

Economics 1: Fall 2010

J. Bradford DeLong, Michael Urbancic, and a
cast of thousands...

http://delong.typepad.com/econ_1_fall_2010/

Ladies and Gentlemen, to Your i>Clickers...

- Were Chinese living standards on average?
 - A. Higher in 1820 than in 1968, and higher today than in 1968.
 - B. Higher in 1820 than in 1968, and higher in 1968 than today.
 - C. Lower in 1820 than in 1968, and higher in 1968 today?
 - D. Lower in 1820 than in 1968, and higher today than in 1968?

Administrivia

- Presentation articles
 - Section 13 (October 11-13)
 - People making choices under constraints
 - “Box-office revenue up for 2009: It's not just higher ticket prices: More people are going to the movies, even as the recession has depressed consumer spending in nearly every other category,” by Ben Fritz. Los Angeles Times (December 14, 2009) <http://latimes.com/business/la-fi-ct-boxoffice14-2009dec14,0,5678666.story>
 - Section 14 (October 13-18)
 - A complex division of labor coordinated by a market:
 - Leonard Read (1958), "I, Pencil" <<http://www.econlib.org/library/Essays/rdPncl1.html>> (ac. June 7, 2010)
 - Section 15 (October 18-20)
 - Supply and demand
 - “Food Prices Are Rising Worldwide: Weather, Oil Costs among Factors,” by Katherine Corcoran, Boston Globe, (March 30, 2008) <http://tinyurl.com/8qkgnb>
 - Section 16 (October 20-25)
 - Incentives and rewards
 - “In Praise of Price Gouging,” by John Stossel. Posted at Townhall.com, September 7, 2005. http://www.townhall.com/columnists/JohnStossel/2005/09/07/in_praise_of_price_gouging

Administrivia

- By now you have read the first 264 pages of Seabright, *The Company of Strangers*...
 - What do you think of the argument that large-scale human socio-economic cooperation is an interesting puzzle that needs to be explained? And what do you think of Seabright's attempted answers?
 - By the start of lecture on October 13, write a short two-page essay intended to explain what Seabright's central argument is to somebody who has not read the book, and giving your evaluation of his central argument.

Economics 1: Fall 2010: Economic Growth II

J. Bradford DeLong

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Wheeler Auditorium, U.C. Berkeley

Guessing at Some Numbers

Year	Population	Income
-8000	5	\$500
0	170	\$500
1500	500	\$500
1800	750	\$600
1900	1500	\$1200
2007	6300	\$7000

Malthusian stagnation

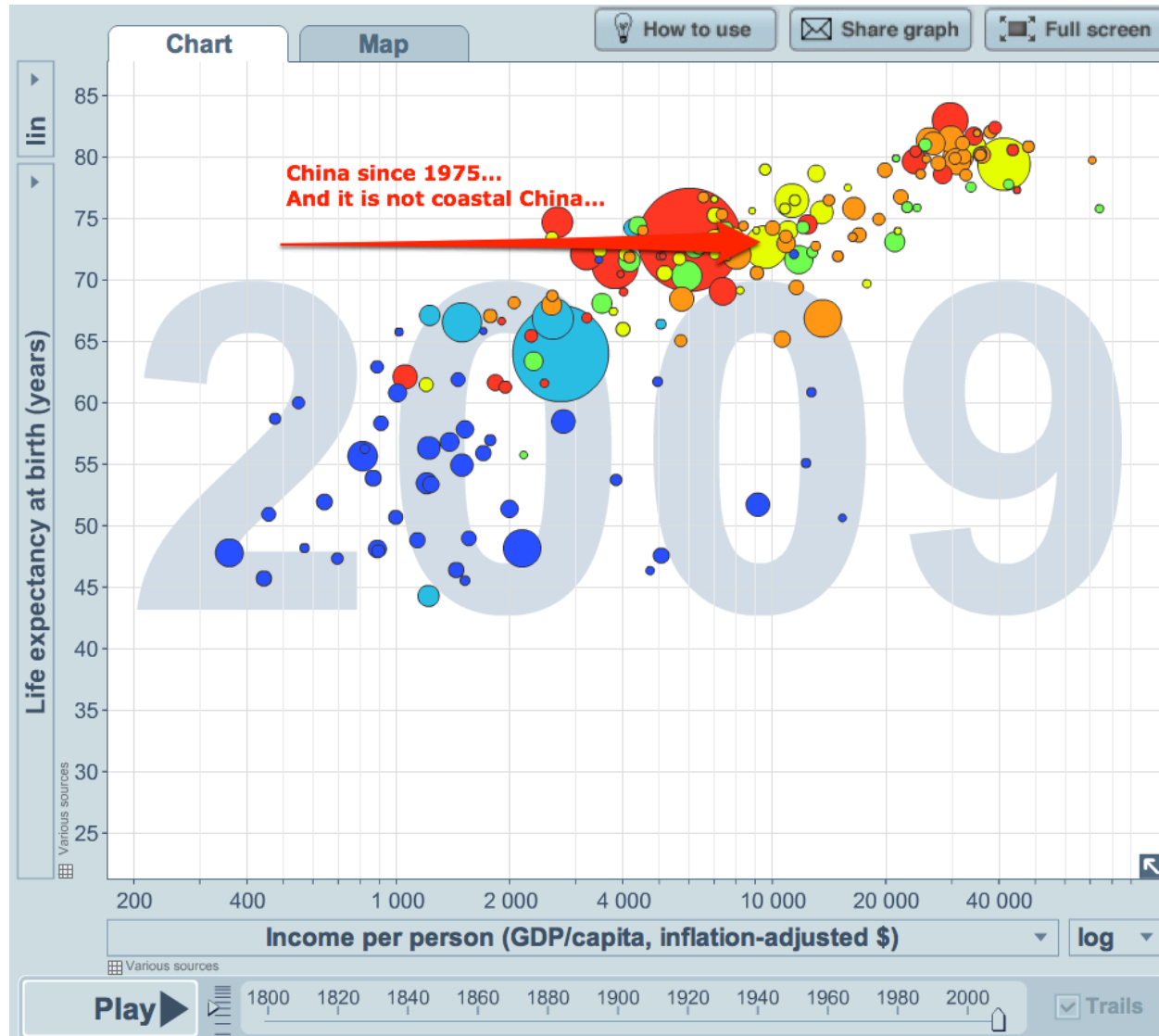
Period	Real GDP Growth	TFP Growth (1)
-8000-0	0.04%	0.01%
0-1500	0.07%	0.02%
1500-1800	0.2%	0.09%
1800-1900	1.38%	0.89%
1900-2007	3.38%	2%

Toward a human world?

Where is the innovation?

- Growth rates of population
 - HG: 0.01%/year
 - AS: 0.05%/year
 - EM: 0.2%/year
 - >1800: 1.0%/year
- Growth rates of technological and organizational knowledge
 - HG: ????
 - AS: 0.01%/year
 - EM: 0.09%/year
 - IS: 2%/year
- Growth rates of global GDP
 - AS: 0.05%/year
 - EM: 0.2%/year
 - EIS: 1.4%/year
 - IS: 3.4%/year

Convergence to 2009



Why Divergence to 1968?

- The agrarian legacy
 - China's population has grown by a factor of 7 since 1800
 - Egypt's by a factor of 30
 - If most of your people are still unmechanized farmers, that is a huge set of headwinds
- The infrastructural task
 - Even if most of your people aren't unmechanized farmers and live in cities, a rapid population growth rate means a large investment burden
- Difficulties of technology transfer
- Difficulties of government
 - Communism
 - Corruption

Why Convergence After 1968?

- End of High Communism
- Expansion of world trade
- Technology transfer
- But if you look at it, the big difference between before 1968 and after 1968 is the different destinies of two countries
 - China
 - India
 - If you count one-country-as-one, rather than one-person-as-one, it is hard to see a pattern

Ladies and Gentlemen, to Your i>Clickers...

- What number should you have in your head for global living standards before 1500?
 - A. \$100 per capita per year
 - B. \$500 per capita per year
 - C. \$1000 per capita per year
 - D. \$7000 per capita per year
 - E. \$55000 per capita per year

Factors of Production and Economic Growth

- Physical capital and resources (K)
- Labor (L)
- Human skills, acquired via education and experience (H)
- Factor income version of the circular flow:
 - $Y = rK + wL + sH$
- Difference it:
 - $\Delta Y = r(\Delta K) + w(\Delta L) + s(\Delta H)$
 - What would you expect an extra lathe to be worth? Well, about what the average lathe is worth.
 - Thus this equation tells you what you would expect the rate of economic growth to be as a result of factor accumulation

Factors of Production and Economic Incentives

- A growth equation:
 - $\Delta Y = r(\Delta K) + w(\Delta L) + s(\Delta H)$
- Incentives
 - Capital: incentives to save and invest
 - Skills: incentives to go to school, and to pay attention on the job
- Benefits of a private market system:
 - Pushes the decisions about factor accumulation out to the periphery
 - Gives people at the periphery the right incentives

The Solow Residual

- A growth equation:
 - $\Delta Y = r(\Delta K) + w(\Delta L) + s(\Delta H)$
- Plug in numbers for the U.S. today in an average year
 - $\Delta Y = rK(\Delta K/K) + wL(\Delta L/L) + sH(\Delta H/H)$
 - $\Delta Y = (0.3)(3\%/year) + (0.3)(0.7\%/year) + (0.4)(1\%/year)$
 - $3\%/year \quad \Delta Y \neq r(\Delta K) + w(\Delta L) + s(\Delta H) = 1.5\%/year$
- Half of all economic growth—2/3 of all growth in output per capita—does not come from factor accumulation, but from something else
- This is why Bob Solow won the Nobel Memorial Prize in Economic Sciences

Total Factor Productivity

- Sources of the Solow Residual
 - Technology
 - Business organization
 - Market organization
- And here we have a big incentive problem
 - Those who invent and innovate new technologies, new organizations, and new markets are enormous public benefactors
 - But they don't get the rewards of what they do—the rewards spillover
 - Patents and copyrights
 - In the U.S. Constitution
 - Resolve the problem
 - But at the cost of creating another problem...

How Much Does TFP Matter?

- Go back to our historical guesses:
- Growth rates of technological and organizational knowledge
 - HG: ?????
 - AS: 0.01%/year
 - EM: 0.09%/year
 - IR: 0.9%/year
 - MIS: 2%/year (world average)

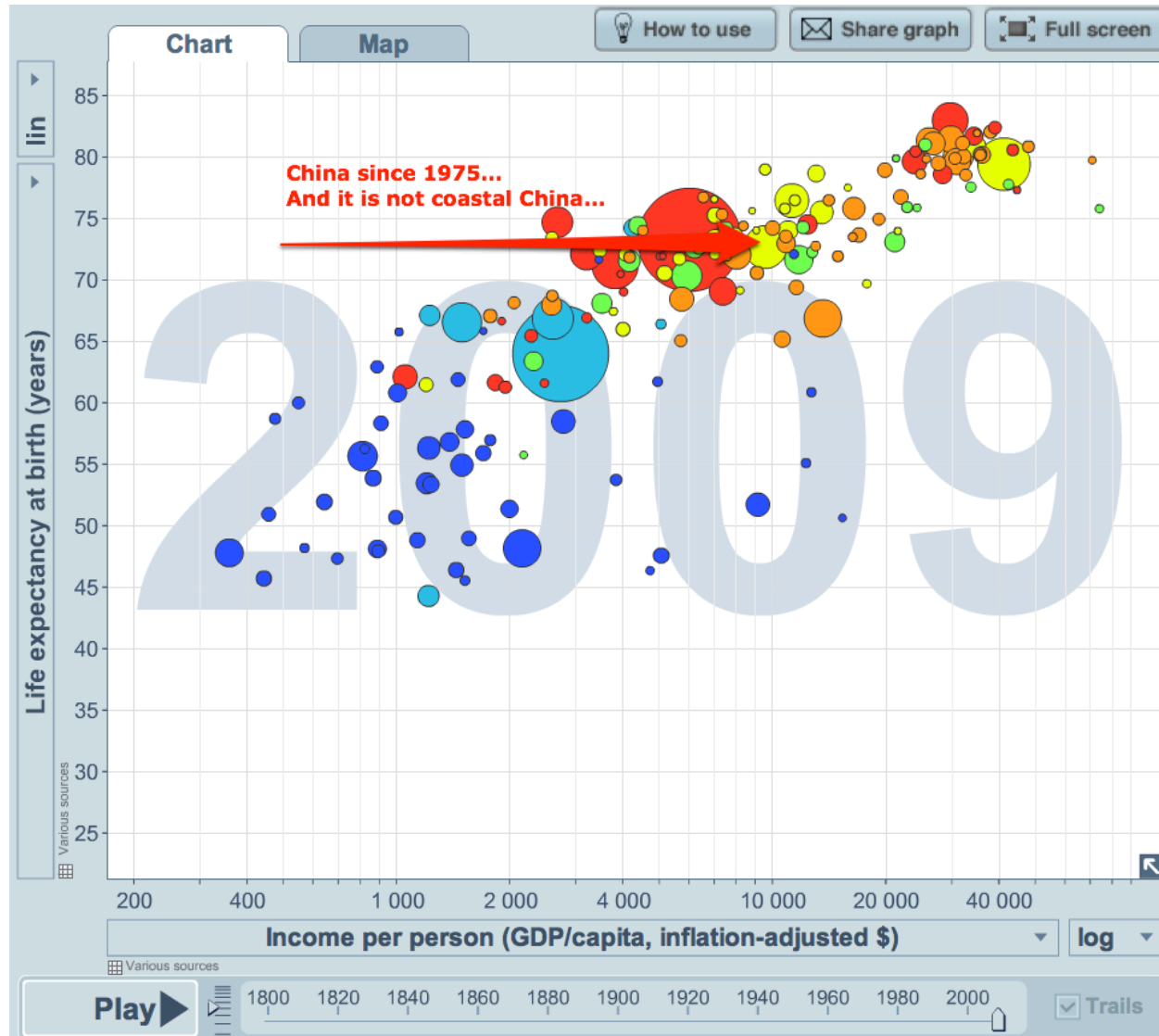
Market Organization

- We have a “natural experiment”
- High Stalinist central planning
 - Marxian suspicion of markets
 - Hence we won’t have any
- Reproduce the Rathenau-Ludendorff World War I Imperial German war economy
 - Communes, economies of scale, GOSPLAN, etc.
 - Overall productivity? 20% of market economies
 - Military productivity is another story—at least during WWII
- You throw away a five-fold amplification of productivity by eschewing the market
 - Still, we have a 18-fold worldwide TFP gain since 1800
 - A 72-fold worldwide TFP gain since 8000 BC

Business Organization and Technology

- So mixed together that they are very hard to separate
- We have a 18-fold worldwide TFP gain since 1800.
 - If one doubling of that is due to “extent of the market,” then we have a 9-fold worldwide TFP gain from business organization and technology
- A 72-fold worldwide TFP gain since 8000 BC
 - If markets are responsible for a 5-fold increase, that gives us a 14-fold worldwide TFP gain from business organization and technology
- And if we could get everyone up to San Francisco Bay standards
 - That would be a further 7-fold amplification

Followership: The Importance of Institutions



Leadership: A Much Lower Speed Limit

- Silicon Valley
- Not just technologies, but technologies people would like to use
- Not just technologies people would like to use, but delivered at an affordable price
- Plus the innovators have to be able to make a profit
 - Without imposing very large restrictions on the social utility we derive from their innovations
 - Google Books...

Ladies and Gentlemen, to Your i>Clickers...

- What share of U.S. growth in an average year is due to total factor productivity improvement?
 - A. $1/10$
 - B. $1/3$
 - C. $2/3$
 - D. $3/4$
 - E. All

Ladies and Gentlemen, to Your i>Clickers...

- What share of Chinese growth since 1975 is due to total factor productivity improvement?
 - A. $1/10$
 - B. $1/3$
 - C. $2/3$
 - D. $3/4$
 - E. All

Test Your Knowledge

- What is the average rate of worldwide improvement in TFP over the past century?
- Why do we fear that the market economy is not a good social calculating machine for producing the “right” amount of TFP growth?
- How much damage does High Stalinist abolition of markets do to an economy?
- About how much better is our technology here in San Francisco Bay today than technology in Gilgamesh’s Uruk back in the early days of agriculture?