Chapter 1. The Core Principles of Economics

# Chapter objective: Learn the four core principles that provide the foundation of all economic analysis, and use them to analyze choices and make better decisions.

1. **Cost‐benefit principle:** Costs and benefits are the incentives that shape decisions. You should evaluate the full set of costs and benefits of any choice and pursue only those whose benefits are at least as large as their costs.
2. **Opportunity cost principle:** The true cost of something is the next best alternative you must give up to get it. Your decisions should reflect this opportunity cost rather than just the out‐of‐pocket financial costs.
3. **Marginal principle:** Decisions about quantities are best made incrementally. You should break “how many” decisions down into a series of smaller, or marginal, decisions.
4. **Interdependence principle:** Your best choice depends on your other choices, the choices others make, developments in other markets, and expectations about the future. When any of these factors change, your best choice might change.

# Key Concepts

cost-benefit principle
economic surplus
framing effect
interdependence principle
marginal benefit
marginal cost
production possibility frontier

marginal principle
opportunity cost

Rational Rule
scarcity
sunk costs
someone else's shoes technique
willingness to pay

# Chapter Summary

This chapter presents four core economics principles that can be applied to virtually any economic decision — the cost‐benefit principle, the opportunity cost principle, the marginal principle, and the interdependence principle. Taken together, these principles teach students that they should evaluate all aspects of a decision, that the true cost of the decision is equal to the best alternative that is given up, that we should break down a decision into a series of small decisions when possible, and that a decision can be influenced by factors beyond our control.

# Chapter Outline

A PRINCIPLED APPROACH TO ECONOMICS

 The Economic Approach

 A Systematic Framework for Making Decisions

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Quantifying Costs and Benefits
Maximize Your Economic Surplus
Focus on Costs and Benefits, Not How They’re Framed
Applying the Cost‐Benefit Principle

THE OPPORTUNITY COST PRINCIPLE
Opportunity Costs Reflect Scarcity
Calculating Your Opportunity Costs
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How Entrepreneurs Think About Opportunity Cost
You Should Ignore Sunk Costs
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 Recap: Evaluating Either/Or Decisions

THE MARGINAL PRINCIPLE
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THE INTERDEPENDENCE PRINCIPLE
Interdependency One: Dependencies Between Your Own Choices
Interdependency Two: Dependencies Between People (or Businesses)
Interdependency Three: Dependencies Between Markets
Interdependency Four: Dependency Through Time
What Else?

# Suggested In-Class Experiments

Holt, C., Myers, E., Wråke, M., Mandell, S., & Burtraw, D. (2010). Teaching opportunity cost in an emissions permit experiment. *International Review of Economics Education*, *9*(2), 34–42.

Neral, J., & Ray, M. (1995). Teaching tools experiential learning in the undergraduate classroom: Two exercises. *Economic Inquiry*, *33*(1), 170–173.

# Suggested News Articles and Op-Eds

[The Cost of Raising a Child Is at an All-Time High, and It's Partly Because Parents Feel Pressure to Buy Kids What Their Friends Have](https://www.businessinsider.com/cost-of-raising-a-child-today-merrill-lynch-report-2018-10) — *Business Insider*

[Mice Don’t Know When to Let It Go, Either](https://www.nytimes.com/2018/07/12/health/sunk-costs-decisions.html) — *The New York Times*

[The Science of Scarcity](https://harvardmagazine.com/2015/05/the-science-of-scarcity) — *Harvard Magazine*

[Missing the Target](https://www.economist.com/news/2015/01/16/missing-the-target) — *The Economist*

[‘Default’ Choices Have Big Impact, But How to Make Sure They’re Used Ethically?](https://theconversation.com/default-choices-have-big-impact-but-how-to-make-sure-theyre-used-ethically-65852) — *The Conversation*

# Chapter Content

Economics is built on four core principles that can be used to provide insights into just about any problem that’s worth thinking about.

## A PRINCIPLED APPROACH TO ECONOMICS

Learning Objective: Understand economics as a way of thinking, grounded in a set of broadly applicable principles that you'll find useful "in the ordinary business of life."

(Content to be added for full release of Instructor’s Resource Manual.)

## THE COST‐BENEFIT PRINCIPLE

Learning Objective: The Cost‐Benefit Principle: Costs and benefits are the incentives that shape decisions. You should evaluate the full set of costs and benefits of any choice, and only pursue those whose benefits are at least as large as their costs.

The cost‐benefit principle says that costs and benefits are the incentives that shape decisions. This principle suggests that before you make any decision, you should do the following:

1. Evaluate the full set of costs and benefits associated with that choice.
2. Pursue that choice only if the benefits are at least as large as the costs.

The cost‐benefit principle is relevant for any choice you might consider.

### Quantifying Costs and Benefits

The hardest part of analyzing costs and benefits can be figuring out how to compare very different aspects of a decision. One approach to conducting this comparison is to examine a consumer’s willingness to pay.

#### Convert costs and benefits into dollars by evaluating your willingness to pay.

Economists convert each cost and benefit into its money equivalent, using willingness to pay.

People should always consider their willingness to pay before looking at a price. Determining willingness to pay corresponds to quantifying the benefit from buying a good, and this benefit depends on how desirable the good is to the individual, not on what the price tag says. This allows quantifying both costs and benefits in the same unit ($), and if benefits exceed costs, the individual should purchase the good.

Teaching Tip: Ask students for the price of a popular food item on campus (for example, a Starbucks’ caramel macchiato beverage). Then ask them what this macchiato is worth to them in monetary value. You can now discuss the cost and benefit of purchasing the macchiato based on how students value the drink.

You might choose to demonstrate how willingness to pay can change under certain conditions. For example, does students’ willingness to pay change during hot or cold weather or shortly before finals, for example? You can demonstrate why purchasing an item during certain times can be a good decision but purchasing that item all the time may not be.

#### Money is the measuring stick, not the objective.

Money is a common measuring stick that allows a wide variety of costs and benefits to be compared while both the financial and nonfinancial aspects of a decision are taken into account.

#### The cost‐benefit principle isn’t selfish — if you aren’t.

Those outside economics often think that economists promote selfish behavior, but a careful cost‐benefit analysis takes into account both the financial and nonfinancial aspects of a decision. Among the set of nonfinancial aspects to consider is generosity. Nonfinancial benefits such as the warm feeling you get when you do something kind can still be defined by your willingness to pay. The more you enjoy doing nice things, the more you are willing to pay for them. The key to using the cost‐benefit principle properly is to think broadly about the full set of costs and benefits involved in your choices.

Teaching Tip: Ask students to list two or three nonprofit organizations that they have supported. Discuss that the choice to donate money or time is a good one so long as the benefits — which include nonfinancial benefits such as the warm feeling of doing something good — outweigh the cost.

Maximize Your Economic Surplus

When the cost‐benefit principle is followed, every decision yields larger benefits than costs. The difference between the benefits and the costs is called *economic surplus*.

#### Follow the cost‐benefit principle, and your choices will increase your economic surplus.

If all decisions are made such that the benefits outweigh the costs, then each decision will inevitably increase your total economic surplus. This principle applies to each item you buy as well as larger decisions such as accepting a new job offer.

#### Both buyers and sellers benefit from voluntary exchange.

If buyers and sellers always follow the cost‐benefit principle, then each will choose to trade only if the benefits to them are at least as large as their costs. This ensures that all transactions will yield economic surplus. This idea that both sides benefit from a voluntary exchange lies at the heart of all economic transactions.

Teaching Tip: Return to the Starbucks example. Remind students of their willingness to pay. If they value the beverage at $5 and the price is $4, they have economic surplus. Then ask students to estimate the cost of producing the drink. Even if we include ingredients, labor, electricity, overhead, and all other expenses, it must be the case that the total cost is less than $4. If the cost is above $4, the item will not be priced at $4. If the true cost of producing the drink is $2, the seller also gains from trade.

### Focus on Costs and Benefits, Not How They’re Framed

People tend to change their cost-benefit decisions depending on how the exchange situation is described. And that’s a mistake. The cost‐benefit principle says that you should make choices based on the underlying costs and benefits of the choice you face rather than on how they are described or framed.

Teaching Tip: Place students in a situation where they can make this mistake. Using clickers in the classroom can be helpful for this illustration. Propose the following situation and two choices to your students:

You’re the CEO of a large but struggling insurance company. Sales have fallen, and you need to cut costs in order to avoid losing money this year. You anticipate needing to fire 6,000 of your employees. Your management team has been exploring alternatives to this drastic action. During your Monday morning meeting, members of the management team suggest two possible plans:

* + Plan A: Saves 2,000 jobs.
	+ Plan B: Has a one‐in‐three chance of saving all 6,000 jobs and a two‐in‐three chance of saving no jobs at all.

Which plan would you choose?

You arrive back at work on Tuesday morning, and members of your management team tell you that they have figured out a new set of alternatives to consider. They present the following two different alternatives:

* + Plan 1: Will result in the certain loss of 4,000 jobs.
	+ Plan 2: Has a two‐in‐three chance of leading to the loss of 6,000 jobs and a one‐in‐three chance of losing no jobs.

Which plan would you choose?

These are two identical sets of plans. However, people tend to choose plan A when deciding for the first plan and plan 2 for the second.

#### Framing effects can lead you astray.

Psychologists have documented that small differences in how alternatives are described, or framed, can lead people to make different choices. This phenomenon is known as the *framing effect*. But although the framing effect is common, it is not rational. Good decisions aren’t affected by how your choices are described.

### Applying the Cost‐Benefit Principle

Teaching Tip: Go over with students the costs and benefits of a typical decision somebody must make. Figure 2 in the book provides data about the costs and benefits of car ownership. Remind students that this example is hypothetical, but encourage them to consider similar calculations for their own car ownership decisions. Other examples to consider include studying for a test versus going out with friends, taking a vacation during spring break or working extra hours at a job, or saving money versus spending money (if you want to incorporate financial literacy).

#### Calculate costs and benefits, relative to your next best alternative.

When using the cost‐benefit principle, one must compare one possibility with its next-best alternative.

## THE OPPORTUNITY COST PRINCIPLE

Learning Objective: The Opportunity Cost Principle: The true cost of something is the next best alternative you must give up to get it. Your decisions should reflect this opportunity cost, rather than just the out‐of‐pocket financial costs.

### Opportunity Costs Reflect Scarcity

#### The opportunity cost of something is the next best alternative you have to give up.

The opportunity cost principle says that the true cost of something is the next best alternative that you must give up to get it. Decisions should reflect this “opportunity cost” rather than just out‐of‐pocket costs. This principle reminds us that when deciding how to spend money, time, or anything else, we should think about its alternative uses.

#### The opportunity cost principle highlights the problem of scarcity.

Even if there’s no out‐of‐pocket cost, there’s always an opportunity cost. Resources are limited, or scarce. Scarcity implies that you always face a trade‐off. Whenever you use any scarce resource, there’s an opportunity cost.

### Calculating Your Opportunity Costs

To evaluate an opportunity cost correctly, you need to answer two questions:

1. What happens if you pursue your choice?
2. What happens under your next best alternative?

Teaching Tip: Go through this process with your students. Figure 3 in the book describes the opportunity costs of pursuing an MBA.

Emphasize again that opportunity costs differ across individuals and that there are nonfinancial costs (in this case, potential psychological costs) associated with further schooling. The example in the book balances 10 hours a day studying with 10 hours a day working at a job, and although both consume 10 hours of time, the impact of these two may differ across individuals. People can reach different decisions regarding graduate school, and they still can make appropriate decisions given their unique set of preferences and estimations of personal costs and benefits.

There are four important points to consider when evaluating an opportunity cost:

1. Some out‐of‐pocket costs are opportunity costs.
2. Opportunity costs need not involve out‐of‐pocket financial costs.
3. Not all out‐of‐pocket costs are real opportunity costs.
4. Some nonfinancial costs are not opportunity costs.

### The “Or What?” Trick

In order to make a good decision, you always have to ask “or what?” as you compare your choice to its next best alternative.

### How Entrepreneurs Think About Opportunity Cost

The opportunity cost principle is also critical to how entrepreneurs evaluate whether to start a business. It is a good idea only if the benefits that the new business yields are large enough to offset the opportunity cost of the income forgone by investing both time and money into this business.

### You Should Ignore Sunk Costs

When the time, effort, and other costs put into the project cannot be reversed, they are referred to as sunk costs. Because sunk costs can’t be reversed, you’ll incur that cost whatever your decision is, which means that they are not opportunity costs. Thus, sunk costs should be ignored.

### Applying the Opportunity Cost Principle

Teaching Tip: This section analyzes several real-life situations where the opportunity cost principle can be used to explain decisions. Select a couple of these to discuss with your students, emphasizing the role that opportunity costs play in each scenario.

### The Production Possibility Frontier

The production possibility frontier (PPF) allows visualizing opportunity costs because it illustrates the trade-offs of allocating scarce resources such as time, money, raw inputs, or production capacity.

#### The production possibility frontier illustrates your alternative outputs.

The production possibility frontier shows the combinations of output that can possibly be produced given available resources (such as money, time, factors of production, and technology). It describes the most you can produce given current circumstances. If resources are used inefficiently, the allocation will be below the PPF.

Teaching Tip: This section introduces the production possibility frontier (PPF) in the context of students’ grades. It is a good way to engage students because many are focused on this specific outcome. Emphasize that this model is a simplification. Usually, students face more than one choice, but it is easier to draw a two-dimensional model that still provides useful insights than build a multidimensional model. (For example, a student could study for economics, math, or science or go to the gym.) You also can use this opportunity to reinforce opportunity cost by putting the next best alternative on the opposite axis.

#### Moving along your production possibility frontier reveals your opportunity costs.

When the allocation is on the production possibility frontier, you can’t produce more of one output unless you produce less of the other. Moving along your production possibility frontier highlights this opportunity cost.

#### Productivity gains shift your production possibility frontier outward.

Discovering new production techniques allows producing more with the same amount of inputs. This shifts out the production possibility frontier. Even in the event of a discovery, resources are still limited. So there’s still an opportunity cost.

Teaching Tip: Building on the PPF for grades, you can add in these two factors. If students are spending all of their available time studying for one subject, the only way they can study more for the second is to reduce the time spent on the first. The second test grade will increase, but it will come at the cost of a falling grade for the first subject. Now imagine the introduction of new technology — perhaps software that helps students study more efficient for both subjects. The introduction of this software represents a productivity gain shift that could move their production possibility frontier outward. They have the ability to do better on each test or both tests.

### Recap: Evaluating Either/Or Decisions

(Content to be added for full release of Instructor’s Resource Manual.)

## THE MARGINAL PRINCIPLE

Learning Objective: The Marginal Principle: Decisions about quantities are best made incrementally. You should break down “how many” decisions into a series of smaller, or marginal, decisions.

The marginal principle says that decisions about quantities are best made incrementally. When applying the cost-benefit principle to a marginal choice, you should compare marginal benefits and marginal costs and agree to make the marginal choice if the marginal benefit exceeds the marginal cost.

## When Is the Marginal Principle Useful?

Whenever you have to decide “how many” of something to choose, you should use the marginal principle to break your decision into a series of smaller marginal choices.

## Using the Rational Rule to Maximize Your Economic Surplus

**The Rational Rule:** If something is worth doing, keep doing it until your marginal benefits equal your marginal costs. Following the Rational Rule leads to good decisions because it maximizes economic surplus.

Teaching Tip: Use Figure 5 in the book to describe the Rational Rule in the context of hiring workers.

Another example is an unhealthy food choice like pizza. Ask students how good pizza is on the first bite or first slice. After that first piece, how do they feel about the second? By the time they start considering the second or third slice, health-conscious students should start comparing the benefits of each slice to the number of minutes it takes on a treadmill to burn off the calories. In the beginning, the marginal benefits outweigh the marginal costs for most students, but at some point, as minutes on the treadmill start to accumulate, the marginal costs will outweigh the marginal benefits. That’s when students should stop eating.

## Applying the Rational Rule

The marginal principle is useful because it is practical. The problem is that most people don’t know in advance exactly what the costs and benefits will be for each alternative they face. So how do they make decisions?

### Businesses experiment at the margin to learn their marginal costs and benefits.

Typically, businesses experiment with different business decisions. They will try something new, such as opening a new location or hiring one or two new workers. If marginal benefit exceeds marginal cost, they will consider that experiment a success and will consider this decision permanent. If the cost exceeds the benefit, they will eventually revisit the decision.

## THE INTERDEPENDENCE PRINCIPLE

Learning Objective: The Interdependence Principle: Your best choice depends on your other choices, the choices others make, developments in other markets, and expectations about the future. When any of these factors change, your best choice might change.

The interdependence principle states that your best choice depends on your other choices, the choices others make, developments in other markets, and expectations about the future. When any of these factors changes, your best choice might change. There are four types of interdependencies — dependencies between your own choices, dependencies between people or businesses in the same market, dependencies between markets, and dependencies through time. The broader point is that the best choice depends on many other factors.

## Interdependency One: Dependencies Between Your Own Choices

Because resources are limited, every choice affects the resources available for every other decision. This interdependence follows from the many different constraints the decision maker is facing. It includes limited income, time, attention, production capacity, and wealth.

Teaching Tip: Relate this back in to the production possibility frontier (PPF) to reinforce that concept. To allocate more time to one good, you necessarily decrease the time spent studying for the other subject. Your grade in economics is affected by the time you spend studying for another course and vice versa.

## Interdependency Two: Dependencies Between People (or Businesses)

The choices made by other economic actors shape the choices available to you. In many cases, this arises because you’re competing for society’s scarce resources. The more others get, the less that’s left for you. Consequently, your best choice depends on the choices that others make.

Teaching Tip: Highlight examples provided in this section, or develop your own. For example, your ability to date your crush depends on that individual’s willingness to date you. Your ability to purchase a popular new gaming system depends on the number of units the producer makes. Your ability to hire talented employees depends on the number of similar firms in the market that are able to offer higher starting salaries. The price you can charge in your restaurant depends on how many other similar restaurants are in the area.

## Interdependency Three: Dependencies Between Markets

Choices are also interdependent across different markets. In particular, changes in prices and opportunities in one market affect the choices you might make in other markets. An example is the dependency going from the credit market to the housing market, to the child-care market, to the labor market. Changes in other markets shape your costs and benefits and can thereby change which option is your best choice.

## Interdependency Four: Dependencies Through Time

Consumers always face the option of buying something tomorrow rather than buying it today. Similarly, an executive chooses when to produce goods and when to bring them to market. Likewise, investors, employers, and workers all decide when to invest, hire, and work, respectively. These alternatives mean that your choices always reflect a trade-off across time: Is it better to act today or tomorrow? As expectations about the future change, the terms of this trade-off change, and so your best choice might change.

## What Else?

The big idea behind the interdependence principle is to ask, “What else?” And this question leads to two types of “What else?” questions. The first asks, “What else might my decision affect?” The second asks, “What else might affect my decision?” Answering these questions helps to determine proper costs and benefits.