



# The Economic Analysis of Contracts and Organizations

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# Content

## **PART I. CONTRACT THEORY**

Topic 1. Rules, Contracts, Opportunism.

Topic 2. Unique Good.

Topic 3. Bilateral Monopoly.

Topic 4. Adverse Selection.

Topic 5. Public Good.

Topic 6. Moral Hazard.

Topic 7. Hold-Up.

## **PART II. THEORY OF THE FIRM**

Topic 8. The Nature of the Firm.

Topic 9. The Structure of Hierarchy

Topic 10. Vertical Integration.

Topic 11. Horizontal Integration.

Topic 12. Functional Integration.

Topic 13. Related Integration.

Topic 14. Conglomerate Integration.

Topic 15. Hybrid Forms.

## **PART III. BUSINESS LAW**

Topic 16. Contract Law.

Topic 17. Company Law.

# Assessment

<b>Contract Theory Application</b>	10 points
<b>Case Analysis</b>	10 points
<b>Essay (research paper)</b>	20 points
<b>Final test</b>	60 points



## Topic 7

# Hold-Up

# Plan

## 7.1. Hold-up Problem

- Specific Assets
- Expropriation of Quasi-Rent
- Examples
- Specific Assets of Buyer
- Welfare Losses

## 7.2. Remedies

- Long-term Contract

### Case: General Motors and Fisher Body

- Vertical Integration

### Case: Montverde and Teece (1982)

- Self-Enforcing
- Hiding Specificity
- The

### Case: Pipelines, Wells and Refineries

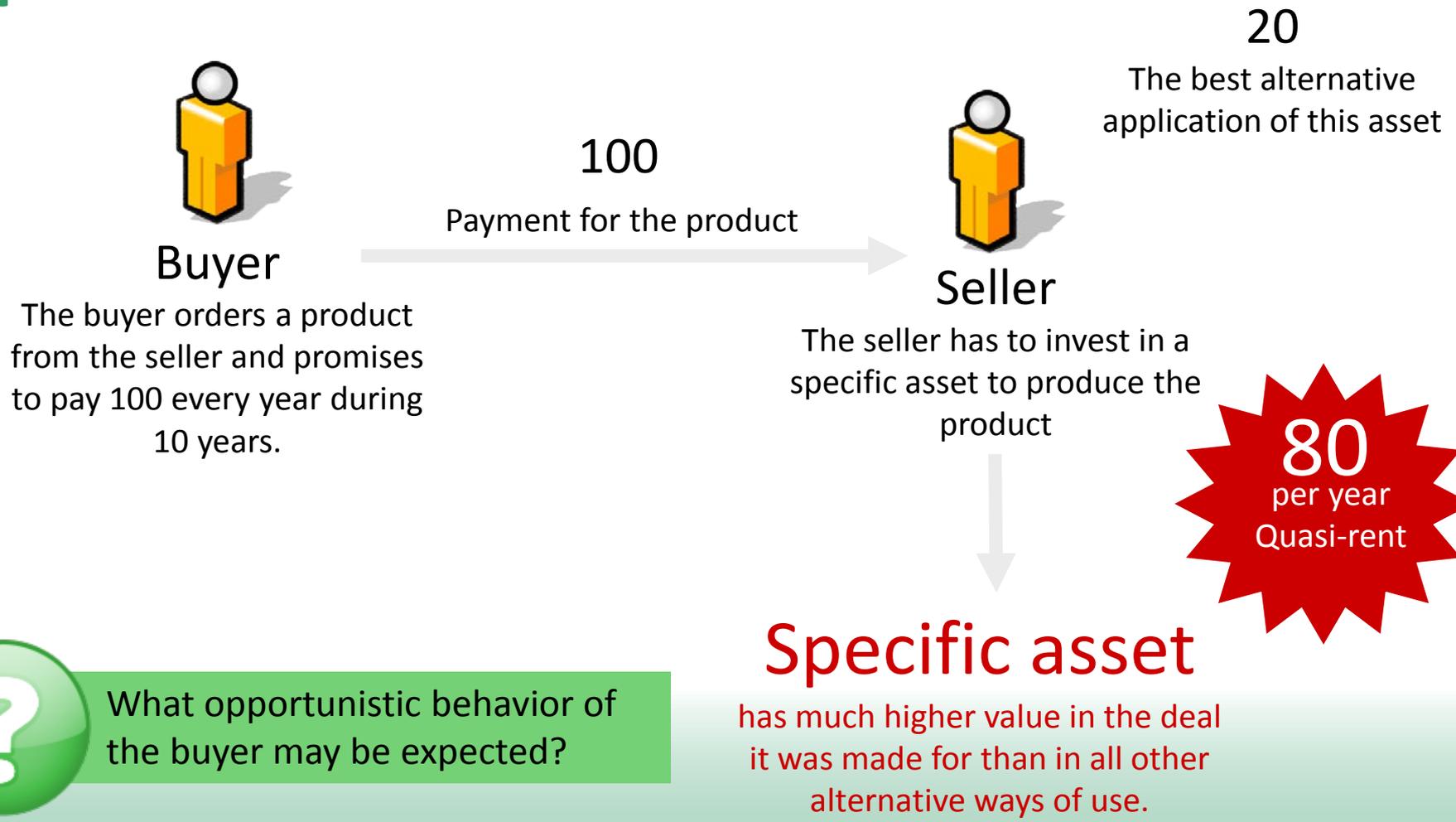
### Case: Farmers and Land

# 7.1

# Hold-up Problem

# 7.1. Hold-up Problem

## Specific Asset



What opportunistic behavior of the buyer may be expected?

## 7.1. Hold-up Problem

# Expropriation of Quasi-Rent



The buyer appropriates the quasi-rent through decreasing the price of the product from the negotiated (100) to the lowest possible which is equal to the value in next best alternative use (20)

## 7.1. Hold-up Problem

# Examples

### B2B market

#### Specific equipment

A car body maker invests in a die which may be used only for one car maker but not to the others

### Labour market

#### Specific human capital

A worker spends a lot of money and time to acquire skills and knowledge which has high value for this company and very low value for all other companies

#### Specific location

A supplier builds its production facilities near the facilities of the main customer.

#### Specific migration

A worker moves to the place of the company location where there is little opportunities for alternative employment.

**Asset  
specificity**

**Site  
specificity**

## 7.1. Hold-up Problem

# Specific Assets of Buyer

	<b>B2B market</b>	<b>Labour market</b>
<b>Asset specificity</b>	<b>Specific equipment</b> A car manufacturer invests in the technology which is specifically designed for a component of a supplier	<b>Short-term hold-up</b> The employees demand for pay increase in the moment of high opportunity costs of finding new employees (harvesting time, high season demand, the launch of new product etc.)
<b>Site specificity</b>	<b>Specific location</b> A customer builds its production facilities close to the source of the important resource	?

### 7.1. Hold-up Problem

# Welfare Losses

## Total market failure

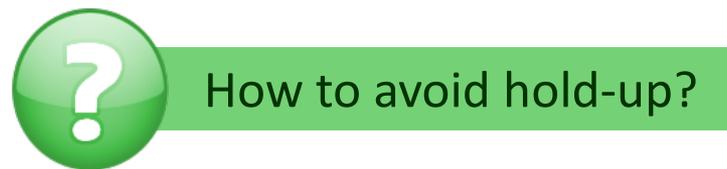
The seller refuses to make such a contract because he is afraid of future opportunistic behavior of the buyer

## Under-Investment

The seller agrees to invest only in less specific resource which is less productive in this deal but may be rather easily reallocated to another deal.

E. g. the seller agrees to invest in an asset which allows to produce the same product with higher costs and to sell it for 150 to this buyer. But if the buyer rejects to buy it this product the asset may be reallocated to another use with value only slightly less or equal to 150.

# 7.2 Remedy



## 7.1. Remedy

# Long-Term Contract

The parties make a contract for full life of the specific asset fixing the price and terms of delivery. Does this contract give the specific asset owner an ABSOLUTE protection?

A change in prices → formula pricing (will it always work?)

A change in the technology → ???

In both cases the contract has to be renegotiated and rewritten. In this moment the weaker party finds itself without contractual protection and may be held up by the stronger party.

It is impossible to write a **complete contract**.

# General Motors and Fisher Body

- 1 In 1919 GM and FB entered a 10 years contract to protect specific investments of FB. Exclusive dealing. Formula pricing (17% markup).
- 2 In a couple of years the conditions changed: it was necessary to produce *open bodies* and in *much more quantities*. The price should go down (economy of scale) but FB demanded for formula pricing. This was a hold-up of GM by FB.
- 3 GM asked FB to move its new plant closer to GM but FB refused because it created too high GM bargaining power in the future.  
Hence, in 1926 GM bought FB.

A more detailed description of this story is on the next slide...

# General Motors and Fisher Body

... In this context, it is interesting to study in some detail the vertical merger that occurred in 1926 of General Motors with Fisher Body.

The original production process for automobiles consisted of individually constructed open, largely wooden, bodies. By 1919 the production process began to shift towards largely metal closed body construction for which specific stamping machines became important. Therefore in 1919 General Motors entered a ten-year contractual agreement with Fisher Body for the supply of closed auto bodies. In order to encourage Fisher Body to make the required specific investment, this contract had an exclusive dealing clause whereby General Motors agreed to buy substantially all its closed bodies from Fisher. This exclusive dealing arrangement significantly reduced the possibility of General Motors acting opportunistically by demanding a lower price for the bodies after Fisher made the specific investment in production capacity. Since exclusive dealing contractual conditions are relatively cheap to effectively specify and enforce, General Motor's post-contractual threat to purchase bodies elsewhere was effectively eliminated.

But large opportunities were created by this exclusive dealing clause for Fisher to take advantage of General Motors, namely to demand a monopoly price for the bodies. Therefore, the contract attempted to fix the price which Fisher could charge for the bodies supplied to General Motors. However, contractually setting in advance a "reasonable" price in the face of possible future changes in demand and production conditions is somewhat more difficult to effectively accomplish than merely "fixing" required suppliers. The price was set on a cost plus 17.6 per cent basis (where cost was defined exclusive of interest on invested capital).

In addition, the contract included provisions that the price charged General Motors could not be greater than that charged other automobile manufacturers by Fisher for similar bodies nor greater than the average market price of similar bodies produced by companies other than Fisher and also included provisions for compulsory arbitration in the event of any disputes regarding price.

Unfortunately, however, these complex contractual pricing provisions did not work out in practice. The demand conditions facing General Motors and Fisher Body changed dramatically over the next few years. There was a large increase in the demand for automobiles and a significant shift away from open bodies to the closed body styles supplied by Fisher. Meanwhile General Motors was very unhappy with the price it was being charged by its now very important supplier, Fisher. General Motors believed the price was too high because of a substantial increase in body output per unit of capital employed. This was an understandable development given the absence of a capital cost pass-through in the original contract.

In addition, Fisher refused to locate their body plants adjacent to General Motors assembly plants, a move General Motors claimed was necessary for production efficiency (but which required a large very specific and hence possibly appropriable investment on the part of Fisher).

By 1924, General Motors had found the Fisher contractual relationship intolerable and began negotiations for purchase of the remaining stock in Fisher Body, culminating in a final merger agreement in 1926.

*(from Klein, Crawford, Alchian 1978)*

1

2

3

## 7.1. Hold-up Problem

# Vertical Integration

The last resort is the **integration of both parties in one firm** what fully eliminates the problem of distributing the quasi-rent.

- The buyer acquires the seller
- The buyer creates in-house division for this production

# Empirical Test: Car Suppliers

Montverde and Teece (1982) investigated organization of supplying 133 car components to GM and Ford.

They measured the **amount of engineering efforts** for each component (*specificity degree*).

It was found that the higher specificity degree is the more likely the car producer uses vertical integration.

*Montverde K., Teece D.J. (1982) 'Supplier switching costs and vertical integration in the automobile industry', Bell Journal of Economics, Vol. 13. 206-213*

## 7.1. Hold-up Problem

# Self-Enforcing?

In the continuous relations hold-up behavior can not be sustainable.

But what if the relations are not continuous?

## 7.1. Hold-up Problem

# Hiding Specificity?

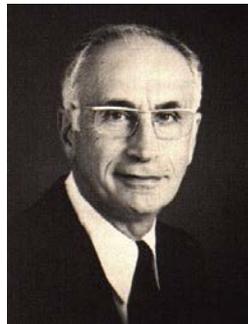
The party which makes specific investments **keeps this information in secret** from the other party.

Is it plausible?

There is very low probability that the customer will not know about the assets specificity.

## 7.2. Hold-Up Problem

# The Original Idea of Hold-Up



Vertical Integration, Appropriable Rents, and  
the Competitive Contracting Process  
*Journal of Law and Economics*. 1978. Vol. 21.

The idea of the **specific asset** and **hold-up** behavior was suggested in 1978 by three American scholars:

- Benjamin Klein,
- Robert Crawford
- Armen Alchian

Their paper described the main idea and illustrated it with many examples.

A mathematical interpretation of “explicitly non-contractible investments” was developed later by Grossman and Hart (1986) and Hart and Moore (1990).

## 7.2. Hold-Up Problem

# Ronald Coase's Criticism

Hold-up theory and its illustration with GM-FB story was met with high criticism by Ronald Coase (the originator of a transaction costs theory of the firm), who accused the authors in factual incorrectness and general theoretical mistake.

### Factual incorrectness

1. In 1922-1925 several body plants were created nearby GM (in Pontiac, Michigan, NY)
2. FB was supplying bodies to other customers so they could not invest in bad technology.
3. GM had a majority share in FB – they would not allow for inefficiency.

### General theoretical claim

Asset specificity can be managed through long-term contract because the reputation prevents from opportunism

*Coase R. The Acquisition of Fisher Body by General Motors. The Journal of Law and Economics. Vol. XLIII, April 2000.*

Case Analysis

# Pipeline, Wells and Refineries

# Oil pipeline



Suppose several oil wells are located along a separately owned pipeline that leads to a cluster of independently owned refineries with no alternative crude supply at comparable cost.



Will there be contracts or vertical integration?

Vertical integration should be expected because the pipeline owner may hold-up oil wells and refineries.

### Case Analysis

# Standard Oil: Railroads and Pipes

- John Rockefeller started Standard Oil with two refineries in the end of 1860s. From the very beginning his strategy was aimed at horizontal integration and control of the market.
- In 1871 he formed a **secret alliance with railroads** in Cleveland to force local refineries to sell their business to Standard Oil.
- In 1874, Standard Oil started **acquiring new oil pipeline networks**. This enabled the company to cut off the flow of crude oil to refineries Rockefeller wanted to buy. When a rival company attempted to build a competing pipeline across Pennsylvania, Standard Oil bought up land along the way to block it. In the end, Rockefeller made a deal with the other company, which gave Standard Oil ownership of nearly all the oil pipelines in the nation.
- By 1880, Standard Oil owned or controlled 90 percent of the U.S. oil refining business.

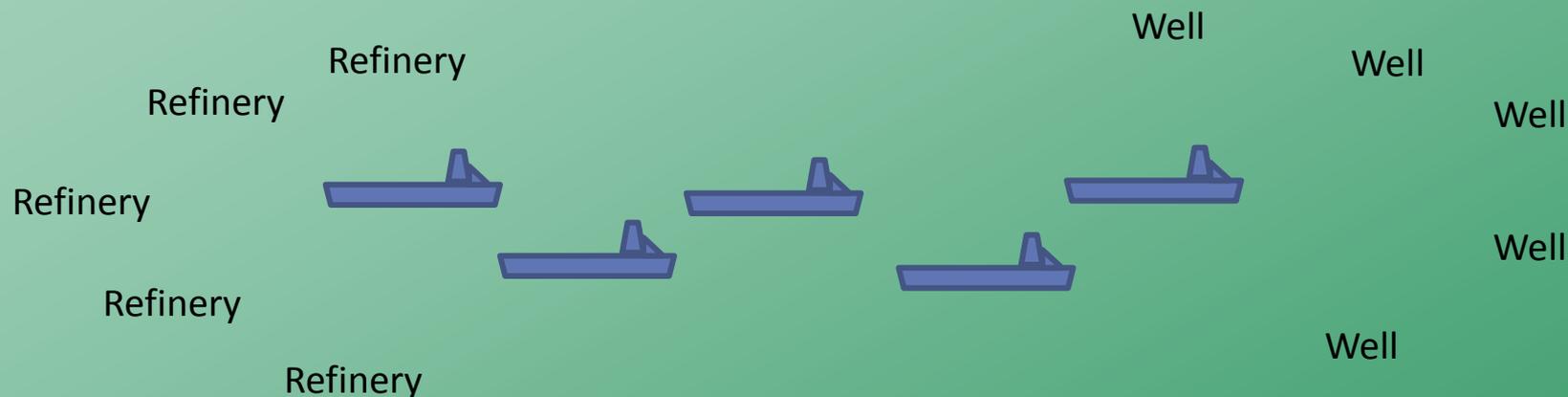
### Case Analysis

# Standard Oil: Tanks Fleet

- In 1870s Rockefeller used another trick to acquire independent refineries. Initially oil was transported in wooden barrels which was not very efficient.
- When steel tanks were invented, Rockefeller secretly owned the **Union Tank Car company**, that held the patent for the tanks and owned almost all tanks in the economy (about 3000).
- First, Rockefeller leased these tanks to his competitors. This allowed to expand operations and competitors decided to invest into expansion of their production capacities.
- Then, Rockefeller broke these leasing agreements and the competitors found themselves without sufficient supply of crude oil. The only feasible option was to sell out their facilities to Standard Oil.



# Oil tankers



Suppose that oil tankers are used instead of pipeline.



Will there be contracts or vertical integration?

Oil tankers may be owned by independent operators, no market power (asset specificity) is created by independent ownership

Case Analysis

# Farmers and Land

# Farmers and Land

There are two types of farmers:

1. **Farmers who grow annual crops**  
(vegetables, sugar beets, cotton, wheat)
2. **Farmers who grow tree crops**  
(nuts, dates, oranges, peaches, apricots, grape vines)



Where we may expect ownership of land and where rent?

## **California, 1970s**

25% of vegetable and melon farms were fully owned

82% of fruit and nut tree farm were fully owned

# Summary

## Opportunism

### Ex ante

(pre-contractual)

The hidden fact has already materialized before making the contract and cannot be changed

#### Unknown value

the problem is measuring unknown quality

#### Public Good

the problem is to get payment from users

#### Bilateral monopoly

the problem is distribution of joint profit

#### Adverse selection

the problem is selection of a good partner

### Ex post

(post-contractual)

The hidden fact has NOT materialized yet and can be changed

#### Moral Hazard

the problem is a non-verifiable dishonest execution of the contract (shirking, imposing...)

#### Hold-Up

the problem is changing of the contract price by the party whose market power increases during the contract execution

Thank you