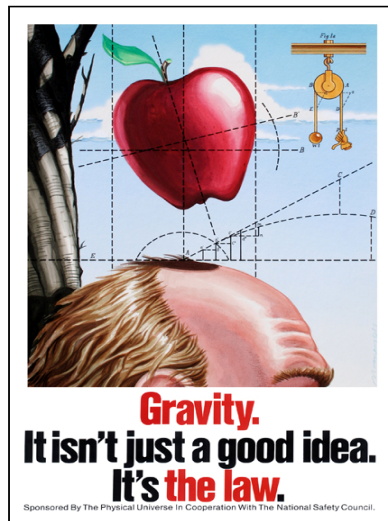


A PRACTICAL GUIDE TO TRADE POLICY ANALYSIS WITH THE STRUCTURAL GRAVITY MODEL



SYLLABUS

Contact Information

Instructor: Yoto V. Yotov
Office: Gerri C. LeBow Hall, 1020
Telephone: (215) 895-2572
E-mail: yotov@drexel.edu
Address: School of Economics, LeBow College of Business, Drexel University
3200 Market Str., Philadelphia, PA 19104, U.S.A.

COURSE OBJECTIVES AND DESCRIPTION

The objective of this course is to serve as a practical guide for trade policy analysis with the gravity model of trade. The course offers a comprehensive and balanced approach between theory and empirics: It describes best practices for estimating the partial equilibrium effects of trade policy within the structural gravity model and also outlines novel methods for quantifying the general equilibrium (GE) impact of changes in trade barriers within the same theoretical framework. The course achieves these objectives by bringing cutting edge academic research to the classroom in order to offer a unique hands-on approach to trade policy analysis, thus increasing access to applied economists, policymakers, and students, and improving intuition about results. An attractive and novel feature of the course is that it complements a rigorous theoretical exposition with a series of applications and empirical exercises, including estimation of the partial and the GE effects of FTAs and MFN tariffs within the same theoretically-consistent framework. Importantly, owing to recent research developments, all experiments and exercises in this course (including the general equilibrium simulations), are performed with standard built-in commands directly in Stata. The course traces the evolution of the structural gravity model from its initial a-theoretical applications to most recent structural estimation gravity frameworks, e.g. dynamic gravity.

COURSE HIGHLIGHTS

- An intuitive introduction to gravity, its history and evolution over time, and a discussion of the most appealing properties of the gravity framework and its applications to trade.
- Derivation and review of the original Armington-CES gravity model and its evolution over time.
- Comparison between the Armington-CES framework and leading supply gravity models at the aggregate and at the sectoral level.
- The focus on the Armington-CES framework, as a representative gravity model, allows for deep analysis of the structural relationships underlying the general equilibrium gravity system, and how they can be exploited to make policy inferences.
- Presentation and discussion of a series of indexes that can be used to summarize the general equilibrium effects of trade policy and changes in trade costs on trade and welfare, and to decompose their incidence on producers and on consumers in liberalizing countries and in outside economies.
- A summary and discussion of the main challenges with gravity estimations, and review of the evolution of alternative approaches and solutions to address those challenges.
- Review of the latest developments in the empirical gravity literature and recommendations for best practices to obtain reliable partial equilibrium estimates of the effects of bilateral and non-discriminatory trade policies within the same theoretically-consistent econometric specification.
- Presentation of consistent methods to aggregate trade costs and their impact, a discussion on the interpretation of gravity estimates, and description of gravity data, data sources and their challenges and limitations.
- A summary of the standard procedures to perform counterfactual analysis with the gravity model, and presentation of recent methods to obtain theoretically-consistent GE effects of trade policy with a simple estimation procedure that can be performed with built-in commands in standard statistical software packages, e.g. Stata.
- A demonstration of how structural gravity can be integrated with a broader class of general equilibrium models by nesting the Armington-CES model within a dynamic production superstructure with capital accumulation with application to Transatlantic Trade and Investment Partnership (TTIP).
- A series of empirical exercises, including Stata codes for their implementation, that demonstrate the usefulness and applicability of the course methods and allow participants to apply what they have learned in the course to real world applications.

TARGET AUDIENCES

The course is designed for and may be beneficial to the following audiences:

- *Applied Economists* and *Policy Makers*, who use the gravity model as a tool to answer specific questions of interest to them, e.g. to evaluate the effects of various trade policies;
- *Advanced Master Students* in the fields of Economics, Public Policy (quantitative track), and International Relations (quantitative track);
- *Ph.D. Students* in the fields of International and Development Economics, Public Policy, and International Relations (quantitative track);
- *Academic Researchers*, who would benefit from a comprehensive refreshment and an update on the latest developments in this area.

COURSE PREREQUISITES

The prerequisites for this course include:

- Master-level Microeconomic Analysis and Master-level Econometric Analysis.
- Previous experience with Stata, including data manipulation and use of canned estimation commands (no coding!) is also required.
- Advanced Undergraduate-level or Master-level knowledge of International Trade is not a formal prerequisite but will be a very beneficial asset to the participants in this course.

TIME REQUIREMENTS

The duration of the course may vary between two 3-hour sessions and four 3-hour sessions and can be adjusted according to the needs and the background of the target audience. Prior experience suggests that two 3-hour sessions are sufficient for professional audiences (e.g. researchers, applied economists, and policy makers with some prior experience in this area). Longer class time or/and complementary homework assignments and exercises may be beneficial in the case of student audiences.

REQUIRED READINGS

The course is developed around the following two working papers that were prepared to contribute to the “Practical Guide to Trade Policy Analysis”, co-published by the World Trade Organization (WTO) and the United Nations Conference on Trade and Development (UNCTAD):

[1] “Trade Policy Analysis with Structural Gravity: Estimation and Partial Equilibrium Effects”, Piermartini, R. and Y. V. Yotov, 2016.

[2] “Trade Policy Analysis with Structural Gravity: General Equilibrium Implications”, Larch, M. and Y. V. Yotov, 2016.

HIGHLY RECOMMENDED READINGS

The two required readings cover a large number of important related studies and I refer the interested reader to the bibliography sections of the above papers. The following are five academic papers that are the most closely related to the course material.

- [1] “Gravity with Gravitas: A Solution to the Border Puzzle”, Anderson, J. E., and E. van Wincoop. 2003. *American Economic Review*, 93(1): 170–192.
- [2] “*Estimating* General Equilibrium Trade Policy Effects: GE PPML”, Anderson, J. E., M. Larch, and Y. V. Yotov, 2015. *CESifo Working Paper Series* WP #5446.
- [3] “The Changing Incidence of Geography”, Anderson, J. E. and Y. V. Yotov, 2010. *American Economic Review*, vol. 100(5), pages 2157-86.
- [4] “Technology, Geography, and Trade”, Eaton, J. and S. Kortum, 2002. *Econometrica*, vol. 70(5), pages 1741-1779.
- [5] “The Log of Gravity”, Santos Silva, J.M.C. and S. Tenreyro, 2006. *Review of Economics and Statistics*, 88(4): 641–658.

RECOMMENDED SURVEY READINGS

The following are excellent surveys that complement the main reading materials for the course.

- [1] “The Gravity Model”, Anderson, J.E. 2011. *Annual Review of Economics*, 3:133-60.
- [2] “Gravity for Dummies and Dummies for Gravity Equations”, Baldwin, R. and D. Taglioni, 2006. *NBER Working Paper Series* WP #12516.
- [3] “Trade Theory with Numbers: Quantifying the Consequences of Globalization”, Costinot, A., and A. Rodriguez-Clare, 2014. in the *Handbook of International Economics* Vol. 4, eds. G. Gopinath, E. Helpman, and K. Rogoff.
- [4] “Gravity Equations: Workhorse, Toolkit, and Cookbook”, Head, K. and T. Mayer, 2014. in the *Handbook of International Economics* Vol. 4, eds. G. Gopinath, E. Helpman, and K. Rogoff.
- [5] “Practical Guide to Trade Policy Analysis”, co-published by WTO and UNCTAD, 2012.