welfare. *Journal of Political Economy*, 125(4):1–57, 2017

Part V

Trade and Inequality: Heterogeneity among Workers and Consumers

In this part of the course, we now shift our attention to the study of heterogeneity among households, whether as workers or as consumers. This allows us to study the impact of international trade on income inequality within countries and address the potential impacts of globalization on rising inequality.

17 Trade and Inequality: Facts and Concepts

Trade and rise in skill premium; Outsourcing; Heterogeneous gains to consumers

Heterogeneity in Returns to Assets: Back to Factor Endowment Theory

- Feenstra Ch. 4 (pp. 83–118).
- Robert C Feenstra and Gordon H Hanson. The impact of outsourcing and high-technology capital on wages: estimates for the United States, 1979-1990. *Quarterly Journal of Economics*, 114(3):907–940, 1999
- Elhanan Helpman. Globalization and wage inequality. 2016

Revisiting Globalization and Cross-country Inequality

- Pinelopi K Goldberg and Nina Pavcnik. Distributional effects of globalization in developing countries. *Journal of Economic Literature*, 45(1):39–82, 2007
- Michael Kremer and Eric Maskin. Globalization and Inequality. 2006
- Ariel T Burstein and Alexander Monge-Naranjo. Foreign know-how, firm control, and the income of developing countries. *Quarterly Journal of Economics*, 124(1):149–195, 2009
- Pablo Fajgelbaum, Gene M. Grossman, and Elhanan Helpman. Income Distribution, Product Quality, and International Trade. *Journal of Political Economy*, 119(4):721–765, 2011

Heterogeneous Gains to Consumers

- Pablo D Fajgelbaum and Amit K Khandelwal. Measuring the Unequal Gains from Trade. *AEA Annual Meeting Working Paper*, pages 1–39, 2013
- ★ Kirill Borusyak and Xavier Jaravel. The Distributional Effects of Trade: Theory and Evidence from the United States. 2017

18 Matching and Sorting of Firms and Workers

Revisiting assignment models

- Elhanan Helpman, Oleg Itskhoki, Marc-Andreas Muendler, and Stephen J Redding. Trade and inequality: from theory to estimation. *Review of Economic Studies*, 84(1):357–405, 2017
- Elhanan Helpman, Oleg Itskhoki, and Stephen J Redding. Inequality and Unemployment in a Global Economy. *Econometrica*, 78(4):1239–1283, 2010
- Elhanan Helpman and Oleg Itskhoki. Labour Market Rigidities, Trade and Unemployment. *Review of Economic Studies*, 77(3):1100–1137, 2010
- Elhanan Helpman and Oleg Itskhoki. Labour Market Rigidities, Trade and Unemployment. *Review of Economic Studies*, 77(3):1100–1137, 2010
- Arnaud Costinot and Jonathan Vogel. Matching and Inequality in the World Economy. *Journal of Political Economy*, 118(4):747–786, 2010

19 Workers, Import Competition, and Mobility Frictions

ADH; Bartik shocks; Quantitative models of migration

- David H. Autor, David Dorn, and Gordon H. Hanson. The China syndrome: Local labor market effects of import competition in the United States. *American Economic Review*, 103(6):2121–2168, 2013
- Lorenzo Caliendo, Maximiliano Dvorkin, and Fernando Parro. Trade Liberalization and Labor Market Dynamics. 2018
- ★ Rafael Dix-carneiro and Brian K Kovak. Trade Reform and Regional Dynamics :. *American Economic Review*, 107(10):2908–2946, 2017
- Rafael Dix-Carneiro. Trade Liberalization and Labor Market Dynamics. *Econometrica*, 82(3):825–885, 2014
- Simon Galle, Andres Rodriguez-Clare, and Moises Yi. Slicing the Pie: Quantifying the Aggregate and Distributional Effects of Trade. 2017

- Kirill Borusyak, Peter Hull, and Xavier Jaravel. Quasi-experimental Shift-share Research Designs. 2018

Part VI

Multinationals and Global Supply Chains

In the next two parts of the course, we consider ways in which international trade and globalization can influence the nature of technology. In this part, we first focus on how trade may influence the organization of the firm and the structure of the supply chains.

20 Multinationals and Global Supply Chains: Facts and Concepts

GVCs; Value-added trade; Firm-to-firm trading networks; Trade in services

- Pol Antràs and Stephen R. Yeaple. *Multinational Firms and the Structure of International Trade*, volume 4. Elsevier B.V., 2015

Measuring GVCs

- Robert C. Johnson. Five Facts about Value-Added Exports and Implications for Macroeconomics and Trade Research. *Journal of Economic Perspectives*, 28(2):119–142, 2014
- Robert C. Johnson and Guillermo Noguera. Accounting for intermediates: Production sharing and trade in value added. *Journal of International Economics*, 86(2):224–236, 2012

Basic theories of supply chains

- Arnaud Costinot, Jonathan Vogel, and Su Wang. An elementary theory of global supply Chains. *Review of Economic Studies*, 80(1):109–144, 2013
- Gene M Grossman and Esteban Rossi-hansberg. Trading Tasks: A Simple Theory of Offshoring Tasks. *American Economic Review*, 98(5):1978–1997, 2008

Network Structure of Value Chains

- Jonathan Eaton, Samuel Kortum, and Francis Kramarz. Firm-to-Firm Trade: Imports, Exports, and the Labor Market. 2018
- Thomas Chaney. The Network Structure of International Trade. *American Economic Review*, 104(11):3600–3634, 2014

Trade in Taks and Services

- Jagdish Bhagwati, Arvind Panagariya, and T.N Srinivasan. The Muddles over Outsourcing. *Journal of Economic Perspectives*, 18(4):93–114, 2004
- Joseph Francois and Bernard Hoekman. Services Trade and Policy. *Journal of Economic Literature*, 48(3):642–692, 2010
- Mary Amiti and Shang Jin Wei. Service offshoring and productivity: Evidence from the US. *World Economy*, 32(2):203–220, 2009

21 FDI and the Organization of the Firm

Property rights theory of the firm; Incomplete contracts and FDI; Knowledge hierarchies and FDI

Background on Property Rights Theory of the Firm Boundary

- Philippe Aghion, Richard Holden, and Economic Perspectives. Incomplete Contracts and the Theory of the Firm : What Have We Learned over the Past 25 Years? *The Journal of Political Economy*, 25(2):181–197, 2011

Vertical Integration and FDI

- Pol Antràs. Grossman-Hart (1986) goes global: Incomplete contracts, property rights, and the international organization of production. *Journal of Law, Economics, and Organization*, 30(SUPPL. 1):118–175, 2014
- Pol Antràs. Firms, contracts, and trade structure. *Quarterly Journal of Economics*, 118(4):1375–1418, 2003
- Pol Antràs and Elhanan Helpman. Global Sourcing. *Journal of Political Economy*, 112(3):552–580, 2004
- Pol Antràs and Davin Chor. Organizing the Global Value Chain. *Econometrica*, 81(6):2127–2204, 2013

Tests of the Property Rights Theory of FDI

- N Nunn and D Trefler. Incomplete contracts and the boundaries of the multinational firm. *Journal of Economic Behavior & Organization*, 94(1):330–344, 2013

Knowledge Hierarchies and Trade

- Pol Antràs, Luis Garicano, and Esteban Rossi-Hansberg. Offshoring in a knowledge economy. *Quarterly Journal of Economics*, 121(1):31–77, 2006
- Pol Antràs and Esteban Rossi-hansberg. Organizations and Trade. *Annual Review of Economics*, 1(1):43–64, 2009
- Lorenzo Caliendo and Esteban Rossi-Hansberg. The Impact of Trade on Organization and Productivity. *Quarterly Journal of Economics*, 127(3):1393–1467, 2012

22 Quantitative FDI Models

Proximity-concentration tradeoff; Multicountry FDI models

Proximity-concentration Tradeoff

- Elhanan Helpman, Marc J Melitz, and Stephen R Yeaple. Export versus FDI with Heterogeneous Firms. *American Economic Review*, 94(1):300–316, 2004
- Arnaud Costinot, Jonathan Vogel, and Su Wang. An elementary theory of global supply Chains. *Review of Economic Studies*, 80(1):109–144, 2013
- Natalia Ramondo, Veronica Rappoport, and Kim J. Ruhl. The proximity-concentration tradeoff under uncertainty. *Review of Economic Studies*, 80(4):1582–1621, 2013

Multicountry FDI models

- Natalia Ramondo, Veronica Rappoport, and Kim J Ruhl. Intrafirm Trade and Vertical Fragmentation in U.S. Multinational Corporations. 2015
- Costas Arkolakis, Natalia Ramondo, Andres Rodriguez-Clare, and Stephen R Yeaple. Innovation and Production in the Global Economy. *American Economic Review*, 108(8):2128–2173, 2018
- Natalia Ramondo and Andrés Rodríguez-Clare. Trade, Multinational Production, and the Gains from Openness. *Journal of Political Economy*, 121(2):273–322, 2013
- Pablo Fajgelbaum, Gene M Grossman, and Elhanan Helpman. A Linder Hypothesis for Foreign Direct Investment. *The Review of Economic Studies*, 82(1):83–121, 2015
- Natalia Ramondo. A quantitative approach to multinational production. *Journal of International Economics*, 93(1):108–122, 2014
- Thomas J. Holmes, Ellen R. McGrattan, and Edward C. Prescott. Quid pro quo: Technology capital transfers for market access in China. *Review of Economic Studies*, 82(3):1154–1193, 2013

23 Trade, Ideas, and Growth

In the final part of the course, we discuss how trade can influence innovation, technologies of production and, ultimately, economic growth. One key theme of this part of the course is the dynamics of trade, a subject that we have for the most part left out in the earlier parts of the course.

24 Trade and Growth: Historical Facts and Concepts

Cross-country studies of trade and growth; Dynamics of comparative advantage

Empirics of Trade and Growth

- Jeffrey A Frankel and David Romer. Does Trade Cause Growth? *American Economic Review*, 89(3):379–399, 1999
- James Feyrer. Trade and Income – Exploiting Time Series in Geography. *Ssrn*, (603):1–43, 2009
- Dani Rodrik and Francisco Rodriguez. Trade policy and economic growth: A skeptic’s guide to cross-national evidence. *NBER Macroeconomics Annual*, 15:261–325, 1998
- Dani Rodrik. Has Globalization Gone Too Far? *Challenge*, 41(2):81–94, 1997

Evolution of Comparative Advantage

- Andrei A. Levchenko and Jing Zhang. The evolution of comparative advantage: Measurement and welfare implications. *Journal of Monetary Economics*, 78:96–111, 2016
- Ricardo Hausmann, Jason Hwang, and Dani Rodrik. What you export matters. *Journal of Economic Growth*, 12(1):1–25, dec 2006
- Bernardo S Blum. Endowments, output, and the bias of directed innovation. *Review of Economic Studies*, 77(2):534–559, 2010

25 Trade and Firm Innovation

Theory and empirics of the effect of trade on innovation

Theories

- Bee Yan Aw, Mark J Roberts, and Daniel Yi Xu. R&D Investment, Exporting, and Productivity Dynamics. *American Economic Review*, 101(4):1312–1344, 2011
- Andrew Atkeson and Ariel T Burstein. Innovation, Firm Dynamics , and International Trade. *Journal of Political Economy*, 118(3):433–484, 2010

Empirics

- Eric Verhoogen. Trade, quality upgrading, and wage inequality in the Mexican manufacturing sector. *Quarterly Journal of Economics*, 123(2):489–530, 2008
- Paula Bustos. Trade Liberalization, Exports, and Technology Upgrading: Evidence on the Impact of MERCOSUR on Argentinian Firms. *American Economic Review*, 101(1):304–340, 2011
- Nick Bloom, Mirko Draca, and John Van Reenen. Trade induced technical change? The impact of Chinese imports on innovation, IT and productivity. *Review of Economic Studies*, 83(1):87–117, 2016

26 Trade and International Diffusion of Ideas

Theories of ideas diffusion and trade

- Thomas Sampson. Dynamic Selection: An Idea Flows Theory of Entry, Trade and Growth. *Quarterly Journal of Economics*, 131(1):315–380, 2016
- Jesse Perla, Christopher Tonetti, and Michael E. Waugh. Equilibrium Technology Diffusion, Trade, and Growth. 2015
- Francisco J Buera and Ezra Oberfield. The Global Diffusion of Ideas. 2017
- Jonathan Eaton and Samuel Kortum. International technology diffusion: theory and measurement. *International Economic Review*, 40(3):323–362, 1999

Course Schedule and Outline

M	D	Part	Lec.	Topic	Note	
Aug	28	Tu	1	Introduction–Trade Facts and Concepts		
	30	Th	2	Factor Endowment Theory of Comparative Advantage		
Sep	4	Tu				
	6	Th	3	Ricardian Theory of Comparative Advantage		
	11	Tu				
	13	Th	4	Demand-side Drivers of Trade		
	18	Tu	II	5 Increasing Returns to Scale	Problem Set 1 due	
	20	Th		6 Krugman Model of Monopolistic Competition		
	25	Tu		7 Love of Variety in the Data		
	27	Th	III	8 Gravity Equation		
Oct	2	Tu	9	Eaton-Kortum Model of Ricardian Comparative Advantage		
	4	Th				
	9	Tu			Fall Break (no classes)	
	11	Th	10	Demand-side Drivers of Trade: Quantitative View	Problem Set 2 due	
	16	Tu	11	Trade Costs and Frictions		
	18	Th	12	Economic Geography	Referee Report 1 due	
	23	Tu	IV	13 Firm Heterogeneity: Facts and Concepts		
	25	Th		14 Melitz Model		
	30	Tu		15 Firm Heterogeneity, Gravity, and Gains from Trade		
	Nov	1	Th	16	Firm Heterogeneity, Competition, and Costs	
		6	Tu	V	17 Trade and Inequality: Facts and Concepts	
		8	Th		18 Matching and Sorting of Firms and Workers	Referee Report 2 due
		13	Tu		19 Workers, Import Competition, and Mobility Frictions	
		15	Th	VI	20 Multinationals and GVCs: Facts and Concepts	Referee Report 3 due
		20	Tu		21 FDI and Firm Organization	
22		Th			Thanksgiving (no classes)	
27		Tu		22 Quantitative FDI Models		
29		Th	VII	23 Trade and Growth: Historical Facts	Problem Set 3 due	
Dec		4	Tu	24	Trade and Innovation	
	6	Th	25	Trade and International Diffusion of Ideas		
	11	Tu			Study Days (no classes)	