Correlation is not always causation, p. 25

Less Homework, Higher Scores

A new paper has found that world-wide, students with more homework often have lower math scores. Below, data from 2003 for the U.S., plus countries with the highest and lowest percentages of students who studied more than four hours a night.

COUNTRY	4 HRS + OF HOMEWORK PER NIGHT	MEAN MATH SCORE	COUNTRY	4 HRS + OF HOMEWORK PER NIGHT	MEAN MATH SCORE
Lebanon	24%	434	**United States**	5%	504
Armenia	23%	478	England	3%	498
Romania	22%	474	Morocco	3%	387
South Africa	22%	266	Netherlands	3%	536
Tunisia	20%	411	Scotland	2%	498
Moldova	19%	459	Korea	1%	587
Jordan	19%	424	Japan	1%	569

Source: Gerald K. LeTendre & Motoko Akiba. "A Nation Spins its Wheels: The Role of Homework and National Homework Policies in National Student Achievement Levels in Math and Science," 2007. Mean scores ranged from 266 to 605.

Reverse Causality

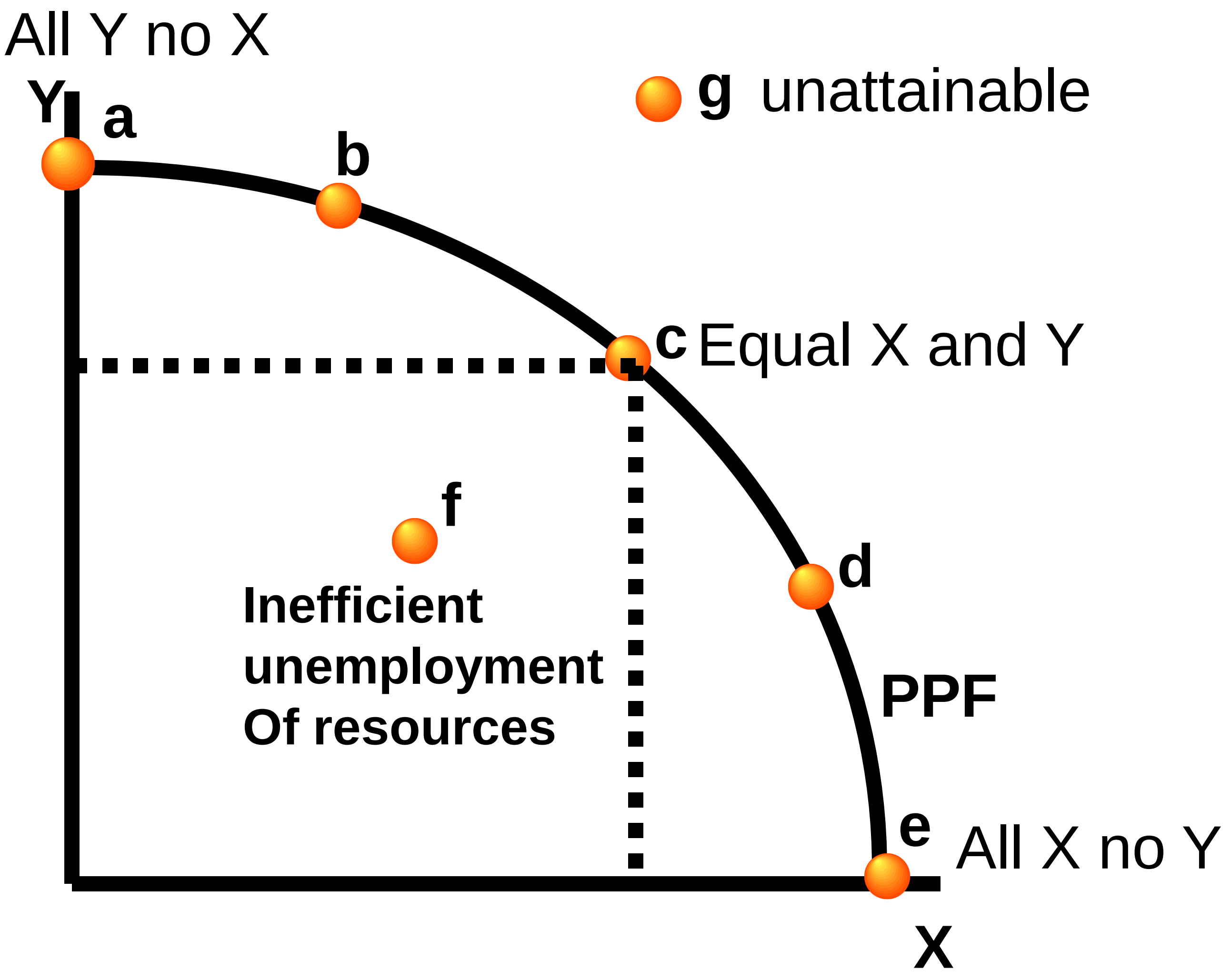
- R: rainfall in Lexington on a given day
- B: # female students on campus wearing tall rubber rain boots
- Does B cause A?
- Correlation?

V. The Production Possibility Frontier Model, p. 26

Production Possibility Frontier - (PPF)

A graph that shows the combinations of two commodities that can be produced given a fixed level of technology and resources being used efficiently at a fixed point in time.

The PPF



- **Scarcity**
- **Choice**
- **Efficiency – getting as much output from as few inputs as possible**

  (Points a, b, c, d, e)

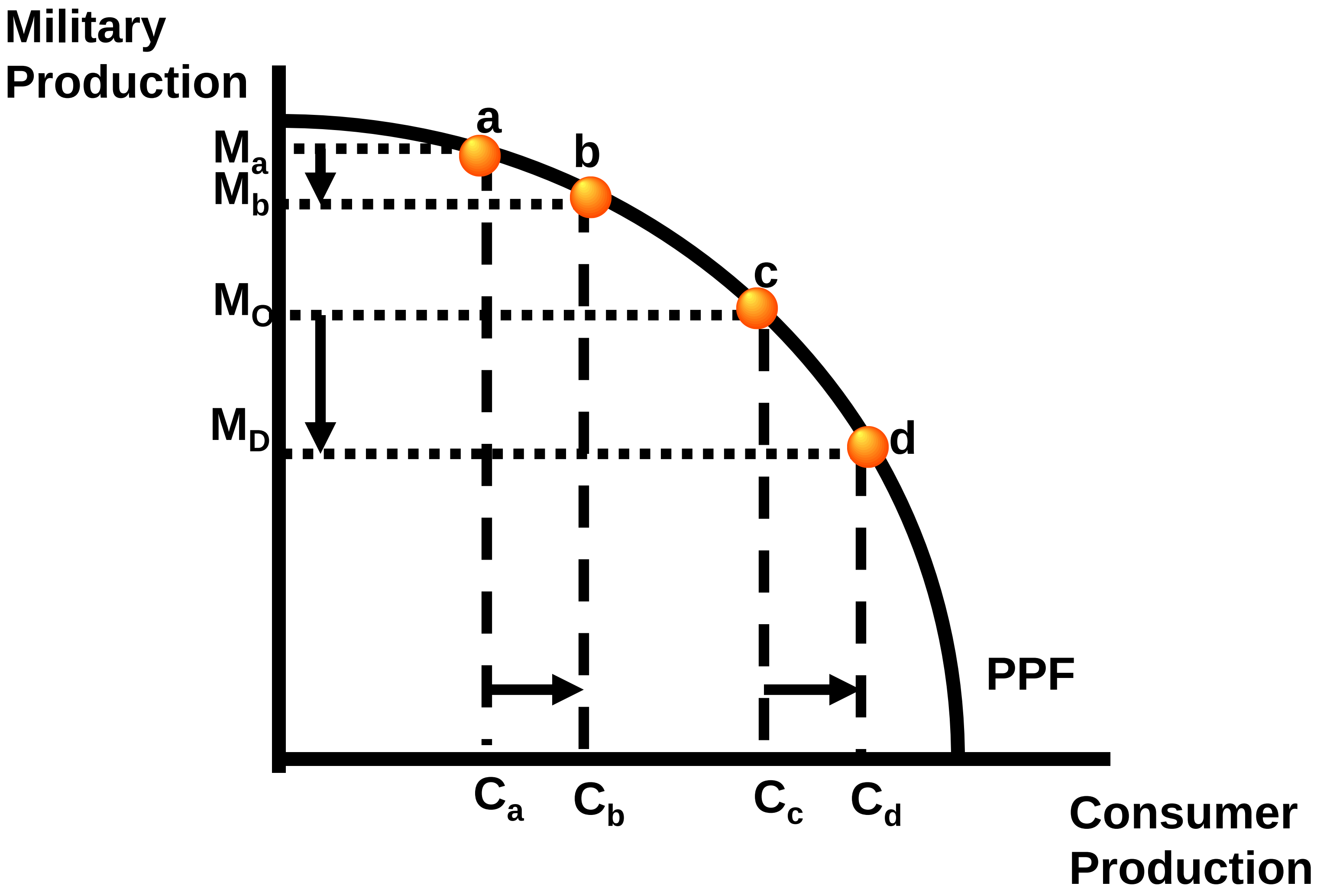
- **Unemployment of resources**

The Slope of the PPF Reflects Opportunity Costs.
P. 27

- A PPF with a constant slope has constant opportunity costs.

- A PPF with a changing slope has changing opportunity costs.

A "GUNS & BUTTER" MODEL



The law of increasing marginal opportunity costs, p. 27

- As an economy produces more of a good, the opportunity cost of an additional unit, expressed in terms of other goods sacrificed, will increase.
- WHY???
- All resources are not equally efficient or suitable for producing all outputs.
- Comparative Advantage of a resource

ICLICKER – REEF POLLING

In-Class Quiz #5

iClicker

1) Which point is <u>unattainable</u> given this country's resources?

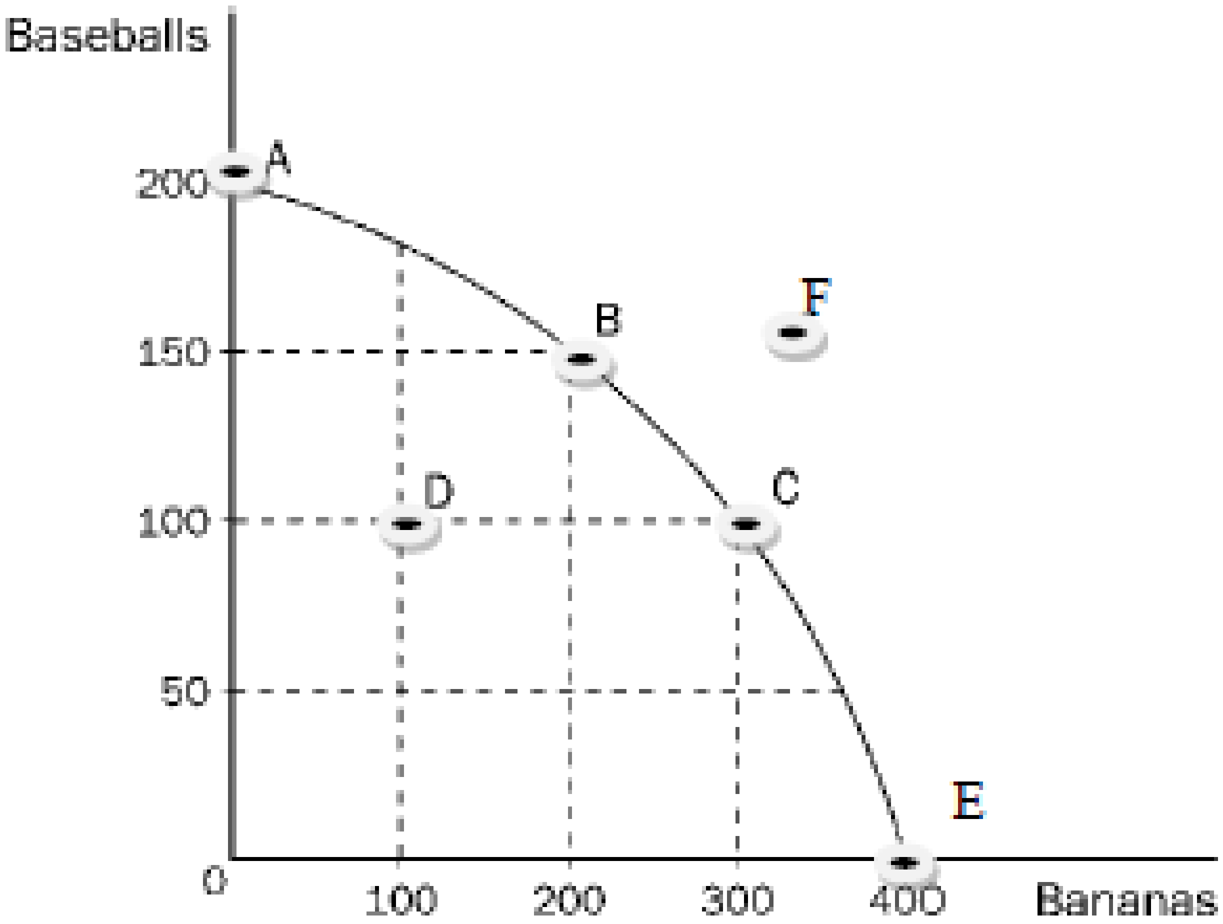
A. A

B. B

C. C

D. D

E. F



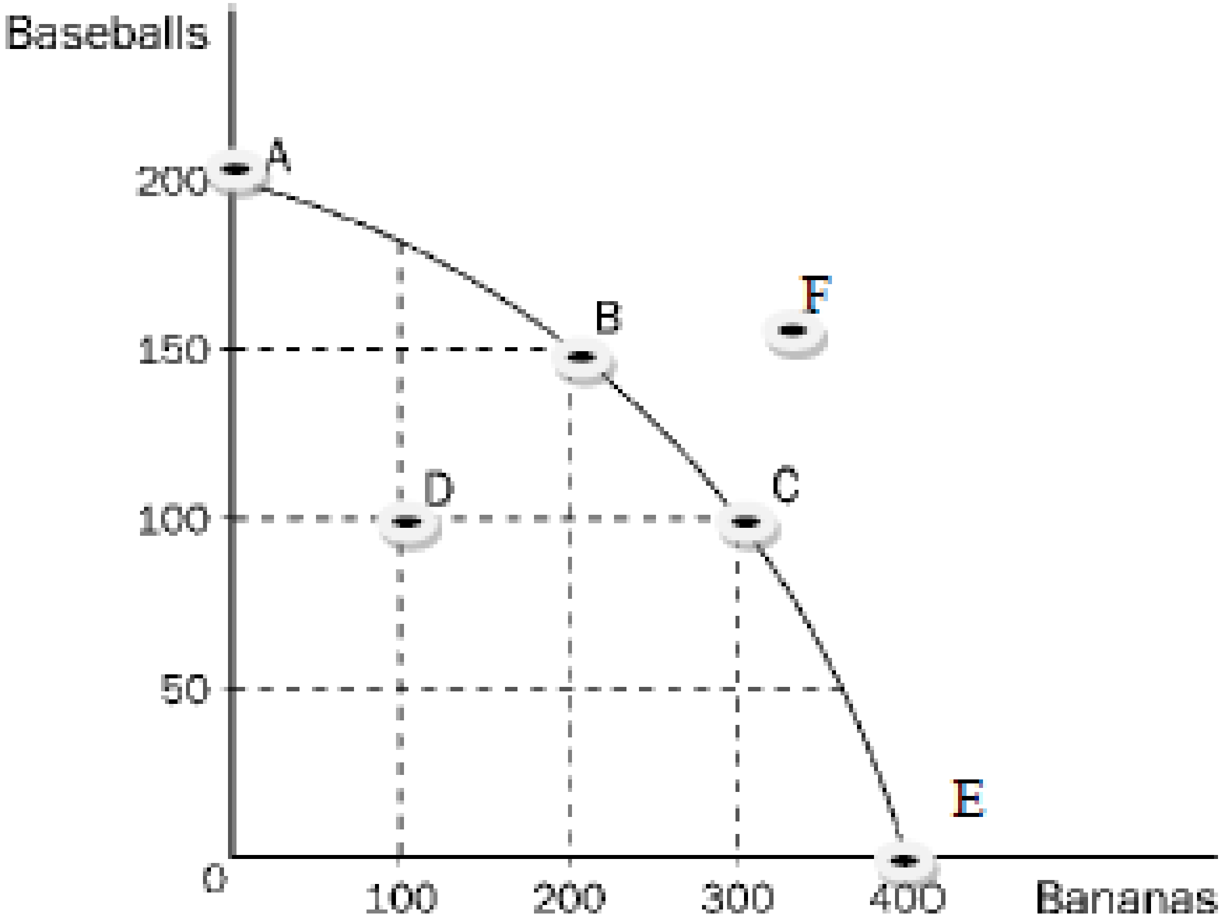
2) If the country is producing efficiently and decides to increase production of bananas from 200 to 300 bananas, what is the opportunity cost?

A. 150 baseballs

B. 100 baseballs

C. 50 baseballs

D. 2 baseballs



- Robinson Crusoe Shipwrecked – practice problem
- P. 28-29

ICLICKER – REEF POLLING

In-Class Quiz #5

3) If the opportunity cost of 100 bananas is 50 baseballs, what is the opportunity cost of 1 banana?

A. 2 baseballs

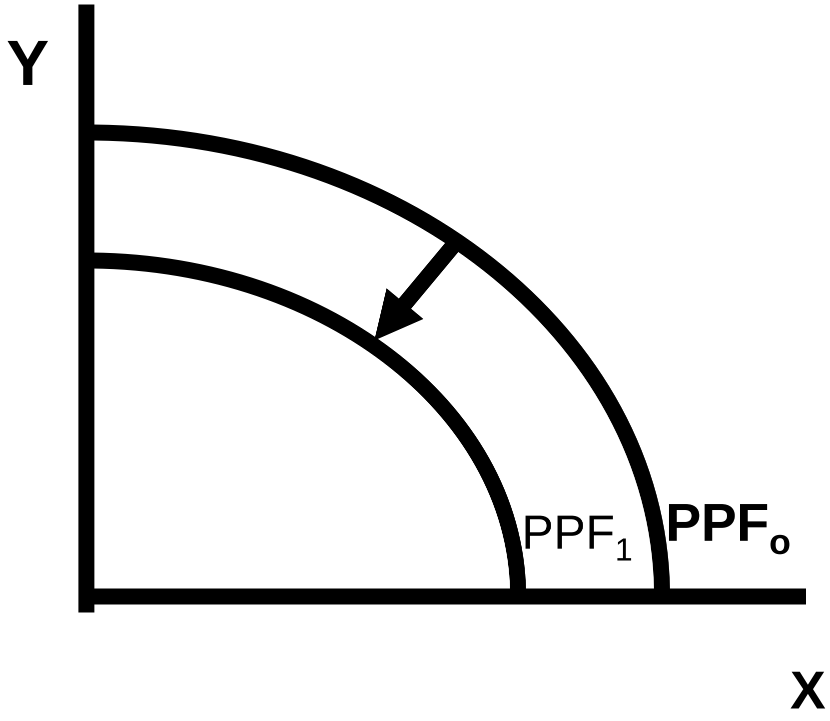
B. 1 baseball

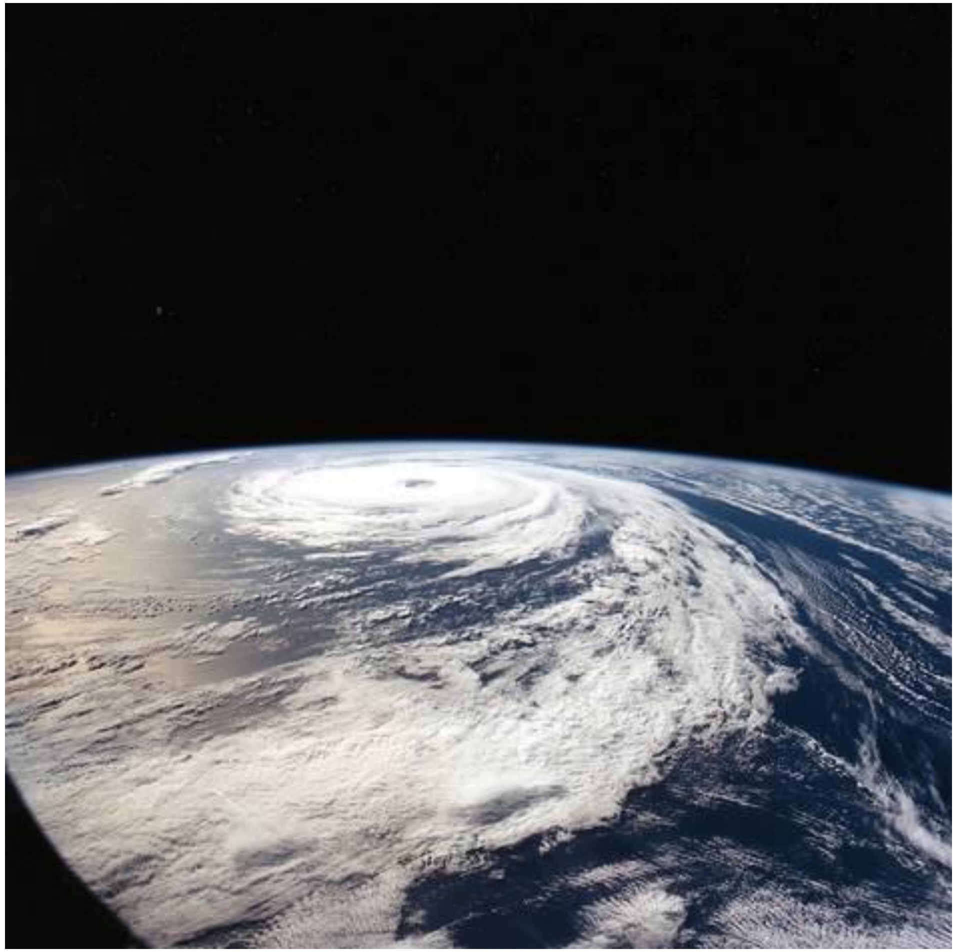
C. ½ of a baseball

Shifting the PPF, P. 30

1) Negative Shock

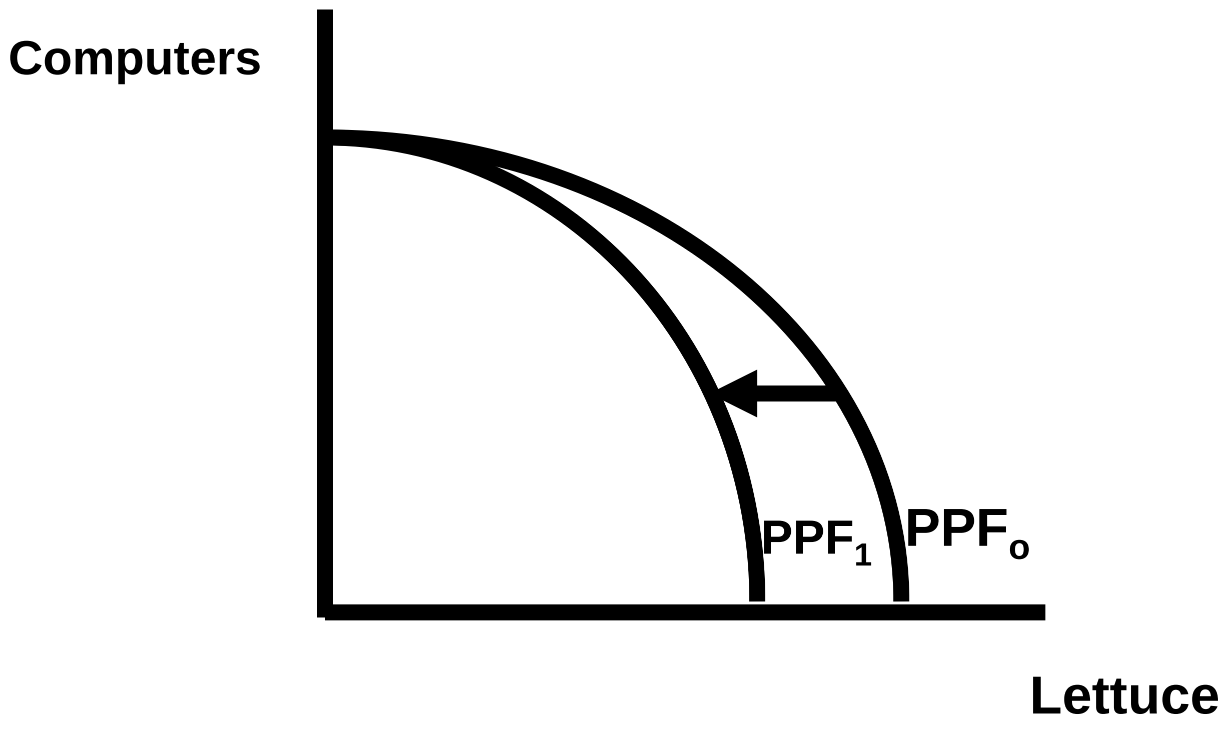
a) an earthquake, hurricane (or zombie apocalypse)





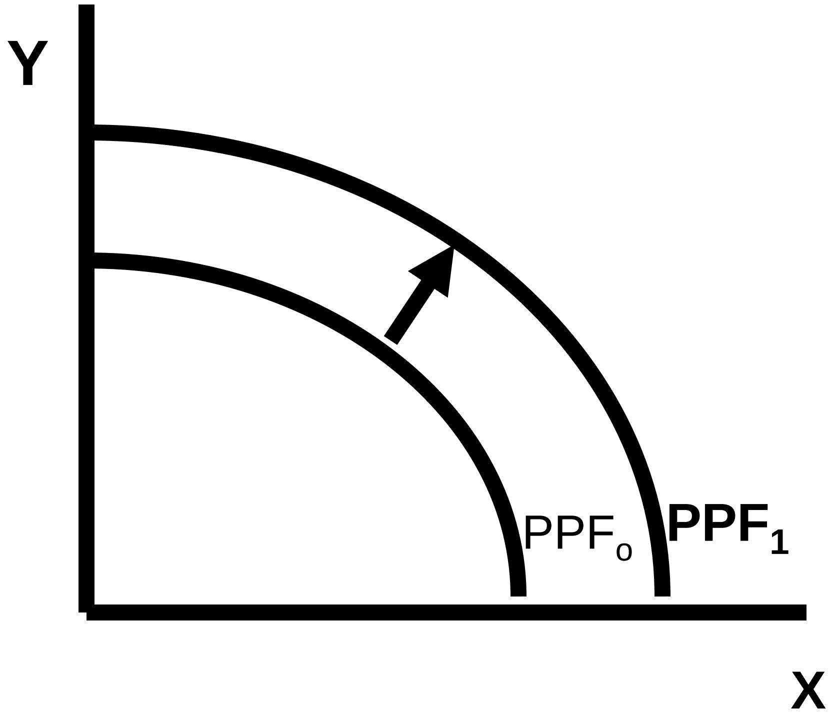
FLORENCE

b) Drought



2) Technological Improvement
(being able to paste a text message)

3) A change in the rules under which the Economy functions
(i.e. Health care reform and tax reform)

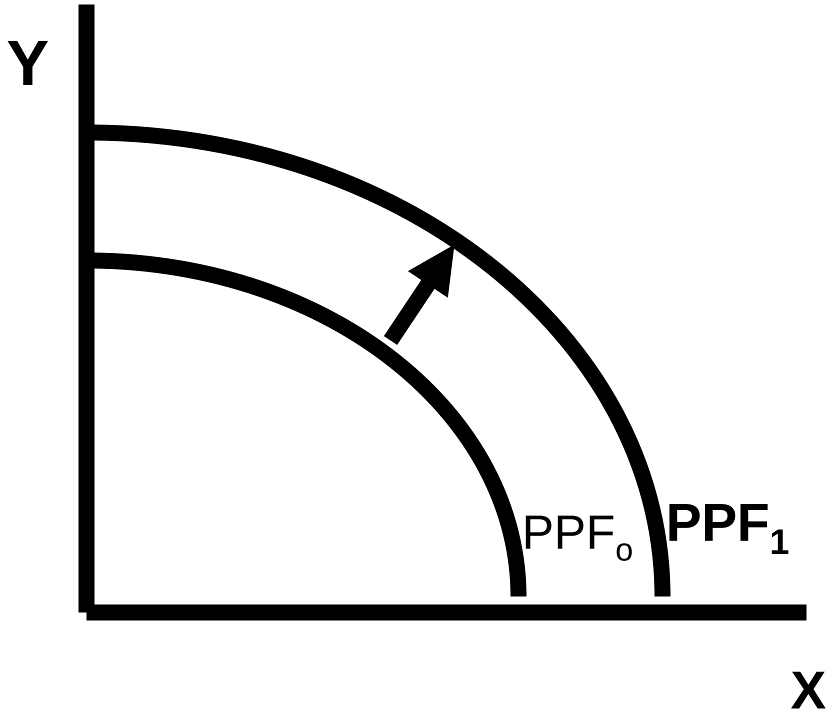


An outward movement of the PPF represents <u>economic growth</u>

4) A change in the economy's resource base, P. 31

Could be sudden or accidental or slow and intentional

-new oil deposits discovered

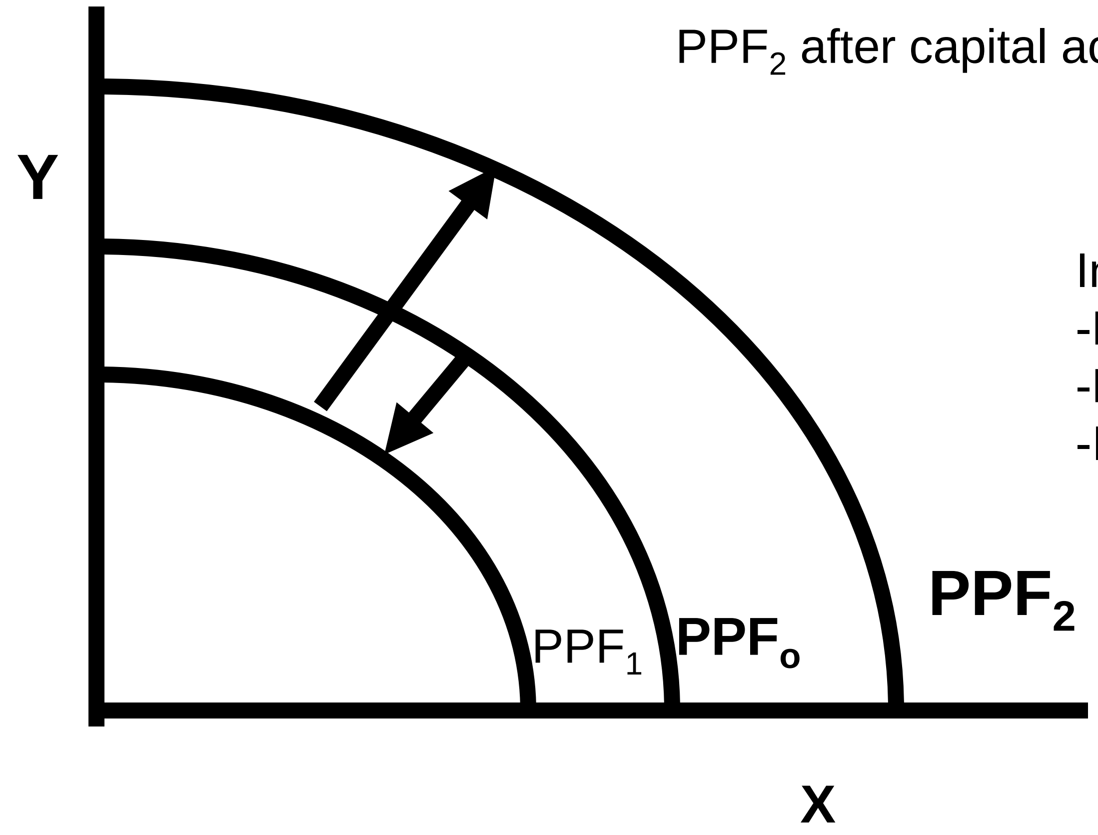


5) Investment or Capital Accumulation

PPF_o before capital accumulation

PPF_1 during capital accumulation

PPF_2 after capital accumulation



Invest through:
-Research
-Education
-Infrastructure

Infrastructure: large-scale public systems, services, and facilities necessary for economic activity (power and water supplies, public transportation, telecommunications, roads, and schools).

% of GDP invested in infrastructure (average 2010-2015)

- China 8.3%
- India 5.6%
- Western European countries 5%
- South Africa 4.7%
- Russia 4%
- Canada 3.4%
- Japan 3.2%
- Mexico 2.5%
- U.S. 2.3%

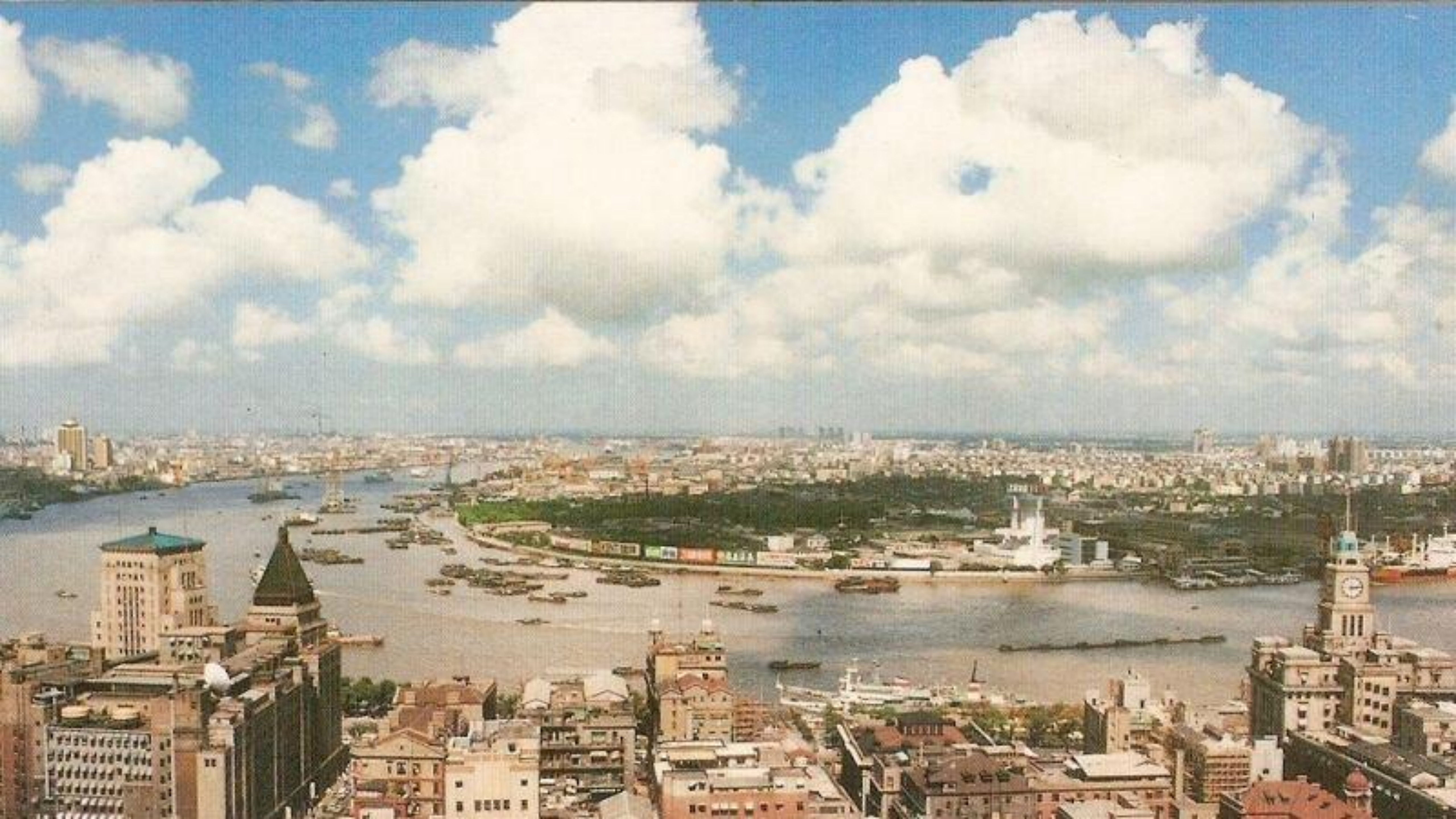
New Delhi – India - Infrastructure


ATM
24 hour
देहाती
DETA
kotak


VEGETARIAN
FOOD
MONEY CHANGER
BOOKING OFFICE
Suvidha
Restaurant
Palm
Grove
Restaurant
STD
ISD
LOCAL
CNG
AHMEDABAD
BOMBAY
NAINITAL
MANALI

Sidewalks and drainage

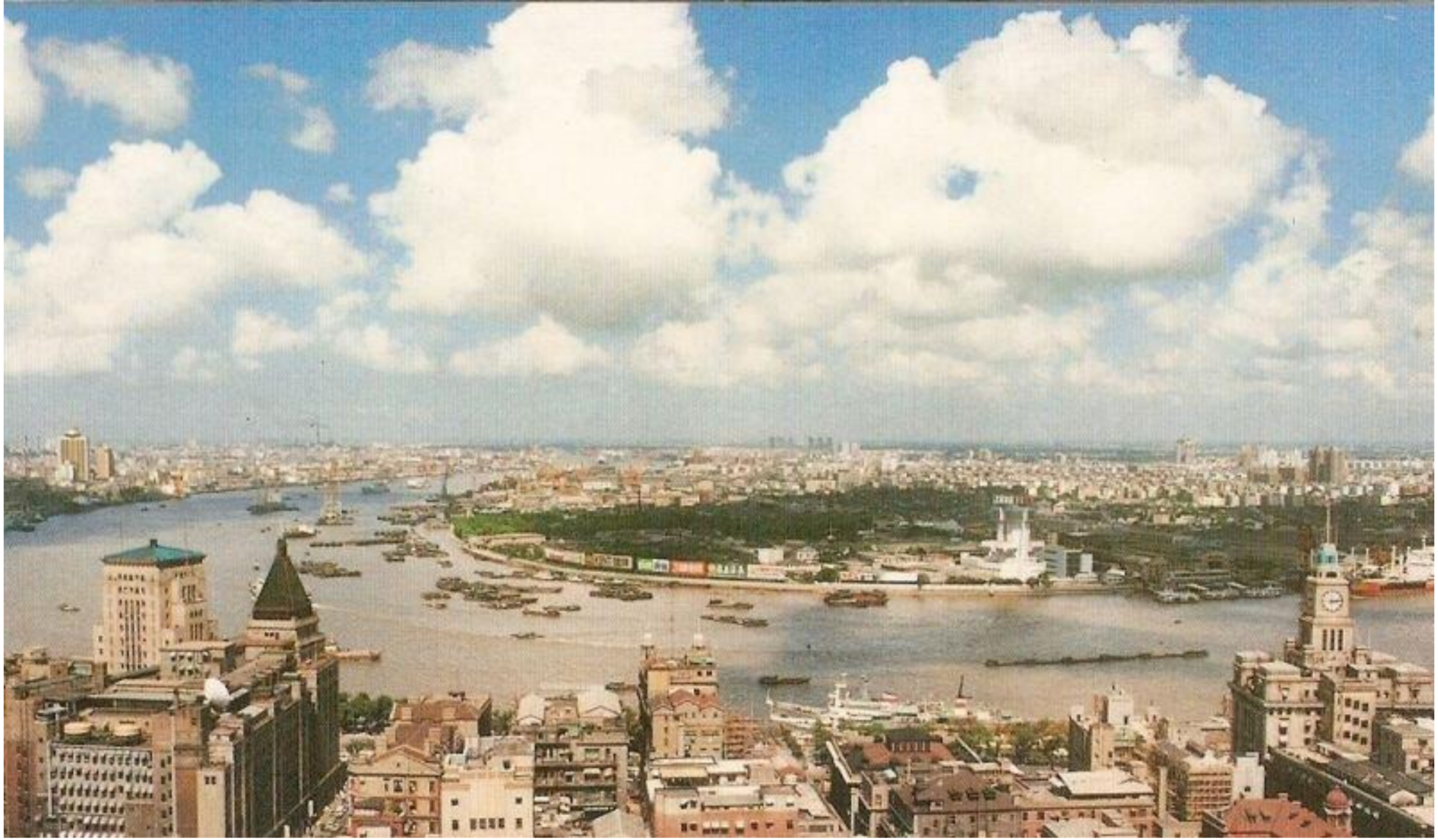
Traffic Grid



AURORA
I ❤ SH
MINT

SHANGHAI - 1990

SHANGHAI - 2010



Four things: (Chinese economic reform of 1970s and 1980s) command to market changes
– private enterprise and private resource ownership (efficiency)
- trade restrictions lifted (gains from specialization and trade)
- Infrastructure development prompted by int’l business presence and trade
- foreign investment allowed - (economic growth)

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Rajan (2010) The financial crisis and the death of development economics