Prologue

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Where We Are Headed

The Principle / uniEF23

Objective

1. Our goal is to understand Theorem 1.1

Theorem 1.1 (First Fundamental Theorem of Welfare Economics)

If preferences are well-behaved and markets are complete and perfectly competitive,

Corollary 1.2

Don't screw the equilibrium unless there is a good reason to do so.

Why do we need to learn Theorem 1.1?

1. It summarizes everything we learn in 3023
2. It defines and characterizes applied microeconomics that you will take after 3023.
3. 3023 is a bridge between 1023 and 3XXX, 4XXX.
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Contents

- Decode Theorem 1.1 and Corollary 1.2
- Preferences?
- Complete and perfectly competitive market?
- Equilibrium?
- Efficient?
- When is it okay to ditch the equilibrium?

What are preferences?
- Ch2 & 10: Budget Constraint
- Ch4: Utility Function
- Ch5: Utility Maximization Problem

Complete and perfectly competitive market?
- Ch5: Utility Maximization Problem
- Ch15A: Aggregate Demand
- Ch22: Firm Supply
- Ch23: Aggregate Supply
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Contents

What do you mean by “efficient”? 
- Ch14: Consumer Surplus 
- Ch23: Firm Supply 
- Ch24: Monopoly 
- Ch16: Equilibrium

When to screw the equilibrium? 
- Ch24: Monopoly 
- Ch16: Equilibrium 
- Ch34: Externalities 
- Ch26: Public Goods

The Principle

A Little Warning

Underlying Principle

At the Margin

Trade-Off

Principle In Use

Summary
A Little Warning

- You **won’t survive this course** if you don’t understand what the derivatives tell you.
- I won’t ask you to **take** derivatives but I will ask you to **interpret** the meaning of derivatives from an economic perspective.

On the contrary, you’re in for a treat if you’ve been wondering “What are derivatives for?”

If you’re somewhere in between, you’ll deepen the understanding of derivatives and understand microeconomics at the same time. Two for the price of one. You’re welcome.

Underlying Principle

**Principle 2.1 (Trade-Off at the Margin)**

Most economic decision is made and evaluated based on the **trade-off at the margin**.

- One exception: 2nd step in Ch22: Firm Supply.
Underlying Principle

- Breakdown of Principle 2.1:
  - At the margin?
  - A trade-off?

At the Margin

- "At the margin?"
  - Liz is climbing McKinley.
  - She forgot the map.
  - She can still get to the peak (why?)

- Question is not global: "where is the peak?" (She won't find the peak b/c she doesn't have a map).
- but instead: "I'll walk uphill rather than downhill",
- i.e., the decision is marginal.
In practice, what she does is compare the current elevation with the elevation one foot away from where she is.

This is where derivatives come in. Derivatives measure the height difference between where it is and one step away from where it is.

Same thing for consumers:
- I’ll have a bit more cheesecakes to see if I get happier than before.
- and for firms:
  - I’ll bake a bit more to see if my profit margin is ≥ 0 or not.

When can she tell that she’s reached the peak?
- At the very peak, (This is won’t be the case in the middle of the slope).
- When Liz takes a height difference at the very peak, it will be zero.

See Appendix.
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At the Margin

- Consumers: cheesecakes won't make them any happier or sadder at the peak.
- Firms: cheesecakes won't make them any more profitable or less profitable at the peak.
- ⇒ Search complete.

Trade-Off

- Economic agents face trade-off.
- The following are not a typical economic problem:
  - Consumer: have as many cheesecakes as possible
  - Firm: sell as many cheesecakes as possible

Consumer: I don't have infinite income. I have to give up some tea to get more cheesecakes.
Firm: I can sell and get revenue but then I have to pay for the cost of production.
Monopolist: I can increase the quantity supplied but that act will drop the price.
Principle In Use

- At the margin, these counteracting factors cancel each other:
  - Consumer: I can give up 2 cups of tea to get a slice of cheesecake, and cheesecake is actually worth 2 cups of tea in the market.
  - Firm: If I bake one more cheesecake, it’ll bring in $4 and it costs me exactly $4 at the margin to bake one.
- They can’t do any better than current choice.
- I.e. they’re at the peak.

Principle in various forms with various counteracting factors:
- Ch5: tangency condition
- Ch19, 20: tangency condition
- Ch22: marginal condition
- Ch24: marginal condition

No matter how they are called, the idea is the same.
- At the margin: decision is local rather than global
- Trade-off: opposing factors offset each other when you make the best choice possible.
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Summary

First fundamental theorem of welfare economics

The principle

Appendix

Slope becomes zero on the bottom of an abyss or ridge.

i.e., just because the slope is zero doesn’t guarantee that Liz is at the peak.

More on this in the 2nd step of Ch22 Firm Supply.
| complete markets, 5 | margin, 15 |
| efficient, 5 | perfectly competitive |
| equilibrium, 5 | market, 5 |
| first fundamental theorem | trade-off, 15 |
| of welfare economics, 5 | |
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