Political Economy of Development

Week 2: Introduction to "Development Theory"

Instructor: Chris Blattman

"Development theories" not "development theory"

- Typically departs from growth theory setup:
  - Don't necessarily start with $Y = A \cdot F(K,HL)$
- No unifying framework or assumptions
  - Particularistic models and ideas
  - Do not add up so easily
- Each model or empirical exercise tends to focus on a particular rigidity, constraint, or market failure

A crude typology

#2 and #3 get us into the realm of "development theory"

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
     - Equilbria are "attractive"
   - Key features: Some form of increasing returns, plus some form of constraint

3. **Rigidities, constraints, and the process of structural change**
   - Not trapped, but structural change, factor accumulation, or technical advancement impeded and slowed
   - A middle view between neoclassical and poverty trap?

A. From neoclassical growth to poverty traps

= Increasing returns over some range

Recall the dynamics of the Solow model

- Output per worker is a function of capital

$$y = Af(k)$$

- Capital per worker follows a simple law of motion:

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

- Combining these, the dynamics of the whole model are described by:

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

- In discrete time:

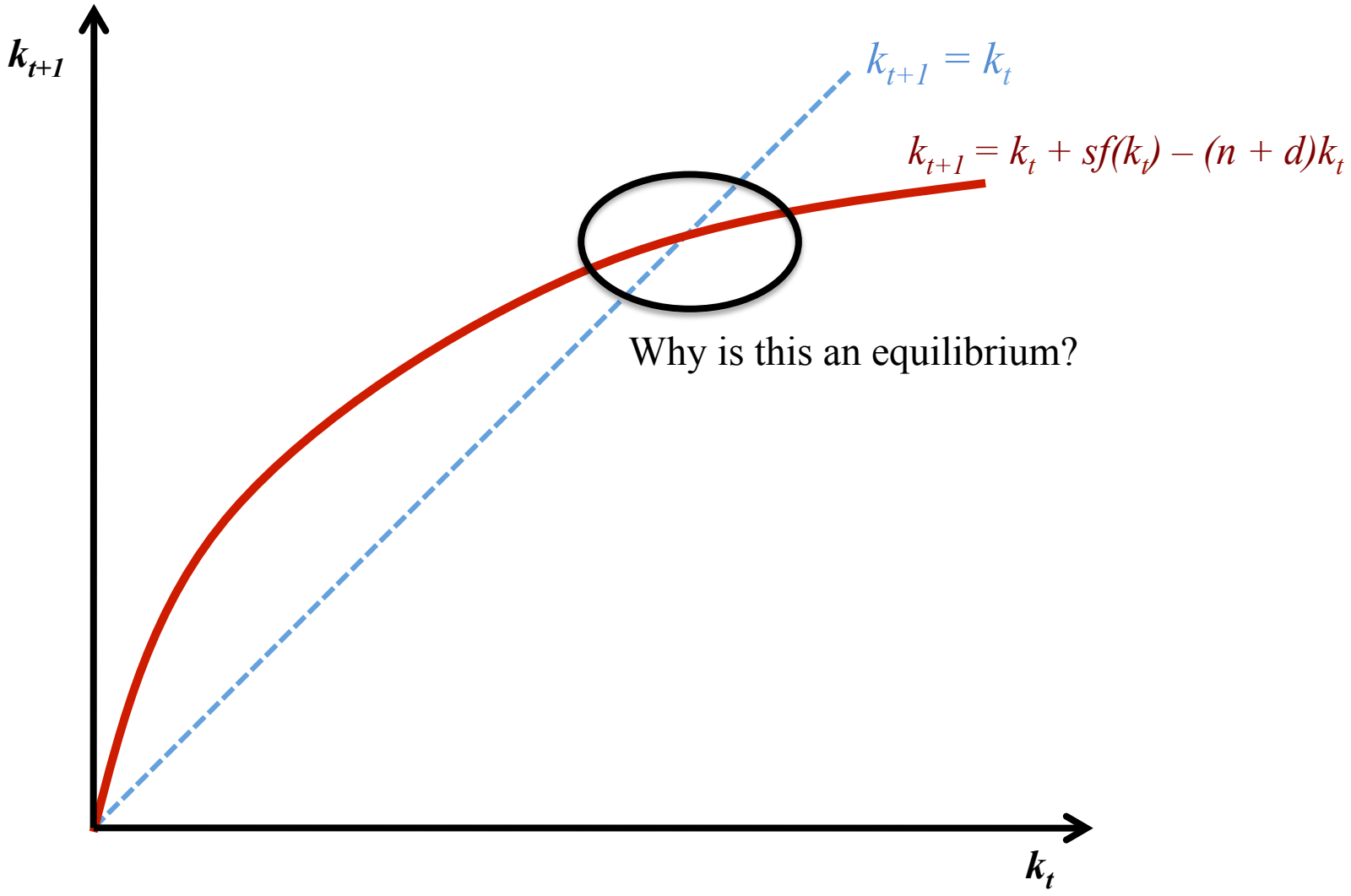
$$k_{t+1} - k_t = sAf(k_t) - (n + \delta)k_t$$

or

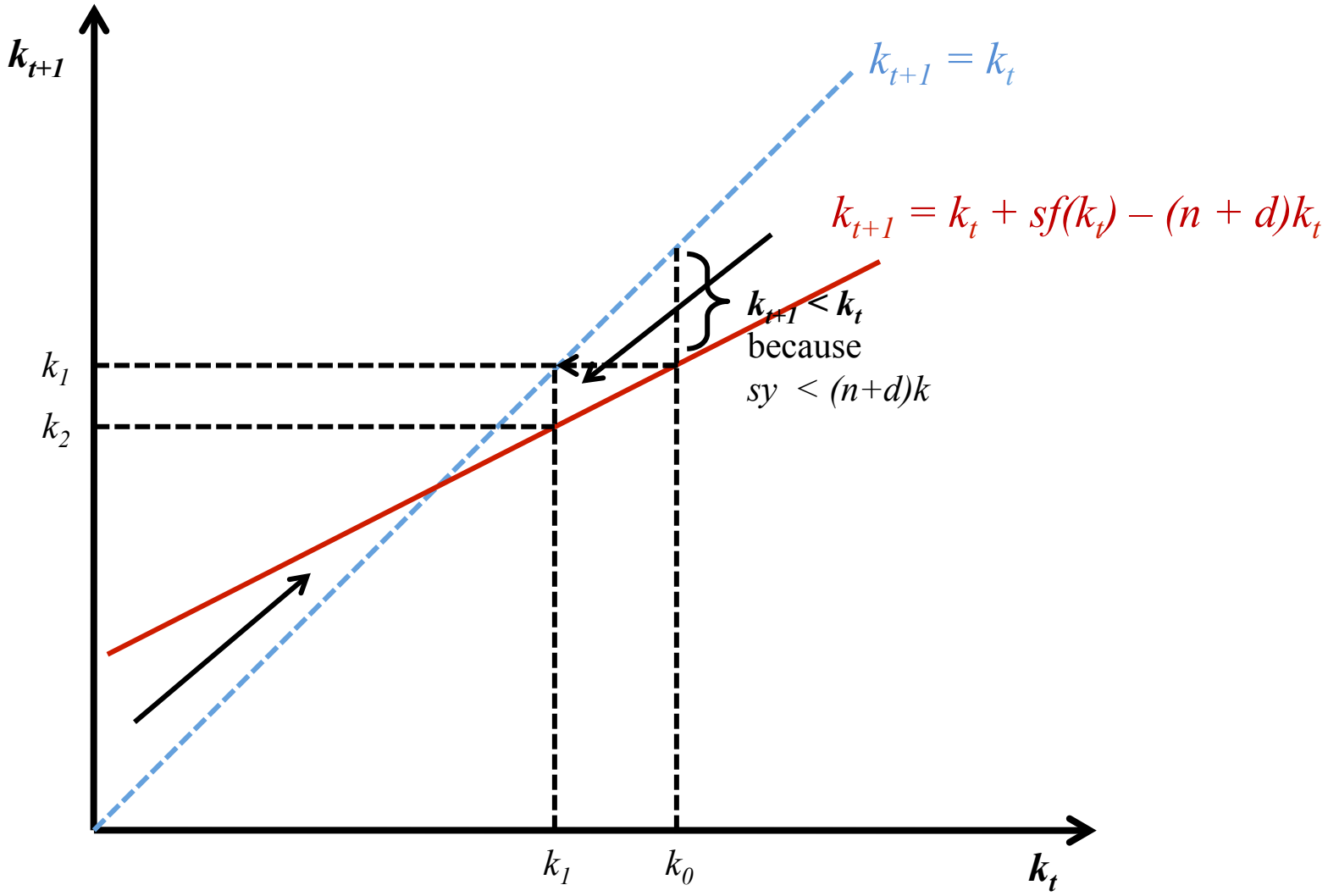
$$k_{t+1} = k_t + sAf(k_t) - (n + \delta)k_t$$

The transition diagram for Solow (without tech growth)

Bends inwards (concave) because of diminishing returns to k

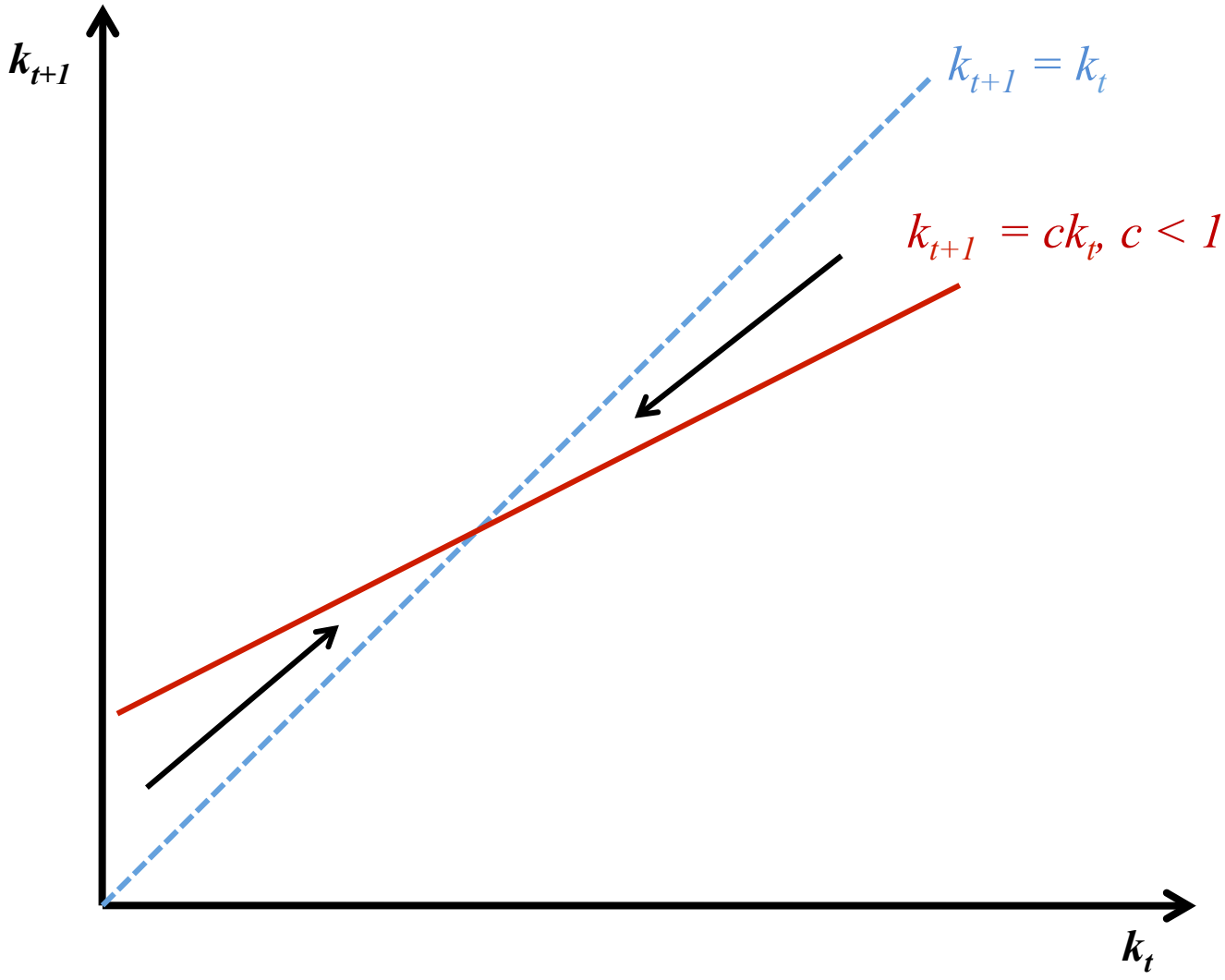


Stable equilibrium: Crosses from above



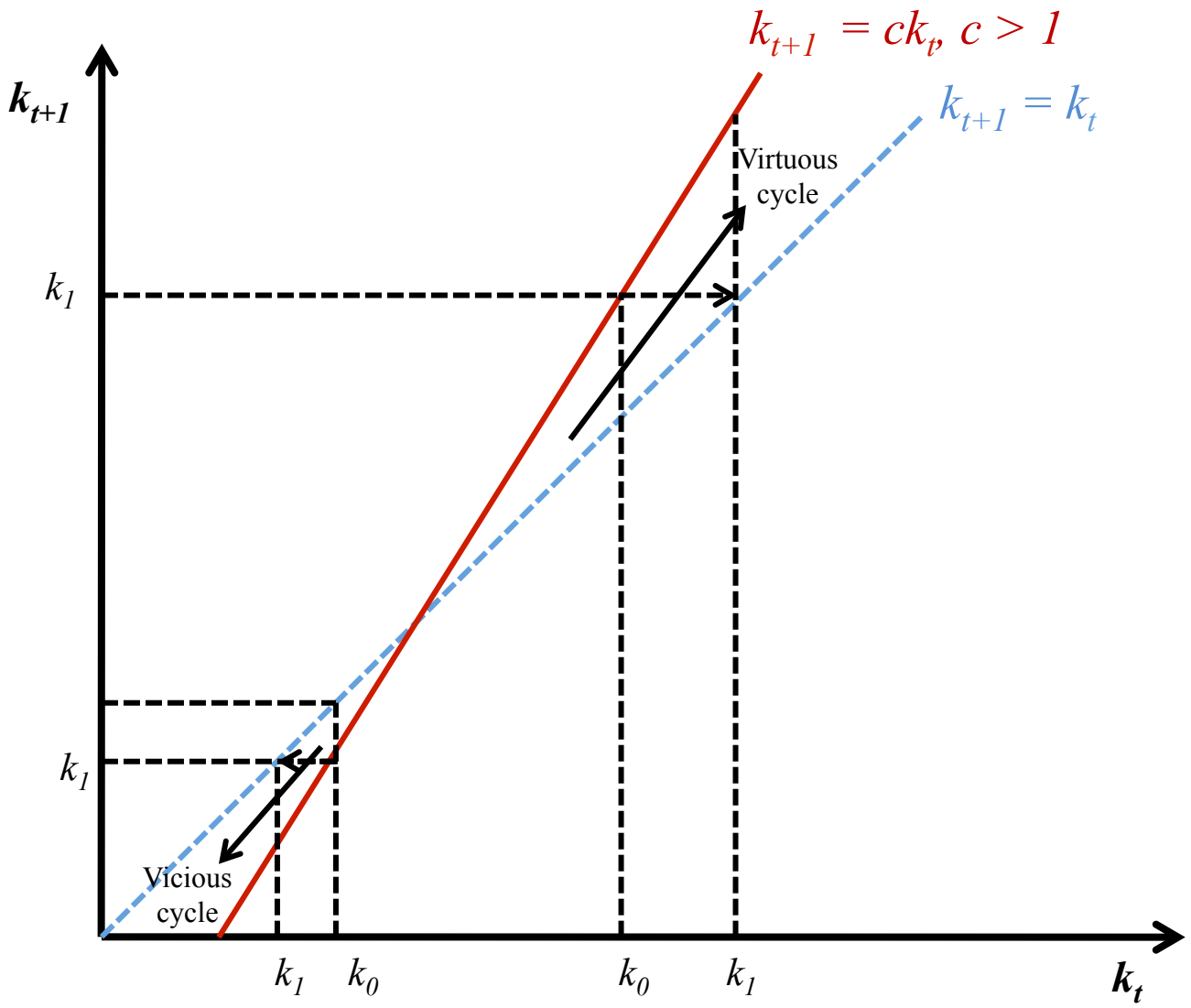
This will be any line with (locally) slope less than 1

i.e. Diminishing returns

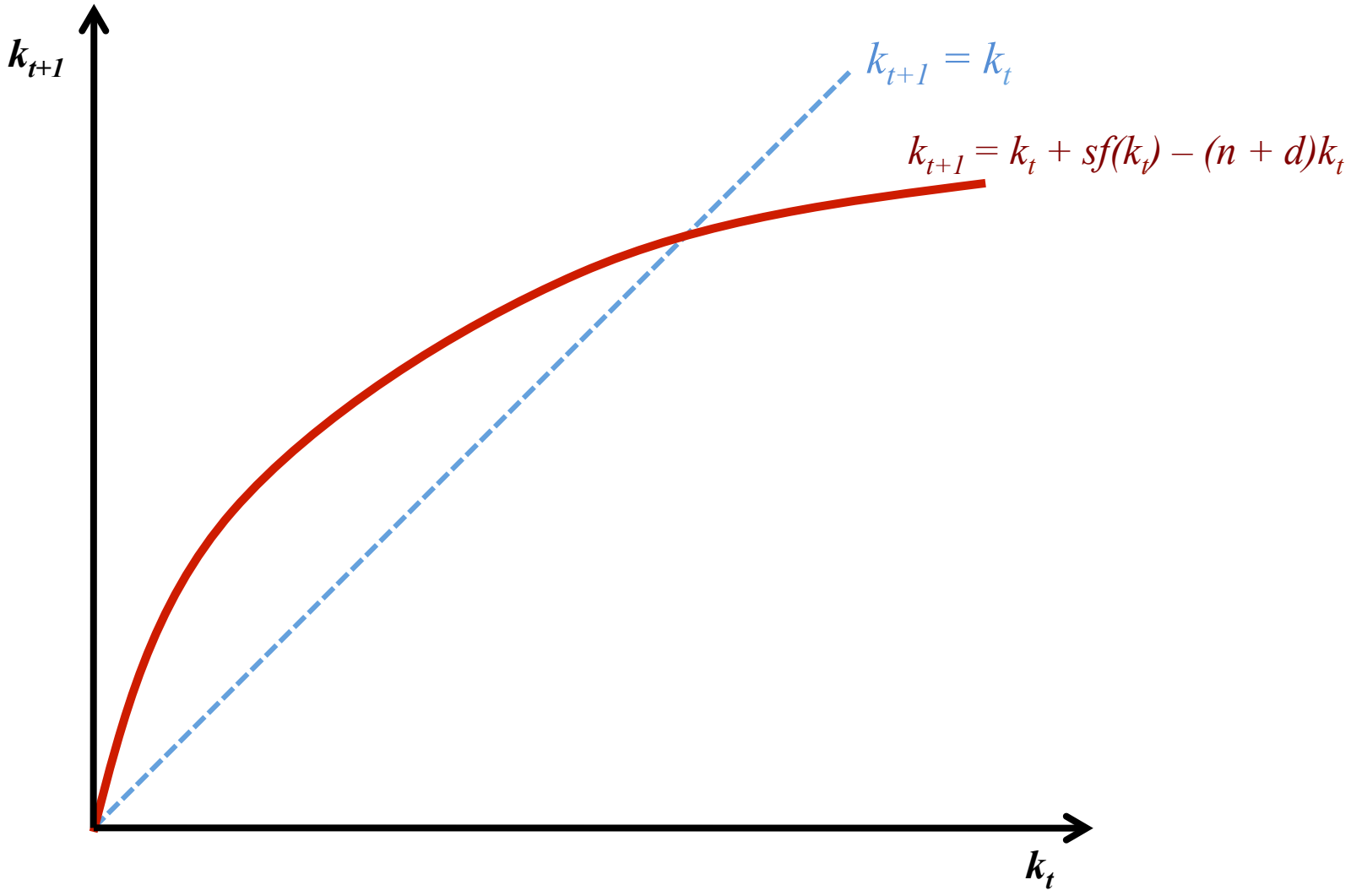


Unstable equilibrium: crosses from below

Slope greater than 1, or (locally) increasing returns



But why should k_{t+1} be a concave function of k_t?

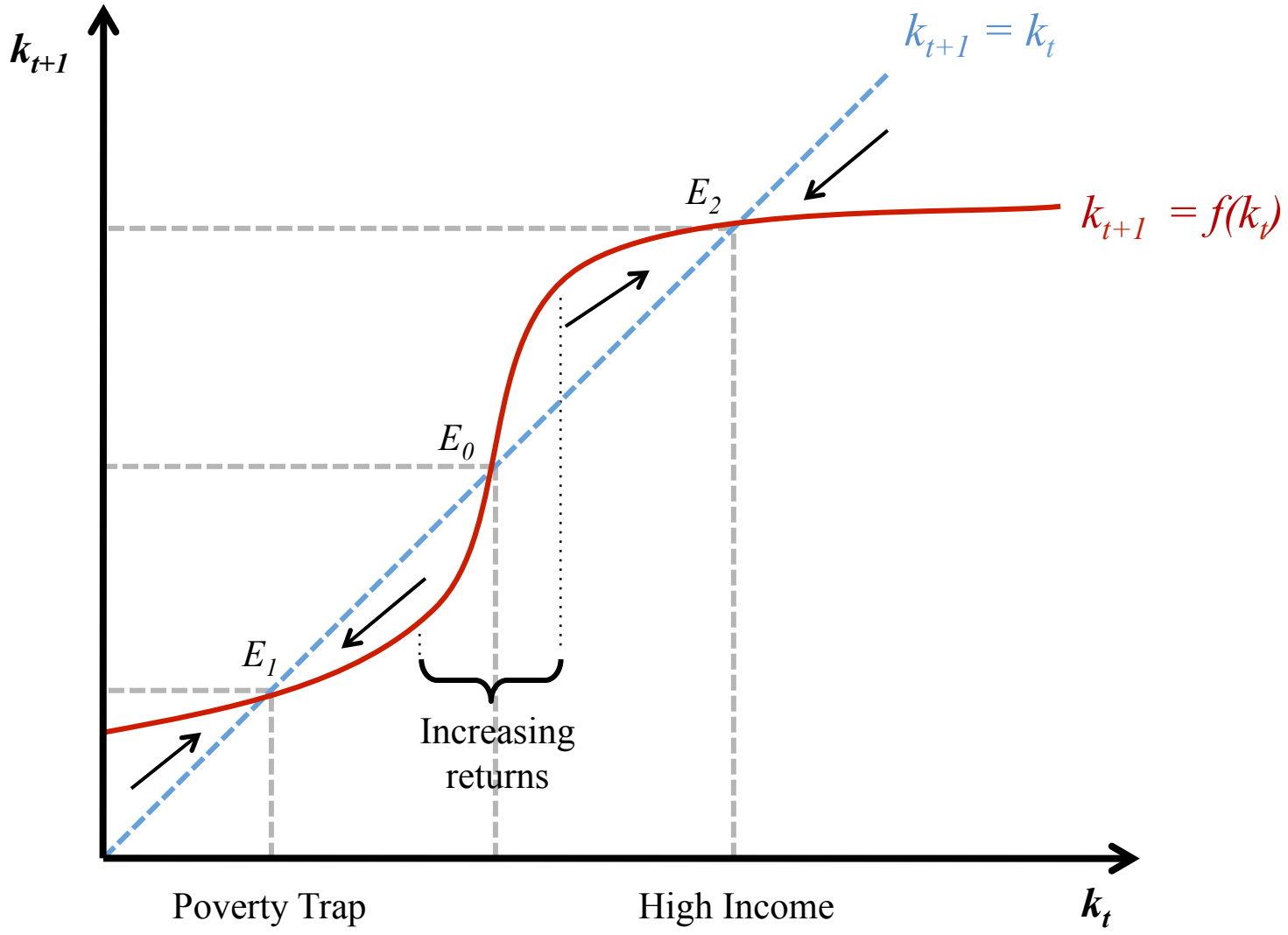


What could lead the returns to capital to be convex (over some range)?

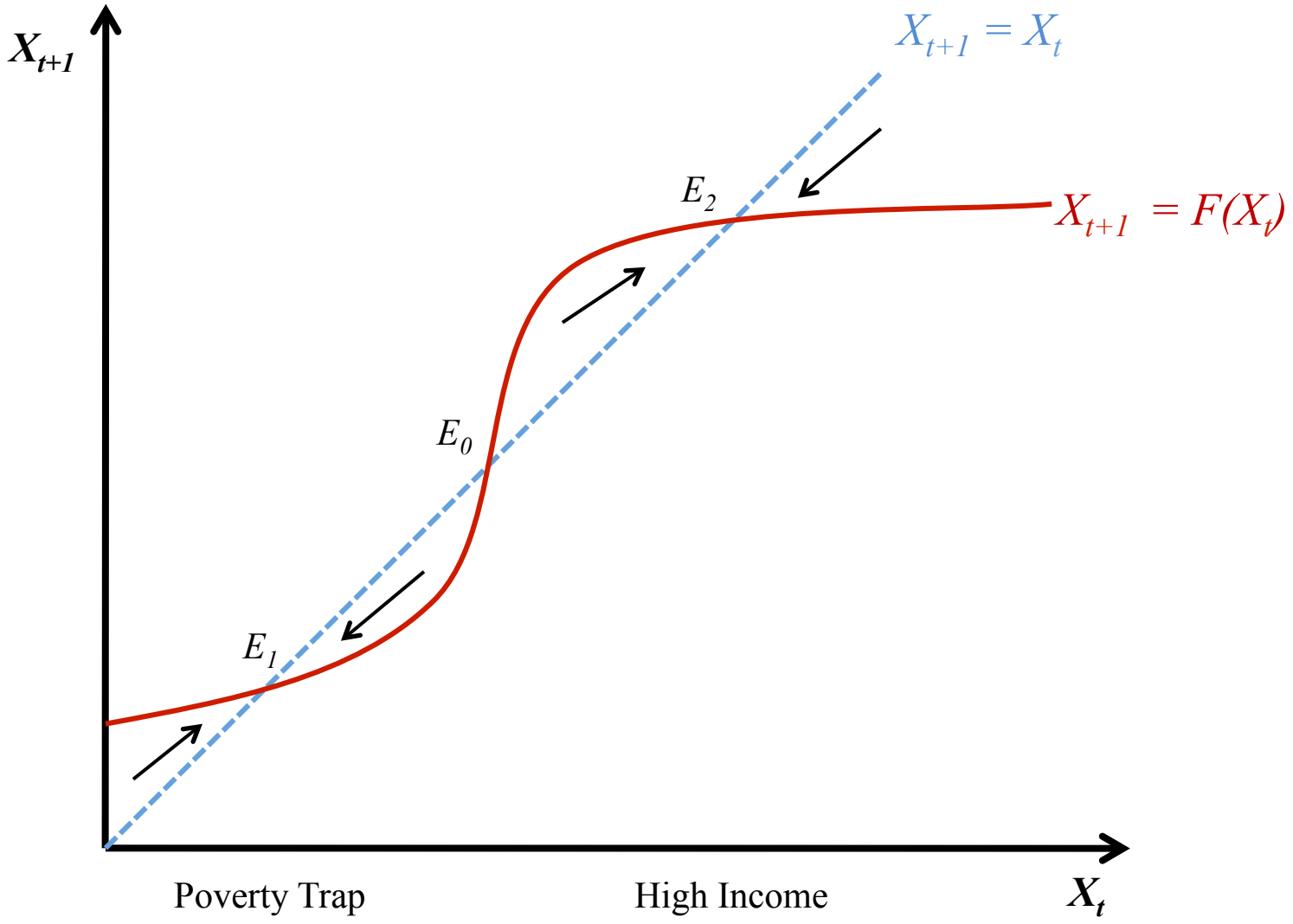
- Knowledge spillovers, learning by doing
  - e.g. AK model
- Shared investments (infrastructure and other "linkages")
- Fixed start-up cost of capital-intensive technologies

A stylized example of multiple equilibria:

$k_{t+1} = f(k_t)$: An equation of motion with both diminishing and increasing returns



The key feature of an equilibrium is that it is "attractive": A marginal increase in X sends you back



"Big push" stories

Two main ingredients:

1. Some source of increasing returns

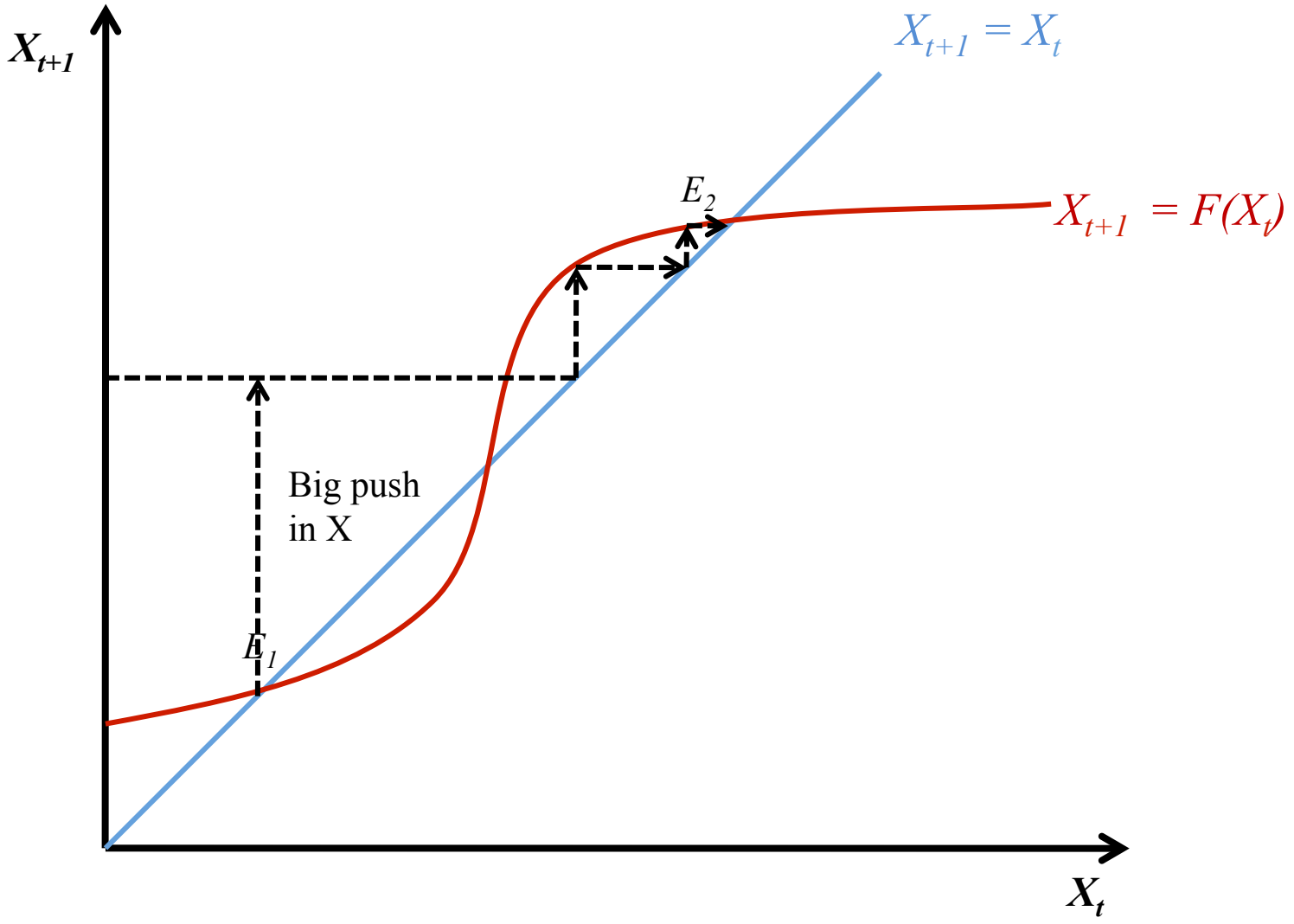
2. Some large change in fundamentals breaks you out of the low level equilibrium

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 IRTS:
  - Demand and supply externalities
    - In supply/production: e.g. knowledge spillovers, infrastructure
    - In demand: Higher wages mean greater purchasing
- Nature of big push:
  - Coordinated investment (by government?)

What intervention can do when there are multiple equilibria

An extremely influential idea in policy



Some (oversimplified) examples

- Soviets
  - **Root of trap:** Concentrated, inefficient ownership of means of production (e.g. quasi-feudal agriculture)
  - **Source of IRTS:** Externalities in revolution
  - **Big push:** Kill czar, collectivization, command economy, forced savings and investment

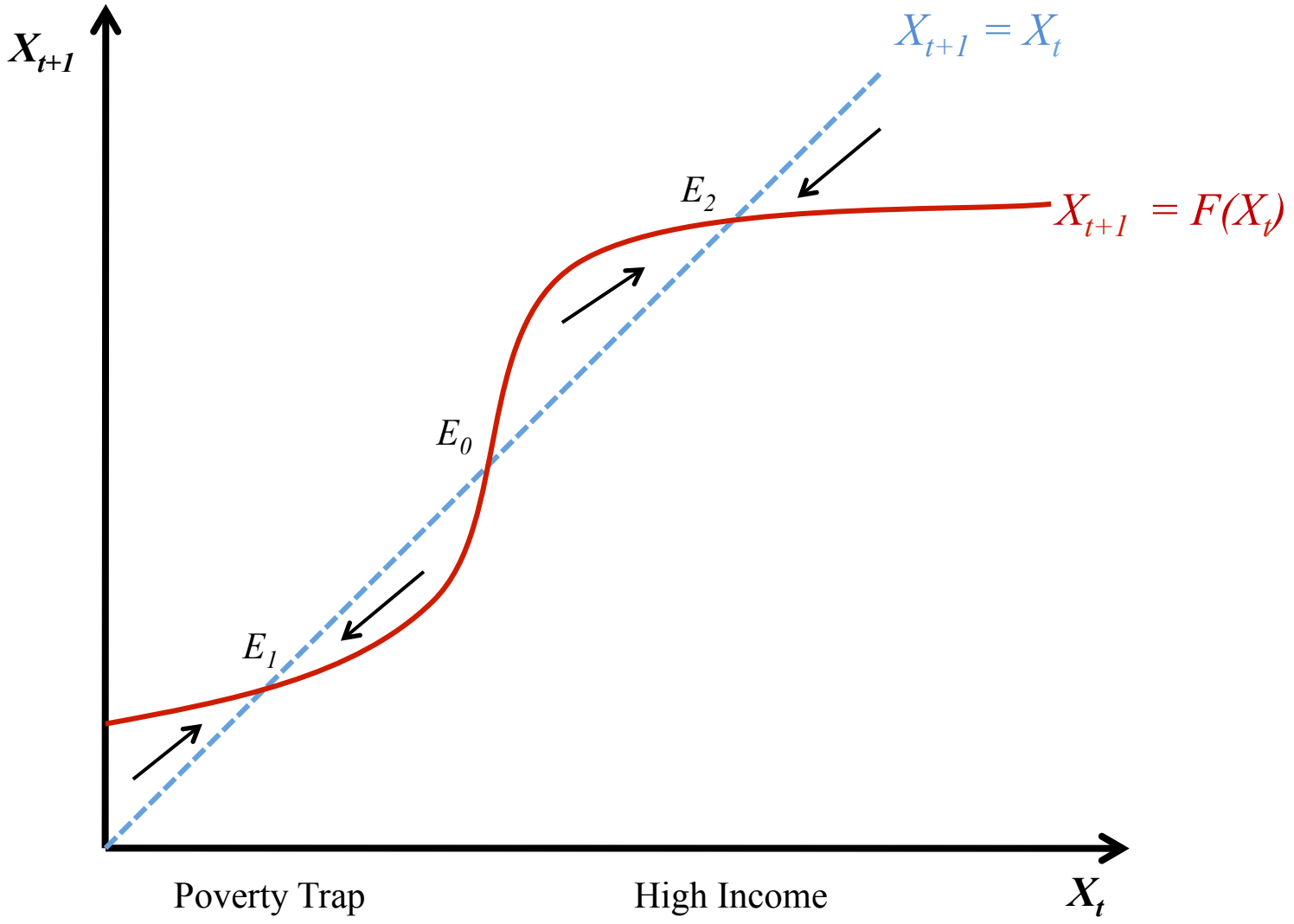
- Jeff Sachs:
  - **Root of trap:** Bad geography and low human capital imply low returns to investment, low trade and specialization
  - **Source of IRTS:** Complementarities between human capital investments, production of trade-able goods
  - **Big push:** Aid, favorable trade policy, export orientation

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

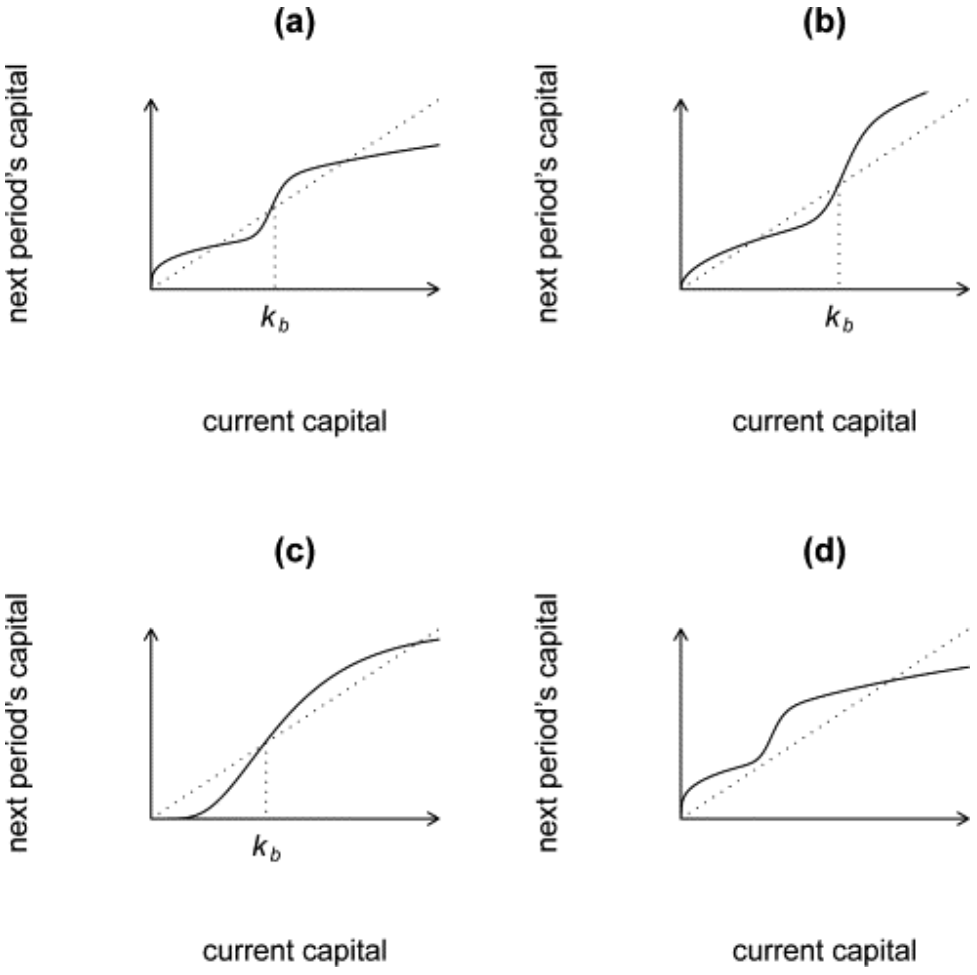
- Malthusian Trap
  - **Root of trap:** Population increases with income
  - **Source of IR:** Preference for children decreases with income (a discontinuity in population-income relationship)
  - **Big push:** Rapid technical change (e.g. chance discoveries)

How is the low equilibria "attractive" in these stylized examples?



The stylized S-curve is just one example

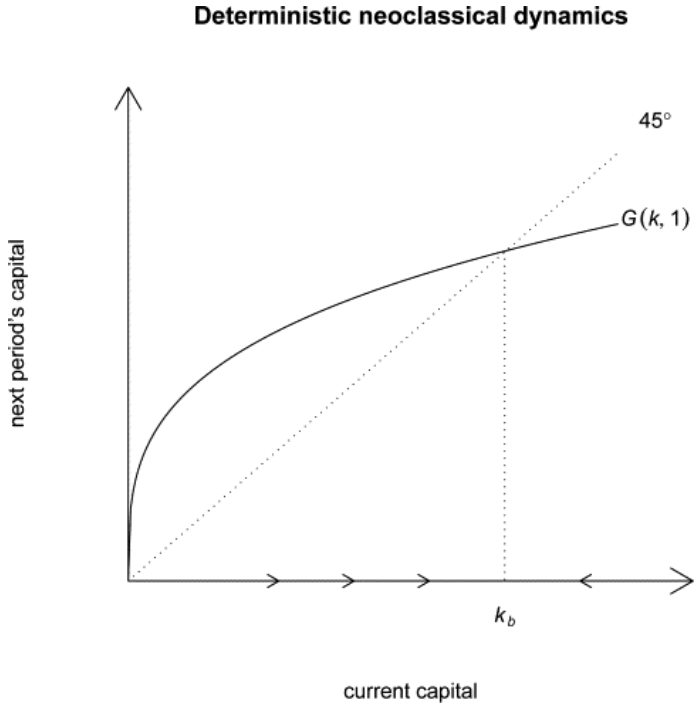
Most of the time we don't know the shape of the curve (all speculation)

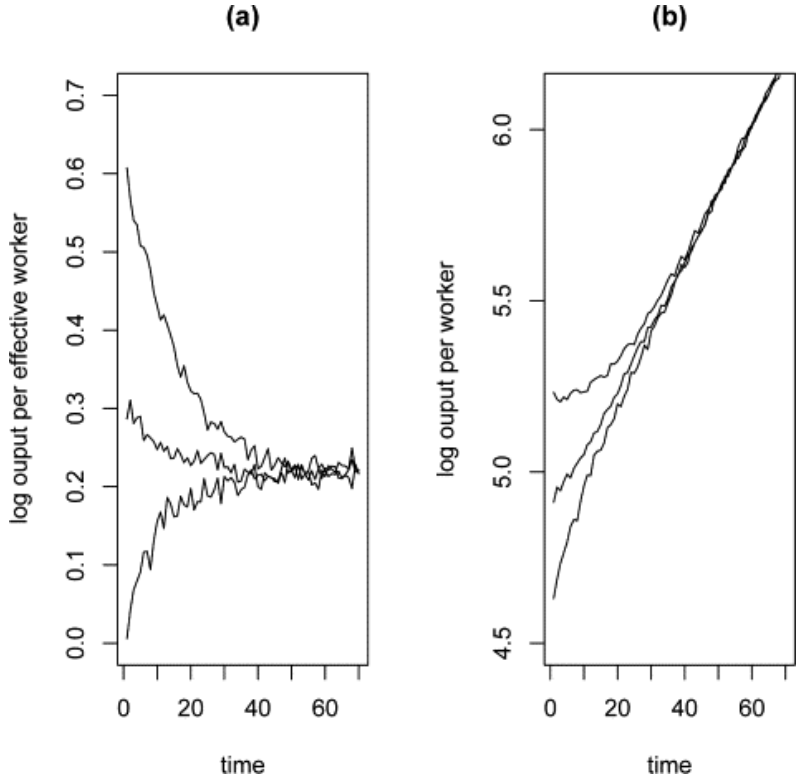


Azariadis & Stachurski (2005), Figure 7

To see the importance of initial conditions, imagine a stochastic aggregate production function

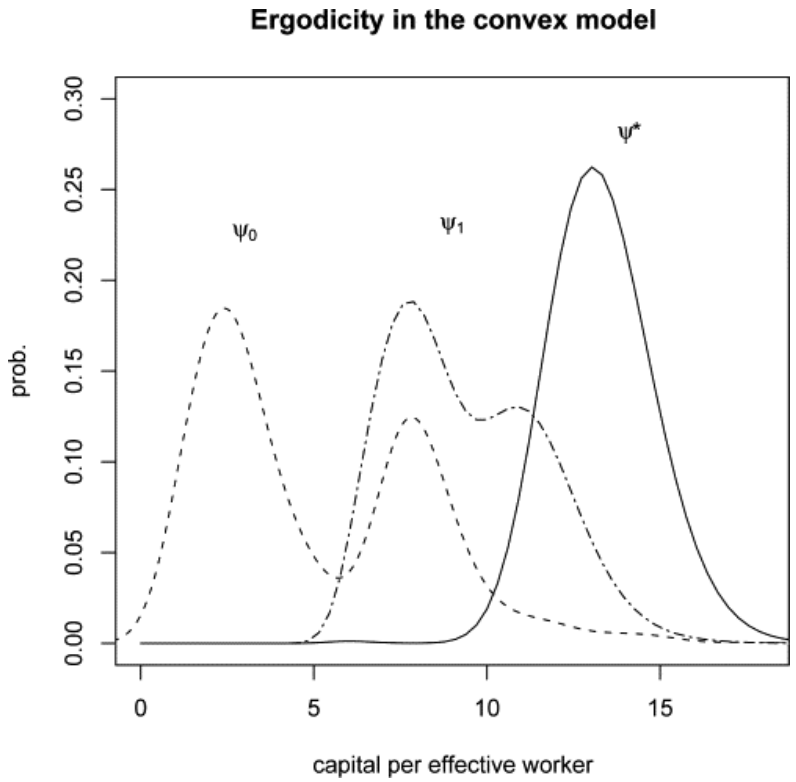
$Y_t = AK_t^{\alpha} L_t^{1-\alpha} \xi_{t,}$ ξ_t is a serially uncorrelated shock

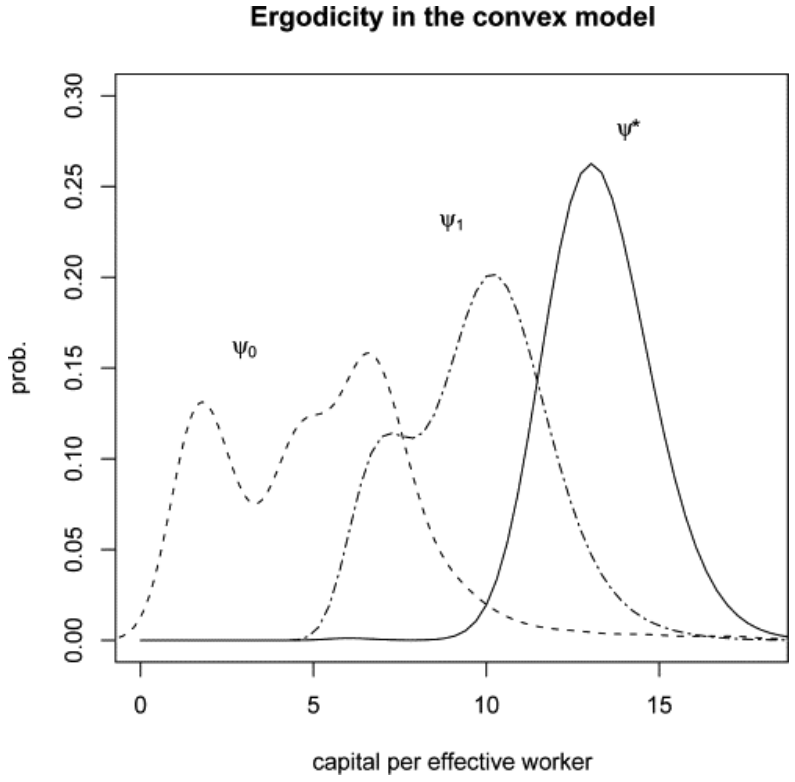




Azariadis & Stachurski (2005), Figures 2 and 3

We will see convergence in the neoclassical model, regardless of differences in initial conditions





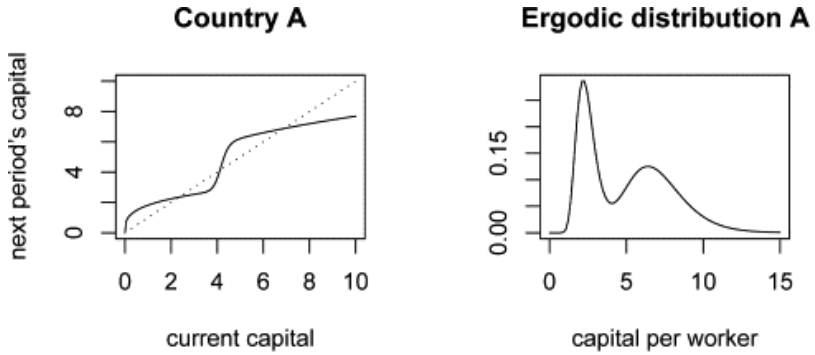
Azariadis & Stachurski (2005), Figures 4 and 5

With IRTS over some range, initial conditions matter

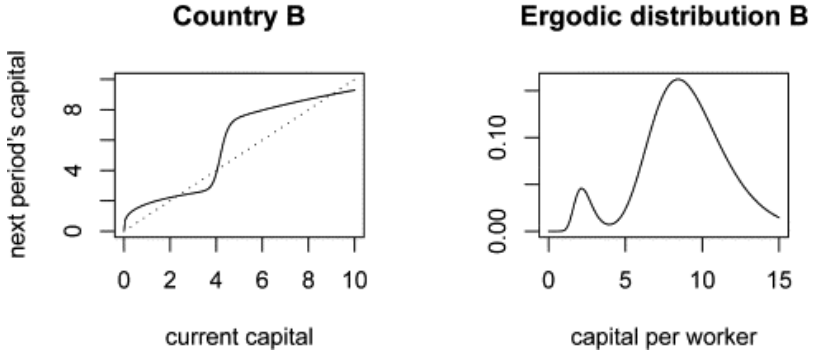
"Ergodic" = converging to a stationary distribution

$Y_t = A(K)K_t^{\alpha}L_t^{1-\alpha}\xi_{t,}$ ξ_t is a serially uncorrelated shock

A. Upper basin of attraction small:



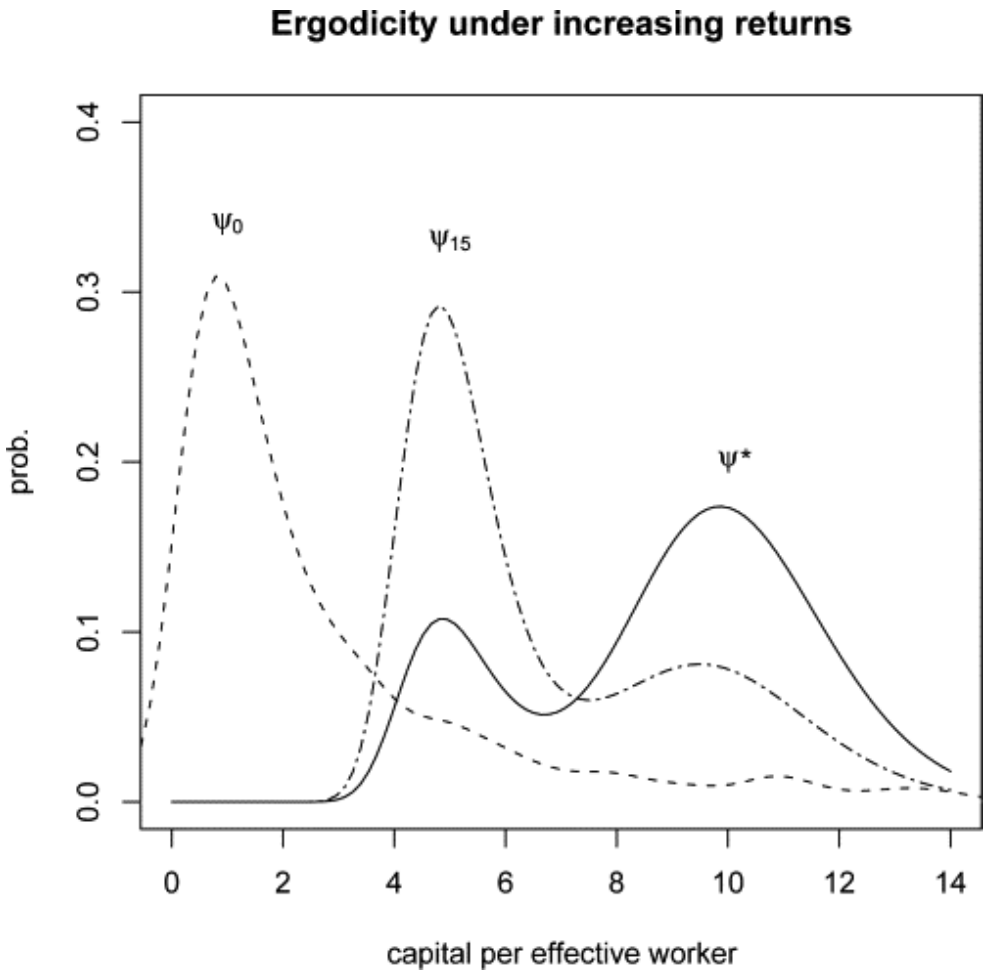
B. Upper basin of attraction large:



Azariadis & Stachurski (2005), Figure 8

Convergence to the bimodal distribution over time, illustrated

Initial difference tend to be magnified over time (convergence club effect)

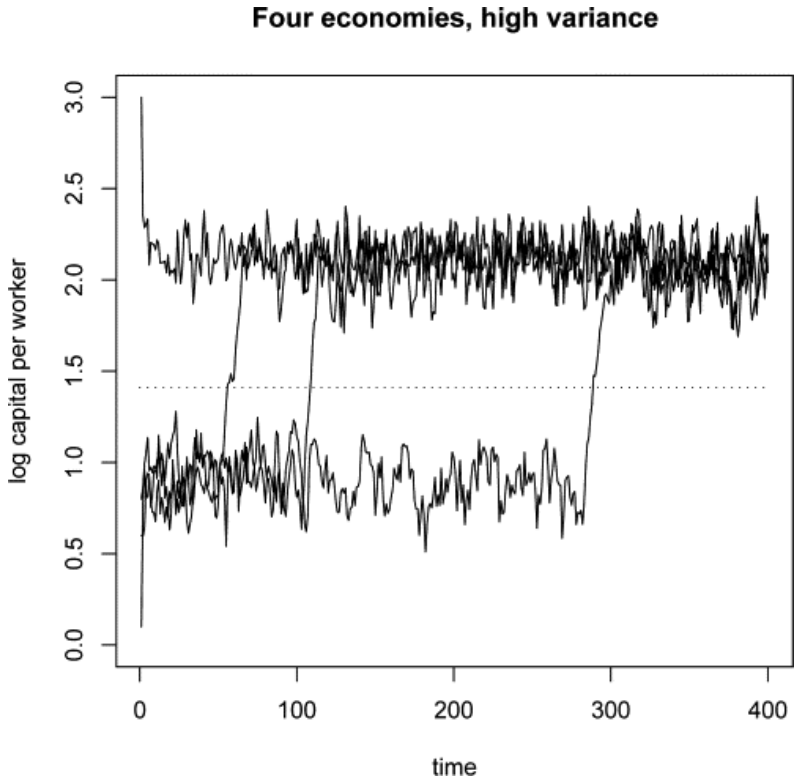


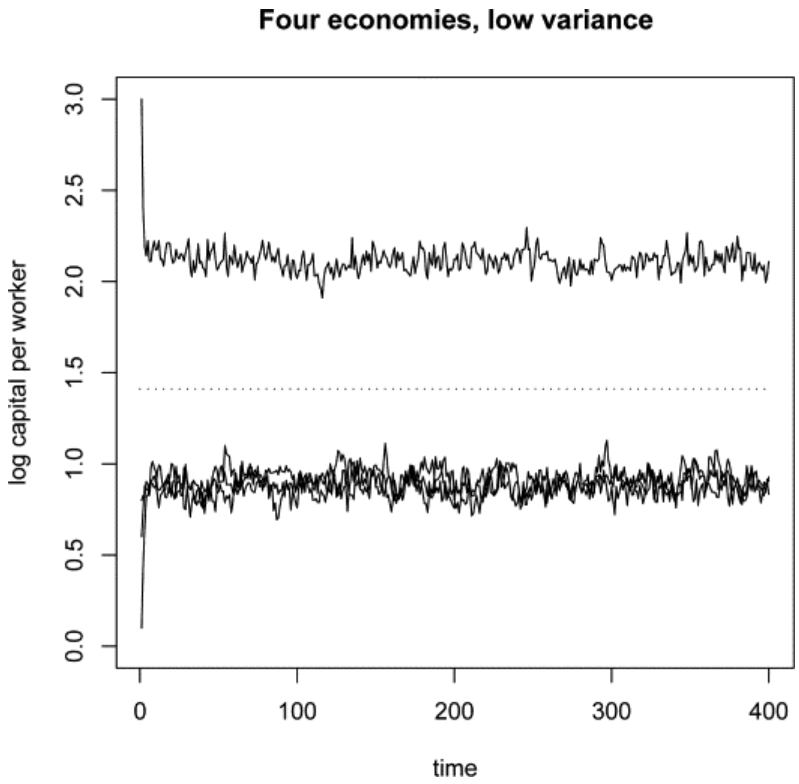
Azariadis & Stachurski (2005), Figure 9

Persistence of historical conditions

Simulated time series of four fictional economies, one initially rich three poor

Large upper basin of attraction

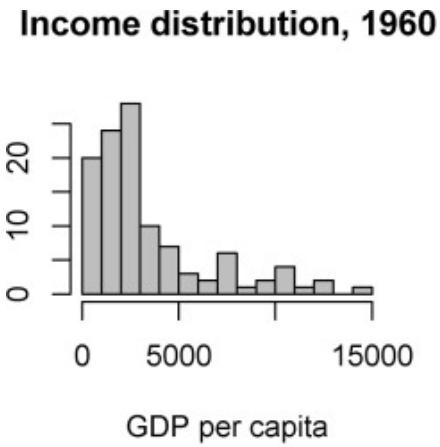


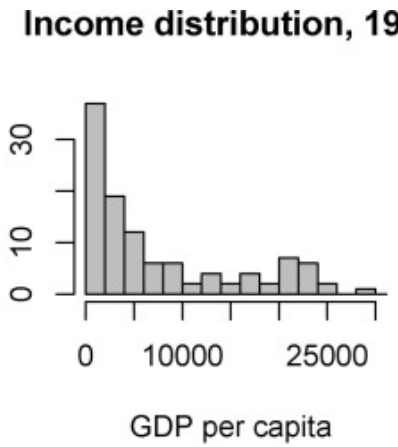


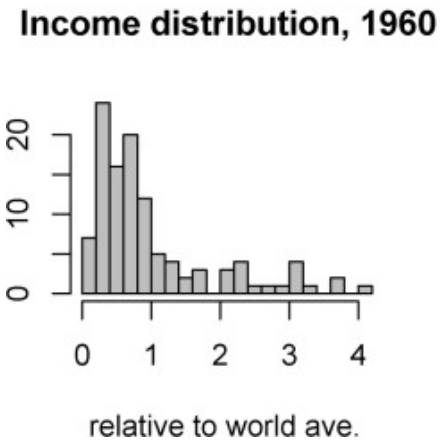
Azariadis & Stachurski (2005), Figures 10 and 11

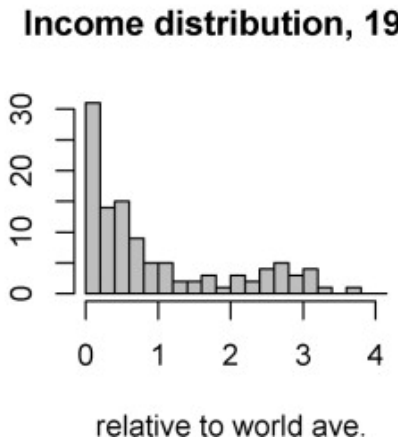
Casual observation of cross-country income looks similar

As we will see, however, this is not a convincing test









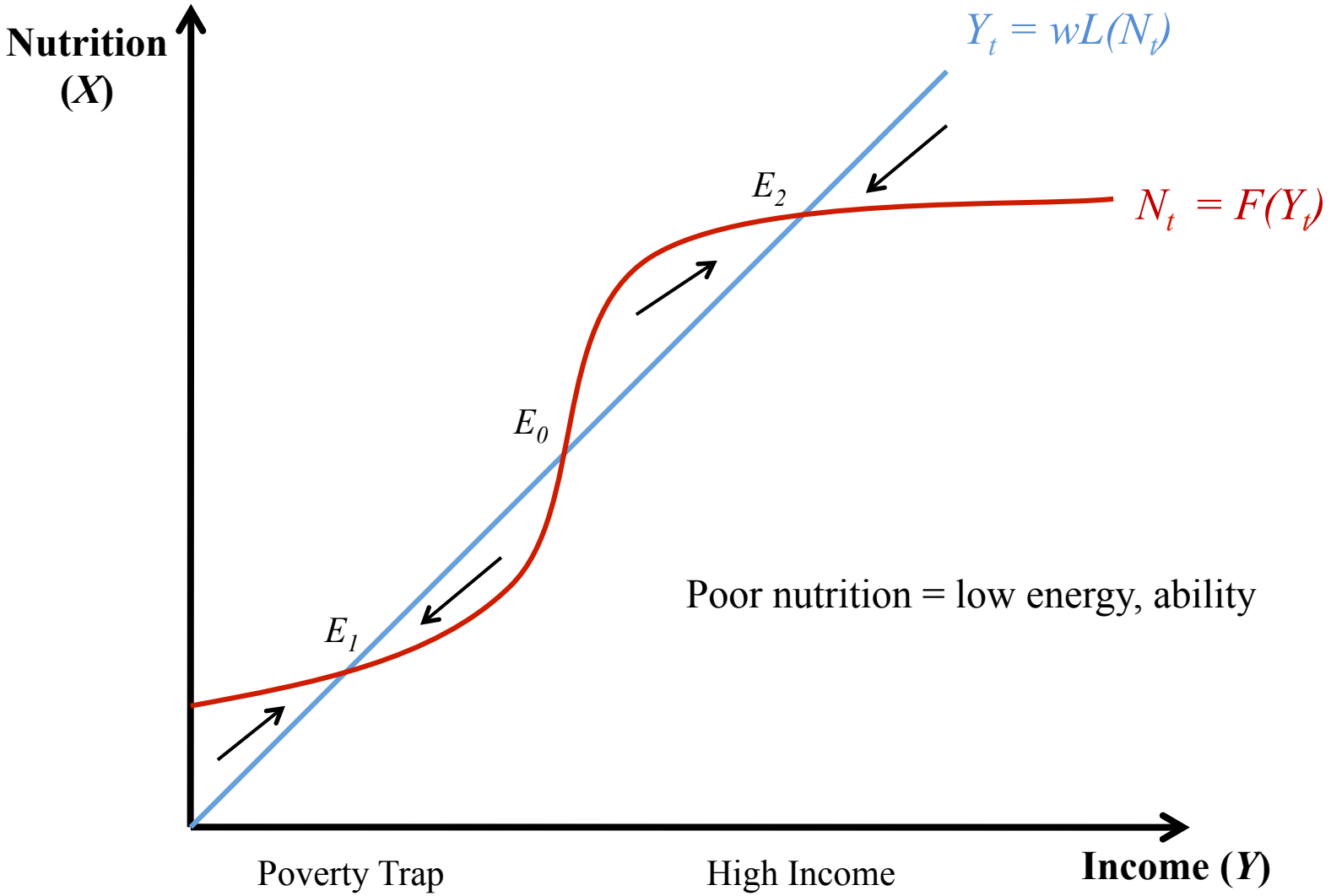
Azariadis & Stachurski (2005), Figure 14

Poverty traps:
Not just a macro-level story

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

Multiple equilibria at the household level

e.g. Nutrition (see Banerjee and Duflo 2012)



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

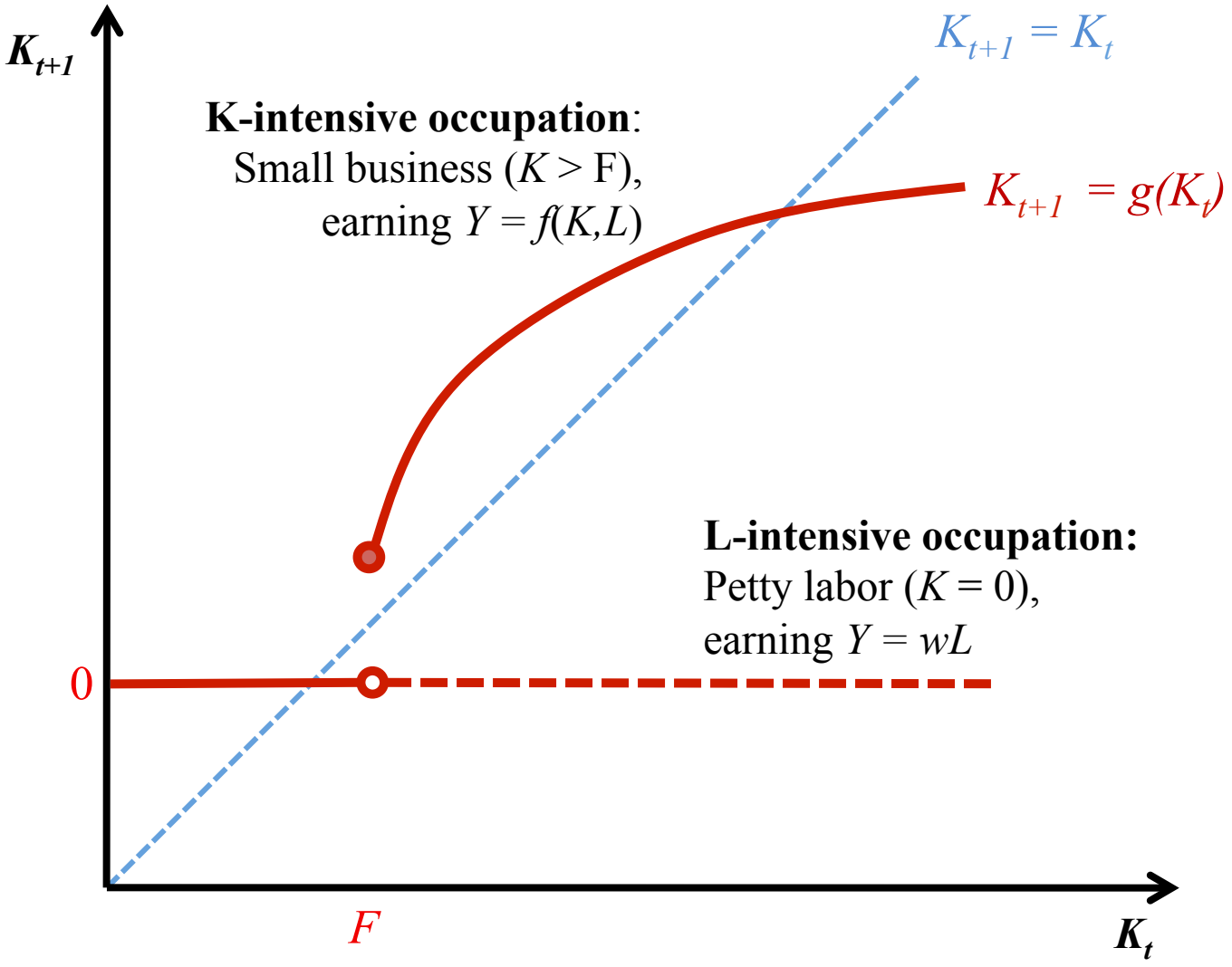
- Credit market failure
  - Poor countries have weak, sparse banking sectors
  - Information asymmetries are large (no institutions to mitigate)
  - The poor have little collateral (and debt contracts may be hard to enforce)
  - MFIs or moneylenders typically lend for short spans (2-3 months)
  - Even 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)

A stylized example of "occupational choice"

Fixed costs cause a discontinuity in production function



A simple formal model

Based on Galor and Zeria 1993, Banerjee Newman 1993, summarized in A&S 2005

- Households are "dynasties"
  - They live for one period, then are succeeded by a child
  - They care about their own consumption and that of their child
  - They consume $(1 - \theta)$ of their income y, where $0 < \theta < 1$
  - They leave a bequest $b = \theta y$ for their children

  (We will derive this consumption and "savings" from utility maximization in the problem set)

- Households have initial wealth x_t
  - This is simply the parent's bequest: $x_{t+1} = \theta y_t$
  - Hence, higher income today, higher wealth of future generation

- Two occupations open to all
  - Unskilled, paying w
  - Skilled, paying $W > w$
  - But the skilled occupation requires a fixed cost F be paid

Case I: No borrowing or lending

- Income depends on whether initial wealth exceeds the fixed cost:

$$y_t = x_t + w \quad \text{if} \quad x < F$$
$$y_t = x_t - F + W \quad \text{if} \quad x \geq F$$

Assuming the high-skill occupation is more profitable even after paying F:

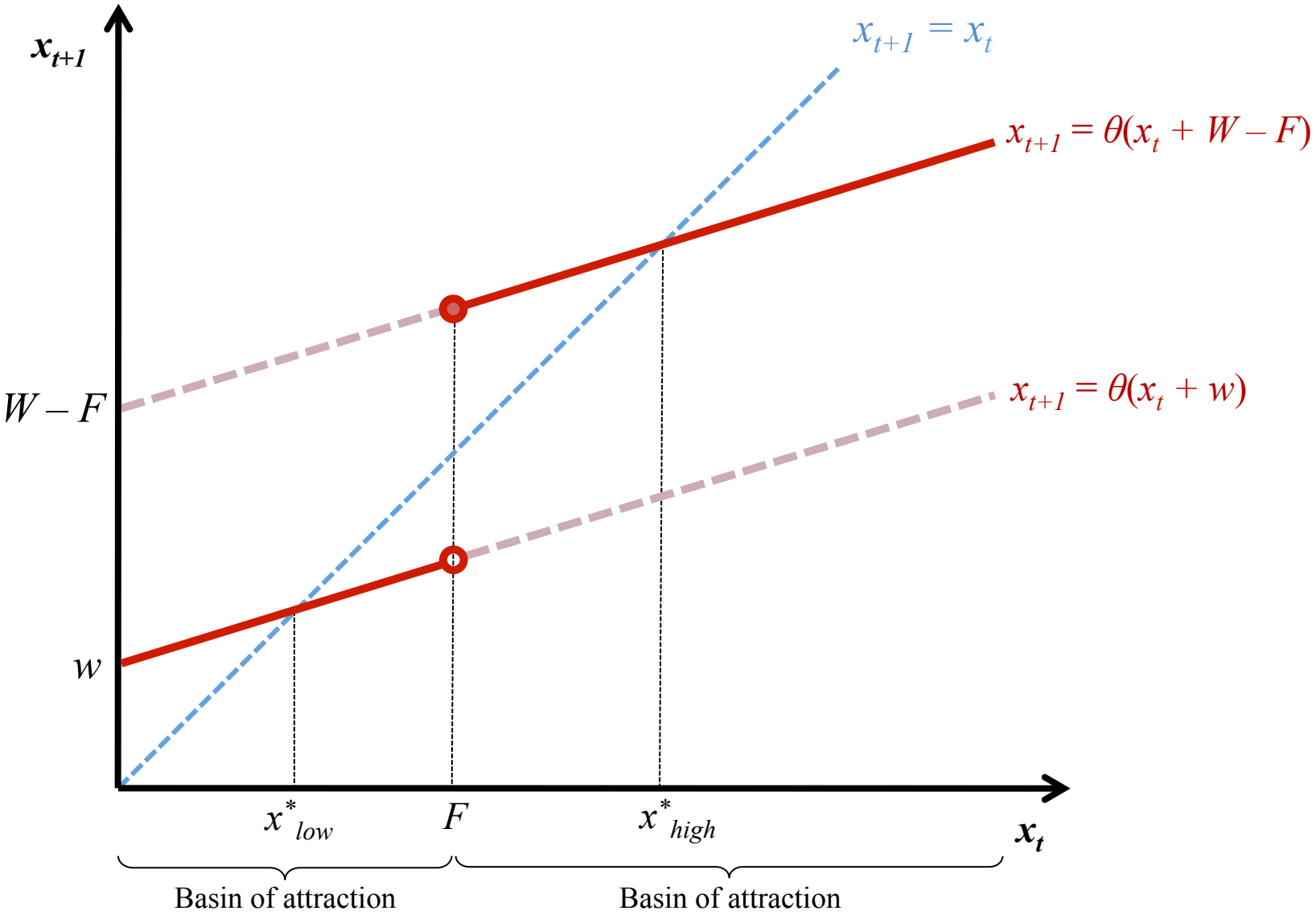
$$x_t + w \leq x_t - F + W$$

or $$w \leq W - F$$

- Recall $x_{t+1} = \theta y_t$. Thus,

$$x_{t+1} = \theta y_t = \theta(x_t + w) \quad \text{if} \quad x < F$$
$$x_{t+1} = \theta y_t = \theta(x_t - F + W) \quad \text{if} \quad x \geq F$$

Transition diagram



Now think about an economy of these dynasties

The role of inequality

- Each dynasty is self-contained (no externalities) and so individual dynamics contain all the information we need for the whole economy

- Different inequality/poverty levels will lead to different levels of long run aggregate development
  - Imagine two economies, each with population normalized to 1
  - One has fraction N with $x < F$, the other has fraction $M > N$
  - In equilibrium:

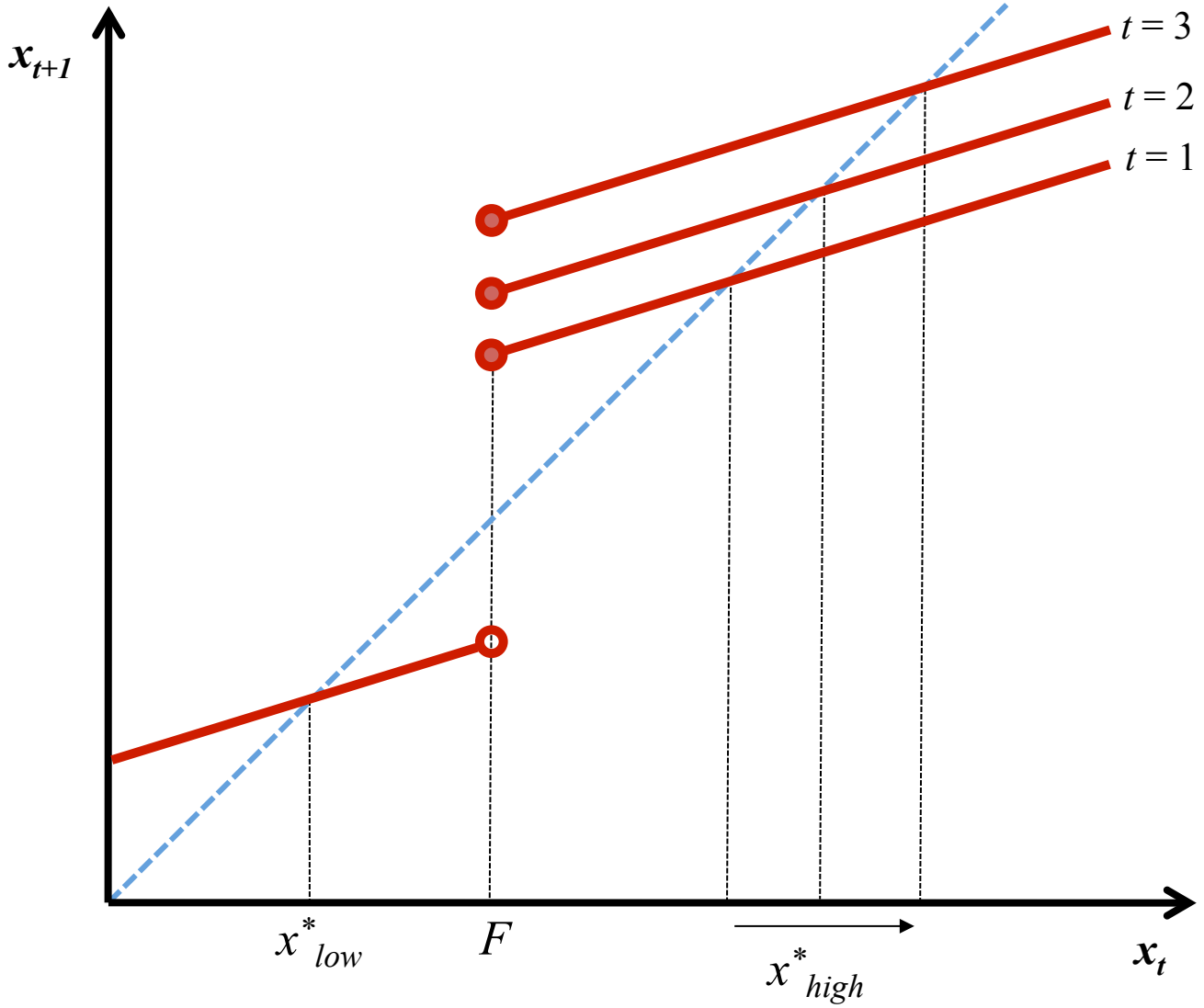
$$Y_N = \Sigma y_t = N(x_L + w) + (1 - N)(x_H + W - F)$$
$$Y_M = \Sigma y_t = M(x_L + w) + (1 - M)(x_H + W - F)$$

- $Y_M > Y_N$: Illustrates the importance of the distribution of income in an economy with imperfect credit markets (though not a general result)

- Note: There is a multiplicity of steady states for these economies, for every value of $0 \leq N \leq 1$

Could also imagine a model where there skill-biased technical change

e.g. What if $W_{t+1} = (1 + g)W_t$ but $w_{t+1} = w_t$?



Case II: With borrowing and lending in imperfect markets (for problem set)

- Now assume you can lend at rate r but borrow at rate $i > r$
  - Cost of monitoring loans creates a wedge between the lending and borrowing rates
  - For simplicity we will assume $r = 0$

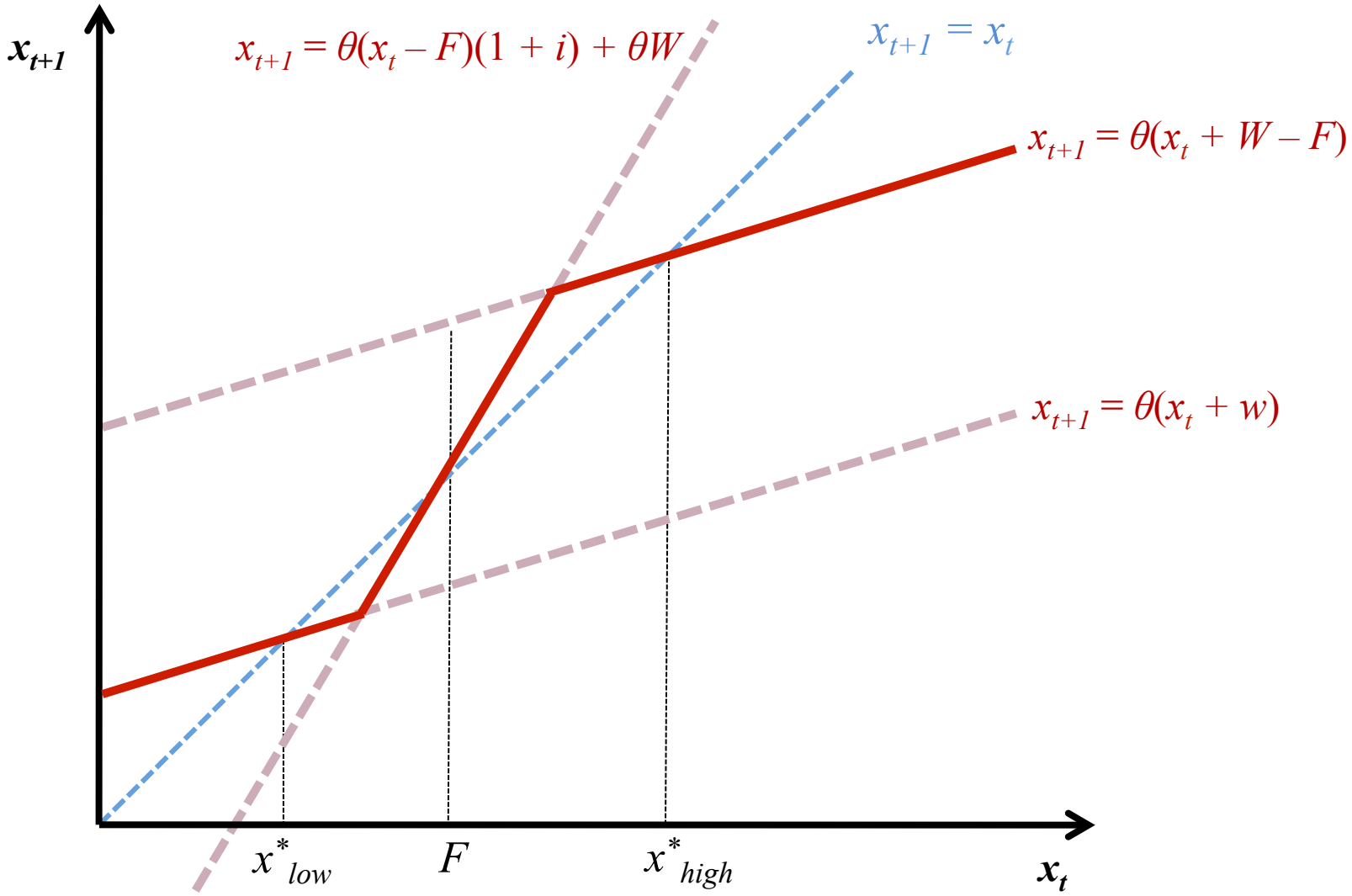
- Income now given by the following:

$$y_t = x_t + w \quad \text{if} \quad x < F \text{ and does not invest } F$$
$$y_t = (x_t - F)(1 + i) + W \quad \text{if} \quad x < F \text{ and invests } F$$
$$y_t = x_t - F + W \quad \text{if} \quad x \geq F$$

- We still assume the high-skill occupation is more profitable after paying F. Now we also assume that agents with $x < F$ will choose the same if the returns are greater.

- We can solve for x_{t+1} in terms of x_t in each case and get transition diagram

Transition diagram



What do we learn from such a model?

- Role of poverty and inequality in affecting aggregate growth under imperfect markets
  - Income redistribution has ambiguous effects, depending on where in basin of attraction it pushes people
- Testable predictions (see next week's papers)
  - Association between initial wealth and occupational choice, long run income and income dynamics
  - High potential returns to capital for the poor
  - Existence of production convexities plus credit constraints
  - Impacts of improving credit markets, or of access to capital
- Distinction between multiple steady states and multiple equilibria

Multiple equilibria versus multiple SS

- Each SS has multiple equilibria, and there are many SS

- Drawbacks to a static multiple equilibrium model (e.g. Big Push, as presented)
  - Indeterminate: Nothing determines what equilibrium you will end up in, other than hand waving about coordination or expectations
  - There is no history
    - Even if you made dynamic (i.e. repeated the interaction) history doesn't matter
  - Makes no difference whether you were in a good equilibrium last period or spent 100 periods in a bad equilibrium
  - Basically, feels dissatisfying

- Multiple SS avoid some of these issues because initial conditions determine a unique outcome

Other extensions

- From partial equilibrium to general equilibrium
  - Capital and labor markets must clear (endogenous wages and interest rates)
  - These in turn become functions of income inequality and initial distributions
  - e.g. Banerjee and Newman 1993, Galor and Zeira 1993, Aghion and Bolton 1997
- Addition of noise into income dynamics
- Inter-temporal household models (rather than dynasties)
- Introduction of risk and insurance markets
- Introduction of “behavioral “ considerations

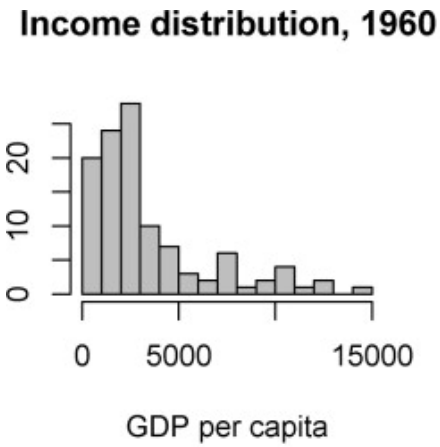
A belief in poverty traps leads to very different policy implications

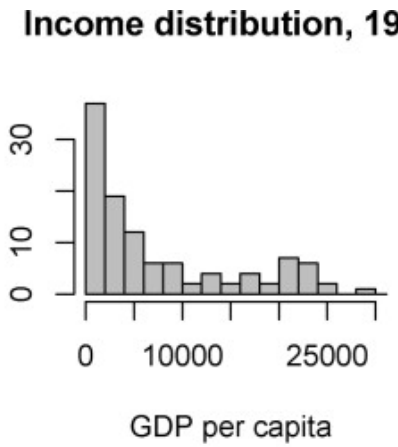
The poverty trap (multiple equilibria) goes with a "transformational" perspective on development

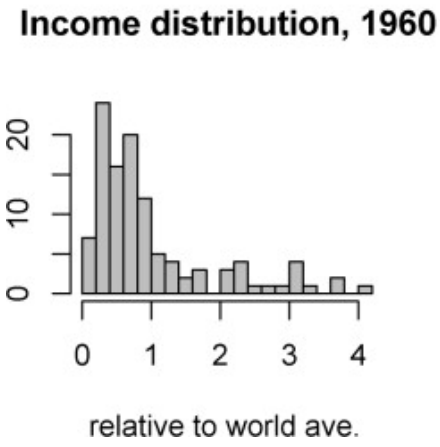
The marginalist approach (a single equilibrium) goes with a more "marginal" perspective

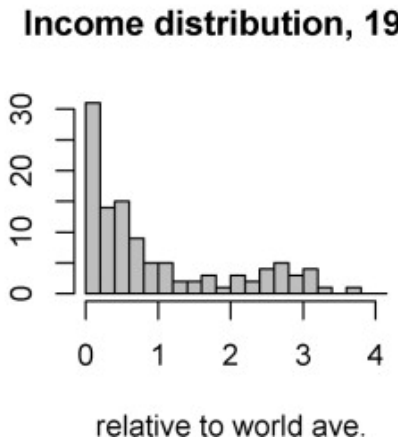
B. Evidence of Poverty traps

Cross-country growth in late 20th century consistent with poverty traps
But far from conclusive









Azariadis & Stachurski (2005), Figure 14

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

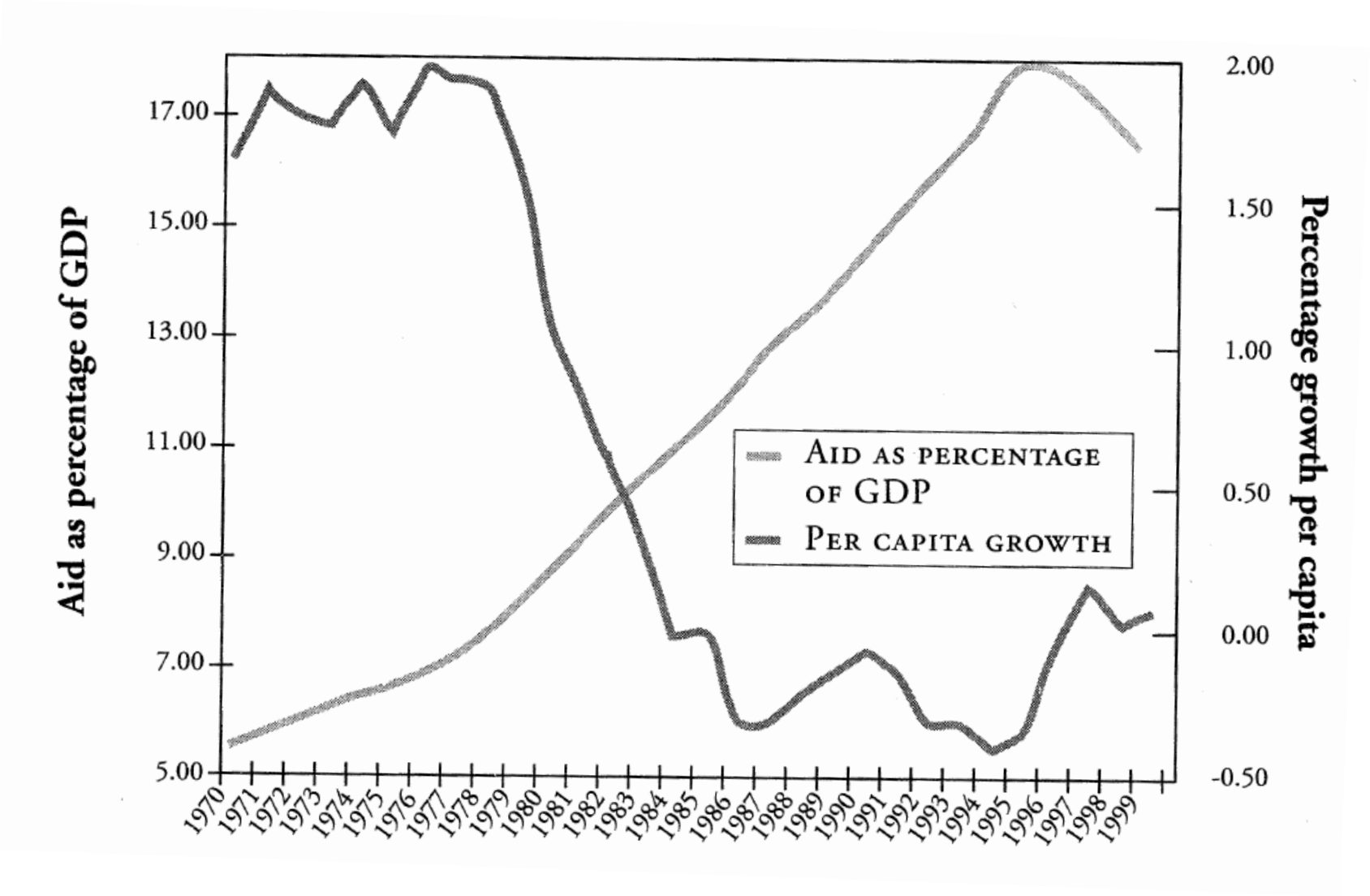
- Not clear that post-2000 growth patterns support the same conclusions

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

And this certainly does not look like a successful big push
(though not a fair test)



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

Micro-level investigations of the entrapment effects of politics and institutions could take you a long way

- Examples:
  - Kin and sharing norms (expanding)
  - Public goods and capacity for collective action
  - Institutions that govern credit/insurance

- Nothing to say these have to be traps, however
  - Brings us back to traps vs slow transitions

c. From poverty traps to "rigidities" and constraints and structural transformation

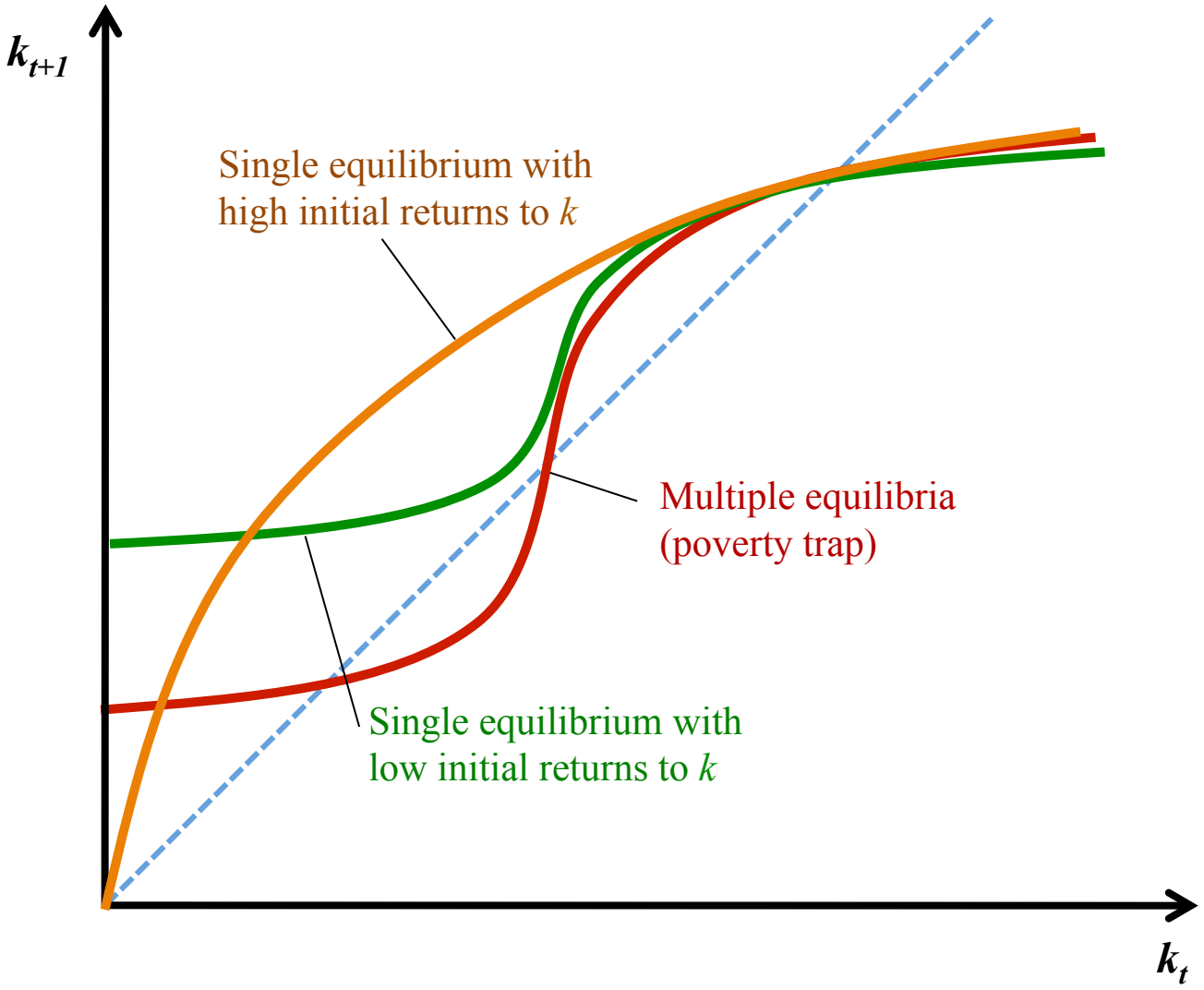
My made up term and category

"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
- Common variety: "structural change" models
  - e.g. Lewis model
- 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"

(see Todaro Smith Ch 3 and Acemoglu MEG 21.3)

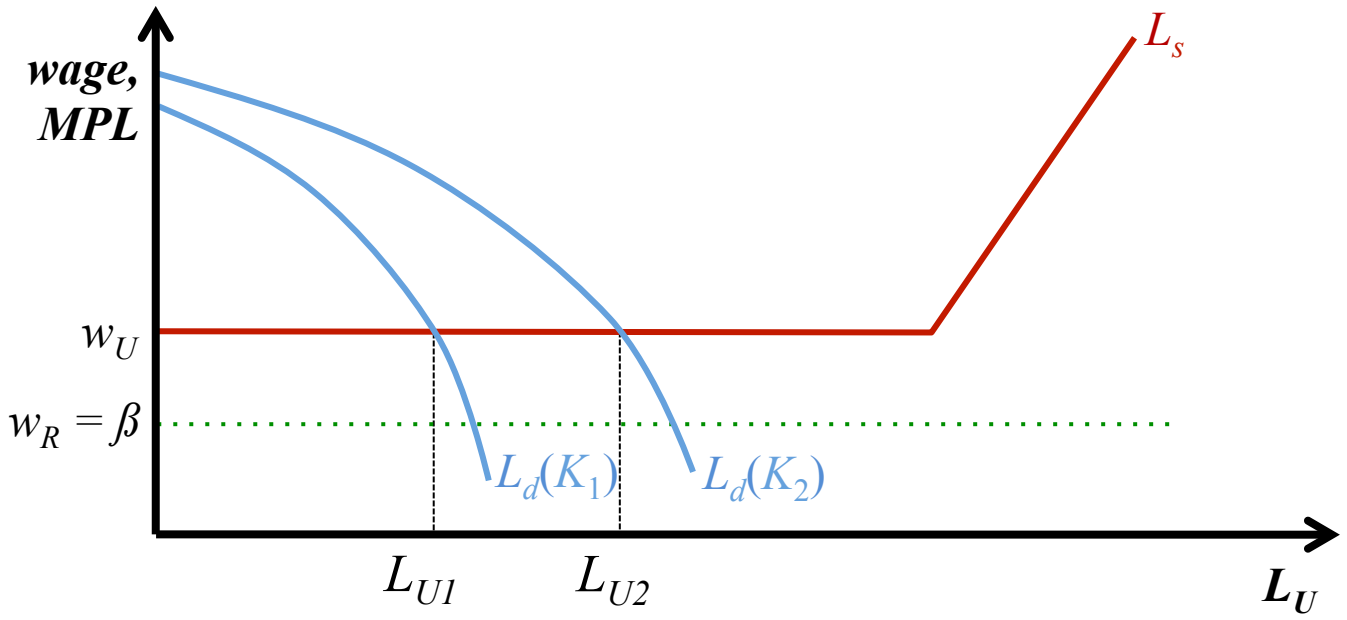
- Dual economy model that describes process of "structural change"
  - Shift from rural (R) agricultural production to urban (U) manufacturing

- Central assumption: Rural labor supply is completely elastic (unlimited)
  - Fixed, subsistence rural agricultural wage (w_R)
    - Why? Imagine linear agricultural production: $Y = \beta L_R$
    - In labor market equilibrium, marginal product of labor (MPL) equals the wage: $w_R = \partial Y/\partial L_R = \beta$
  - Large population = surplus labor at that wage level
  - Population may also produce Y_U for wages w_U
  - So long as $w_U > w_R$, rural workers will work elastically at w_U

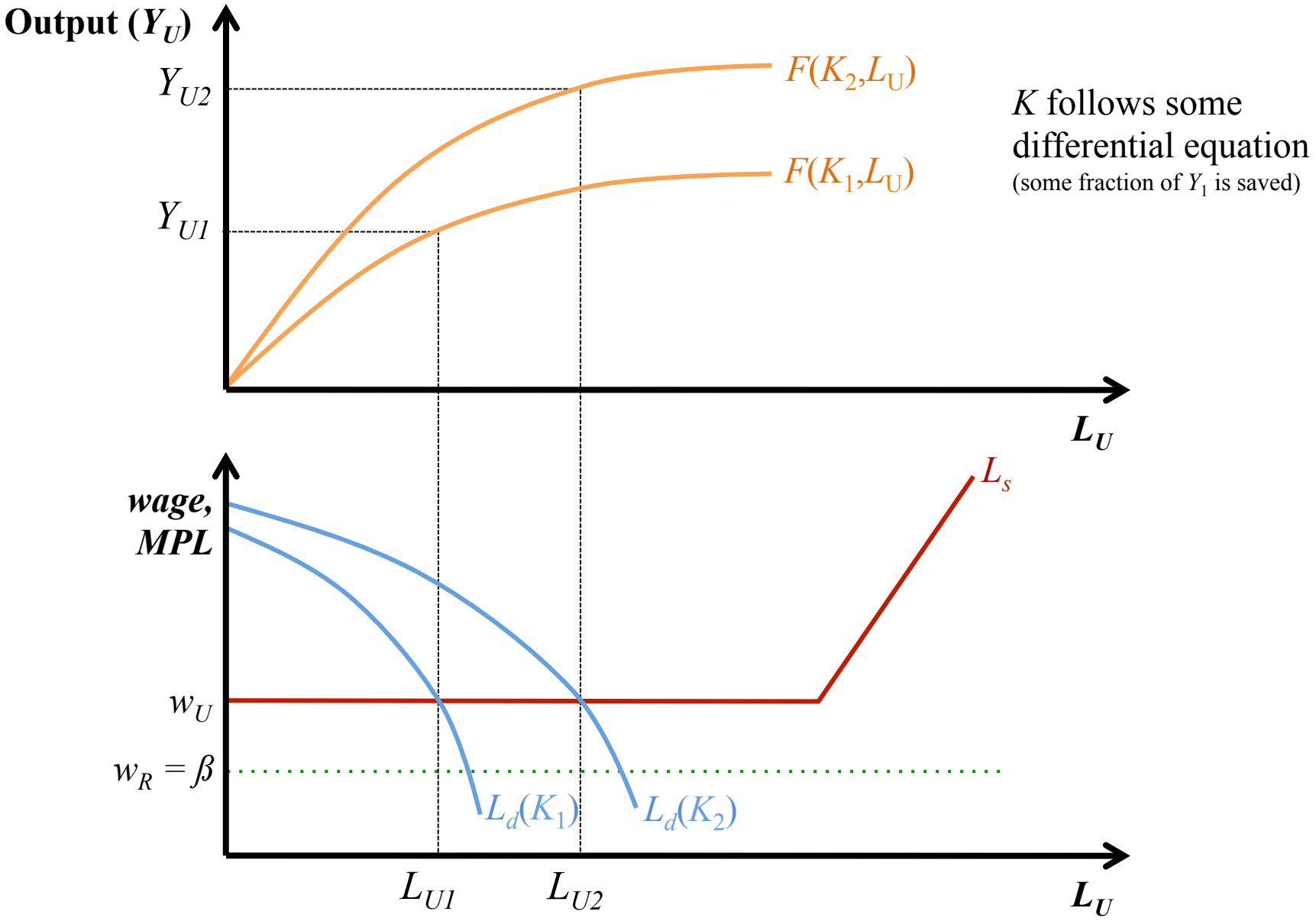
- Simple application: Chinese urban wages will not begin to rise until the surplus rural labor is absorbed into production

Labor supply and demand in the Lewis model

- Labor supply L_s assumed to be flat (perfectly elastic) for some range of L_U, paying $w_U > w_R$
- Labor demand curves represent marginal product of labor in urban industry



Each labor demand curve corresponds to production with increasing K



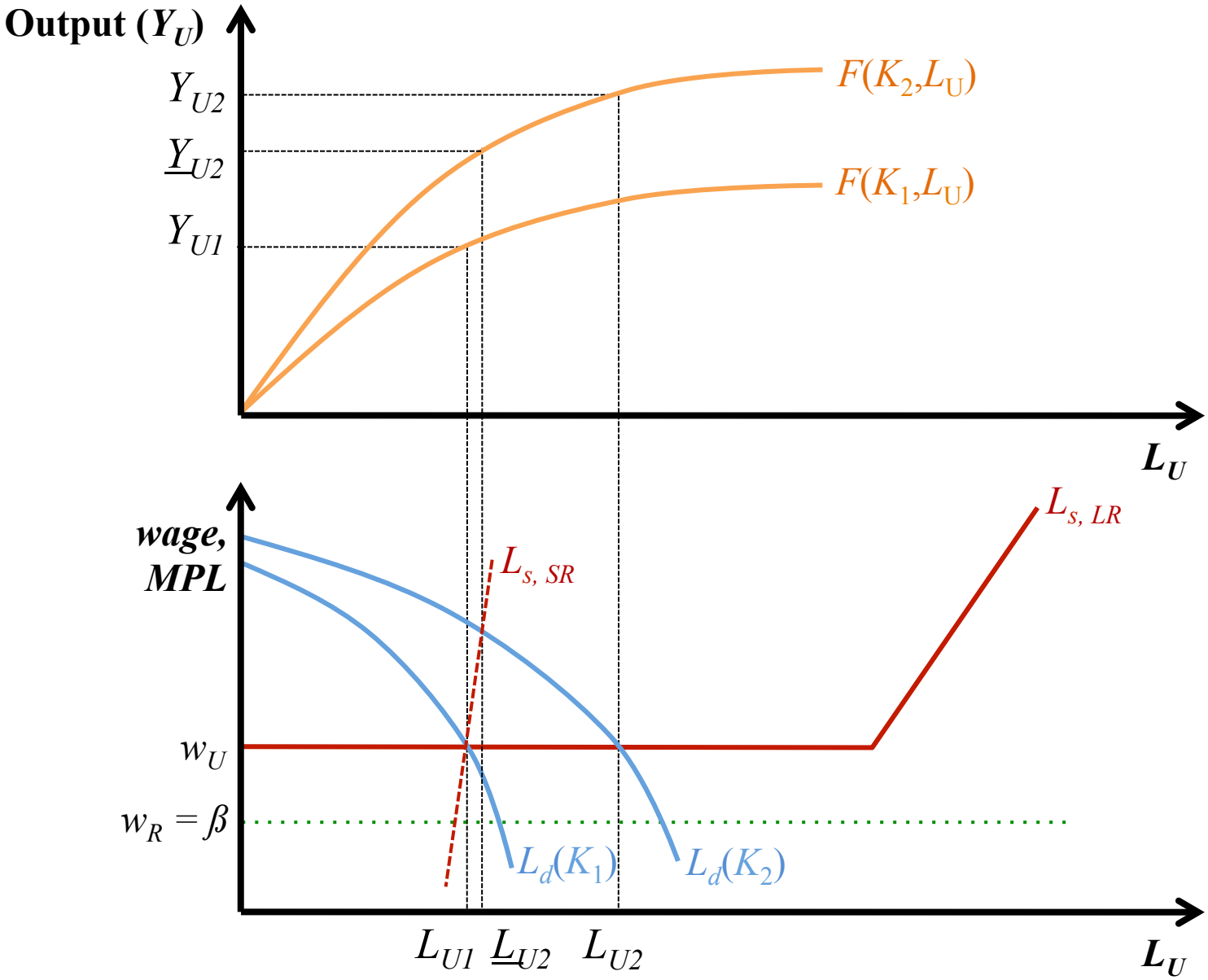
K follows some differential equation
(some fraction of Y_1 is saved)

Now introduce barriers to migration

Acemoglu MEG 21.3

- Suppose migration from rural areas to urban is restricted to some small fraction μ per period: $\Delta L_U = \mu L_{Ut}$
- In effect, this makes L_s perfectly inelastic in the very short run, though still perfectly elastic in long run
- Will restrain growth, even when capital is increasing

In the short run (SR), there may be too little urban labor, depressing output growth



Informal institutions as a barrier to migration?

Banerjee and Newman 1998, Acemoglu and Zilibotti 1999, Acemoglu MEG 21.3

- Urban economy is more productive, but have severe credit and insurance problems
  - Social networks less dense, more diffuse, easy to escape
  - Formal legal and financial institutions still shallow
- Rural economy has lower productivity but is less affected by information asymmetries and commitment problems
  - Better able to observe effort or type
  - Norms and local institutions can reward/enforce behavior
  - Allows more sophisticated contracts
  - Hence credit and insurance markets function better
- Slows down growth of modern sector

d. Traps, rigidities, and institutions

Where does politics come into play?

Why constraints, rigidities and traps matter

- Constraints and rigidities can manifest themselves as:
  1. Costly transactions
     - Large, depersonalized markets will be imperfect (e.g. credit, insurance)
  2. Behavior: e.g. People are boundedly rational
     - Decisions are shaped by their subjective experience, deduction, and intergenerational transmission of knowledge, values and customs
     - These mental models shape individual action, and are path dependent

- Institutions matter in both cases
  - They have the potential to reduce transactions costs, or determine how well inefficiencies are resolved

- Studying them helps us understand why institutions and behavior vary
  - Some institutional equilibria may be inefficient and persistent
  - In general, the relationship between these local and often informal institutions is underexplored

Other potential political-institutional roots of traps or rigidities (relatively underexplored)

- Corruption
  - Bardhan 1997
- Kinship systems
  - E.g. Hoff and Sen 2004, Jakiela and Ozier 2012
- Informal property rights enforcement and investment
  - Most studies are of formal property rights (e.g. title)
  - Will explore Week 5
- Clientelism, violence, local collective action & public goods, etc…