

Political Economy of Development

Week 1: Introduction and Overview
of Economic Growth Theory

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Logistics

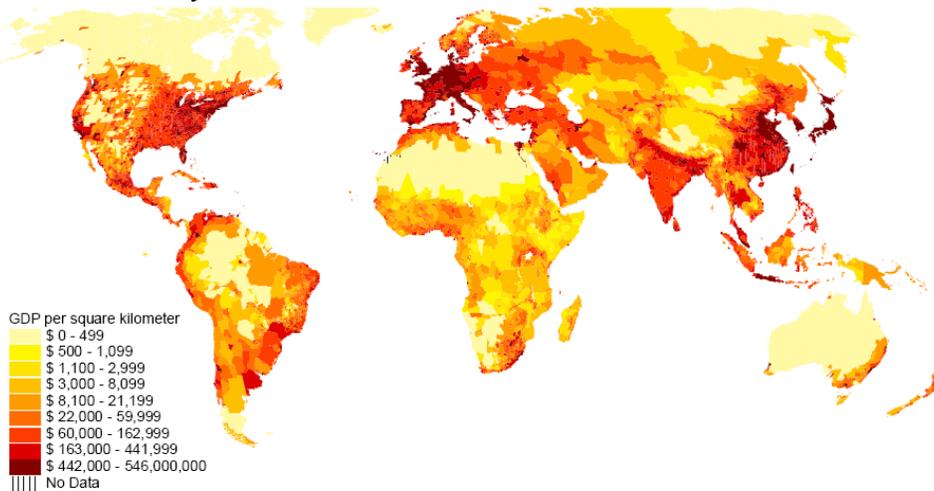
- Who are you?
- Course supply and demand
- Syllabus

Some empirical patterns and puzzles to address

1. Aggregate income and growth
2. Structural change
3. Political freedoms

Large variations in levels of income and production

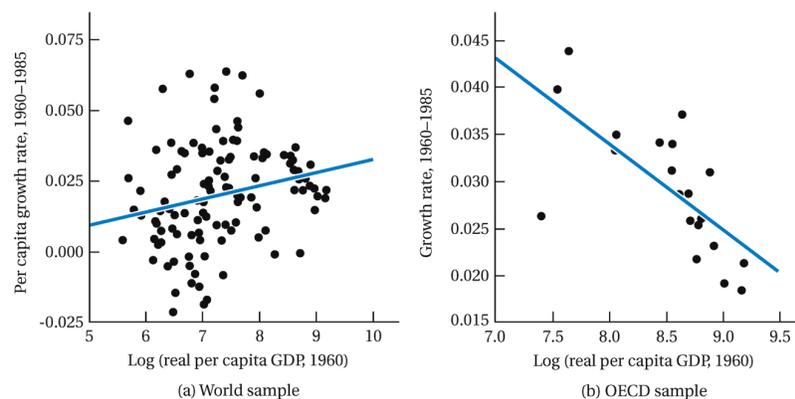
GDP Density



Mellinger, A.D., J.D. Sachs, and J.L. Gallup (1999). "Climate, Water Navigability, and Economic Development."

Convergence among OECD Countries but Divergence in the World as a Whole

Convergence =

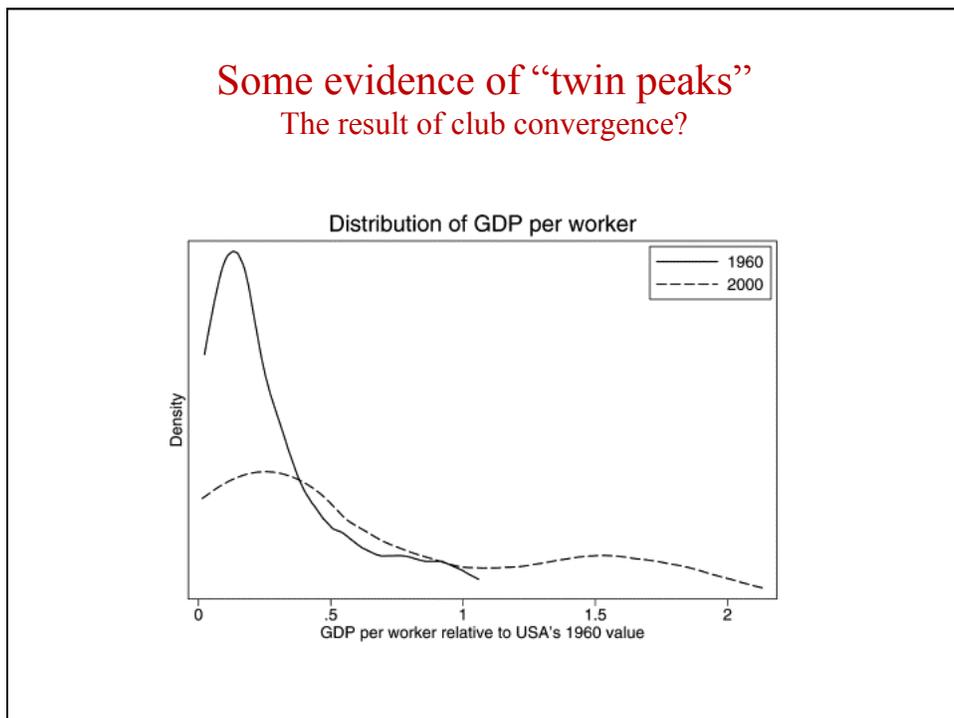
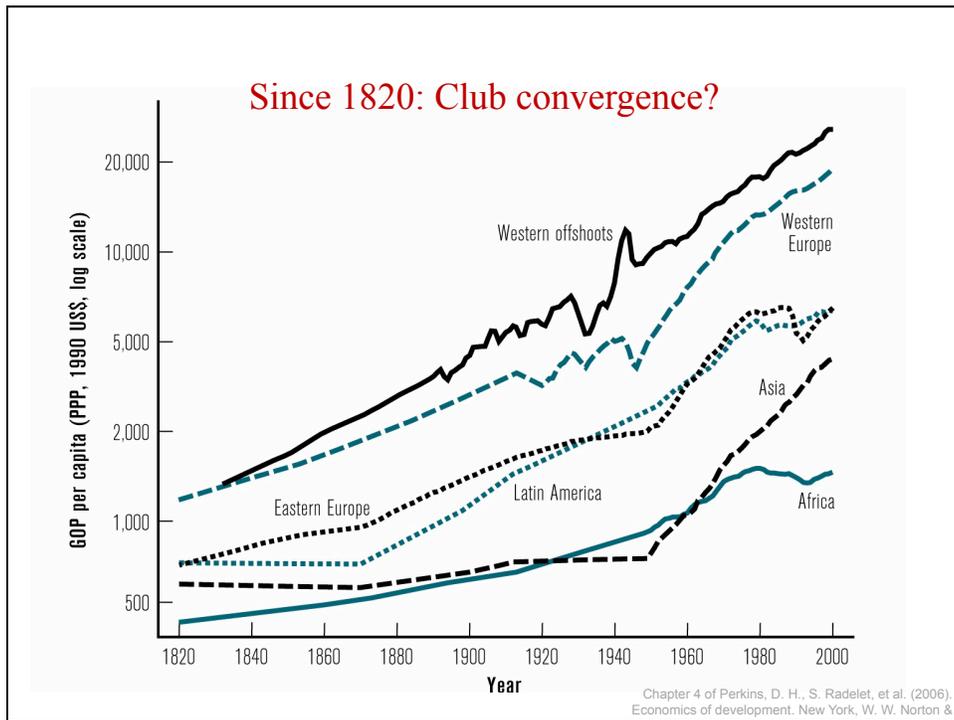


Source: Robert Barro and Xavier Sala-i-Martin, *Economic Growth* (New York: McGraw-Hill, 1995), p. 27. Reprinted with permission.

Historically we see divergence

	Income per capita relative to Western Europe			
	0	1000	1820	1998
Western Europe	1.00	1.00	1.00	1.00
Western Offshoots	0.89	1.00	0.97	1.46
Japan	0.89	1.06	0.54	1.14
Latin America	0.89	1.00	0.54	0.32
Eastern Europe /USSR	0.89	1.00	0.54	0.24
Asia (excluding Japan)	1.00	1.13	0.47	0.16
Africa	0.94	1.04	0.34	0.08

Maddison, Angus. 2001. *The World Economy: A Millennial Perspective*: OECD Publishing.



Or will we witness convergence in the coming century?

“Africa is now one of the world’s fastest-growing regions” – The Economist, Jan 6th 2011



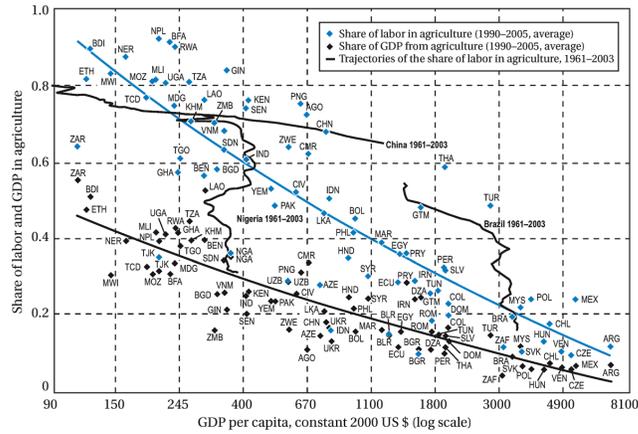
http://www.economist.com/blogs/dailychart/2011/01/daily_chart

These trends do not always capture
the massive structural change that
typically accompanies development

Ideally growth and development theories
can help account for this structural change

Structural change: Composition of production

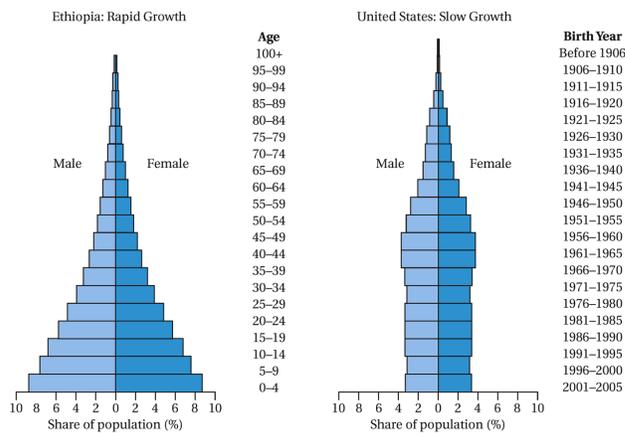
As countries develop, shares of GDP and labor in agriculture tend to decline



Source: World Bank, *World Development Report, 2008*. Used with permission.
 Note: The list of 3-letter codes and the countries they represent can be found on page xviii of the above report.

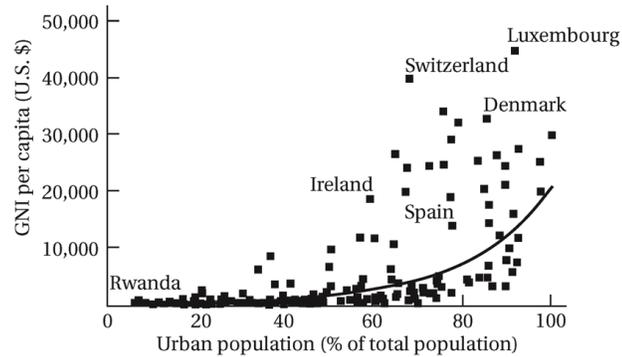
Structural change: Demographic transition

Fall in birth rates lag behind falling death rates



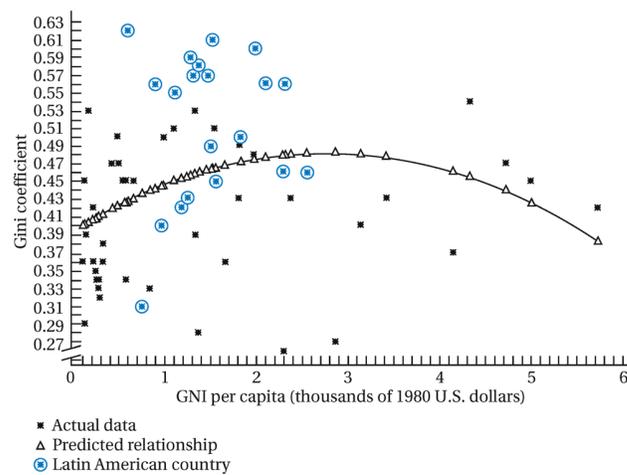
Source: *Population Bulletin 62* (2007): fig. 6. Used with permission.

Structural change: Massive population flows Migration and urbanization

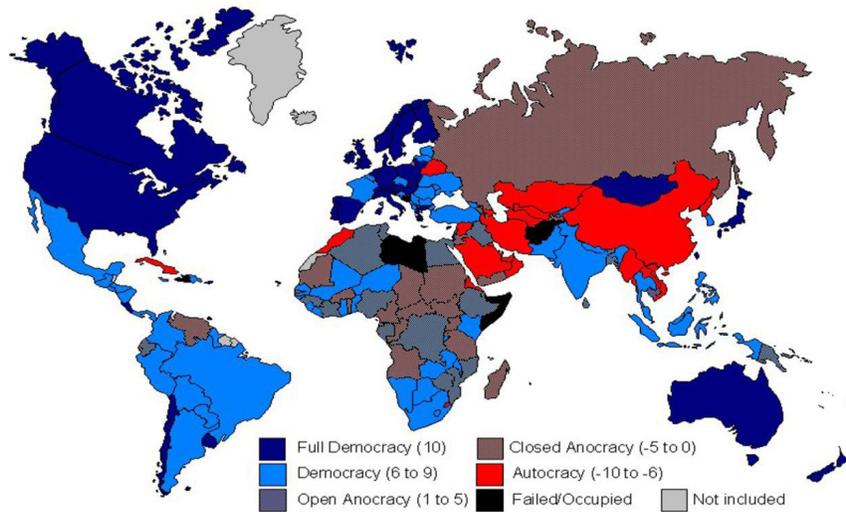


Source: UN-Habitat, "State of the World's Cities, 2001," <http://www.unchs.org/Istanbul+5/86.pdf>. Reprinted with permission.

Structural change: Inequality The "Inverted-U" Kuznets Curve

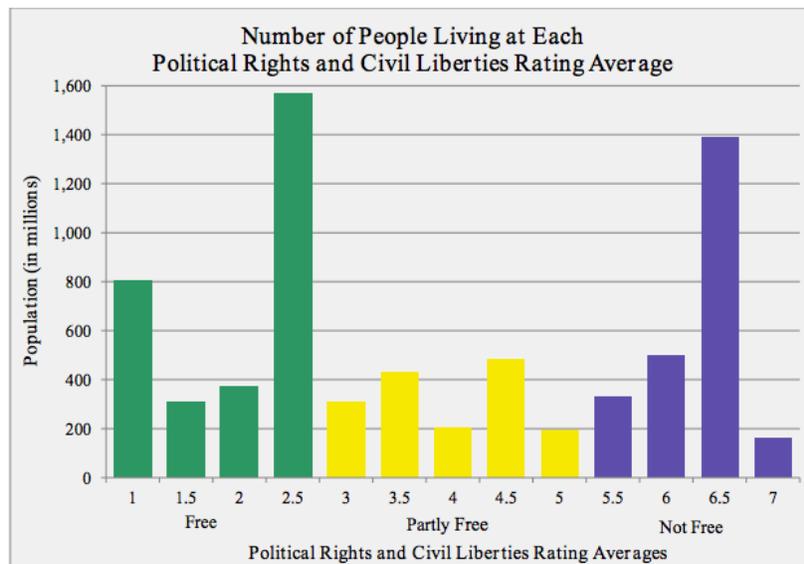


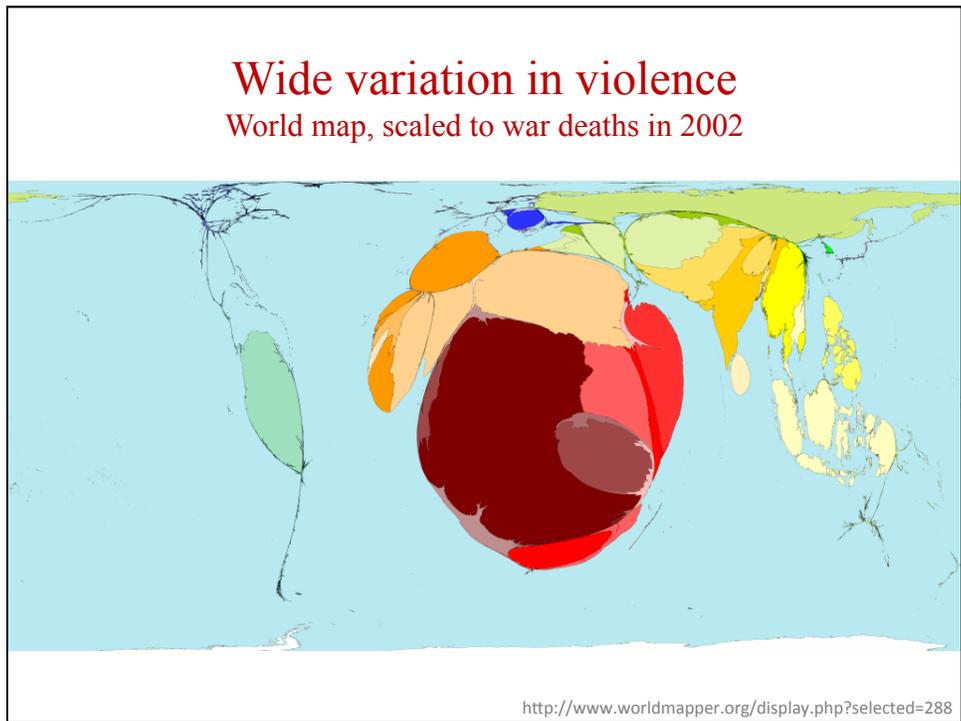
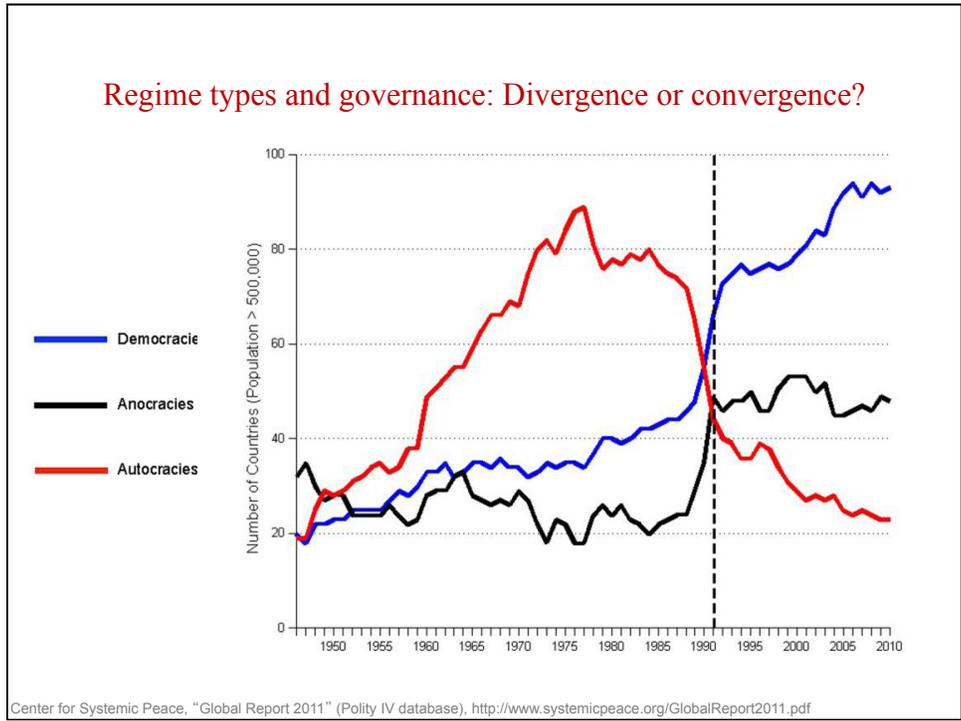
Finally, we also see wide variation in regime type
 Distribution of Governance Regimes, 2011



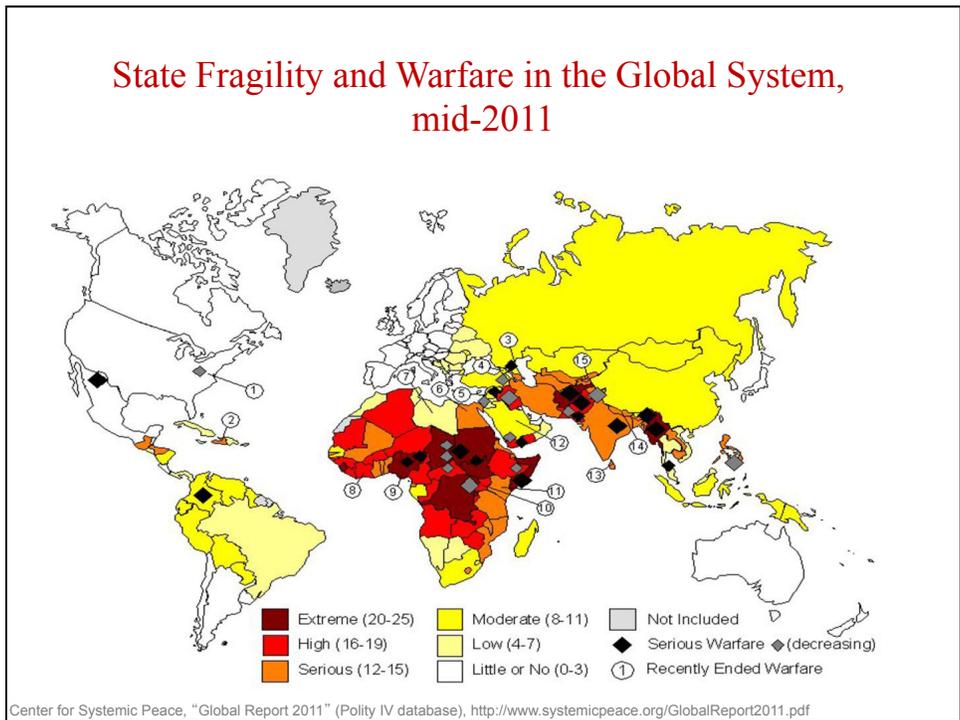
Center for Systemic Peace, "Global Report 2011" (Polity IV database), <http://www.systemicpeace.org/GlobalReport2011.pdf>

Bimodal political freedoms?
 Freedom house index, 2013

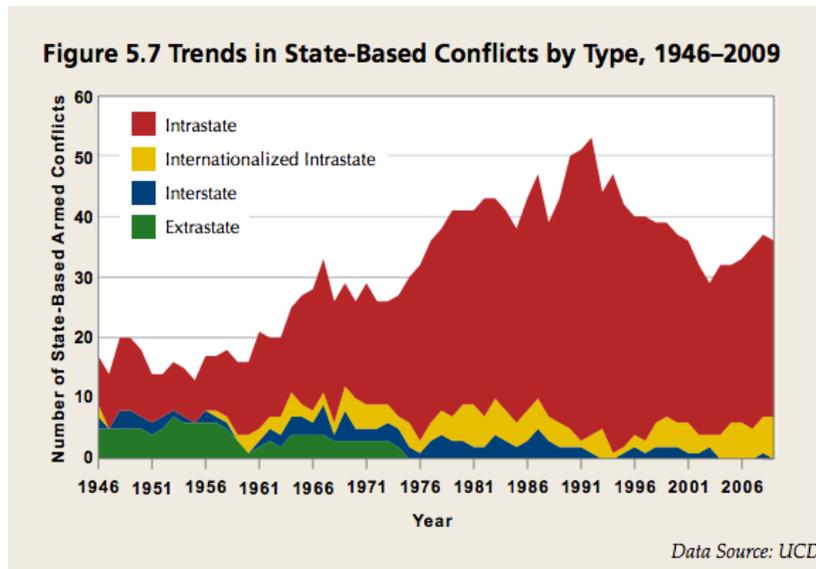




State Fragility and Warfare in the Global System, mid-2011



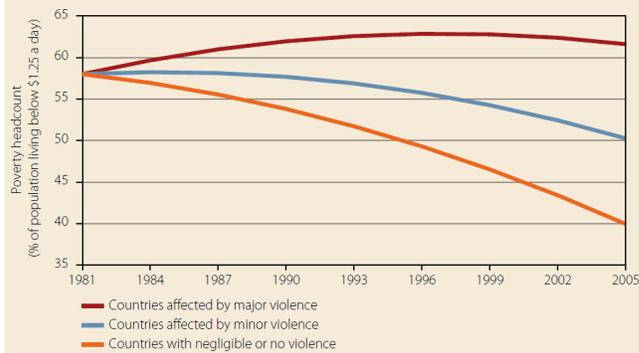
Falling levels of conflict (maybe)



Violence disrupts development? Or underdevelopment disrupts violence?

The gap in poverty is widening between countries affected by violence and others

New poverty data reveal that poverty is declining for much of the world, but countries affected by violence are lagging behind. For every three years a country is affected by major violence (battle deaths or excess deaths from homicides equivalent to a major war), poverty reduction lags behind by 2.7 percentage points.

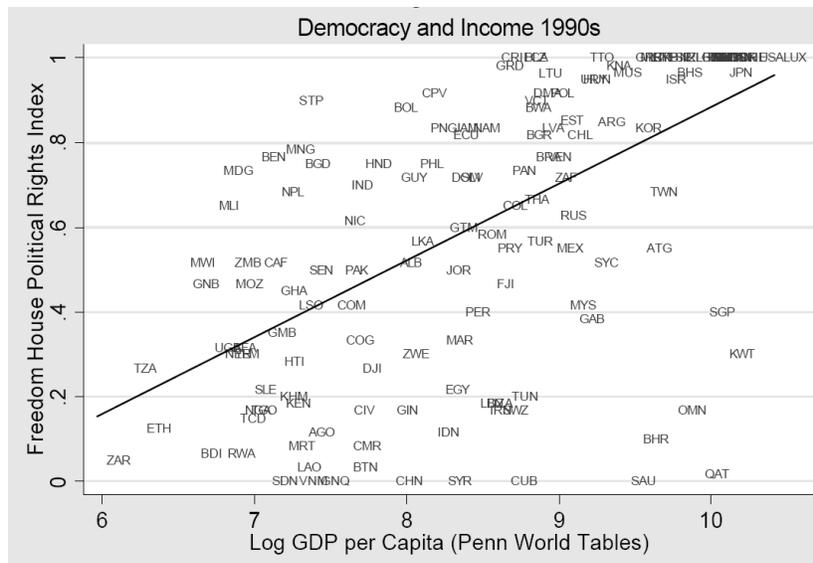


Sources: WDR team calculations based on Chen, Ravallion, and Sangraula 2008 poverty data (available on POVCALNET (<http://iresearch.worldbank.org>)).

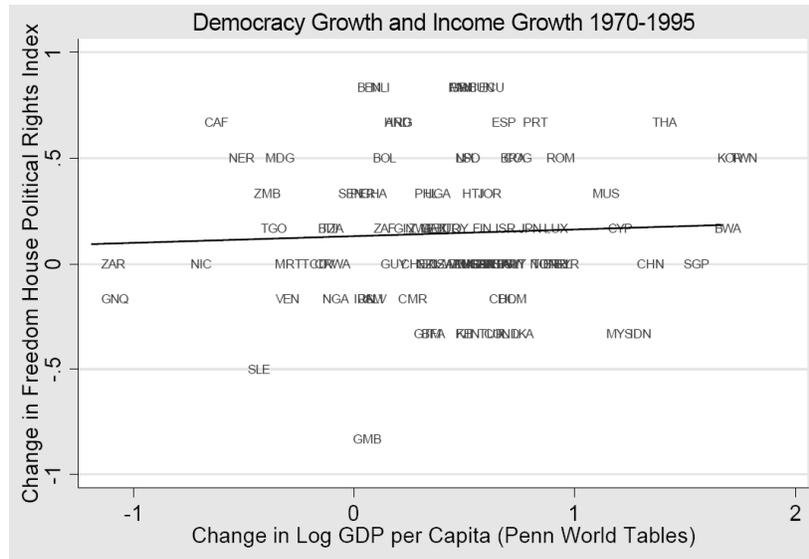
Note: Poverty is % of population living at less than US\$1.25 per day.

Source: WDR 2011

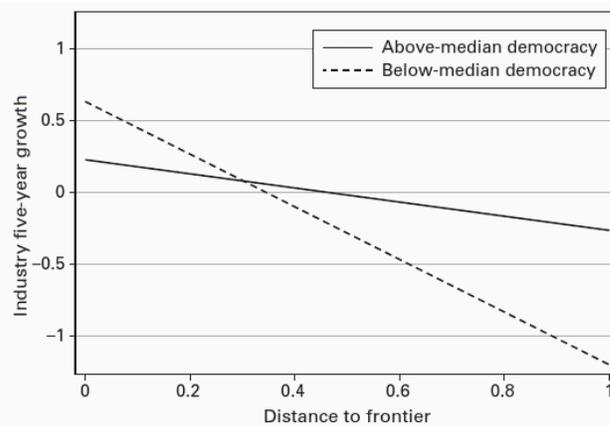
Rich countries tend to be democracies



But growth in democracy not correlated with growth in incomes



Also, the growth-democracy relationship may not be simple or linear



A conceptual framework for the political economy of development

(Preliminary and incomplete)

The big questions of development:

- I. Why are some societies so poor, volatile, unequal and violent?
- II. Why have some societies become more wealthy, stable, equal and peaceful?
- III. What policies or reforms help achieve this?

So what is the political economy of development?

1. Political choices, institutions, and forms of government → Economic performance?
2. Economic performance → Political choices, institutions, and forms of government?
3. Where do political choices, institutions, and forms of government come from?
4. How to reform policy, institutions, and form of government?

**1. Political choices, institutions,
and forms of government →
Economic performance?**

Starting point: What leads to low levels and growth rates of income?

- Proximate answer:
 - The country has not accumulated factors (H, K)
 - They are not combining factors effectively (A)
- This proximate analysis is the domain of growth models and growth accounting
- So we need to ask why politics and institutions can affect A , H , and K ?

Why would K, H, A and g_Y be low in some countries? How can we explain the patterns we see (e.g. twin peaks)? Three major kinds of stories (models)

1. Neoclassical view
 - Function of different starting points and possibly different steady states
 - e.g. Solow-Swan model
 - Endogenous growth models (e.g. AK model)
 - Evidence not necessarily consistent with predictions of the models
 - e.g. higher marginal returns to factors and higher growth rates in poor countries)
 - Overall, may hold for middle- and high-income countries
2. Poverty trap
 - Multiple equilibria
 - Marginal changes in factors not sustained
 - Equilibria are “attractive”
 - Key features: Some form of increasing returns, plus some form of constraint
3. Rigidities
 - Not trapped, but structural change, factor accumulation, or technical advancement impeded and slowed
 - A middle view between neoclassical and poverty trap?

Potential traps and rigidities

Through the lens of politics and institutions

- a. Economic market failure
 - Incomplete credit and risk markets
 - On its own: Rigidity
 - Combined with increasing returns or production discontinuities (e.g. fixed costs): Poverty trap
 - These market failures may have political/institutional roots
 - Obvious source: Political instability
 - Political roots of institutional failure unexplored theoretically and empirically

- b. Weak incentives to invest or innovate
 - Uncompetitive markets
 - Protection, regulation, excessive market power
 - Stifling of creative destruction
 - High rates of risk or depreciation
 - Instability: Crime, disasters, social conflict
 - Poor protection of property rights
 - Poor rule of law
 - Weak institutions of contract enforcement or dispute resolution
 - State expropriation, or punitive taxes

Potential traps and rigidities

Through the lens of politics and institutions

- c. Economic externalities and coordination
 - Demand externalities
 - e.g. Require high incomes to produce at high level
 - e.g. “Big Push model” of Rosenstein-Rodan
 - Supply externalities
 - e.g. Shared technological investments (R&D, linkages)
 - e.g. Hirschman
 - Coordination a political problem?

- d. Externalities from public goods
 - Akin to a supply externality
 - Constrained by quality of governance
 - State capacity, bureaucracy
 - Inhibited by clientelism, corruption
 - Constrained by societal features and fractures?
 - Levels of inequality
 - Social cleavages, heterogeneity

Potential traps and rigidities

Through the lens of politics and institutions

- e. Rigidities in structural change
 - Often modeled as dual economy models
 - Traditional and modern economies function in parallel but with limited interaction
 - e.g. Lewis model of unlimited supply of labor, Malthusian models, Demographic transition
 - Difficulties in the transfer of factors from traditional to modern sectors
 - E.g. Barriers to migration, skills acquisition, etc.
 - Self-enforcing factors in the traditional sector inhibit modern sector growth
 - e.g. Malthusian population growth in traditional sector
 - Some of these factors could be political/institutional
 - e.g. Traditional culture and institutions enforce contracts better than in modern sector (cities)
 - Norms of childbearing influencing demographic transition

- f. Beliefs and ideas
 - Ideology → bad policy
 - E.g. Communism and command economies
 - Herding, information cascades
 - Could lead to externalities and coordination problems

Potential traps and rigidities

Through the lens of politics and institutions

- g. Behavioral
 - Myopic or impulsive behavior
 - Typically applied to investment decisions (K)
 - Can be applied to policy choices? Institutional forms? Underexplored.
 - Overconfidence
 - Increases risk of conflict or attempts at oppression → More instability?
 - Bounded rationality
 - Limited information and processing means decisions have transaction cost
 - Institutions matter where there are costly transactions
 - Local mental models and subjective beliefs can shape political choices and local institutions

2. Economic performance → Political choices, institutions, and forms of government?

So far we have treated political choices, institutions and forms of government as exogenous to economic development.

Examples of economic performance affecting politics

- a. Modernization theory
 - Macro-level
 - Income and economic development → social change, democracy?
 - Micro-level
 - Impact of income on social and political behavior?
- b. Income → Reduced violence, increased stability
 - Increases state counter-insurgency capacity
 - Reduces likelihood of grievances, frustration-aggression
 - Increases opportunity cost of conflict
- c. Endogenous origins of institutions
 - Institutional and state development a product of investment (e.g. Besley and Persson)
 - Can be shaped by economic endowments

3. Where do political choices, institutions, and forms of government come from?

- a. What institutions are important?
 - “Economic” vs “political”
 - Formal versus informal
 - Dividing line with culture?
- b. Competing theories of institutional development
 - Endogenously determined
 - By economic actors to maximize efficiency (e.g. Coase, Williamson, etc.)
 - Strategically chosen to preserve power, bargaining between groups (e.g. Acemoglu and Robinson)
 - Somewhat exogenously determined
 - Byproduct of groups pursuing other interests (e.g. Tilly)
 - Initial conditions, historical accidents, and path dependence (e.g. Herbst)
 - Many others
- c. How persistent are institutions?
 - Often assumed to be quite persistent, but not always (e.g. Levitsky)

4. How to reform policy, institutions, and form of government?

- a. Can institutions be changed on the margin?
 - Ease of changing property rights, rule of law
 - Effectiveness of “parchment” changes
 - Feasibility of norm and informal institutional change
- b. What is the effectiveness of the tools available?
 - Aid
 - Military intervention
 - Information
- c. When does policy reform occur? Why does it succeed or fail?
 - Role of agency, interest groups, political incentives, ideology
 - Persistence of ideas and institutions
- d. Can reform be directed and planned?
 - Skeptics (Scott, Easterly, Hayek, Ferguson)

14 weeks

I. Intro to development theory

1. Introduction & growth theory
2. Structural change and poverty traps
3. Poverty and market failure: The micro level

II. Institutions and development

4. Instrumental institutions
5. History matters
6. Institutions: Evidence from the micro level
7. Impacts of development on democratization

III. Conflict

8. Micro-level impacts of conflict on development
9. Macro-level impacts of conflict
10. Aid and conflict

IV. Frontiers of micro-level PE

11. Democracy and accountability
12. Norms and behavior change
13. Building institutions at the micro level
14. TBA

A lightning tour of neoclassical growth and development

1. The Solow model
2. Endogenous growth models (AK model)
3. Extensions
4. Growth empirics

First, some notation and a calculus refresher

Working in continuous time

- Change in x over time $\frac{\partial x}{\partial t} = \dot{x}$
- Growth rate of x $g_x = \dot{x}/x$
- Chain rule $x = Y^a Z^b$
 $\dot{x} = aY^{a-1}Z^b \dot{Y} + bY^a Z^{b-1} \dot{Z}$
- Growth decomposition $x = Y^a Z^b$
 $\dot{x}/x = a \dot{Y}/Y + b \dot{Z}/Z$

Solow model

Factor accumulation

- Aggregate output (Y) produced by physical capital, K , human capital-adjusted labor or ‘effective labor’, HL , and Total Factor Productivity, A

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

- A is usually considered ‘technology’ or ‘organization’
- Endogenous factors (in this formulation): Y , K and L
- Crucial assumptions:
 - Constant returns to scale (CRTS) from increasing all factors
 - Diminishing returns to individual factors (production is concave)

Standard formulation

Equation 1: Per capita output as a function of capital per worker

- $F(\cdot)$ commonly takes a Cobb-Douglas form, assuming $H=1$

$$Y = AK^\alpha L^{1-\alpha}, \quad 0 < \alpha < 1$$

- α represents the share of income going to capital in the economy, with the remainder going to labor
- CRTS: sum of exponents on endogenous factors equals 1
- Assume $g_A = 0$ and $g_L = n$

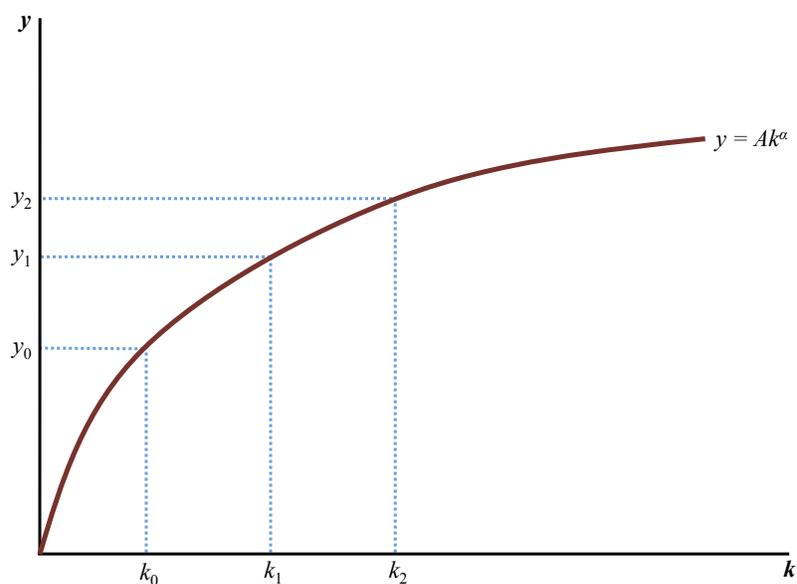
- Expressed in per person form: $y = Y/L, k = K/L$

$$Y \cdot (L/L) = AK^\alpha L^{1-\alpha} \cdot (L/L)$$

$$y = A(K/L)^\alpha (L/L)^{1-\alpha}$$

$$y = Ak^\alpha$$

Production function with diminishing returns



How does capital change over time?

Equation 2: Capital accumulation over time

- Capital increases with investment, I , and decreases with depreciation of existing capital, δK

$$\dot{K} = I - \delta K, \quad 0 < \delta < 1$$

- Assume that population saves a fixed fraction of output, s , and that all savings are investment: $I = sY$

$$\dot{K} = sY - \delta K$$

- Rewrite in capital per worker form:

$$\dot{k}/L = sy - \delta k$$

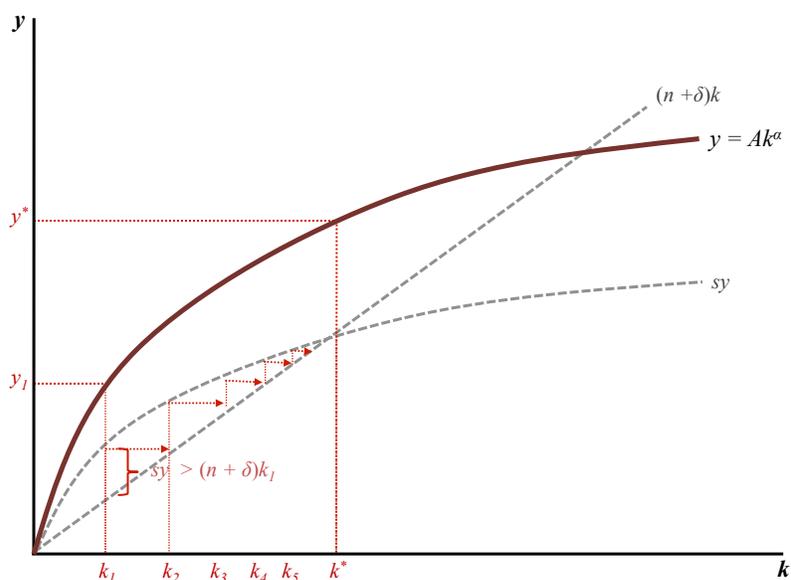
$$\dot{k} - nk = sy - \delta k \quad (*)$$

$$\dot{k} = sy - (n + \delta)k$$

*Apply chain rule to $k = K/L$. Solve for \dot{k}/L . Recall $\dot{L}/L = n$. Please demonstrate this to yourself at home.

Dynamics of the model (putting the two equations together)

e.g. Economy with an initially low level of capital per worker



What are the equilibrium levels of y and k (y^* and k^*)?

- In equilibrium, we know

$$sy^* = (n + \delta)k^*$$

$$sAk^{*\alpha} = (n + \delta)k^*$$

$$k^* = (sA/n + \delta)^{1/(1-\alpha)}$$

- Plug k^* into $y = Ak^\alpha$

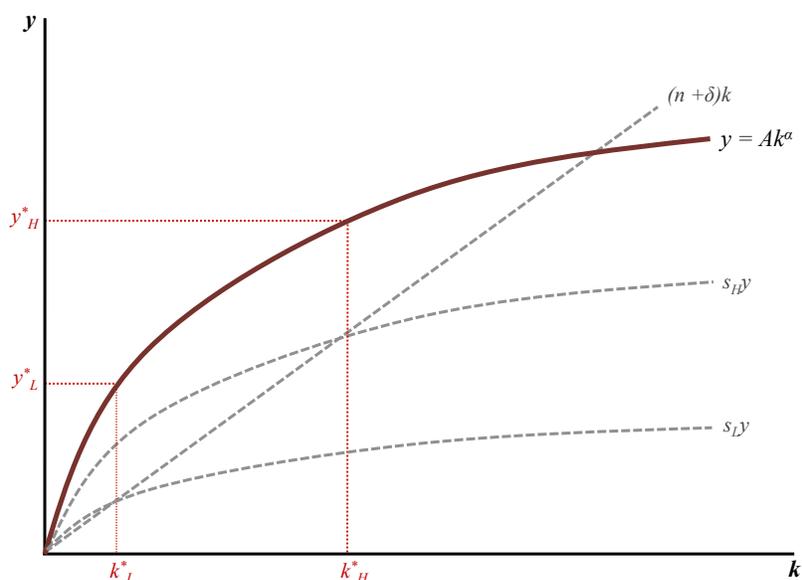
$$y^* = A^{a/(1-\alpha)} \cdot (s/n + \delta)^{1/(1-\alpha)}$$

- Note the comparative statics

$$\begin{aligned} \frac{\partial y^*}{\partial A} &> 0, & \frac{\partial y^*}{\partial s} &> 0, \\ \frac{\partial y^*}{\partial n} &< 0, & \frac{\partial y^*}{\partial \delta} &< 0, & \frac{\partial y^*}{\partial \alpha} &> 0 \end{aligned}$$

e.g. Compare high and low savings rates

In Solow world, only different exogenous parameters can explain why Botswana takes off while Congo stagnates



The economy has a single “steady state” (SS) equilibrium

- Recall

$$\dot{k} = sy - (n + \delta)k$$

- Thus

$$\dot{k}/k = s^{y/k} - (n + \delta)$$

- If g_k is steady then y/k must be steady.
- Thus the SS condition for this capital accumulation function is $g_y = g_k$

Important implications of this setup

- The economy has a single SS equilibrium
 - It converges to a point where savings equals depreciation and dilution
 - k is stationary at this point, and so y is stationary
 - But note that Y and K are growing at rate n
- Countries grow faster the further they are from steady state
 - The rate of increase of k is the vertical distance between the savings and the depreciation/dilution curve
- Model predicts convergence in cross-country incomes
 - If two countries have the same s , A , n and δ , they have the SS
 - The one with lower initial K should grow faster, until it catches up
 - Thus the returns on K (and hence interest rates) should be higher below SS
- Also predicts that income and capital stock eventually stop growing

Clearly we do not observe zero growth in developed countries.
What if we add exogenous technical change?

- Now, assume technology and organization improve at rate $g_A > 0$. What is the new steady state?
- By growth decomposition

$$\begin{aligned} y &= Ak^\alpha \\ \dot{y}/y &= A/A + \alpha k/k \\ g_y &= g_A + \alpha g_k \end{aligned}$$

- To find the SS growth rate, we can combine this decomposition with the SS condition, $g_{SS} = g_y = g_k$. Thus

$$\begin{aligned} g_{SS} &= g_A + \alpha g_{SS} \\ g_{SS} &= g_A / (1 - \alpha) \end{aligned}$$

- Thus in SS, y and k grow at fixed rate proportional to technical change.
 - There is steady state growth.
 - Note: You get a cleaner result, $g_{SS} = g_A$, if you start with the production function $Y = K^\alpha (AL)^{1-\alpha}$, where A is labor-enhancing (i.e. is akin to H above) rather than total factor productivity

What does capital accumulation look like with technical growth?

- Aggregate capital accumulation is unchanged

$$\dot{K} = sY - \delta K$$

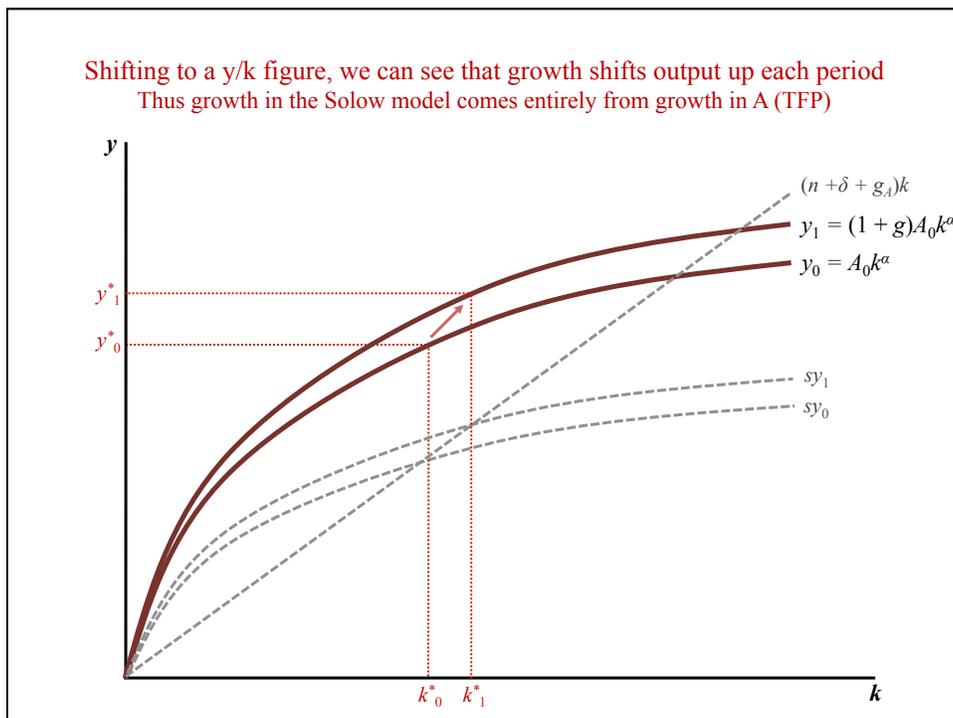
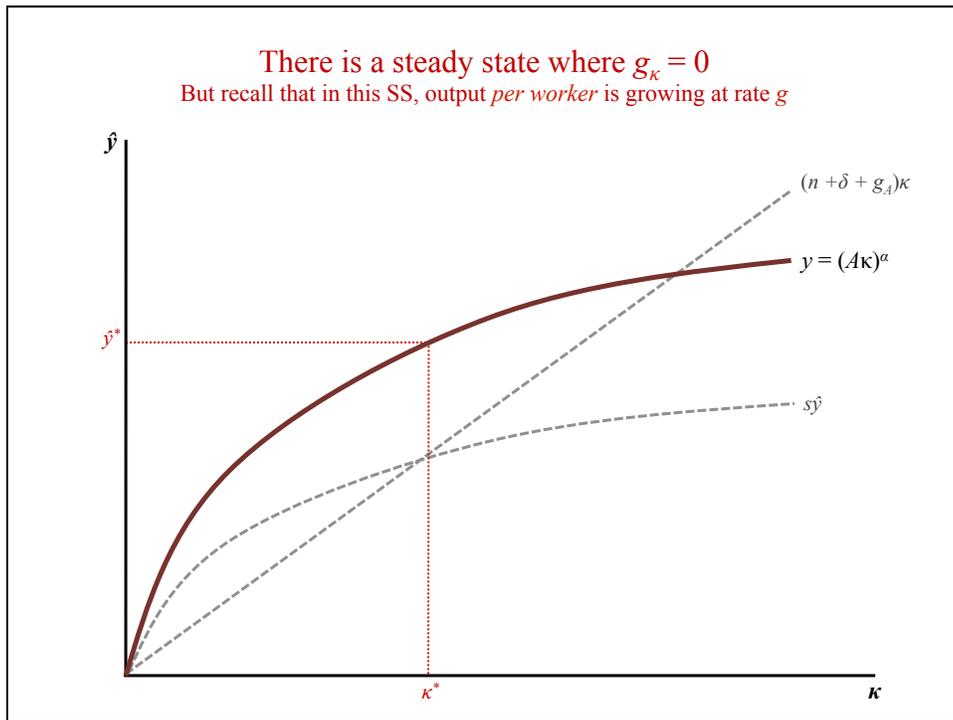
- Now define capital and output per *effective worker*, $\kappa = K/AL$ and $\hat{y} = Y/AL$

$$\dot{\kappa}/AL = s\hat{y} - \delta\kappa$$

$$\dot{\kappa} - n\kappa - g_A\kappa = s\hat{y} - \delta\kappa$$

$$\dot{\kappa} = s\hat{y} - (\delta + n + g_A)\kappa$$

- To maintain capital per *effective worker*, workers have to be equipped with the new technology
- As before, at some point $s\hat{y} = (\delta + n + g_A)\kappa$, so that $\dot{\kappa} = 0$



“Growth accounting”

How much growth is (proximately) related to the accumulation of K (and H) and how much from TFP (A)?

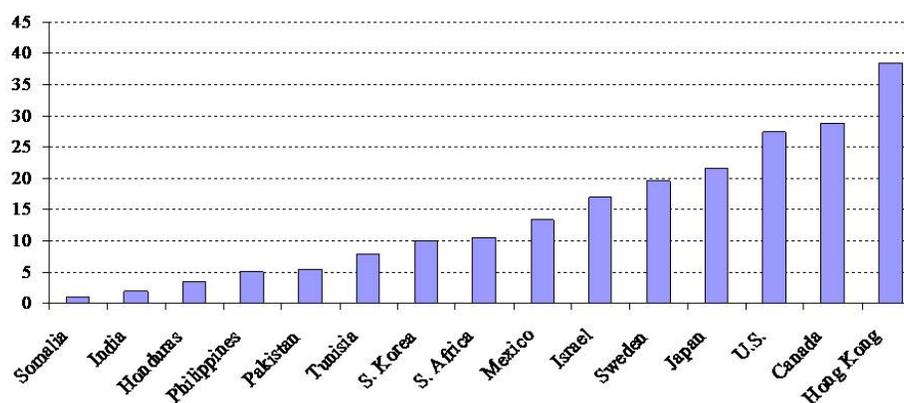
- Recall the growth decomposition:

$$g_y = g_A + \alpha g_k$$

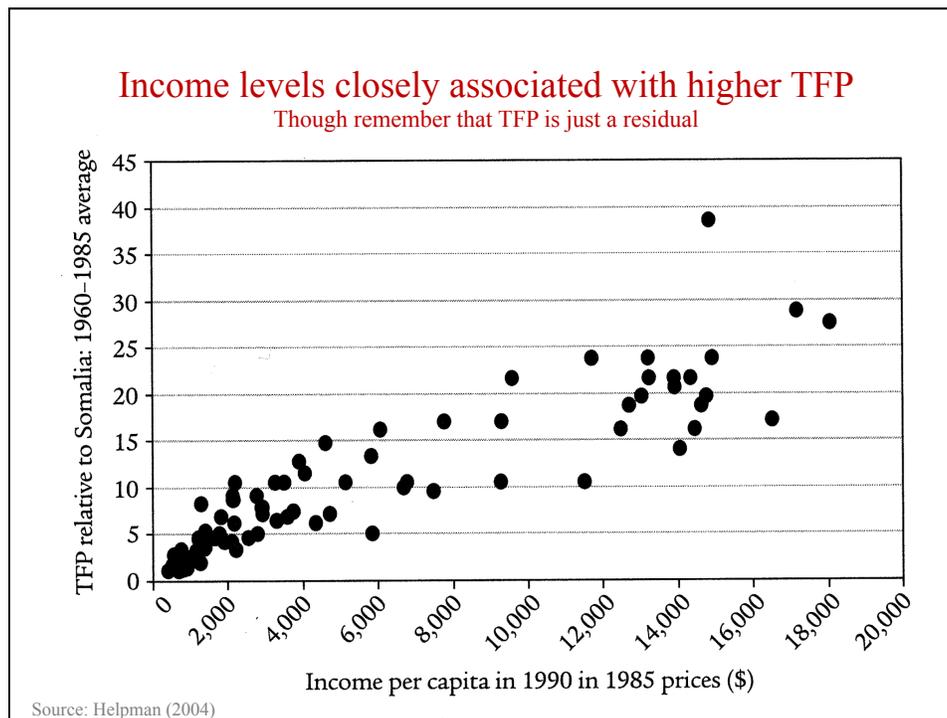
- We have cross-country data on g_y and moderate quality data on k (and hence g_k), but no direct measures of g_A or α
 - $\alpha = 0.3$ is a common estimate
 - Studies attribute $\frac{1}{3}$ to $\frac{2}{3}$ of income growth to TFP growth, with the upper bound seeming more plausible (see work by Hsieh)
- Challenges:
 - Capital is difficult to measure, and the results are very sensitive to this
 - TFP is measured as a residual
 - This is not a causal relationship, but a proximate accounting one. The factors that underlie TFP undoubtedly influence incentives to invest

Differences in TFP across countries are large and persistent

Productivity levels relative to Somalia, 1960-95 average



Source: Helpman (2004)



**This gives us a potentially more satisfying reasons for
 difference in income levels and growth**

- Different countries may have different levels of TFP and different rates of TFP growth
- This just presents additional puzzles
 - If knowledge and organization are public goods, why aren't they widely and quickly adopted? α
 - Even if they are not pure public goods, the returns from acquiring them are so high that the incentives to overcome any barrier are huge
- This opens the door to components of A or g that are extremely persistent and difficult to change
 - e.g. “culture”, “institutions”, “social conflict”
 - Inhibit technological diffusion and growth, and reduce incentives for investment

Also unsatisfying: all the action in the Solow model is coming from exogenous parameters

- Different countries may have different levels of savings, population growth, TFP and TFP growth
- This just presents additional puzzles
 - If knowledge and organization are public goods, why aren't they widely and quickly adopted?
 - Even if they are not pure public goods, the returns from acquiring them are so high that the incentives to overcome any barrier are huge
 - Why not increase savings? Or reduce the birth rate?
- This opens the door to components or determinants of s and TFP that are extremely persistent and difficult to change
 - e.g. “culture”, “institutions”, “social conflict”, and maybe even “human capital”
 - Inhibit technological diffusion and growth, and reduce incentives for investment

Literature has gone in several directions

Trying to match theory to empirical realities, and reduce need to assume growth exogenously (which everyone hates)

1. Add additional factors to Solow
 - a. Human capital, natural resources, public goods (i.e. government taxation and spending)
2. Endogenize savings and population growth
 - a. Requires building micro-foundations
 1. Ramsey-Cass-Koopmans model (adds time preferences)
 2. Models of the demographic transition, Malthusian models
3. Endogenize technological growth
 - a. Allow for technological growth to be determined within the model
 1. Mechanically, such as in “learning by doing” of AK models
 2. Through forward looking investments and empirically-founded models of technological innovation, diffusion, and creative destruction (e.g. R&D models, Schumpeterian models)
 - b. Also allow for the possibility of increasing returns to scale (IRTS)
4. Allow both for IRTS and constraints
 - a. Poverty traps, rigidities

We will touch on #1 in the problem set, simple elements of #3 today, #4 next week, and perhaps touch on basic elements of #2 in the following week (especially the Euler equation).

The “AK” model

- Among the earliest and simplest models of endogenous growth
- Rooted in the notion that there is a technological externality called “learning by doing”
 - There are many small firms who take technology as given
 - But as K grows large, some firms learn how to do things better, and this knowledge is a public good
 - This generates increasing returns to scale (IRTS) as opposed to CRTS in the Solow model
- An alternate way to model this is to allow the introduction of human capital (H) to provide the IRTS, rather than A

The AK model

- Take the same Cobb-Douglas form, but now A is a function of K

$$Y = A(K) \cdot K^\alpha L^{1-\alpha}, \quad 0 < \alpha < 1$$

- For simplicity we also normalize L to 1 (i.e. ignore population growth)

$$Y = A(K) \cdot K^\alpha$$

- Simplest formulation: Assume $A(K)$ is a function of initial TFP and stock of capital

$$A(K) = A_0 K^\beta$$

Thus $Y = A_0 K^\beta K^\alpha$

$$Y = A_0 K^{\alpha+\beta}$$

What does capital accumulation look like with technical growth?

- Capital accumulation follows the same laws of motion as before, with an exogenous savings rate

$$\dot{K} = sA_0K^{\alpha+\beta} - \delta K$$

- Growth rate of capital stock:

$$g_K = \dot{K}/K = sA_0K^{\alpha+\beta-1} - \delta$$

- Is there a SS? This depends on $\alpha+\beta$

$\alpha+\beta < 1$ Knowledge spillovers insufficient to counter diminishing returns to K accumulation and there is a SS where $g_{SS} = g_K = 0$

$\alpha+\beta > 1$ The explosive growth case, where learning externalities are so strong there is no stable SS equilibrium

$\alpha+\beta = 1$ Learning externalities directly offset diminishing returns to K accumulation and there is a SS with sustained growth

What is the SS growth rate of income?

- Recall $Y = A_0K^{\alpha+\beta}$. Thus

$$\dot{Y}/Y = \dot{A}_0/A_0 + (\alpha+\beta)\dot{K}/K$$

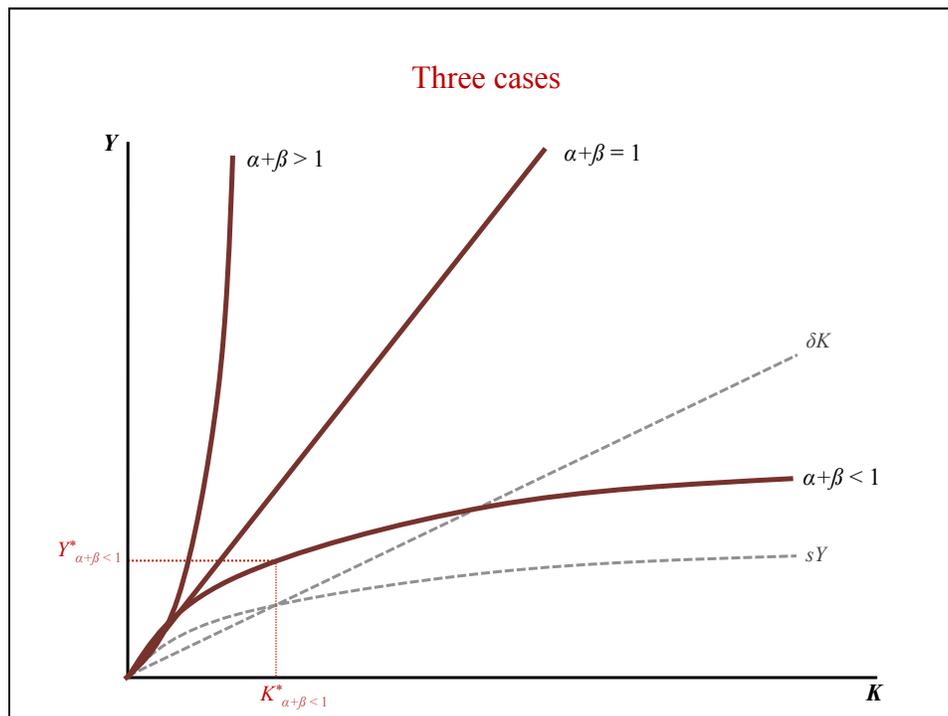
$$g_Y = (\alpha+\beta)g_K$$

- In SS, $g_Y = g_K$

$\alpha+\beta < 1$ $g_Y = g_K = 0$

$\alpha+\beta > 1$ No SS that satisfies both equations

$\alpha+\beta = 1$ $g_Y = g_K = sA_0 - \delta$



What good is the AK model?

- Some empirical support
 - Can account for persistently positive growth rates
 - And researchers have observed some evidence of externalities to capital and technology
 - And speed of convergence we observe in economies closer to that of AK ($\alpha = 1$) than Solow ($\alpha = .3$)
- But cross-country differences in A_0 and α will result in permanent differences in income levels and rates of economic growth
 - Does not predict conditional convergence
- Several aspects do not fit the facts
 - Yet we have observed convergence of some poor and many middle income countries
 - Also, AK does not even predict regional convergence within countries, which we certainly observe
 - Finally, the empirical evidence seems to be consistent with diminishing returns to K accumulation

The uses of AK

- Variations have been used for more advanced endogenous growth models
 - e.g. Adding rewards for technical progress
- Could be true for a range of K
 - i.e. production is non-convex over some range
- For this reason AK is often the basis for simple poverty trap models
 - Where IRTS over some range is typically a crucial ingredient

Do these models help us explain comparative development?

- Simply kicks the question backwards: Why do some societies save and invest a lot, innovate and adopt new technology, and have a well-organized productive sector?
 - Focus is on the *proximate* rather than the *fundamental* determinants
- Yet growth theories help us structure our thinking and focus our attention on the proximate determinants that matter (theoretically and empirically)
- Also suggests important institutions and other “stuff” that matter
 - Has focused our attention on property rights, innovation systems
 - Tended to focus less on political instability, social conflict
- In order to get at these fundamental roots, however, literature has moved away from growth theory to more dynamic political economy models
 - e.g. Acemoglu and Robinson. Besley and Persson

Income and growth measurement

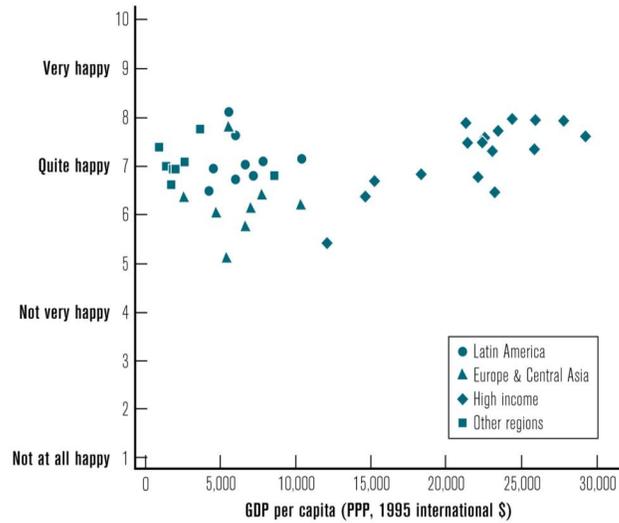
Income = Gross domestic product (GDP)

- A measure of national income
 - Sum of the value of goods and services produced within the borders of a nation
- What's in? What's out?
 - Goods and services sold on the market
 - Excludes unpaid housework and family workers
 - But try to estimate and include farm produce that is consumed
- If poor countries have more non-market transactions, we:
 - underestimate their income
 - overestimate their growth

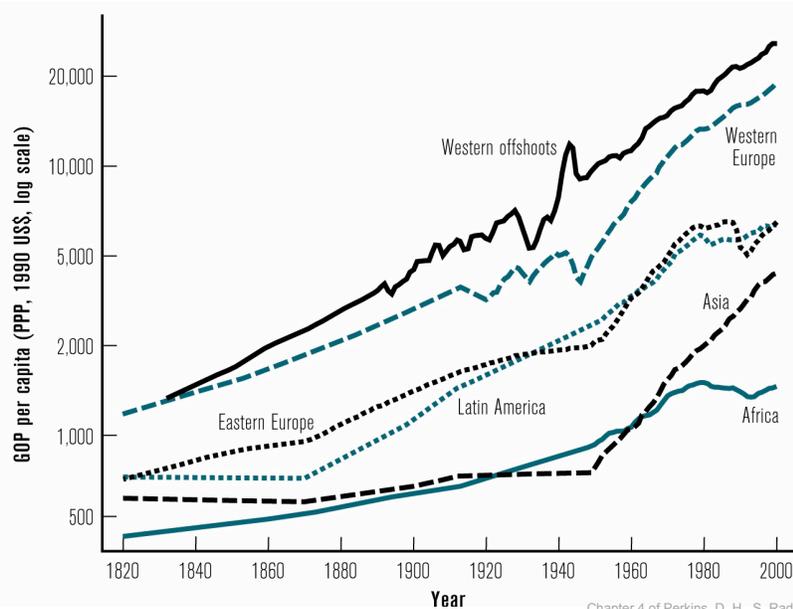
What's omitted?

- No “bads” are counted
 - Pollution
 - Congestion
 - Crime

- Not all “goods” counted
 - Health
 - Longevity
 - Happiness

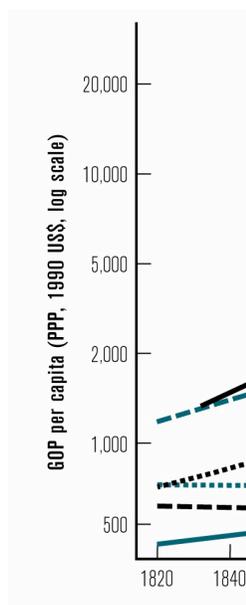


Income per capita (PPP, 1990 US\$, log scale)



Chapter 4 of Perkins, D. H., S. Radelet, et al. (2006). Economics of development. New York, W. W. Norton &

Income per capita (PPP, 1990 US\$, log scale)



On a logarithmic scale, an equal difference in order of magnitude is represented by an equal distance.

Advantage: Compression

Bonus: The slope of the line closely approximates the growth rate.

How to compare cedis to dollars?

- We want to convert to a common unit (like \$US)
- But a dollar goes a lot further in Ghana than in the US
 - Ghana: \$2 haircut
 - USA: \$20 haircut
- So incomes (in terms of purchasing power) are greater
- Official exchange rates reflect the prices of tradable goods (or government policy)
- Like wages, non-traded goods are often cheaper in poor countries

Purchasing power parity (PPP)

- Pick a set of prices for all goods and services in one country and use that set of prices to value goods and services in all

	MEASURED USING OFFICIAL EXCHANGE RATES	MEASURED AT PURCHASING POWER PARITY	RATIO OF PPP CALCULATION TO OFFICIAL EXCHANGE RATE CALCULATION
Japan	34,010	27,380	0.8
United States	35,400	36,110	1.0
Germany	22,740	26,980	1.2
Senegal	470	1,540	3.3
Kazakhstan	1,520	5,630	3.7
Indonesia	710	3,070	4.3
China	960	4,520	4.7
Vietnam	430	2,300	5.3
India	470	2,650	5.6
Ethiopia	100	780	7.8

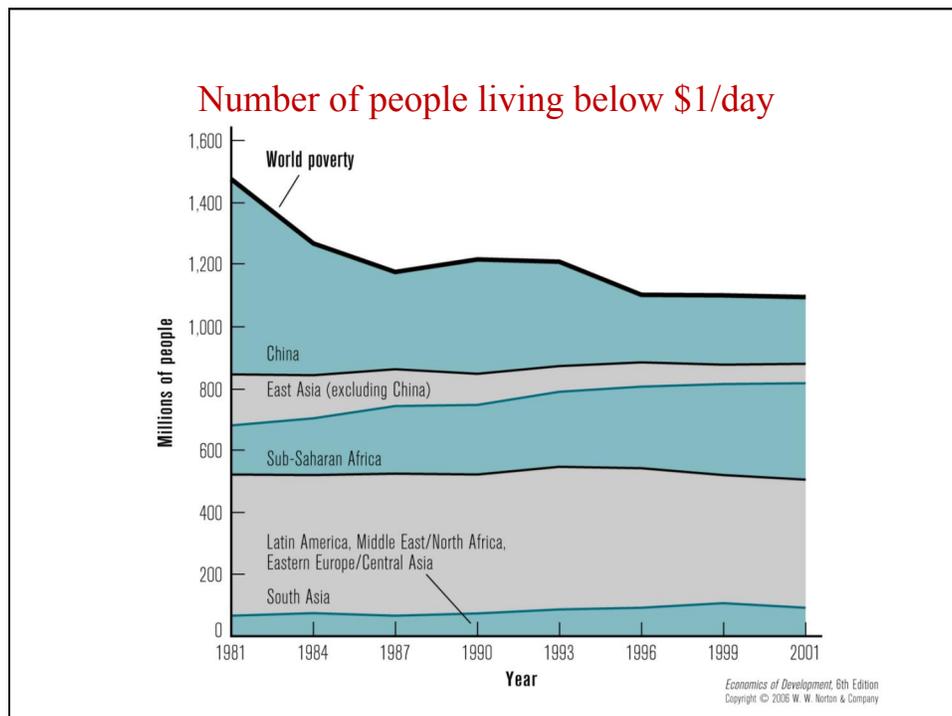
Growth rates and the rule of 72

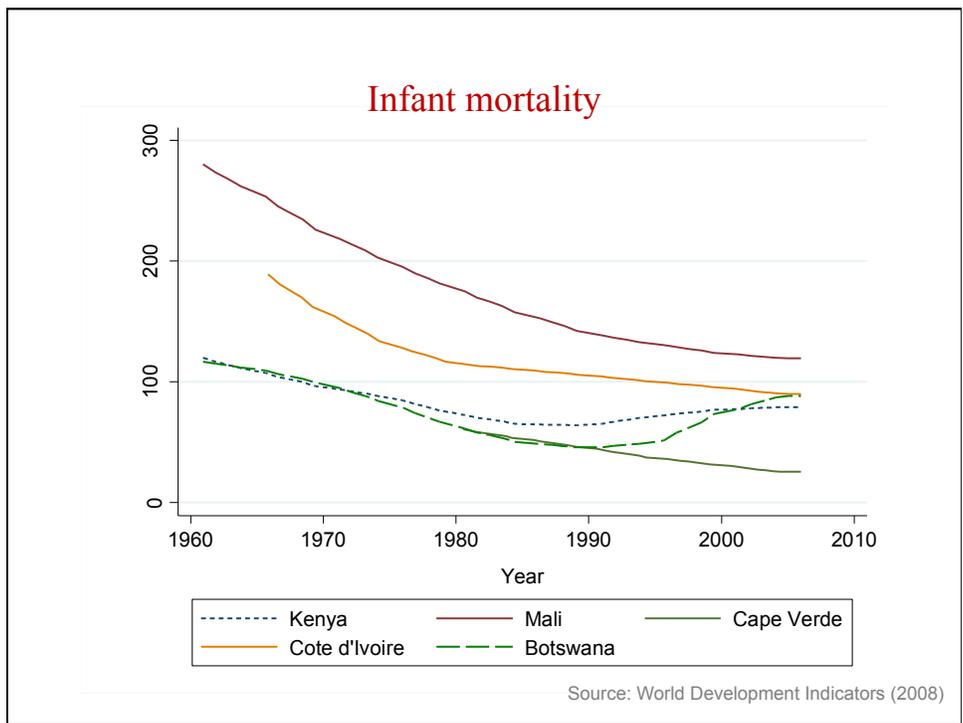
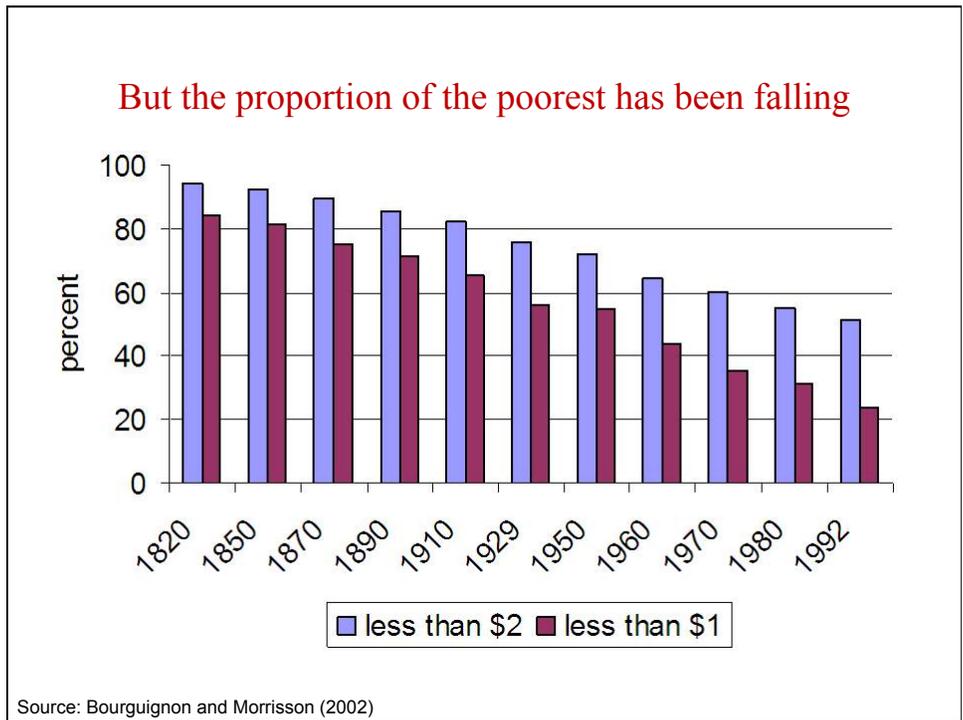
	Growth of income per capita		
	0-1000	1000-1820	1820-1998
Western Europe	-0.01	0.14	1.51
Western Offshoots	0	0.13	1.75
Japan	0.01	0.06	1.93
Latin America	0	0.06	1.22
Eastern Europe /USSR	0	0.06	1.06
Asia (excluding Japan)	0	0.03	0.92
Africa	-0.00	0	0.67

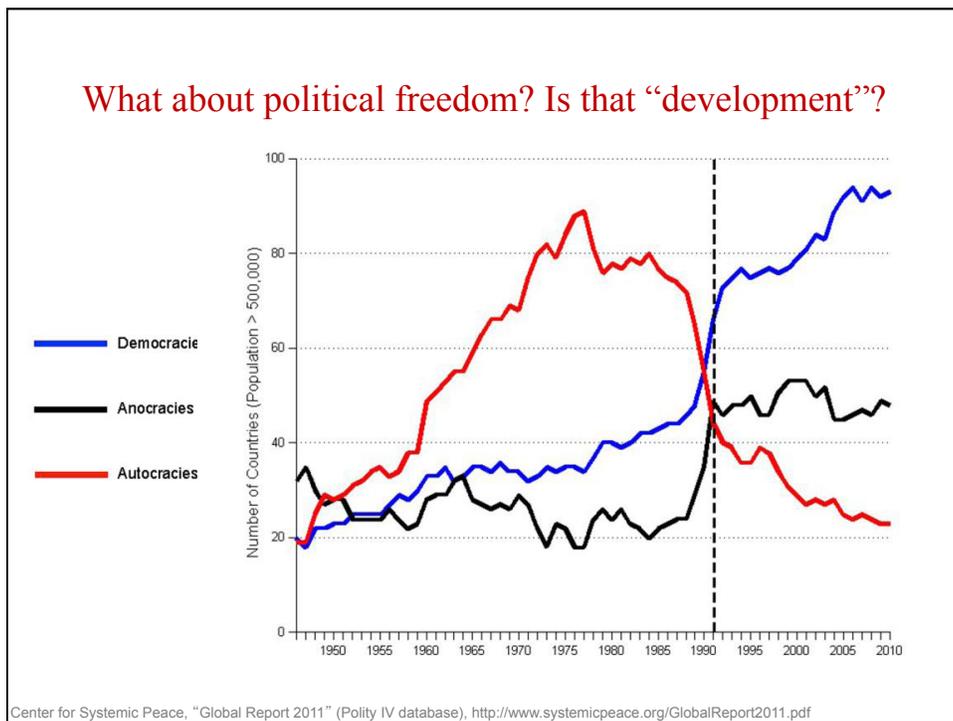
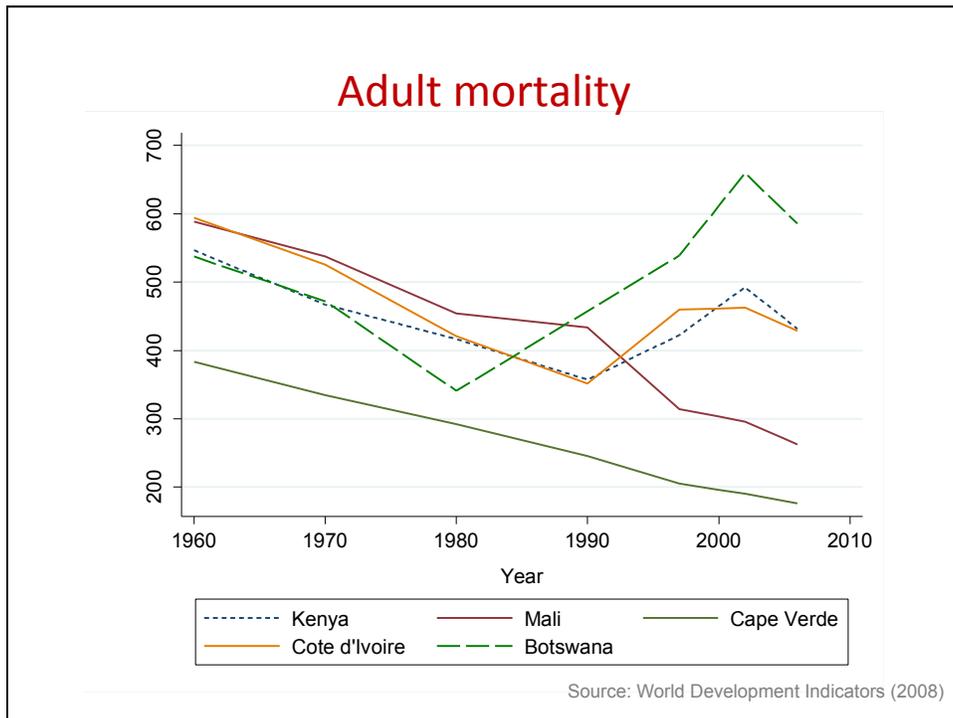
Maddison, Angus. 2001. *The World Economy: A Millennial Perspective*: OECD Publishing.

Is GDP per capita an adequate measure of development?

In part.

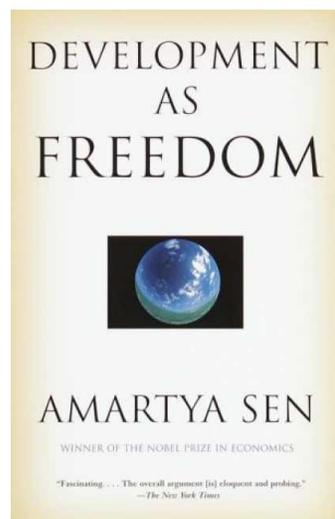






Amartya Sen's "capabilities approach"

- The central aspect of well-being is functioning: the freedom of choice and control over one's life
 - Freedom from hunger, from disease, from early death, from violence, from oppression...



What about a poverty line?

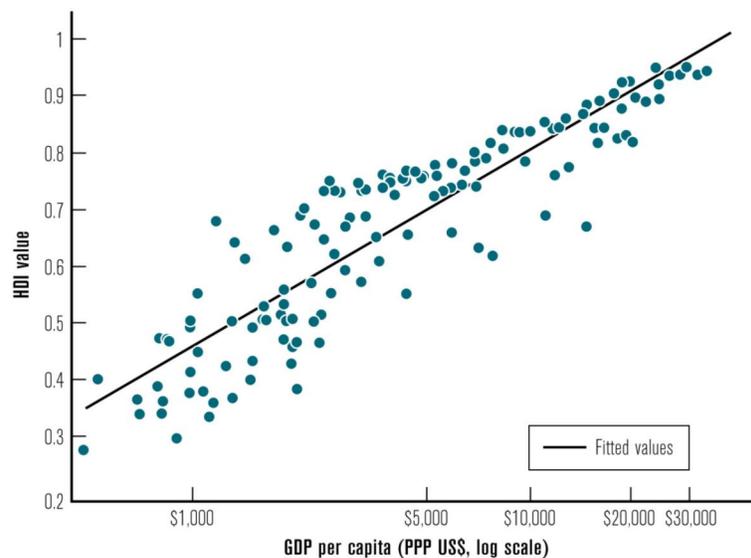
- Define basic needs in terms of needs for certain minimal amounts of essential commodities such as food, clothing and shelter.
- Still "commodity fetishism"?

“in dealing with extreme poverty in developing economies, we may be able to go a long distance in terms of a relatively small number of centrally important functionings and the corresponding capabilities, such as the ability to be well-nourished and well-sheltered, the capability of escaping avoidable morbidity and premature mortality and so forth.

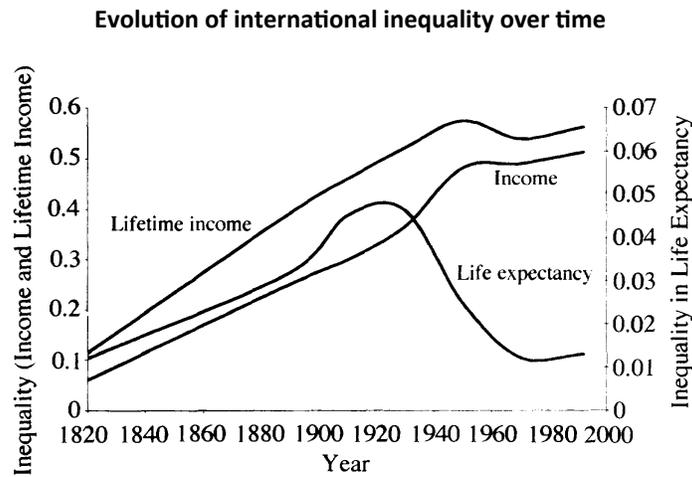


In other contexts, including more general problems of assessing economic and social development, the list may have to be much longer and much more diverse.”

Human Development Index (HDI) related to GDPpc
 A simple average of three indices: income, adult literacy, and life expectancy



But non-income measures tell a different story over time



Source: Bourguignon and Morrisson (2002)

And political freedoms have a noisier relationship with income

