ECON 450
Development Economics

Contemporary Models of Development and Underdevelopment

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In this lecture, we review a sample of some of the most influential of the new models of economic development.

The new research has broadened considerably the scope for modeling a market economy in a developing-country context.

One of its major themes is incorporating problems of coordination among economic agents, such as among groups of firms, workers, or firms and workers together.
These new theories depart to some degree from conventional neoclassical economics, at least in its assumptions of

1. perfect information;
2. the relative insignificance of externalities;
3. and the uniqueness and optimality of equilibria.
Outline

Underdevelopment as a Coordination Failure

Multiple Equilibria
  Multiple Equilibria in a Diagrammatic Approach
  Starting Economic Development: The Big Push

Further Problems of Multiple Equilibria
Underdevelopment as a Coordination Failure

Many newer theories of economic development that became influential in the 1990s and the early years of the twenty-first century have emphasized complementarities between several conditions necessary for successful development.

These theories often highlight the problem that several things must work well enough, at the same time, to get sustainable development under way.
Underdevelopment as a Coordination Failure

- They also stress that in many important situations, investments must be undertaken by many agents in order for the results to be profitable for any individual agent.
- Generally, when complementarities are present, an action taken by one firm, worker, or organization increases the incentives for other agents to take similar actions.
Underdevelopment as a Coordination Failure

- An important example of a complementarity is the presence of firms using specialized skills and the availability of workers who have acquired those skills.
Underdevelopment as a Coordination Failure

- An important example of a complementarity is the presence of firms using specialized skills and the availability of workers who have acquired those skills.
- Another example typical of rural developing areas concerns the commercialization of agriculture.
As another example, a new or modernizing firm using new technologies may provide benefits to other firms that the adopting firm cannot capture.
Underdevelopment as a Coordination Failure

▶ In many cases, the presence of complementarities creates a classic "chicken and egg" problem: Which comes first, the skills or the demand for skills?
Underdevelopment as a Coordination Failure

- In many cases, the presence of complementarities creates a classic "chicken and egg" problem: Which comes first, the skills or the demand for skills?
- Often the answer is that the complementary investments must come at the same time, through coordination.
Underdevelopment as a Coordination Failure

- **A coordination failure** is a state of affairs in which agents’ inability to coordinate their behavior (choices) leads to an outcome (equilibrium) that leaves all agents worse off than in an alternative situation that is also an equilibrium.
Underdevelopment as a Coordination Failure

- A coordination failure is a state of affairs in which agents’ inability to coordinate their behavior (choices) leads to an outcome (equilibrium) that leaves all agents worse off than in an alternative situation that is also an equilibrium.
  - Where-to-meet dilemma as a coordination failure example.
Underdevelopment as a Coordination Failure

- In much of economics, such complementarities are not present.
  - For example, in competitive markets, when there is excess demand, there is counterpressure for prices to rise, restoring equilibrium.
Underdevelopment as a Coordination Failure

- Whenever **congestion** may be present, these counterpressures are very strong
  - **Congestion** is the opposite of a complementarity. It is an action taken by one agent that decreases the incentives for other agents to take similar actions.
Underdevelopment as a Coordination Failure

- But in the process of economic development, joint externalities are common:
  - Underdevelopment begets underdevelopment, while processes of sustainable development, once under way, tend to stimulate further development.
In cases in which coordination failure leads to an inferior equilibrium, there is scope for government intervention. Many development specialists look actively for cases in which government policy can still help, even when government is imperfect, by pushing the economy toward a self-sustaining, better equilibrium (deep interventions).
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Further Problems of Multiple Equilibria
Multiple Equilibria

- **Multiple equilibria** is a condition in which more than one equilibrium exists. These equilibria may sometimes be ranked, in the sense that one is preferred to another, but the unaided market will not move the economy to the preferred outcome.

- The standard diagram to illustrate multiple equilibria with possible coordination failure is shown in the next slide.
Multiple Equilibria
In the multiple-equilibrium diagram, equilibrium is found where the "privately rational decision function" (the S-shaped curve in the figure) crosses the 45-degree line.
Multiple Equilibria

- Suppose that firms expected no other firms to make investments, but some firms did anyway.
- But then, seeing that some firms did make investments, it would not be reasonable to continue to expect no investment!
- Firms would have to revise their expectations upward, matching their expectations to the level of investment they actually see.
Multiple Equilibria

- But if firms now expect this higher level of investment, firms would want to invest even more.
- This process of adjustment of expectations would continue until the level of actual investment would just equal the level of expected investment.
Multiple Equilibria

- The general idea of an equilibrium in such cases is one in which all participants are doing what is best for them, given what they expect others to do, which in turn matches what others are actually doing.
Multiple Equilibria

- In the diagram, the function cuts the 45-degree line three times. Any of these points could be an equilibrium.
  - Of the three, $D_1$ and $D_3$ are "stable" equilibria.
  - The middle equilibrium at $D_2$ is unstable.
Multiple Equilibria

- When jointly profitable investments may not be made without coordination, multiple equilibria may exist in which the same individuals with access to the same resources and technologies could find themselves in either a good or a bad situation.
Multiple Equilibria

In the view of many development economists, it is very plausible that many of the least developed countries, including many in sub-Saharan Africa, are essentially caught in such circumstances.
Whether an economy has been growing sustainably for some time or has been stagnant seems to make a very big difference for subsequent development.

If growth can be sustained for a substantial time, it is much more unusual for economic development to later get off track for long.

Moreover, it is very difficult to get modern economic growth under way.
Starting Economic Development: The Big Push

- Why should it be so difficult to start modern growth?
- As we will see, coordination failure is an important factor.
The most famous coordination failures model in the development literature is that of the "big push" pioneered by Paul Rosenstein-Rodan, who first raised some of the basic coordination issues.

He pointed out several problems associated with initiating industrialization in a subsistence economy.
The big push is a model of how the presence of market failures can lead to a need for a concerted economywide and probably public-policy-led effort to get the long process of economic development under way or to accelerate it.

Kevin Murphy, Andrei Shleifer, and Robert Vishny (1989) demonstrated the formal logic of this approach more clearly.
Assumptions

1. One factor of production: Labor, with fixed total supply $L$;
2. Two sectors: A traditional receiving wage of 1, and a modern sector with wage $W > 1$;
3. Technology
   - $N$ types of products
   - Traditional sector: one worker produces one unit of output
   - Modern sector: Linear production function of the form $L = F + cQ$;
Assumptions

4. Consumers spend an equal amount, $Y/N$, on each good;
5. Closed economy
6. Perfect competition with traditional firms operating, limit pricing monopolist with a modern firm operating
The Big Push

- In the next figure, production functions are represented for the two types of firms for any industry.
- The traditional producers use a linear technique with slope 1, with each worker producing one unit of output.
- The modern firm requires $F$ workers before it can produce anything, but after that, it has a linear technique with slope $1/c > 1$. 
The Big Push
The Big Push

- For the traditional firm, the wage bill line lies coincident with the production line (both start at the origin and have a slope of 1).
- For the modern firm, the wage bill line has slope $W > 1$.
- At point A, we see the output that the modern firm will produce if it enters, provided there are traditional firms operating in the rest of the economy.
Conditions for Multiple Equilibria

★ Suppose that we have a traditional economy with no modern production in any market.
★ A potential producer with modern technology considers whether it is profitable to enter the market.
★ The answer depends on two considerations:
  1. how much more efficient the modern sector is than the traditional sector;
  2. how much higher wages are in the modern sector than in the traditional sector.
Conditions for Multiple Equilibria

- If the prevailing wage is given by a bill line like $W_1$, passing below point A, revenues exceed costs, and the modern firm will pay the fixed cost $F$ and enter the market.

- By assumption, production functions are the same for each good, so if a modern firm finds it profitable to produce one good, the same incentives will be present for producing all goods, and the whole economy will industrialize through market forces alone.
Conditions for Multiple Equilibria

- Demand is now high enough that we end up at point B for each product.
- This shows that a coordination failure need not always happen.
Conditions for Multiple Equilibria

- If a wage bill line like $W_2$ holds, passing between points A and B, the firm would not enter if it were the only modern firm to do so in the economy because it would incur losses.
- But if modern firms enter in each of the markets, then wages are increased to the modern wage in all markets, and income expands.
Conditions for Multiple Equilibria

- With a prevailing wage like $W_2$, there are two equilibria
  1. one in which producers with modern techniques enter in all markets, and profits, wages, and output are higher than before;
  2. and one in which no modern producer enters, and wages and output remain lower.
- The market by itself will not get us from A to B because of a coordination failure.
A final possibility is found in a wage bill line like $W_3$, passing above point B. In this case, even if a modern producer entered in all product sectors, all of these firms would still lose money, so again the traditional technique would continue to be used.
Conditions for Multiple Equilibria

- In general, whenever the wage bill line passes below point A, the market will lead the economy to modernize, and whenever it passes above A, it will not.
- If the line passes above B, it makes no sense to industrialize.
- But if the wage line passes between points A and B, it is efficient to industrialize, but the market will not achieve this on its own.
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Further Problems of Multiple Equilibria
Inefficient Advantages of Incumbency

- The presence of increasing returns in modern industries can also create another kind of bad equilibrium.
- Once a modern firm has entered, it has an advantage over any rivals because its large output gives it low average costs.
- So if an even better modern technology becomes available to a potential rival, it may not be easy for the new technology to supplant the old.
Behavior and Norms

- Movement to a better equilibrium is especially difficult when it involves many individuals changing their behavior from one of rent seeking or corruption to honesty and the value of building a reputation to reap the gains from cooperation (e.g., with business partners).
- Only by cooperating with other good-willed cooperators may you reach the best outcome.
- Moreover, past experience may lead people to expect opportunistic behavior, which in turn raises the incentives for the potential partners to actually act that way.
There are several ways to undertake a big push, encouraging the simultaneous expansion of the modern sector in many industries. One strategy for solving coordination problems is to focus government policy on encouraging the development of industries with key linkages. The theory of linkages stresses that when certain industries are developed first, their interconnections or linkages with other industries will induce or at least facilitate the development of new industries.