



HOCHSCHULE RUHR WEST
UNIVERSITY OF APPLIED SCIENCES

WIRTSCHAFTSINSTITUT

Workshop on Strategic Real Options -
Concepts, Theories, Applications

The making of real options

University of Bremen, Germany

in cooperation with

Lappeenranta University of Technology, Finland

Overview

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Introduction

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The Creation Process of Real Options

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The Value Enhancement Process

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Future Research

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The Value Enhancement Process

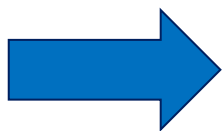
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Future Research

What is a real option?

Real options are:

- opportunities – not necessarily called real options,
- allow managers to take specific actions now or at a future point in time and
- add value by amplifying good fortune or mitigating loss under conditions of uncertainty.



- **Call option** \Rightarrow **Investment**
- **Put option** \Rightarrow **Divestiture**

Research questions

1. How are real options identified or even proactively created? – Which competencies are required at each stage of the creation process?
2. How can entrepreneurs proactively enhance real option value?

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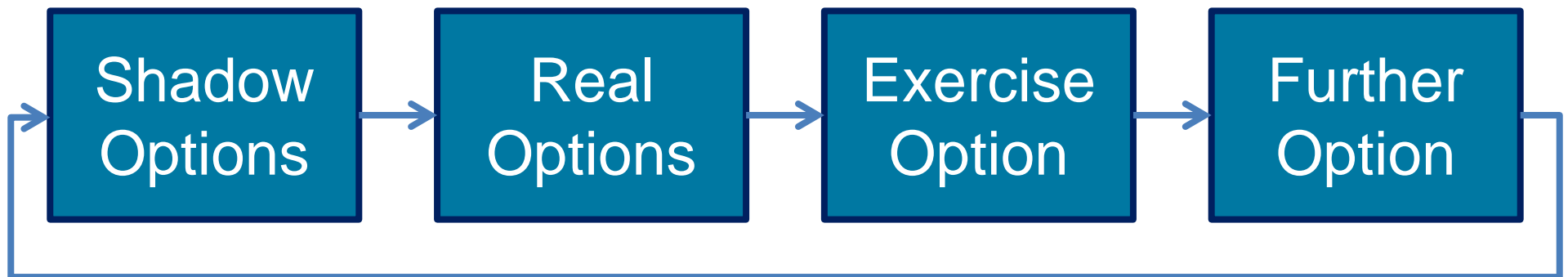
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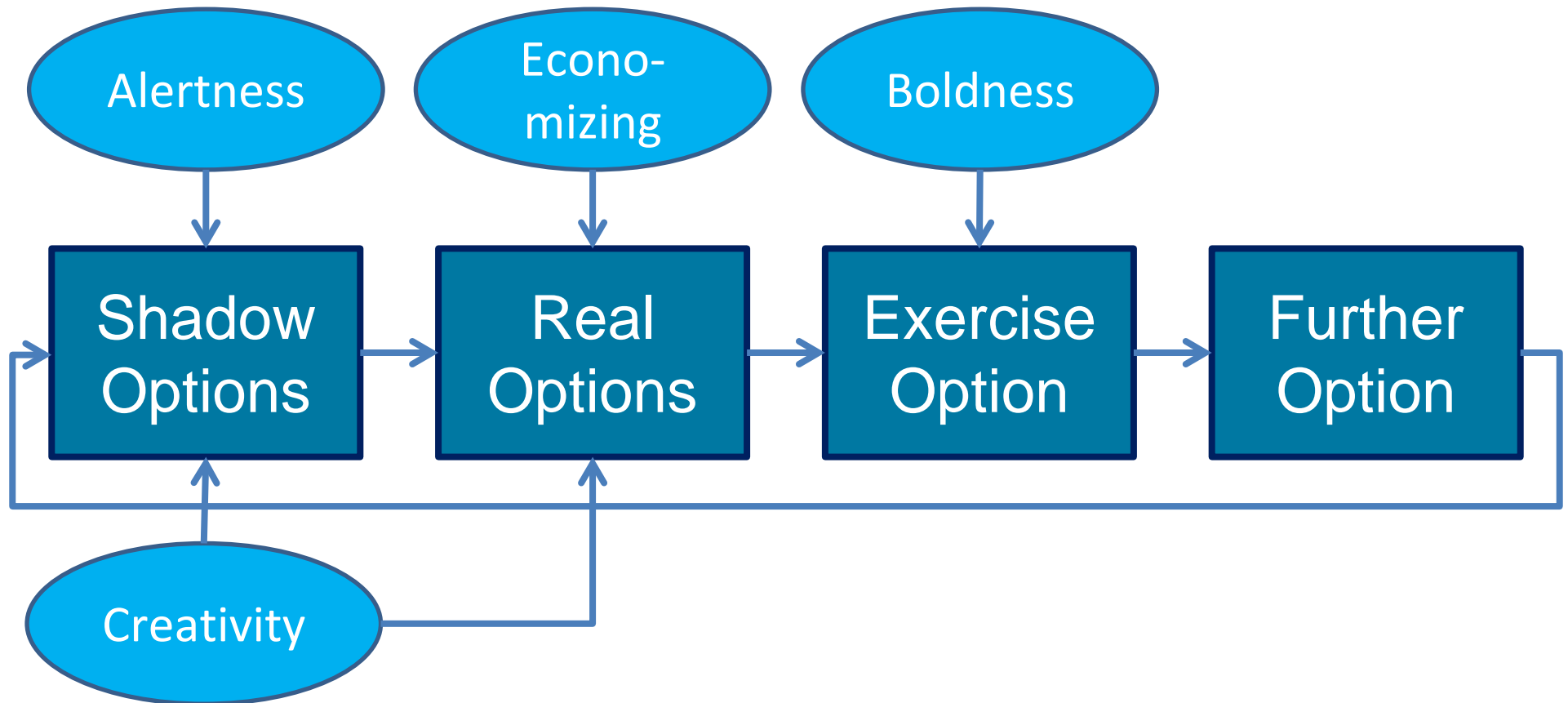
Future Research

Option chain



Source: Bowman and Hurry (1993), similar Sanchez (1993)

Option chain with entrepreneurial competencies



Propositions

- P_1 : The better the absorptive capacity is developed, the better the chances of capitalizations will be.
- P_2 : With growing alertness of the entrepreneurs the propensity of identifying shadow options increases.
- P_3 : With growing creativity of the entrepreneurs the propensity of creating new real options increases.
- P_4 : With growing ability to economize the propensity of recognizing the 'real' value of real options increases.

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Enhancing real option values

Real options parameters	Value	Value enhancement of real options
Expected present value of cash flows from the resource	+	Increase future cash flows by: <ul style="list-style-type: none"> • Increasing prices • Increasing quantities • Reducing costs
Investment costs to acquire the resource	-	Reduce investment costs by: <ul style="list-style-type: none"> • Scale down investment • Searching for bargains • Negotiating on price • Share with partner
Volatility of the future cash flows and the net present value	+	Increase volatility by: <ul style="list-style-type: none"> • Increasing / decreasing future cash flows • Choosing more volatile projects
Time that is left to exercise the option and to learn more about the environment	+	Increase time to maturity by: <ul style="list-style-type: none"> • Deferring investment projects while keeping dividends low

Propositions – Value creation

- P_5 : With growing alertness the propensity of modifying the parameters that constitute value increases.
- P_{6a} : Entrepreneurial behavior is positively related to the search activities in order to identify new shadow options.
- P_{6b} : Entrepreneurial behavior is positively related to the proactive consolidation from shadow to real option.
- P_7 : Capabilities of exercising real options are positively related to the probability of striking the options.

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Different kinds of options

	Real Options	Strategic Options	Entrepreneurial Options
Symmetry	Symmetric: Investment / Divestiture	Asymmetric: Focus on Investment	Asymmetric: Investment preferred over divestiture
Formalization	Mathematical models	Mathematical models	Heuristics
Discovery / Creation of Options	Exogenously given	Exogenously given	Endogenous to entrepreneurial process
More Uncertainty ...	Raises value of option and likelihood of investment or deferral	Raises value of option and likelihood of investment or deferral	Decreases the value of option and the likelihood of investment / increases the likelihood of deferral

Entrepreneurial opportunity vs. option

	Entrepreneurial opportunity	Entrepreneurial option
Core	Both are defined as chances / ideas, beliefs and actions/ situations.	
Input / Output	Both relate to new inputs, outputs or their combinations, such as new products, services, new raw materials, new production processes, new markets and / or business models to create superior value in future.	
Demand	Both are affected by demand-side uncertainty.	
Specification	Blurred, less specific.	More specific, including alternative ways of action (e.g., deferral, entry)
Evaluation	None.	Heuristics.
Vision an action?	Undefined.	Yes.

Entrepreneurial opportunity vs. entrepreneurial option – Similarities

- Both include (a set of) ideas / chances,
- both relate to new inputs, outputs or their combinations, such as new products, services, new raw materials, new production processes, new markets and / or business models to create superior value in future and
- both are affected by demand-side uncertainty.

Entrepreneurial opportunity vs. entrepreneurial option – Differences

- Entrepreneurial options are more formal and more specific than entrepreneurial opportunities including alternative ways of action (e.g., deferral, entry, exit, although there is some asymmetry regarding the preference of the different alternative actions),
- entrepreneurial options include some kind of evaluation, not necessarily mathematical evaluation, of the different actions and
- entrepreneurial options entail a selection of a specific action.

Future research

- Develop a typology of entrepreneurial options to be identified.
- Identify different forms of opportunity recognition within different classes of entrepreneurial options (e.g., growth options, etc.).
- Integrate the topic of “resilience” into the options chain – relates to boldness – other factors?
- Empirical investigation into the competencies (or a selection) involved in the options chain.

Thank you!

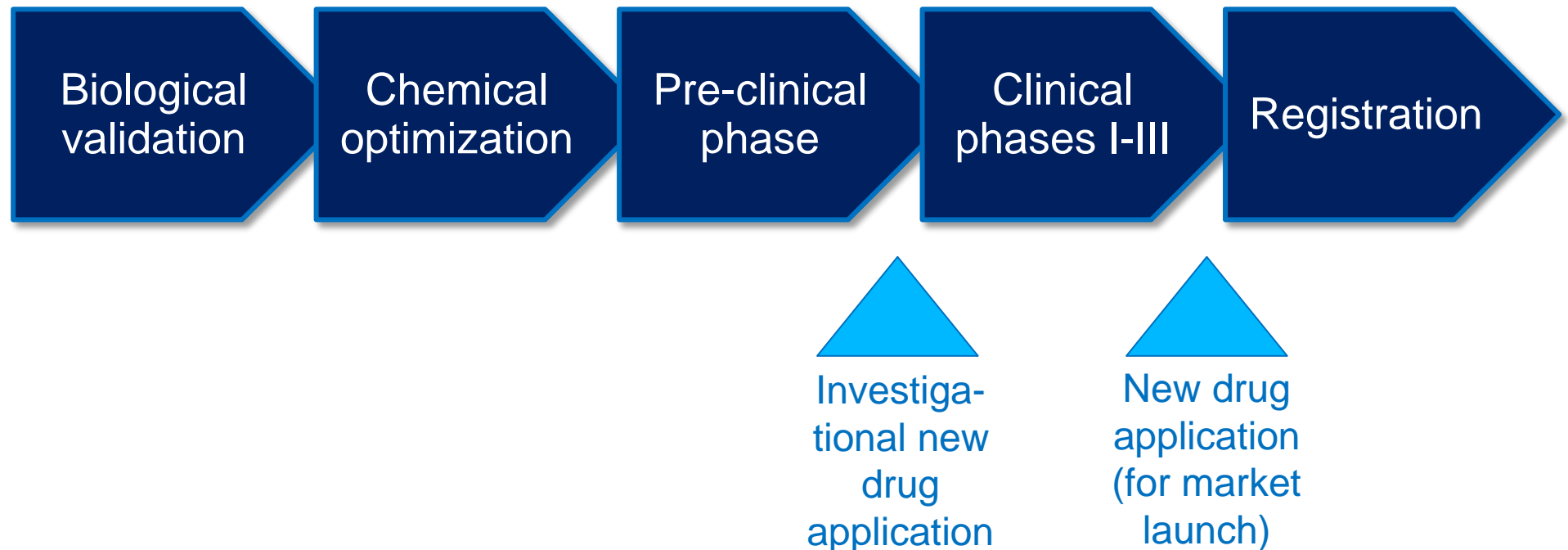
Markets are more dynamic than ever ...

... due to:

- radical technological changes (e.g., iPod, iPhone, iPad),
- increasing number and dimensions of natural catastrophes (e.g., earthquake and tsunami in Japan),
- political changes in the Arab world,
- global financial crisis,
- debt crisis in the European Union and
- economic crisis in several industrialized countries.

 **increasingly volatile business environments**

An example in the pharmaceutical industry



Source: Hartmann and Hassan (2006)

Types of real options

- Option to defer a project (call)
- Option to expand a project (call)
- Option to contract the scale of a project (put)
- Option to abandon a project (put)
- Option to switch input/output (put and call)

 **Real options create flexibility.**

 **Flexibility creates value.**

Typology of uncertainty

	Risk	Uncertainty	Radical uncertainty
Is a complete set of futures states given?	Yes	Yes	No
Can probabilities be assigned to future states?	No	No	No