Economics 448: Lecture 9
History, Expectations, and Dependence

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Transitional Chapter

This chapter is uniquely Ray’s perspective. Connect historical perspective and economic analysis.

Modern neoclassical economics (mainstream) assume: Economic agents are forward looking, ⇒ behavior is driven by their (subjective) expectations and beliefs.

Expectations are informed by what has happened in the past, i.e., history. It is an interpreted history, but history just the same.

These issues are particularly important for economic development.
Complementarity

A particular type of *externality* that may be positive or negative. May be easiest to define by an example.
Ray uses QWERTY as an example of Complementarities. QWERTY invented to slow speed in mechanical typewriters. Has the value of being first. And has a large (virtually all) base of users. Other keyboards may exist (Dvorak) that may be ergonomically better. But the adoption cost declines with the number of users. Thus there is an externality and specifically a complementarity. Lock–in because the number of users is so large it is difficult to switch to a new system.
Green Revolution

Hybrid seeds more productive and produce higher crop yield per unit of land.

Yet use of new technology represents a change from traditional ways.

Social Norms or “culture” may inhibit adoption of new technology.
Green Revolution

Expect the social cost of adopting the new technology to decline with the proportion of local adoptees.

Each adopter thus has the direct effect of increased individual production, and the indirect positive effect of propensity to adopt by others.
Defined and Example

Recall that a complementarity affects the ranking of alternatives, and not to the level of utility or financial reward.

Importantly, complementarity reduces the cost as the number of users increases. The number of users then affects the ranking, how likely this alternative is the best more so than the actual payoff.

Example: Vaccinations. The greater fraction of the population vaccinated makes the vaccine more effective.

Another example endogenous growth based on diffusion. A higher rate of capital accumulation as a whole raised the productivity of all firms thus raising the rate of return at the individual level.
Multiple Equilibriums

One equilibrium could be if no one adopts the technology (QWERTY)

Or everyone may adopt.

Or somewhere in between. Critical point equilibrium may not be stable.
Unstable Equilibrium

Small changes in condition may induce large changes in outcomes (i.e., switch from one equilibrium to another)

Opportunity for Policy.
Family Planning Policy

Birth control, contraceptive practice in developing countries in which there are cultural and social norms against contraception. (e.g., concern over a woman’s health)

Government intervention program — family planning distribute contraceptives and knowledge about contraceptives.

At start, perhaps zero usage of contraceptives.

Target village leaders; get them to adopt. Then through normal lines of communication (through kin mostly). As use of contraception increases the social cost declines. Each adopter lowers the cost on subsequent women.

Equilibrium shifts over time from zero to a high fraction of women using contraceptives (though not everyone).
Increasing cost in adoption

If an externality increases the cost on others of use, then a complementarity is not possible.

Example congestion. New road opens up. Commuters arbitrage and use new road until incremental travel times are equal.
Definition of Coordination Failure

Coordination: when groups get their act together. 

Failure: When groups can not get their act together.

Investment: requires an expectation of future benefit, but profitability depends on what others do. If coordinate action raise payoffs for all.

One view of underdevelopment is that underdevelopment is the result of coordination failure.

Coordination failure offers an explanation for why two countries follow different (development) paths over time.
Consider a heavy industry such as steel making. It depends on coal and iron as inputs. And transportation system to get inputs to mill and outputs (steel) from mill to customers.

Forward linkage: affects the ease of supply of another product.

Backward linkage: $A \rightarrow B$ as coal to steel. Then an increase in $B$ (steel) increases the demand for $A$ (coal).

Forward linkages are like “pushes” while backward linkages are like “pulls”.
Interdependences require coordination for development of the economy.

Government policy — Big Push — simultaneous coordinated investment in many critical industries to “jump start” the economy.

This is the same Big Push discussed in the last chapter of GEH.

Which sectors? Could have balanced growth — more or less same growth in sectors.

More likely to have unbalanced growth — selectivity promote the development of certain key sectors, and the linkages among these sectors and the rest of the economy will enable the market to respond to imbalances (arbitrage/profit...
Which Sectors?

Notion of Intrinsic Profitability. Should the government invest in the most profitable industries?

Answer: No. Arbitrage opportunities in the most profitable sectors are likely to attract market response.

Government maximizes the chances of overcoming coordination failure by investing in the least profitable activity, provided that the activities have linkages.

Role of government sometimes to take up intrinsically unprofitable activities/sectors.
History Versus Expectations

In the presence of complementarities payoffs depend on the number of other using the technology or engaging in the activity.

However, we all prefer others to be first, as there is a lag between investment and payoffs.

This can lead to more coordination failure.

Everyone wants everyone else to go first.
Increasing returns means that total cost falls with increasing output.
Example of Automobile Producer

Small country imports automobiles from international producer (e.g., Toyota).

Local producer develops a car that is idea for local market, but is not competitive for other (larger) markets.

To make a profit, need a large share of the local market (why?)

Consumers will not instantaneously adopt the new car. Thus, local firm must suffer losses at start up.
No Problem with Perfect Capital Markets

Perfect capital market (definition) all profitable projects that produce a rate of return at least as high as the market interest rate are funded.

The local car mfg could obtain a loan to cover the interim period of losses, while consumers shift to the new car.

But if capital markets are imperfect or missing no loan is forthcoming.
Increasing Returns to Scale Critical

Three components interact:

1. Increasing returns to scale
2. Delay in adoption by consumers.
3. Missing or incomplete capital markets.

But the increasing returns are the critical feature. In absence of increasing returns, firm with better (lower cost) technology can enter the market and sell a small quantity and make a profit.
Policy Implication

If existing products from developed countries have a large share of the market, local firms may not be able to sustain losses over an interim period even if the local firms produce a superior (local) product.

Gives possible role for government intervention. To offer loans to support local firm at early stages of new product.

Can see that firms in developing countries must not only innovate, but must do so while competing with firms from developed country.
General versus Partial Equilibrium

Previous analysis adopted a *partial* equilibrium analysis – assumed that the market was of given size.

Appropriate for analysis of single firm or small industry (small relative to size of national economy).

But there may be many activities so limited, demand for these activities will be affected through a feedback mechanism.
Roundaboutness

Think of many intermediate products – or many stages of production between raw materials and production of final product for the consumer market.

Ray uses the example of home construction.

Another example: clothing manufacturer.

- One production process done through labor intensive process, many individuals working with basic tools (needle, thread, scissors, ruler).
- Another production process is heavily mechanized — automated cutting machines, sewing machines, sophisticated storage and inventory system.
Capital Intensive

Production system requires a large market to amortize the cost of equipment (including set up cost).

Many times intermediate goods produced under increasing returns to scale.

Increasing returns benefit from scale, but also *variety* (as per last penultimate problem on last problem set).

Increasing returns to variety because of division of labor—introduce a new variety of intermediate input, increase the division of labor to make it more efficient (Smith’s pin factory.)
Smith’s Pin Factory

Adam Smith used the production of pins to illustrate the gains from the division of labor.

One production process: have a single worker do all steps of the production process.

Alternatively, disaggregate the production of pins into different tasks (e.g., uncoil steel wire, cut wire to proper length, fix pin head, sharpen point).
Multiple Equilibrium

Back to the original discussion. See how the interaction of the production of process and market size can produce multiple equilibria.

Economy may be “poor” low demand for final product. Intermediate goods too expensive for use, so adopt a labor intensive production process. Production low and keeps demand low.

Virtuous circle. High demand for final product, intermediate goods can be produced via increasing returns, lower cost, raises demand for final product, increased substitution from labor to capital. Productivity of labor increases so does income as does demand for final product.
Central to the virtuous circle is the increasing returns of intermediate goods. Lowers price of intermediate goods, lower cost of final good (competitive market) lower price of final good.

Notice the similarities between increasing returns and complementarities.
Externalities as Missing Markets

Externalities can be viewed as imperfection in some markets or the lack of some markets.

Example: entrepreneur builds mass transportation system in city. Raises real estate prices of locations near transportation system (externality).

There is no competitive market in which potential real estate beneficiaries can compensate the entrepreneur for building the system.

If so, the externality would be internalized. The system would be built if and only if it were socially beneficial.
Competitive Markets

Competitive market: there is a price at which one can buy or sell unlimited quantities of a commodity (take prices as given and unaffected by your actions).

Competitive markets fully internalize the benefits and costs at the fixed price and thus will not support coordination failure or inability to internalize backward and forward linkages.

Competitive markets and price–taking behavior the notion that the size of the market imposes a limit to efficient production simply does not hold.
International Trade

Does it make sense to presume that the seller can sell “unlimited” quantities of a good at any given price? Yes, if small relative to the overall size of the sector.

Frictionless international trade competitive market assumption may be compelling.

Yet, infrastructure is a non–traded good. Likewise, many intermediate goods are non–traded goods. Hence, issues of coordination failure and limited markets apply if at all for domestically produced and non–traded goods.
Other devices that may hinder development
Social Norms

Evolve to reinforce the status quo, and within current system help to coordinate activities.

Likely, not to change quickly. Hence may serve as a drag on development.
Status Quo

Development as in other forms of economic change has winners and losers.

If the winners gain enough to compensate the losers for their lost then change should be possible.

However, sometimes that isn’t enough. It may be that winners within each subgroup have to be able to compensate losers within the subgroup.

This is a high standard and difficult to obtain.
Summary

Presented ways of thinking about issues of development. We will see these ideas in many different forms for the remainder of the course.