

## ECON 102 Principles of Economics

Professor Elliott Parker, Spring 2007, Section 2

Online Syllabus: <http://www.coba.unr.edu/faculty/parker/econ102>

### Catalog description:

Introductory analysis of price determination, resource allocation, market structure, consumer behavior, producer behavior, market failure and government failure. Economic approaches to social issues and policy.

Prereq(s): MATH 120 or ACT of 22 or SAT of 520 or satisfactory scores on math readiness exam, OR

Coreq(s): MATH 124/126 or higher.

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## From the Online Syllabus

❖ **Textbook:** *Microeconomics*, by Krugman & Wells. New, used, or online.

❖ **Readings:** *The Economics of Public Issues*, by Miller, Benjamin, & North.

❖ **Homework:** Aplia website, packaged with new textbook or online subscription.

❖ **Math Skills Quiz:** Aplia quiz due Sunday, 80% to pass, bonus points. If you fail, you get a second quiz with half the bonus points. If you fail again, you need to see me.



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## More from the Online Syllabus

### Grading:

- ❖ 60% -- Two Midterm Exams, Aplia Homework
- ❖ 30% -- Final Exam
- ❖ 10% -- Attendance and Participation

### Other Things Explained in the Online Syllabus:

- ❖ Dropping a Midterm Exam Grade
- ❖ Aplia Experiments included in Participation
- ❖ Teaching Philosophy
- ❖ Grading Scales
- ❖ Sample Past Exams
- ❖ Cheating
- ❖ Tutoring
- ❖ Combining School and Work
- ❖ Schedule and Assigned Readings

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## Chapter 1: Introduction and First Principles

- ❖ Economics is a social science that studies how individuals in society choose to allocate scarce resources to produce and distribute economic goods.
- ❖ Microeconomics looks at choices made by individuals and firms and how markets coordinate those choices.
- ❖ Macroeconomics looks at the aggregate choices of everyone in the economy.
- ❖ Economy comes from the Greek word “oikonomia” which means management of the household or the state.

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## Choice – The Essential Act

- Economic theory begins with a *model*, which converts simplifying assumptions into refutable hypotheses.
- The economic model starts by assuming that individuals make *choices* out of self-interest, choices that are consistent with their own preferences, given their information and constraints.
- We assume people are “rational” and do what they do for a reason. This does not mean that they are accurate and precise in their mental calculations, or even correct in their choices.
- Individual self-interest is often (but not always) assumed to be consistent with the accumulation of *material wealth*.
- All groups (e.g., firms, societies) are composed of individuals with interests that may or may not conflict.

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## Two Alternative Models of Self-Interest

- Adam Smith’s Invisible Hand (from the *Wealth of Nations*, 1776): Individuals who act in their own self-interest unintentionally promote the public interest, frequently more effectively than when they intentionally pursue it.
  - The butcher, the baker, the farmer, the brewer.
- The Prisoner’s Dilemma: When individuals act in their own self-interest at the expense of others, the result can be that everyone is worse off.

Sometimes incentives will lead to one, and sometimes the other.

A Prisoner’s Dilemma makes the players worse off. This can be good for society, or it can be bad.

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## The Prisoner's Dilemma

Imagine two criminals arrested for suspicion of a crime, but without sufficient proof (and we don't even know if they are guilty). The two prisoners are isolated from each other, and the police visit each of them and offer them a deal to testify against the other and go free.

- If neither testifies, they are cooperating with each other, and both get only a small punishment due to lack of proof.
- If one betrays the other, the defector will gain more, since he is freed, but the one who remained silent will be harshly punished.
- If both betray each other, both will be punished, but less severely than if they had refused to talk.

Each prisoner has a choice between only two options, and in the game they cannot negotiate with each other.

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## The outcome?

Outcomes for Prisoners X, Y	Y testifies	Y stays silent
X testifies	X and Y get medium punishment	X goes free, Y gets harsh punishment
X stays silent	X gets harsh punishment, Y goes free	X and Y get lightest punishment

The "Nash equilibrium" is that both confess, even if they aren't guilty.

- Solutions include "tit for tat" retaliation in repeated games, enforceable agreements (e.g., the Mafia).
- Many examples: war, gang violence, traffic jams, firms cutting their prices, students trying to beat a curve, countries imposing import tariffs, et cetera.

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## Choice is necessary because of scarcity

- A **shortage** occurs when the amount desired exceeds the amount available. A good or service is **scarce** if a shortage would occur when the price is zero.
- All economic goods have value, which we measure by how much of other things people are willing to give up to get them. Value usually has diminishing returns.
- All economic goods have an **opportunity cost** (the value of the next best alternative), because scarcity means that something must be given up (i.e., there is no truly free lunch). Opportunity costs usually increase.
- Trade-offs between value (benefits) and opportunity costs occur at the margin. Does one more give me more additional value than it makes me give up?

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## Monetary and Nonmonetary Goods

Economics does not only apply to goods priced in money and sold in stores. Money is merely a medium of exchange, a store of value, and a convenient way to measure things.

- We can measure the value of a hiking trail by what people are willing to give up to enjoy it, and we can measure the cost by what else could be produced with the land and labor.
- We can measure the value of love and relationships (including marriage and children) by what you are willing to give up to have it.
- We can measure how people value their own life by how much they are willing to pay to reduce their risk of death (e.g., imagine spending \$1000 more on a car that would reduce your chance of death from 0.1% to 0.05%, which roughly implies a value of \$2 million).

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## Some Parts of the Economic Process

- **Resources:** productive assets used to produce goods, including human assets (labor, time, skills), produced assets (i.e., capital), and natural resources (land, water, air, minerals). Also called inputs or factors of production.
- **Allocation:** the choice of how to use scarce economic resources. Which producers get to use which resources in what quantities.
- **Production:** the process of converting scarce resources into economic goods.
- **Distribution:** the choice of who gets which economic goods, and in what quantities.
- **Consumption:** the purchase of goods and services for personal short-term use.
- **Investment:** the purchase of goods and services for the production of future goods and services.

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## Market Capitalism

- ❖ **Capital** comes from "head," as in cattle (wealth). Produced and productive assets, like factories, machines, tools, et cetera. Increased through investment, and decreased through depreciation.
- ❖ Capitalism means an economic system in which individuals own capital, and can control it, buy or sell it, and receive the residual income from its use.
  - ❖ Capitalism relies on markets, which are decentralized institutional arrangements for buying and selling, with prices determined by buyers and sellers.
  - ❖ Markets prices help determine allocation, production, and distribution.
  - ❖ Distribution depends on income earned from resource ownership, which are priced by markets.

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## How Market Economies Work

- ✓ Specialization can increase production.
- ✓ Voluntary trades create mutually beneficial gains – a positive sum “win-win” game, not a zero-sum game.
- ✓ Choices often interact—my choices affect your choices, and vice versa.
- ✓ Free markets tend to move toward equilibrium (e.g., the Manhattan Jiffy Lube legend), and opportunities tend to be exploited (\$20 bill).
- ✓ Efficient use of resources (in allocation, production, and distribution) maximizes the long-run value of goods and services produced by an economy, not just the short-run monetary value. This includes the environment.

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## Institutions of a Market Economy

- Markets: capital markets, labor markets, product markets, et cetera.
- Participants include:
  - Households/individuals (consumers) – buyer of products, seller of labor and capital.
  - Firms – seller of products, user of labor and capital. Includes sole proprietorships, partnerships, corporations, banks, manufacturers, farmers, barbers, retailers, etc.
  - Government (state) – buyer/seller of products, user of labor and capital, regulator, etc.
  - International participants – exports, imports, foreign borrowing and lending.

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## Resource Reimbursement

Resource owners are reimbursed for their resources by

- **Wages** for providers of labor.
- **Interest** for providers of capital.
- **Rent** for providers of natural resources.
- **Profit** for entrepreneurs.

Wages, interest and rent are determined by markets for labor, capital, and land.

Profit is the revenue from producing goods and services and selling them on the market, minus the costs paid to the other holders of resources.

An individual's ability to buy goods and services is thus determined by the resources provided to the market in turn, and what value the market places upon them.

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## Efficiency and Equity

- An economy is efficient if it exploits all opportunities to make some people better off without making other people worse off.
- Equity means that everyone gets his or her fair share. Since people can disagree about what's "fair," equity isn't as well-defined a concept as efficiency.
- Sometimes there exists a conflict between equity and efficiency.
  - Higher taxes for the rich may improve equity but reduce incentive to invest (and thus reduce efficiency). Poorly-designed welfare programs reduce incentive to work.
  - Land reform in developing countries can improve both. 16

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## Market and Government Failure

- 1) Free markets provide strong incentives, and are usually relatively efficient.
- 2) Sometimes markets fail to be efficient.
- 3) Because resource ownership and opportunities are not equally distributed, the income created by free markets is not equally distributed.
- 4) Government intervention can sometimes improve society's welfare by "fixing" market failures, or redistributing resources, opportunities, or income.
- 5) Sometimes government also fails. Intervention can make things worse.

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## Why do Markets Fail?

- > Individual actions have *spillover effects* not taken into account by the market (we call these externalities).
- > Property rights may be undefined or unenforceable.
- > Some goods (e.g., *public goods*) cannot be efficiently managed by markets.
- > Sometimes there are not enough buyers and sellers to make a market work well.
- > One party (e.g., a *monopoly*) prevents mutually beneficial trades from occurring in the attempt to capture a greater share of resources for itself.
- > Costly *information* makes it hard to know which trades are good. Limited or one-sided information may lead people to avoid possibly beneficial trades (e.g., used cars, inexperienced employees).

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## Democratic Market Capitalism

- In theory, economists often describe an capitalist economy with perfect markets and no government, but it is unlikely that capitalism can function without government. At minimum, government must enforce property rights and contracts, and provide for a common defense.
- Democratic market capitalism begins with a relatively open society whose political structure permits participation in the political process by individuals (i.e., voters), and follows policies that are subject to the will of the governed.
- Decisions on how resources are used is mostly (but not entirely) done by a market process.
- The U.S.A. is a democratic market capitalist country, with relatively less government intervention in markets than most other countries in the world.

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## Reminder...

Register for Aplia using course key, not necessary to pay now.

- Math quiz required by Sunday 11PM.
- Two graded homeworks for Chapter 1 also due.

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- CHAPTER 2
- Economic Models:
- Trade-offs and Trade

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## Economics is a Science

- ❖ Science is a methodology of theory and evidence seeking natural explanations for observable phenomena.
- ❖ In *social science*, it is sometimes difficult to perfectly replicate an experiment, or control for all other factors.
- ❖ Rules of proof rely on testing refutable hypotheses with statistical evidence. You can never prove a theory or hypothesis is true, you can only keep failing to disprove it.
- ❖ The four steps of the scientific method are:
  - ❖ Identify the question and the relevant variables.
  - ❖ Specify assumptions to create a "model."
  - ❖ Formulate a hypothesis.
  - ❖ Test the hypothesis.
- ❖ Well-established models become theories, even "laws." 22

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## Assumptions and Hypotheses

- Assumptions are simplifications and clarifications under which the model will operate, and are not necessarily realistic. Assumptions are not tested.
- One major assumption used in economics is ceteris paribus which means "all other things being equal".
- An hypothesis is a logical implication of your model, and should be refutable with observable evidence.
  - "If the price of a paper textbook rises, more students will buy the electronic version instead" versus "If the price rises, this will not be fair."

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## Models in Economics:

- A **model** is a simplified representation of a real situation that is used to better understand real-life situations.
- For example, the **production possibility frontier (PPF)** illustrates the trade-offs facing an economy that produces only two goods. It shows the maximum quantity of one good that can be produced for any given production of the other.

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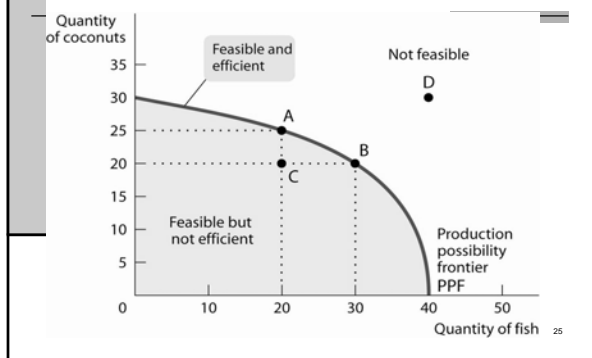
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## The Production Possibility Frontier




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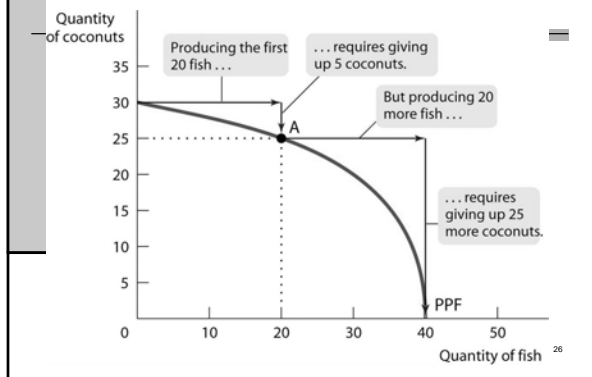


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## Increasing Opportunity Cost




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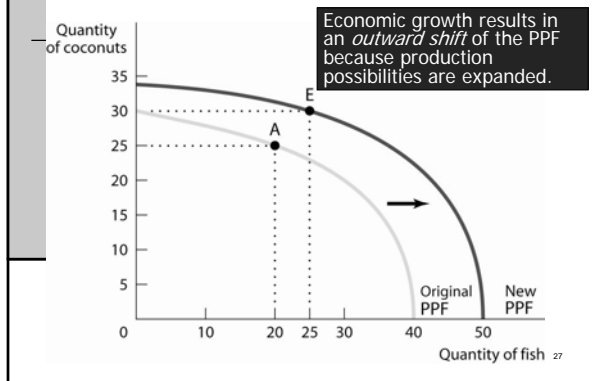


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## Economic Growth




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## The Ricardian Model

- Adam Smith's Hypothesis of Absolute Advantage – cost is based on the amount of labor used, but some can specialize and use less labor per unit.
- David Ricardo, *Principles of Political Economy and Taxation* (1817):
  - Comparative Advantage – cost is based not on labor, but on what that labor could have produced instead.
  - Simple Trade Model – assume each person has a constant cost.



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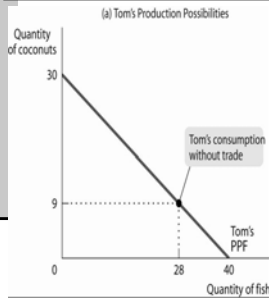
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## For Example, Consider Tom (and Hank)



- In a typical period of time, Tom can produce either 30 coconuts and no fish, 40 fish and no coconuts, or some mix in between, like (28,9).
- Tom's opportunity cost of another fish is  $\frac{3}{4}$  coconuts.
- Tom's opportunity cost of another coconut is  $\frac{4}{3}$  fish.

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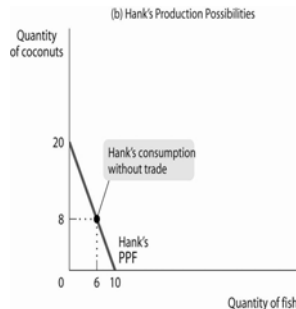
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## Hank is not as productive as Tom

- In the same time, Hank can produce either 20 coconuts and no fish, 10 fish and no coconuts, or some mix in between, like (6,8).
- Hank's opportunity cost of another fish is 2 coconuts.
- Hank's opportunity cost of another coconut is  $\frac{1}{2}$  fish.



Quantity of fish

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### Tom and Hank's Opportunity Costs of Fish and Coconuts

	Tom's Opportunity Cost	Hank's Opportunity Cost
One fish	3/4 coconut	2 coconuts
One coconut	4/3 fish	1/2 fish

- Tom has absolute advantage in both goods, but comparative advantage in only fish.
- Hank has absolute advantage in neither good, but comparative advantage in coconuts.
- If they specialize according to comparative advantage, they can produce more.
- If they have voluntary trade, especially after specialization, then they can both have a more preferred combination for consumption.

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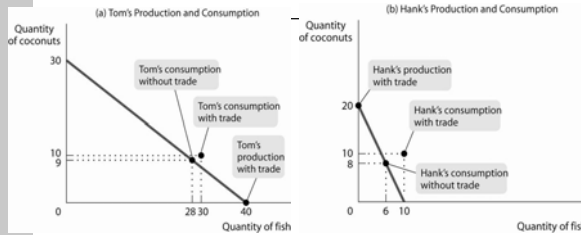
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### Specialization and Trade



		Without Trade		With Trade		Gains from Trade
		Production	Consumption	Production	Consumption	
Tom	Fish	28	28	40	30	+2
	Coconuts	9	9	0	10	+1
Hank	Fish	6	6	0	10	+4
	Coconuts	8	8	20	10	+2

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### Extensions of the Model

- Combining the PPFs into the "Island PPF" → convex PPF shows diminishing returns.
- Two Islands → more overall gains, but some may receive fewer gains from trade than before.
- More people → same hypotheses.
- More goods → more dimensions, same hypotheses.
- Economic growth → increases income, may or may not change comparative advantage.
- Price determination → depends on bargaining power.
- Wage determination → determined by prices and labor productivity.

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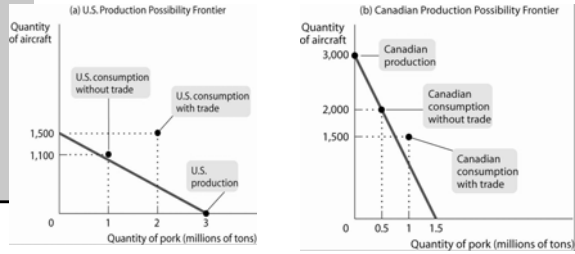
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## Comparative Advantage and International Trade (U.S. vs. Canadian Economy)



The U.S. and Canada can both achieve mutually beneficial gains from trade.

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## What are the Testable Hypotheses?

- Absolute Advantage would predict that specialization would increase production – not refuted – that less productive people would not have jobs, and that rich countries would not have any reason to trade with poor countries – both refuted.
- Comparative Advantage would predict that individuals and countries would benefit from trade, that more productive and less productive could still benefit from trading, that labor productivity would largely determine real income, and that countries that trade more would grow faster – all not refuted.

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## Another Model: The Circular-Flow of Economic Activities

- Economic Agents:
  - Households
  - Firms
- Where they interact:
  - Markets for goods and services
  - Markets for factors of production

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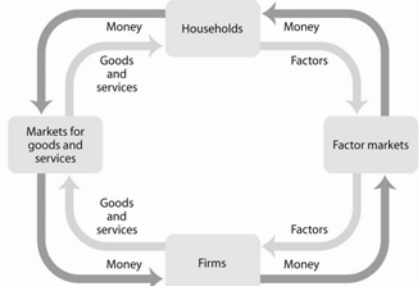
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## Transactions: The Circular-Flow Diagram



The **circular-flow diagram** is a model that represents the transactions in an economy by flows around a circle.

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## Hypotheses and Extensions

Everything balances:

- Transactions are two-sided, and can be measured several ways. Money flows can measure real flows.
- All that goes in, goes out, so changing one part changes another.

Extensions to a more complex model?

- Add government, foreign sector.
- Separate labor, capital, and other resource markets.
- Separate consumption from investment and intermediate goods.
- The value of parsimony.

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## Using Models / Why do economists disagree?

- > Positive versus normative analysis: factual and verifiable versus unsubstantiated opinion, "what is" versus "what should be."
- > Causal relationships versus correlations: Cats who use kitty litter live longer.
- > Fallacy of composition: what works for the individual may not work for the group (standing in a stadium, the prisoner's dilemma).
- > A forecast is a simple prediction of the future based on analysis of past events.

Economists are famous for disagreeing, sometimes with themselves. But I would argue that 90% of economists agree on 90% of economic theory. They disagree on the application of this theory to the real world.

There are two main reasons economists disagree:

- > They may disagree about which simplifications to make in a model, or which models apply to which real-world situations.
- > They may disagree about values.

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