

Community Economic Development

Theories of Economic Growth A Brief Overview

Theories of Economic Growth A Brief Overview

A fundamental question that economists have asked for years is what drives economic growth.

- Why do some communities experience economic growth while others struggle?
- In a capitalist economy why not just let the markets work?
- Are there policies that can be put in place to influence economic growth?

In order to understand how the local economy is performing and how the community can influence growth it is necessary to have a basic understanding of the economic growth process

Theories of Economic Growth A Brief Overview

There are almost as many theories of economic growth as there are economists. But there are two broad classifications of theories that have dominated the thinking:

- ❑ **Neoclassical** economic growth theories
- ❑ **Endogenous** economic growth theories

There are also numerous “minor” theories such as:

- ❑ Stages of growth theory
- ❑ Growth Machine theory

Theories of Economic Growth

A Brief Overview

Stages of Development Theory

Somewhat surprisingly, prior to World War II economists did not devote much attention to economic growth theories. The combined effects of the Great Depression and the challenges of rebuilding Europe and much of the Pacific Rim challenged economists to not only develop policy options but more importantly solid theoretical foundations for those options.

Much of the early work was based on empirical observations made by the Nobel (1970) winning economist Simon Kuznets and economic historian Walt Rostow who independently developed the stages of development theory.



Kuznets

Rostow



Theories of Economic Growth

A Brief Overview

Stages of Development Theory

Although Kuznets and Rostow ask two very different questions about economic growth, they both reached remarkably simple theories to answer their respective questions:

Kuznets: why does income growth appear to diverge in some countries and converge in others?

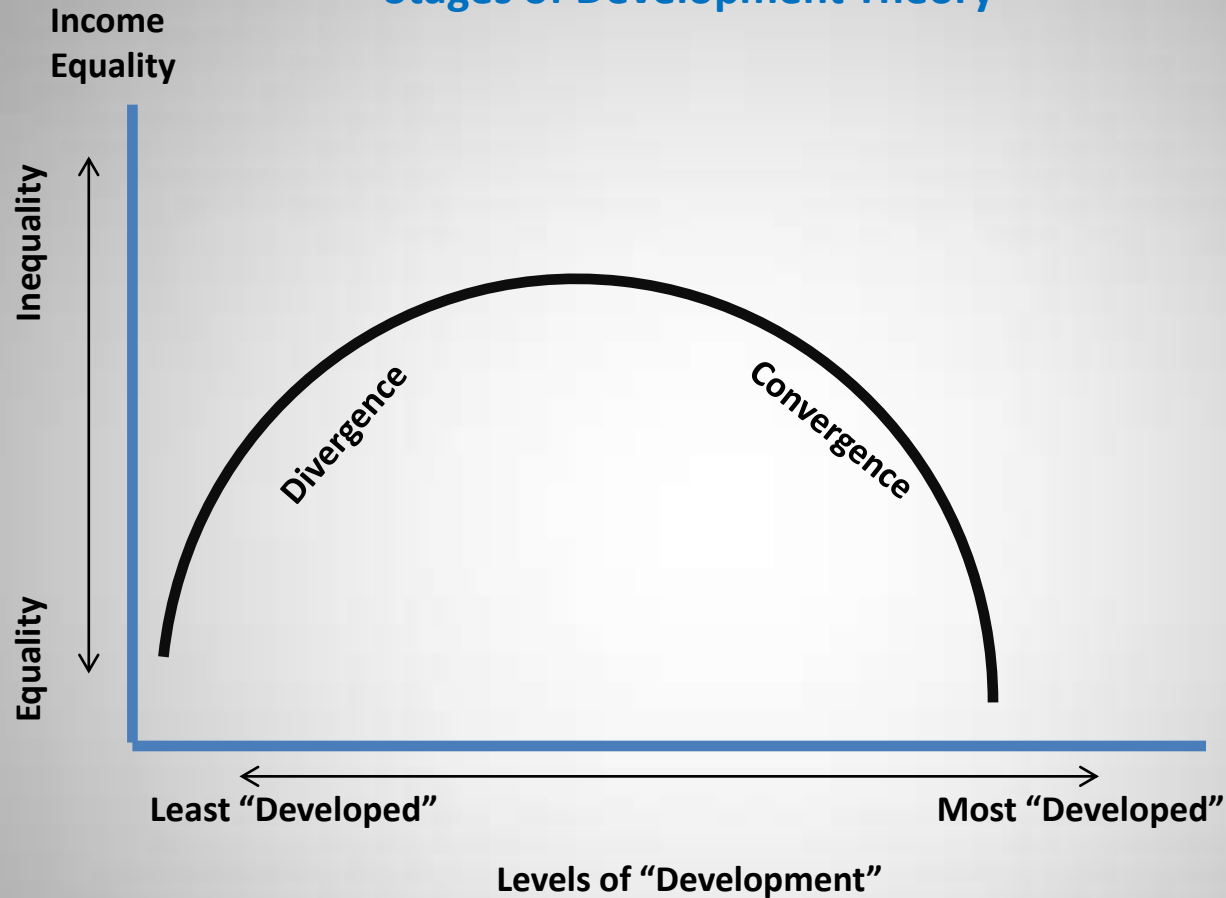
Rostow: what drives the movement of people from living and working in rural areas to urban cities?

Convergence: Over time the income distribution moves to the average (e.g., a growing middle class).

Divergence: Over time the income distribution becomes wider (e.g., a shrinking middle class).

Theories of Economic Growth A Brief Overview

Stages of Development Theory



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Theories of Economic Growth

A Brief Overview

Stages of Development Theory

- Consider a very simple rural economy composed solely of self-sufficient farmers.
- The notion of comparative advantage suggests that some farmers will specialize in certain agricultural products.
- Because farmers are specializing they are no longer self-sufficient and the need for trade arises.
- As more farmers are trading agricultural goods the need for centrally located “farmers’ markets” immerges. The foundation for villages is laid.

Comparative Advantage: A person has a comparative advantage at producing something if he can produce it at lower cost than anyone else.

Theories of Economic Growth

A Brief Overview

Stages of Development Theory

- With farmers now specializing in specific agricultural commodities the demand for specialized inputs begins to grow the market for manufactured tools grows.
- As specialization continues and a manufacturing industry is established the concept of economies of scale comes into play. Both farms and manufacturing grows in scale. Economies of scale reinforces specialization.
- As farmers rely more on machinery the surplus labor moves into manufacturing. Villages begin to grow into cities.

Economies of Scale or Size: cost advantages that a business obtains due to expansion, if you double inputs output more than doubles.

Theories of Economic Growth

A Brief Overview

Stages of Development Theory

- As farmers and manufactures become larger labor becomes more productive and wages (income) goes up.
- As income grows Engel's Law comes into play and people start to spend a lower share of income on necessary goods (food, clothing, shelter) and more on “luxury” goods (e.g., recreation).
- In Kuznet's theory we move from agriculture, to manufacturing to a service based economy (i.e., three stages of development).
- In Rostow's theory we move from farmers scatter across the rural landscape to cities and the age of “mass consumption.”

Engel's Law: as income rises, the *proportion* of income spent on food falls, even if *actual* expenditure on food rises.

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

- Economist concluded that the Stages of Development Theory is a pleasant “story” but not a very rigorous theory. Economists prefer “deductive” not “inductive” theories.
- In the 1950s Nobel (1987) winning economist Robert Solow and Trevor Swan turned to neoclassical economics and built on the earlier, simplistic Harrod-Domar models.
- At the time Solow was working closely with Paul Samuelson (Nobel Economist 1970) with the development of what is now commonly taught in microeconomic classes.

Solow



Deductive Theory: Deductive arguments are attempts to show that a conclusion necessarily follows from a set of premises or hypotheses.

Inductive Theory: Inductive reasoning moves from specific observations to broader generalizations and theories.

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

In traditional neoclassical economics we make several assumptions about behavior and technologies.

- Firms (people) are assumed to maximize profits (utility).
- Firms (people) have full information.
- Firms (people) can process all information.
- Firms (people) are rational.
- Technology exhibits constant returns to scale.
- Labor and capital (machinery, buildings, etc.) are the only inputs.
- Capital exhibits diminishing returns.
- Firms (people) are price takers.

Constant Returns to Scale:
Output changes in the same proportion as changes in inputs: double inputs, output doubles.

Diminishing Returns: For a given level of labor increasing capital leads to increases in output at a decreasing rate.

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

The last assumption, that firms (people) are “**price takers**” is extremely important.

This means that **markets are perfectly competitive**.....or we have **perfect competition**, there are no firms (people) large enough to influence the markets.

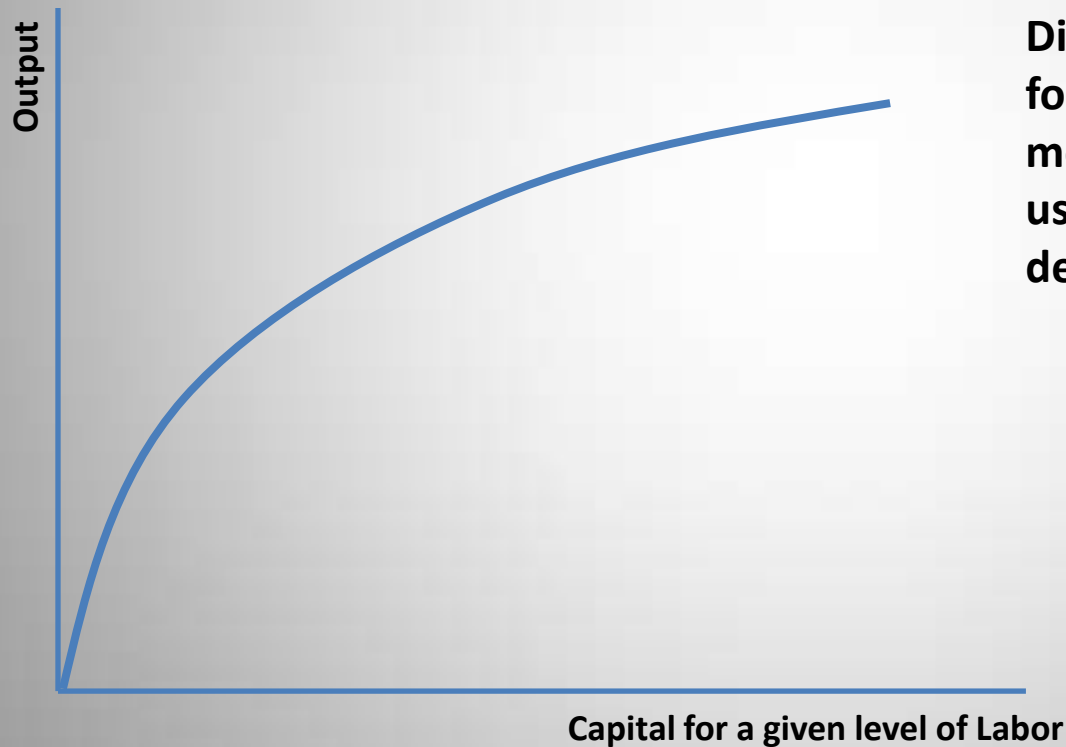
Side note: from a purely technical perspective, the assumption of constant returns to scale and diminishing productive will lead us to a situation of perfect competition. So technically, the assumption of perfect competition is redundant.

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

We can visually present the production function with diminishing returns as:



Diminishing returns in capital for a given level of labor means that as more capital is used output increases at a decreasing rate.

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

Now, how can the economy grow? One of two sources, increases in labor and/or capital: increase inputs, output (income) grows.

For simplicity lets assume that labor grows at some natural rate that is tied to the birth and death rates. Economists would call this “exogenous” or determined outside of the model.

Now what happens to capital? Two counter-acting forces are at play:

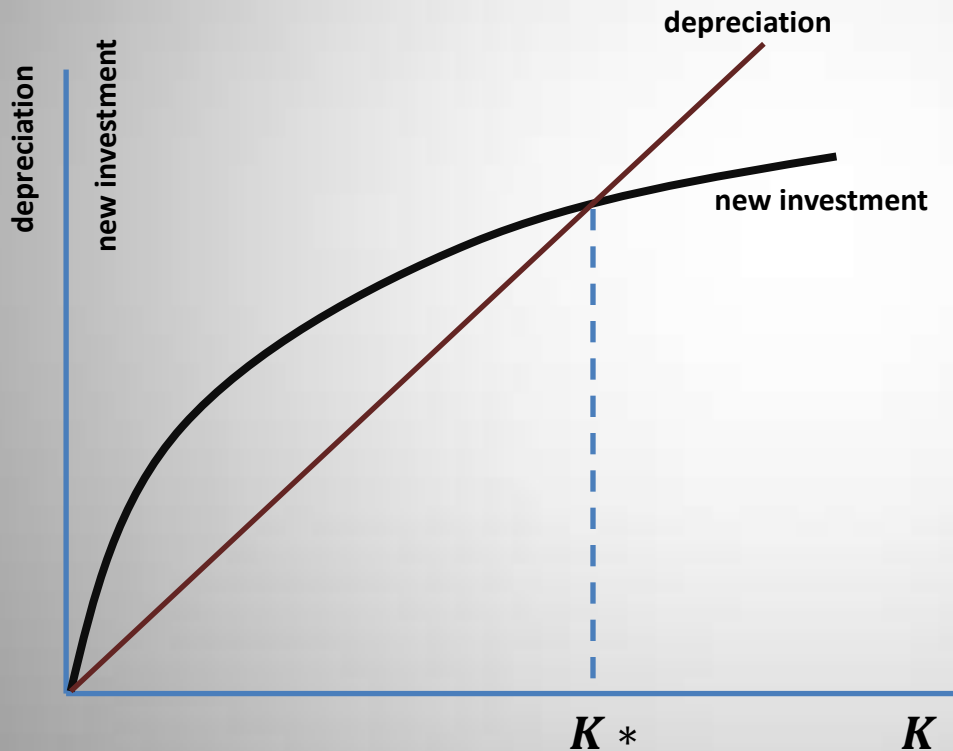
- ❑ Depreciation is “eating away” at the stock of capital and places downward pressure on economic growth.
- ❑ Investment is adding to the stock of capital and places upward pressure on economic growth.

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

How depreciation and new investments interact can be expressed by:



Here K^* is the level of capital where the economy has hit an equilibrium.

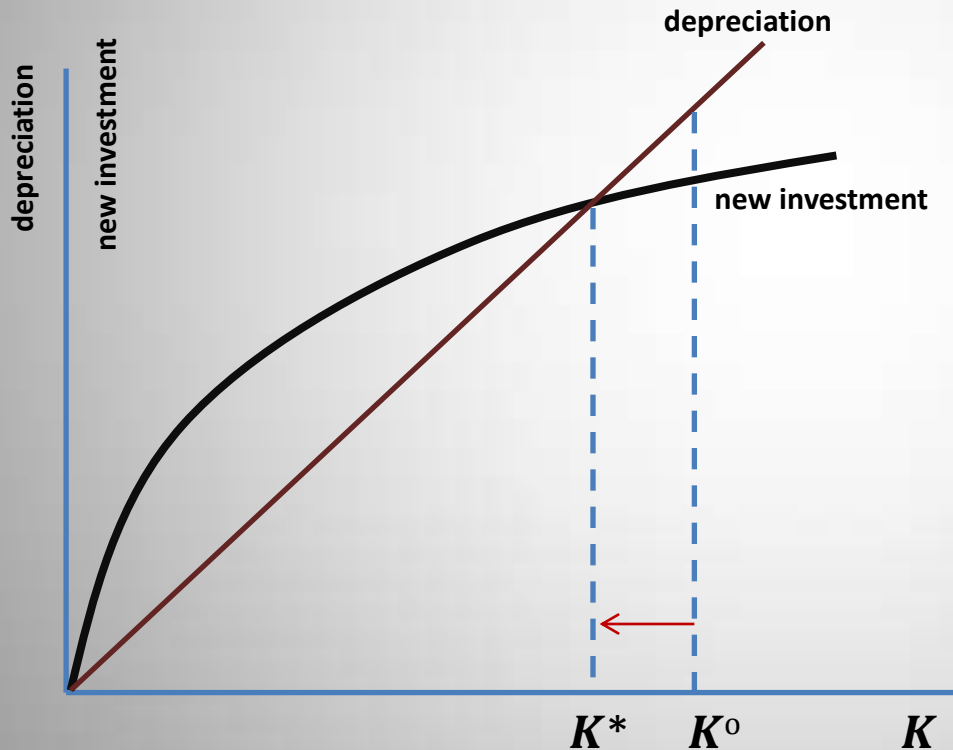
Here new investment in capital is exactly equal to capital depreciation.

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

How depreciation and new investments interact can be expressed by:



Suppose we have some level of capital called K^0

$K^0 > K^*$ → new investment is less than depreciation and the stock of capital will decline:

if $K^0 > K^*$ then $K^0 \rightarrow K^*$

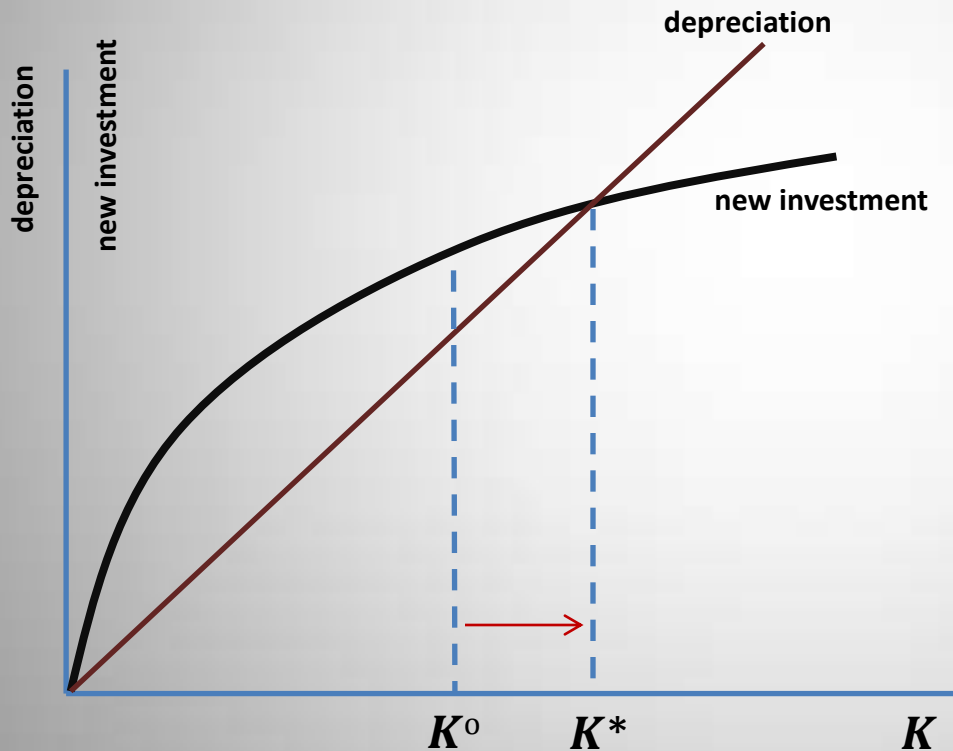
WOW! What a mouthful!!!

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

How depreciation and new investments interact can be expressed by:



Suppose we have some level of capital called K^0

$K^0 < K^* \rightarrow$ new investment is more than depreciation and the stock of capital will increase:

if $K^0 < K^*$ then $K^0 \rightarrow K^*$

WOW! What a mouthful!!!

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

What does all this mean?

1. The model is stable in that if you “shock” the economy away from the equilibrium K^* there are natural market forces that will return it to the equilibrium.
2. If you do not have enough capital ($K^0 < K^*$) then the amount of new investment will be greater than depreciation and new capital will be added to the economy. The same logic apply to too much capital but with the process in reverse.

In other words, the neoclassical model predicts CONVERGENCE.

Over time, incomes will growth together and have a growing middle class.



Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

What do we end up with?

Markets Work!

Adam Smith's Invisible Hand Works!

Perfectly competitive markets will lead to a growing middle class!

Policy implications:

Let the markets work, get out of the way.

Promote competition.

Need to promote labor productivity (i.e., education!)

Note: Much of the early thinking on human capital development came out of this line of work.



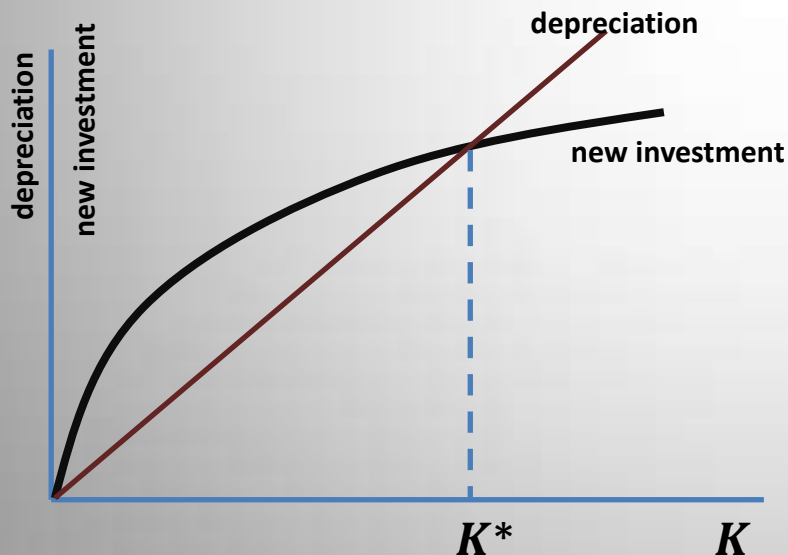
Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

Why does this work? Why do we have convergence? What is the key?

Focus on the shape of the investment curve. Notice how it is “concave” or bending downward. This shape is vital to the theory working. If the investment curve is not concave the theory becomes unstable and “explosive”.



Now why is the investment curve concave? Constant returns to scale and diminishing rates of return!

As capital increases the growth rate in income starts to slow down!

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

The results on convergence, or incomes moving to an average, is reinforced if the neoclassical model is placed in a **regional setting**.

Instead of one economy suppose we have a lot of different regions and people (labor) and capital is able to move from one region to another.

Suppose that what drives labor and capital to move from one region to another is wages (for labor) and rates of return (for capital).

Here, if region A is paying wage W^A and region B is paying W^B and $W^A > W^B$ then people will move from region B to region A.

As people leave region B the supply of labor will go down shifting the labor supply curve to the left, putting upward pressure on W^B . Conversely, as more people move into region A the supply of labor goes up putting downward pressure on W^A .

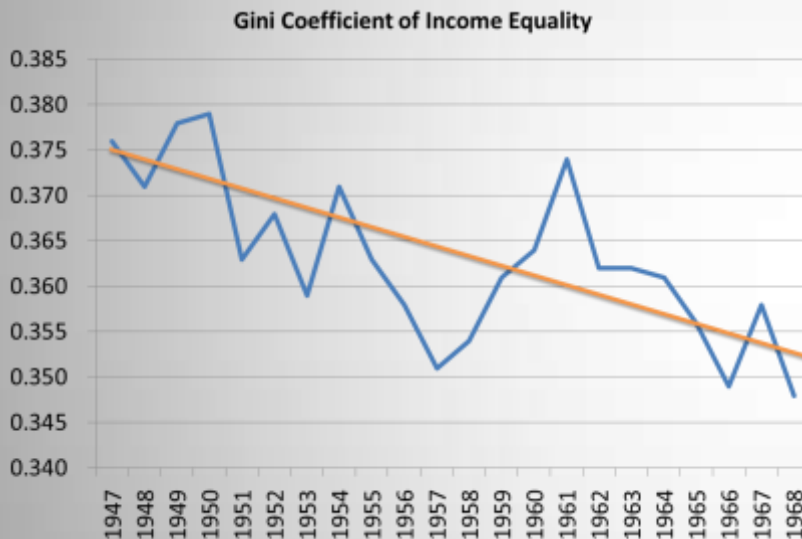
People will continue to move until $W^A = W^B \rightarrow$ convergence!

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

Now, the question is, the theory predicts convergence, but what about the data. What does the data tell us?



While this work was being done, the data confirmed a pattern of convergence!

The theory was deductive, consistent with neo-classical economics, and the data supported the predictions of the theory.

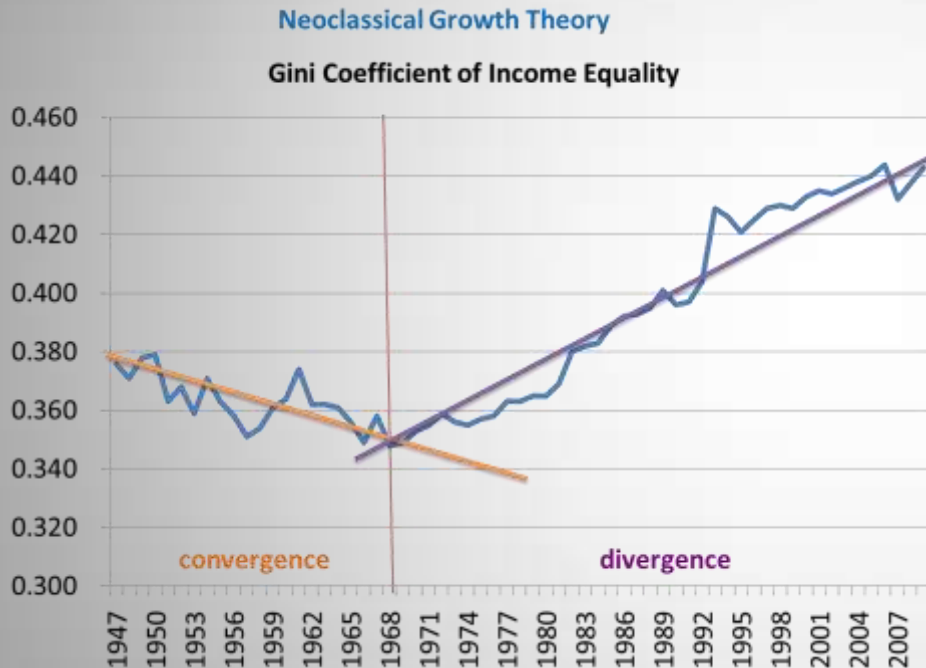
The result? “We’ve got it figured out.” Throughout the 1970s and early 1980s very few economists were studying economic growth processes.

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

Then something happened: people started questioning the validity of the neoclassical theory.



Starting in the early 1970s (or late 1970s depending on which data you use) the pattern of convergence broke down, indeed, there is now a sustained period of divergence!

The result? **“We don’t have it figured out.”** Renewed interest in economic growth theory, and policy implications.

Theories of Economic Growth

A Brief Overview

Neoclassical Growth Theory

In addition to the fact that the data is no longer consistent with the dominate theory (although many economists refuse to give up the fight) two other things started to occur:

1. Economic historians were keen to point out that economic growth really hinges on technological innovation. When one looks historically at when the economy makes major strides forward (growth) it is based on radical new innovations. **The neoclassical model cannot handle (i.e., predict) advances in technology or innovations...a major problem.**
2. Economists were really questioning the reasonableness of constant returns to scale. There is simply too much evidence that increasing returns to scale is present. If we lift the constant returns to scale assumption, and with it perfect competition, the whole neoclassical model falls apart.

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Kaldor was a British economist writing during the post-WWII period of reconstruction. The British economy was struggling and not experiencing the growth of Europe or Japan and there was significant political pressure for the government to “do something.”

If the neoclassical model was indeed correct, government has a very passive role in economic growth. Not a politically acceptable answer.

But Kaldor’s main thrust of attack came in the role of constant returns to scale and diminishing marginal returns.



Kaldor

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Kaldor maintained that the economy, primarily manufacturing, exhibited increasing returns to scale and once a region was able to gain a comparative advantage and capture economies of scale, the growth process would be cumulative, a process that Myrdal (1957) described as circular and cumulative causation effect.

Once a large region, like a metro area, gained a comparative advantage economies of scale would reinforce growth → divergence.

Kaldor, however, was unable to present a “stylized model” (i.e. deductive) theory and his arguments were never widely accepted. Besides, all the empirical evidence at the time was pointing to convergence, something the neoclassical model predicted.

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

The work of Paul Romer (1986 & 1987) and Nobel (1995) winning economist Robert Lucas (1988), however, radically changed how economist thought about the growth process and the underlying factors causing growth.

Following a trend in economic theory they lifted the assumption of perfect competition which had already occurred in the industrial organization and international trade literatures, Romer asked *what would happen if we abandoned the neoclassical model and started with a clean slate in which the economy is not held to perfect competition.*



Romer



Lucas

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Romer suggested an economy that had the following characteristics:

- There are many firms in a market economy (i.e., there is competition, just not “perfect” competition).
- Discoveries of new ideas differ from other inputs in the sense that many people can use them at the same time. In other words, ideas are public goods.
- It is possible to replicate physical activities. If one firm can produce a good or service in a certain way there is nothing preventing another firm from replicating the first firm.
- Technology advances from things people do (human capital matters).

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

- Technological advances do not fall from heaven as in the neoclassical model. **Many individuals and firms have market powers and earn monopoly rents on discoveries.**

The **last characteristic is the linchpin** of the Romer view of the world.

Earning monopoly rents on discoveries cannot occur in a perfectly competitive economy, but **it is the striving to capture these rents that spur economic growth**. How does this process play out?

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

The key idea is that **profit seeking investments in knowledge** play a critical role in long-term growth.

Investment in knowledge has two components. The first is investment in human capital through education. The second is investment in research and development of new products and technologies in an attempt to capture monopoly rents on those discoveries.

The latter leads us to *endogenous technological progress or endogenous growth*.

Put another way, *if research and development of new products and technologies are fundamental to the growth process, why would firms or people invest in research and development? The key is short-term monopoly rents that can be gained on the new technology.*

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Important distinction exists between “ideas” and “things”.

Ideas are similar to public goods and it is very difficult to preclude people from using new ideas.

Ideas cannot be patented.

Trade secrets are fiercely protected.

Intellectual property rights is a very hot topic.

“Things” are closer to private goods and patents can protect the inventor or innovator.

For example, the *idea* of last-minute-inventory cannot earn the innovator monopoly rents but the technical processes to implement and say inventorying computer software might be able to earn monopoly rents.

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Policy implications:

- Invest in human capital (education).
- Encourage business to invest in research and development.
- Encourage firms to adopt new technologies as soon as possible.
- Ensure that the laws are well established and enforced.
(Shaffer Star Rules/Institutions)
- Public sector investment in basic research (e.g., NASA, DoD, Universities)

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Basic vs Applied Research:

Pure research, basic research, or fundamental research is research carried out to increase understanding of fundamental principles. Many times the end results have no direct or immediate commercial benefits: pure research can be thought of as arising out of curiosity. In the long term, however, it is the basis for many commercial products and applied research.

The outcomes of basic research is highly uncertain and risky. Businesses are not likely to undertake significant levels of basic research because the potential to earn monopoly rents is too uncertain and risky. Basic research, however, is often necessary to lay the foundation for new innovations. Does the government have a role in ensuring Some of this basic research is taking place?

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Nobel (2008) winning economist Paul Krugman explicitly incorporated space into the new endogenous growth theory by asking a basic question:

What are the economic forces at play that result in the creation of megalopolises such as New York City and Tokyo?

He suggested that many of the notions common to regional and urban economics could be reconsidered in the new light of endogenous growth theory. Krugman maintains that prior to endogenous growth theory all attempts to explain why a system of cities might exist have been lacking.

Prior to Krugman and the “New Economic Geography” the predominate “theory” explaining the clustering of firms and people into cities centered on agglomeration economies.



Krugman



Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Agglomeration economies are a powerful force that help explain the advantages of the "clustering effect" of many activities ranging from retailing to transport terminals. There are three major categories of agglomeration economies:

Urbanization economies. Benefits derived from the agglomeration of population, namely common infrastructures (e.g. utilities or public transit), the availability and diversity of labor and market size.

Industrialization economies. Benefits derived from the agglomeration of industrial activities, such as being their respective suppliers or customers. This favors the emergence of industrial clusters.

Localization economies. Benefits derived from the agglomeration of a set of activities near a specific facility, let it be a transport terminal (logistics parks), a seat of government (lobbying, consulting, law) or a large university (technology parks).

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

The problem with agglomeration economies as a theory is well stated by Krugman:

“The point is not just that positing agglomeration economies seems a bit like assuming one's conclusion -- **as a sarcastic physicist remarked after hearing one presentation on increasing returns, "So you're telling us that agglomerations form because of agglomeration economies".** “

Agglomeration economies is much like the stages of economic development theories outlined above: it's a great story but great stories do not make a reliable theory.

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

A detailed discussion of Krugman's application of endogenous growth theory to a system of cities is clearly beyond the scope of this overview. But a brief overview of the main points helps us understand the economic forces at play.

Krugman notes that there are *Centripetal forces* create urban centers and describe the economic forces that pull economic activity together as well as *Centrifugal forces* force or spread economic activity away from the urban center.

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Centripetal forces include many elements but the dominate two are internal and external economies of scale.

Internal economies of scale centers directly on the shape of the production technology of the firm: being bigger simply makes the firm more productive and profitable. But rather than having the firm's resources scattered over the economic landscape there are synergies to being located in a central place.

External economies of scale centers on the firm's enhanced profitability to be located in close proximity to not only suppliers and customers but also competitors.

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

External economies of scale is the more interesting element to the theory. As firms either start-up and/or grow they need access to specialized input services (e.g., specialized business services such as financing, marketing, etc.). It makes sense that these types of services are more likely to be located in urban centers (i.e., cities).

But in close proximity to competitors is perhaps unexpected. But within the framework of endogenous growth theory it makes perfect sense where innovation is from things people do. Labor here is vital to the theory. What follows is the notion of **“thick labor markets”**.

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

A **“thick labor market”** is a way of talking about a relatively large supply of labor where there is a large potential pool of labor to draw from.

Thick labor markets are attractive for both firms and workers because each can find better matches and risk is lowered. Better matches means that employers can find better employees and workers can find better job opportunities. Here, competitors will be drawn into the same spatial labor markets.

Here firms (competitors) looking for labor with certain skills and workers with those skills will tend to “cluster” or “agglomerate” together.

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

Classic examples are:

- Investment bankers in New York City, specifically Manhattan.
- Computer design in Silicon Valley south of San Francisco.
- Garment industry in New York City.
- Electronic gaming design in Dallas.
- NASCAR racing in Charlotte, North Carolina.
- F1 racing outside of London, England.
- Indycar racing in Indianapolis.
- Waterparks in the Wisconsin Dells.
- Entertainment industries in Los Angeles.

What we have here is the laying of the economic foundation for “industry clustering” ala Michael Porter. This will have significant economic development policy implications that we will explore latter.

Theories of Economic Growth

A Brief Overview

Endogenous Growth Theory

The implication of Endogenous Growth Theory and Krugman's "New Economic Geography" on smaller and rural communities can be stark. In essence, the "cards are stacked" in favor of larger urban areas.

But there are *Centrifugal forces* that dampen the strong forces toward larger cities. Examples include congestion, pollution, crime and high rents. When centrifugal forces surpass *Centripetal forces* firms and labor will move toward the urban fringe or to a second tier city.

Theories of Economic Growth

A Brief Overview

Growth Machine Theory

Economists are not alone in the search for rational theories of economic growth. One of the particularly relevant from sociology is Harvey Molotch's **Growth Machine Theory**.

Growth Machine Theory states that the “power structure” of the community matters. In the spirit of the Shaffer Star we are focused on the “society” and “decision-making” nodes and the community power structure that influences those nodes.

Molotch maintains that we most focus on **“the politics which determines who, in material terms, gets what, where, and how.”**



Molotch

Theories of Economic Growth

A Brief Overview

Growth Machine Theory

In the simplest sense, those who benefit the most from economic growth drive the economic growth process. Broadly thinking this is the business elite who stand to gain in terms of income and property values.

Briefly, Molotch maintains that community elites form a coalition devoted to promoting growth because it provides them with a number of tangible economic advantage. Although these elites may disagree on other issues, the desire for growth finds wide support so that civic "boosterism" becomes institutionalized through chambers of commerce, newspapers, athletic teams, and so forth. It is maintained that the basic purpose of these local phenomena is to allow the community to compete with other communities for increased growth

Theories of Economic Growth

A Brief Overview

Growth Machine Theory

From community economic development perspective Growth Machine Theory has several implications:

- Understanding the power elite structure is vital.
- The power elite is not necessarily in the “public’s eye”.
- Decisions are often made behind closed doors.
- The wider benefit of the community not always considered.

One of the challenges facing Wisconsin communities is the balance between the requirements of open government (one power elite) and the desire for discretion from businesses (one power elite).

This conflict has been evident in publicly supported economic development corporations and the need for confidential discussions with private businesses.

Theories of Economic Growth

A Brief Overview

Policy Implications and Conclusions

- It is important to remember that most of these theories have limited direct application to community economic development because they are conceptual and help us think through the growth process.
- This discussion sets the context for much of what we try to do in communities. In order to influence growth at the local level we must have an appreciation of the larger forces that drives growth.
- These theories do provide insights into the growth process when viewed from the local perspective. **What drives overall growth sets the tone of discussion at the local level.**

Theories of Economic Growth

A Brief Overview

Policy Implications and Conclusions

But what are the common themes?

The institutional rules matter.....

These rules reduce uncertainty and risk.

Haphazard changes to these rules (e.g., environmental regulations, land use laws, etc.) creates uncertainty and risk.

Innovation and technological advances matter.....

A role for public and private investment in research and development.

Adoption of new innovations/technology vital to economic competitiveness.

Investment in human capital is vital to a competitive economy.

Theories of Economic Growth

A Brief Overview

Policy Implications and Conclusions

But what are the common themes?

Comparative advantage matters.....

A community must be realistic about what its comparative advantage is, and is not.

As the economy grows (i.e., incomes rise) those comparative advantages can change and the community must be able to adapt.

Scale matters.....

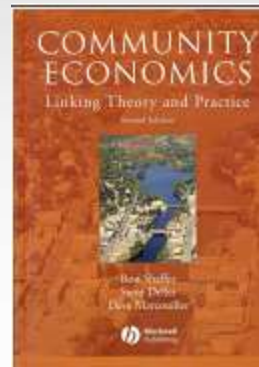
The assumption of constant returns to scale, which is vital to perfect competition (Adam Smith's Invisible Hand), is unreasonable.

The engines of economic growth are larger urban areas.

It is not readily clear how smaller more rural areas compete.

Recommended Readings

Shaffer, R., S.C. Deller and D.W. Marcouiller.
(2004). Community Economics: Linking Theory and Practice. Blackwell: Oxford England.





Prepared by Steven Deller, Department of
Agricultural and Applied Economics,
University of Wisconsin-Madison/Extension