Innovation and choice

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General motivation

What is an innovation? New market or increase surplus in existing market

The problem of ex-ante contractability. (Incomplete Contracts, Grossman and Hart(1986))

Solution: Intellectual property, endogenize research, etc

Structure

First chapter: What occurs when a single firm has a monopoly on a good which has social value?

Second chapter: How does the option of a firm to be acquired change its innovation choices?

Third chapter: We explore the causes of discounting

Chapter 1: Piracy and network value

Motivation: Piracy

The intellectual property claim: limiting entry $\rightarrow$ increases the incentive to innovate.

The piracy claim: making piracy illegal $\rightarrow$ increases the incentive to innovate.

The monopoly issue: If a single firm sells the asset and has control of the price $\rightarrow$ the price set will be above what is welfare maximizing.

Questions

1) Does uniform enforcement of intellectual property increase innovation?

2) Does social value enchance or curtail monopoly power?

3) Who benefits from piracy?

4) Is the incentive to improve the product independent of social value?

Model components:

The main modelling component used is social value.

Agents have the option of buying, pirating and not using.

Using encompasses pirating or buying.

Easier to pirate

→ More pirates some of which used to buy but also higher willingness to pay of buyers.

→ Buyers have a higher willingness to pay.

Tentative answer 1

Does uniform enforcement of intellectual property increase innovation? No

Causal Mechanism: Piracy can increase profits.

Tentative answer 2

Does social value enhance or curtail monopoly power? curtail

Causal Mechanism: Number of agents consuming increases $\rightarrow$ Product value increases $\rightarrow$ Monopolist will try to increase users.

Tentative answer 3

Who benefits from piracy? Consumers with a lower willingness to pay will benefit. Firms may benefit.

Causal Mechanism: Firms may benefit by including lower willingness to pay agents by charging higher willingness to pay agents more.

Tentative answer 4

Is the incentive to improve the product independent of network value? No

Causal Mechanism: A high network value may be a substitute to innovation.

Chapter 2: Cost side innovation with project variance

Motivation

Buyouts claim: Having the option of being bought out can only increase innovation.

Industry consolidation: Is it efficienct?

Questions

1) Does the alienability of assets have a uniform effect (is the order the same)?

$B < A < 0 \rightarrow 0 < B < A$

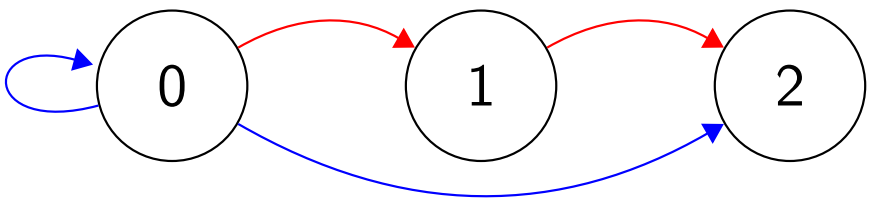
$B < A < 0 \rightarrow 0 < A < B$

2) Do existing firms always have an incentive to promote buyouts?

3) Why does successful innovation often lead to buyouts?

Modelling structure

Incumbent is ahead, entrant can choose project



Tentative answer 1

Does the alienability of assets have a uniform effect (is the order the same)? No

Causal Mechanism: The entrant can monetize damage done to the incumbent with the intermediate technology.

Tentative answer 2

Do existing firms always have an incentive to promote buyouts? No

Causal Mechanism: Not regulating mergers can lead to a situation where blackmail occurs. Entrants pursue damage maximizing projects instead of profit maximizing.

Tentative answer 3

Why does successful innovation often lead to buyouts?Because innovators purposefully choose projects with the intent of being bought out.

Causal Mechanism: Entrants will prefer correlated projects

Chapter 3: Microfoundations of Discounting

Discounting: motivation

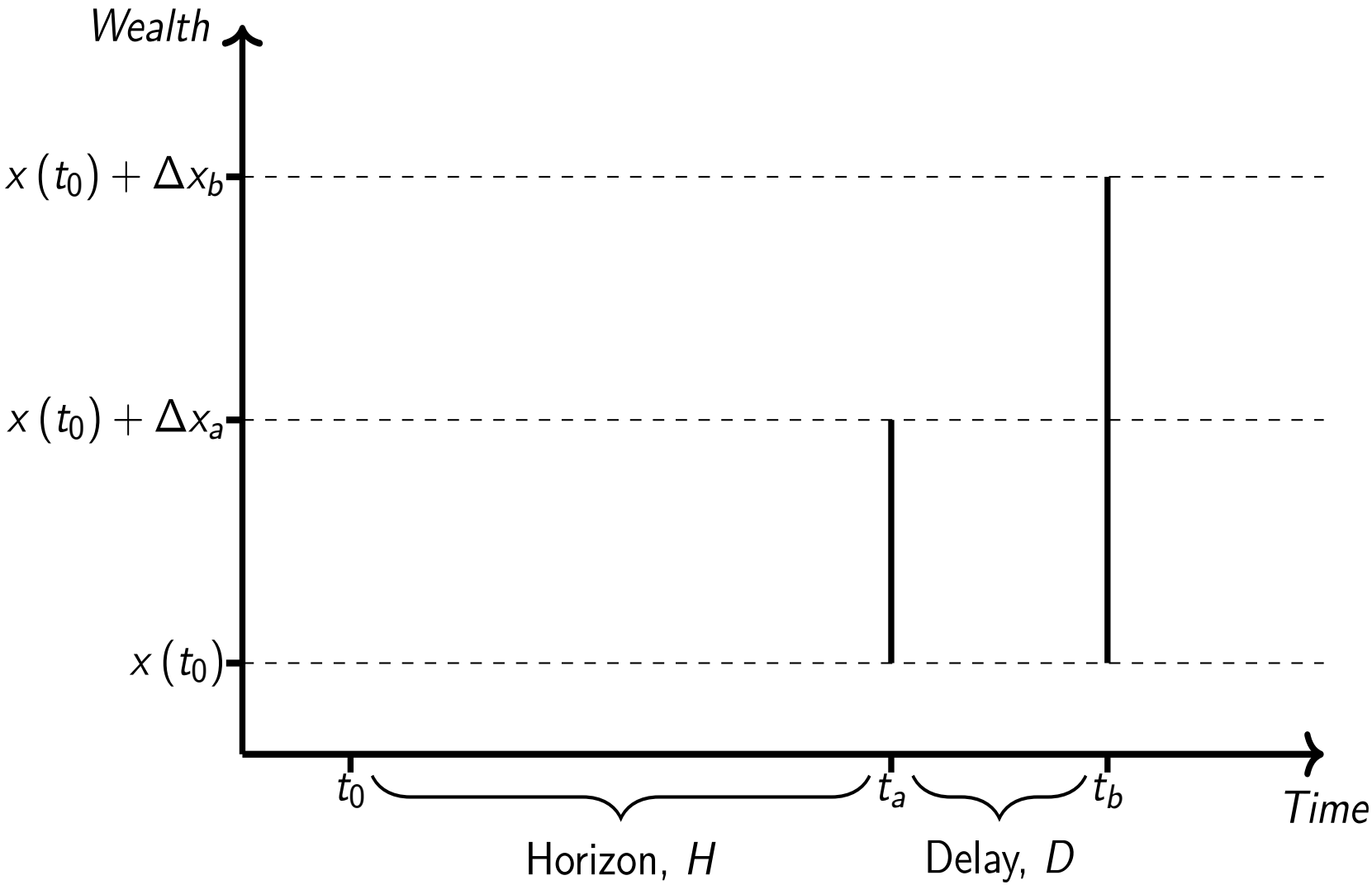
Phenomenon: Agents prefer present payments to future payments.

Definition: A discount rate is the rate you must multiply the future payment to get the value of an equivalent payment in the present.

Experimentally, people discount payment hyperbolically, yet there is variance.

Firm criteria for investing is mostly based on exponential discounting (NPV).

Theory points to exponential discounting as profit maximizing.


Wealth
$x(t_0) + \Delta x_b$
$x(t_0) + \Delta x_a$
$x(t_0)$
t_0
t_a
t_b
Time
Horizon, H
Delay, D

An alternative to preferences: Adaptation

Economics: Preferences + Environment $\rightarrow$ Strategy

Biology: Environment $\rightarrow$ Preferences/Strategy

Preferences are adaptations, if it were conscious it would be a strategy.

Questions

1) Why do agents have different ways of discounting?

2) How do we reconcile the normative method of discounting (exponential) and the descriptive method (hyperbolic)?

3) Can we draw out new falsifiable predictions from a unified framework?

Some modelling choices used:

Base assumption: Maximize growth of wealth.

Multiplicative vs additive.

Some choices can affect future choices.

Agents have different wealth levels.

$\rightarrow$ Can imply that exponential discounting is not always the best way to maximize profits/wealth.

Tentative answer 1

Why do agents have different ways of discounting?Agents discount as a function of their different environments.

Causal Mechanism: Growth depends on the kind of process that the agents face, which means their heterogeneity can be explained by the variation in their environment.

Tentative answer 2

How do we reconcile the normative method of discounting (exponential) and the descriptive method (hyperbolic)? It depends on the agents time horizon and growth process.

Causal Mechanism:

Multiplicative + Fixed = Exponential

Additive + Adaptive = Hyperbolic

Tentative answer 3

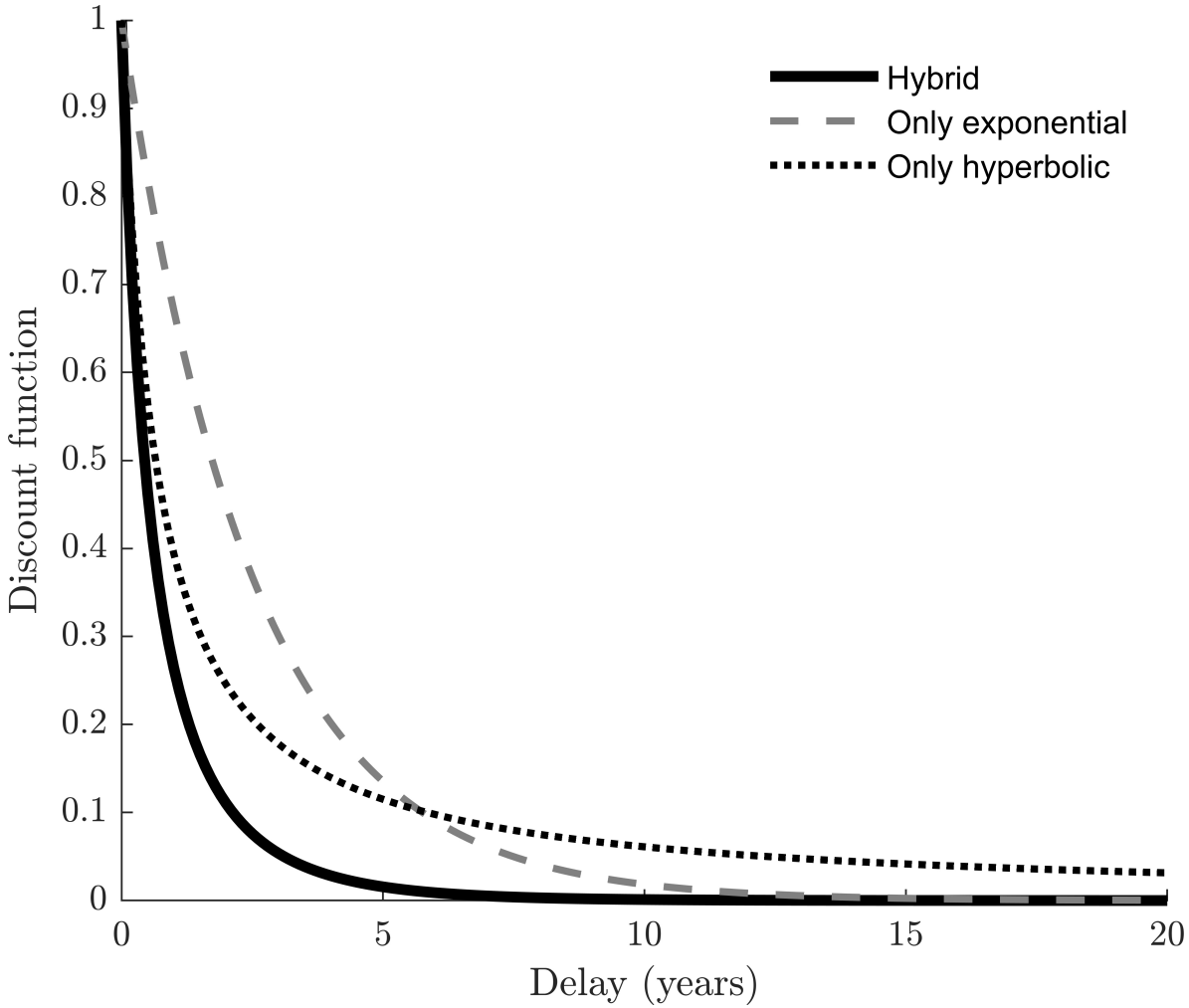
Can we draw out new falsifiable predictions from a unified framework? Yes

Causal Mechanism:

Additive + Fixed = Highest payout → unconstrained capacity and unscaleable project based firms don't discount

Multiplicative + Adaptive = Hybrid → firms with constrained capacity with projects that depend on scale discount the most

→ Wealth of agents can affect their discounting.


Hybrid
Only exponential
Only hyperbolic
Discount function
Delay (years)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
5
10
15
20

Thank you for listening. I look forward to your comments.