core
econ

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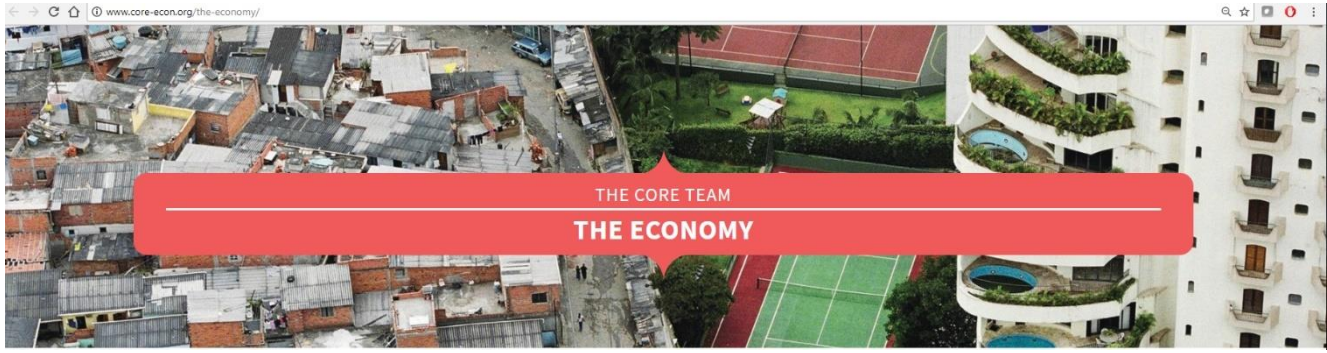
go to www.core-econ.org

Welcome to the
CORE USA
Workshop
2017

Belinda Archibong, CORE-USA
Barnard College, Columbia University



Transforming the undergraduate curriculum in economics

Azim Premii
University,
Bangalore

Yann Algan
CORE-Sciences Po, Paris

Antonio Cabrales CORE-UCL

Samuel Bowles, Santa Fe Institute and CORE
Wendy Carlin, UCL and CORE
University of Stellenbosch
August 2017

What is the most pressing issue that economists today should address?

U. de los Andes, Bogota…

ar students
m 2016

Humboldt University, Fall 2016

What is the most pressing issue that economists today should address?

New graduate recruits Bank of England, Tuesday 27th September 2016

What needs was CORE developed to meet?

Natalie Grisales
Student at Universidad de los Andes

I hoped economics would give me a way to describe and predict human behaviour through mathematical tools; … after semesters of study, **I had mathematical tools**; **but** all the **people** whose behaviour I wanted to study **had disappeared from the scene**

Refik Erzan
Professor at Boğaziçi University, Istanbul

When **economics students** are asked about the economy, their **reasoning** is **no different from** the **wisdom** of **taxi drivers**, and sometimes a bit less well informed

Tim Harford
Economics journalist
BBC, FT

What **we teach in economics** today determines what people think tomorrow, it's the analysis of tomorrow, it's the **policy advice of tomorrow**, it's the political discourse of tomorrow. We **can't just ignore this** and think it's just a little academic game. It matters.

What key needs was CORE developed to meet?

Students

Economics is hard, boring and unrelated to the questions we want to answer

Lecturers

Teaching a standard principles course is easy but student engagement is poor and the content does not reflect advances in economics and the way we do research

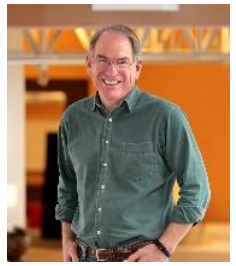
Employers/
Public policy

Economics graduates are technically competent but unable to relate their knowledge to other team members or apply it to problems

CORE: A global collaboration of researchers

Yann Algan
Sciences Po, Paris

Tim Besley
LSE



Samuel Bowles
Santa Fe Institute

Antonio Cabrales
UCL

Juan Camilo Cárdenas
Universidad de los Andes

Wendy Carlin
UCL

Diane Coyle
University of Manchester

Marion Dumas
Santa Fe Institute; LSE

Georg von Graevenitz
Queen Mary University of London

Cameron Hepburn
University of Oxford

Daniel Hojman
University of Chile

David Hope
King's College London

Arjun Jayadev
Azim Premji University

Suresh Naidu
Columbia University

Robin Naylor
University of Warwick

CORE: A global collaboration of researchers

Kevin O'Rourke
University of Oxford

Begüm Özkaynak
Boğaziçi University

Malcolm Pemberton
UCL

Paul Segal
King's College London

- **Researchers** and **teachers** from **around the world** – from Colombia to Bangalore, from Sciences Po to Columbia University
- United by the **goal** of creating high quality open access resources to **bring to students** the **best of economics**
- Enabling them to engage in **evaluation and debates** on the pressing **public policy issues** of today

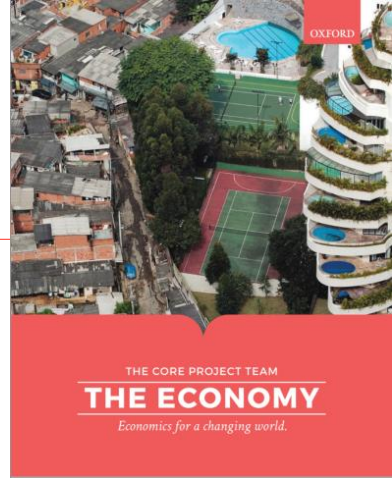
Nicholas Rau
UCL

Rajiv Sethi
Barnard College, Columbia University

Margaret Stevens
University of Oxford

Alex Teytelboym
University of Oxford

What are the main successes of the CORE project prior to launch of 1.0 version?



Produced free on-line ebook + rich teaching & learning materials

Engagement

Total registered on website 40k+ from 189 countries
Verified teachers from 86 countries given access 3k+
>40 universities are participating in CORE pilots, from 15 different countries.

Replaced the standard principles course at:
UCL, Bristol, Toulouse School of Economics, Sciences Po, Humboldt University, Bangor Business School, Azim Premji University Bangalore, La Reunion, Birkbeck College, King's College London, University of Siena, and many more

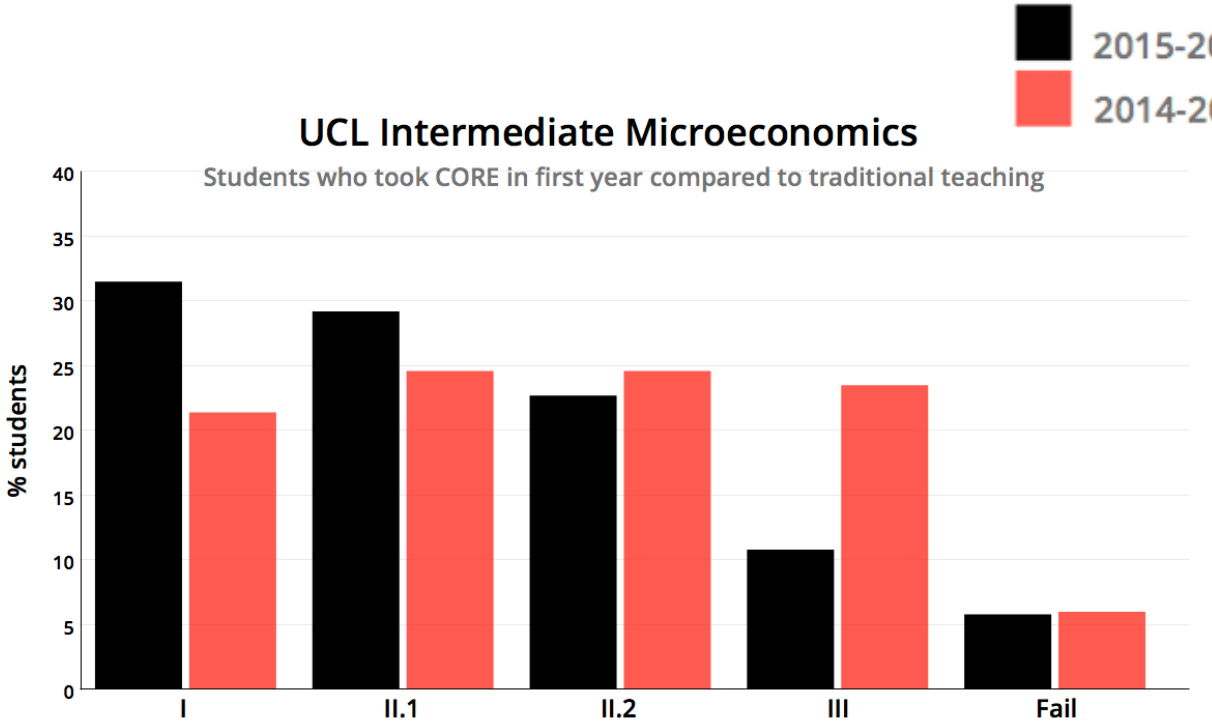
Published new 1.0 free ebook & identical print book, Oxford University Press

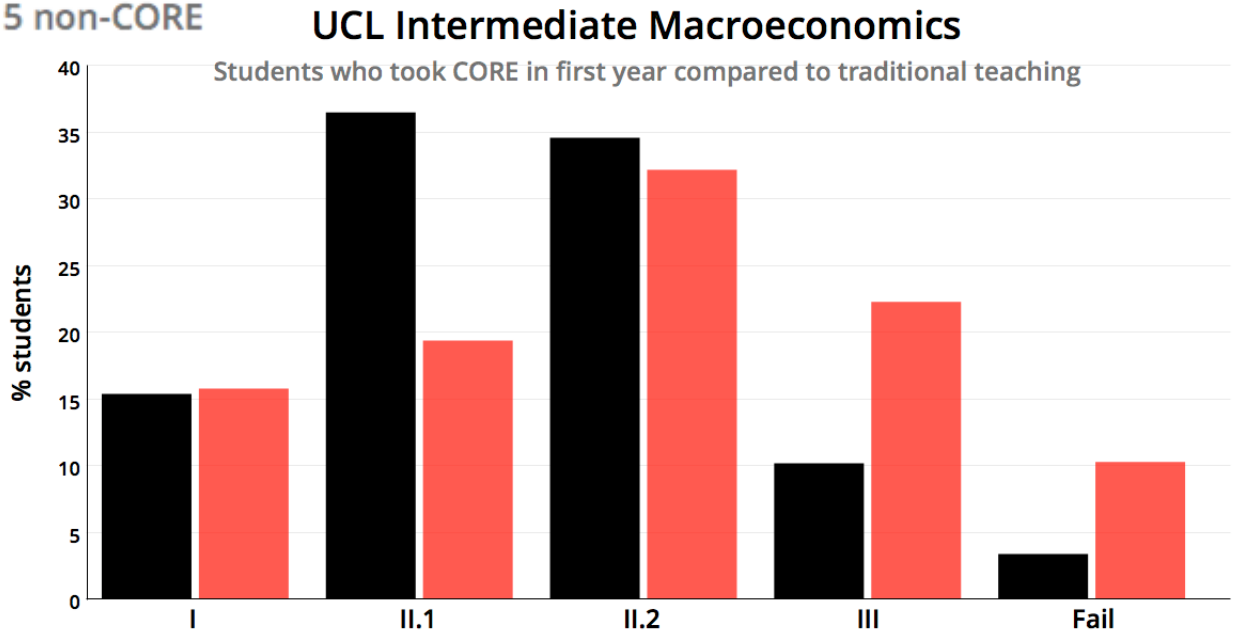
Does it work? UCL replaced its 'ECON101' by CORE for all BSc Econ students in 2014

Examination results in 2016 of the first CORE cohort in their conventional **second year** intermediate micro and macro exams:

Comparison of first CORE cohort (n=269) with last non-CORE cohort (n=288)

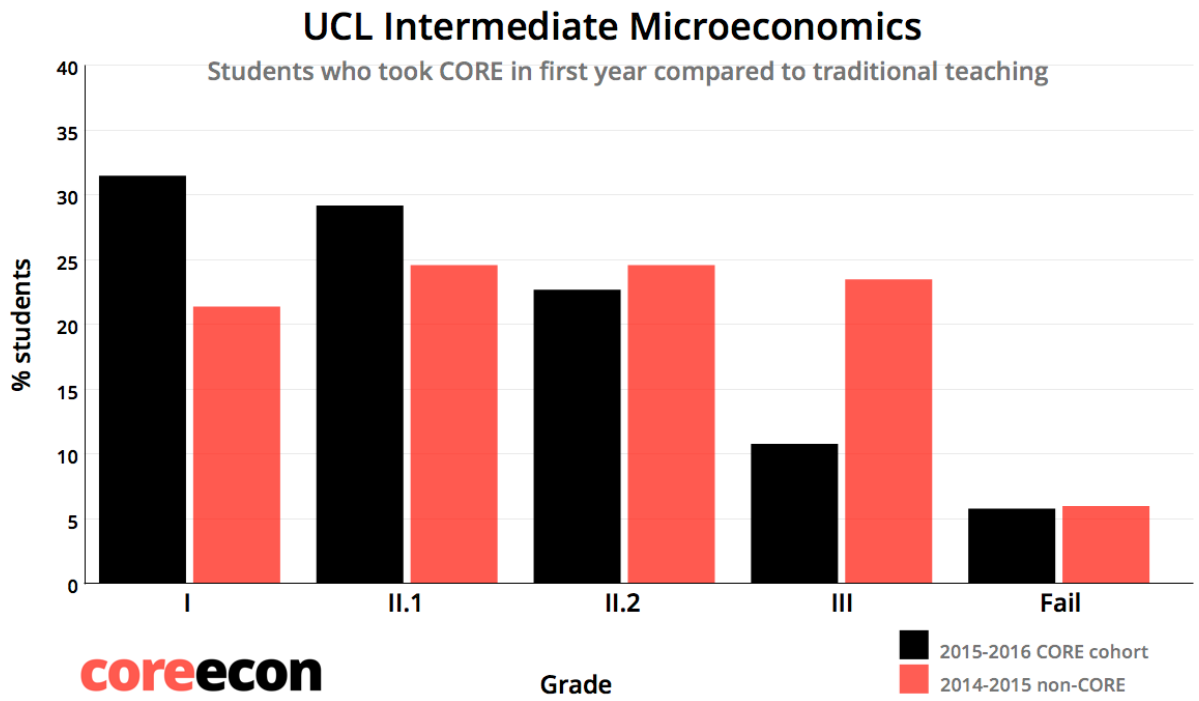
Students who had studied CORE (the black bars) performed better in intermediate micro & macro

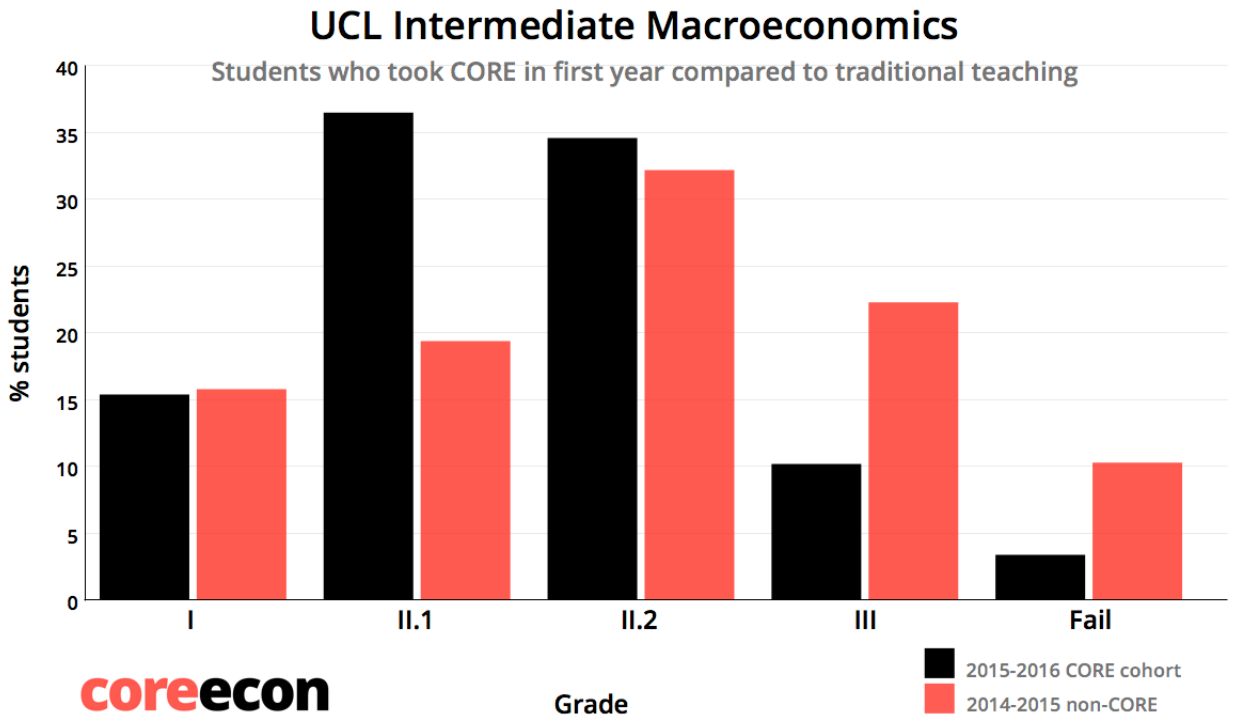




First class (distinction) .....Fail

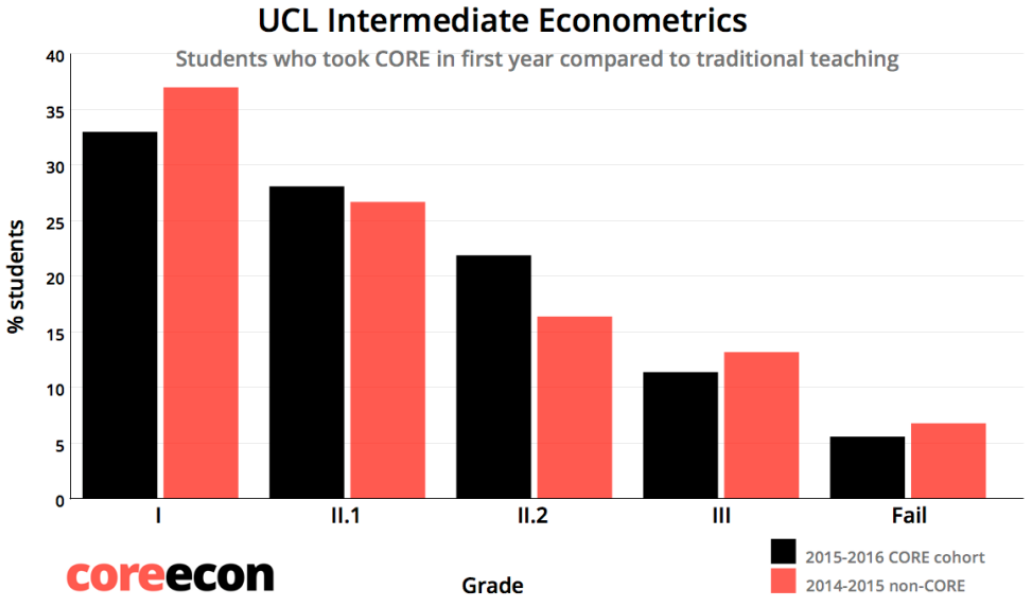
First class (distinction) .....Fail





Just better students that year?

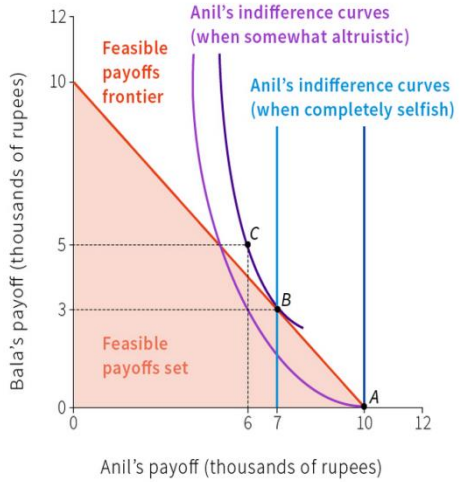
What could explain this?



2015-2016 CORE cohort

2014-2015 non-CORE

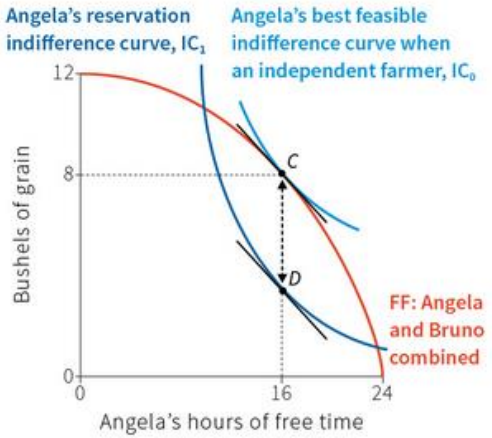
Why does it work? Teaching the tools of economics – feasible sets and preferences – motivated by and applied to real problems in the world

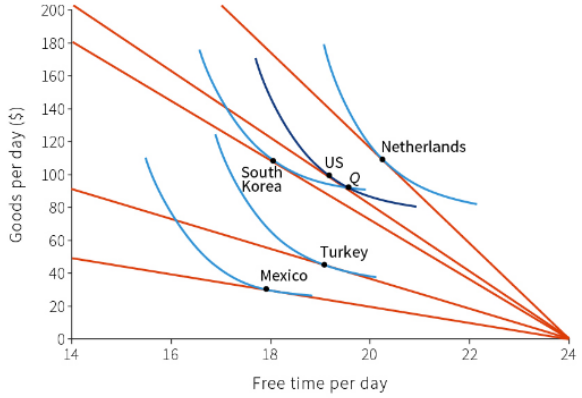


The individual: selfish and altruist preferences

Anil's indifference curves when he is somewhat altruistic

Strategic interaction: mutual gains and their distribution

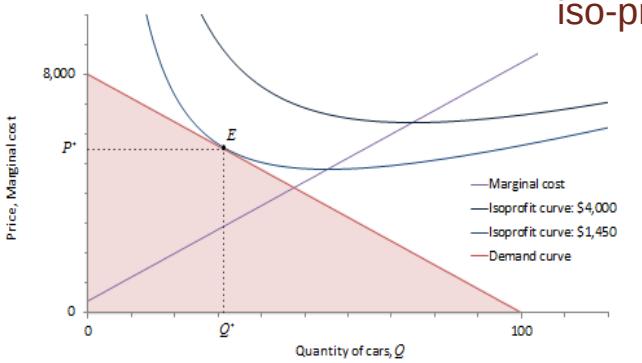




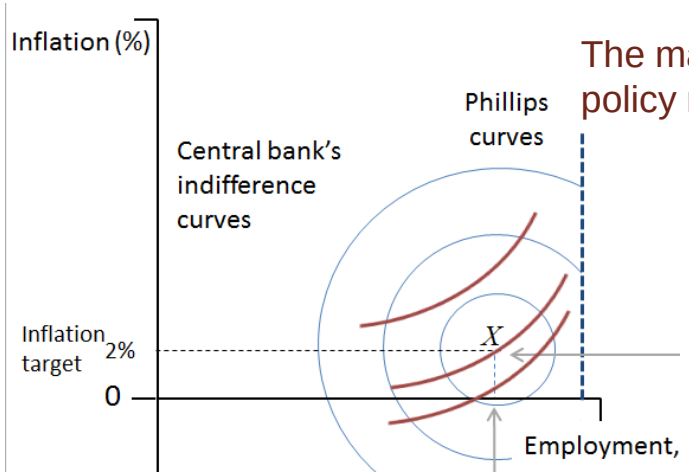
The US and South Korea

Point Q is at the intersection of the indifference curves for the US and South Korea. At this point Americans are willing to give up more units of daily goods for an hour of free time than South Koreans.

The firm: demand and iso-profit curves



The macroeconomic policy maker



Provide context – a century of decline in work hours

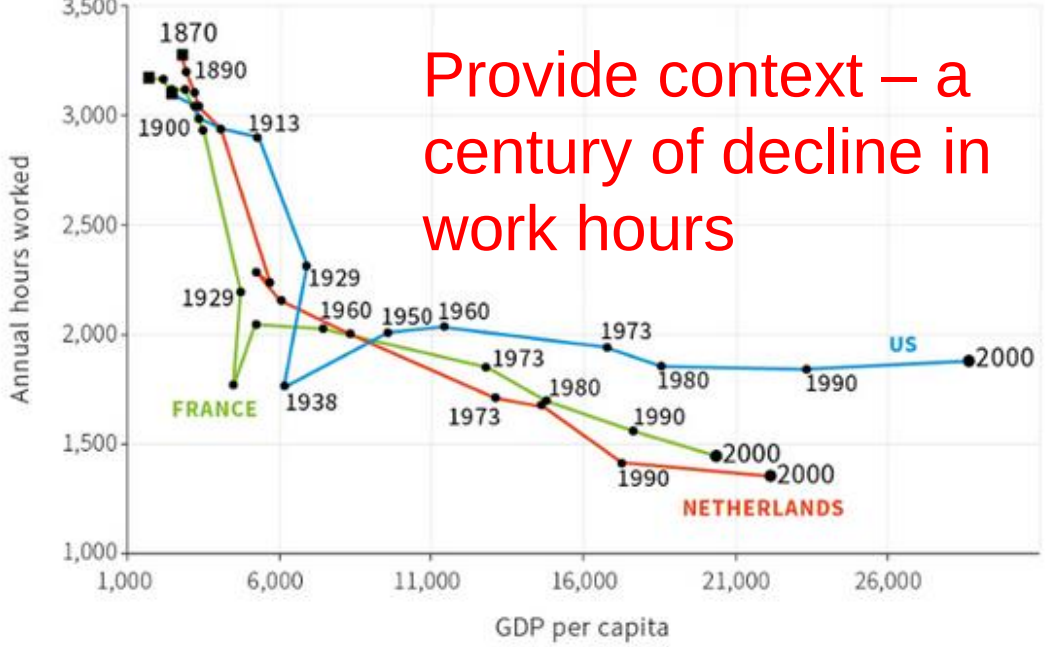


Figure 3.1 *Annual hours of work and income (1870-2000).* Source

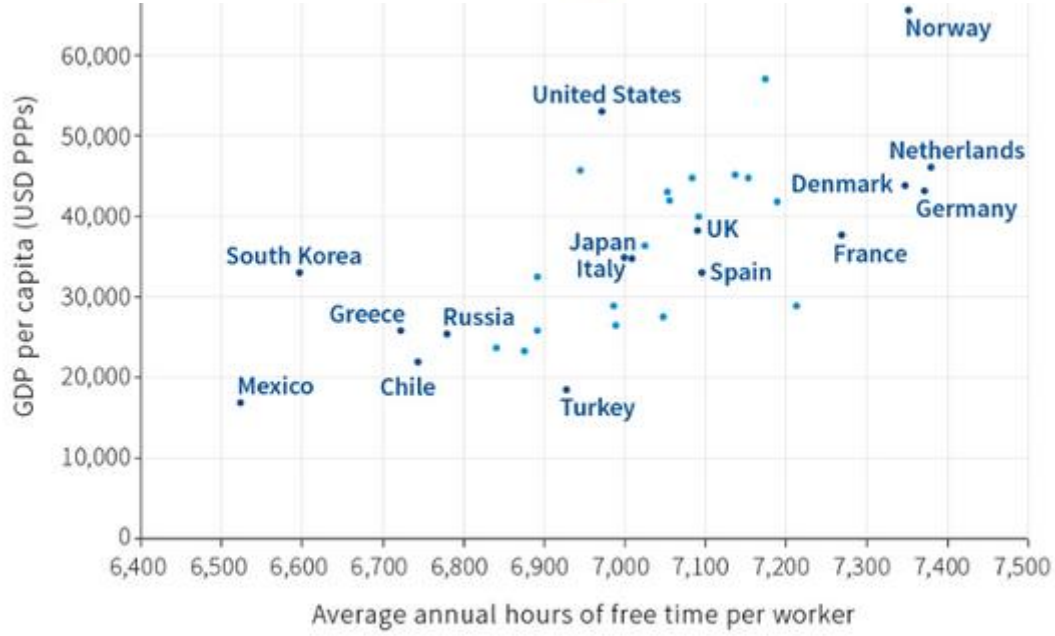


Figure 3.2 *Annual hours of free time per worker and income (2013).* Source

The theory

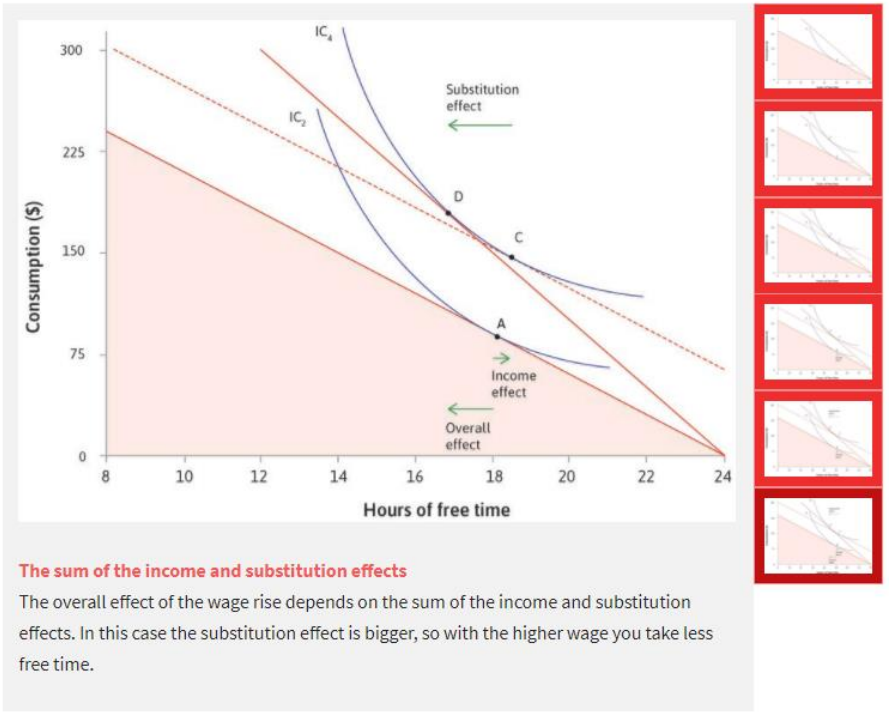
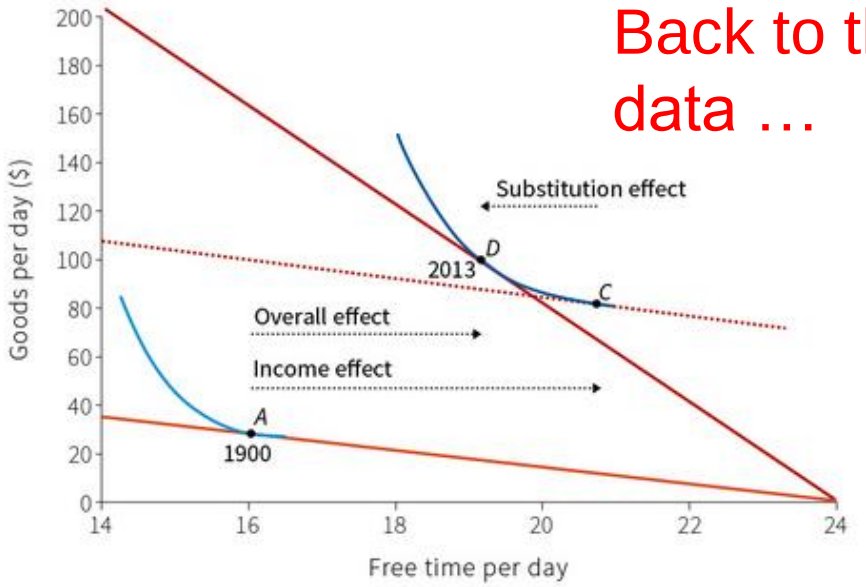


Figure 3.19b The effect of a wage rise on your choice of free time and consumption.

Motivate income and substitution effects

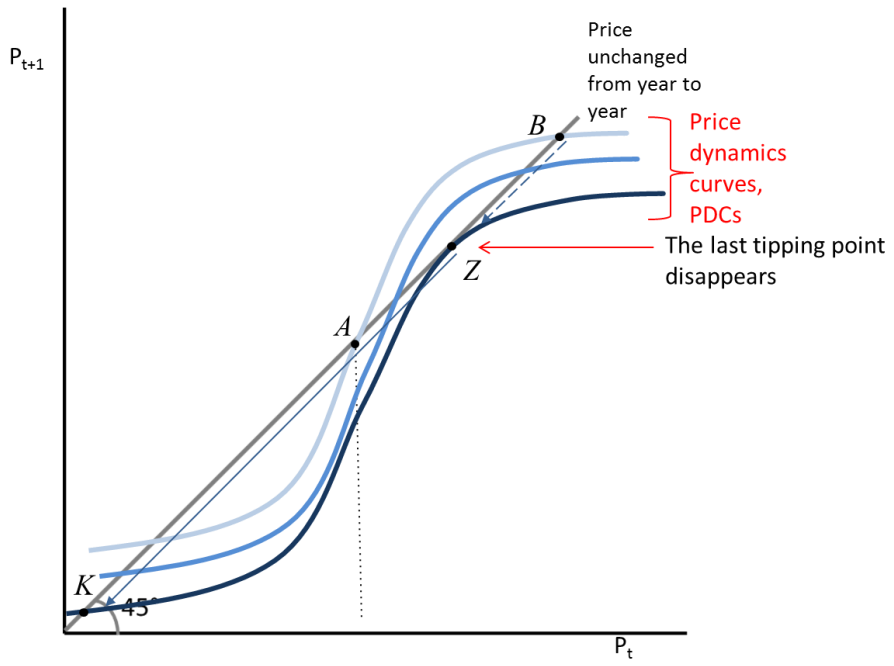
Back to the data …



Teaching the tools of economics – dynamics & instability – applied to real problems

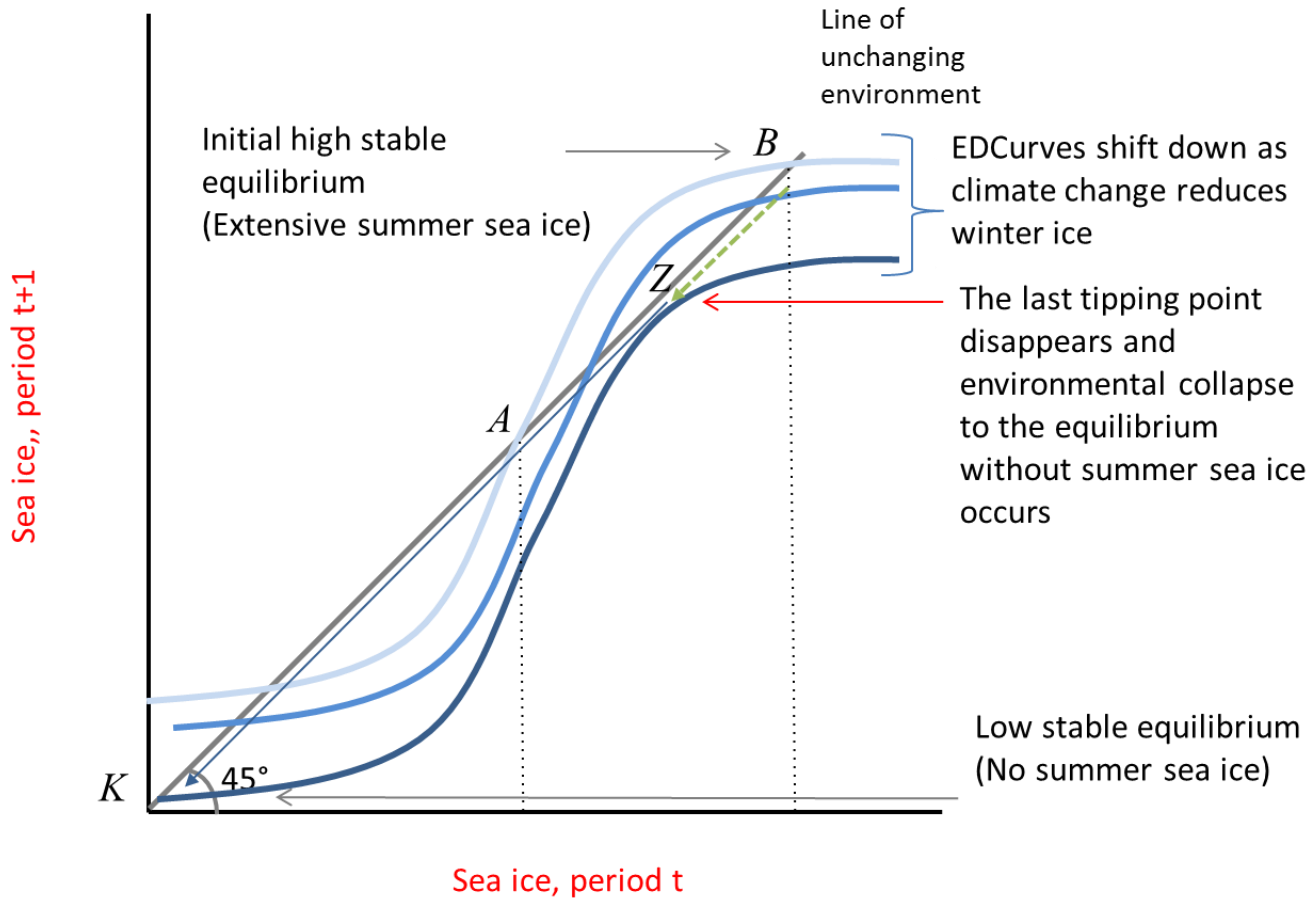
A bubble in the housing market

Figure 17.24. A tipping point in the housing market.



An environmental tipping point

Figure 20.24. Climate change and irreversible loss of summer Arctic sea ice.



Teaching the tools of economics – motivated & disciplined by facts

In this video, Nobel laureate James Heckman and Thomas Piketty explain how collecting data has been fundamental to their work on inequality and the policies to reduce it.

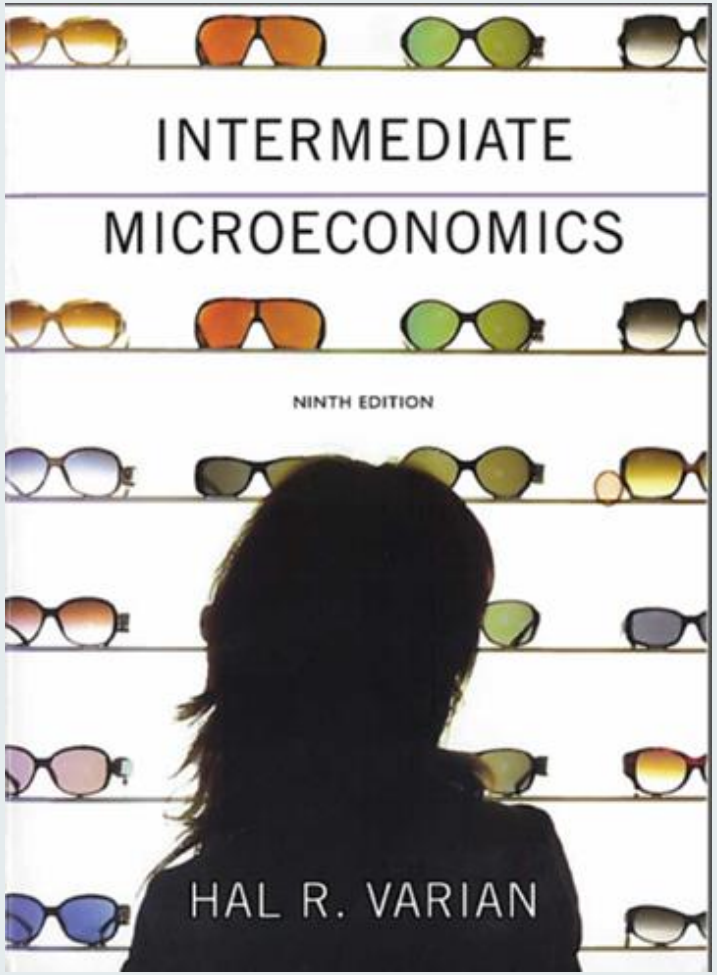
***

Problems, paradigms and texts

- New problems sometimes instigate new paradigms in economics (Kuhn: a paradigm is what good undergraduates learn)
  - e.g. the Great Depression and the “Keynesian revolution”
- And these new paradigms are eventually codified in a new textbook.
  - e.g. the “Keynesian revolution” and Samuelson 1948
- Earlier paradigm setting texts: Marshall 1890, Mill 1848
- The basic content and method of the top intro economics textbooks has changed little in the half century since Samuelson.

Samuelsonian benchmark model	*Economics*
Far-sighted, self-interested	*People*
Price-taking markets	*Interactions*
Complete	*Information*
Complete	*Contracts*
Markets	*Institutions*
Largely ignored	*History*
Preferences and budget constraints differ among buyers and sellers	*Differences among people*
In monopoly, governmental powers	*Power*
‘Rent-seeking’ creates inefficiencies	*Economic rents*
The economy is self-stabilizing	*Stability*
Are there unexploited mutual gains?	*Evaluation*

Economics as shopping?



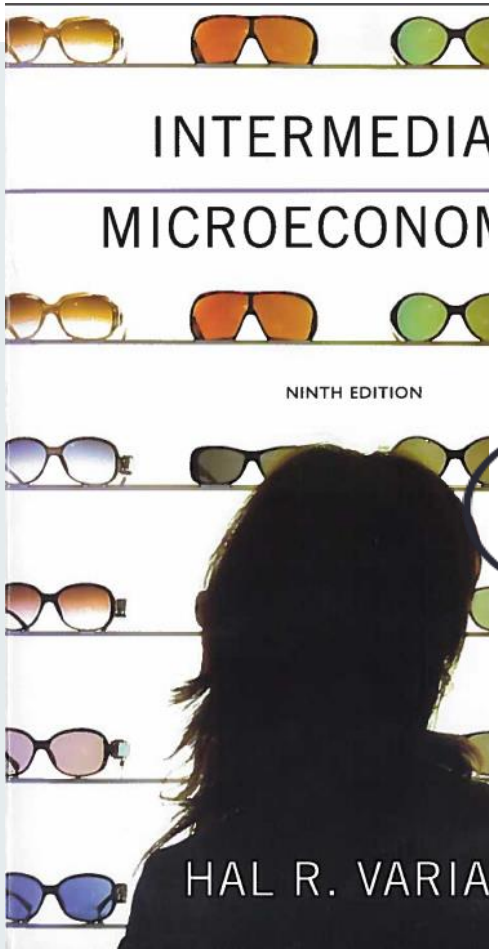
1 The Market

2 Budget Constraint

3 Preferences

New problems and advances in theory go to the back of the book

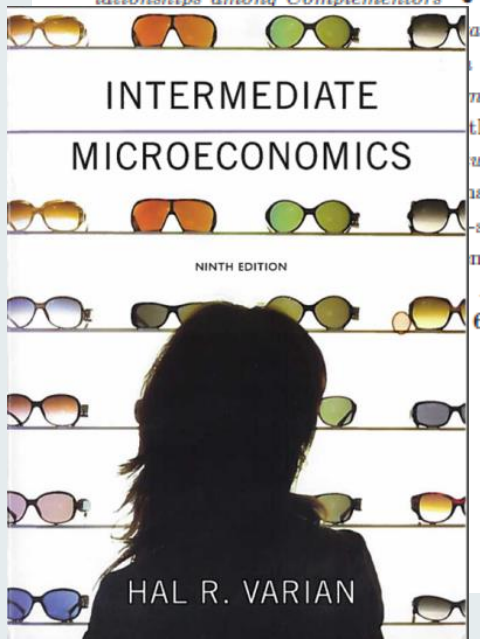
fixed from one period to the next, but as it turns out, both firms keep changing their output. Only in equilibrium is one firm's expectation about the other firm's output choice actually satisfied. For this reason, we will generally ignore the question of how the equilibrium is reached and focus only on the issue of how the firms behave in the equilibrium.



33 Welfare

34 Externalities

35 Information Technology



36 Public Goods

37 Asymmetric Information

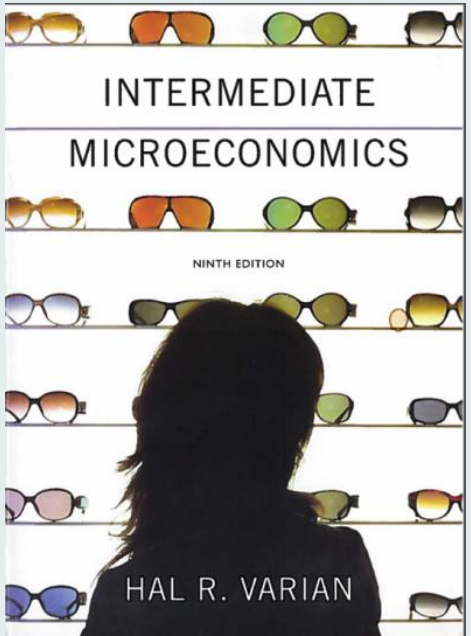
Mathematical Appendix

Brief Table of Contents for Mankiw's Principles of Economics

Fourth Edition ©2015

Economics

Paul Krugman (*City University of New York*) , Robin Wells



Suppose that the intro course began a little differently…

UNIT ONE

THE CAPITALIST REVOLUTION

HOW CAPITALISM REVOLUTIONIZED THE WAY WE LIVE, AND HOW ECONOMICS ATTEMPTS TO UNDERSTAND THIS AND OTHER ECONOMIC SYSTEMS

- Since the 1700s, increases in average living standards became a permanent feature of economic life in many countries.
- This was associated with the emergence of a new economic system

LEGEND: CORE THEMES

- 17: History, instability and growth
- 18: Global economy
- 19: Inequality
- 20: Environment
- 21: Innovation
- 22: Politics and policy

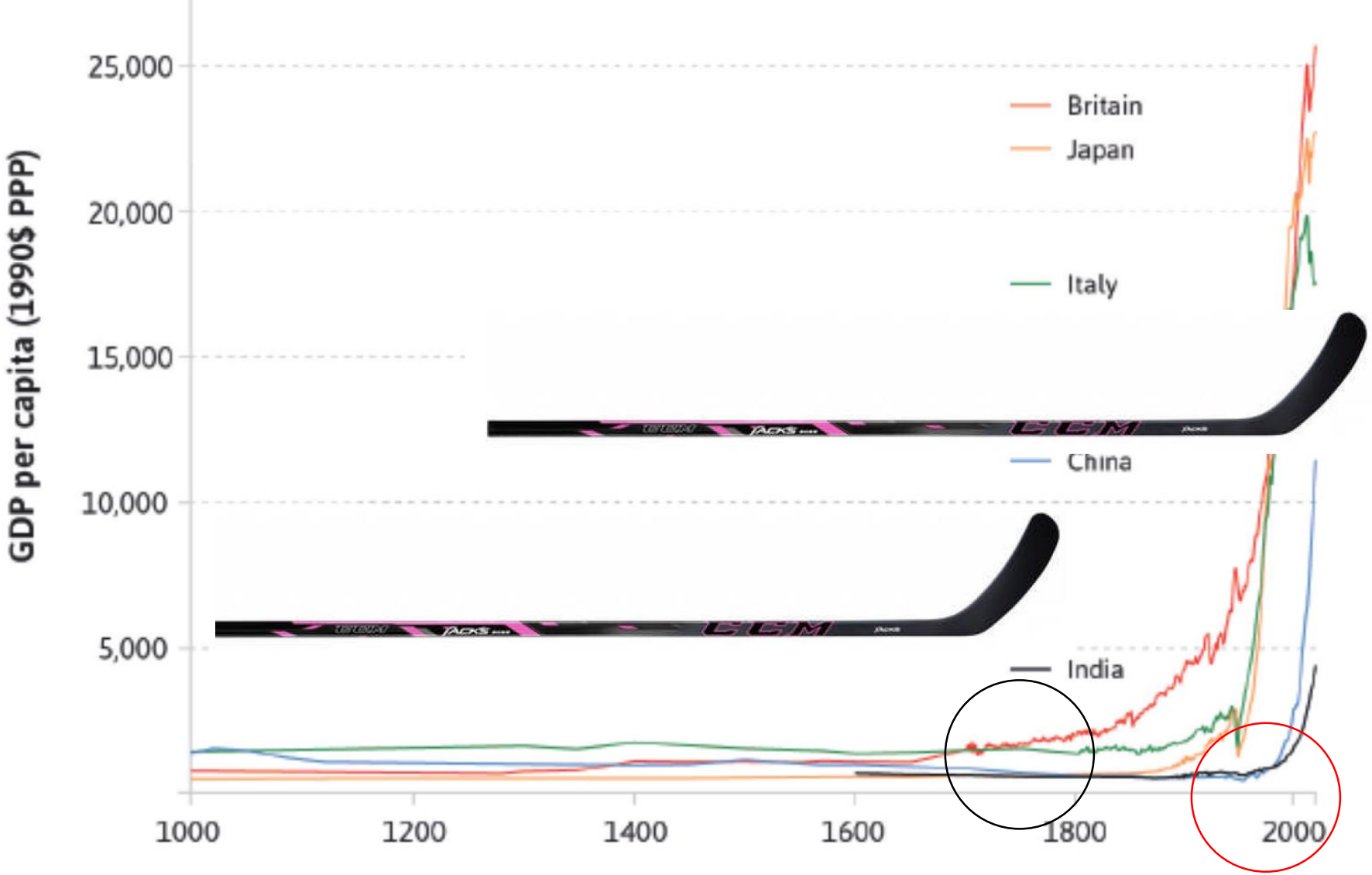
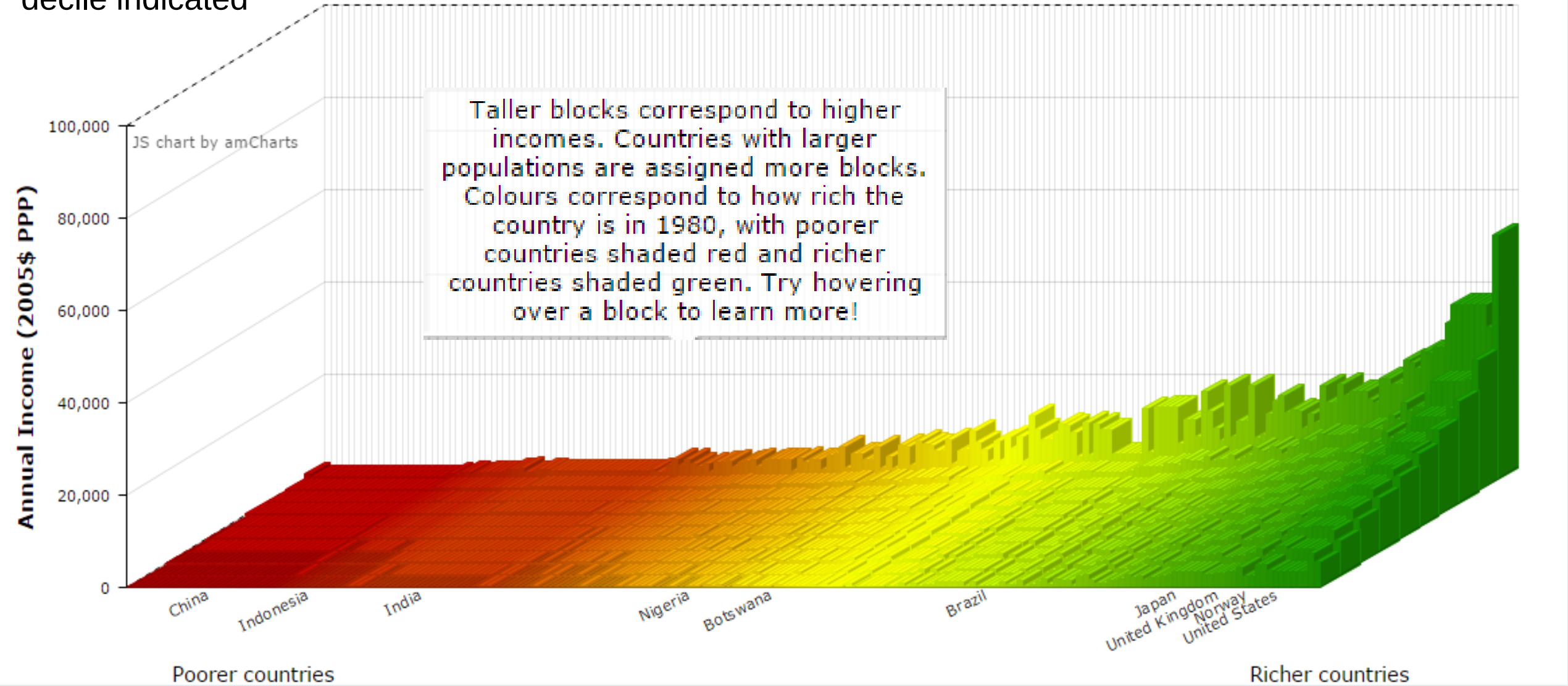


Figure 1.1 History's hockey stick: Gross domestic product per capita in five countries (1000-2015).

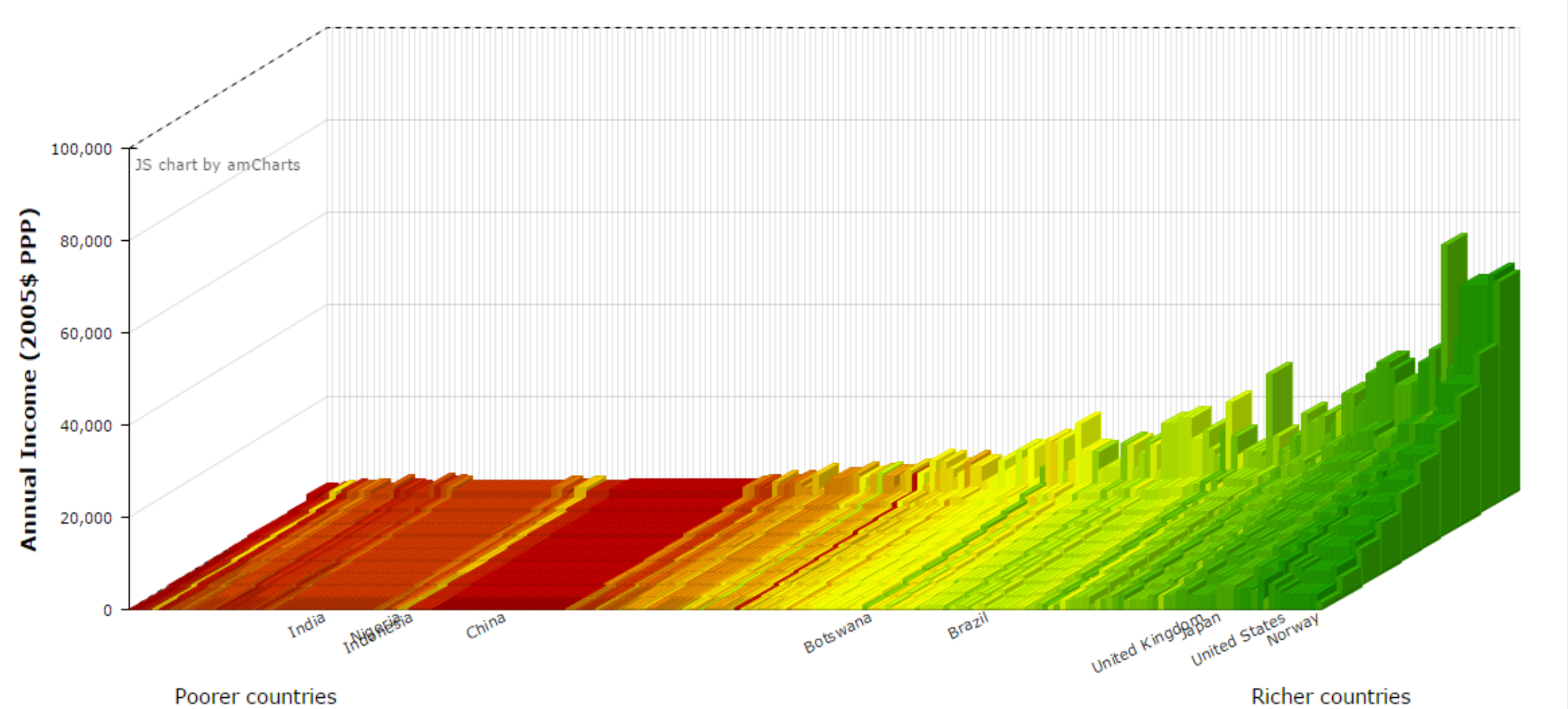
One of the first figures the student sees in CORE (and can manipulate)

The distribution of income in the world. Height of the bars is the gross domestic income per capita (measured in purchasing power parity dollars) of the population decile indicated

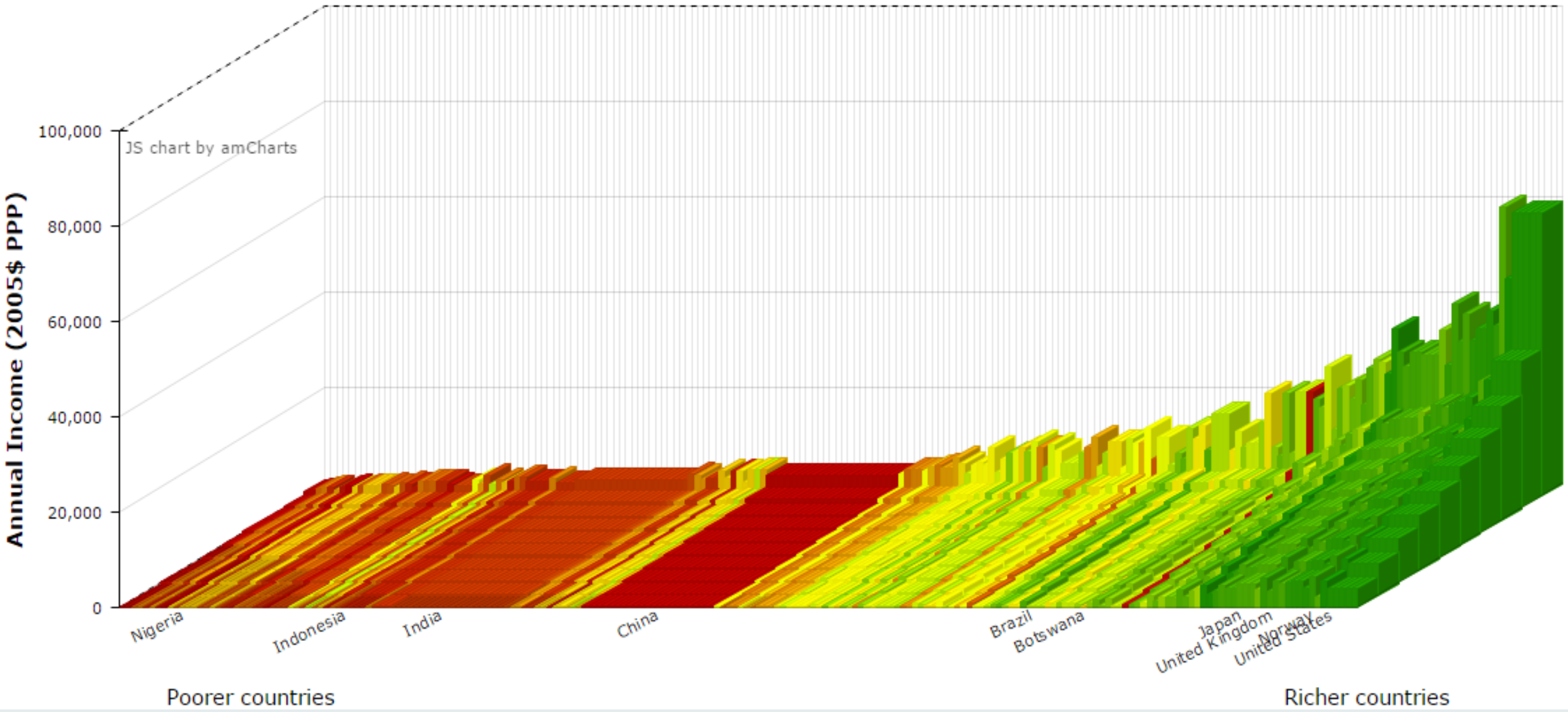
1980



1990


Annual Income (2005$ PPP)
100,000
80,000
60,000
40,000
20,000
0
JS chart by amCharts
India
Nigeria
Indonesia
China
Botswana
Brazil
United Kingdom
Japan
United States
Norway
Poorer countries
Richer countries

2000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40,000
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Nigeria
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Botswana
Japan
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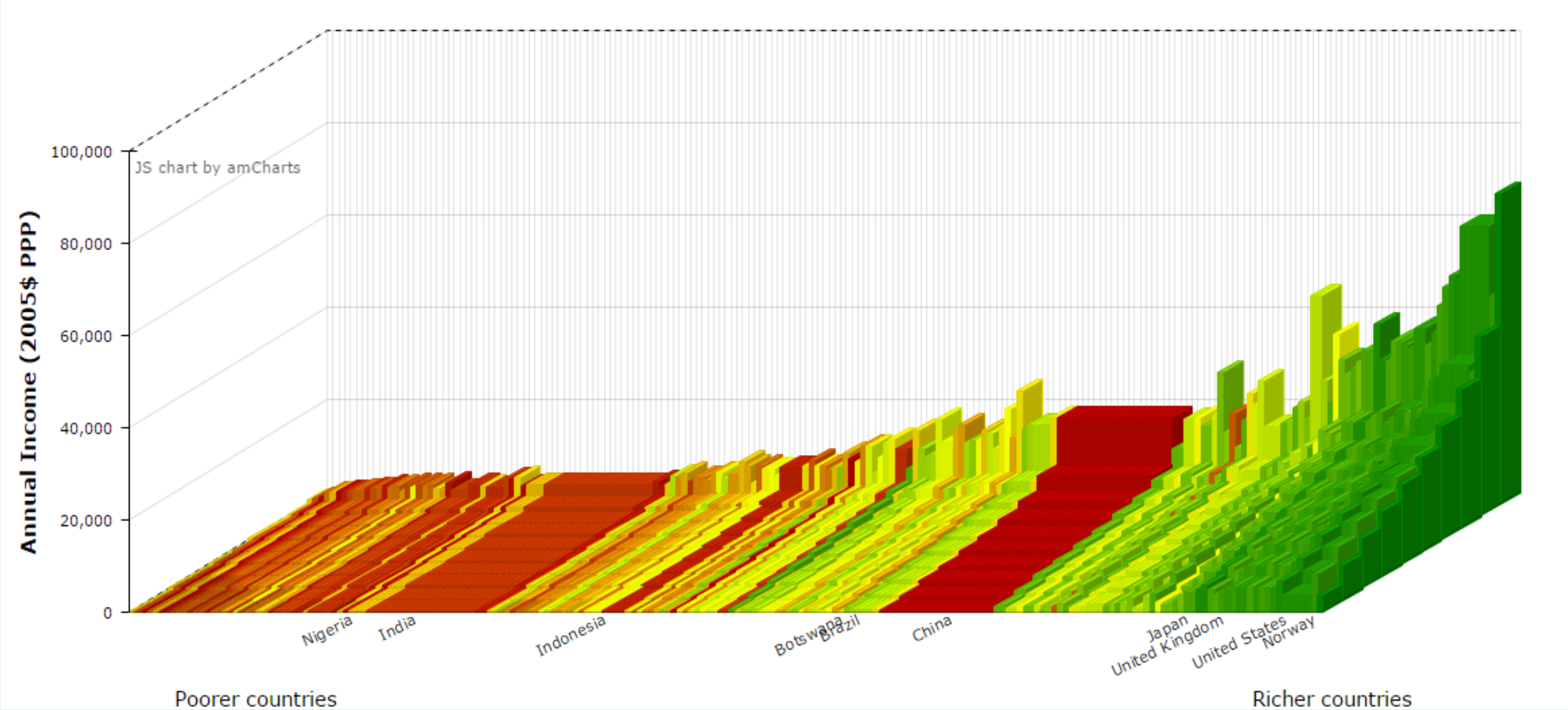
2014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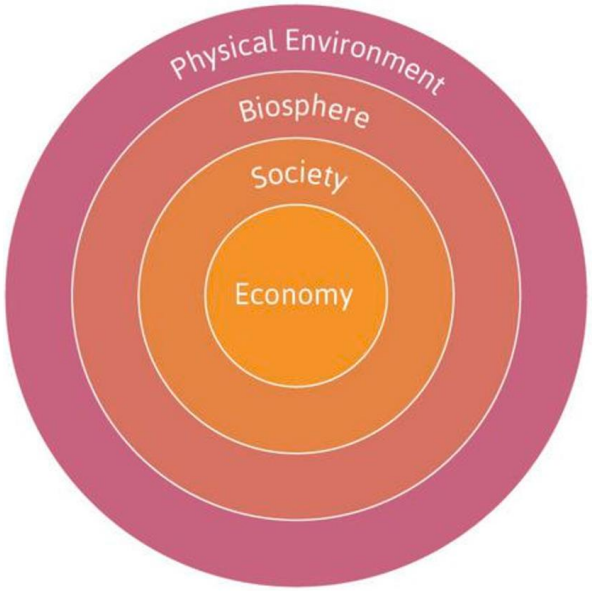
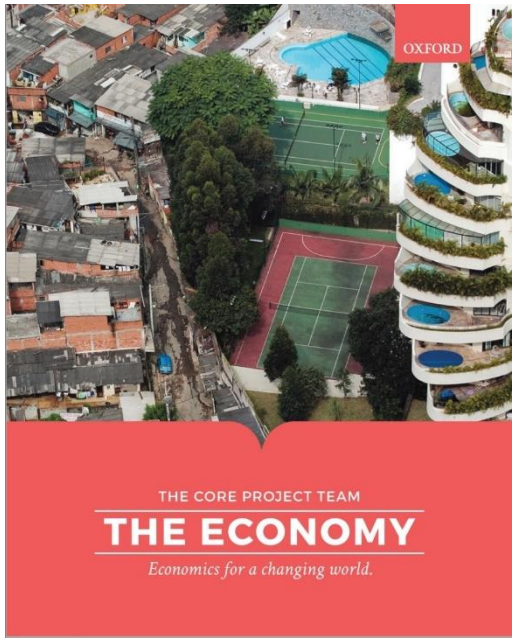
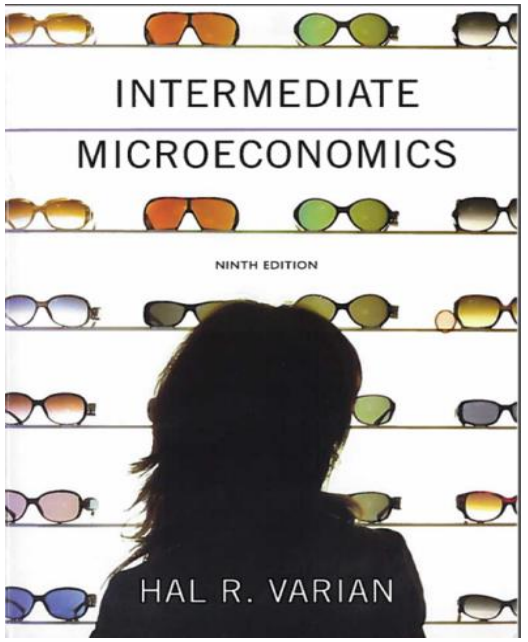
Poorer countries
Richer countries

In the standard texts, why are the new problems and topics at the end of the book?

- Not because they are more **difficult**
- Not because the **prior theory** is required to study them
- They are at the end because putting them at the front would alter the students' conception of what economics is about (i.e. not shopping, not just constrained optimization)
- … and it would force a change in some basic concepts to accommodate the new subject material







If the new problems and questions are at the front of the book there will have to be some changes in the **rest** of the book…examples.

Problems

- Wealth creation & growth
- Environmental problems
- Inequality
- Unemployment & fluctuations
- Instability

Key concepts new to Intro

- Schumpeterian rents, disequilibrium
- Social interactions / other-regarding preferences
- Rents, bargaining power, institutions
- Incomplete contracts in labour & credit markets
- Prices as information & dynamics of price-setting

If the new problems and questions are at the front of the book there will have to be some changes in the **rest** of the book…examples.

Problems	*Key concepts new to Intro*
• Wealth creation & growth	• Schumpeterian rents, disequilibrium
• Environmental problems	• Social interactions / other-regarding preferences
• Inequality	• Rents, bargaining power, institutions
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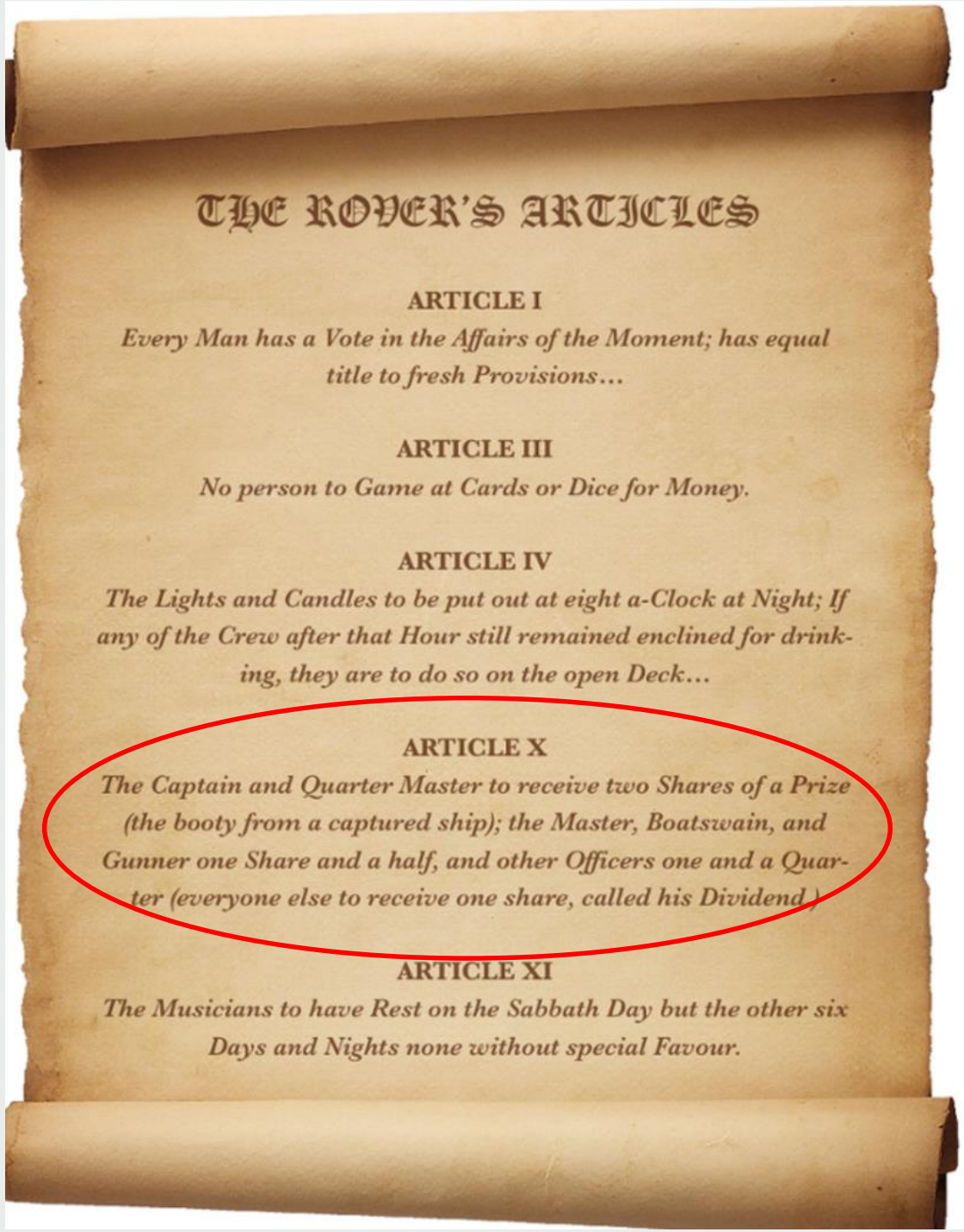
• Instability	• Prices as information & dynamics of price-setting

hore Dr
Northshore Dr
Milkwood
Milkwood
Lakeshore Dr

Economic institutions are the rules of the game – who does what and who gets what on a pirate ship

HOW INSTITUTIONS INFLUENCE THE BALANCE OF POWER IN INTERACTIONS AMONG ECONOMIC ACTORS, AND HOW THIS AFFECTS THE FAIRNESS AND EFFICIENCY OF THE ALLOCATIONS THAT RESULT

- Technology, biology, economic institutions and people's preferences all matter as determinants of economic outcomes
- Interactions between economic actors can result in mutual gains, and also in conflicts over how the gains are distributed
- *Power* is the ability to do and get the things we want in opposition to others



THE ROVER'S ARTICLES

ARTICLE I

Every Man has a Vote in the Affairs of the Moment; has equal title to fresh Provisions…

ARTICLE III

No person to Game at Cards or Dice for Money.

ARTICLE IV

The Lights and Candles to be put out at eight a-Clock at Night; If any of the Crew after that Hour still remained enclined for drinking, they are to do so on the open Deck…

ARTICLE X

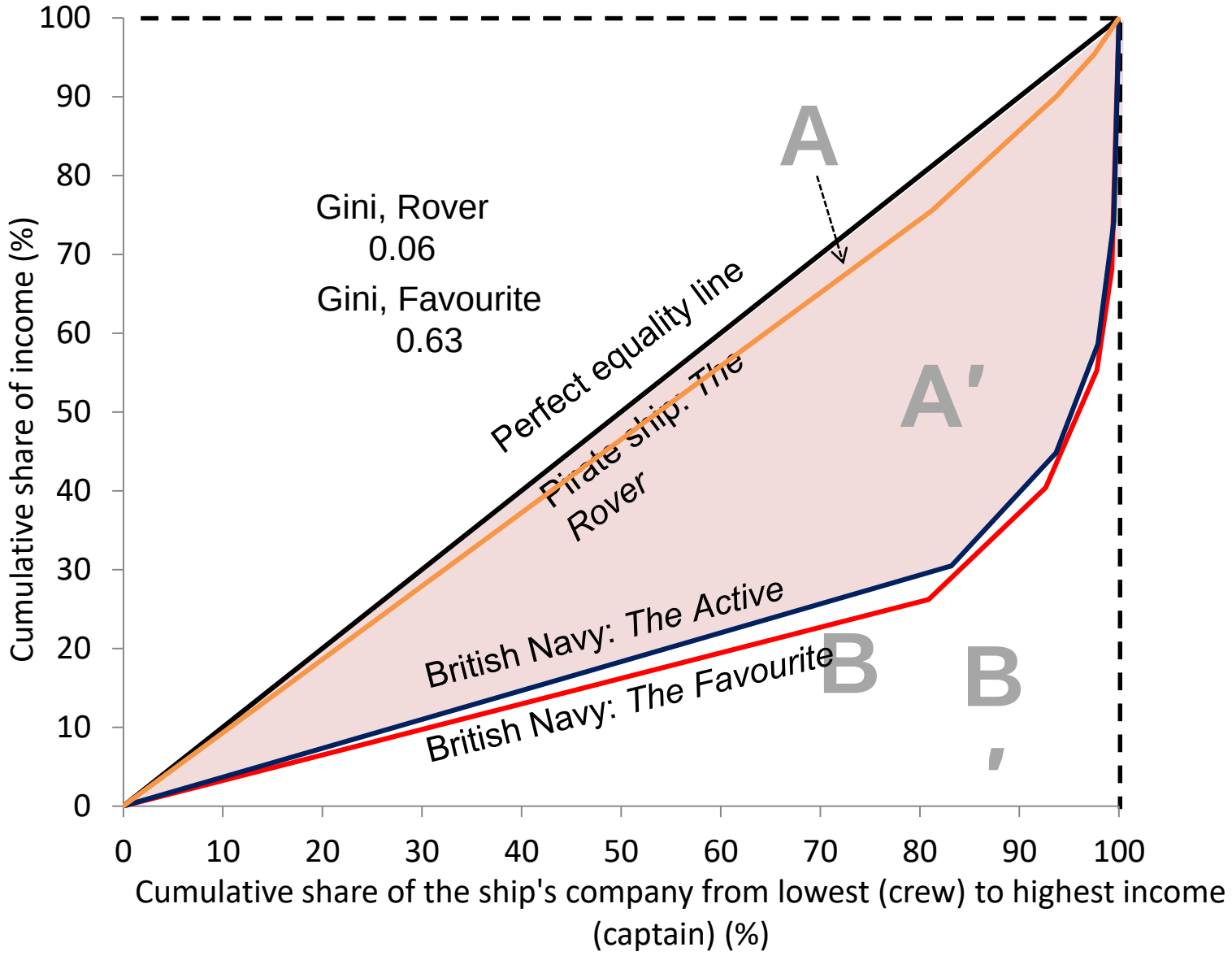
The Captain and Quarter Master to receive two Shares of a Prize (the booty from a captured ship); the Master, Boatswain, and Gunner one Share and a half, and other Officers one and a Quarter (everyone else to receive one share, called his Dividend.)

ARTICLE XI

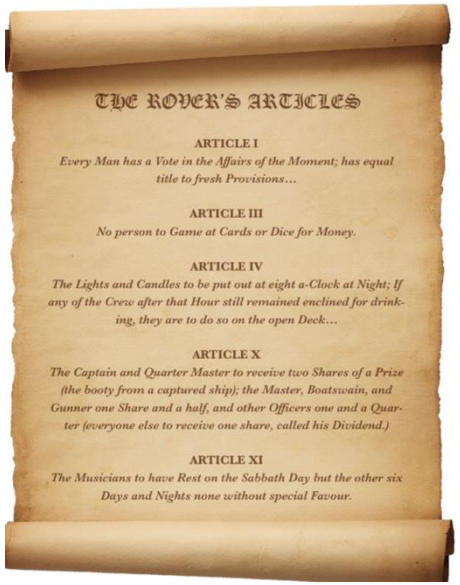
The Musicians to have Rest on the Sabbath Day but the other six Days and Nights none without special Favour.

Constitutions and contracts

Inequality in the division of the spoils: pirates and the Royal Navy



Every economic transaction involves both mutual gains & conflicts of interest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ARTICLE XI
The Musicians to have Rest on the Sabbath Day but the other six Days and Nights none without special Favour.

Description (Facts)

Allocation: who does what and who gets what

Evaluation (Values)

Is the allocation efficient? Would there be mutual gains from moving to some other allocation?

Is the allocation fair? Is there some other allocation that would be fairer? Are the rules of the game that produced the allocation fair?

A Rawlsian question (used throughout)

DISCUSS 1.9: WHERE AND WHEN WOULD YOU CHOOSE TO HAVE BEEN BORN?

Suppose you can choose to be born in any time period in any of the countries in Figure 1.1a, 1.10 or 1.12, but you know that you would be among the poorest 10% in the population.

1. In which country would you choose to be born?
2. Suppose, instead, you know you would be among the poorest 10% in the population, but you can move to the top 10% of the population if you work hard. In which country would you now choose to be born?
3. Finally, suppose that you can only decide on the country and time period of your birth. You cannot be sure if you would be born in the city or the countryside, would be male or female, rich or poor. In which time and country would you choose to be born?
4. For the scenario in (3), in which time and country you would least want to be born?

Use what you have learned from this unit to explain your choices.

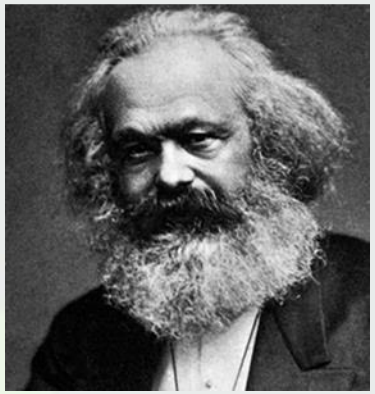
The politics of the firm

WHEN ECONOMISTS *AGREE*

RONALD COASE AND KARL MARX ON THE FIRM AND ITS EMPLOYEES

George Bernard Shaw (1856-1950), a writer, joked that "If all economists were laid end to end, they would not reach a conclusion."

This is funny, but not entirely true.



Even more striking is that two economists from different centuries and political orientations came up with similar ways of understanding the firm and its employees.

Recall that Coase had also defined the firm by its political structure: "If a workman moves from department Y to department X, he does not go because of a change in prices but because he is ordered to do so." He sought to understand why firms exist at all, calling them "islands of conscious power in this ocean of unconscious cooperation."

Our focus on actors and problems leads us to stress

- **Game theory** – tools and rules
- **Principal agent models**
- Price-**making** and (economically productive) **rent seeking**
- Social preferences and **norms**
- Increasing returns, **positive feedbacks**
- **Dynamics**

This leads to an novel sequencing of the material taught …
for example, teach firms before markets

The Capitalist Revolution (Unit 1)
Technological Change and Economic Growth (Unit 2)
Scarcity Work and Choice (Unit 3)
Social Interactions (Unit 4)
Property and Power: Mutual Gains and Conflict (Unit 5)
The Firm: Owners, Managers & Employees (Unit 6)
The Firm and its Customers (Unit 7)
Supply and Demand: Price-taking and Competitive Markets (Unit 8)

… and provides key foundations for the **aggregate economy** by

- beginning with **heterogeneous agents** through a set of **principal-agent problems** and
- leading naturally to a model with **involuntary unemployment** and **fluctuations**, **endogenous money** and **bubbles**
- where **inequality** is in the modelling framework's DNA

Market failures: the actors, their actions and interactions

The principal agent problem

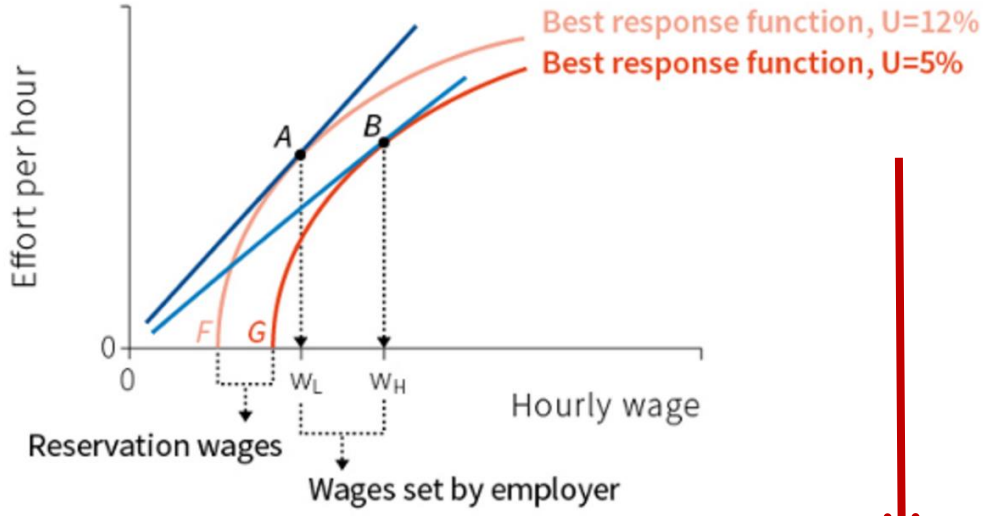
- Conflicts of interest
- Information is asymmetric because actions are hidden from principal / not verifiable in court
- Uncertainty because actions are in the future

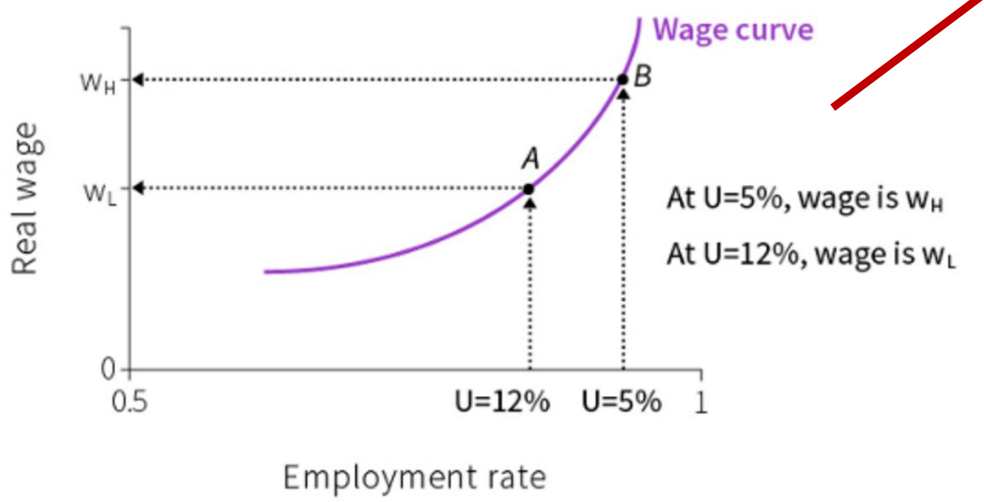
Conflict of interest over what ? Contract does not cover?

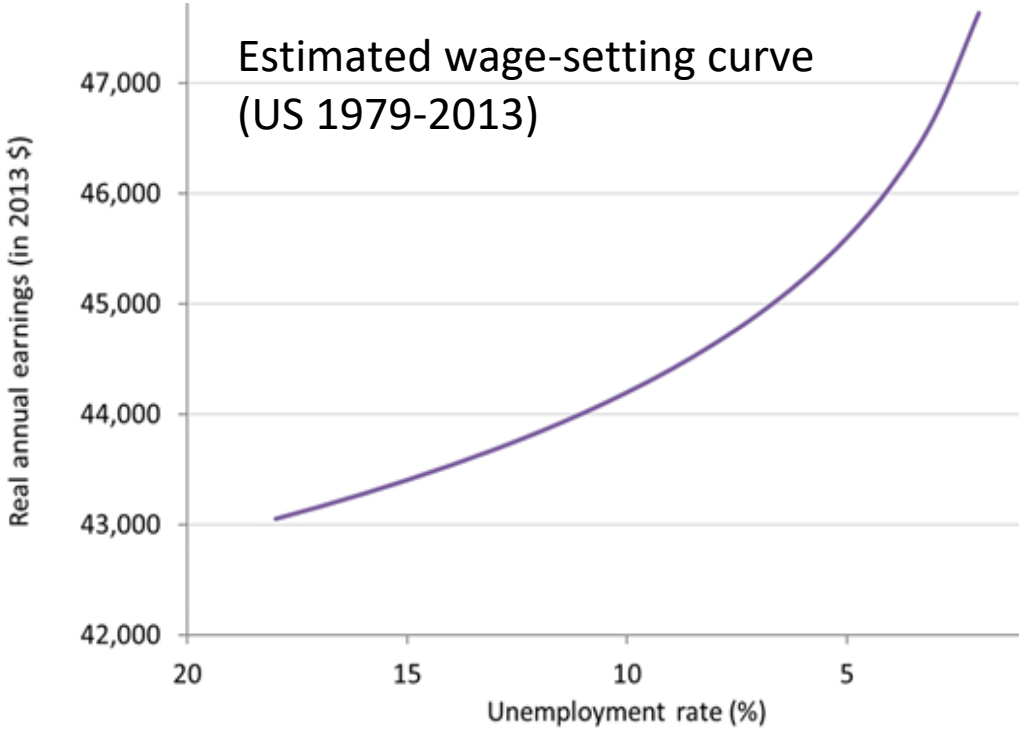
→ Incomplete contracts
→ market failures
→ institutions and social norms matter

For example, incomplete labour contracts in the intro classroom

Firms set wages; an identical unemployed worker cannot get a job by offering to work for less (no way to ensure effort) → Involuntary unemployment





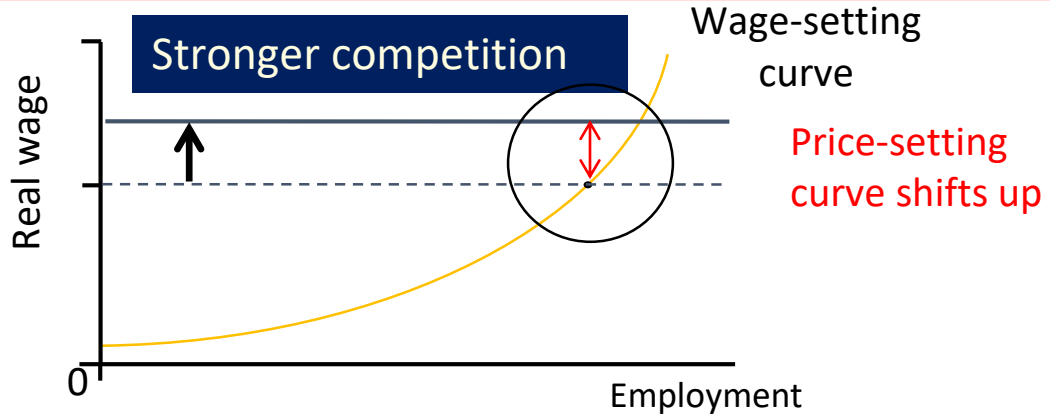


'Micro' – the firm sets the wage

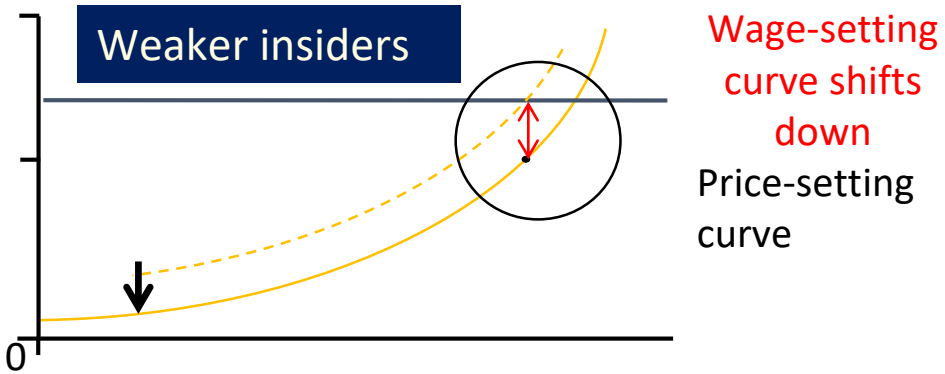
'Macro' – the economy-wide wage-setting curve

Data – estimated wage-setting curve US

Seamlessly from the P-A problem to 'what keeps inflation down?'

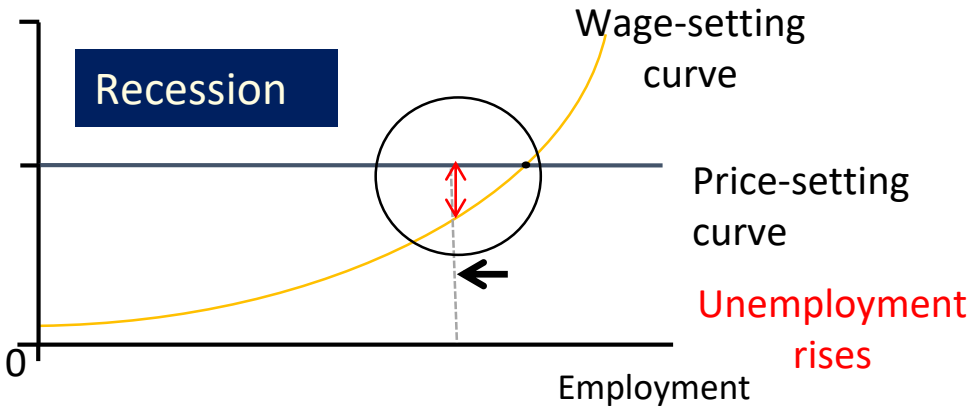


1. Owners' power falls relative to consumers



Always ask: what has happened to the bargaining gap?

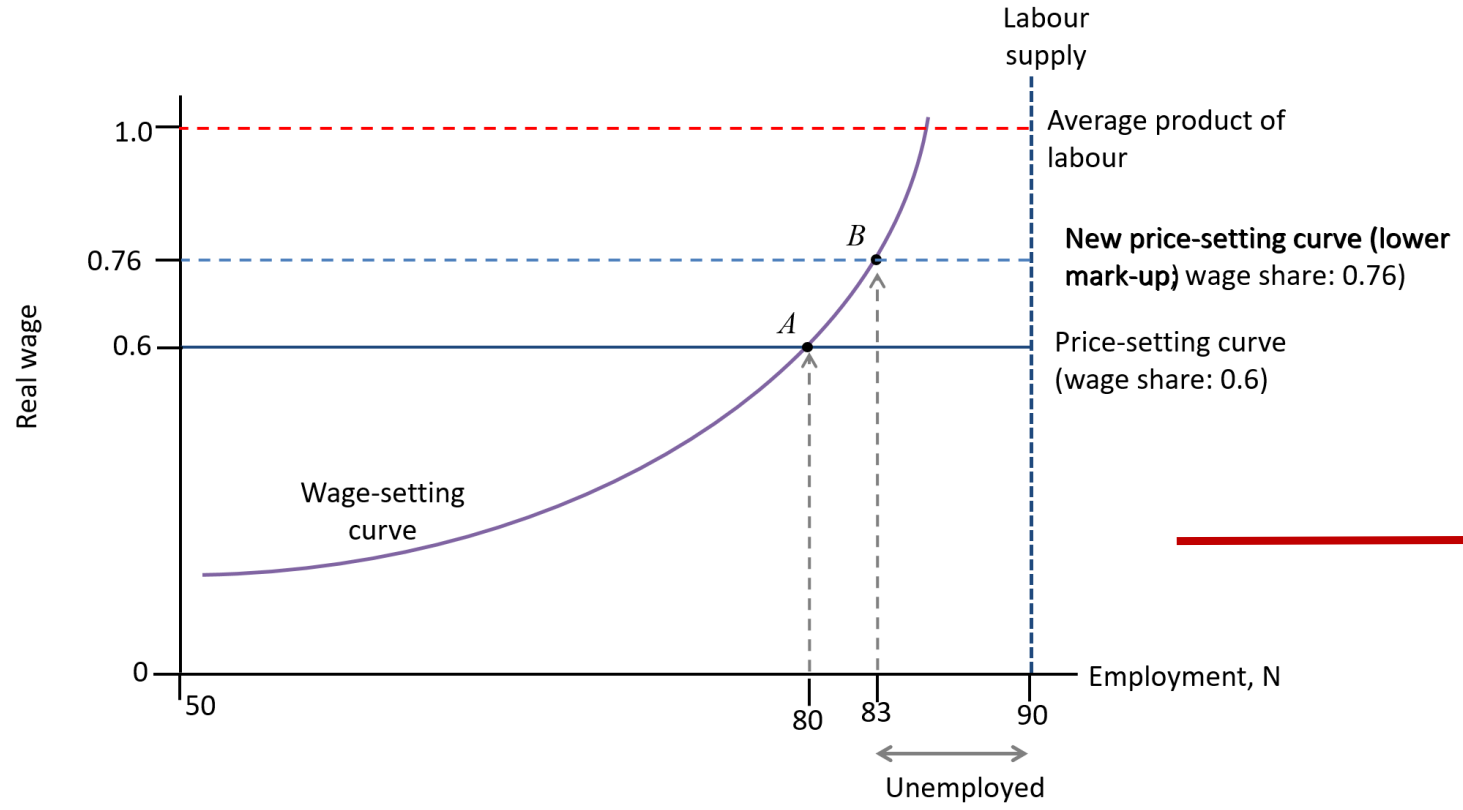
2. Employees' power falls relative to owners



3. Employees' power falls relative to owners in a recession

Inequality in the aggregate economy – using Lorenz curves
The effect of an increase in the degree of competition

Lower unemployment and higher real wage in equilibrium



A lower Gini coefficient

Gini coefficient: 0.36 before;
Gini coefficient 0.19 after

A second principal-agent problem in the same framework: credit market

	Actor	Conflict of interest over	Contract covers	Left out of contract (or unenforceable)	Market failure
Labour market (Unit 6)	Employer Employee	Wages, work (quality & amount)	Wages, time, conditions	Work (quality and amount), duration of employment	Effort under-provided; unemployment
Credit market (Unit 11)	Lender Borrower	Interest rate, conduct of project (effort, prudence)	Interest rate, repayment	Effort, prudence, repayment	Too much risk, credit constraints

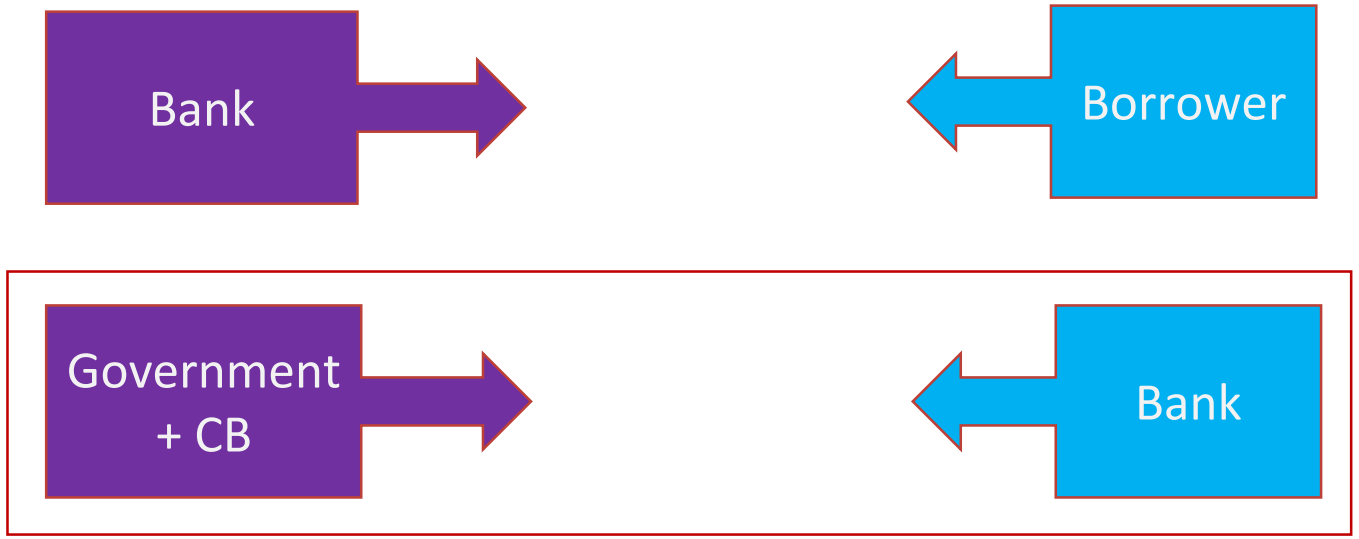
Figure 20. *The credit market and the labour market compared.*

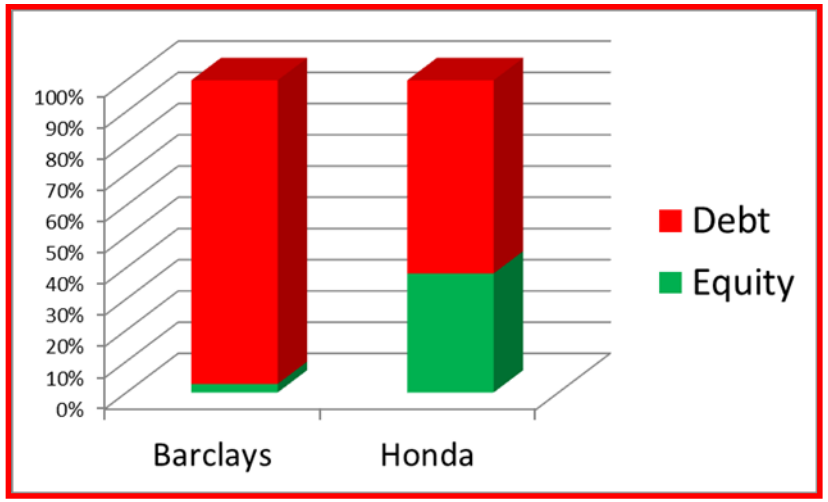
→ Heterogeneous agents, credit-constrained households, multiplier effects in the aggregate economy

And a third principal agent problem to analyze bank risk-taking

In both cases the agent has an incentive to take on **too much risk**
This is an **external effect** because the costs are borne by others (the principal)

→ Bank failures and regulation





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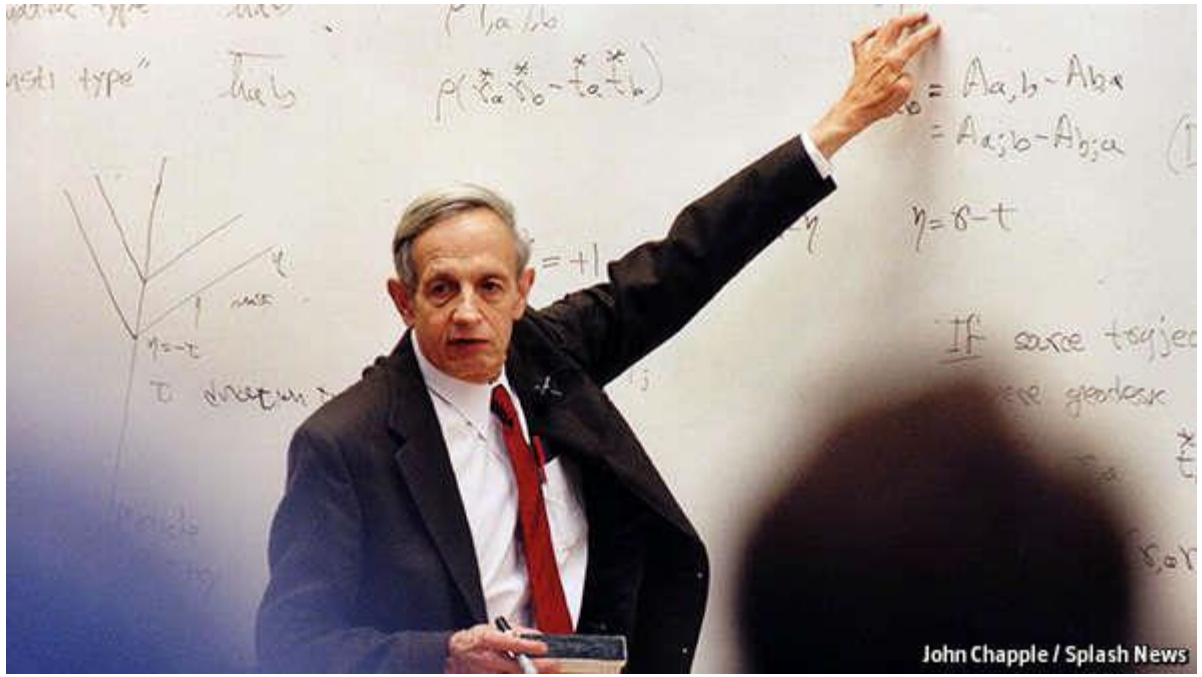
Problems, paradigms and texts

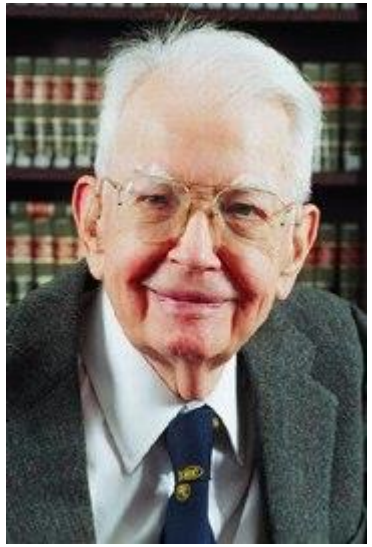
Aggregate demand



Strategic interaction

Information is scarce and local

Problems, paradigms and texts: not invited



Social interactions

Innovation

Samuelsonian benchmark model	*Economics*	Contemporary economics & CORE
Far-sighted, self-interested	*People*	Also cognitively limited; have motives in addition to self-interest, respond to social norms of fairness and punishment.
Price-taking markets	*Interactions*	include price-making markets and strategic interactions including in setting wages, interest rates, prices.
Complete	*Information*	is incomplete and asymmetric
Complete	*Contracts*	are incomplete for effort and diligence in labour and credit markets and for other external effects
Markets	*Institutions*	include informal rules (norms), firms, unions, banks, governments
Largely ignored	*History*	provides data about alternative rules of the game and the process of change
Preferences and budget constraints differ among buyers and sellers	*Differences among people*	people also differ in the positions in the economy that they occupy as employers and employees; lenders and borrowers
In monopoly, governmental powers	*Power*	principals' power over agents e.g. in labour, credit markets
'Rent-seeking' creates inefficiencies	*Economic rents*	are also endemic in a well-functioning private economy providing incentives to innovate, work hard
The economy is self-stabilizing	*Stability*	… and instability are characteristics of the economy.
Are there unexploited mutual gains?	*Evaluation*	also includes fairness.

What's wrong with starting with the usual approach (the Samuelsonian benchmark model)?

Far-sighted, self-interested	*People*
Price-taking markets	*Interactions*
Complete	*Information*
Complete	*Contracts*
Markets	*Institutions*
Largely ignored	*History*
Preferences and budget constraints differ among buyers and sellers	*Differences among people*
In monopoly, governmental powers	*Power*
'Rent-seeking' creates inefficiencies	*Economic rents*
The economy is self-stabilizing	*Stability*
Are there unexploited mutual gains?	*Evaluation*

The Samuelsonian benchmark model allows economics to neglect what we know from the social and natural sciences:

- Human behaviour – psychology, evolutionary biology
- Culture & social norms – sociology, anthropology
- Institutions and contracts – political science, law
- Power and the state – sociology, political science
- Multiple equilibria, what happens out of equilibrium? – phase transition in maths, physics & biology; history; geography
- Ethics – philosophy, political theory

CORE's *The Economy*

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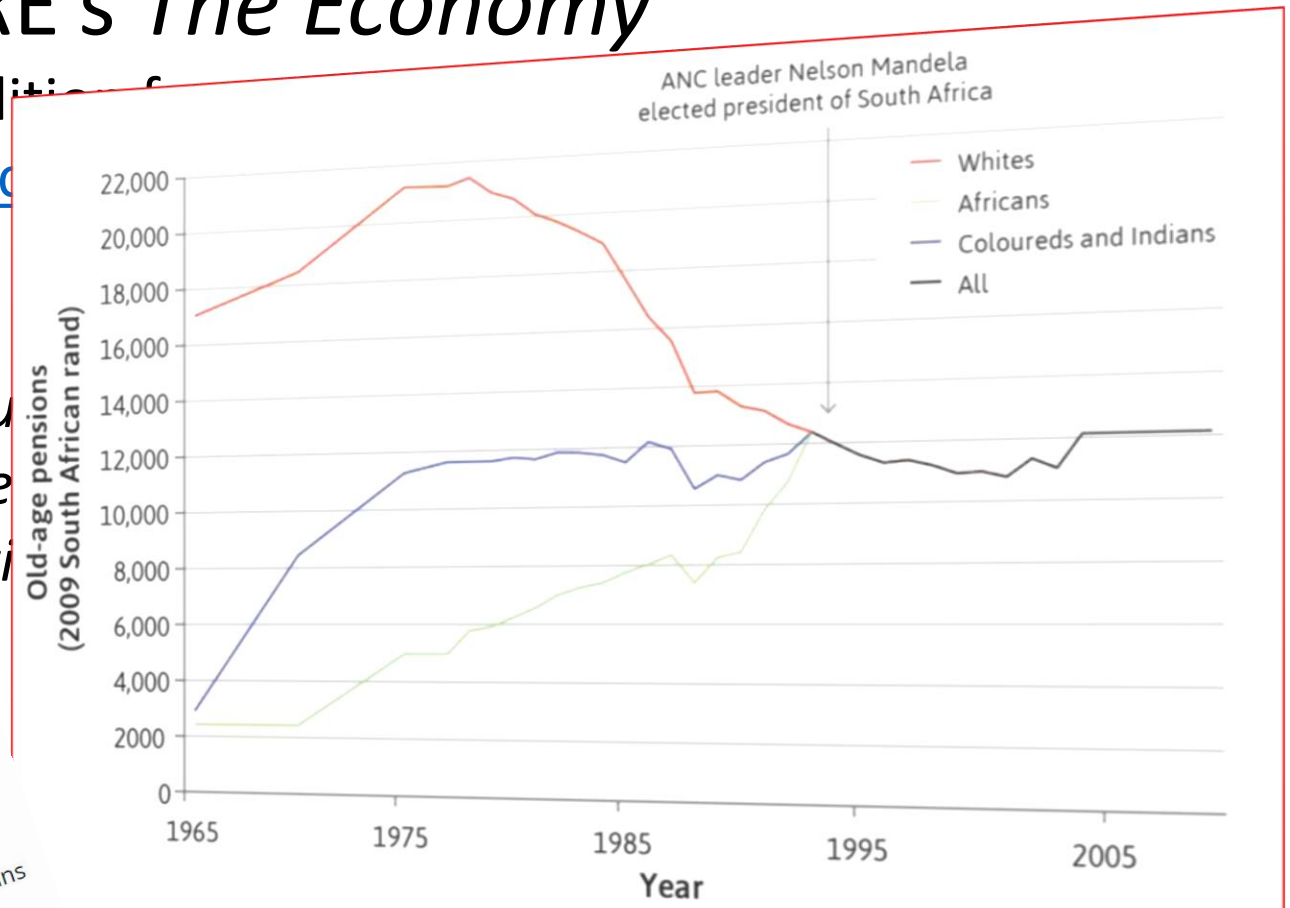

Figure 22.1 Apartheid and its demise: The value of South Africa's old age pension.

Murray Leibbrandt, Ingrid Woolard, Arden Finn, and Jonathan Argent. 2010. 'Trends in South African Income Distribution and Poverty since the Fall of Apartheid', OECD Social, Employment and Migration Working Papers, No. 101, OECD Publishing, Paris. Note: The names of the population groups are the official South African census terms. 'Coloured' is the South African term meaning people of mixed European, Asian and African origin.