

LECTURE 1.0

INTRODUCTION

ABOUT ME

Lecturer: Jason Collins

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Communications

- For questions concerning course content, please post them on the Discussion board of Canvas. There is a discussion for each week. I will respond there or in class.
- For administrative or personal matters, please email. We can set up an appointment if required.
- At the end of each week's live lecture I will hold an office hour where you can drop in.

LECTURE STRUCTURE

Lectures for this unit are scheduled from 6pm to 9pm each Wednesday. Lectures and tutorials will take the following format:

- From 6pm I will hold a live session on Zoom for approximately an hour. This week's session is an introduction to the course. For subsequent weeks, this hour will be used to work through tutorial questions and any other questions raised by students. These sessions will be recorded and made available on Canvas.
- Other lecture materials will be pre-recorded. These will be available on Canvas for viewing during the remainder of the scheduled lecture time between 7pm and 9pm. However, you are free to watch these recordings at another time as is convenient for you.
- I will hold an office hour immediately following the live session from approximately 7pm.
- In Week 8, there will be a mid-semester test. There will be no live session that week.

CANVAS

Canvas is one of our primary means of communication:

- Tutorials for each week will be posted immediately after the Wednesday night session of the week before.
- Lectures will be available each week before the Wednesday night session. As we progress through semester, some of these may be posted in advance to give you some flexibility as to when you watch them. When they are posted early, I will make an announcement on Canvas.
- As already noted, please use the Discussion board to ask questions about the course content. There are discussion areas for each week. Also feel free to start your own discussion. On weekdays, I will respond within a day. I will respond to questions on weekends by the end of Monday.

READING

- There is no required textbook for this unit. Readings are drawn from a variety of sources. All will be available for download or accessible via link from Canvas.
- Readings for the full course are already available on Canvas.
- Most of the readings are the source from which the lecture material was drawn. Reading them will give a more in depth analysis, and sometimes a different lens. If you are struggling with a concept in the lectures, the readings will be helpful.
- I will suggest some optional reading along the way. These will not be assessable, but will provide guidance for those interested in taking their understanding to the next level.

ASSESSMENT

Mid-semester test

Weight: 25%

Coverage: Weeks 1 to 6

Date: 6pm Wednesday
21 October (Week 8)

How: Online quiz in Canvas

Term paper

Weight: 25%

Coverage: Weeks 7 to 11

Due: 23:59 Wednesday
18 November (Week 12)

How: Submit in Canvas

Final exam

Weight: 50%

Coverage: All course content

Date: During final exam period

How: Attend final exam

COURSE STRUCTURE

Week	Date	Theme	Lecture
1	26 August	Economic concepts	The Economic approach
2	2 September		Game Theory
3	9 September	External relationships	Market Structure
4	16 September		Pricing
5	23 September		Product differentiation
6	30 September	Internal relationships	What is a firm
	7 October		No lecture - Session break
7	14 October		Organisational structure
8	21 October		Mid-term test
9	28 October		Hiring and retention
10	4 November		Incentive compensation
11	11 November		Evaluating performance
12	18 November		Vertical integration and the boundaries of the firm

ECONOMICS AND THE ECONOMIC APPROACH

READING

Chapter 1, “Introduction” in Brickley, Smith and Zimmerman (2016) *Managerial Economics and Organizational Architecture* (6th ed)

Chapter 2 , “Economists' View of Behavior” in Brickley, Smith and Zimmerman (2016) *Managerial Economics and Organizational Architecture* (6th ed)

“Introduction” in McAfee (2002) *Competitive Solutions*

Links to readings or downloads are available in Canvas.

WHY ARE WE INTERESTED IN THE ECONOMICS OF BUSINESS STRATEGY?

Let's illustrate with the story of Enron.

Enron Corporation formed in 1985 through the merger of two gas pipeline companies.

With deregulation creating new opportunities, Enron built an innovative business model. It was a pioneer in trading derivative securities tied to assets like natural gas, electricity, and coal. It transformed from a capital-intensive gas pipeline company, shrinking reliance on hard assets and developing creative and unconventional products and practices.

Enron was named “Most Innovative” of Fortune’s Most Admired Companies list six years in a row.

WHY ARE WE INTERESTED IN THE ECONOMICS OF BUSINESS STRATEGY?

By 2000, Enron operated in:

- transportation and distribution, supplying gas and electric transmission services
- wholesale services, providing energy services and other products to energy suppliers and other firms
- retail services, offering business customers energy products and services
- broadband services, providing service providers with access to a fiber-optic cable network
- other businesses including water resources and wind energy.

WHY ARE WE INTERESTED IN THE ECONOMICS OF BUSINESS STRATEGY?

In 1990, 80 percent of Enron's revenues came from its regulated gas pipeline business. By 2000, over 90 percent of revenues came from its wholesale energy operations and services segment.

Enron used sophisticated partnerships whose financing details were kept off Enron's balance sheet.

For example, Enron formed a partnership called the Atlantic Water Trust in which it held a 50 percent stake. When Enron's partner, Marlin Water Trust, was marketed to institutional investors, Enron guaranteed the debt with its own stock. If Enron's credit rating fell below investment grade and the stock fell below a stipulated price, Enron would be responsible for the partnership's \$915 million debt.

WHY ARE WE INTERESTED IN THE ECONOMICS OF BUSINESS STRATEGY?

When Enron prospered, these guarantees appeared to cost the company little. But Enron began to experience significant problems.

- In 2000, following a power shortage in California that resulted in blackouts, California launched an investigation into price gouging by Enron and other power marketers.
- Enron's investment in water concessions in Brazil and England ran into political obstacles. For instance, British regulators cut the rates that it was allowed to charge its customers.
- Enron had a 65 percent stake in a \$3 billion power project in India, which was embroiled in a dispute with its largest customer, who refused to pay for electricity.
- The fall in oil prices following the 11 September 2001 attacks generated losses for Enron's trading operations. Technology changes produced a glut of broadband services.

WHY ARE WE INTERESTED IN THE ECONOMICS OF BUSINESS STRATEGY?

After reaching a peak of nearly \$70 billion in August 2000, Enron collapsed, filing for bankruptcy in December 2001.

Why did this occur?

Business Week wrote:

Enron didn't fail just because of improper accounting or alleged corruption at the top. . . . The unrelenting emphasis on earnings growth and individual initiative, coupled with a shocking absence of the usual corporate checks and balances, tipped the culture from one that rewarded aggressive strategy to one that increasingly relied on unethical corner cutting. In the end, too much leeway was given to young, inexperienced managers without the necessary controls to minimize failures. This was a company that simply placed a lot of bad bets on businesses that weren't so promising to begin with.

WHY ARE WE INTERESTED IN THE ECONOMICS OF BUSINESS STRATEGY?

The failure of Enron rested on three core strategic failures:

- **Organisational architecture:** The assignment of decision rights in the firm. What was the management and decision-making structure? Who was making decisions? Was there any oversight or checks and balances?
- **Incentive compensation:** The methods of rewarding individuals. Did performance measures encouraged excessive risk taking?
- **Performance evaluation:** The structure of the of the systems to evaluate performance of individuals and business units. Did the accounting measures provide an accurate view of performance?

These three areas will all be covered this semester.

INTRODUCTION TO THE ECONOMICS OF STRATEGY

In this unit, we are going to use an economic lens to understand firm success. We will examine both inside and outside the firm, as economics can offer insight across all these issues.

We will examine interactions with external agents, such as:

- Which markets to enter
- How to enter markets and deter rival entry
- Product differentiation
- How to price products

We will also examine the internal organisation of firms (as per the issues we have just identified with Enron):

- Hiring and retaining the right employees
- Designing incentives and decision rights
- Evaluating and rewarding performance

INTRODUCTION TO THE ECONOMICS OF STRATEGY

Economics studies how individuals make choices under constraints.

- What do consumers buy with limited income?
- How do managers and employees make production and pricing decisions with limited resources?

Economics emphasises the role of incentives.

- What are the incentives of firms to compete?
- What are the incentives of employees to work hard and make good decisions?

In this course we try to understand how economics can provide insight into value creation

INTRODUCTION TO THE ECONOMICS OF STRATEGY

In this unit we will examine how economics can provide insight into business strategy.
We want to go beyond the black box



INTRODUCTION TO THE ECONOMICS OF STRATEGY

We will use economics to discuss issues such as the following:

- Centralisation versus decentralisation within the firm.
- Bundling tasks: which tasks to bundle and how
- Bundling jobs into business decision units
- Objective versus subjective performance measures.
- Incentive compensation schemes
- The make versus buy decision
- How to interact with customers (pricing) and competitors.

We will analyse these questions with some bread and butter economic concepts. The challenge will be construct simple models that shed light on each, and use our models to help explain what works, what doesn't, and why.

THE PRE-RECORDED LECTURES

This week's pre-recorded lectures cover the following areas:

- 1.1 The economic approach
- 1.2 Decision making under risk
- 1.3 Multi-period models
- 1.4 Concepts: cost and profit
- 1.5 Concepts: demand and elasticity

SUMMARY

We will be using economics to explain:

- external relationships of the firm: with rivals, potential entrants, suppliers, regulators, customers
- internal relationships of the firm: with employees, managers, divisions.

The economic approach helps us understand what strategies and tactics do (or do not) work.

Economics can present a stylised description of the world. We use models that are simplifications of reality. Be critical and open-minded!

CLOSING QUESTIONS

Read the “Introduction” to McAfee, *Competitive Solutions* (article on Canvas). McAfee discusses the dominance of AOL in the early days of ISPs and the world wide web

What explained its dominance?

Why did it decline as an internet powerhouse?

LECTURE 1.1

THE ECONOMIC APPROACH

THE STORY OF MERRILL LYNCH

In 2002 Merrill Lynch settled charges that its analysts had recommended stocks to its clients that they thought were poor investments. They agreed to pay \$100 million in the settlement:

- Internet services company Infospace was recommended to clients yet called a “powder keg” or “piece of junk” in internal emails.
- Excite@Home was rated accumulate or buy, yet internally called a “piece of crap”.

The Merrill Lynch triggered a broader investigation, ultimately resulting in a \$1.2 billion settlement by 10 investment banks to protect investors from brokerages.

THE STORY OF MERRILL LYNCH

What would Merrill Lynch's management need to do to fix this problem?

As a start, Merrill Lynch would need to understand what motivated Merrill Lynch analysts to mislead its investment clients.

- Was it simply a few dishonest employees?
- Or had Merrill Lynch created incentives through its compensation plan?

Different diagnoses lead to different responses. And what should that response look like? What form would an effective compensation plan take?

To make an effective remedy, we need to understand what motivates behaviour.

THE ECONOMIC APPROACH

Economics studies how individuals make choices under constraints

- What do consumers buy with limited income?
- How do managers and employees make production and pricing decisions with limited resources?

Economics emphasises the role of incentives

- What are the incentives of firms to compete?
- What are the incentives of employees to work hard and make good decisions?

Economics can help us understand why analysts at Merrill Lynch rated a “piece of crap” highly for clients

CORE ECONOMIC PRINCIPLES

Two principles are critical to understand the relationships of the firm:

- 1) **Incentives matter:** Economists generally see agents acting in their own interest (although that interest can be defined very broadly)
- 2) **Asymmetric information:** Your employee knows some things that you don't. The CEO knows things that shareholders don't. Teams members know some things that others don't.

So what will be important? If you recall the Enron example from the introductory lecture, it was:

- a) Assignment of decision rights
- b) The system of incentive compensation
- c) Performance evaluation

THE ECONOMIC MODEL OF BEHAVIOUR

The economic model of human behaviour is one of constrained optimisation.

- Consumers maximise utility subject to a budget constraint
- Firms maximize profit subject to a production constraint
- Managers maximize their 'payoff' subject to the constraints imposed by the firm.

In each case individuals compare costs and benefits at the margin. They go ahead with decision as long as the marginal benefit is greater than the marginal cost ($MB > MC$).

THE ECONOMIC MODEL OF BEHAVIOUR

We can apply this to a whole range of decision-making scenarios for the firm. Consider these decisions.

- How much to produce?
- How much to advertise? In which media?
- How much to research/innovate?

Consider these decisions for employees of a firm

- How hard to work?
- Which tasks to perform?
- How much to pay workers?
- How much risk to take?

Aside: are people always so calculating and rational? Perhaps not.

THE ECONOMIC MODEL OF BEHAVIOUR

Some of the implications of the economic model of behaviour.

- Sunk costs are irrelevant, only avoidable costs matter. Suppose you get utility from both income from work and playing tennis. The fact you paid \$5000 last month for the tennis membership should not affect today's decision about whether to work or play tennis.
- Opportunity costs are what matter from an economic and indeed strategic point of view. For example, time is money.

But calculations can be time consuming. Perhaps individuals adopt a more heuristic approach.

INDIVIDUAL CHOICE

Dom values two goods: food and clothing.

We represent an individual's preferences by a utility function:

$$\text{Utility} = U(\text{food}, \text{clothing})$$

Dom would like more of both, but faces a budget constraint. He has an income of I , yet each unit of food and clothing costs P_f and P_c respectively:

$$I \geq P_f F + P_c C$$

$$\text{Or } F \leq I/P_f - (P_c/P_f)C$$

P_c/P_f is the price ratio.

INDIVIDUAL CHOICE

Individuals maximize utility subject to a budget constraint. The utility function is represented graphically using indifference curves.

At the optimum, agents choose the highest possible indifference curve subject to the budget constraint. With well behaved preferences this means that the slope of the indifference curve is equal to the slope of the budget constraint at the optimum.

$$MRS = MRT \text{ or price ratio}$$

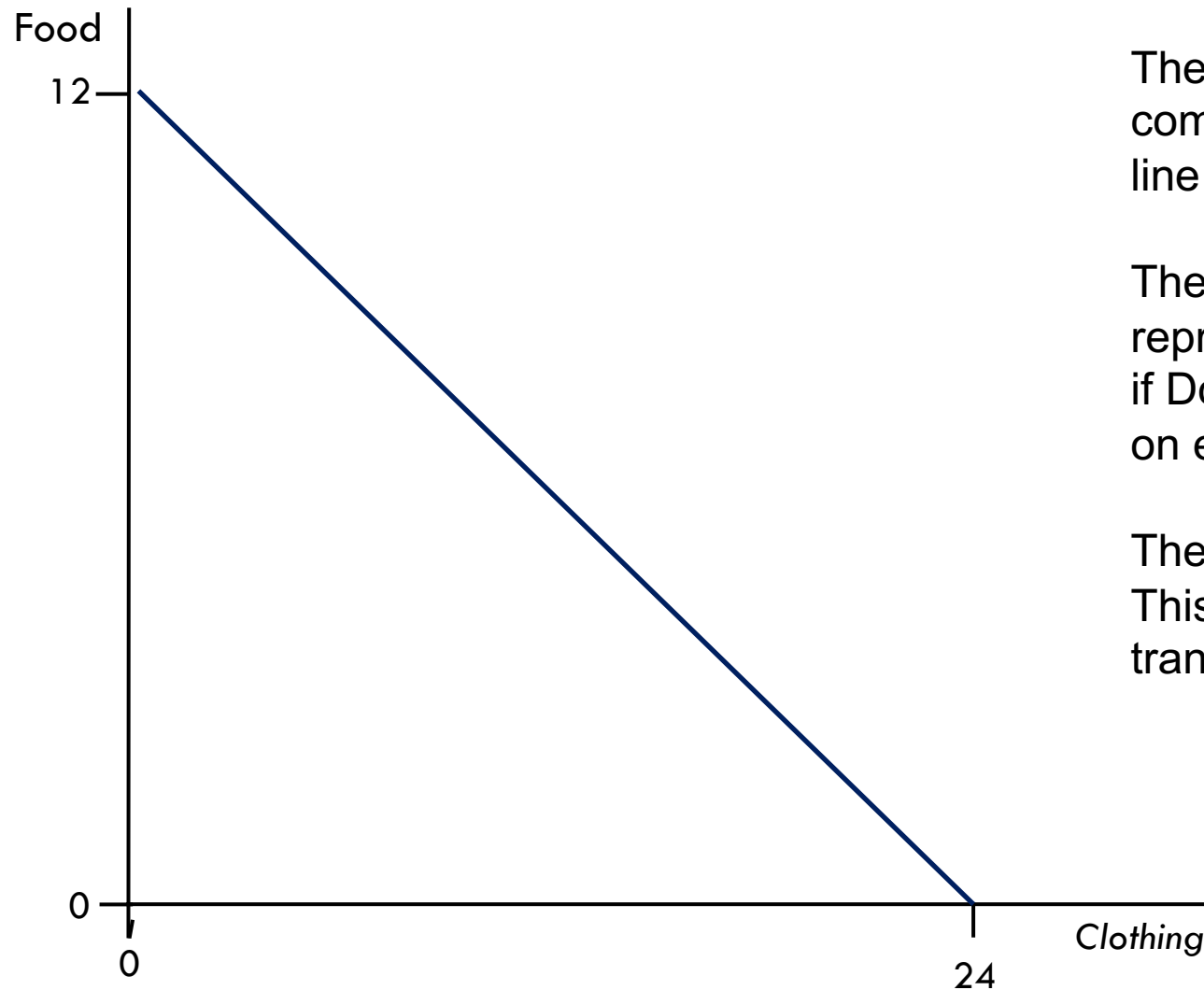
$$\frac{\partial U_f}{\partial U_c} = - \frac{p_c}{p_f}$$

Let:

$$I = 72$$

$$P_f = 6$$

$$P_c = 3$$

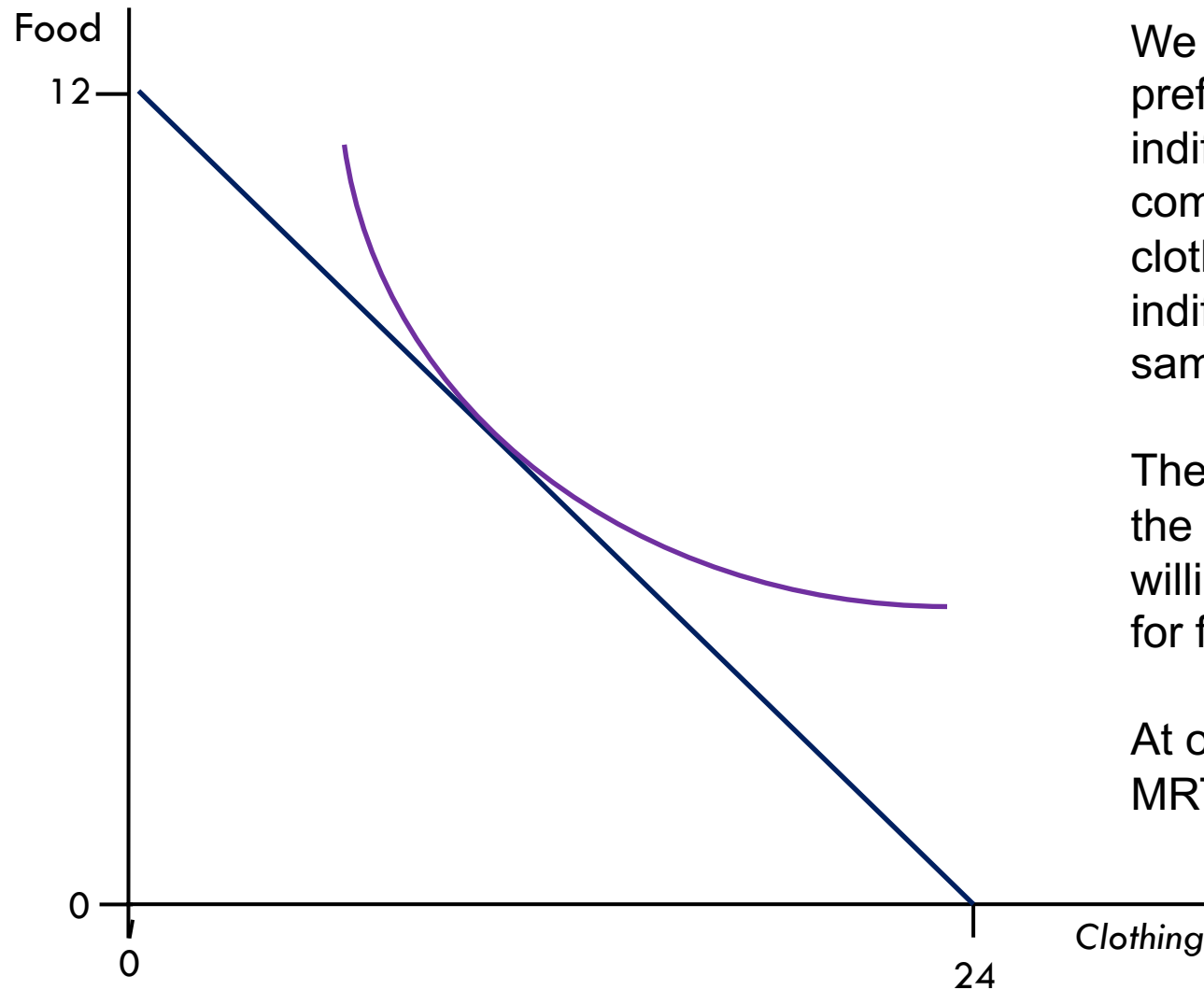


The budget line: All combinations on or below the line are attainable.

The intercepts at each axis represent what would happen if Dom spent all of his income on either food or clothing.

The slope of the line is $-P_c/P_f$
This is the marginal rate of transformation

Let:
 $I = 72$
 $P_f = 6$
 $P_c = 3$

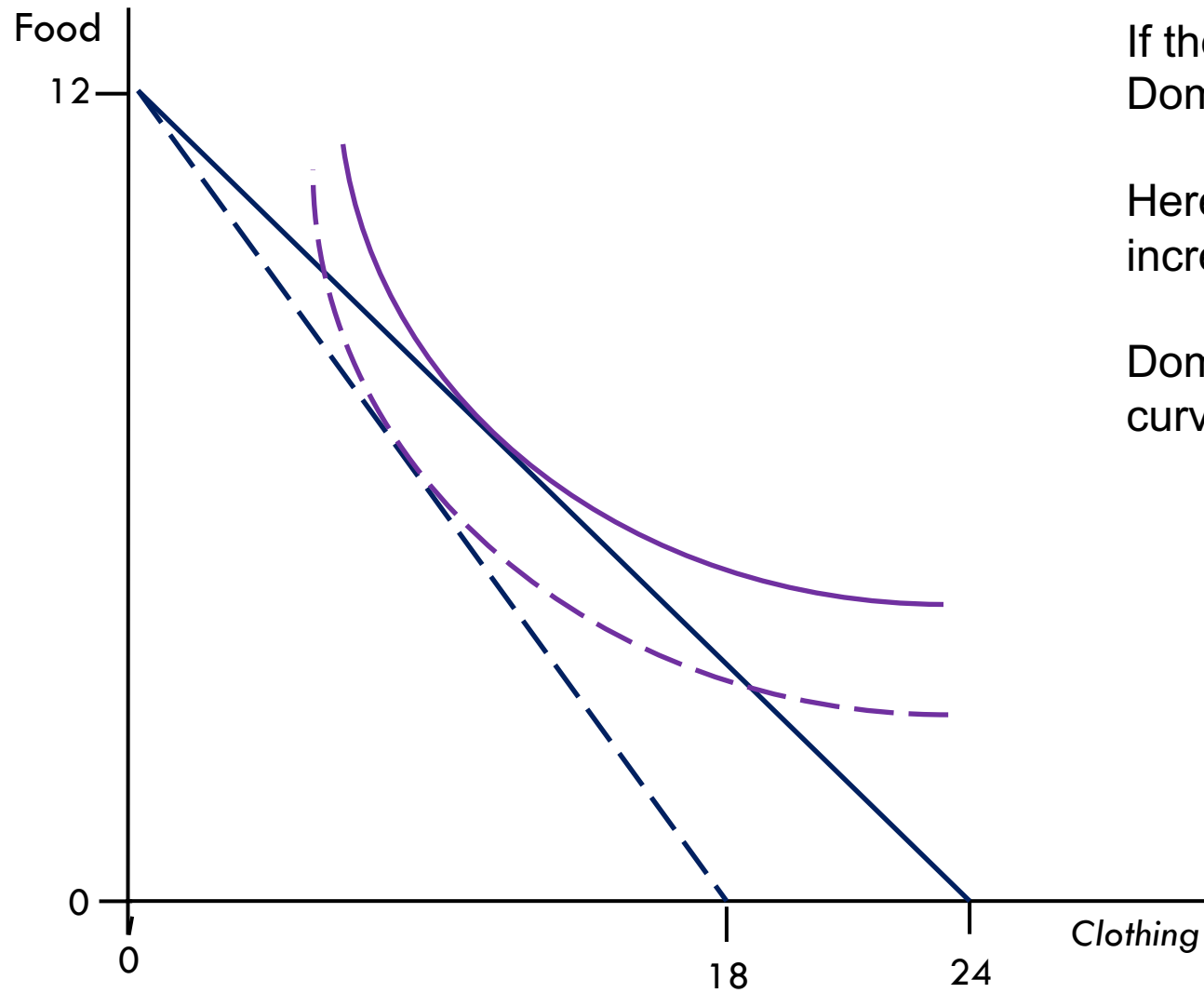


We can represent Dom's preferences through indifference curves. All combinations of food and clothing along the indifference curve give the same utility.

The indifference curve gives the rate at which Dom is willing to substitute clothing for food.

At optimum, MRS equals the MRT or price ratio

Let:
 $I = 72$
 $P_f = 6$
 $P_c = 4$



If the price changes, so does Dom's decision.

Here the price of clothing has increased.

Dom is now on a lower utility curve.

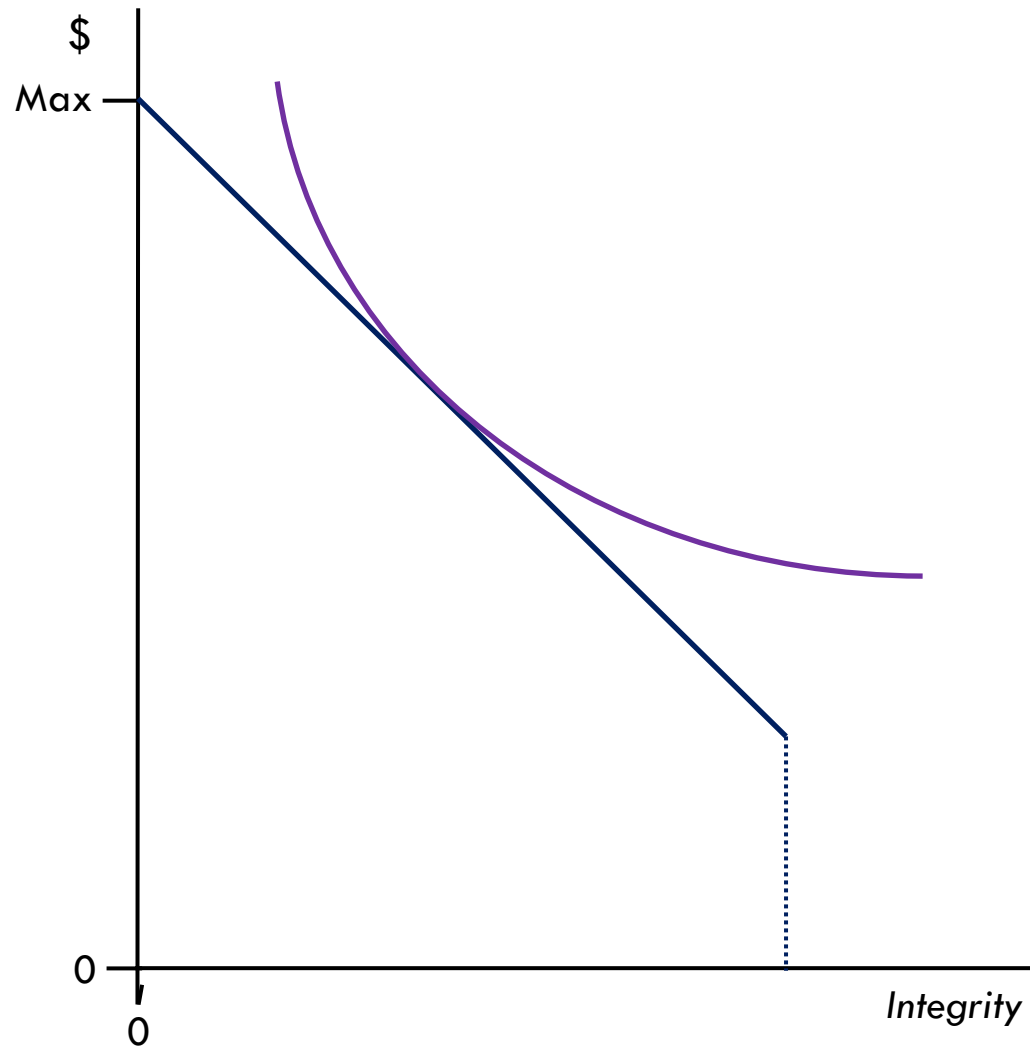
HOW TO USE THIS APPROACH

We can use the same approach to understand the behaviour of analysts at Merrill Lynch. They have preferences over money (M) and integrity (I):

$$U(M, I) = U(\text{money}, \text{integrity})$$

Suppose that poor investment advice presents a tradeoff. It likely gives greater monetary reward, but has a negative impact on one's integrity. (In the case of Merrill Lynch, analyst bonuses were determined in part by the success of the investment banking side of the business.)

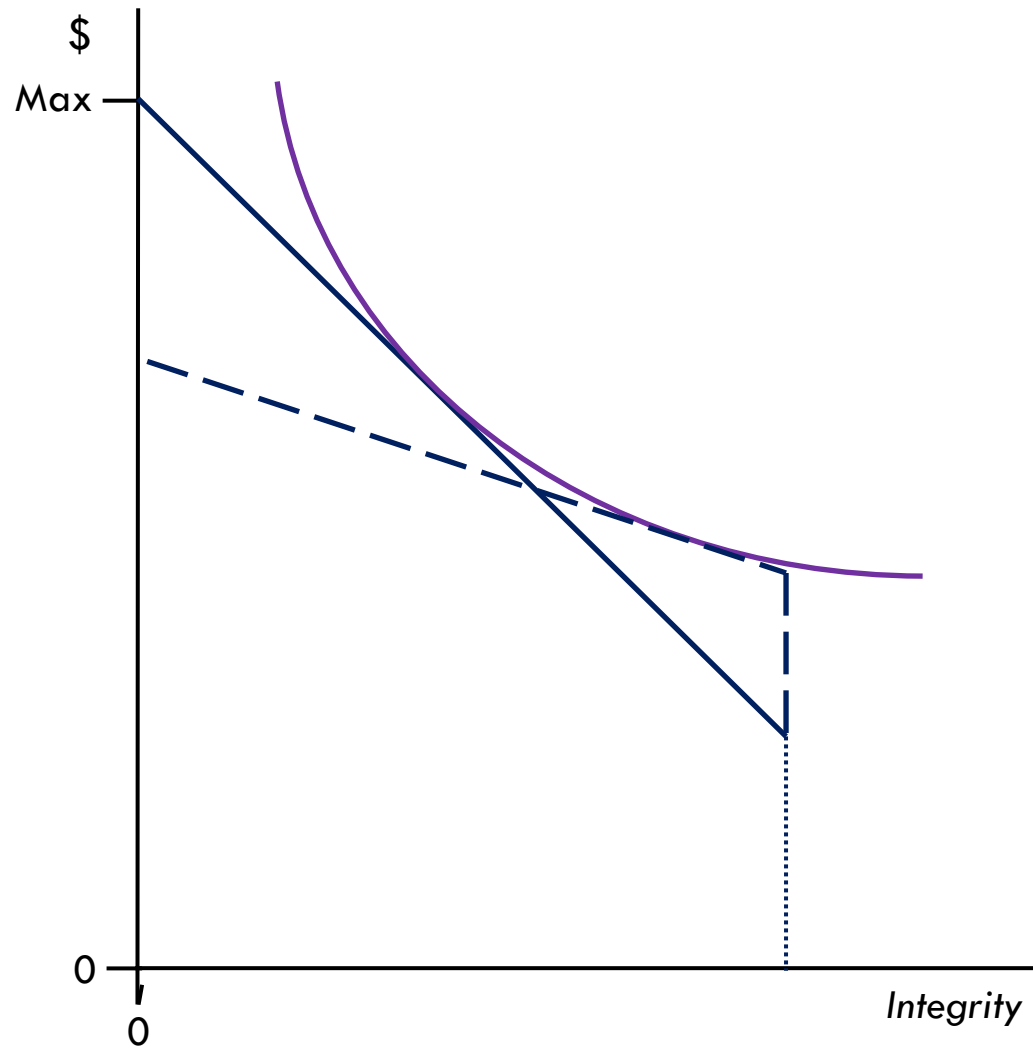
How should the analyst give investment advice?



The diagram here looks like the previous one where the choice was over food and clothes.

The constraint looks different as a base salary provides a floor.

The analyst chooses the combination of money and integrity that maximises their utility.



What happens if Merrill Lynch changes the compensation scheme, say by reducing the degree the bonus is tied to the investment banking business?

HOW TO USE THIS APPROACH

It may be the case, of course, that in trying to influence outcomes what is important is the preferences (or indifference curves) of the individuals.

This is likely to present different and arguably more challenging problems.

HOW TO USE THIS APPROACH

We also need to ask what else might motivate behaviour. What are some potential models?

- **Money matters:** But what of volunteering? Retirement?
- **Happy-is-productive model:** Happy employees exert effort. So, how do you make them happy?
- **Good citizen model:** People inherently want to do a good job for the organisation. But surely incentives matter?
- **Product of the environment:** Treat people poorly and they behave poorly. Certain environments might have a culture of cheating that affects the behaviour of new people who join them.

Takeaway: Incentives matter, but single explanation models are likely to be inadequate.

LECTURE 1.2

DECISION MAKING UNDER RISK

DECISION MAKING UNDER RISK

A fundamental question in economics is how people respond to a choice involving a risky prospect.

- We usually think about agents maximizing expected utility.
- Most people are risk averse compared with being risk loving. They prefer less risk or uncertainty.
- More precisely:
 - a risk averse person will prefer a sure thing to a risky alternative with the same expected (average) value
 - a risk averse person has a concave utility function

DECISION MAKING UNDER RISK

Suppose we have an event or lottery X with possible outcomes $\{x_1, x_2, \dots, x_n\}$. The probability of outcome x_i is $p(x_i)=P(X=x_i)$

The *expected value* or mean of X is:

$$\mu = E(X) = \sum p(x_i)x_i = p(x_1)x_1 + p(x_2)x_2 + \dots + p(x_n)x_n$$

The *variance* of X is:

$$\sigma^2 = \sum p(x_i) \cdot (x_i - \mu)^2$$

DECISION MAKING UNDER RISK

For a person with a utility function of $U(x)$, the *expected utility* of the lottery is:

$$EU(X) = E(U(X)) = \sum p(x_i)U(x_i)$$

The certainty equivalent of the lottery, $CE(X)$, is the value of a certain payment that gives the same expected utility as the lottery X .

The risk premium is the difference between the expected value of a lottery and its certainty equivalent

$$\text{Risk premium} = \mu - CE(X) = E(X) - CE(X)$$

DECISION MAKING UNDER RISK

Consider someone who faces a choice between two different payment schemes.

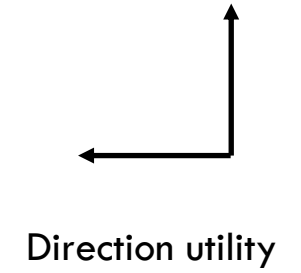
- 1) Salary = \$80,000; $\sigma=0$. Expected value = \$80,000.
- 2) Salary + performance bonus with $\sigma=81,650$. Expected value = \$100,000.

What are they indifferent between them? What does this look like?

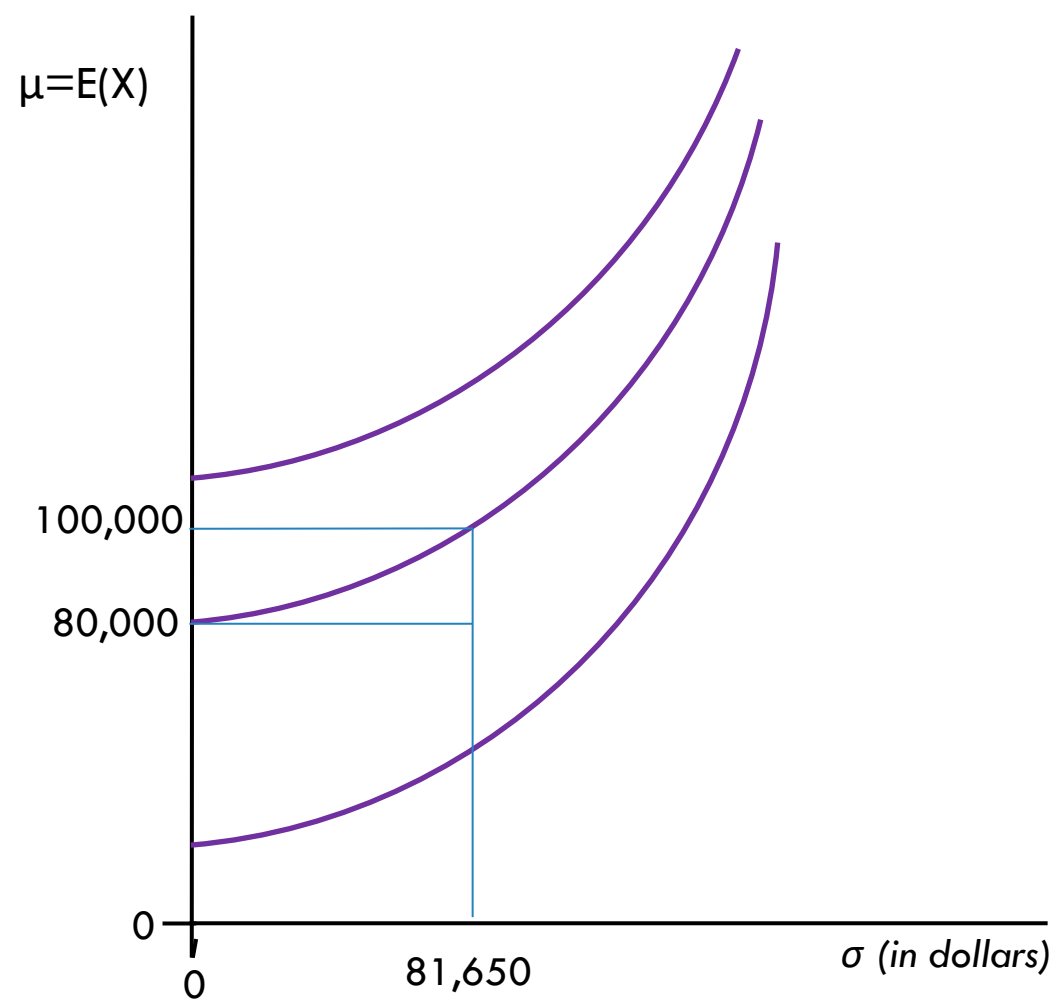
We will look at this in two different ways:

- 1) With indifference curves
- 2) With the utility function (although using a simpler salary structure)

DECISION MAKING UNDER RISK

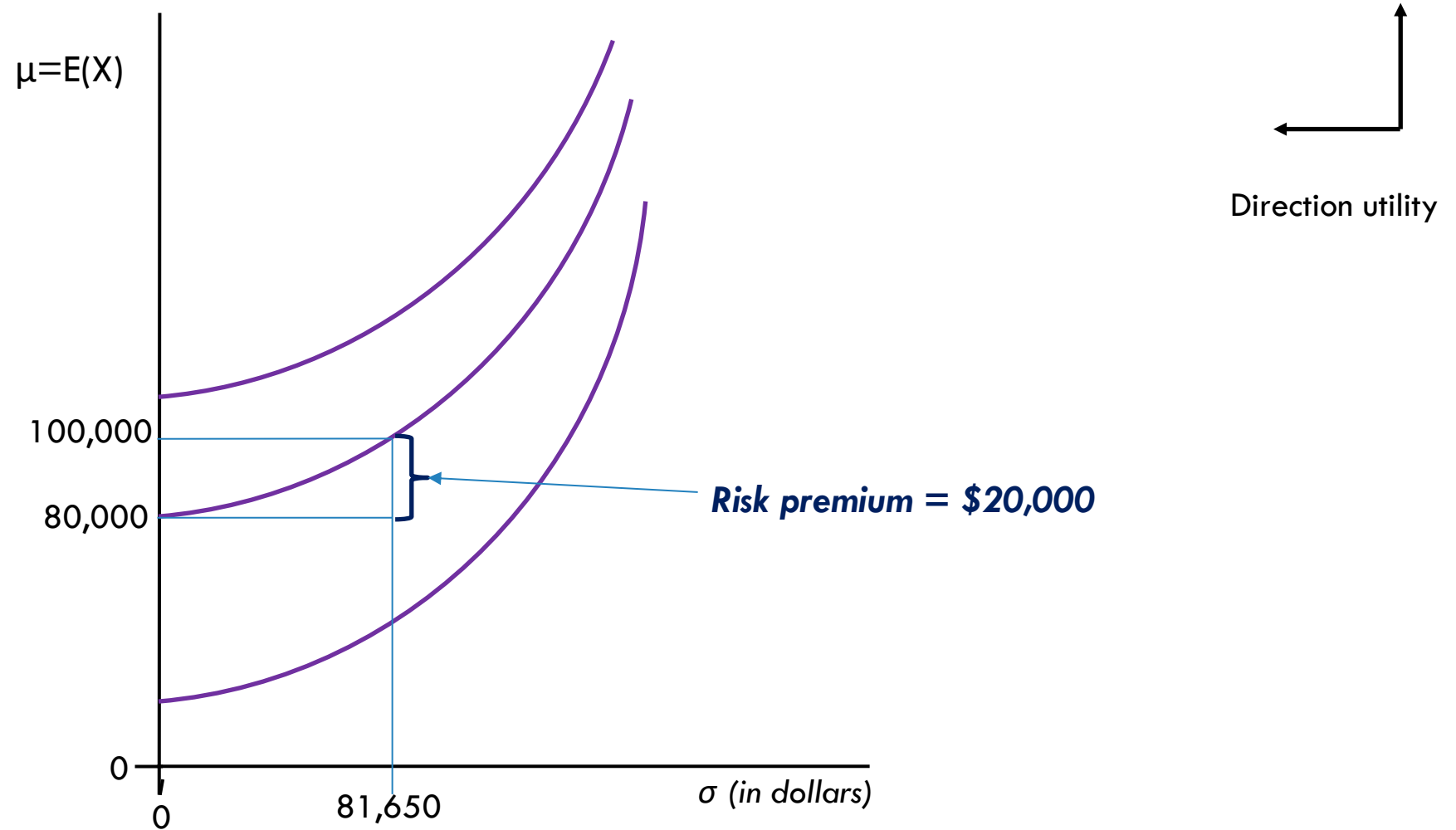


DECISION MAKING UNDER RISK



Direction utility

DECISION MAKING UNDER RISK



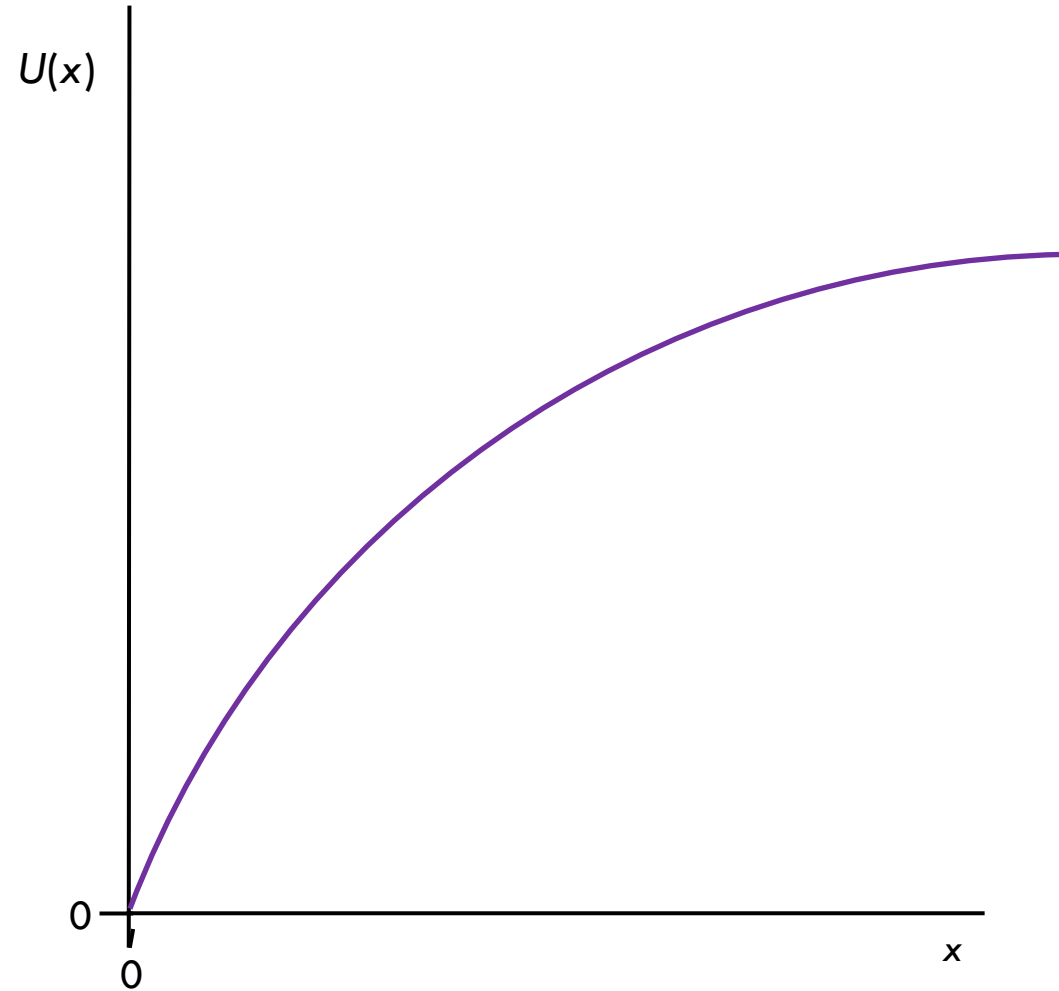
DECISION MAKING UNDER RISK

Consider someone who faces is offered a job with the following payment scheme.

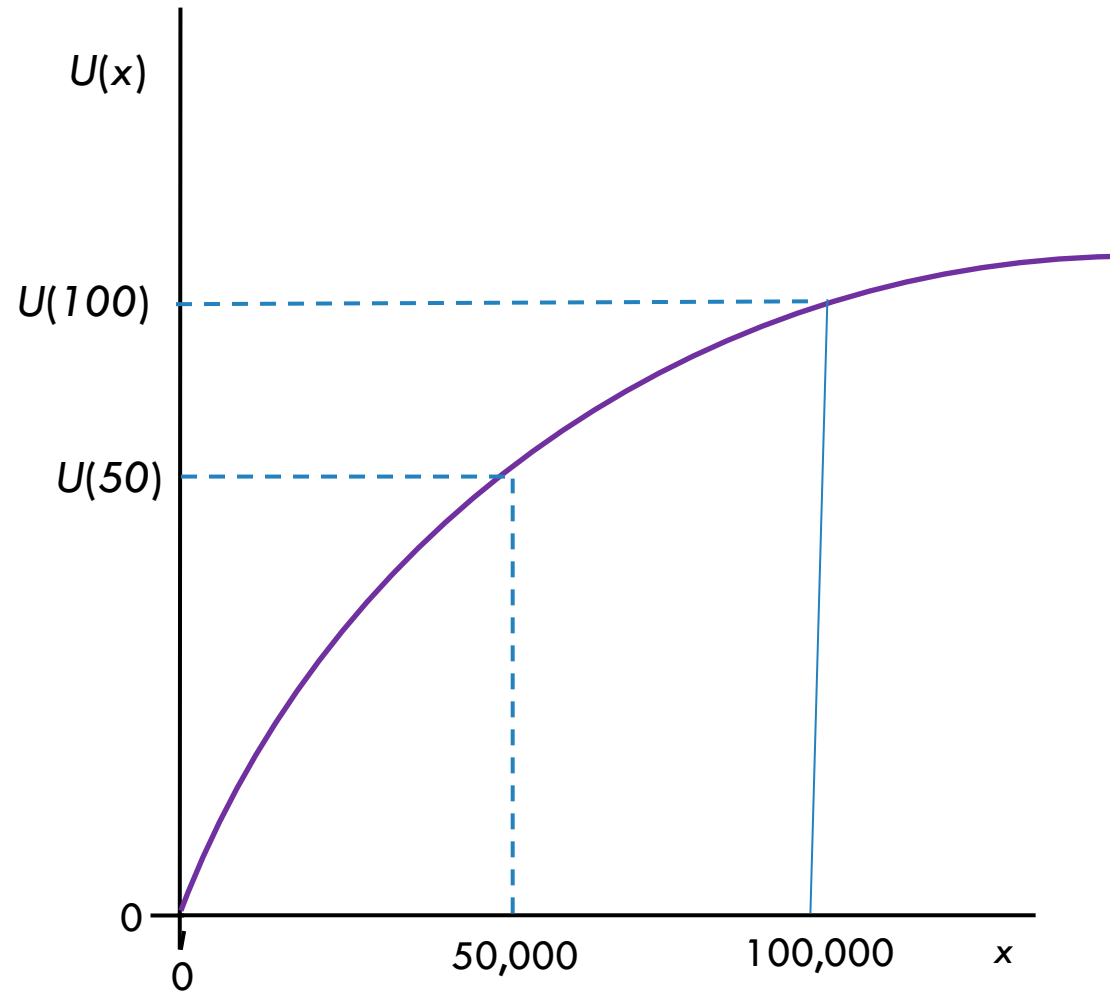
- 1) If they have a good year and sell many houses (50% of the time) their salary = \$100,000.
- 2) If they have a bad year and sell nothing (the other 50%) their salary = \$0.

The expected value is \$50,000.

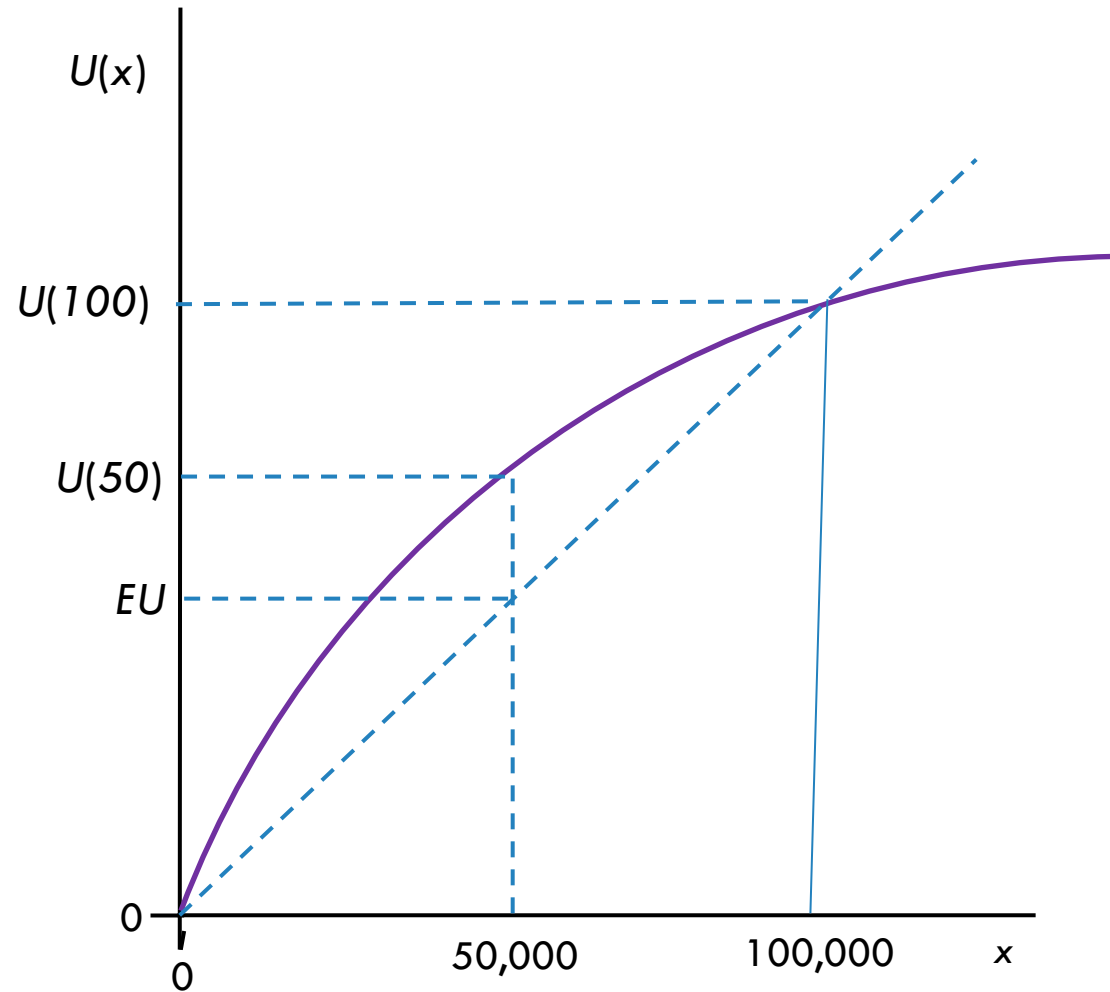
DECISION MAKING UNDER RISK



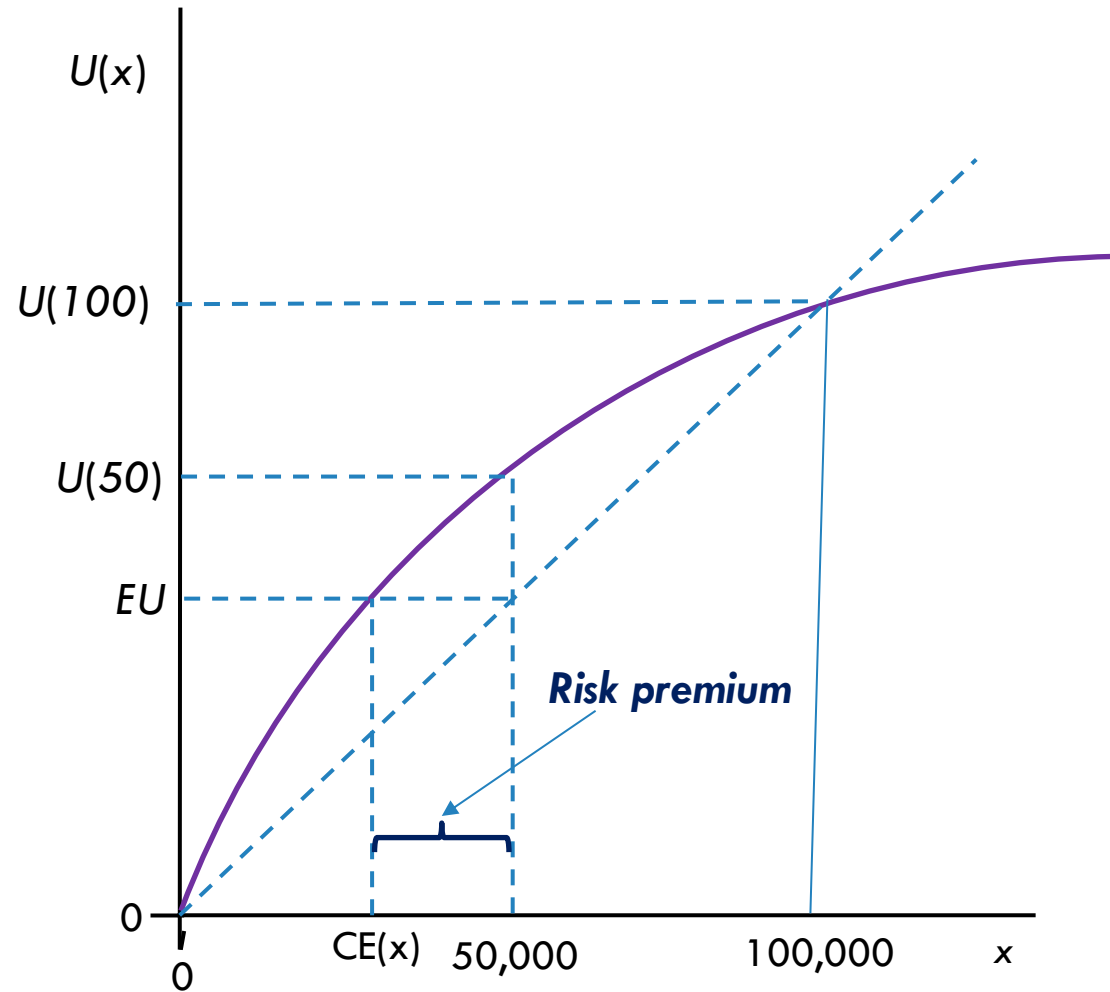
DECISION MAKING UNDER RISK



DECISION MAKING UNDER RISK



DECISION MAKING UNDER RISK



LECTURE 1.3

MULTI-PERIOD MODELS

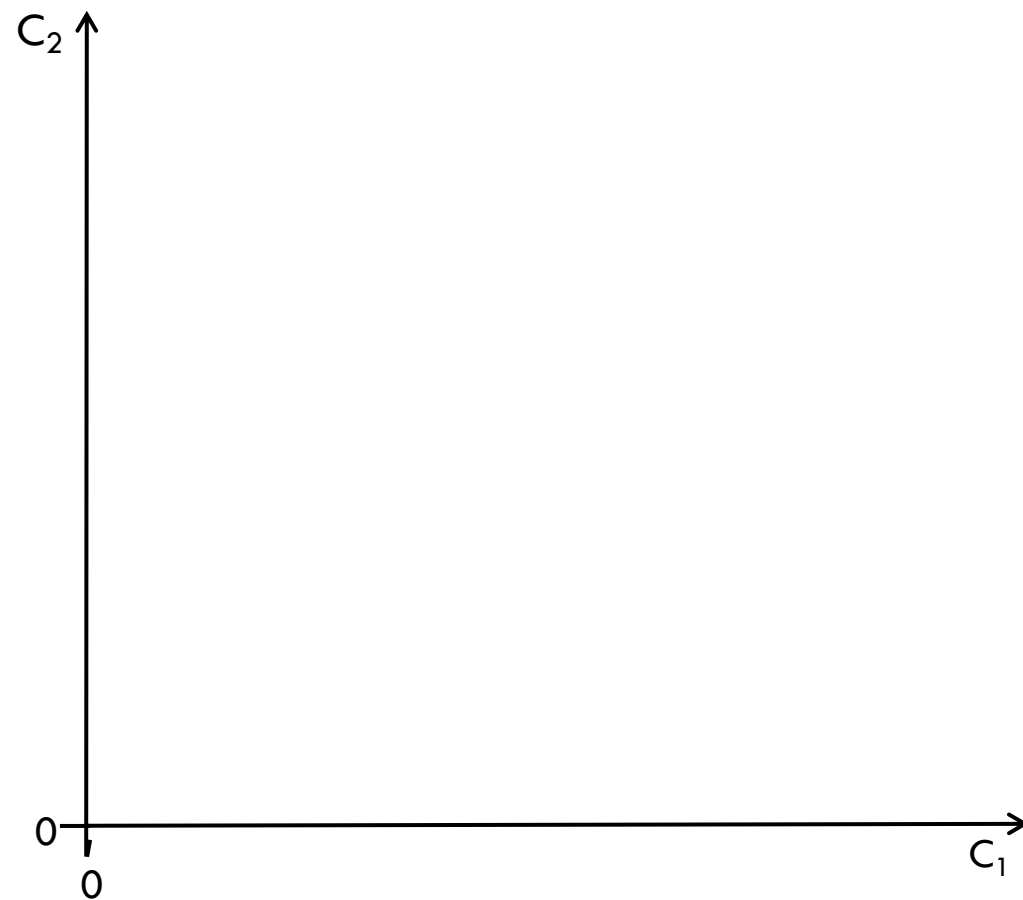
MULTI-PERIOD MODELS

We can generalize the question of choice to one where we consider the choice over consuming today versus consuming tomorrow, i.e. an inter-temporal allocation.

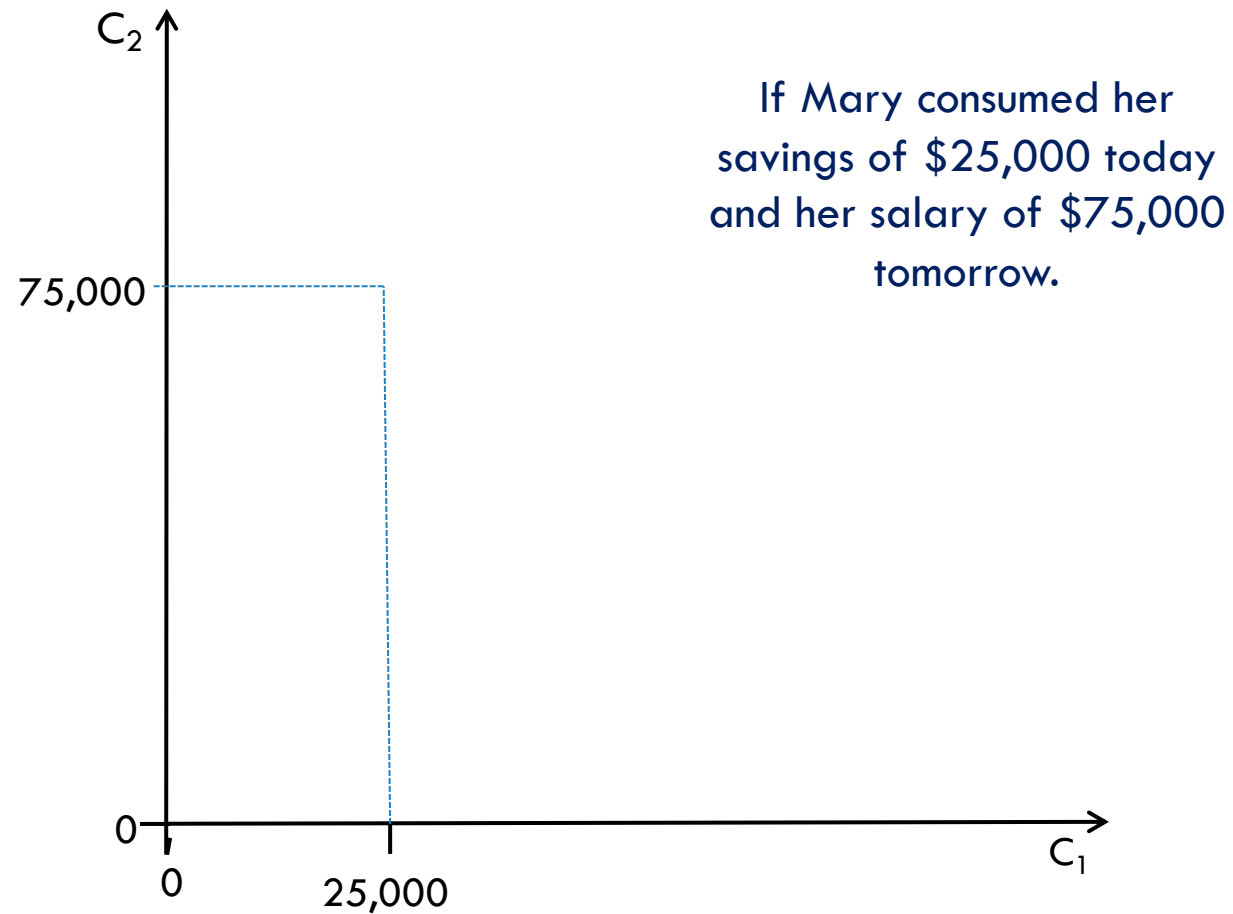
Consider the example of Mary who is deciding about how to allocate her savings and higher future income from studying a Masters program. (You can find this example in Chapter 2 of Brickley et al.)

- She has savings of \$25,000.
- Her employer has promised her that once she completes her post-graduate qualification they will pay her a salary of \$75,000.
- Interest rate of 5% for borrowers and savers.
- Assume that Mary's consumption decision is limited to two periods: today and tomorrow.

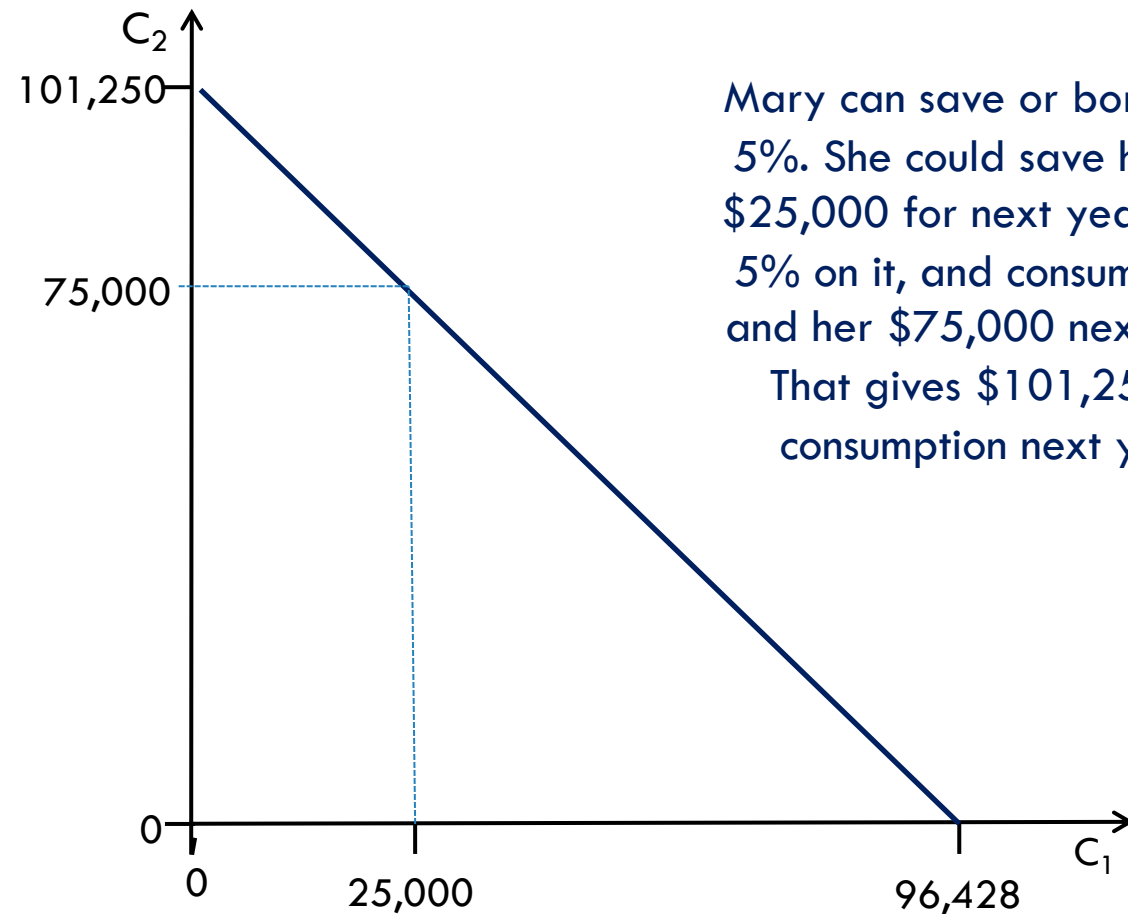
MULTI-PERIOD MODELS



MULTI-PERIOD MODELS

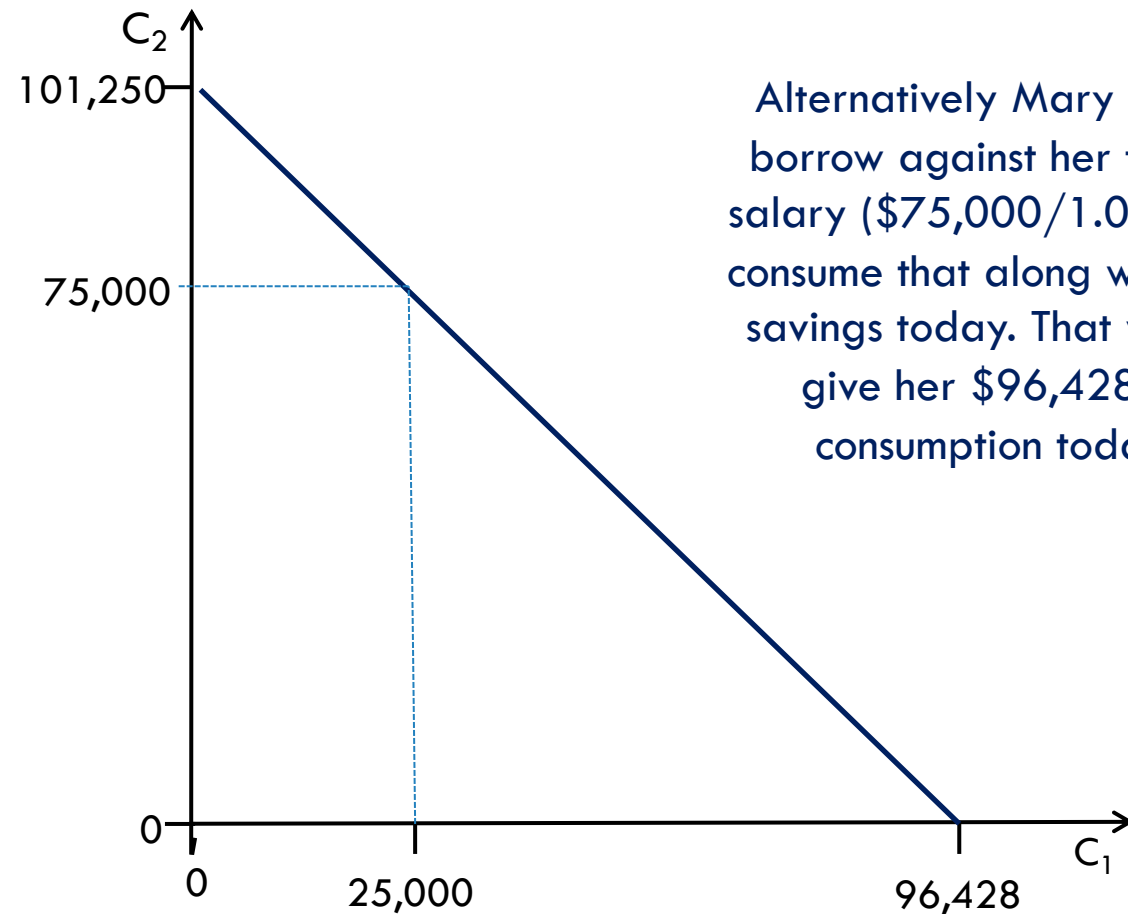


MULTI-PERIOD MODELS



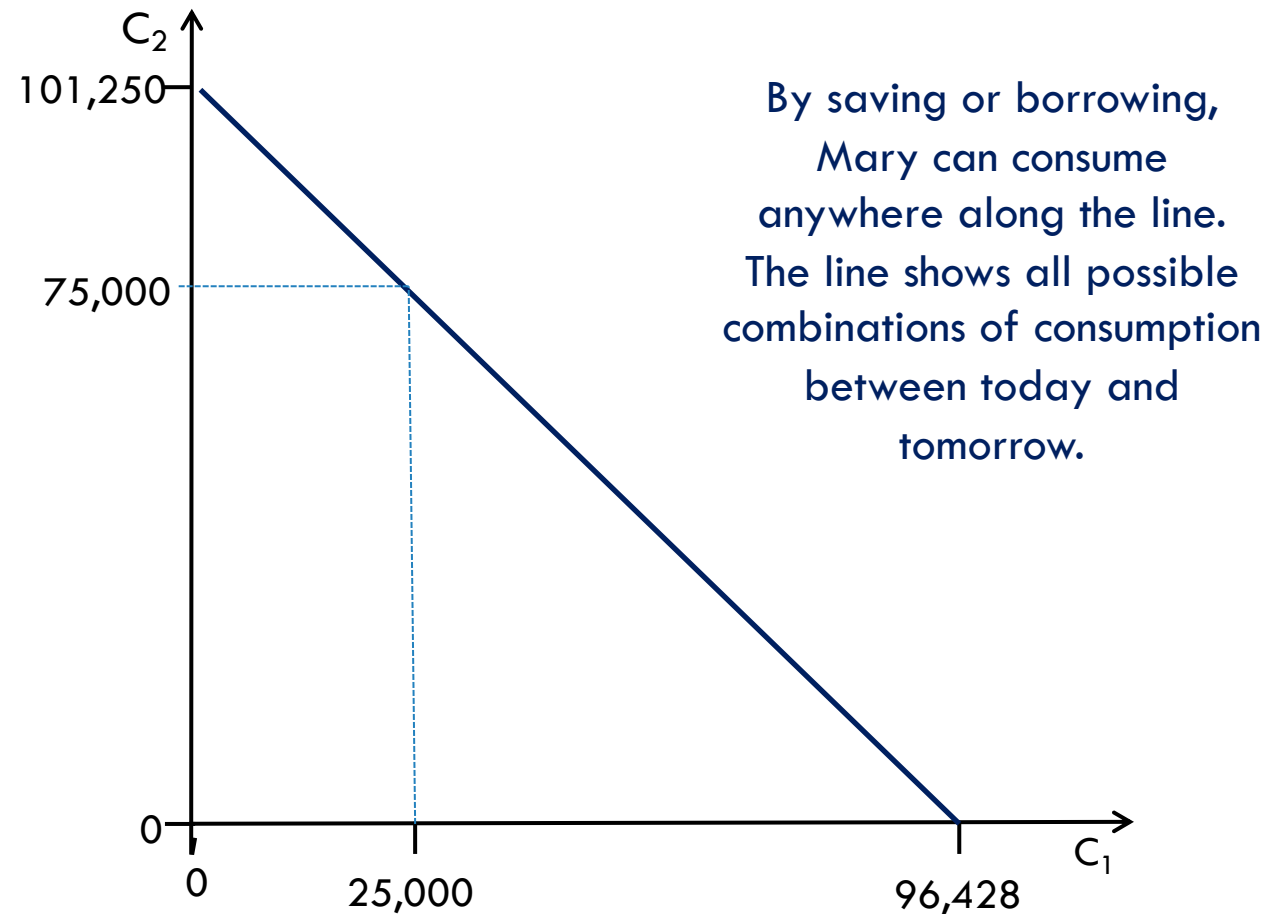
Mary can save or borrow at 5%. She could save her full \$25,000 for next year, earn 5% on it, and consume that and her \$75,000 next year. That gives \$101,250 in consumption next year

MULTI-PERIOD MODELS

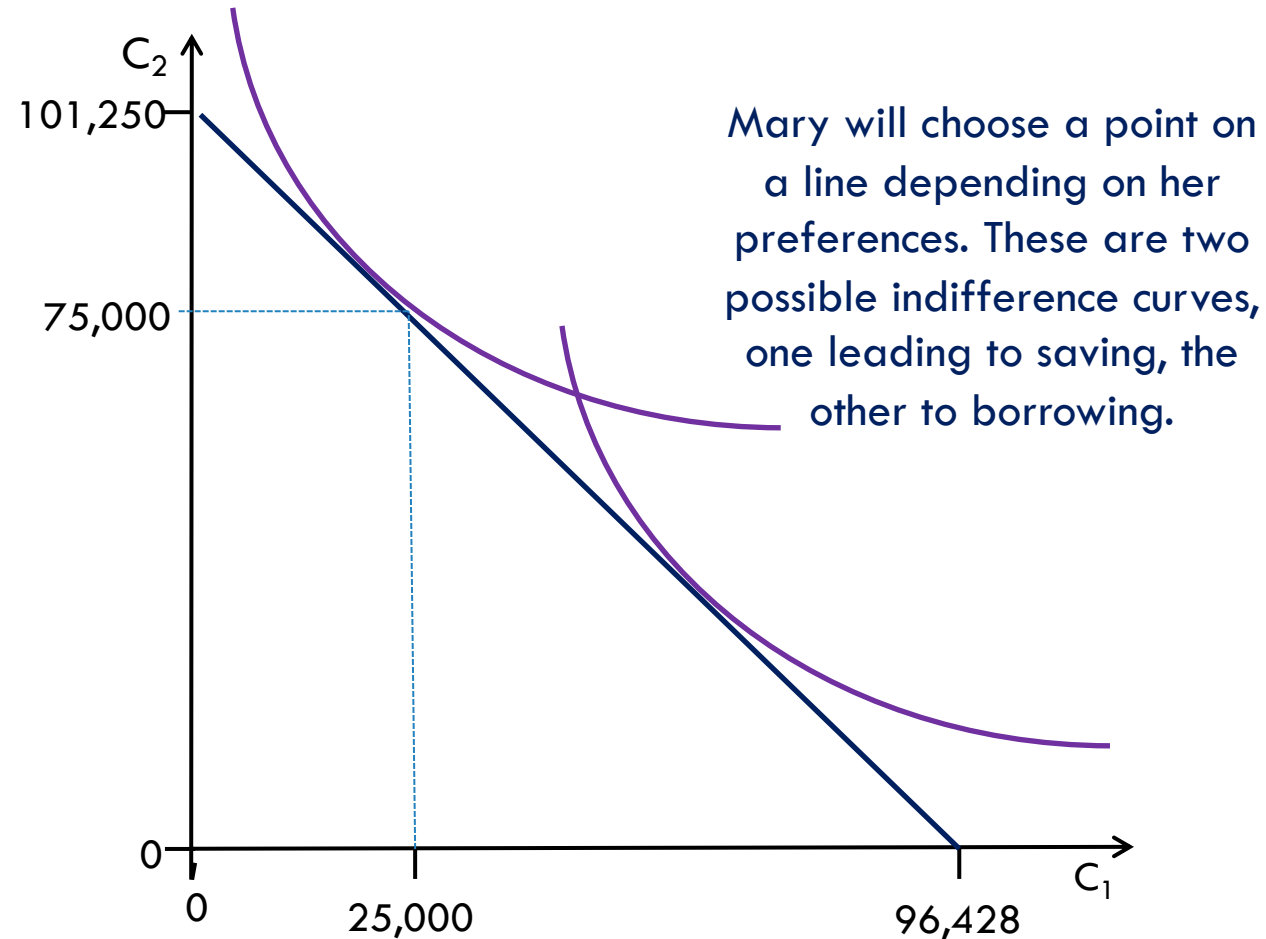


Alternatively Mary could borrow against her future salary ($\$75,000/1.05$) and consume that along with her savings today. That would give her $\$96,428$ in consumption today

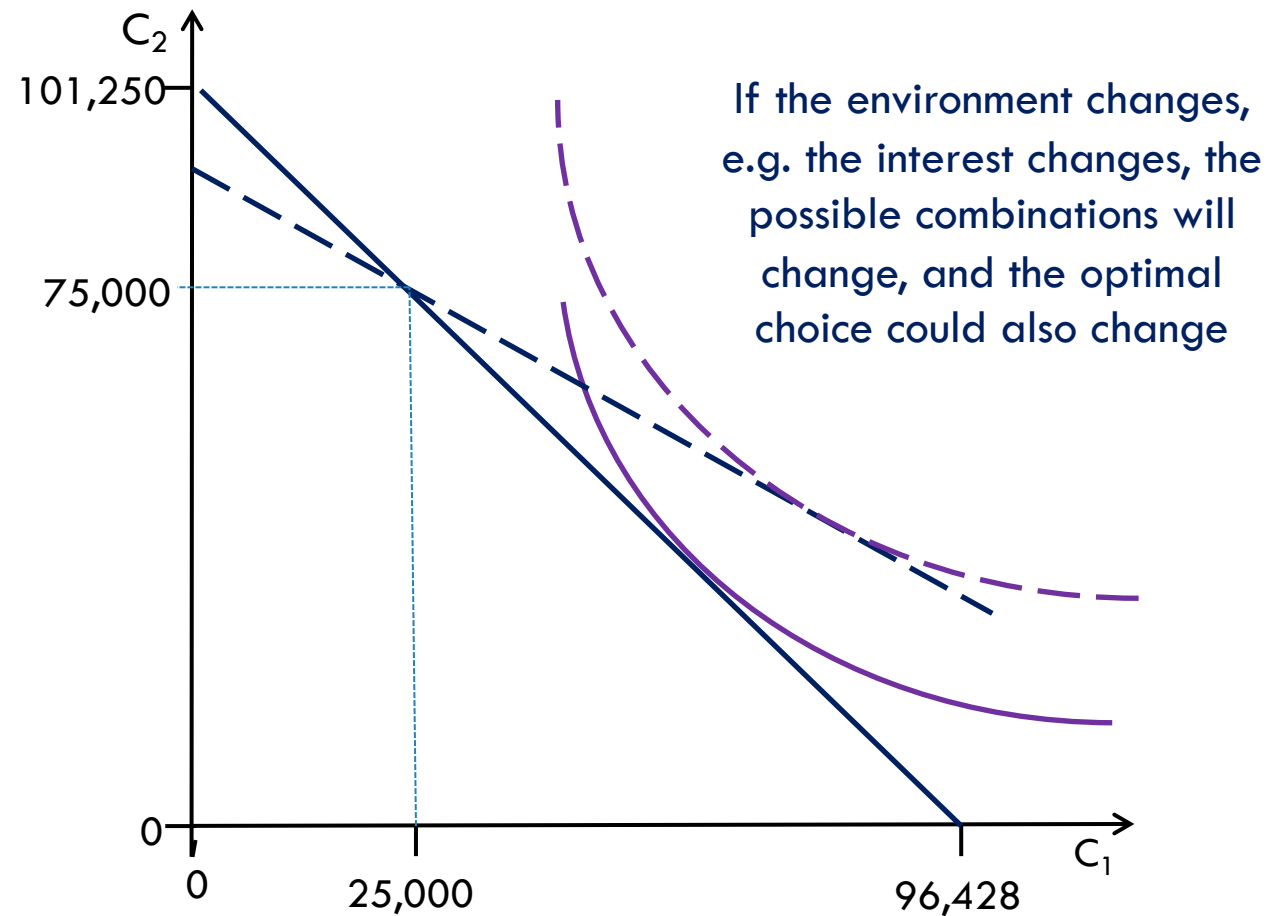
MULTI-PERIOD MODELS



MULTI-PERIOD MODELS



MULTI-PERIOD MODELS



MULTI-PERIOD MODELS

What if a firm needs to make an inter-temporal investment decision? Should that firm consider the inter-temporal preferences of its owners?

Consider a firm that has \$100,000 that it could either distribute as cash dividends today, or invest to pay higher dividends to its owners tomorrow?

What if these owners are highly impatient and would prefer to consume today?

MULTI-PERIOD MODELS

Fisher Separation theorem

Assume:

- The presence of perfect capital markets, i.e. zero transaction costs, no taxes and perfect information
- Everyone agrees on the merits of an investment (in other words, that they agree whether or not it will increase the net present value of the company)

In this case, the financing of investment can be separated from the investment decision itself.

Individuals with different time preferences can just borrow or save to smooth consumption consistent with intertemporal preferences.

LECTURE 1.4

CONCEPTS: COSTS AND PROFIT

COSTS

Total cost (TC) equals fixed costs (FC) plus variable costs (VC):

$$TC = FC + VC$$

Average total cost (AC) = Total cost divided by quantity produced (Q).

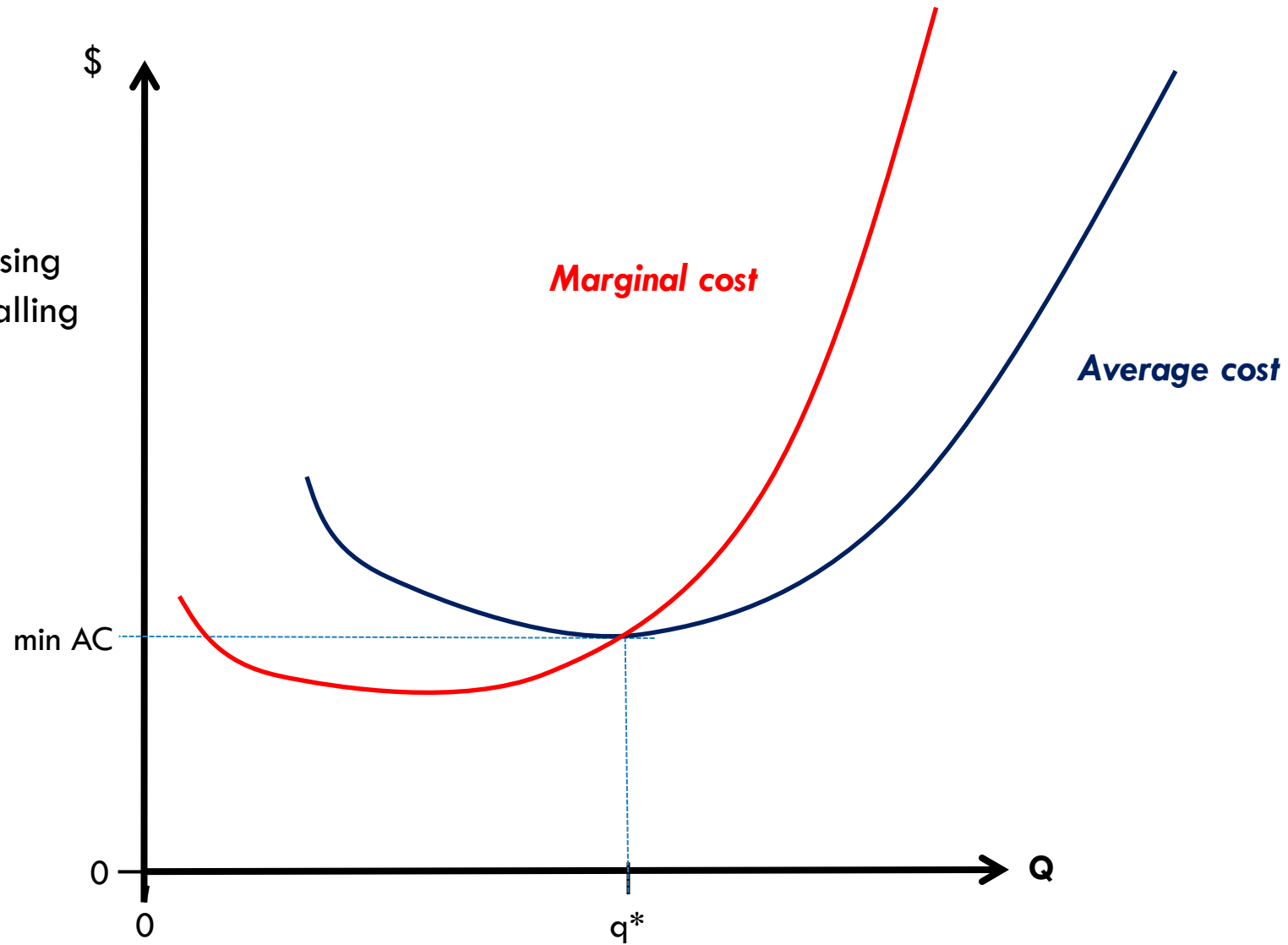
$$AC = TC/Q = AFC + AVC \text{ (in short run)}$$

Minimum efficient scale occurs where AC is minimised – a long run phenomena

Marginal cost:

$$MC = \frac{dTC}{dTQ} \text{ or } \frac{\Delta TC}{\Delta Q}$$

If $MC > AC$, AC is rising
If $MC < AC$, AC is falling
If $MC = AC$, AC is
minimised



PROFIT

Accounting statements focus on historical costs. Given the need to provide objective, verifiable numbers to external audiences, this makes sense.

But you do not want to make decisions based on accounting costs. Economic costs, which include the opportunity costs of deploying resources to another activity, must also be considered.

This difference between economics and accounting costs leads to a difference between economic and accounting profit.

LECTURE 1.5

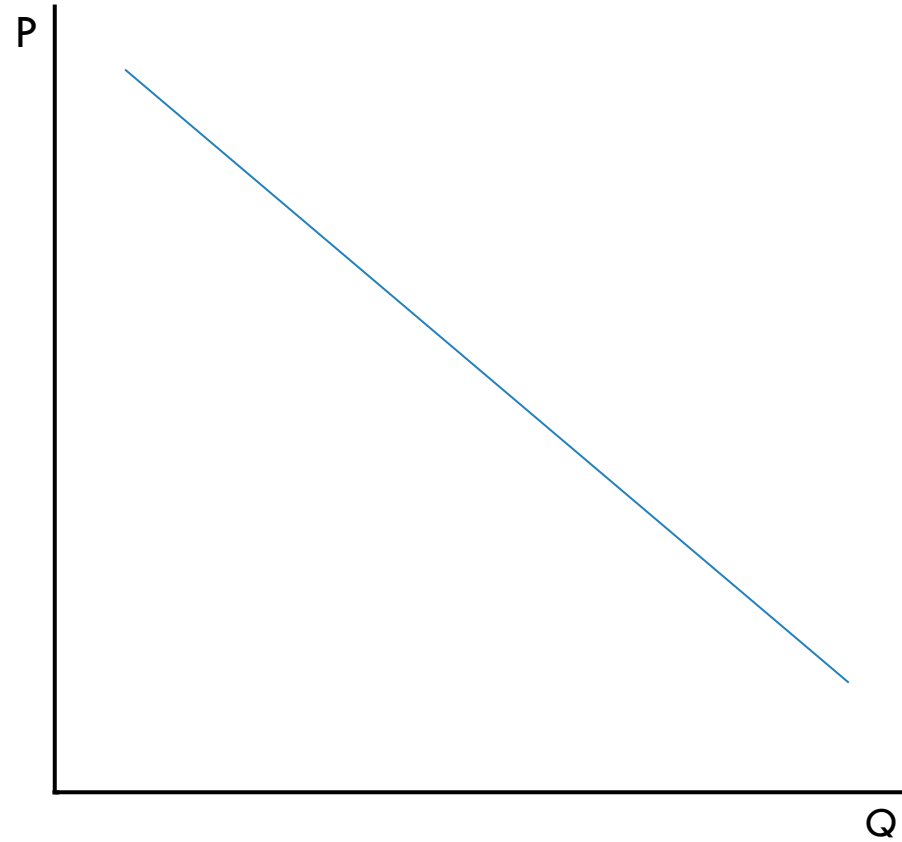
CONCEPTS: DEMAND AND ELASTICITY

DEMAND

Demand follows from the optimisation of economic agents:

- Maximise utility subject to a budget constraint → demand curve
- Relationship between price and quantity: the demand curve shows the quantity of a product consumers will purchase at different prices
- Law of demand: demand curves slope down. The lower the price, the greater the quantity demanded

A DEMAND CURVE



The height of the demand curve measures willingness to pay

ELASTICITY

A firm is considering increasing the price of their product. The law of demand suggests they will lose some sales. The price elasticity of demand is the sensitivity of demand to price.

Own price elasticity of demand:

$$\eta = \frac{dQ}{dP} \frac{P}{Q}$$

$\eta < 1$, demand is inelastic

$\eta > 1$, demand is elastic

This number can be thought of as the percentage change in quantity from a 1% change in price.

Revenue:

$$TR = P(Q)Q$$

$$MR = P(Q) \left[1 - \frac{1}{\eta} \right]$$

If demand is elastic, the marginal revenue is positive. A reduction in price will lead to an increase in demand that will increase total sales revenue. If inelastic, the marginal revenue is negative and a reduction in price will lead to lower sales revenue.