ECON 105: INTRODUCTION TO ECONOMICS

Session 1: Course Introduction and Welcome to Economics

Sebastian Anti, Assistant Professor of Economics, Bryn Mawr College

Outline

- Welcome and Introductions/Ice Breaker
- About Me
- Economics as a discipline
- Econ 105, and the syllabus
- Basics of Economic Reasoning (Session 1 and 2 Content)

Welcome and Introductions

Quick Exercise

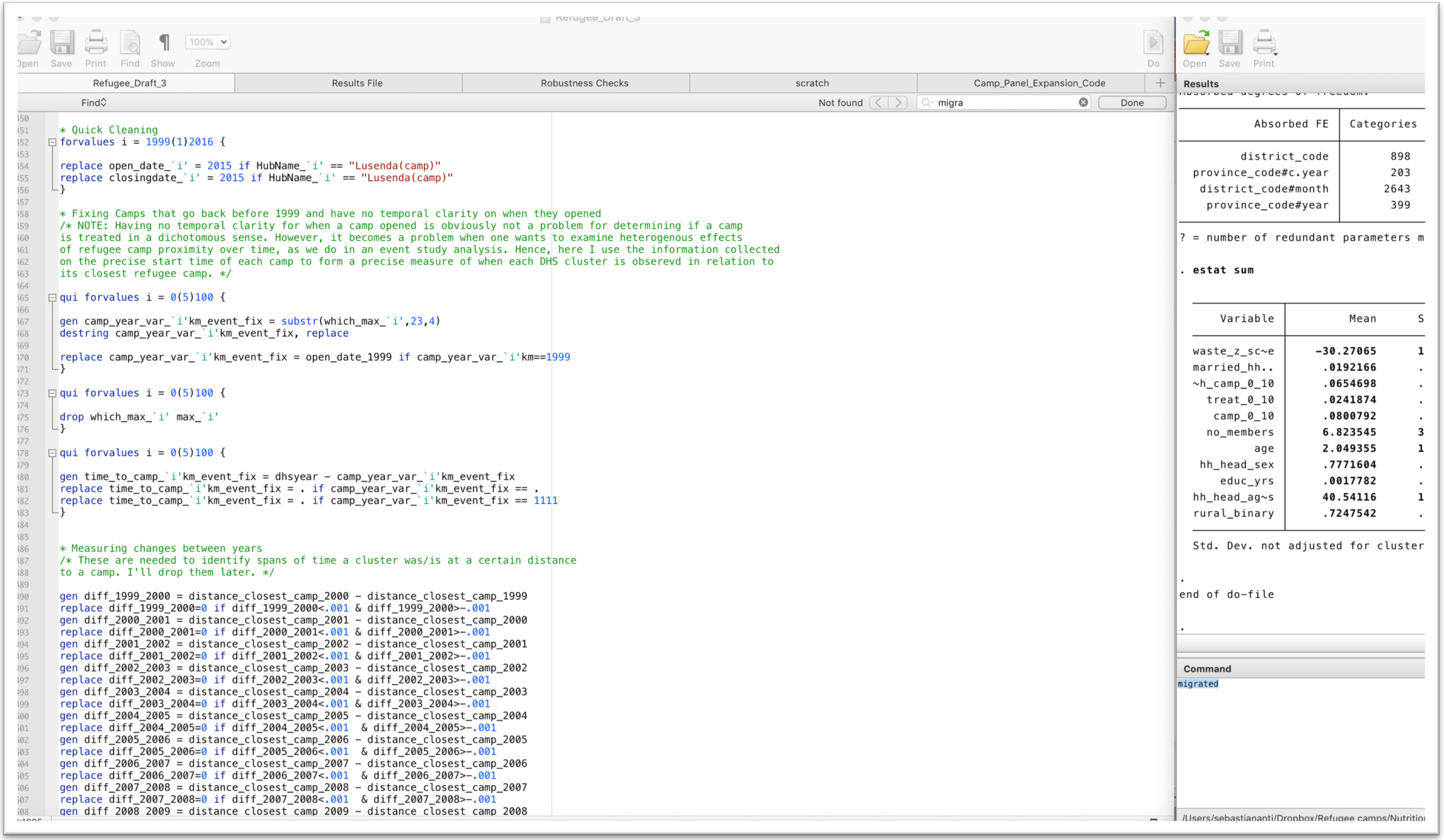
1. **Turn to your neighbor (or Zoom breakout room partner)**
2. **Introduce yourself:**
   - Why are you in Econ 105?
3. **Discuss:**
   - What do you think of when you think of "economics?"
   - What/Who is an "economist?"
   - What does an economist do?

Who is an economist? Common Answer 1:

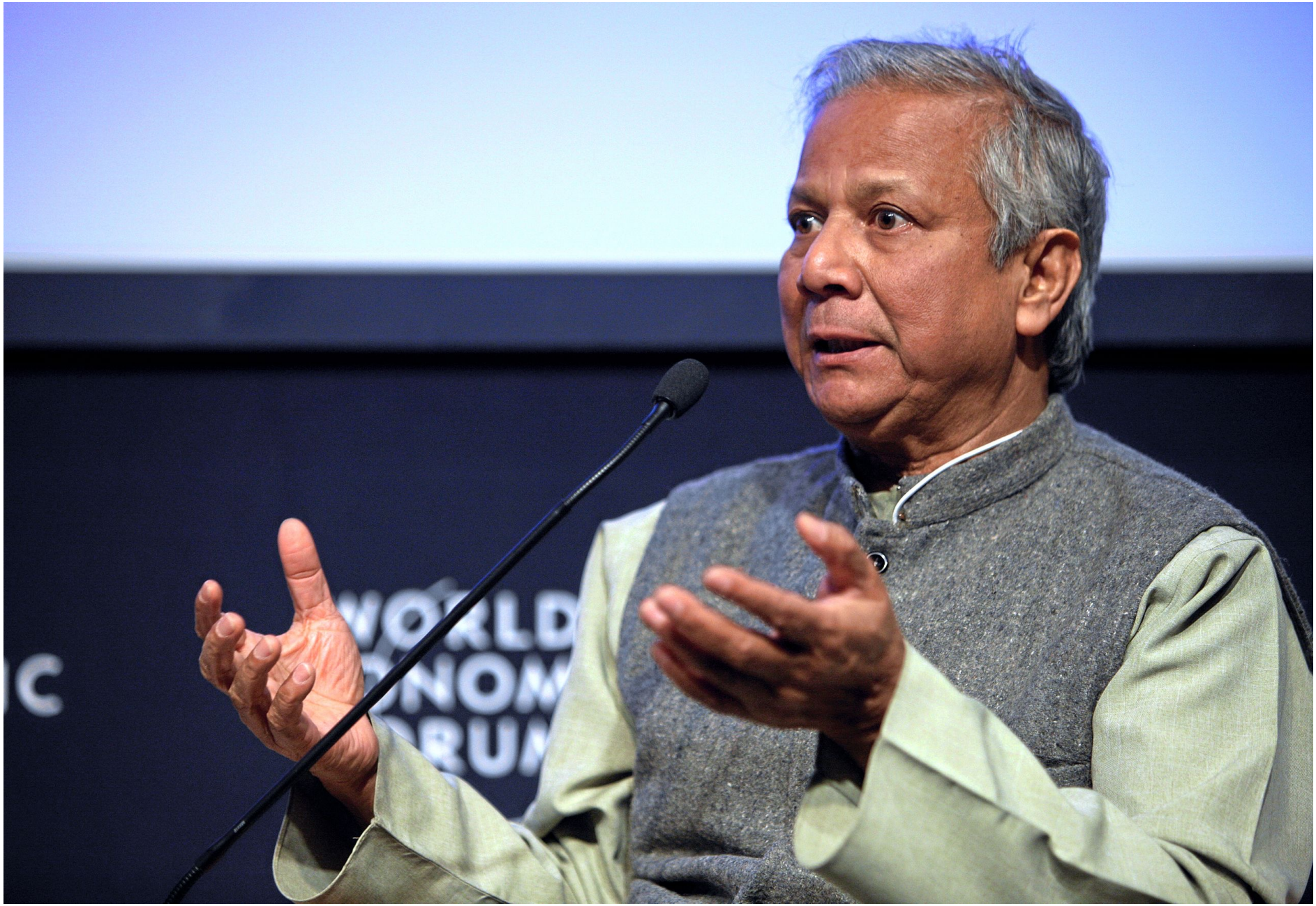
Who is an economist? Common Answer 2:

“Doing” Economics? Common Answer:

Actually "Doing" Economics



Abhijit Banerjee, Esther Duflo and Michael Kremer. Recipients of the 2019 Nobel Prize in Economic Sciences.
Source: Business Insider



Muhammad Yunus. Founder of the Grameen Bank. Also an economist (PhD in Economics, Vanderbilt)

Janet Yellen. Chair of the Federal Reserve. Also an economist (PhD Yale)

What's the Point Here?

- **Major applications of its methods and frameworks for analysis in finance, and business management, and monetary policy**
  - Econ is often associated with these professions because of their visibility
- **Economics at its core is about people, human behavior, and resource use**
  - Much more than just its most visible associated professions and public personalities
  - This is a first course in exposing you to this broad field

About Your Instructor

About Me

Personal

- **Development economist**
- **Educations and Training**
  - PhD, Applied Economics, University of Minnesota
  - MALD, Fletcher School of Law and Diplomacy, Tufts University
  - BA, Oberlin College
- **Prior work in international development**
  - Peace Corps, Cameroon
  - One Acre Fund, Kenya and Malawi
  - Other short-term work with: The Millennium Challenge Corporation, The Foreign Policy Research Institute

Research Agenda

- Development economics/Natural resource economics/International trade
- More details at sebastiananti.com

Introduction to Economics as a Discipline

Economics As a Discipline

Basics of Economics:

- **Broad Definition (my own):** The study of how individuals and societies use resources
- Social science, **but mainstream economics is** highly unified around quantitative and mathematical core methodologies and "ways of knowing"
- Helpful to break mainstream economics along two dimensions:
  1. Theory and measurement:
     - **Theory:** Mathematical models of the relationships within economic systems (exception: Heterodox Economics)
     - **Econometrics:** Measurements of these relationships using data
  2. Scale:
     - **Macroeconomics:** The study of market-level or country-level economic phenomena
     - **Microeconomics:** The study of individual-level or household-level economic phenomena

Micro and Macro Distinctions

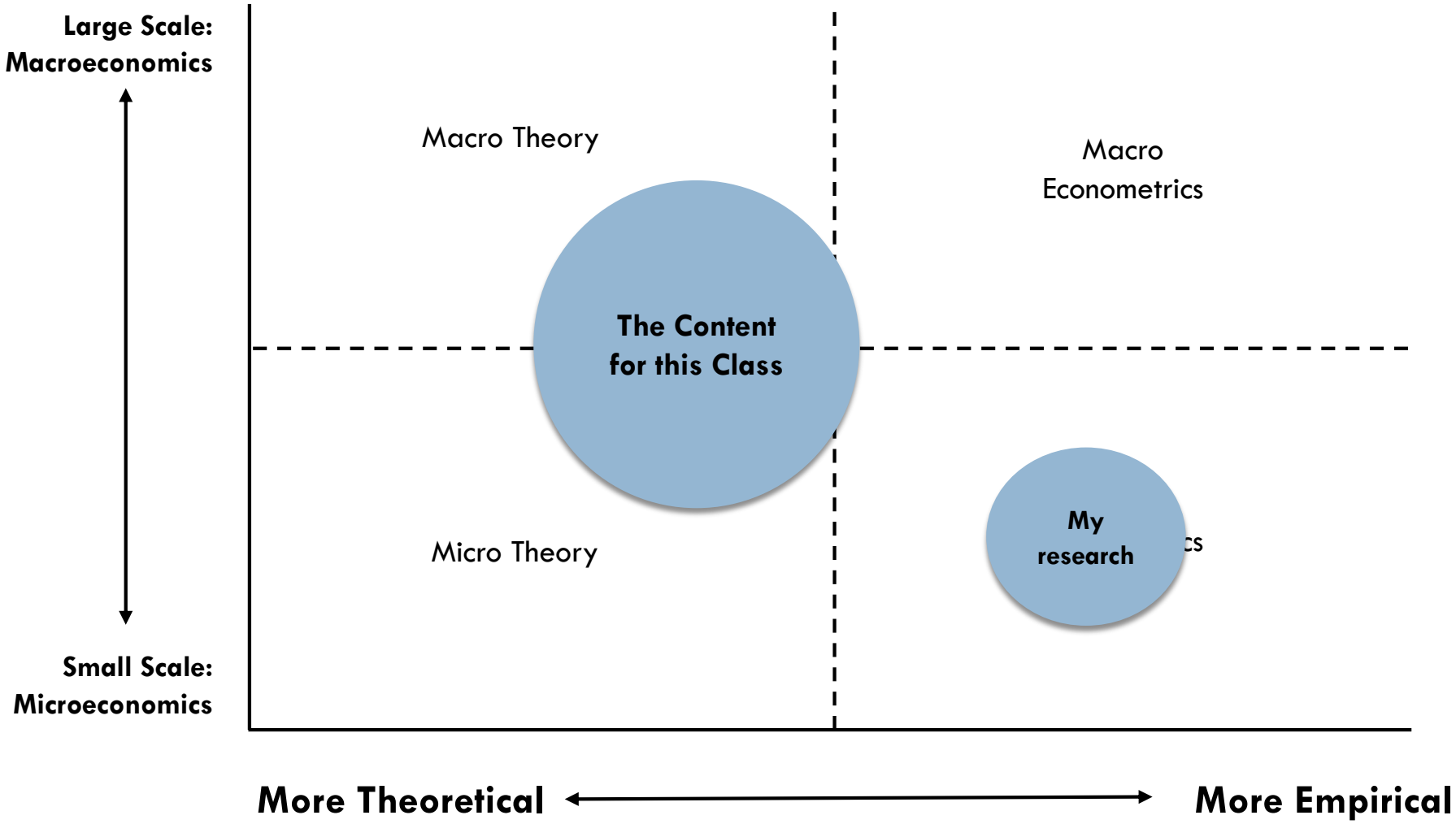
Examples of the Distinction:

- **Microeconomic Question:** How does the distribution of resources in a household depend on the gender of the main earner?
- **Macroeconomic Questions:** How do economies of countries grow? How does inflation affect firm productivity in the long term? How does the government affect the stability of the economy?

Huge Number of Subfields:

- Upper-level econ classes at Bryn Mawr and Haverford introduce you to these.

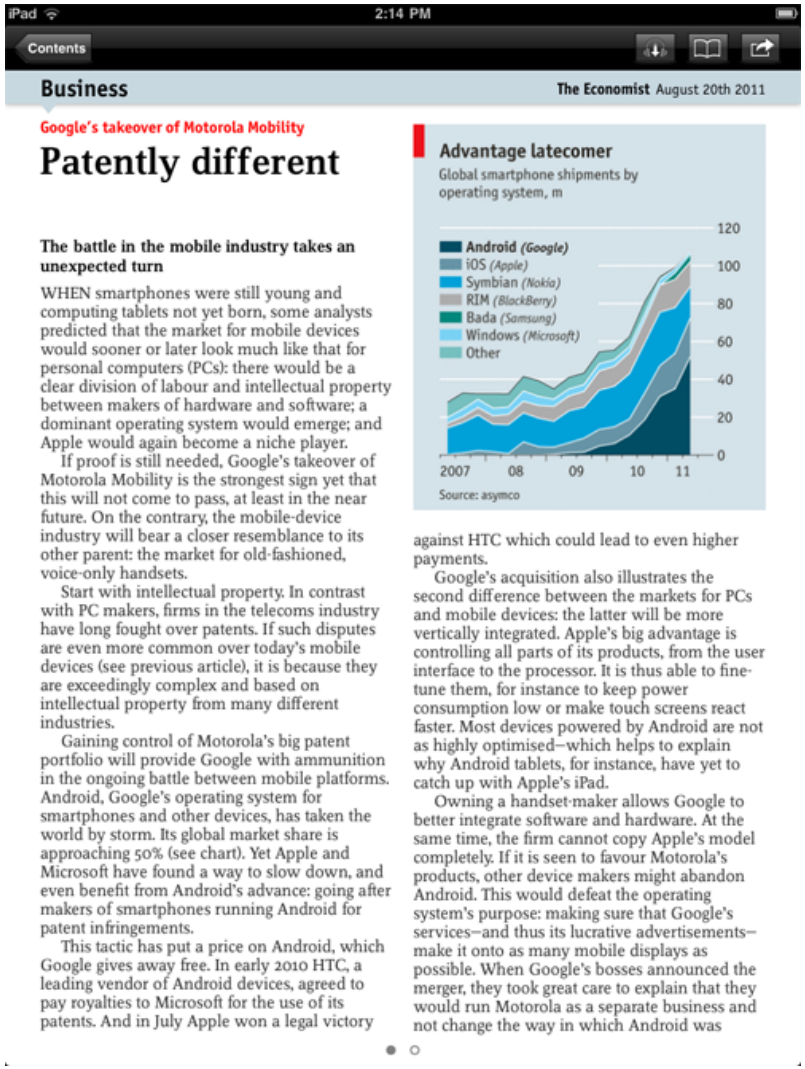
First Graph in the Class



Subfields of Economics

- **Development Economics:** the study of how economies grow and change
- **Labor Economics:** the study of the labor market, wages, and skill development
- **Natural Resource Economics:** the study of how humans consume, value, and manage natural resources like forests, fisheries, land, etc.
- **Others:** Consumer Economics, Financial Economics, Land Economics, Law and Economics, Industrial Organization, Production Economics, Agricultural Economics, Trade, Regional Economics, Economic Geography, Heterodox Economics, Economics of Gender, Race, and Discrimination

Mathematical Structure means Academic Work Does Not Resemble Popular Writing



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Business The Economist August 20th 2011

Google's takeover of Motorola Mobility

Patently different

The battle in the mobile industry takes an unexpected turn

WHEN smartphones were still young and computing tablets not yet born, some analysts predicted that the market for mobile devices would sooner or later look much like that for personal computers (PCs): there would be a clear division of labour and intellectual property between makers of hardware and software; a dominant operating system would emerge; and Apple would again become a niche player.

If proof is still needed, Google's takeover of Motorola Mobility is the strongest sign yet that this will not come to pass, at least in the near future. On the contrary, the mobile-device industry will bear a closer resemblance to its other parent: the market for old-fashioned, voice-only handsets.

Start with intellectual property. In contrast with PC makers, firms in the telecoms industry have long fought over patents. If such disputes are even more common over today's mobile devices (see previous article), it is because they are exceedingly complex and based on intellectual property from many different industries.

Gaining control of Motorola's big patent portfolio will provide Google with ammunition in the ongoing battle between mobile platforms. Android, Google's operating system for smartphones and other devices, has taken the world by storm. Its global market share is approaching 50% (see chart). Yet Apple and Microsoft have found a way to slow down, and even benefit from Android's advance: going after makers of smartphones running Android for patent infringements.

This tactic has put a price on Android, which Google gives away free. In early 2010 HTC, a leading vendor of Android devices, agreed to pay royalties to Microsoft for the use of its patents. And in July Apple won a legal victory against HTC which could lead to even higher payments.

Google's acquisition also illustrates the second difference between the markets for PCs and mobile devices: the latter will be more vertically integrated. Apple's big advantage is controlling all parts of its products, from the user interface to the processor. It is thus able to fine-tune them, for instance to keep power consumption low or make touch screens react faster. Most devices powered by Android are not as highly optimised—which helps to explain why Android tablets, for instance, have yet to catch up with Apple's iPad.

Owning a handset-maker allows Google to better integrate software and hardware. At the same time, the firm cannot copy Apple's model completely. If it is seen to favour Motorola's products, other device makers might abandon Android. This would defeat the operating system's purpose: making sure that Google's services—and thus its lucrative advertisements—make it onto as many mobile displays as possible. When Google's bosses announced the merger, they took great care to explain that they would run Motorola as a separate business and not change the way in which Android was

Advantage latecomer

Global smartphone shipments by operating system, m

Source: asymco

case where N_1 grows faster than N_2, namely, $\mu = 0$. To derive the large sample distribution of the test statistic for the number of common factors, we deploy an asymptotic expansion for the estimated PCs in each group, which extends results in Bai and Ng (2002, 2006), Stock and Watson (2002), and Bai (2003), and we report in Proposition 3 in Appendix B. For $t = 1, \ldots, T$ and $j = 1, 2$, the estimate $\hat{h}_{j,t}$ is asymptotically equivalent (in a sense made precise in Proposition 3), up to negligible terms, to

$$\hat{\mathcal{H}}_j\left(h_{j,t} + \frac{1}{\sqrt{N_j}}u_{j,t} + \frac{1}{T}b_{j,t}\right), \tag{4.2}$$

where $u_{j,t} = (\frac{1}{N_j}\sum_{i=1}^{N_j}\lambda_{j,i}\lambda_{j,i}')^{-1}\frac{1}{\sqrt{N_j}}\sum_{i=1}^{N_j}\lambda_{j,i}\varepsilon_{j,i,t}$, $\hat{\mathcal{H}}_j$ is a nonsingular stochastic factor rotation matrix, $b_{j,t} = (\frac{1}{N_j}\sum_{i=1}^{N_j}\lambda_{j,i}\lambda_{j,i}')^{-1}(\frac{1}{T}\sum_{t=1}^{T}h_{j,t}h_{j,t}')^{-1}\eta_{j,t}^2 h_{j,t}$, and $\eta_{j,t}^2 = \text{plim}_{N_j\to\infty}\frac{1}{N_j}\times\sum_{i=1}^{N_j}E[\varepsilon_{j,i,t}^2|\mathcal{F}_t]$ is the limit average error variance conditional on the sigma field $\mathcal{F}_t = \sigma(F_s, s \le t)$ generated by current and past factor values $F_t = (f_t^{c\prime}, f_{1,t}^{s\prime}, f_{2,t}^{s\prime})'$, and $\lambda_{j,i} = (\lambda_{ji}^{c\prime}, \lambda_{ji}^{s\prime})'$. The zero-mean term $u_{j,t}$ drives the randomness in group factor estimates conditional on factor path. Vector $b_{j,t}$ is measurable with respect to the factor path and induces a bias term at order T^{-1} in principal components estimates. Vectors $u_{j,t}$ and $b_{j,t}$ depend on sample sizes but, for convenience, we omit the indices N_j, T.

Let $\tilde{\Sigma}_{u,jk,t}(h) = \text{Cov}(u_{j,t}, u_{k,t-h}|\mathcal{F}_t)$ be the conditional covariance between $u_{j,t}$ and $u_{k,t-h}$, that is,

$$\tilde{\Sigma}_{u,jk,t}(h) = \left(\frac{1}{N_j}\sum_{i=1}^{N_j}\lambda_{j,i}\lambda_{j,i}'\right)^{-1}\frac{1}{\sqrt{N_jN_k}}\sum_{i=1}^{N_j}\sum_{\ell=1}^{N_k}\lambda_{j,i}\lambda_{k,\ell}'\,\text{Cov}(\varepsilon_{j,i,t}, \varepsilon_{k,\ell,t-h}|\mathcal{F}_t)$$
$$\times\left(\frac{1}{N_k}\sum_{i=1}^{N_k}\lambda_{k,i}\lambda_{k,i}'\right)^{-1},$$

and $\tilde{\Sigma}_{u,jk,t}(-h) = \tilde{\Sigma}_{u,kj,t}(h)'$, for $j, k = 1, 2$ and $h = 0, 1, \ldots$. We set $\tilde{\Sigma}_{u,jj,t} \equiv \tilde{\Sigma}_{u,jj,t}(0)$. Moreover, let us define the (probability) limits $\Sigma_{u,jk,t}(h) = \text{plim}_{N_j,N_k\to\infty}\tilde{\Sigma}_{u,jk,t}(h)$ and $\Sigma_{\lambda,j} = \lim_{N_j\to\infty}\frac{1}{N_j}\sum_{i=1}^{N_j}\lambda_{j,i}\lambda_{j,i}'$, and let $\bar{b}_{j,t} = \Sigma_{\lambda,j}^{-1}\eta_{j,t}^2 h_{j,t}$ be the large sample counterpart of $b_{j,t}$.

THEOREM 1: *Under Assumptions A.1–A.7, and the null hypothesis $H_0 = H(k^c)$ of k^c common factors, we have*

$$N\sqrt{T}\left(\Omega_{U,1} + \frac{N}{T^2}\Omega_{U,2}\right)^{-1/2}\left[\hat{\xi}(k^c) - k^c + \frac{1}{2N}\text{tr}\{\tilde{\Sigma}_{cc}^{-1}\tilde{\Sigma}_U\} + \frac{1}{2T^2}\text{tr}\{\tilde{\Sigma}_{cc}^{-1}\tilde{\Sigma}_B\}\right]$$
$$\xrightarrow{d} N(0, 1), \tag{4.3}$$

where $\tilde{\Sigma}_{cc} = \frac{1}{T}\sum_{t=1}^{T}f_t^c f_t^{c\prime}$, $\tilde{\Sigma}_B = \frac{1}{T}\sum_{t=1}^{T}\widetilde{\Delta b}_t^{(c)}\widetilde{\Delta b}_t^{(c)\prime}$, *and*

$$\widetilde{\Delta b}_t = b_{1,t} - b_{2,t} - \left(\frac{1}{T}\sum_{s=1}^{T}(b_{1,s} - b_{2,s})F_s'\right)\left(\frac{1}{T}\sum_{s=1}^{T}F_sF_s'\right)^{-1}F_t,$$

Introduction to Econ 105 and the Syllabus

Econ 105: Basics

- **<u>Please read the syllabus carefully on your own time</u>**
  - We won't possibly be able to discuss it all in person today and there are many details you are responsible for knowing
- **I will cover now the most important aspects of the administration of the class**

Econ 105: Basics

- **The textbook for this class is *Economics* by David Colander**
  - I use the 10th edition b/c it's cheaper to purchase older copies (less than 25 USD on Amazon right now)
  - Newer or older copies are fine
    - It's your responsibility to make sure you're reading the correct chapters in preparation for class

ECON 105: Basics

First course introducing the foundational academic concepts of economics

- Preparation for further study in economics and critical engagement with the popular discourse in economics

Broken into 3 "modules"

1. Module I: Core Principles
2. Module II: Microeconomics
3. Module III: Macroeconomics

Evaluation:

- 5 Problem Sets (10% of your grade)
- 3 Exams (90% of your grade)

Resources

- **I have office hours:**
  - Monday 1:15 PM to 2:45 PM
  - Wednesday 10:00 AM to 11:30 AM

- **Two weekly TA Sessions:**
  - TA: Yan Zhou
  - Start next week
  - Time and location are to be determined

ECON 105: Grading

Exams

- Midterms 1 and 2 start with 100 points, the Final starts with 150 points (b/c it's 50% longer)
  - Mix of longer questions asking you to analyze an economic scenario and multiple choice/true-false questions
- I deduct points according to the scheme in your syllabus.
- Questions are weighted equally unless otherwise stated.

Problem Sets

- Graded on a "Zero, Check Minus, Check, Check Plus" basis
  - What is this?

Problem Set Grading Clarification

- **Zero:** No submission, mostly incomplete, mostly incorrect, superficial answers **(0 in the grade book)**
- **Check minus:** Partially to mostly complete with significant missing work, generally poor work, high level of incorrect, or partially incorrect answers **(50% in the gradebook)**
- **Check:** Complete, mostly correct answers, demonstration of significant understanding of, and engagement with, the material **(100% in the gradebook)**
- **Check Plus:** Complete, almost all correct, demonstrates exceptional ability with the material **(100% in the gradebook)**

More on Problem Sets

- **I drop your lowest problem set grade in calculating your problem set average.**
- **Note that this grading scheme means I will be giving checks (100% credit) to work that is not 100% correct.**
  - It would be a mistake to interpret a check, or even a check plus, as a reason to not study the suggested answers for problem sets

More Policies

- **Problem sets are due <u>at the start of class</u> on the day they are due in the syllabus**
- **<u>I do not accept late work.</u> If you turn in a problem set late or miss an exam, you automatically receive a zero**
  - I make exceptions for medical or family emergencies
  - If you need to request an extension, please email me and copy your dean

Feedback

- **I will highlight the general location of mistakes in your work so you know what to focus on when you go to look at the answer key**
- **I will not provide much feedback beyond this**
- **It is <u>your responsibility</u> to study the suggested answers that I provide to the problem sets to correct your errors**
  - You have the following resources
    - Me in office hours
    - Review sessions before midterms
    - Weekly TA review sessions
    - Your peers

ECON 105: Evaluation Details

Problem Sets

- Designed as preparation for exams.
- Encouraged to work in groups with classmates, but you must write up your final answers individually (with names of your collaborators attached).
- Okay to consult outside resources such as YouTube and other internet resources.
- Use complete sentences, explain your reasoning, and show your work in order to get full credit. Please organize your work in a way that makes it easy for me to follow
- Fine and expected that answers will be similar within and across groups, but please sit down and write up your own work. Don't copy others or workshop answers that you then all use. Your answers should not be identical to your collaborators

Exams

- Place to show me what you've learned.

ECON 105: Advice and Miscellaneous Points

Mathematics is the language of (conventional) economics. This can be a challenge, but it's also clarifying

- Possible this is your first experience with a discipline that is an applied math
  - Normal for it to take a while to adjust to new ways of thinking
- But math requirement for this class is manageable enough that all in this class should feel confident going into it (algebra is all you'll need)

Mistakes are valuable parts of learning

- The problem set grading structure is meant to be quite forgiving of mistakes. Remember that each problem set is only 2.5% of your final grade
- Mistakes on exams have much more of an effect on your final grade. Use the problem sets as the place to work out misunderstandings so you are comfortable with the material before the exams.

Question and reflect on this material

- Conventional economics requires a lot of assumptions, simplifications, and stylization. Are the conclusions still valid when we take these away? How can we complicate the models that we learn to reflect a more complex world? Think about this as we go.

Next Steps

- **Problem Set 1 will be available on Tuesday next week.**
- **Let's start studying economics together.**