

# **Lecture 15:**

## **4.4. Convergence and Its Absence**

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for presentation: Tu 2020-03-17

Original course by Melissa Dell (Harvard Econ 1342), revised by Brad DeLong

[<https://github.com/braddelong/public-files/blob/master/econ-135-lecture-15.pptx>](https://github.com/braddelong/public-files/blob/master/econ-135-lecture-15.pptx)

# **Big Ideas: Lecture 14: Globalization Advances and Retreats**

**Takeaways from last lecture:**

1. Give me five...

# Convergence's Absence

## Expected convergence:

- Economists have always expected the "convergence" of national productivity levels
- The theoretical logic behind this belief is powerful.
- Will Baumol expressing conventional wisdom
  - Personal biography

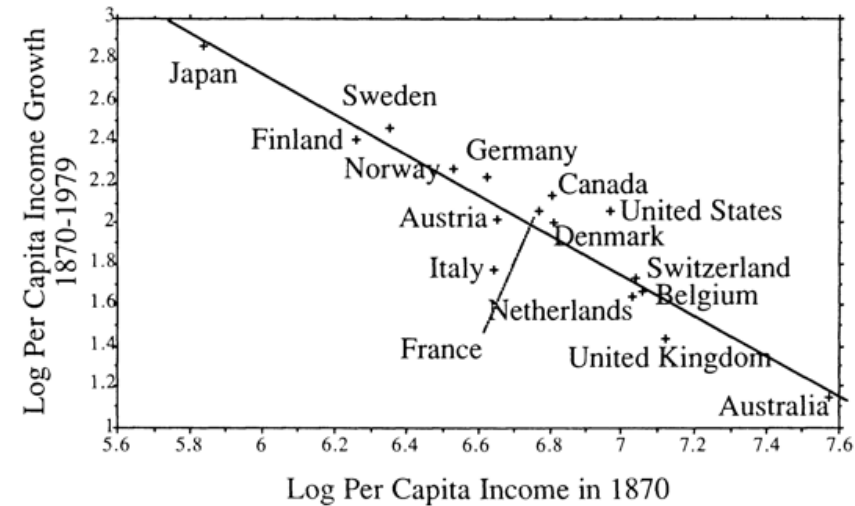


FIGURE 1. PER CAPITA GNP REGRESSION FOR MADDISON'S SIXTEEN

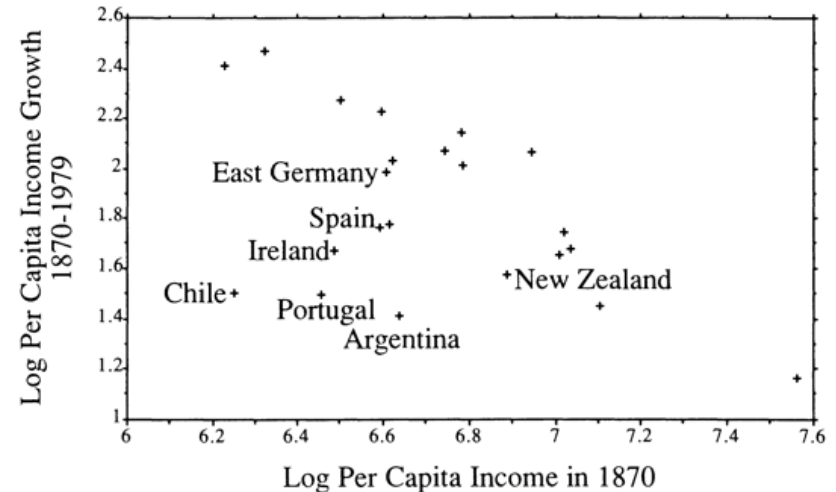


FIGURE 2. 1870 PER CAPITA INCOME AND SUBSEQUENT GROWTH FOR THE ONCE-RICH TWENTY-TWO

# Convergence's Theoretical Logic

## Expected by everyone—even Marx—back to before 1850:

- The theoretical logic behind this belief is powerful.
  - The per capita income edge of the West is based on its application of the storehouse of industrial and administrative technology of the Industrial Revolution.
  - This storehouse is open: modern technology is a public good.
  - \* The benefits of tapping this storehouse are great
  - So nations will strain every nerve to assimilate modern technology and their incomes will converge to those of industrial nations.

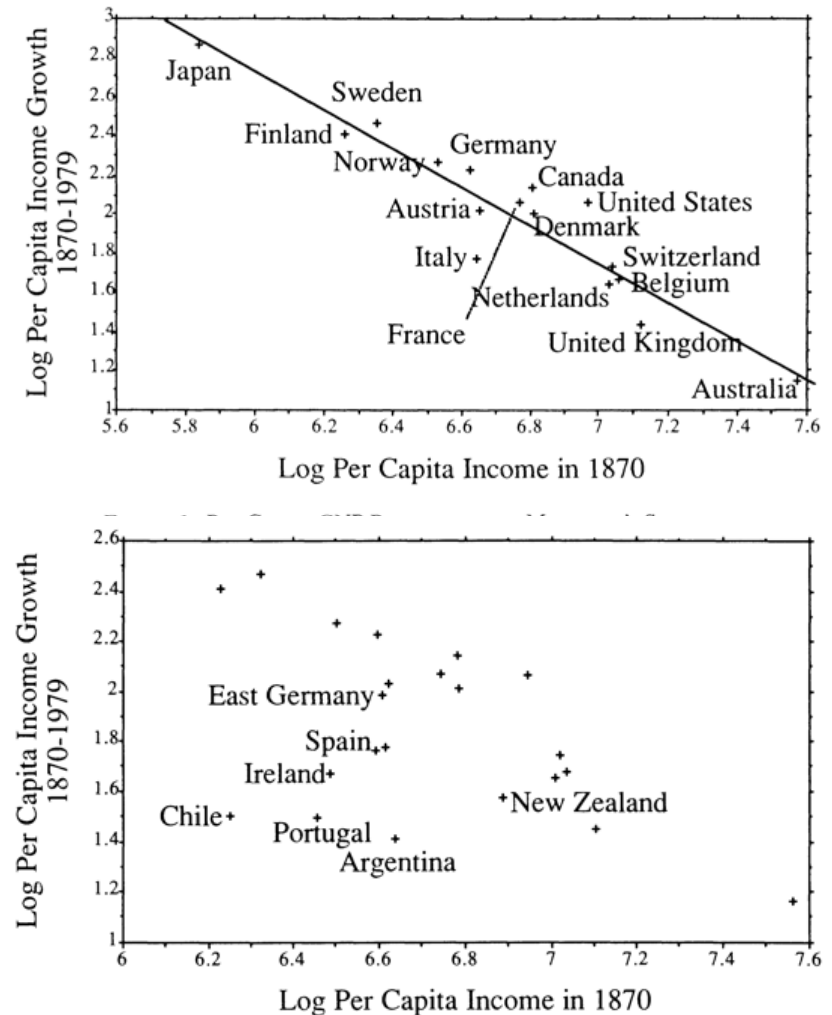


FIGURE 2. 1870 PER CAPITA INCOME AND SUBSEQUENT GROWTH FOR THE ONCE-RICH TWENTY-TWO

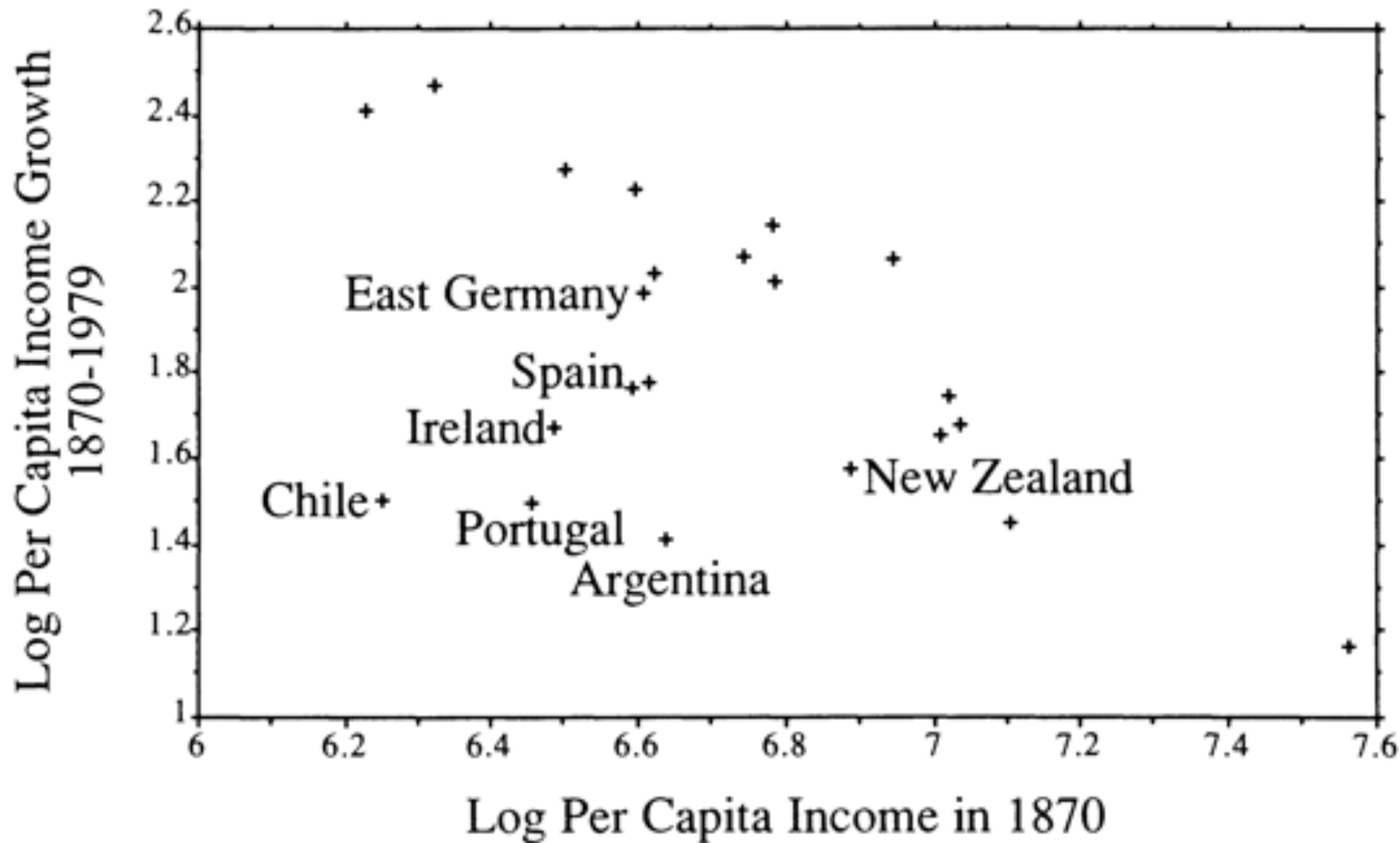


FIGURE 2. 1870 PER CAPITA INCOME AND SUBSEQUENT GROWTH FOR THE ONCE-RICH TWENTY-TWO

Log Per Capita Income in 1870

FIGURE 3. MAXIMUM LIKELIHOOD ESTIMATION FOR THE ONCE-RICH TWENTY-TWO, 1870-1979

# There Is No Convergence Tendency

## Do these two things:

- Then any convergence tendency in the data disappears
- This is much stronger than “there is divergence because some countries had good institutions, and others could not learn”
- This is, rather: “even if you have good institutions at one particular point in time, it can still get very messed up”
- But perhaps the once-rich twenty-two contained some countries that were rich by accident, and thus should not be in a sample of countries that had successfully developed “modernizing institutions”?

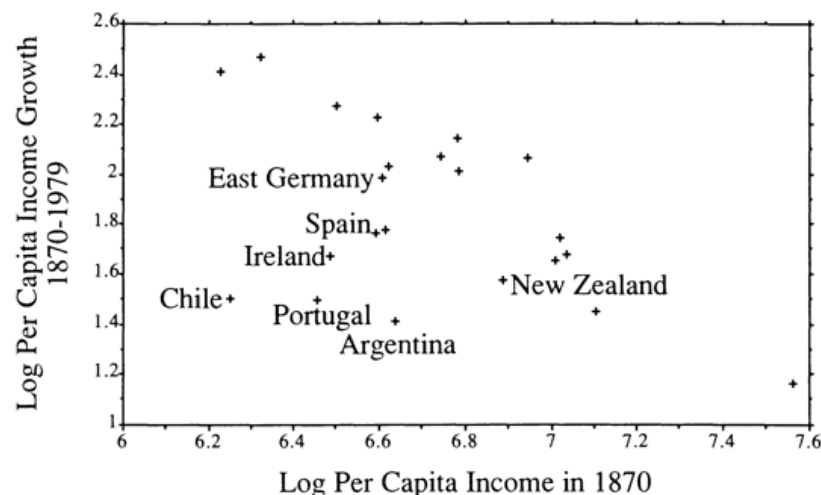


FIGURE 2. 1870 PER CAPITA INCOME AND SUBSEQUENT GROWTH FOR THE ONCE-RICH TWENTY-TWO

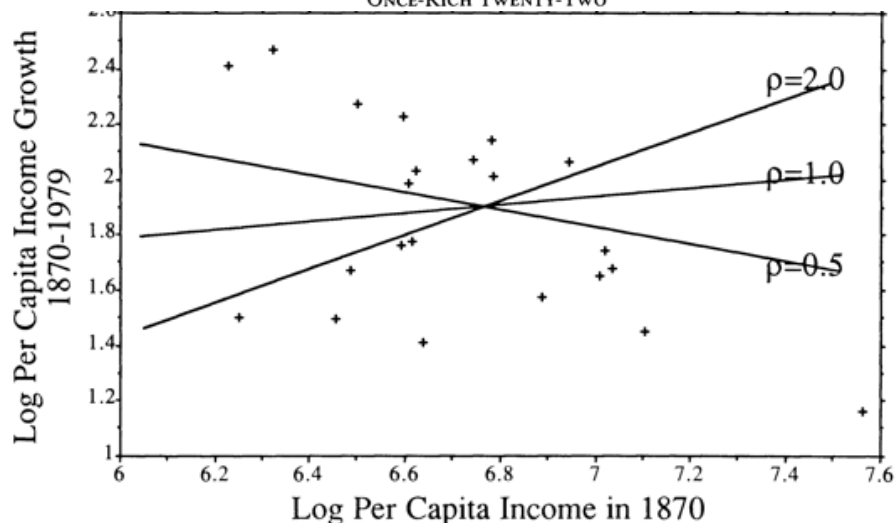


FIGURE 3. MAXIMUM LIKELIHOOD ESTIMATION FOR THE ONCE-RICH TWENTY-TWO, 1870-1979

# Can You Rescue Convergence

**Might the once-rich twenty-two also be the wrong group to look at?:**

- Perhaps the once-rich twenty-two contained some countries that were rich by accident
- Consider OPEC today
- Countries rich by accident thus should not be in a sample of countries that had successfully developed “modernizing institutions”

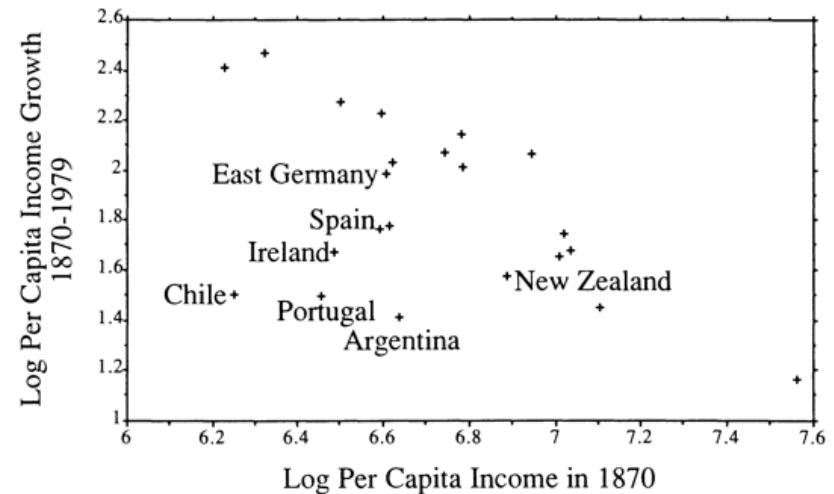


FIGURE 2. 1870 PER CAPITA INCOME AND SUBSEQUENT GROWTH FOR THE ONCE-RICH TWENTY-TWO

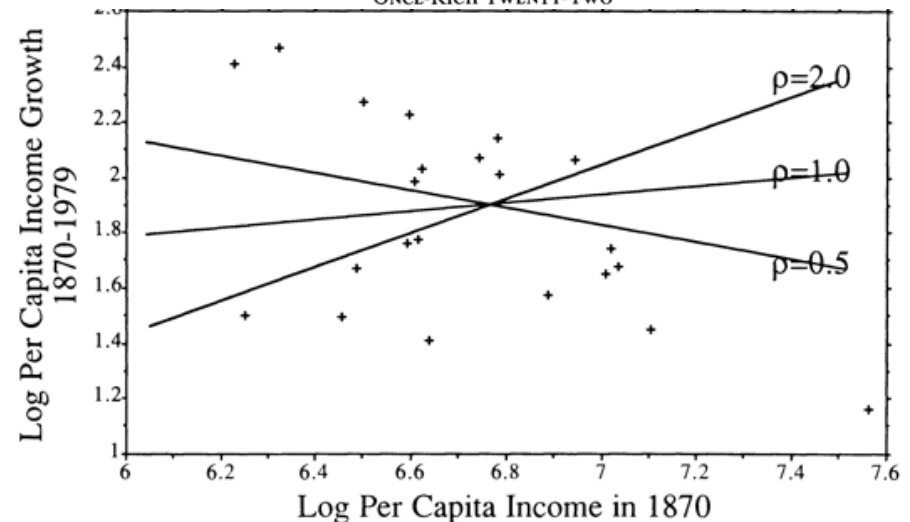


FIGURE 3. MAXIMUM LIKELIHOOD ESTIMATION FOR THE ONCE-RICH TWENTY-TWO, 1870-1979

# What Did People Think at the Time

## Let's look at investors' judgments as of 1913:

- The volume of overseas investment poured into the additional nations by investors from London and Paris between 1870 and 1913 tells us that investors thought these nation's development prospects good
- The six non-European nations among the top ten recipients of investment per capita from France and Britain, and four of the five top recipients of investment belong to the once- rich twenty-two
- Every pound or franc invested is an explicit bet that the recipient country's rate of profit will remain high and an implicit bet that its rate of economic growth would be rapid
- The coincidence of the nations added on a per capita income basis and the nations that would have been added on a foreign investment basis is powerful evidence that these nations do belong in the potential convergence club

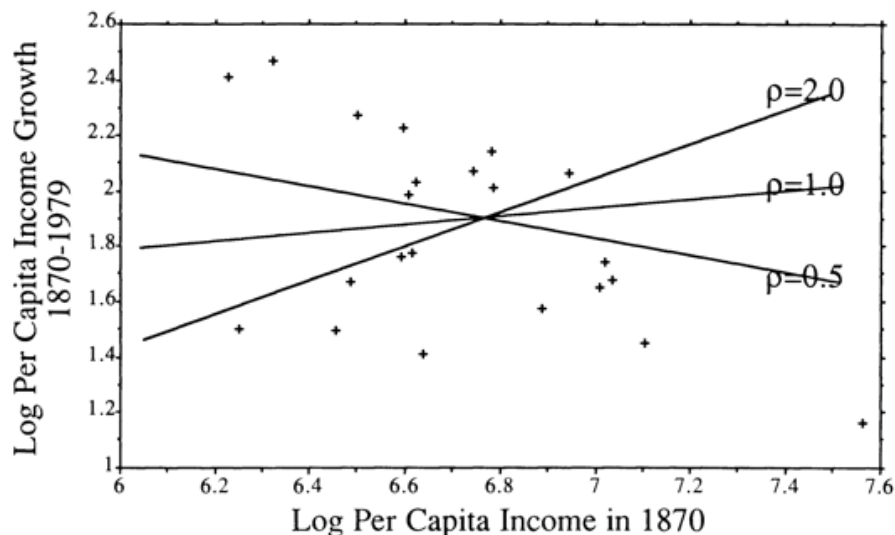


FIGURE 3. MAXIMUM LIKELIHOOD ESTIMATION FOR THE ONCE-RICH TWENTY-TWO, 1870-1979



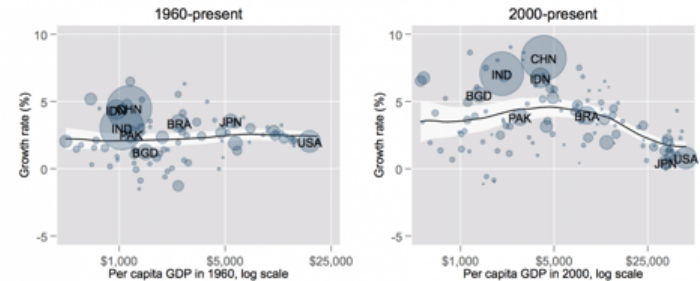
# There Was No Convergence Tendency

**Patel, Sandefur, and Subramanian:**  
“Our basic point doesn’t even require regressions”

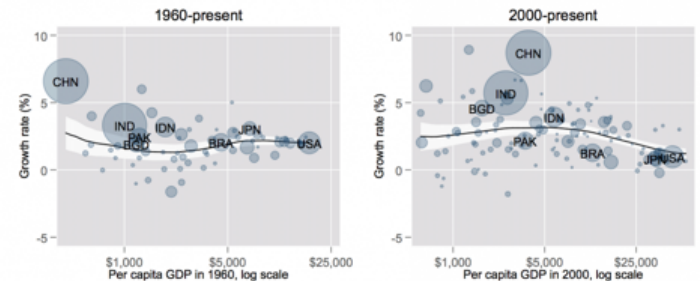
- But they do them nonetheless
- Their argument is that there did not use to be convergence—back before 1990 there was not: there was divergence
- But something changed between 1990 and 2000
- And since 2000 there has been strong “convergence”
  - There is every reason to think—hope—that this strong convergence will continue into the future
  - What is this post-2000 convergence due to? We can think about that at the end...

Growth and Initial GDP

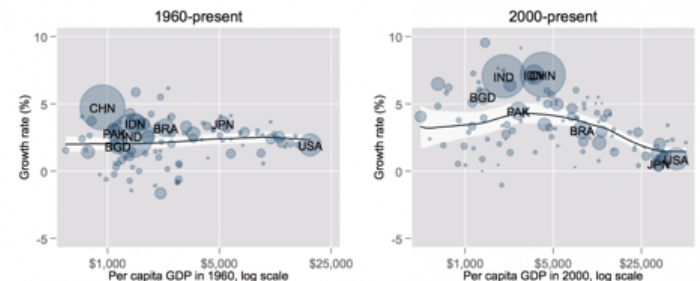
PWT 9.0, Chained PPP



WDI, 2011 PPP



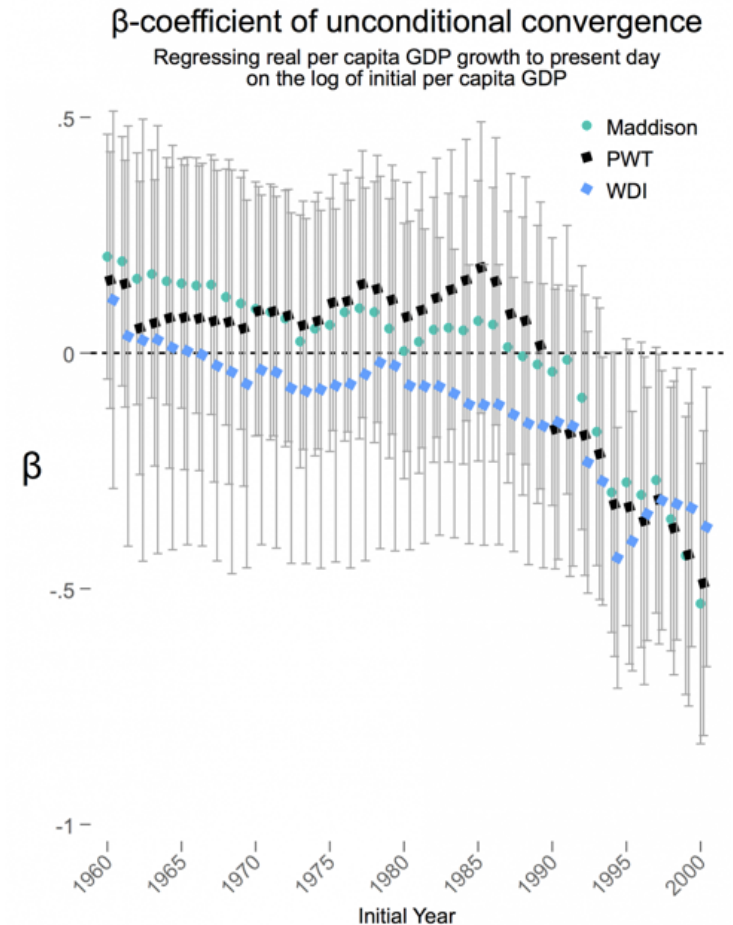
Maddison, 2011 USD



# Changes since 1990

## Things today are different than they were in 1990:

- The world has changed from 1990-2020
- Unconditional convergence was singularly absent in the past
- There has been unconditional convergence:
  - Beginning (weakly) around 1990
  - Emphatically for the last two decades



Each point represents the coefficient from a separate, bivariate regression. The dependent variable is the annual real per capita growth rate from the year listed until the most recent data round. The independent variable is the log of real per capital GDP in the base year.  
NB: Sample excludes oil-rich countries (i.e. 'Export Earnings: Fuel' in IMF DOTS), and countries with populations under 1 million.

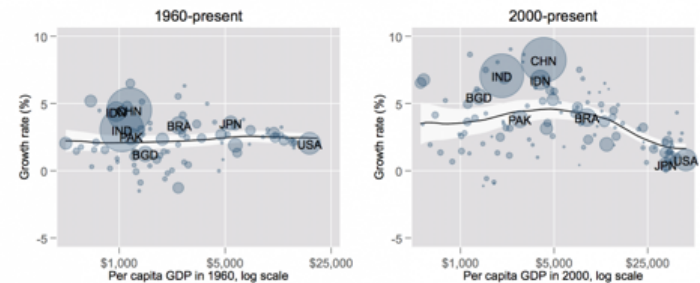
# But There Is No Convergence Tendency

**Patel, Sandefur, and Subramanian: “Our basic point doesn’t require regressions”**

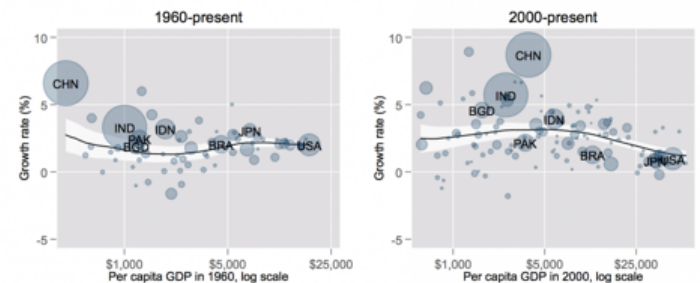
- [Of] the 43 countries the World Bank classified as “low income” in 1990, 65 percent have grown faster than the high-income average since 1990
- The same is true for 82 percent of the 62 middle-income countries circa 1990
- Not just that poor countries have sped up
- Also that rich countries have slowed down

Growth and Initial GDP

PWT 9.0, Chained PPP



WDI, 2011 PPP



Maddison, 2011 USD



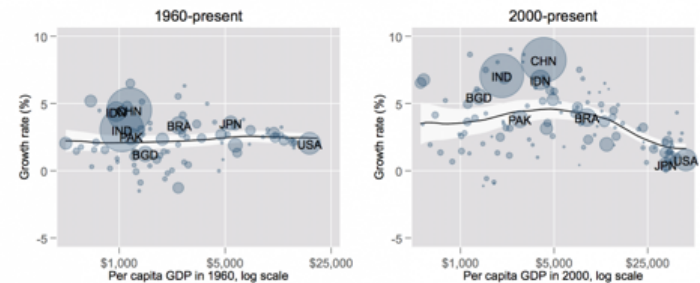
# The Old Empirical Growth Literature

## Patel, Sandefur, and Subramanian:

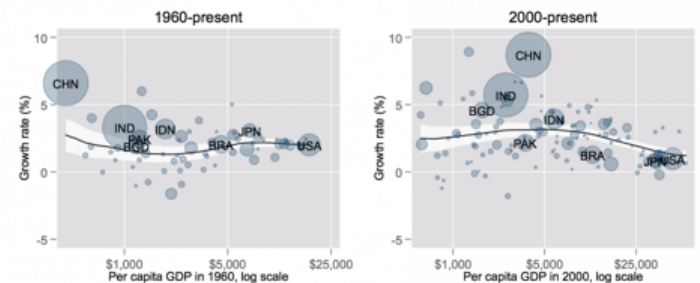
- The conclusion of the empirical growth literature in the 1990s was that convergence was conditional on poor countries achieving the level of human capital and governance in rich countries
- Economists' standard “all else equal” fudge
  - Dowrick and DeLong (2003) noted this was... absurd
  - Bangladesh can't become Belgium overnight
  - It didn't have to
- Developing countries have managed to grow faster without such radical changes in their endowments or institutions

Growth and Initial GDP

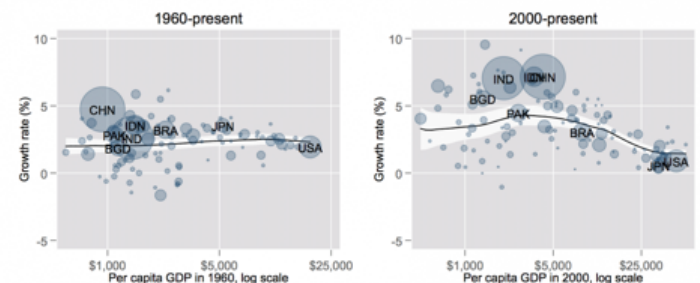
PWT 9.0, Chained PPP



WDI, 2011 PPP



Maddison, 2011 USD



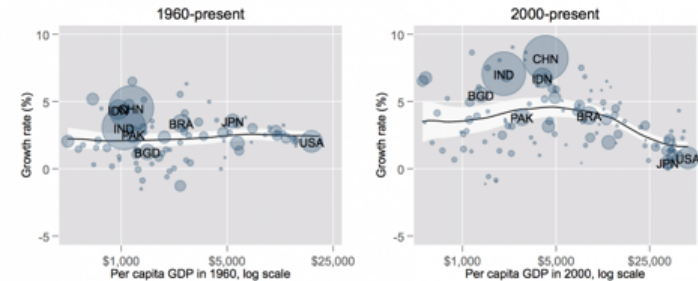
# What Caused Post-2000 Convergence?

**Patel, Sandefur, and Subramanian do not say:**

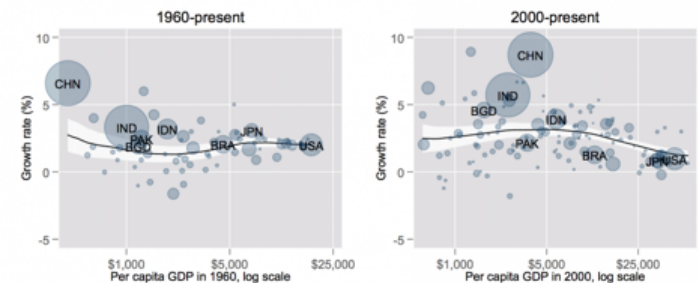
- Let's think about this...
- What are the obvious candidates?
  - The Great Recession and the Anemic Recovery
    - Institutional dysfunction in the Global North
    - Austerity and a failure to prioritize a return to full employment and growth
  - The coming of the value-chain economy
    - No longer having to keep your blue-collar assembly-line workers close to your engineers, your executives, and your brand creators
  - Modern information and communications technologies more generally
    - The internet
    - Reduced distance in general—transoceanic airplane flights at a greatly increased pace

Growth and Initial GDP

PWT 9.0, Chained PPP



WDI, 2011 PPP



Maddison, 2011 USD



# Discussion

## **Convergence and Its Absence:**

- What strikes you as important here?

# Roadmap for the Next Two Weeks

## 15. T Mar 17: 4.4. Convergence and Its Absence

- **Read Before:** J. Bradford DeLong (1986): Productivity Growth, Convergence, and Welfare: Comment <<https://github.com/braddelong/public-files/blob/master/delong-baumol.pdf>>
- **Read Before:** Dev Patel, Justin Sandefur, and Arvind Subramanian (2019): Everything You Know about Cross-Country Convergence Is (Now) Wrong <<https://www.piie.com/blogs/realtime-economic-issues-watch/everything-you-know-about-cross-country-convergence-now-wrong>>
- **Slides:** <<https://github.com/braddelong/public-files/blob/master/econ-135-lecture-15.pptx>>
- **Start:** Assignment 7 (6 pts): <<https://bcourses.berkeley.edu/courses/1487685/assignments/8082488>> Tell Us What Is Happening to You, and What You Wish For; due Mar 20

## 16. Th Mar 19: 4.5. Inequality and Plutocracy

- **Slides:** <<https://github.com/braddelong/public-files/blob/master/econ-135-lecture-16.pptx>>
- **Finish:** Assignment 7 (6 pts): <<https://bcourses.berkeley.edu/courses/1487685/assignments/8082488>> Tell Us What Is Happening to You, and What You Wish For; due Mar 20
- **Start:** Assignment 8: character of modern economic growth paper; due Mar 25

## 17. Tu Mar 31: 4.6. The Development of Underdevelopment

- **Read After:** W. Arthur Lewis (1978): Evolution of the International Economic Order <<https://delong.typepad.com/sdj/2008/04/w-arthur-lewis.html>>
- **Slides:** <<https://github.com/braddelong/public-files/blob/master/econ-135-lecture-17.pptx>>
- **Finish:** Assignment 8: post-1500 growth accelerations paper; due Apr 1
- **Start:** Assignment 9: character of modern economic growth paper; due Apr 8

## 18. Th Apr 2: Touring the Continents: 5.1. Western Europe, North America, and South America

- **Read Before:** Joel Mokyr (1990): *Lever of Riches*, chapter 10 Britain and Europe <<https://delong.typepad.com/files/mokyr-lever-europe.pdf>>
- **Read Before:** John Coatsworth (2008): Inequality, Institutions and Economic Growth in Latin America <<https://delong.typepad.com/files/coatsworth-institutions.pdf>>
- **Slides:** <<https://github.com/braddelong/public-files/blob/master/econ-135-lecture-18.pptx>>

# Big Ideas: Lecture 15: Convergence & Its Absence

**Takeaways from this class:**



# Catch Our Breath...

- Ask a couple of questions?
- Make a couple of comments?
- Any more readings to recommend?



# Notes



# Coronavirus!

~~With 31 deaths in the U.S. as of March 11, a 1% death rate, and up to 4 weeks between infection and death, that means that as of Feb 12 there were 3100 coronavirus cases in the United States.~~

~~With 73 deaths in the U.S. as of Mar 16, a 1% death rate, and up to 4 weeks between infection and death, that means that as of Feb 17 there were 7300 coronavirus cases in the United States~~

~~If it is doubling every seven days, then now about 116,000 people have and in the next week about 116,000 more people in the U.S. will catch coronavirus—which means 1/2700, currently 3000 of the 7.6 million inhabitants of San Francisco Bay. Touch a hard surface that any of those 3000 has touched in the last 48 hours, and the virus has a chance to jump to you...~~

~~These numbers could be five times too big. These numbers are probably not five times too small unless the thing is a lot less deadly, and there are a lot of asymptomatic cases...~~

- What is wrong with this analysis?

# MOAR Coronavirus!

**As of March 16: Things are not moving in the right direction:**

- What is the  $R_0$ ?
- How can the  $R_0$  be changed?
- How will the  $R_0$  change?
- What is the asymptote share of the population?
- What is the mortality rate?

Coronavirus Cases:

**179,836**

[view by country](#)

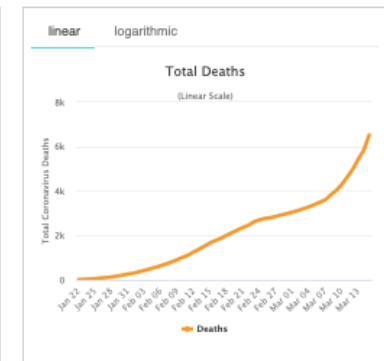
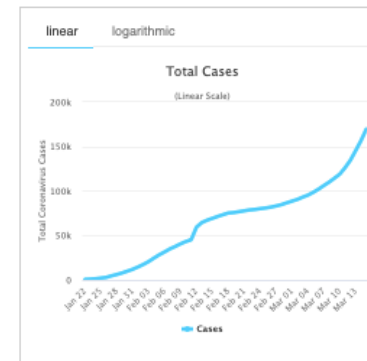
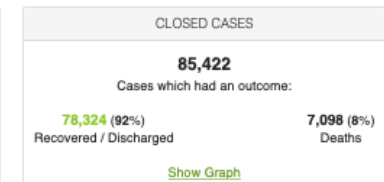
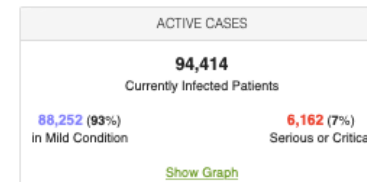
Deaths:

**7,098**

Recovered:

**78,324**

Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	Active Cases	Serious, Critical	Tot Cases/ 1M pop
<a href="#">China</a>	80,880	+36	3,213	+14	67,819	9,848	3,226	56.2
<a href="#">Italy</a>	27,980	+3,233	2,158	+349	2,749	23,073	1,851	462.8
<a href="#">Iran</a>	14,991	+1,053	853	+129	4,590	9,548		178.5
<a href="#">Spain</a>	9,428	+1,440	335	+41	530	8,563	272	201.6
<a href="#">S. Korea</a>	8,236	+74	75		1,137	7,024	59	160.6
<a href="#">Germany</a>	7,241	+1,428	15	+2	65	7,161	2	86.4
<a href="#">France</a>	5,423		127		12	5,284	400	83.1
<a href="#">USA</a>	4,186	+506	73	+5	73	4,040	12	12.6
Switzerland	2,353	+136	19	+5	4	2,330		271.9
<a href="#">UK</a>	1,543	+152	55	+20	52	1,436	20	22.7
Netherlands	1,413	+278	24	+4	2	1,387	45	82.5
Norway	1,323	+67	3		1	1,319	27	244.0



# MOAR Coronavirus!

**As of March 10: Things are not moving in the right direction:**

- What is the  $R_0$ ?
- How can the  $R_0$  be changed?
- How will the  $R_0$  change?
- What is the asymptote share of the population?
- What is the mortality rate?

Coronavirus Cases:

**125,599**

[view by country](#)

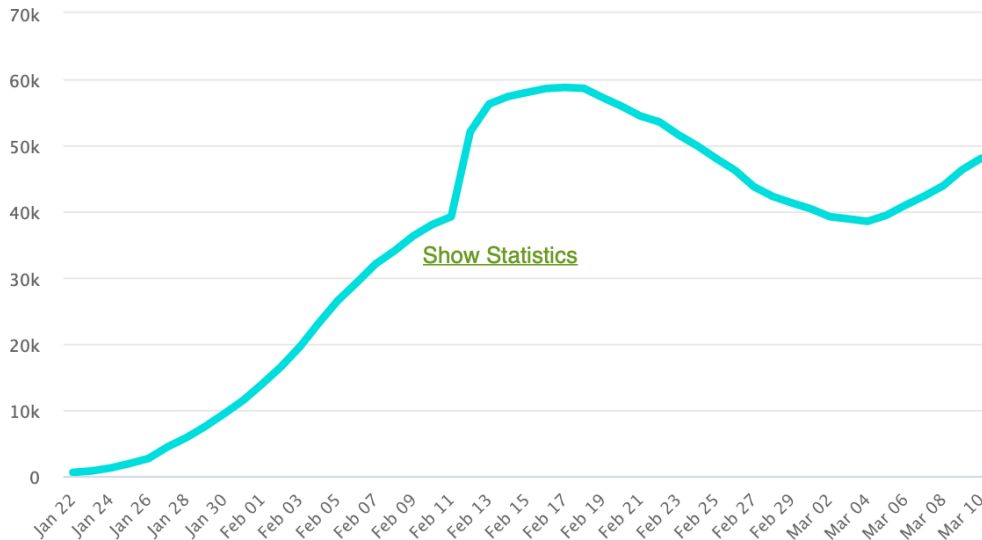
Deaths:

**4,605**

Recovered:

**67,051**

## ACTIVE CASES



## ACTIVE CASES

**53,943**

Currently Infected Patients

**48,025 (89%)**  
in Mild Condition

**5,918 (11%)**  
Serious or Critical

[Show Graph](#)

## CLOSED CASES

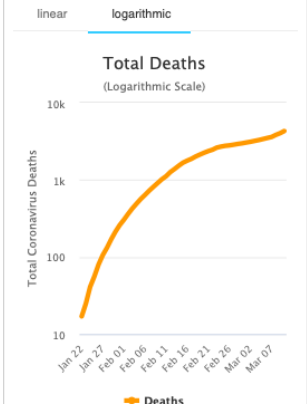
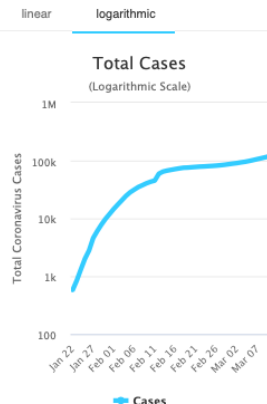
**71,656**

Cases which had an outcome:

**67,051 (94%)**  
Recovered / Discharged

**4,605 (6%)**  
Deaths

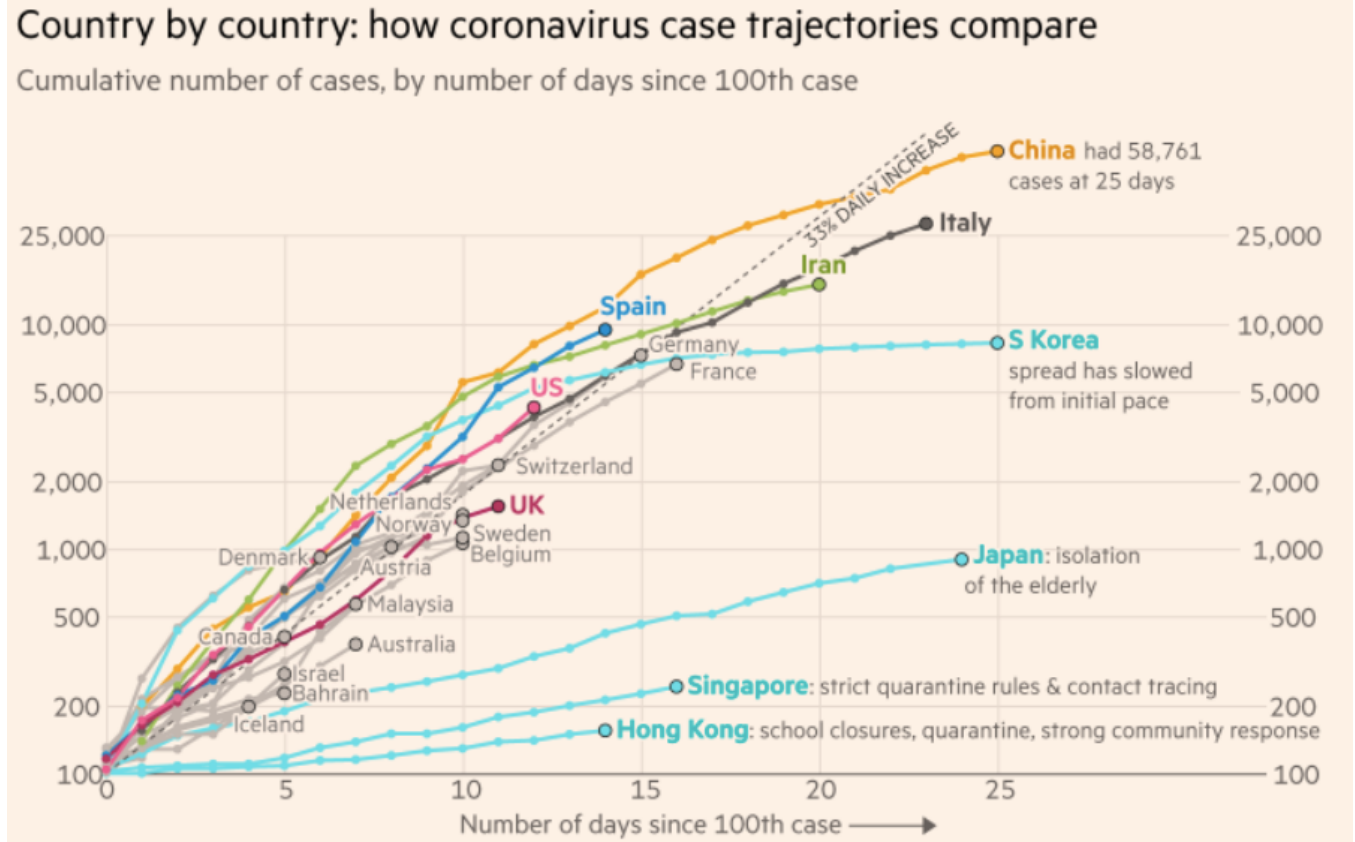
[Show Graph](#)



# MOAR Coronavirus!

## What I am watching:

- **Max Roser & Hannah Ritchie:** *Coronavirus Disease (COVID-19)* <<https://ourworldindata.org/coronavirus>>...
- **Worldometer:** *Coronavirus Update (Live)* <<https://www.worldometers.info/coronavirus/>>: '125,599 Cases and 4,605 Deaths from COVID-19 Virus Outbreak...
- **FT Coronavirus Tracker** <<https://www.ft.com/content/a26fbf7e-48f8-11ea-aeb3-955839e06441>>
- <<https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html>>



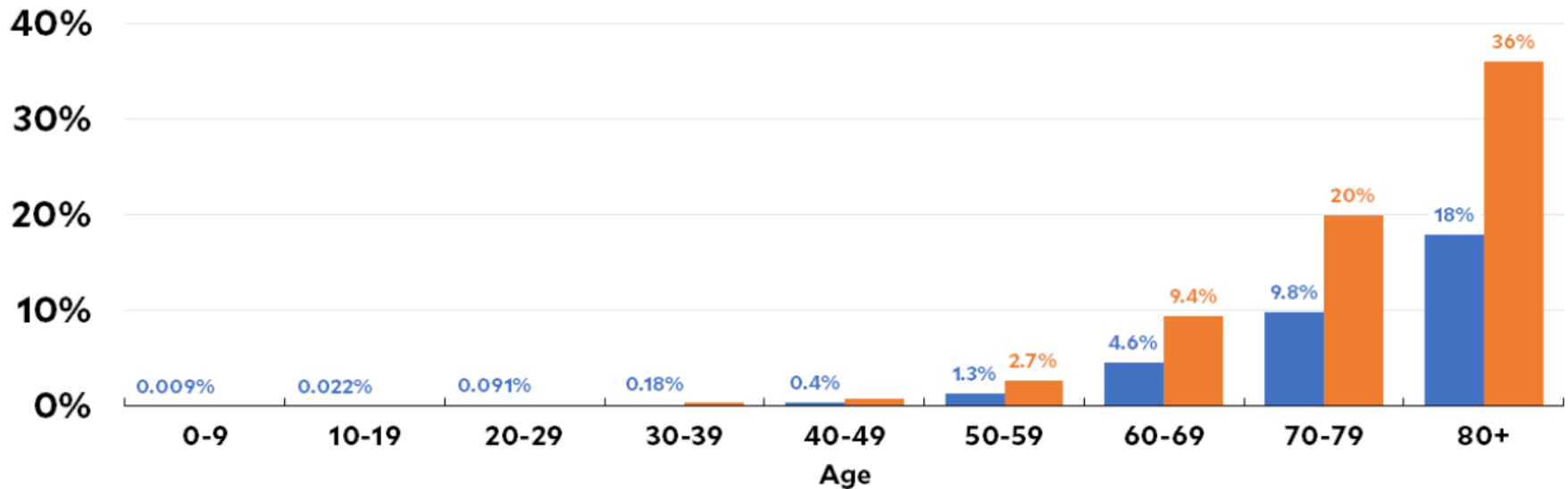
# MOAR Coronavirus!

## It's a Thing for Geezers!

- Mortality for the Youngs very low...
- It's the flu for them...

### Death Rate From Coronavirus

■ = All Infections, ■ = Only Symptomatic Infections



Source: Riou et al.

Mother Jones

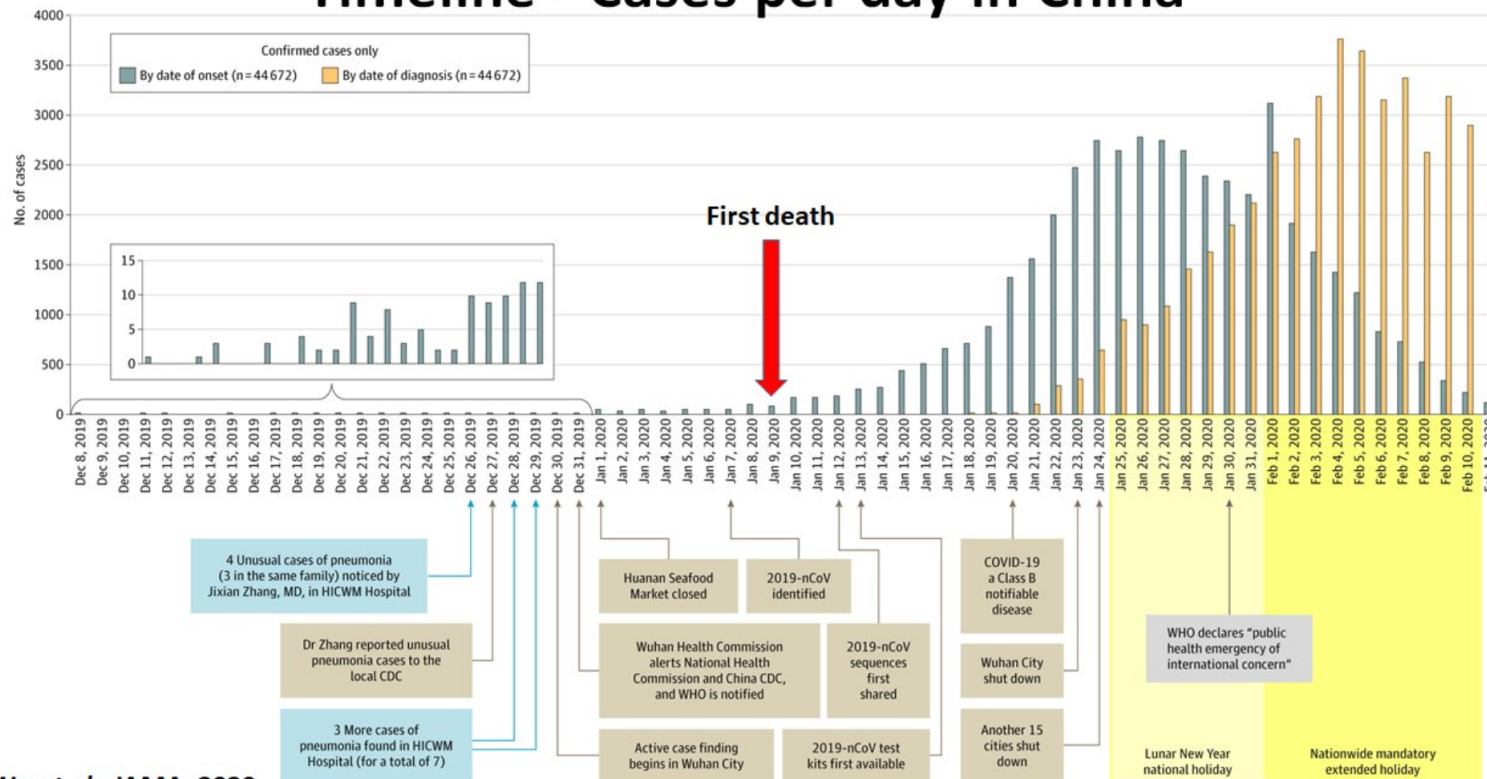


# MOAR Coronavirus! II

## China Beat It!

- Shut down Wuhan when 200 cases per day
- That seems to have been a good decision

## Timeline - Cases per day in China





# MOAR Coronavirus! III

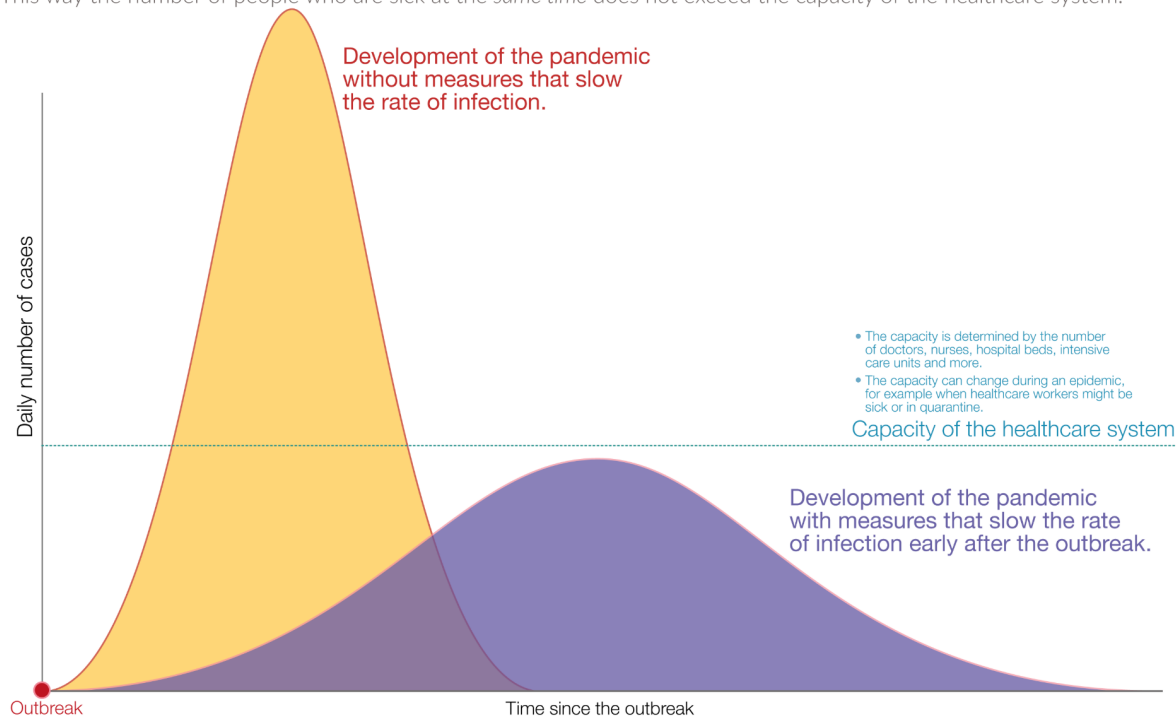
## When Is It Appropriate to Move on This?

- Immediate social distancing...
- Self-isolate if you have a cough and a fever...
- Hope that warmer temperatures will do to this what they did to SARS...
- Otherwise, when do you want to start spreading out transmission. It seems that early is as good as later...

In the outbreak of an epidemic *early* counter measures are important

Our World  
in Data

Their intention is to 'flatten the curve': to lower the rate of infection to spread out the epidemic. This way the number of people who are sick at the *same time* does not exceed the capacity of the healthcare system.



# Catch Our Breath...

- Ask a couple of questions?
- Make a couple of comments?
- Any more readings to recommend?



# Notes

