

Econ 113: January 22, 2015

- Framework: Economic Growth & Development
 - Solow Growth Model
- Productivity Growth Examples
 - Piracy and shipping
 - Tobacco farming
- Methodology: Critiquing Arguments
- Pre-colonial economic activity
- Model: Gains from Trade

Framework: Growth & Development

- Economic growth
 - ↑ real GDP per capita
 - ↑ living standards
- Economic development
 - Infrastructure
- In the presence of inequities
 - Note that neither growth nor development focuses *per se* on inequality, distributional issues, power, discrimination, etc.

Solow growth model Productivity growth Critiquing arguments Pre-colonial economic activity

Table 1. Economic Growth Rates
(average annual percentage increase
of Real GDP per capita)

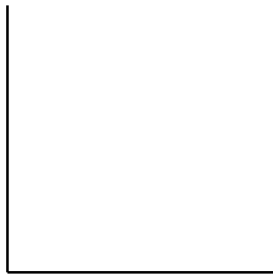
	U.S.	14 countries
1820-1870	1.5	0.9
1870-1989	1.9	1.6
1950-1973	2.2	3.9
1973-1989	1.6	2.2
For comparison: data computed by Prof. Olney with real GDP per capita data on BEA website (www.bea.gov)		
1950 - 1973	2.5	
1973 - 1989	2.0	
1989 - 2007	1.8	

Table 2. GNP per capita, U.S.

	(1989 \$)	Annual Growth Rate from Previous Date
1710	\$ 550	
1775	750	0.5 %
1840	1,350	0.9
1880	2,650	1.7
1929	6,150	1.7
1945	10,450	3.4
1960	11,100	0.4
2000	27,857	2.3

Economic Growth

- Production Possibilities Frontier
- Sources of growth?



Solow growth model Productivity growth Capital accumulation Technological progress

Solow Growth Model

- More formally. . .

$$Y = A \cdot F(K,L)$$

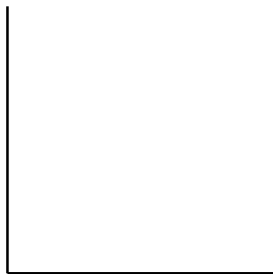
K stands for capital: machines & buildings

L stands for labor: people, whether free or slave

Solow growth model Productivity growth Capital accumulation Technological progress

Solow Growth Model

- More formally. . .
- $$Y = A \cdot F(K,L)$$



Solow growth model Productivity growth Capital accumulation Technological progress

Solow Growth Model, cont

Solow growth model Productivity growth Capital accumulation Technological progress

We need to expand that basic model

- Agriculture matters, too:

$$Y = A \cdot F(K, L, T)$$

- And government capital & human capital matter, too:

$$Y = A \cdot F(K_p, K_G, K_H, L, T)$$

Solow growth model Productivity growth Government capital Human capital

More expansions

- And so does labor force participation growth:

$$Y = A \cdot F(K_p, K_G, K_H, L, T)$$

Solow growth model Productivity growth Government capital Human capital

“A” measures “total factor productivity”

- What causes changes in “A” ?
exogenous forces?

endogenous forces?

Solow growth model Productivity growth Government capital Human capital

Table 3. Sources of Economic Growth

period	Share attributable to . . .			
	labor	capital	land	productivity
1840-1860	49	26	10	15
1870-1930	43	27	4	27
1940-1990	41	14	0	45

Transportation & Distribution

- Costs of production include:

- ↓ Shipping costs due to
 - ↓ port time
 - ↓ piracy

Agriculture

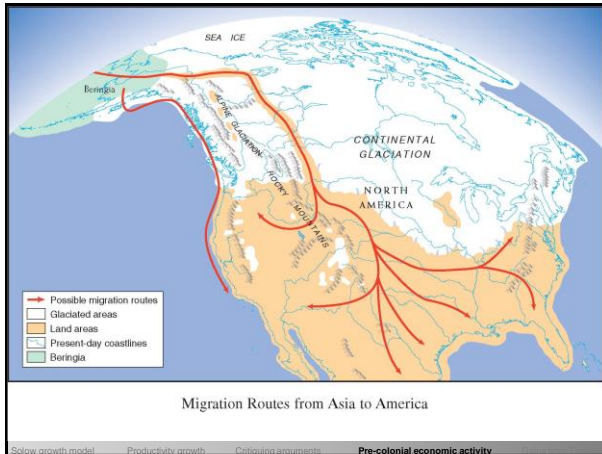
- ↑ productivity in tobacco, pre-1650

Methodology: Critiquing Arguments

- Think of this as “How to be an economist”
- Olney 5-step Method:
 - 1) Replicate the argument
 - 2) Identify assumptions
 - 3) Change an assumption
 - 4) Argue to conclusion
 - Same conclusion? Go back to #3*
 - New conclusion? Go on to #5*
 - 5) Defend your alternative assumption: Verify empirically if evidence exists or construct a tight logical argument in favor of the validity of your alternative assumption

Pre-Colonial Native American History

- Migration across Bering Strait
 - Or possibly along the coastal waters
 - Subject of debate in archeological circles
 - In general, well more than 10,000 years ago, from Asia



Pre-Colonial Native American History

- Migration across Bering Strait
 - Or possibly along the coastal waters
 - Subject of debate in archeological circles
 - In general, well more than 10,000 years ago, from Asia
- Hunters
 - Mega-fauna
 - Clovis point
 - Folsom point

Clovis Point

- 12,000 years ago
- Found throughout U.S. and Canada



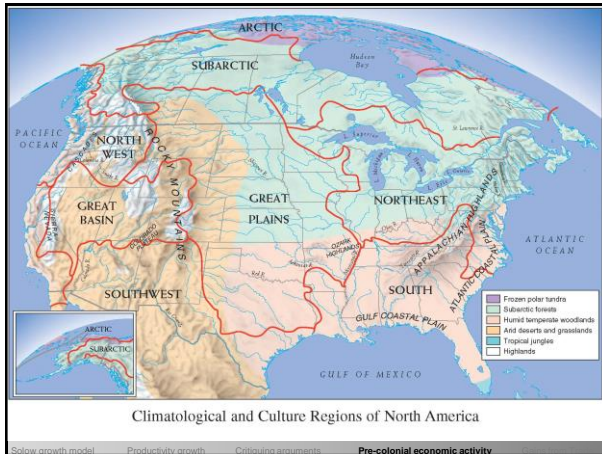
http://www.webdyer.com/artifacts_fossils/artifacts_thumb_gallery_02/clovis%20point%20illinois.jpg

Folsom Point

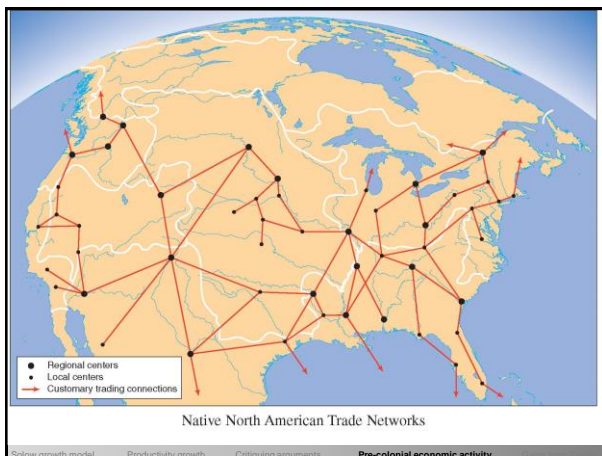
- 10,000 years ago
- Found in New Mexico, embedded in bison ribs

- [Photos](#)





- ARCTIC: fishing; sea-mammal hunting
- SUB-ARCTIC: subsistence hunting
- NORTHWEST COAST: salmon fishing
- FAR WEST: salmon fishing, small game hunting, & gathering
- SOUTHWEST: irrigated farming; pottery making, weaving
- GREAT PLAINS: farming; then, bison hunting
- EASTERN WOODLANDS
 - North: hunting, gathering, limited agriculture
 - South: settled agriculture; trade in crafts

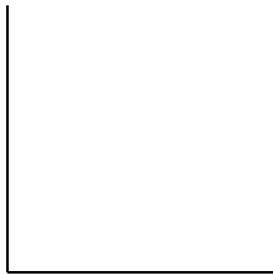


Cahokia

- <http://ngm.nationalgeographic.com/2011/01/cahokia/img/cahokia-990.jpg>

Gains from Trade

- Production Possibilities Frontier



Slow growth model Productivity growth Colonial economies Pre-colonial economic activity Gains from Trade

Gains from trade exist if . . .

1. opportunity costs differ
 - If natural endowments differ, then opportunity costs differ
2. transportation network exists
3. information flows occur
4. markets for trade exist (with property rights scheme)

Slow growth model Productivity growth Colonial economies Pre-colonial economic activity Gains from Trade

Gains from Trade

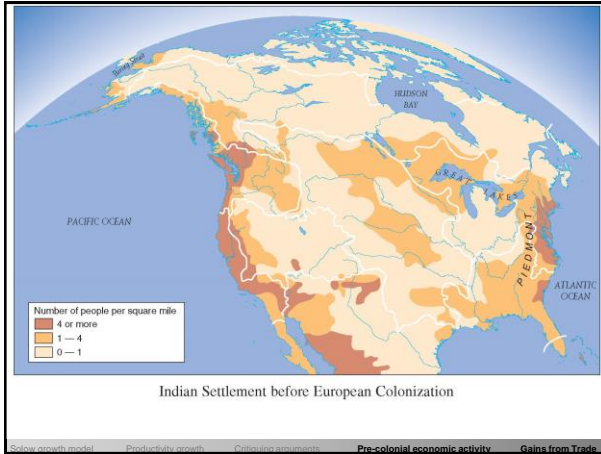
- Trade improves [every community's] social welfare
 . . . Assuming what?

Slow growth model Productivity growth Colonial economies Pre-colonial economic activity Gains from Trade

Summarizing, pre-Columbus

- Very settled, especially along coasts and through South
- Native American Population
 - About 4 million circa 1500
 - Less than ½ million by 1700
- Many different tribes / nations
- Natural resources determined activity
- Trade existed

Slow growth model Productivity growth Colonial economies Pre-colonial economic activity Gains from Trade



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