

INAF U6164:

Political Economy of  
Development:  
Africa and the World

Week 2: Overview of growth and  
development theories

Instructor: Chris Blattman

# Announcements

- Spots in the class?
- Auditing
- Special recitation
- Assignment 1 due Feb 8
- Missing/broken links on syllabus
- Office hours: Tuesdays 9-11:40am
- Comparison to economic development class

# The big questions of “macro” 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?

# First we need theories of economic performance

- Major models/approaches
  1. **Factor accumulation (Neoclassical growth)**
  2. **Poverty traps**
  3. **Rigidities and constraints in structural transformation**
  4. **Dependency theory and other critiques**

# 1. Factor accumulation and “neoclassical” growth







# Typical factors of production

- Labor (L)
- Physical capital (K)
  - Plant, machinery & equipment
  - Inventory, working capital
- Land and natural resources (R)
- Human capital (H)
  - Education, skills, efficiency
- Technology and organization (A)
  - Inventions and patents
  - Techniques and knowledge
  - Systems of organization
  - Management practices
  - Institutions?
    - Rules and norms
    - Culture

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

- Proximate answer:
  - The country has not accumulated crucial 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  $K$ ?

# Growth through factor accumulation: The Solow model

- After WWII, macroeconomists emphasized the accumulation of human and physical capital per worker
- Solow Model
  - Income per person is a function of capital intensity (capital per worker) and “technology”
  - Capital intensity rises with savings and investment
  - Capital intensity falls with population growth and depreciation
    - Capital needs to be replaced
  - A long run equilibrium is attained when savings equals the replacement rate

Income per person,  $y$ , comes from accumulating capital per person,  $k$

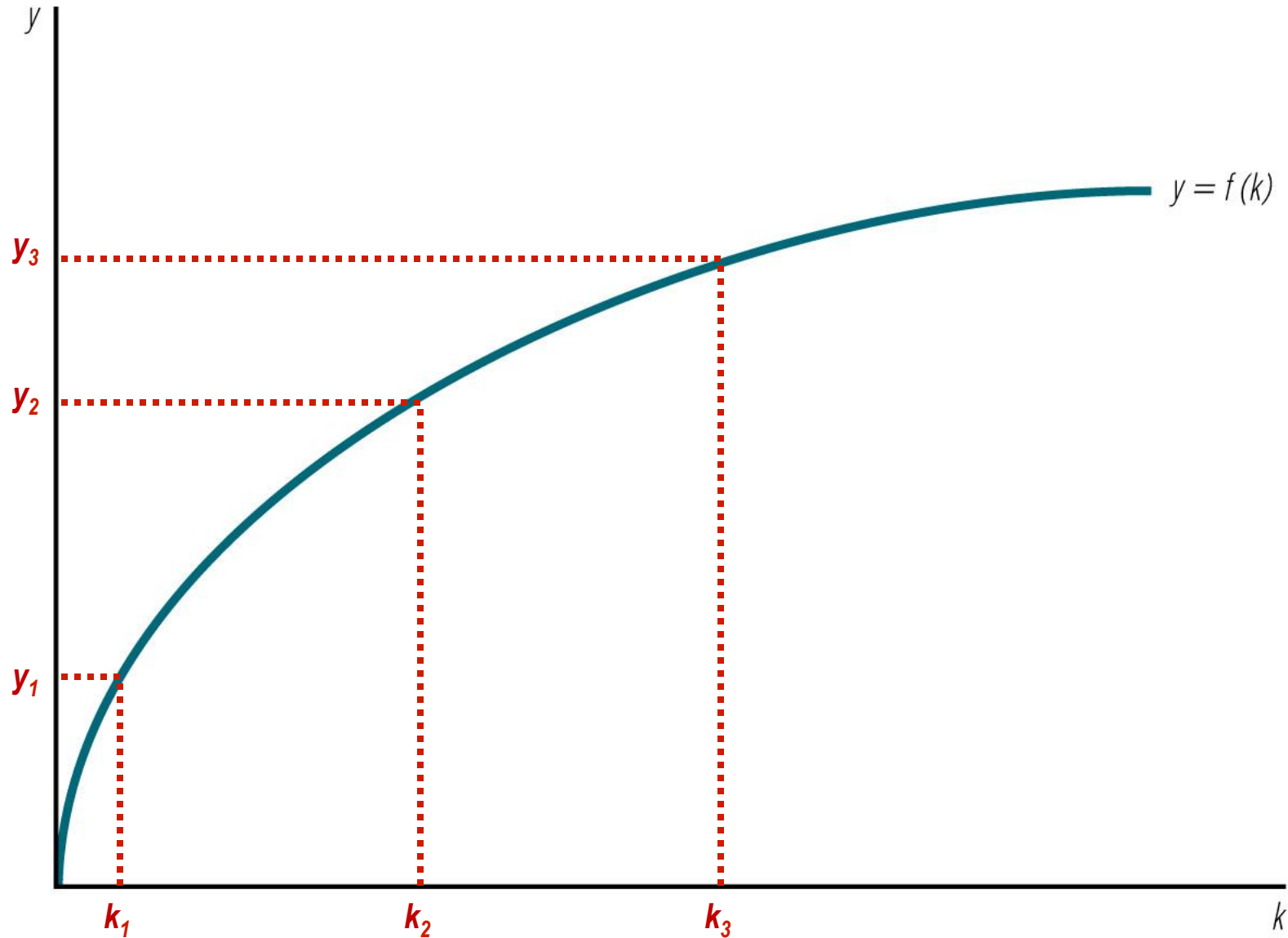
$y$



$$y = f(k)$$

$k$

## Factors of production may have diminishing returns



## How does capital per worker ( $k$ ) change over time?

- How does  $k$  go up?
  - Saving and investing a proportion of output ( $sy$ )
- What forces push  $k$  down?
  - Tools, machines, and other capital depreciate and need replacement ( $dk$ )
  - New workers (from growing population) need to be equipped with the same amount of  $k$  ( $nk$ )

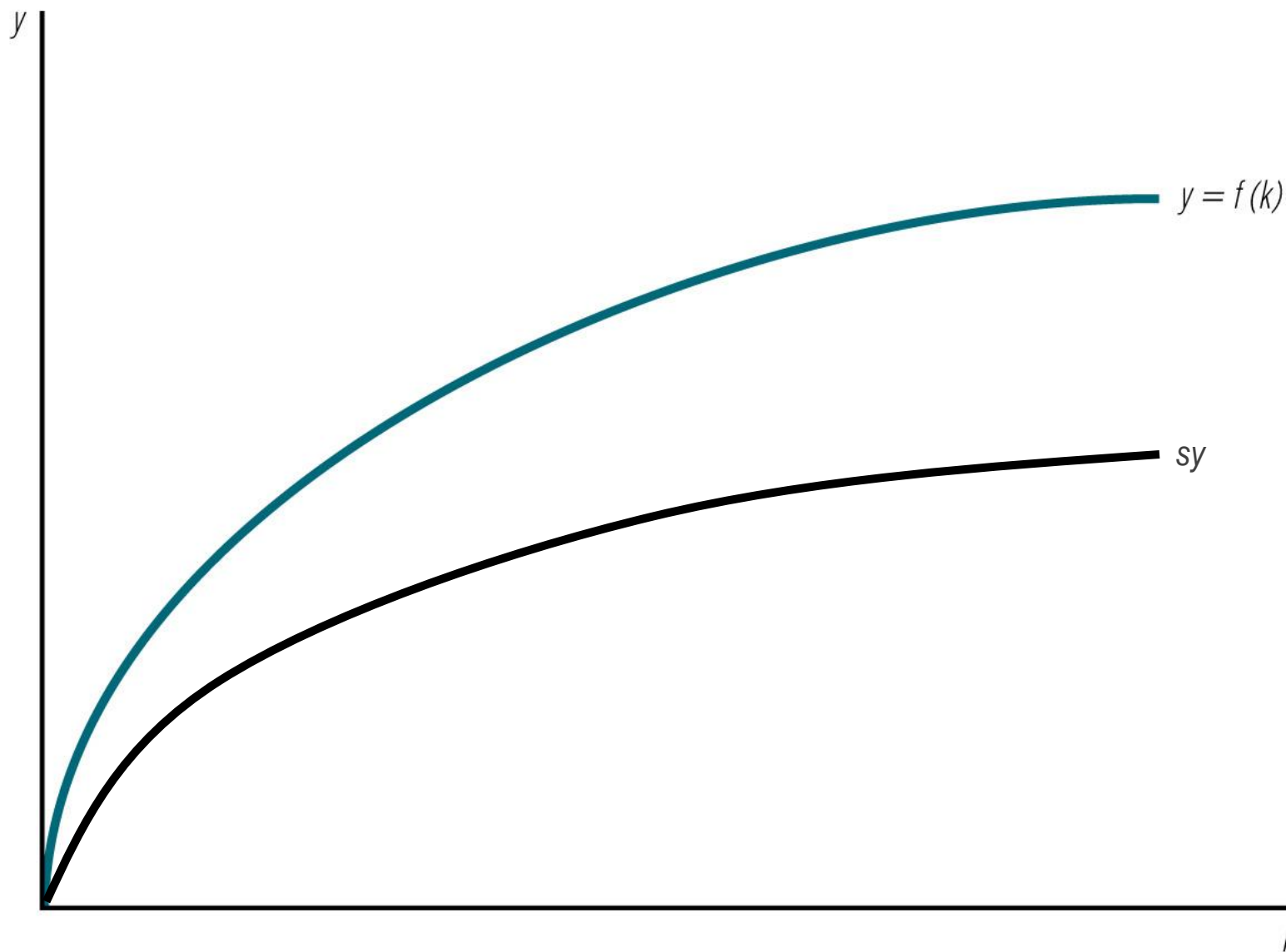
$$k_{\text{tomorrow}} = k_{\text{today}} + sy_{\text{today}} - nk_{\text{today}} - dk_{\text{today}}$$

$$\Delta k = k_{\text{tomorrow}} - k_{\text{today}} = sy_{\text{today}} - (n + d)k_{\text{today}}$$

When is capital per worker “in equilibrium”?

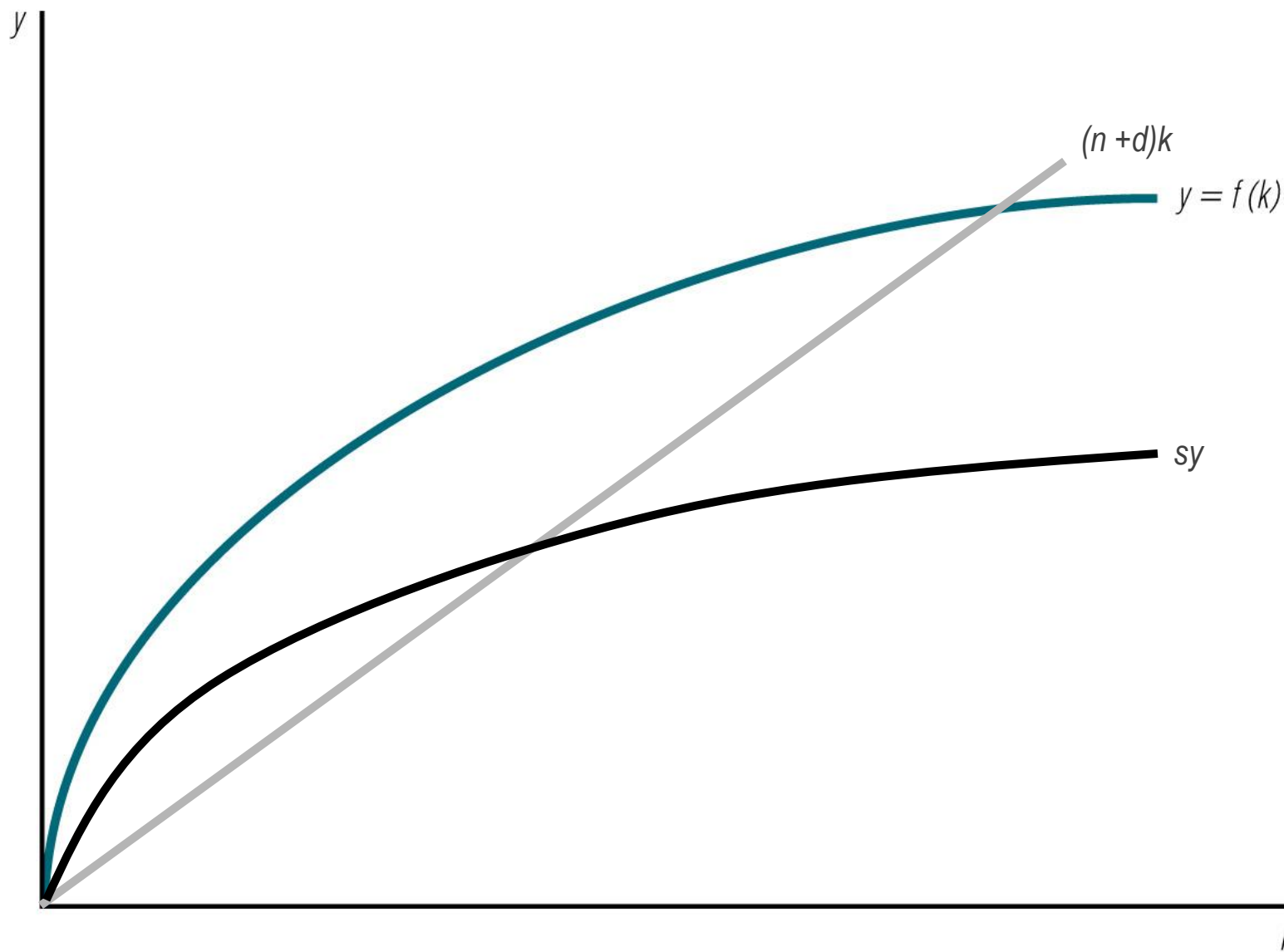
# How do we find a country's equilibrium income per capita?

First, note that a country saves a fraction  $s$  of its income each year

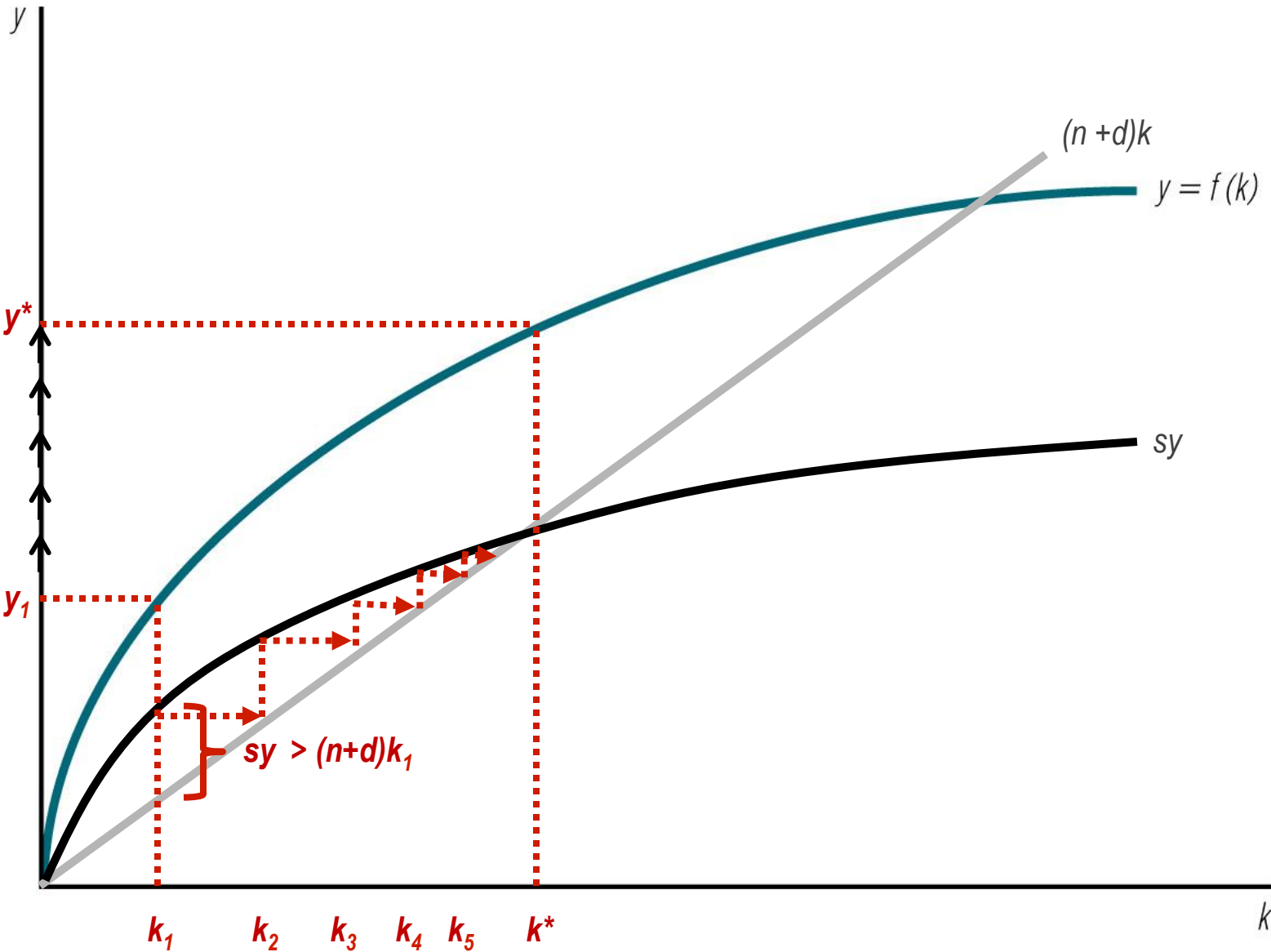




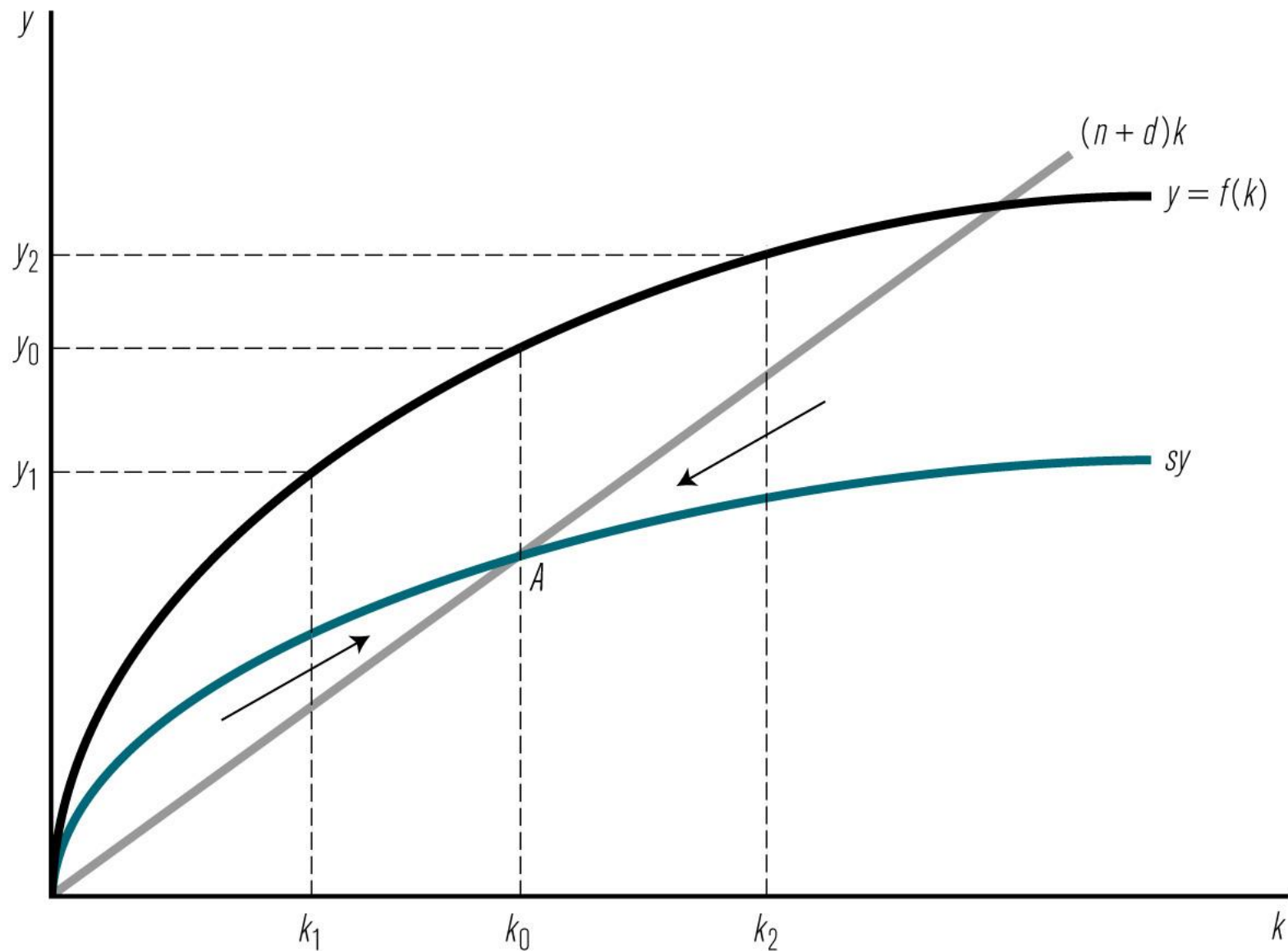
The replacement rate: each year a proportion of capital depreciates,  $d$ , or goes to equip the new population,  $n$



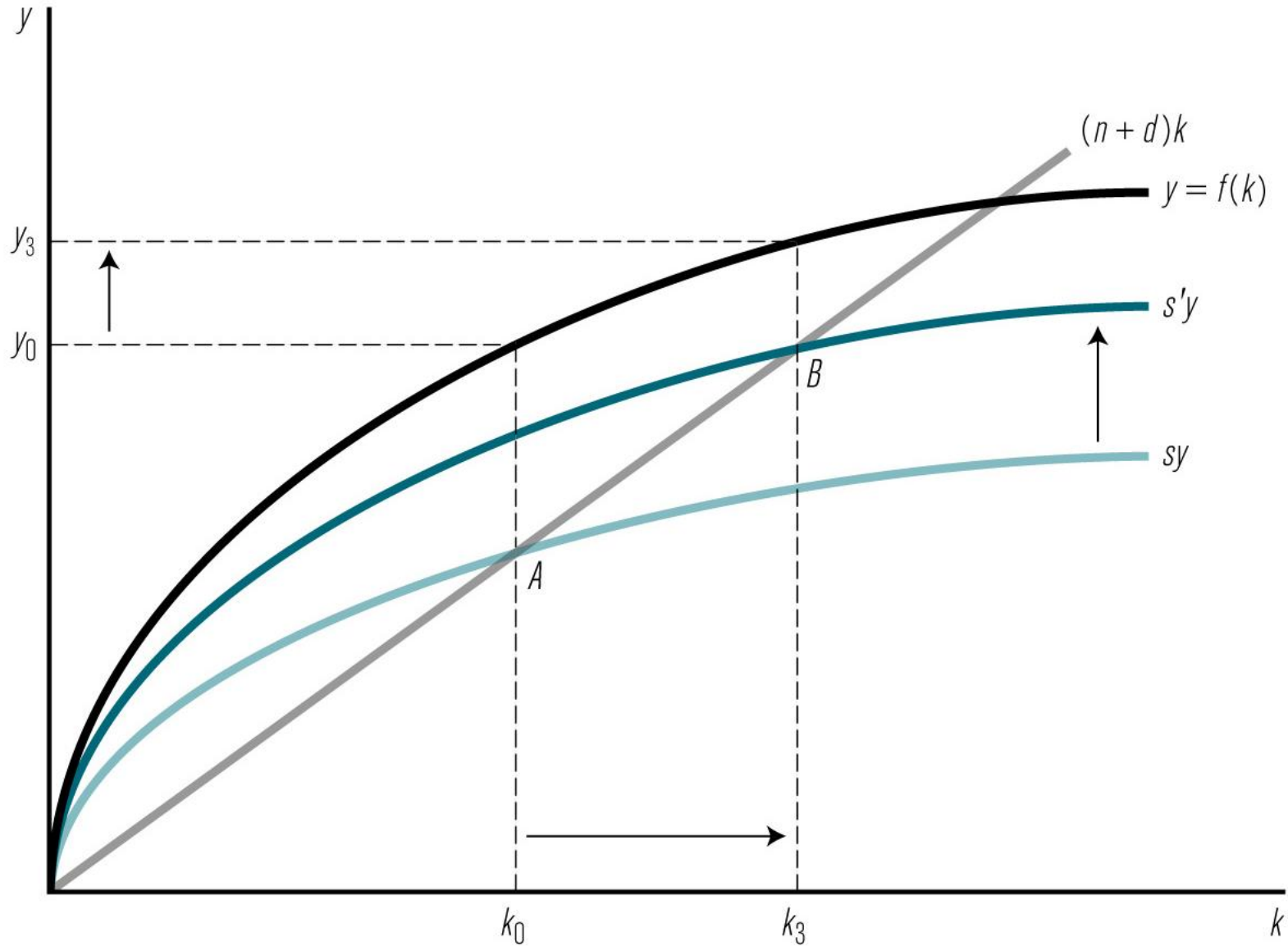
# What if a country starts out with low capital per person?



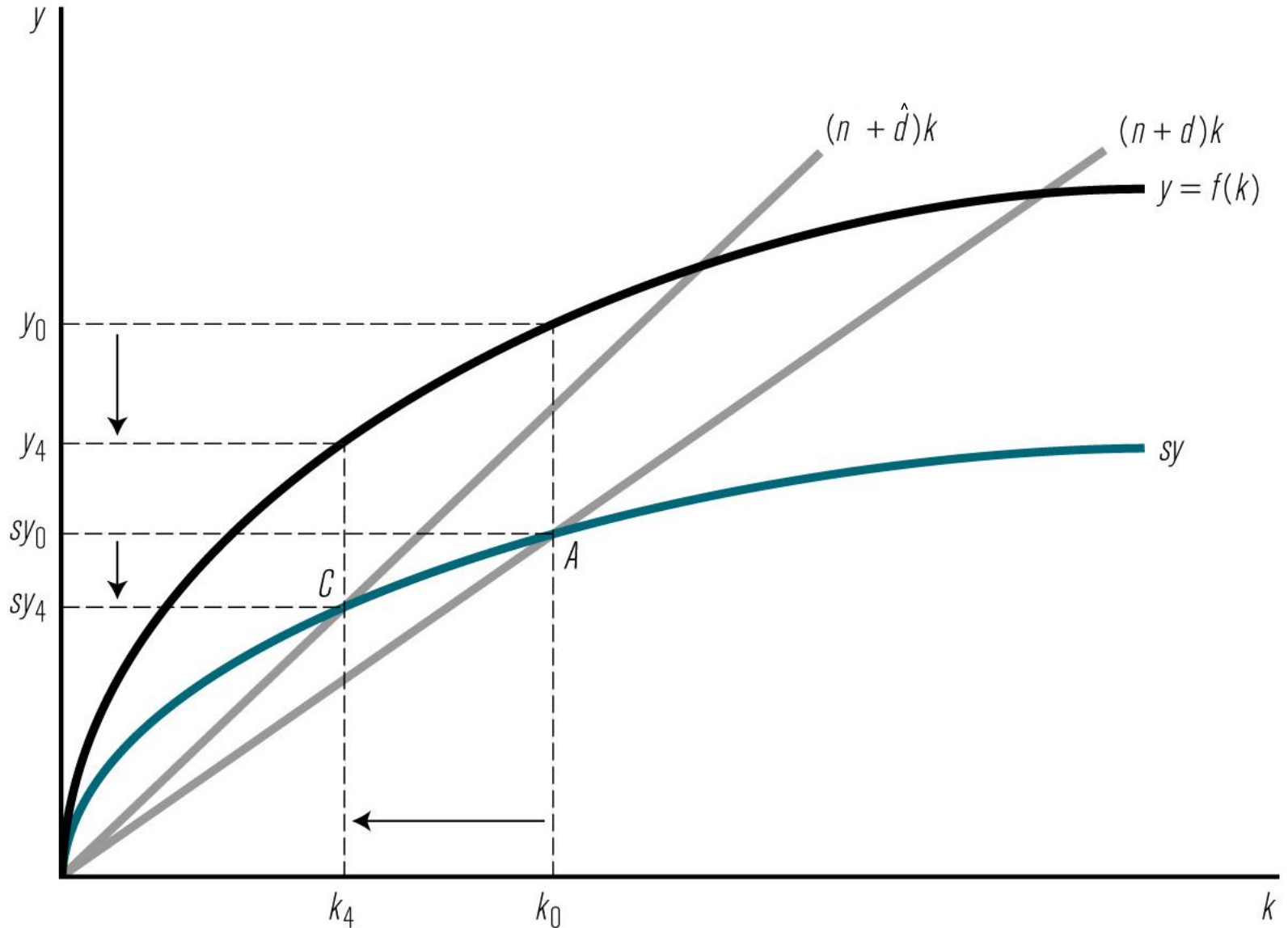
No matter what level of capital per person, income always converges to the equilibrium determined by  $s$ ,  $n$ , and  $d$ .



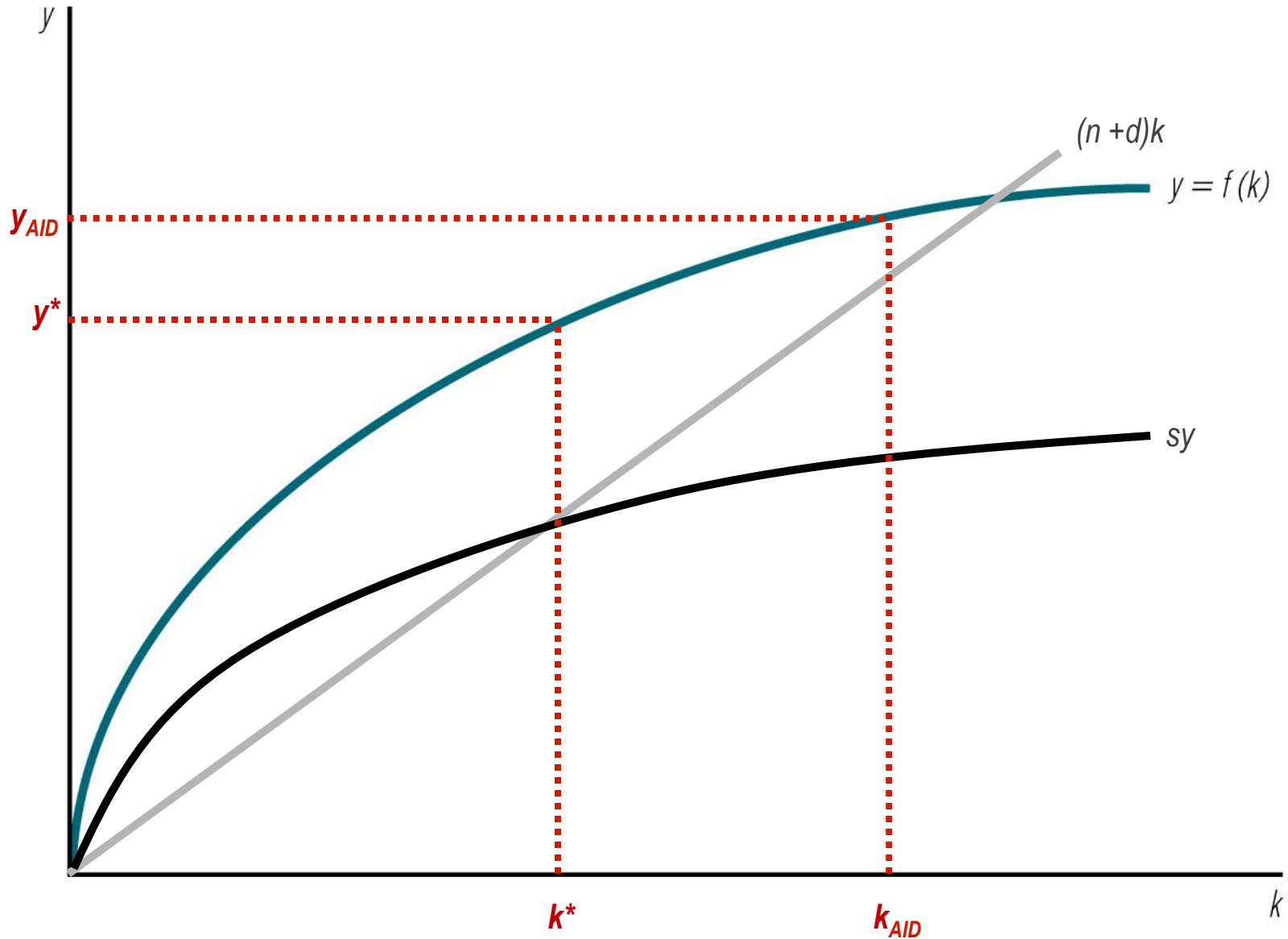
Increase saving, and you increase the level of income per person



Increase depreciation, and you decrease the level of income per person



What happens if aid increases the stock of human or physical capital?

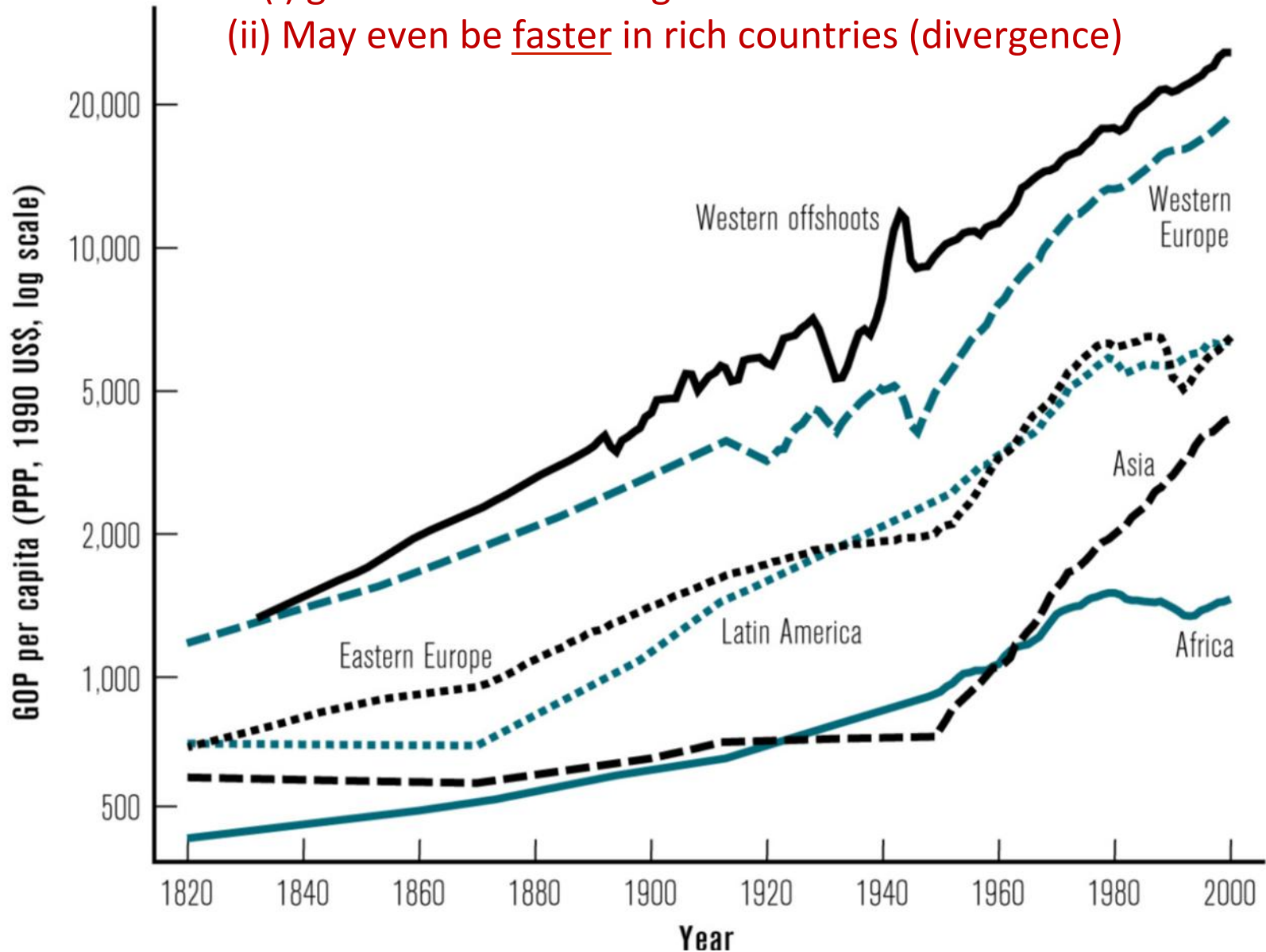


# Growth in the simplest Solow Model

- Growth in  $y$  occurs ONLY as countries move to the steady state
  - In steady state, there is no growth in  $y$
  - The aggregate economy ( $Y$ ) grows at rate of  $n$
- Implication: Countries with low  $k$  should grow more quickly than countries with  $k$  closer to steady state
  - Predicts high growth in poor countries

# Problem:

- (i) growth is not moving to zero in rich countries
- (ii) May even be faster in rich countries (divergence)





# What could explain different levels and growth rates of income?

1. Poor countries have lower steady states
2. Something is missing from the Solow model
3. We need a completely different model

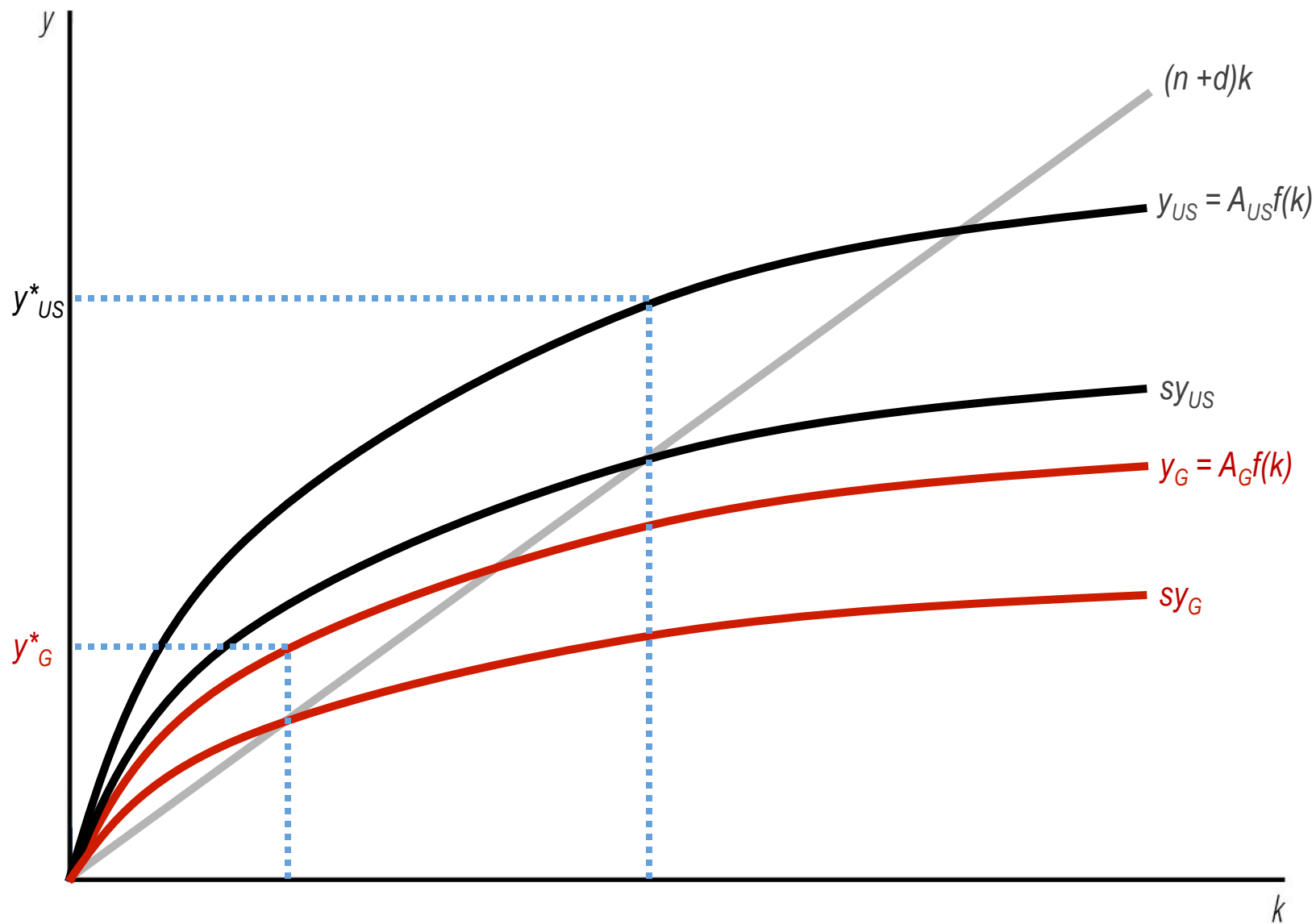
# Missing from the simplest Solow model: “Total factor productivity” (TFP)

- “Technology” is shorthand for things that affect productivity
  - New products and techniques
  - Systems of organization and management
  - Rules, norms, and laws
  - Culture and work ethic
- Often represented by parameter A

We will see:

- More technology → higher income levels
- More technological growth → higher income growth

# What happens when we introduce “technology” (A)?



# Productivity growth

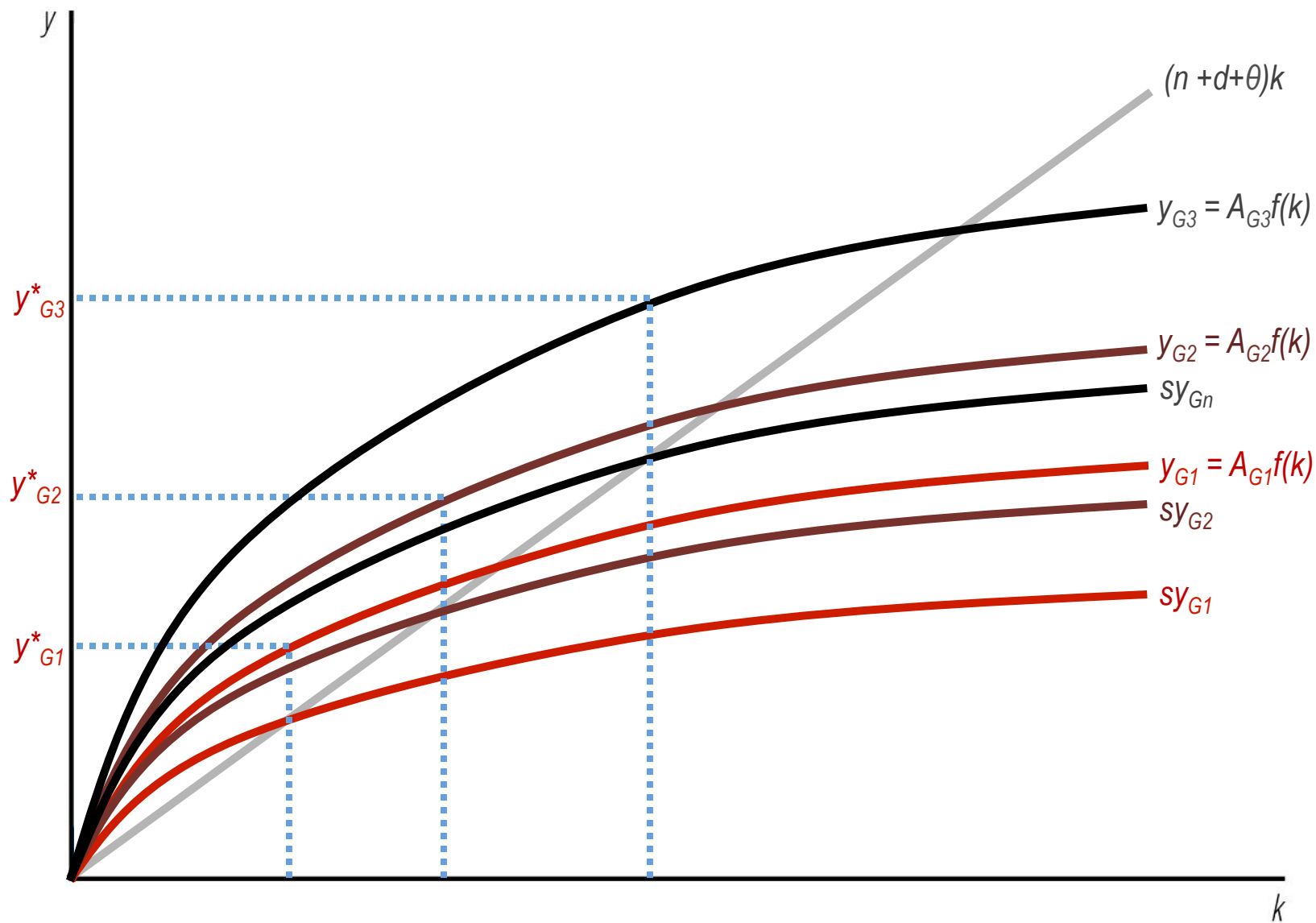
## Innovation

- New inventions
  - New products
  - New inputs
  - New production techniques
- New systems of organization
  - Scientific management
  - Quality control
  - Supply chain optimization
- New norms and laws
  - Limited liability corporations
  - Enforceable contracts
  - Intellectual property

## Diffusion

- Spread of inventions
- Adapt to local conditions
- Knowledge is a public good

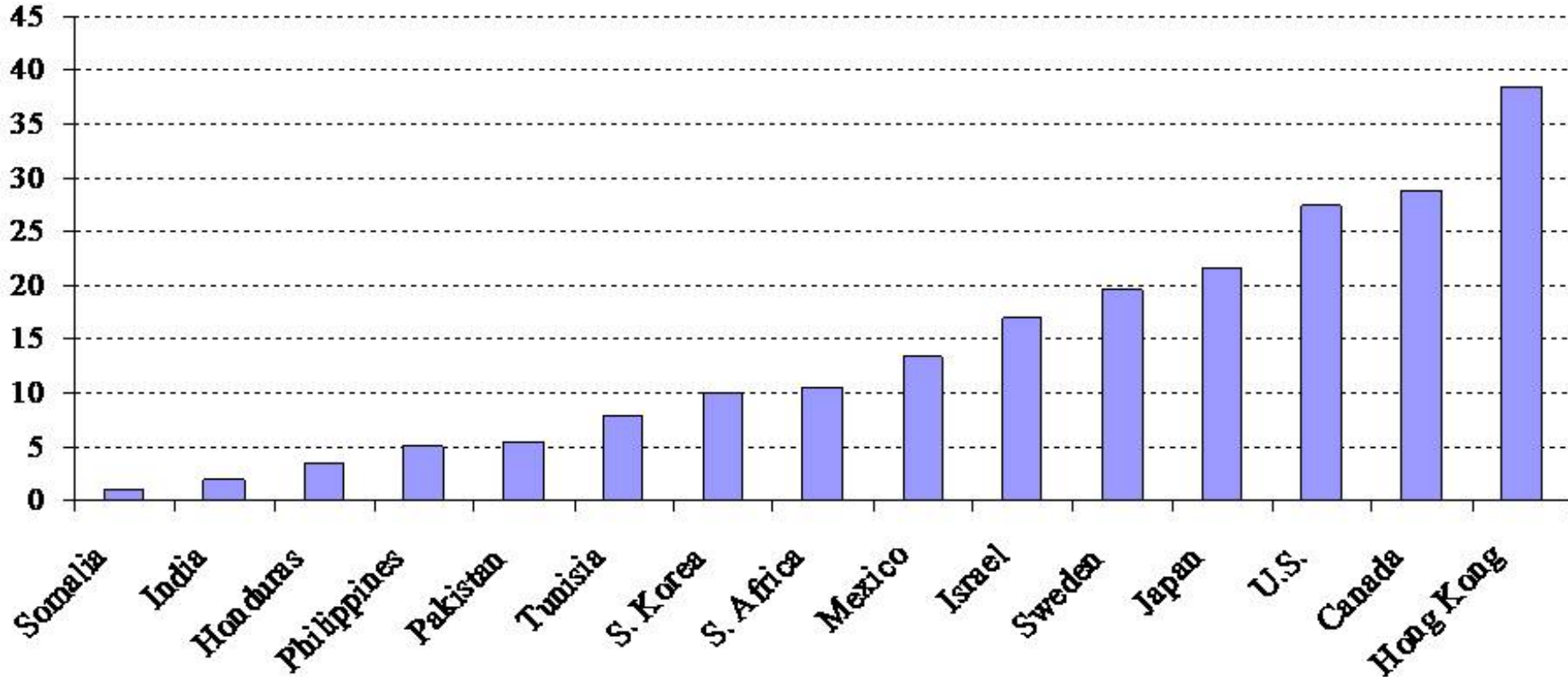
# What if technology and productivity grows at rate $g$ ?



## Big message: Long run growth in the Solow model

- In the long run,  $k$  and  $y$  will grow at the rate of  $g$  (technological growth).
- Differences in long run growth rates, and convergence/divergence, all driven by differences in  $g$ .
- So why did we see zero growth in the first Solow model example?

# Productivity levels relative to Somalia, 1960-95 average



Source: Helpman (2004)

# So what drives the rate of innovation and productivity?

## Many ideas and proposals

- Trade
- Communications
- Migration
- Property rights
- Political stability
- Political freedom
- Competition
- Creative destruction
- R&D investments
- Entrepreneurial spirit

## Common thread:

- Factors that affect people's incentives and ability to invest in innovation



# Neoclassical paradigm has been very influential in policy thinking

- Examples
  - Structural adjustment
  - Macroeconomic stabilization
- Central idea: Get policy and institutions “right” and growth will follow
- What role should aid play in the Solow model to impact income levels and growth?

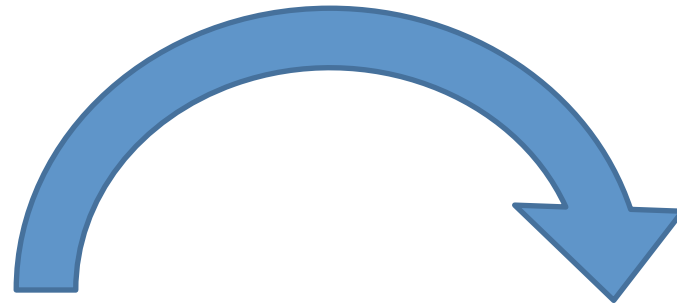
So far we have modeled each nation  
as having a single equilibrium  
determined by the fundamentals

Could there be multiple equilibria?

# Poverty traps

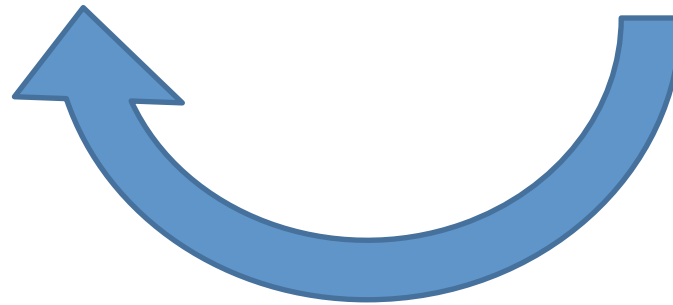


# Macro-level: Coordination problems



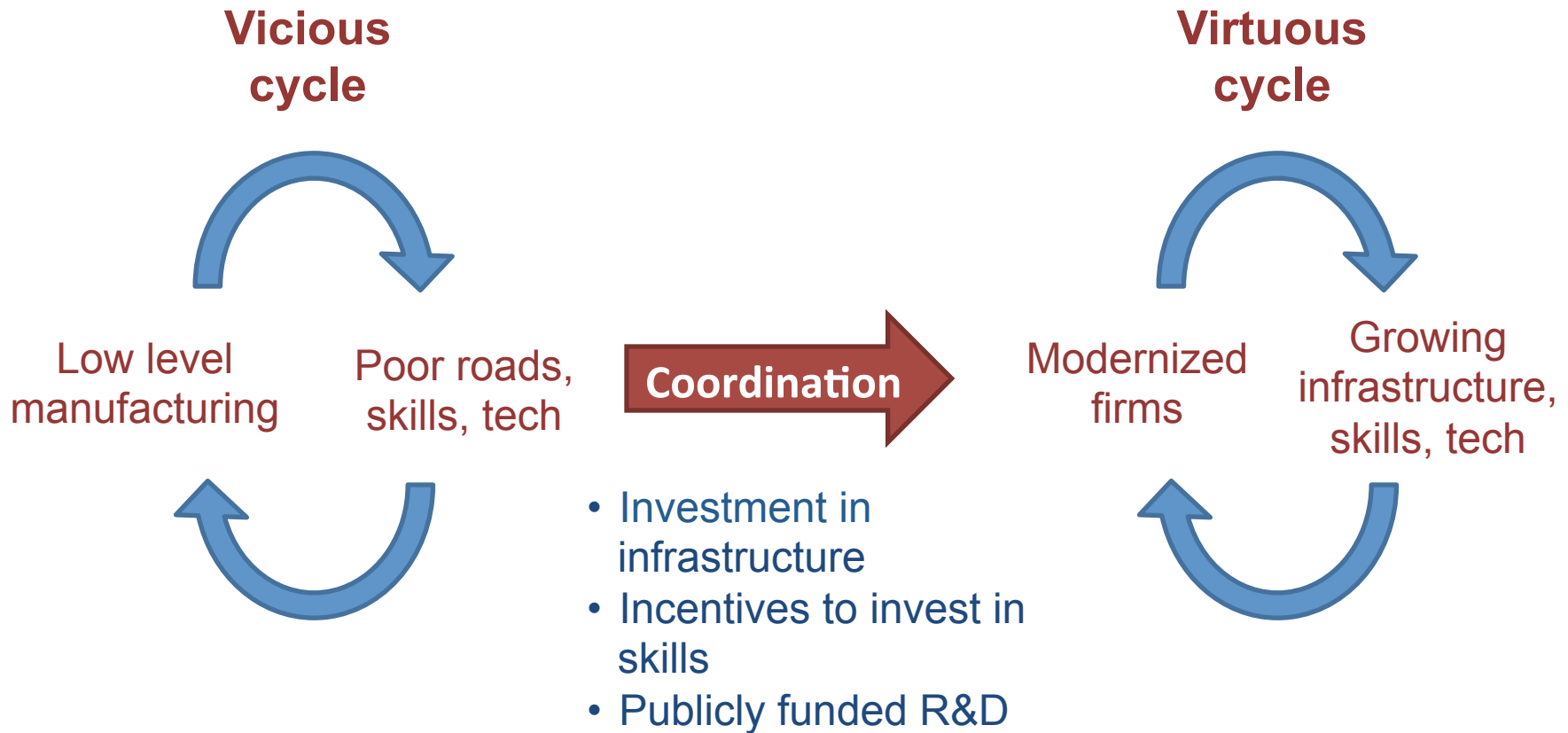
Low level of  
manufacturing

Poor infrastructure  
Limited technical know-how



- Transport/trade infrastructure
- Universities, trade schools
- Local innovation
- Sales channels

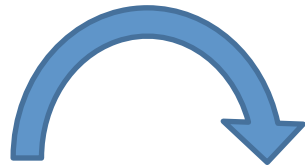
# Aid and public policy as a “big push”



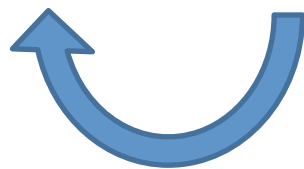
# Simple and compelling rationale for aid:

A one-time transfer can push you out of a poverty trap

## Vicious cycle



Poverty

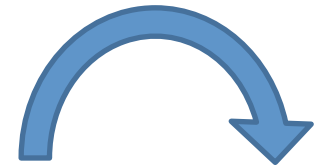


Inability to invest in health, education and capital

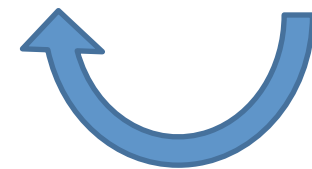


- Infrastructure
- Firm incentives
- Roads
- Microcredit
- Insurance

## Virtuous cycle



Wealth generation

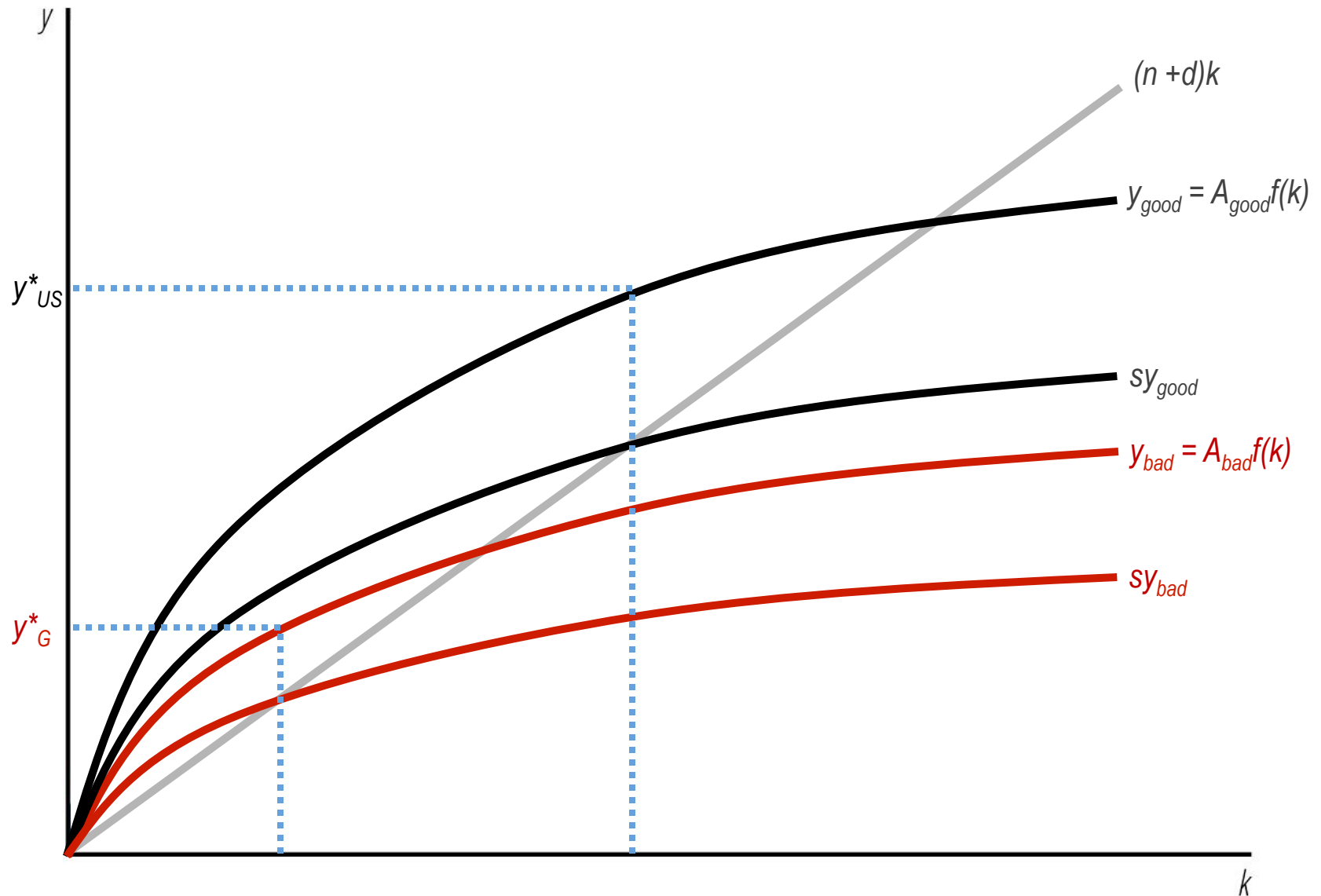


New capital, more skills, better health

How do we recognize a true  
“poverty trap”?

A lot of mistakes are made here

A simple constraint (e.g. high corruption, uncompetitive market) might make poverty, but is not necessarily a “trap”





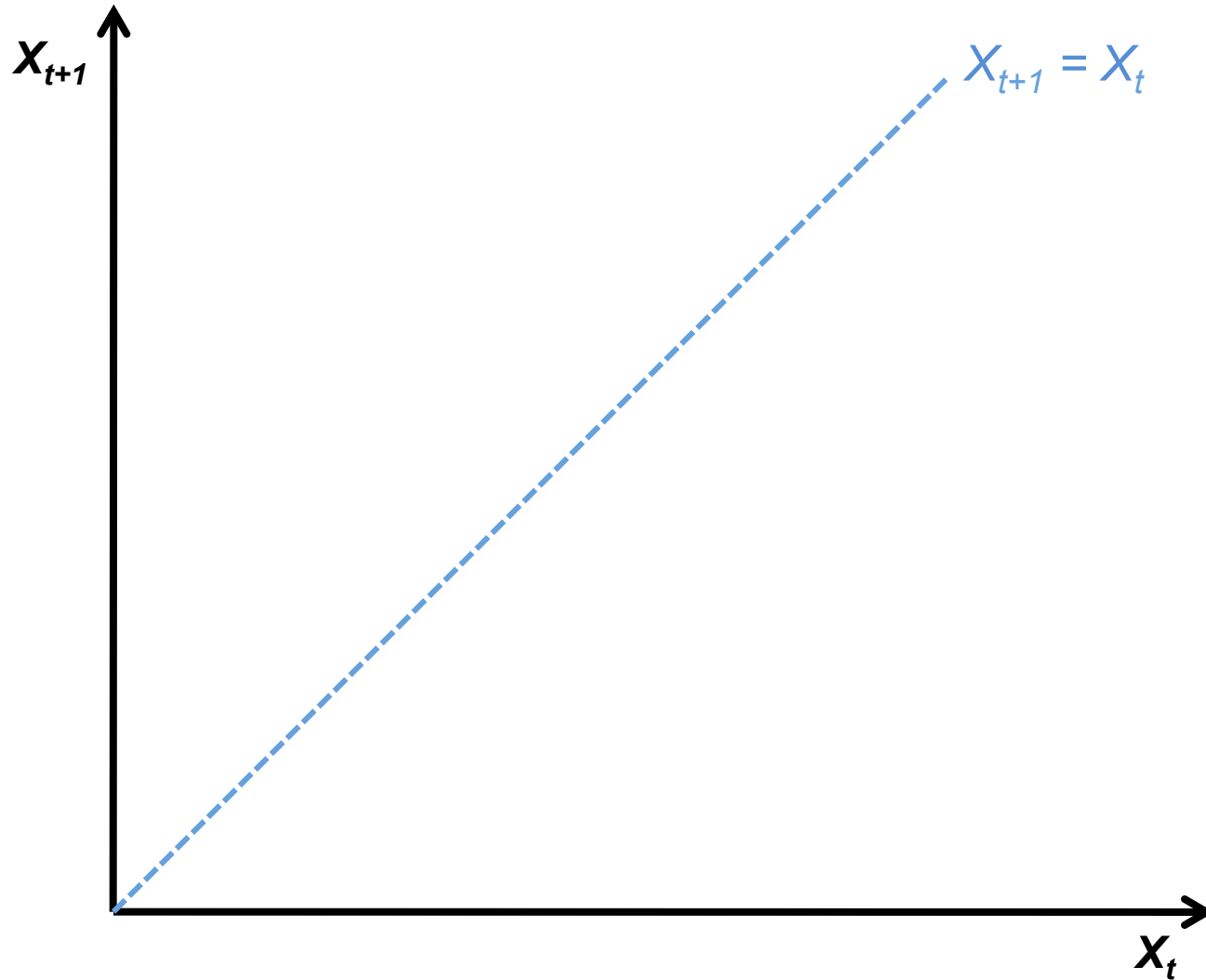
# Key characteristics

Poverty traps are “attractive” or self-enforcing

And they typically have multiple equilibria

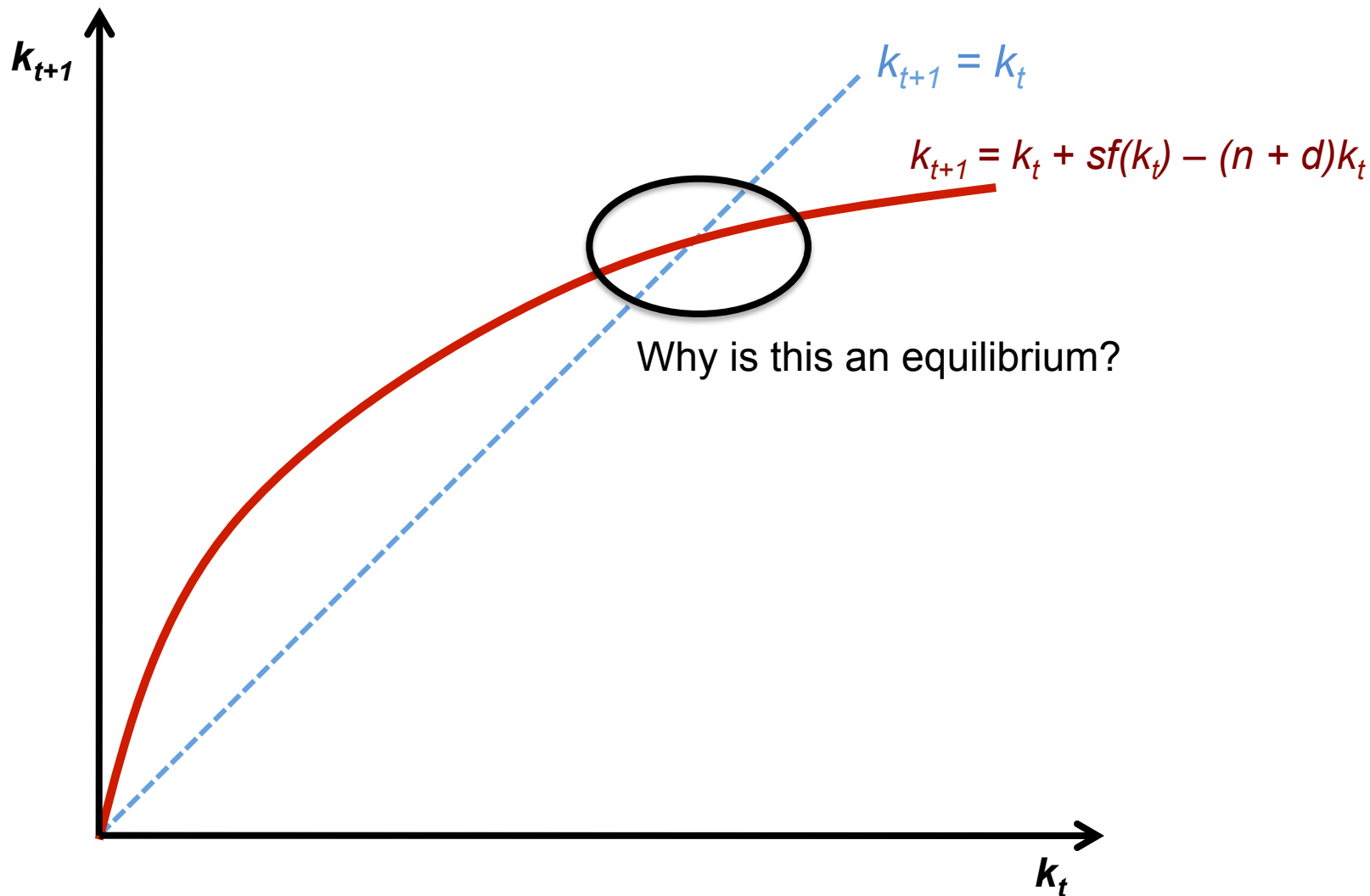
Think about a factor  $X$  that determines income,  $Y = f(X)$

How would we depict how  $X$  changes over time?

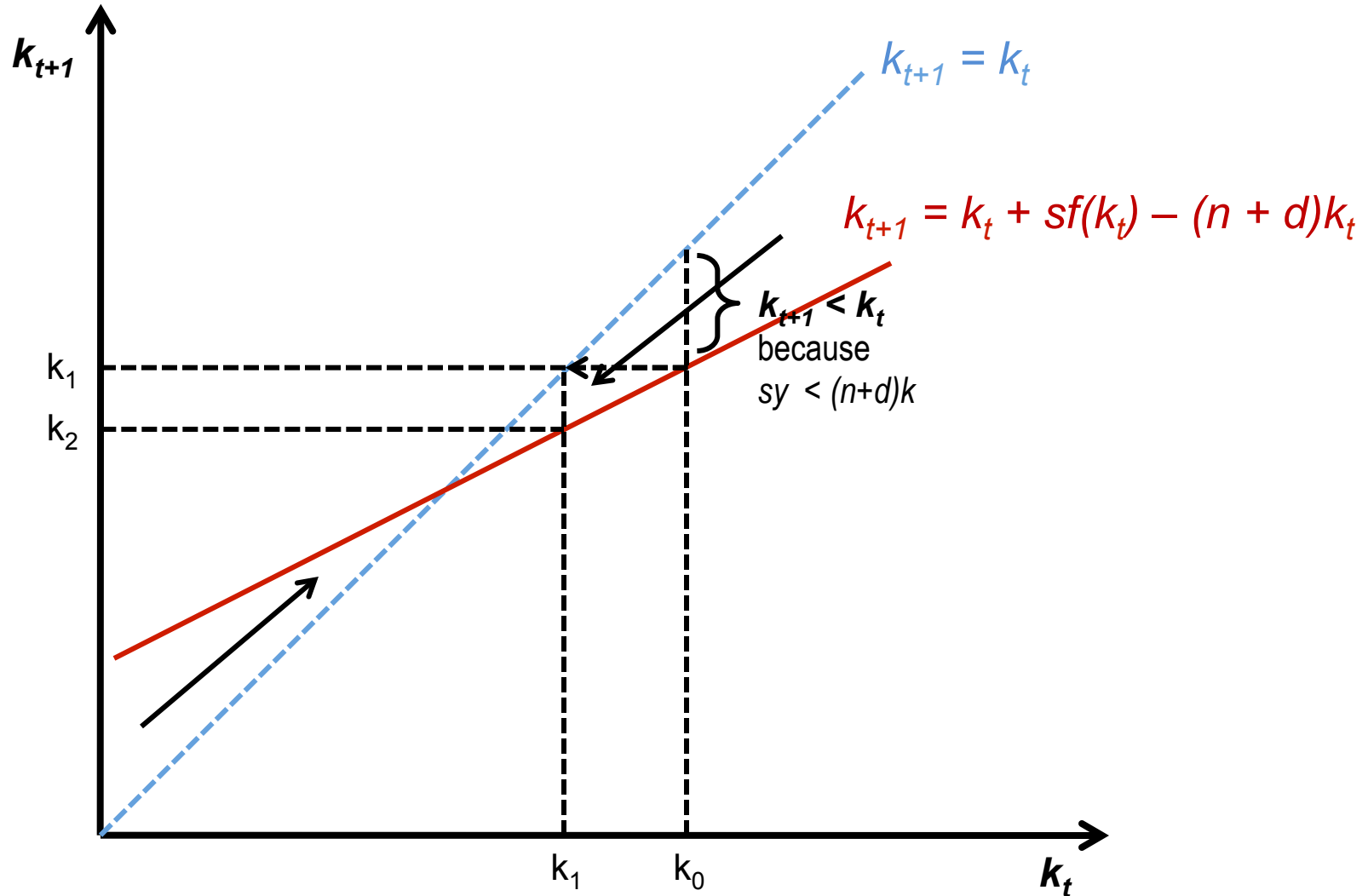


# The transition diagram for Solow (without tech growth)

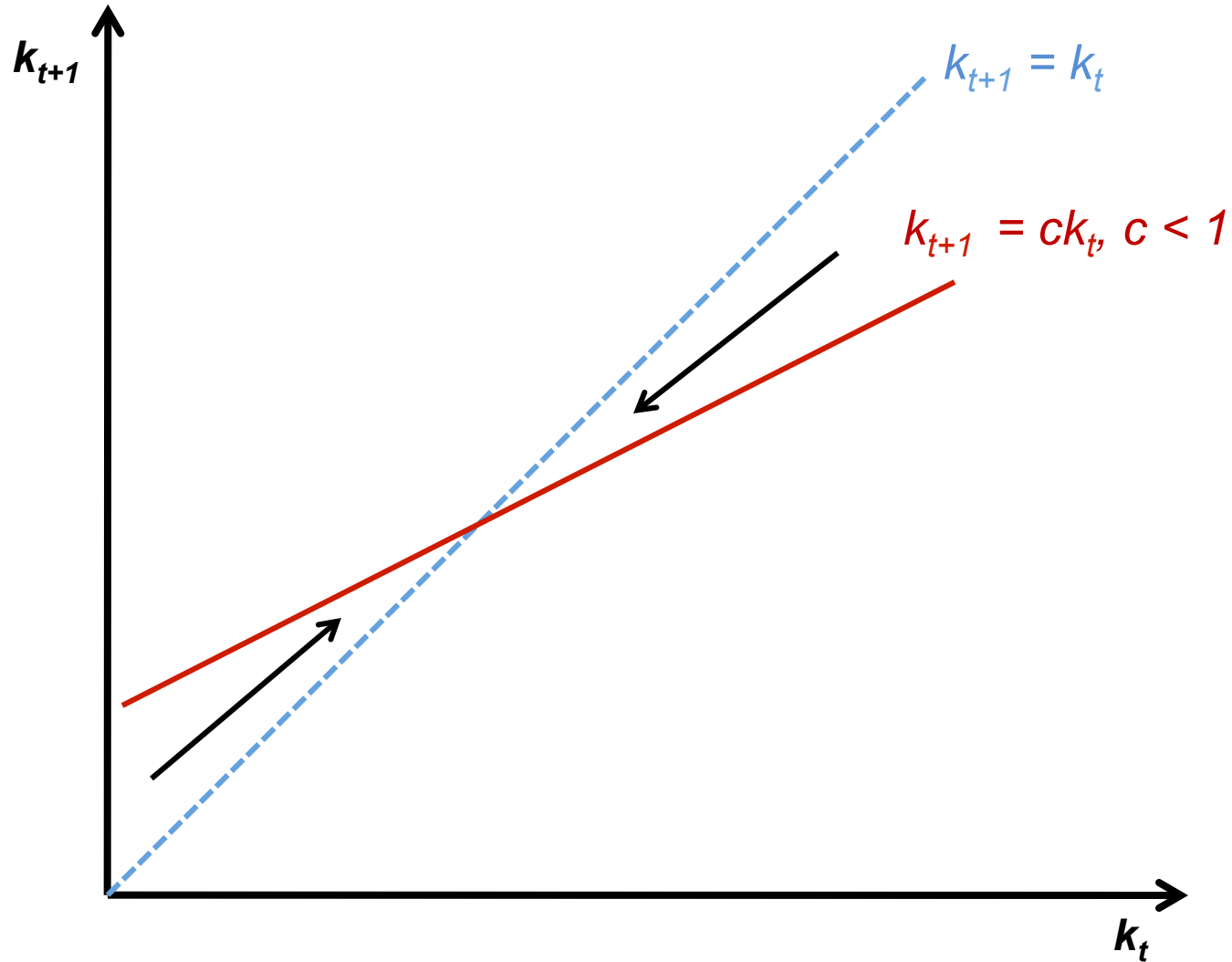
Bends inwards (concave) because of diminishing returns to  $k$



# Stable equilibrium: Crosses from above

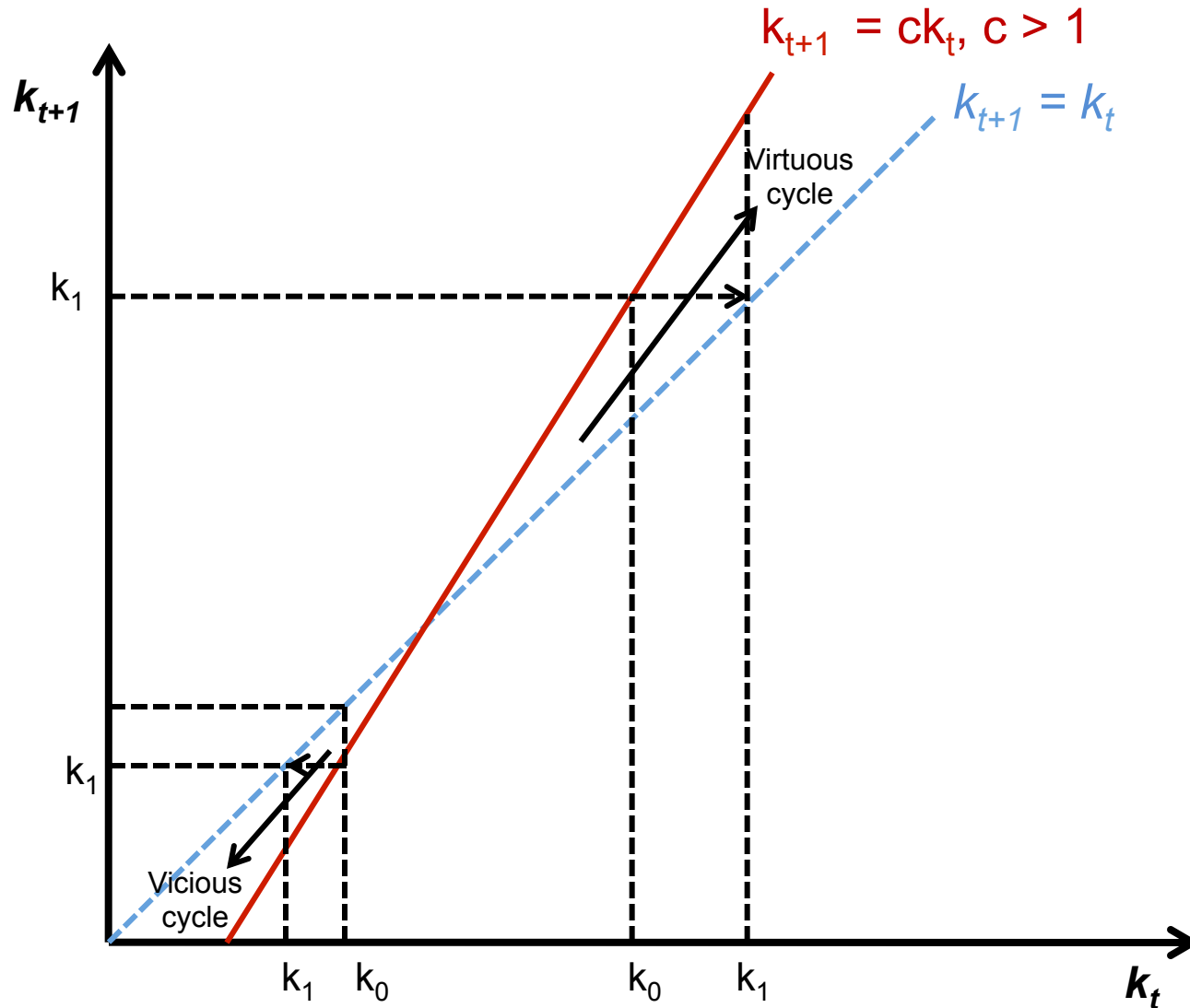


This will be any line with (locally) slope less than 1  
i.e. Diminishing returns



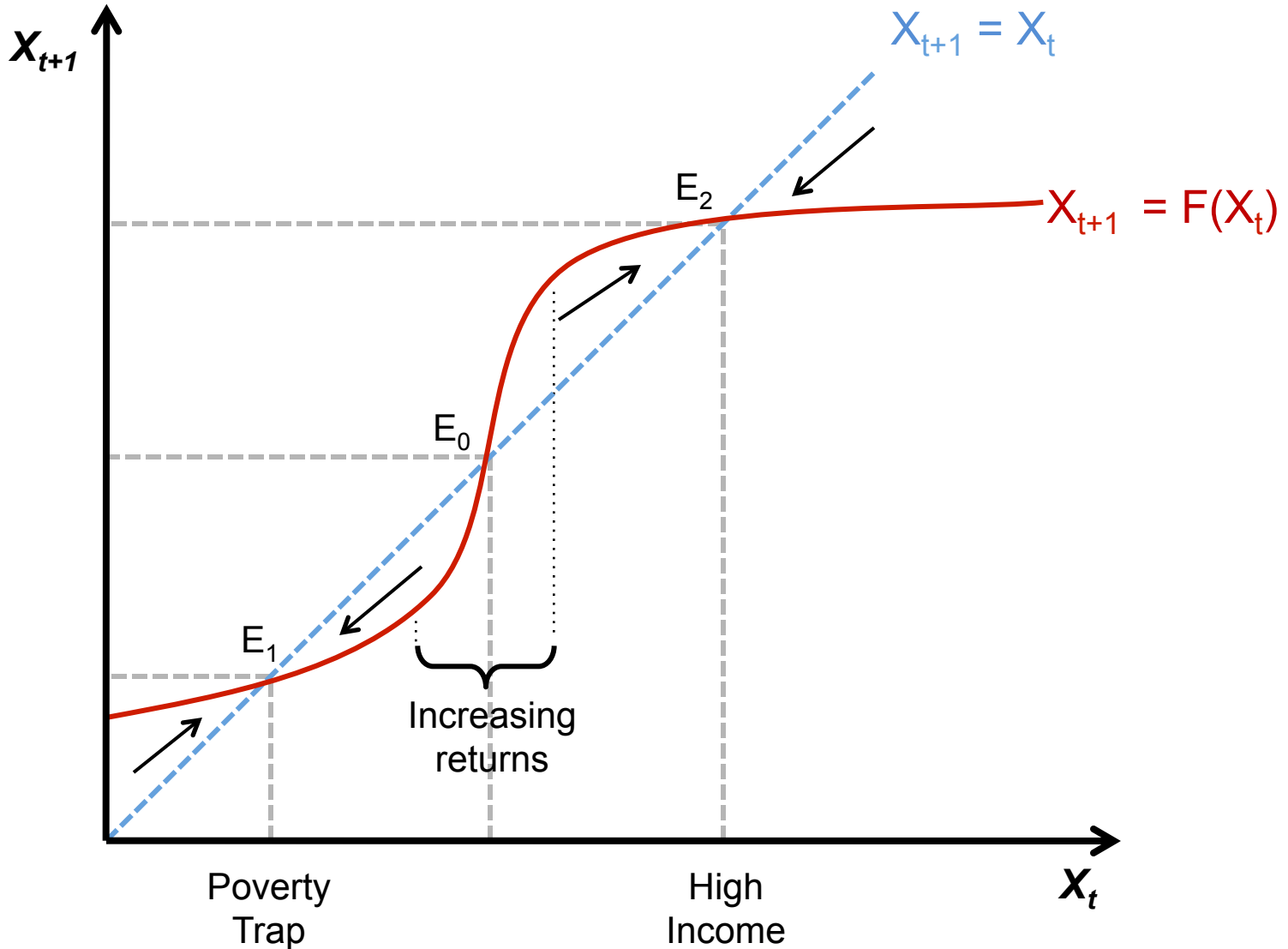
# Unstable equilibrium: cross from below

Slope greater than 1, or (locally) increasing returns



# A case of multiple equilibria:

An equation of motion with both diminishing and increasing returns

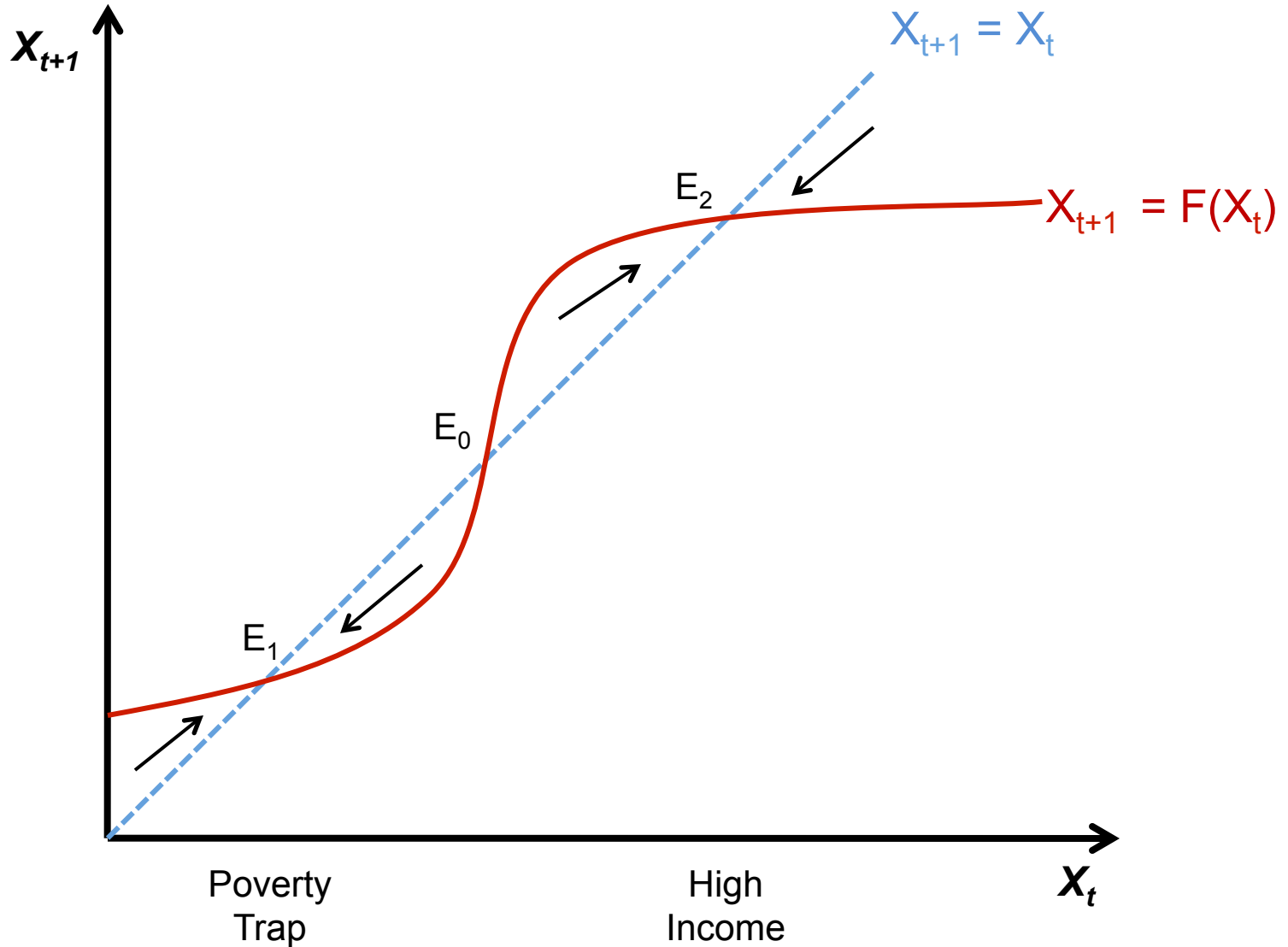


# It's all about increasing or decreasing returns to factors (c)

- X increases more than proportional to income (increasing returns to X)
  - Unstable equilibrium
  - Virtuous or vicious cycle
  - Divergence
- X increases less than proportional to income (diminishing returns to X)
  - Single, stable equilibrium
  - Convergence, based on fundamentals
  - e.g. Solow model



The key feature of an equilibrium is that it is “attractive”:  
A marginal improvement sends you back



# “Big push” stories

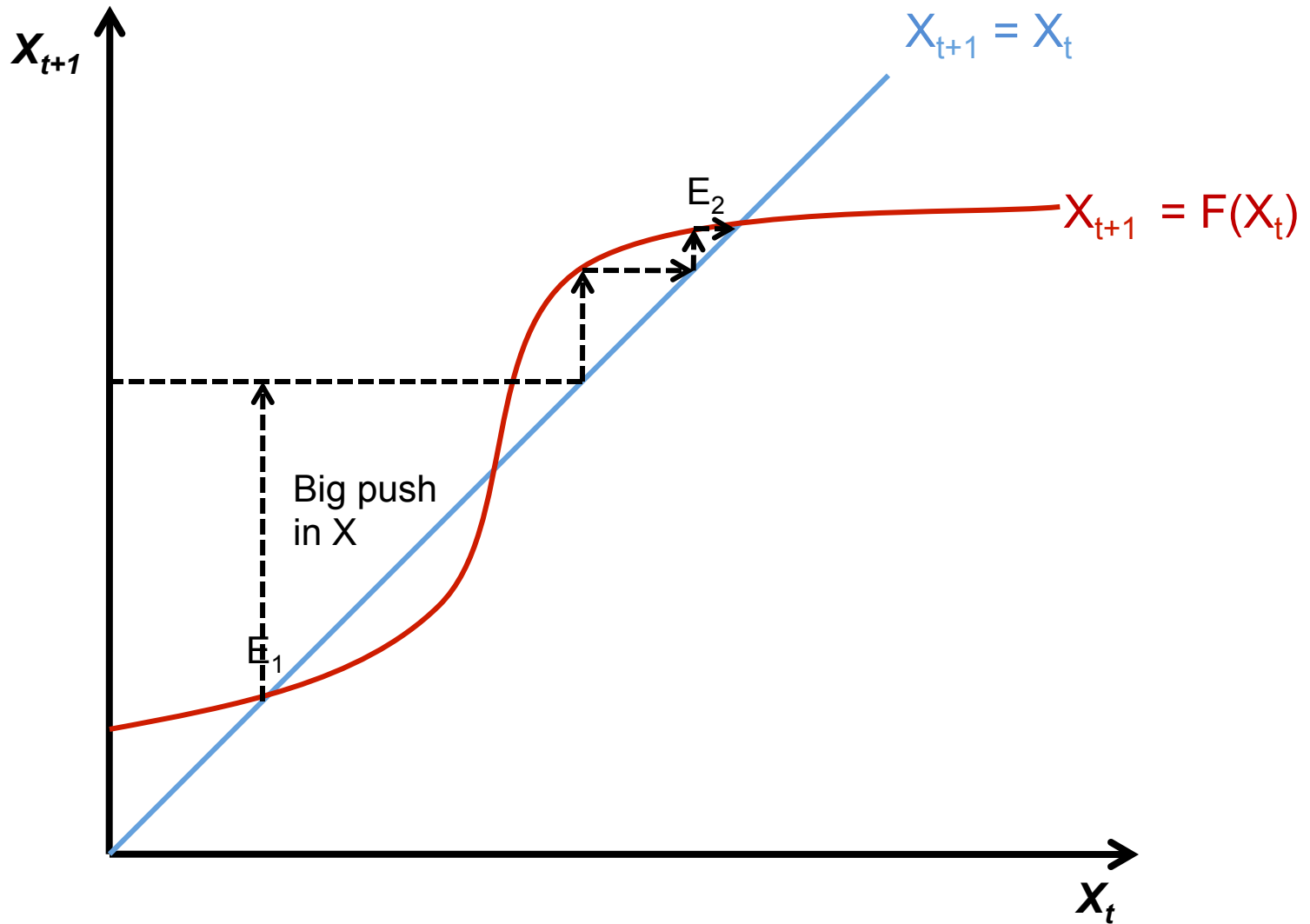
Two main ingredients:

1. Some source of increasing returns
2. Some large change in fundamentals breaks you out of the low level equilibrium

# The classic Big Push story: Industrialization

- Proposed by development economists such as Rosenstein-Rodan and Hirschman
  - Formalized by Murphy, Shleifer, Vishny
  - See Krugman reading for a simple overview
- **Root of trap:** Industrialization requires large initial investments (larger than any one firm), and so firms only industrialize if most others do
- **Source of IR:** Demand and supply externalities
  - **In supply/production:** e.g. knowledge spillovers, infrastructure
  - **In demand:** Higher wages mean greater purchasing
- **Big push:** Coordinated investment

# What intervention can do when there are multiple equilibria



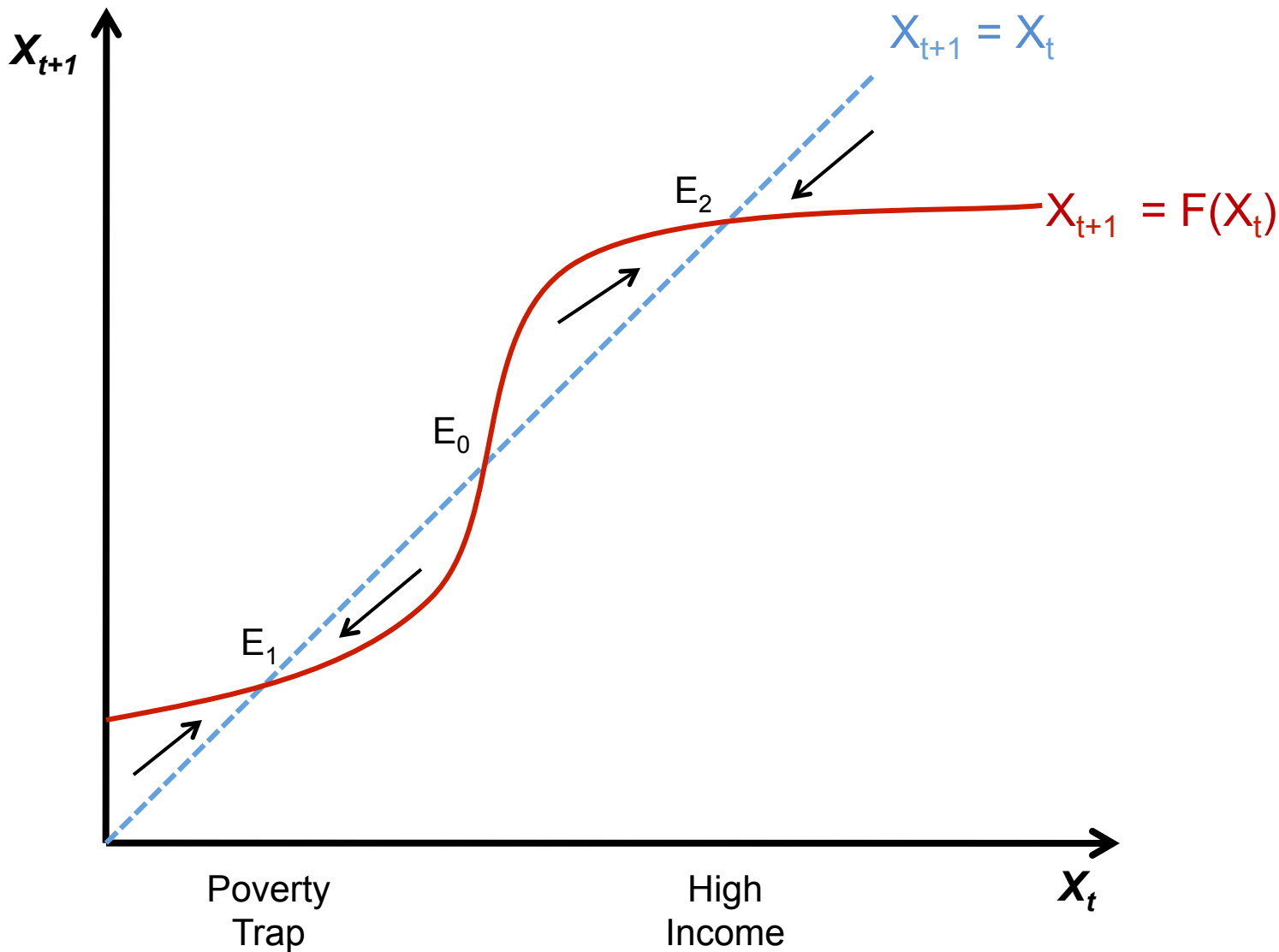
# Some (oversimplified) examples

- Soviets
  - **Root of trap:** Concentrated, inefficient ownership of means of production (e.g. quasi-feudal agriculture)
  - **Source of IR:** Externalities in revolution
  - **Big push:** Kill czar, collectivization, command economy, forced savings and investment
- Jeff Sachs:
  - **Root of trap:** Bad geography and low human capital imply low returns to investment, low trade and specialization
  - **Source of IR:** Complementarities between human capital investments, production of trade-able goods
  - **Big push:** Aid, favorable trade policy, export orientation

# Other (oversimplified) examples

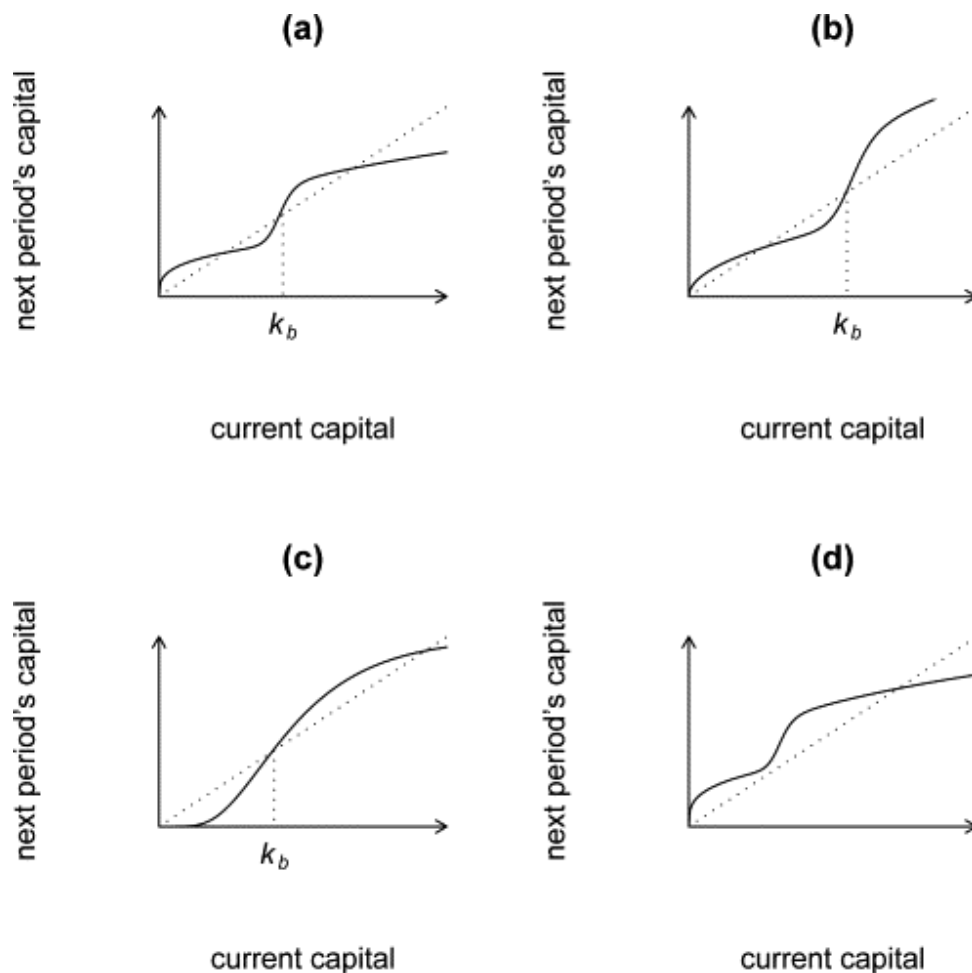
- Max Weber and “the spirit of capitalism”
  - **Root of trap:** Cultural preference for leisure, godliness through observance
  - **Source of IR:** Supply and demand externalities?
  - **Big push:** Protestants start to believe that godliness comes (or is revealed by) hard work and economic success
- Malthusian Trap
  - **Root of trap:** Population increases with income
  - **Source of IR:** Preference for children decreases with income (a discontinuity in population-income relationship)
  - **Big push:** Rapid technical change (e.g. chance discoveries)

How are the high and low equilibria “attractive” in these cases?



# The stylized S-curve is just one example

Most of the time we don't know the shape of the curve (all speculation)



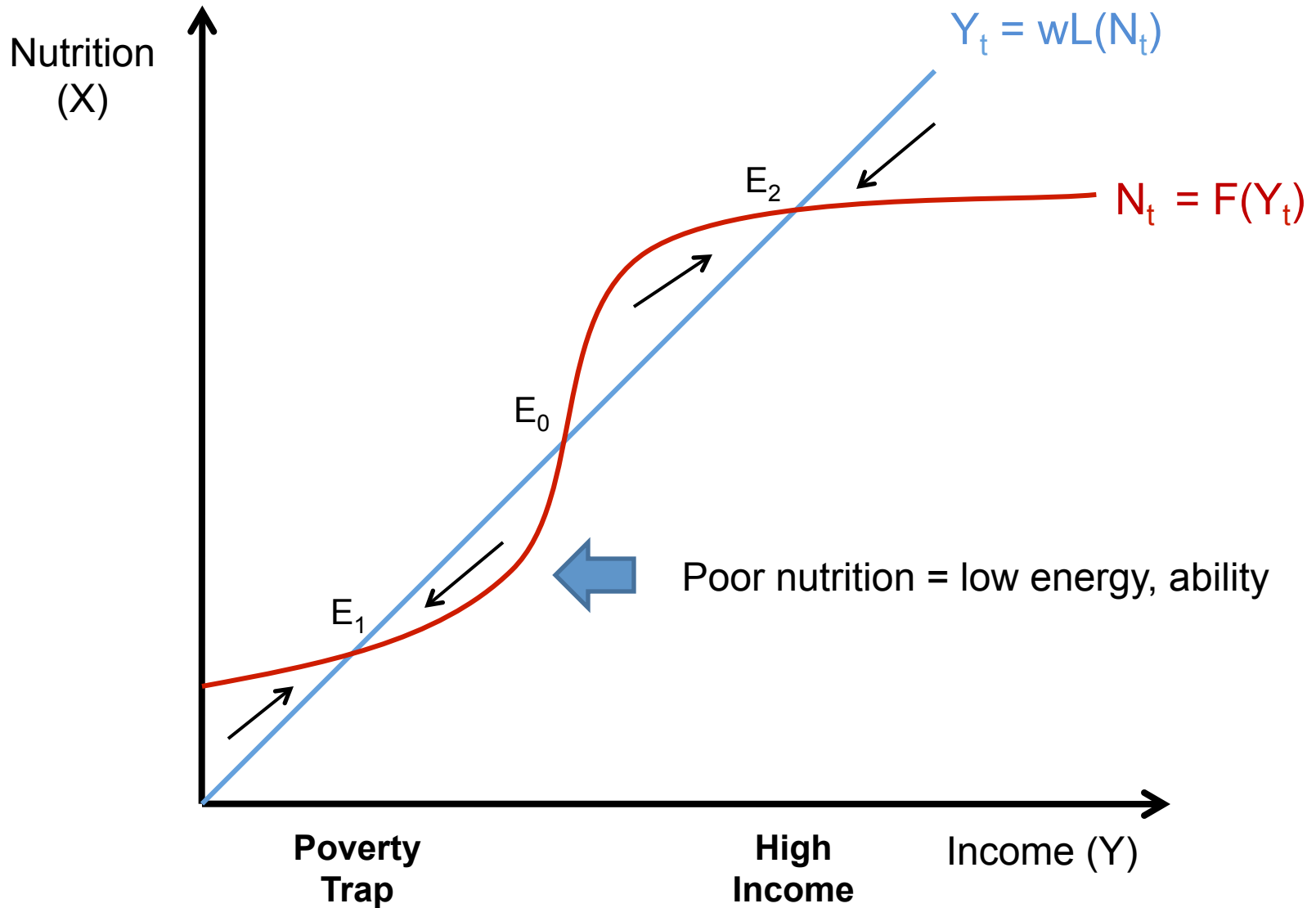


# Not just a macro-level story

Why might poor people face S-shaped income today/tomorrow curves?

# Multiple equilibria at the micro (household) level

Banerjee and Duflo



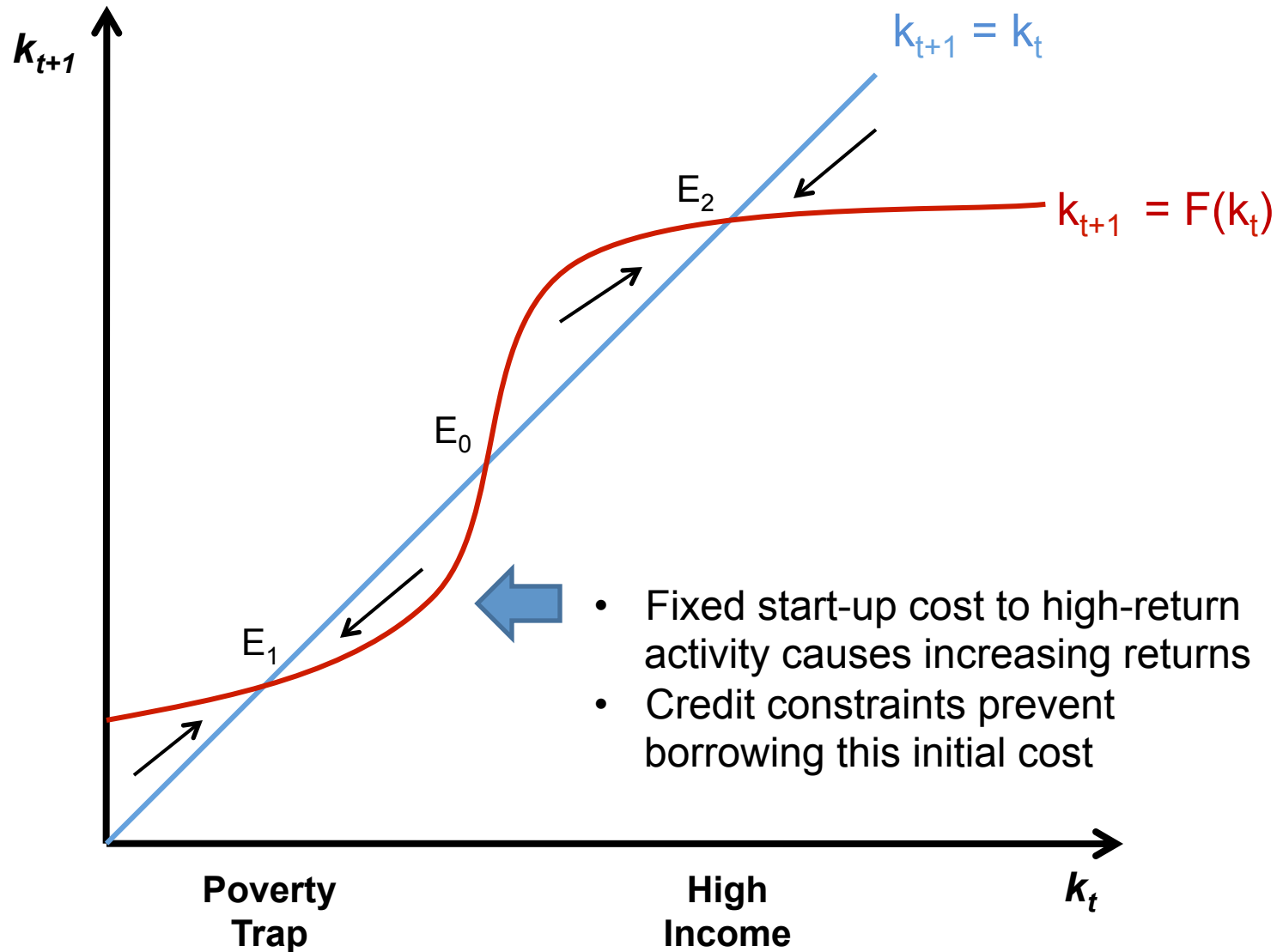
## Another common example (with more supporting evidence) is the role of credit market failure

- At least some of the poor have high potential returns to investment ( $r$ )
  - e.g. de Mel et al 2008, Udry and Anagol 2008, Kremer et al 2011
- Some investments may be lumpy
  - E.g. fixed costs ( $F$ )
  - General case: “production non-convexity” (IRTS)
- *If* financial markets work well *and* people are “well-behaved”, then the poor can make these investments
  - Profitable to borrow if market interest rate  $i < r$
  - Or can save at interest rate  $i$  until  $F$  is accumulated

# Unfortunately markets (and people) may not function so smoothly

- Credit market failure
  - Poor countries have weak, sparse banking sectors
  - Information asymmetries are large (no institutions to mitigate)
  - The poor have little collateral (and debt contracts may be hard to enforce)
  - MFIs or moneylenders typically lend for short spans (2-3 months)
  - Even MFI interest rates are prohibitively high: 10% per mo. = >200% per annum
- Other financial market failure
  - Many savings institutions do not allow saving for >2-3 months (e.g. ROSCAs)
  - High cost of saving → Interest rate on savings is negative
  - High inflation → Real interest rate on cash savings negative
  - Most long-term savings instruments (e.g. land, housing, livestock) are lumpy, illiquid, and may yield a low return
- Other “failures”
  - Self control problems over small amounts of money (e.g. Banerjee and Mullainathan 2010)
  - Pressure to share with others in ones social network (e.g. Platteau 2000, di Falco and Bulte 2009)

# Credit constraints and fixed costs of start-up



# Very different policy implications

The poverty trap (multiple equilibria) goes with a “transformational” perspective on development

The marginalist approach (a single equilibrium) goes with a more “marginal” perspective

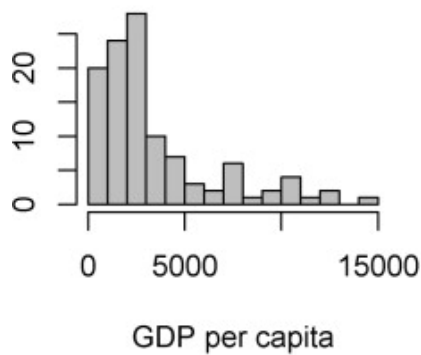
# What's the evidence say?

Short answer: Difficult to say and somewhat ambiguous

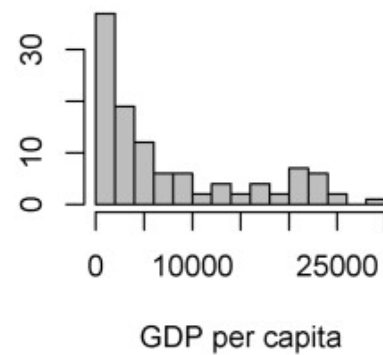
# Cross-country growth in late 20<sup>th</sup>c consistent with poverty traps

But bimodality is what we seek to explain, so cannot we cannot use it as the reason

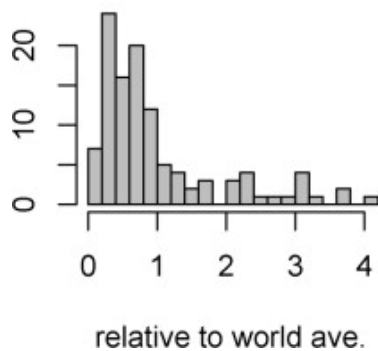
**Income distribution, 1960**



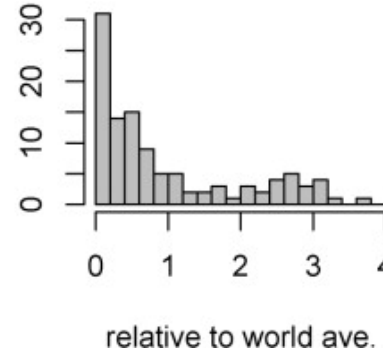
**Income distribution, 1995**



**Income distribution, 1960**



**Income distribution, 1995**





# Evidence on macro-level traps

- Pretty weak (says Easterly 2008)
  - Poorest countries change all the time (few stay in “traps”)
    - Initially poor countries no more likely to have zero or lower growth than middle income ones
    - Of course, not clear this is the right horizon
  - Big increases in aid do not seem to result in big jumps in growth
- Not clear that post-2000 growth patterns support the same conclusions

# Macro-level poverty traps have fallen out of favor in economics

- Lack clear, testable quantitative implications
  - Hard to distinguish from mere rigidities or constraints/  
different fundamentals
  - Recall that constraints are not “poverty traps”
- Not clear how long the long run is
  - Especially in “new” post-colonial nations

# What about the micro level?

e.g. Banerjee and Duflo 2012

- Growing base of evidence of some poverty traps for the poorest
  - Growing base of evidence for:
    - Self-control and social constraints
    - High returns to capital among the poor
    - Adverse effect of credit and risk market imperfections
    - More ambiguous evidence of fixed costs and a “trap”
  - Evidence less compelling for other purported traps
    - E.g. nutrition
- But unclear whether a “big push” does not necessarily lead to a virtuous cycle of growth
  - Change is more incremental

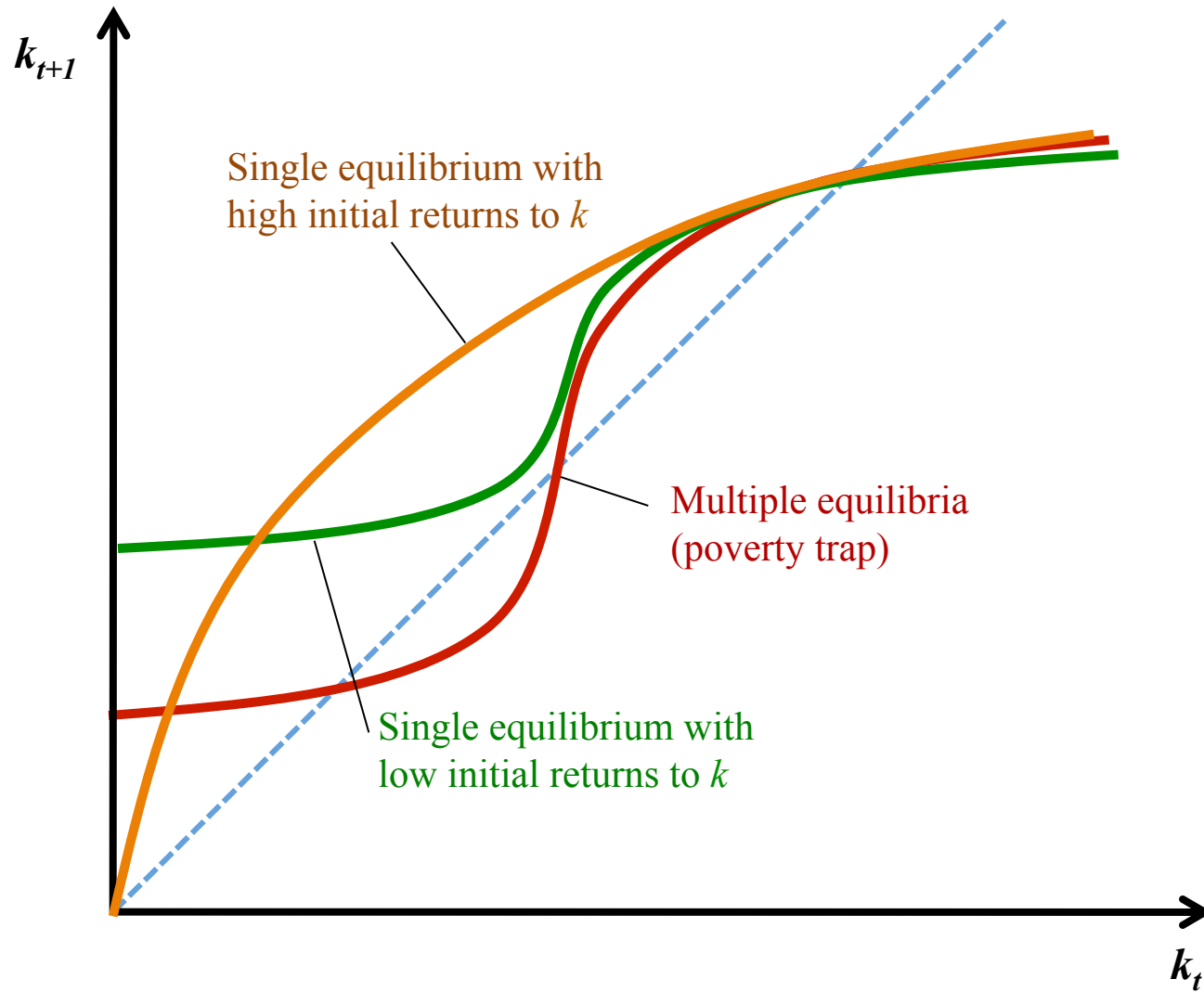
c. From poverty traps to  
“rigidities” and constraints and  
structural transformation

My made up term and category  
“Things that slow transition to the  
frontier”

# It's not clear we need "traps"

- Could be as simple as slow transitions (over some range)
  - Low initial levels of development
  - Below steady state
  - Some constraint slows pace of accumulation
    - e.g. self control, financial market imperfections, migration costs, monitoring costs, contacting difficulties, etc
  - Can, but do not necessarily, involve IRTS
- Empirically rigidities are going to be difficult to distinguish from traps

# Stylized example



# Classic model of structural change: The “Lewis model of unlimited labor supplies”

- Intuitively, tries to capture the following logic: Chinese urban wages will not begin to rise until the surplus rural labor is absorbed into production
  - Rural agriculture less productive than urban industry
  - Huge “surplus” labor in rural agriculture
  - Urban industrial wage greater than rural agricultural wage
    - “Unlimited supply” of rural workers
  - Can mean large increases in demand are not reflected in wages
- Now introduce rigidities (e.g. rural-urban migration costs)
  - Means that urban labor supply constricted in short term
  - Can retard output growth

Another potential rigidity:  
Economic development as self  
discovery















One rigidity or constraint:  
Learning what one is good at  
producing

Hausman & Rodrik

# It's hard to pick winners

- For all but the most sophisticated economies , industrial success entails concentration in a relatively narrow range of high-productivity activities.
- The specific product lines that eventually prove to be hits are typically highly uncertain and unpredictable.



# The information externality

1. There is uncertainty about what products can be produced efficiently in a country
  - Unknown cost structure and comparative advantage
2. Experimentation and adaptation is costly and risky
3. Once the advantage is discovered, imitators rush in

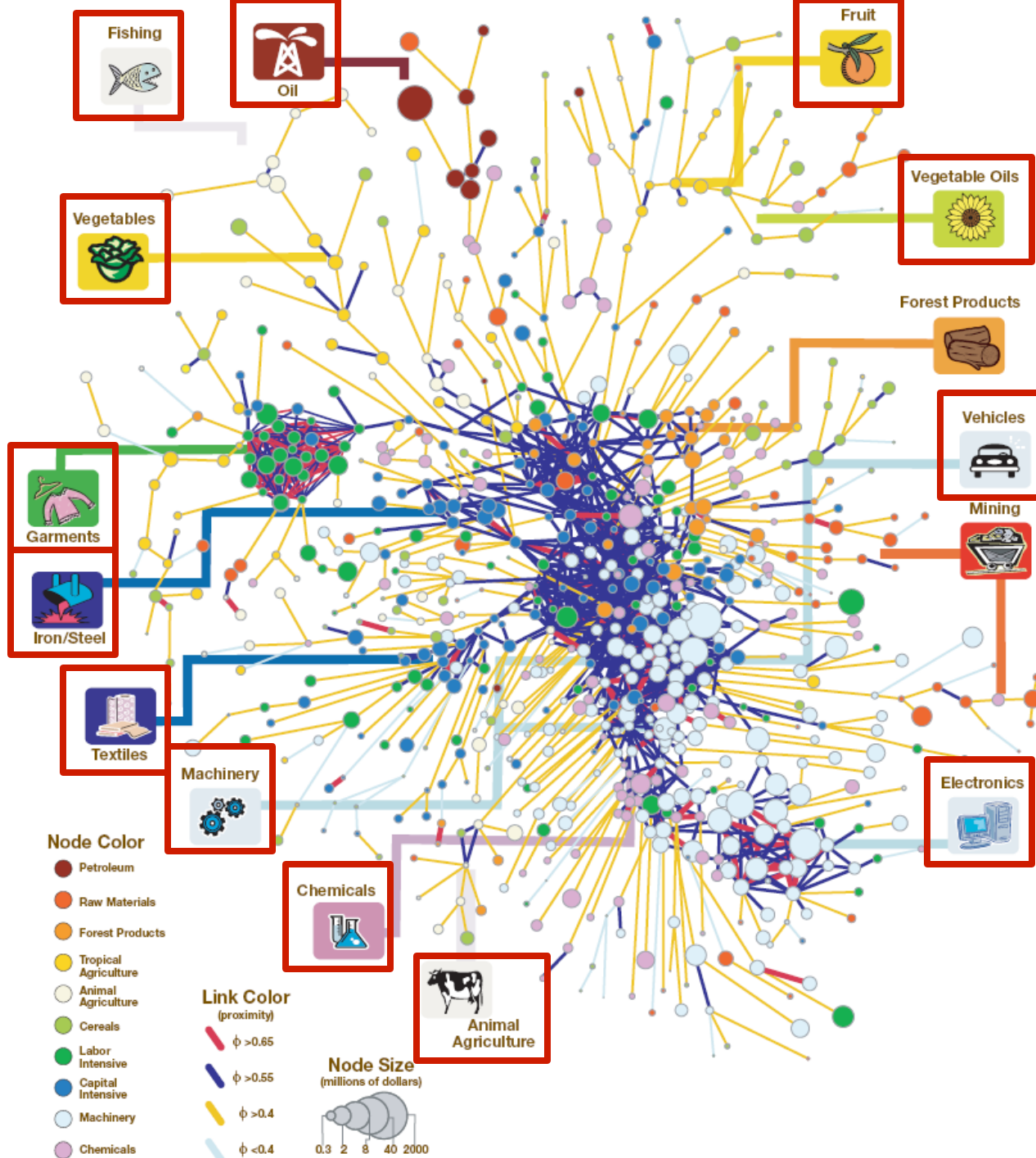
# The information externality

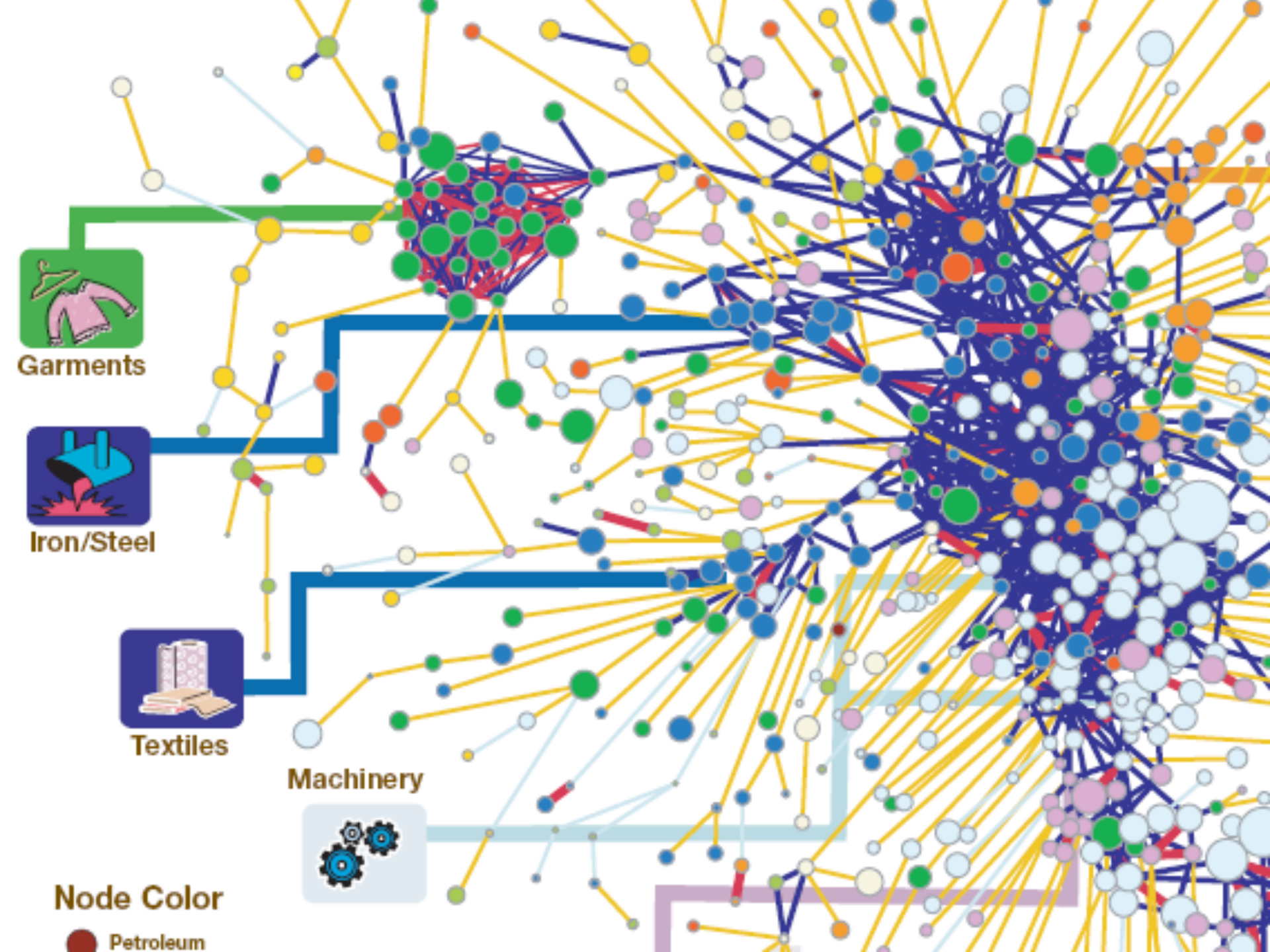
- Why would a firm make the costly and risky investment if everyone else will come in and reap the benefits?
- How do we overcome this knowledge externality in rich country innovation?
  - Patents and intellectual property
  - Research incentives and grants
  - University funding

How to promote discovery and experimentation in developing economies?

# Development as diffusion (Hausmann)

- As nations develop, different industries and products are born
- Similar countries face different opportunities for diversification because they have different linkages to other products
  - **Backward linkages:** supply chain, infrastructure needs, shared inputs, ...
  - **Frontward linkages:** market access, production and processing, ...
- Economic development should be seen as a diffusion process over an evolving network





# Implications for growth policy

- Strengthens case for trial and error
  - Evolutionary selection
- Emphasis on development of linkages
- Important role for trade concessions in developing new industry clusters
- But coordination and good governance key