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On Uncertainties, Strategic (Real) Options and Capabilities

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REAL OPTIONS APPROACH

- **Real or strategic options theory**: background in the **financial options theory** (Black & Scholes model) where the markets of underlying assets are well-behaved, at least weakly efficient, and ruled by parametric uncertainty (where the probability function of outcomes is known and stable) .
- Definition of **an option** (the derivative in finance): *The holder of an option has the right, but not the obligation to take an action in the future => flexibility*

Real Options Approach – definitions:

Amram & Kulatilaka (1999):

“A real option is the right, but not the obligation, to take an action in the future. Options are valuable when there is uncertainty. Many strategic investments create subsequent opportunities that may be taken, and so the investment opportunity can be viewed as a stream of cash flow plus a set of options.....The ROA is more a *way of thinking* than value calculation of specific real options.”

We fully agree!

Option value

The key point: **Strategic value of investment (SNPV)** consists two components:

- 1) **the NPV-value** component based on the expected cash flows of initial investments, and
- 2) **the value of different options (O_v)** embedded in such investment decisions.

$$\text{SNPV} = \text{NPV} + O_v$$

The option component is the "*flexibility*" component in decision making: **the greater uncertainty about future states of world, the greater the value of an option.**

The links between the valuation factors of financial options and real options.

Valuation Factor	Stock option	Real option
Underlying Instrument (+)	Stock price	Present value of the real investment project
Uncertainty (+)	Volatility in stock price	Volatility in project present value
Exercise price (-)	The contract price to buy/sell	The costs of real investment
Risk free rate (-)	General risk free rate	General risk free rate
Time period (+)	Time period	Time period

STRATEGIC OPTIONS

Strategic options are unilateral contracts of strategic tangible and intangible assets that give the holder or buyer the right but not the obligation to exercise the strategic opportunity before its expiry

Characteristics:

- Markets often thin or even non-existent (i.e. they have to be created)
- Uncertainty is not parametric in nature
- Path dependencies and organizational rigidities are present

KNIGHT (1921)

CERTAINTY

Pay-offs are certain!

RISK

Probabilities are known!

UNCERTAINTY

Probability distribution is known at the best!

SUBSTANTIVE

-Related to **EXTERNAL** environments and acts

PROCEDURAL

-Relates to decision procedure and bounded rationality (cf. chess)

PARAMETRIC

STRUCTURAL

COMPLEXITY

Optimization

Routine-and capability based backward-looking behavior

Financial options

Real options

Strategic options

What are the differences?

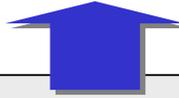
	Financial options	Real options	Strategic options
Asset	Financial assets	Real assets	Strategic assets, tangible or intangibles
Markets for underlying assets	Thick and well-defined, clear property rights	Thin and often more or less ill-defined	Thin or non-existent (unique), ill-defined
Nature of uncertainty	Parametric	Parametric or structural	Structural or procedural (sometimes even radical)
Valuation	Options pricing methods	Options pricing methods sometimes usable	No traditional options pricing methods available
Time to execution	Well-defined	Definable	Unknown

Edelmann, J. 2011, academic dissertation, LUT, p. 48

MAIN STRATEGIC OPTIONS:

- The ability to modify and reconfigure existing resources and capabilities ("**learning, expansion, contraction (scaling) and switching options**")
- The ability to generate Schumpeterian new combinations by using internal and/or external resources and capabilities ("**growth options**")
- The ability to defer ("**deferral or waiting option**")
- The ability to abandon ("**abandonment option**")

LUCK → **GOAL: Sustainable competitive advantage in global markets**



Technological artifacts

- performance characteristics of services/products

LEARNING

PARTIAL REPLICATION

Core capabilities

REPLICATION PARTIAL

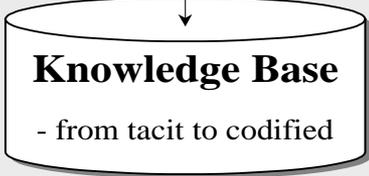
SEARCH PROCESSES

Capabilities

- path-dependent & - idiosyncratic

Routines

CREATION OF NEW KNOWLEDGE



Habits, skills, assets

Resources

- financial, physical, human, technological, organizational, cultural

Firm Boundary

SELECTION ENVIRONMENTS (Markets/non-markets)

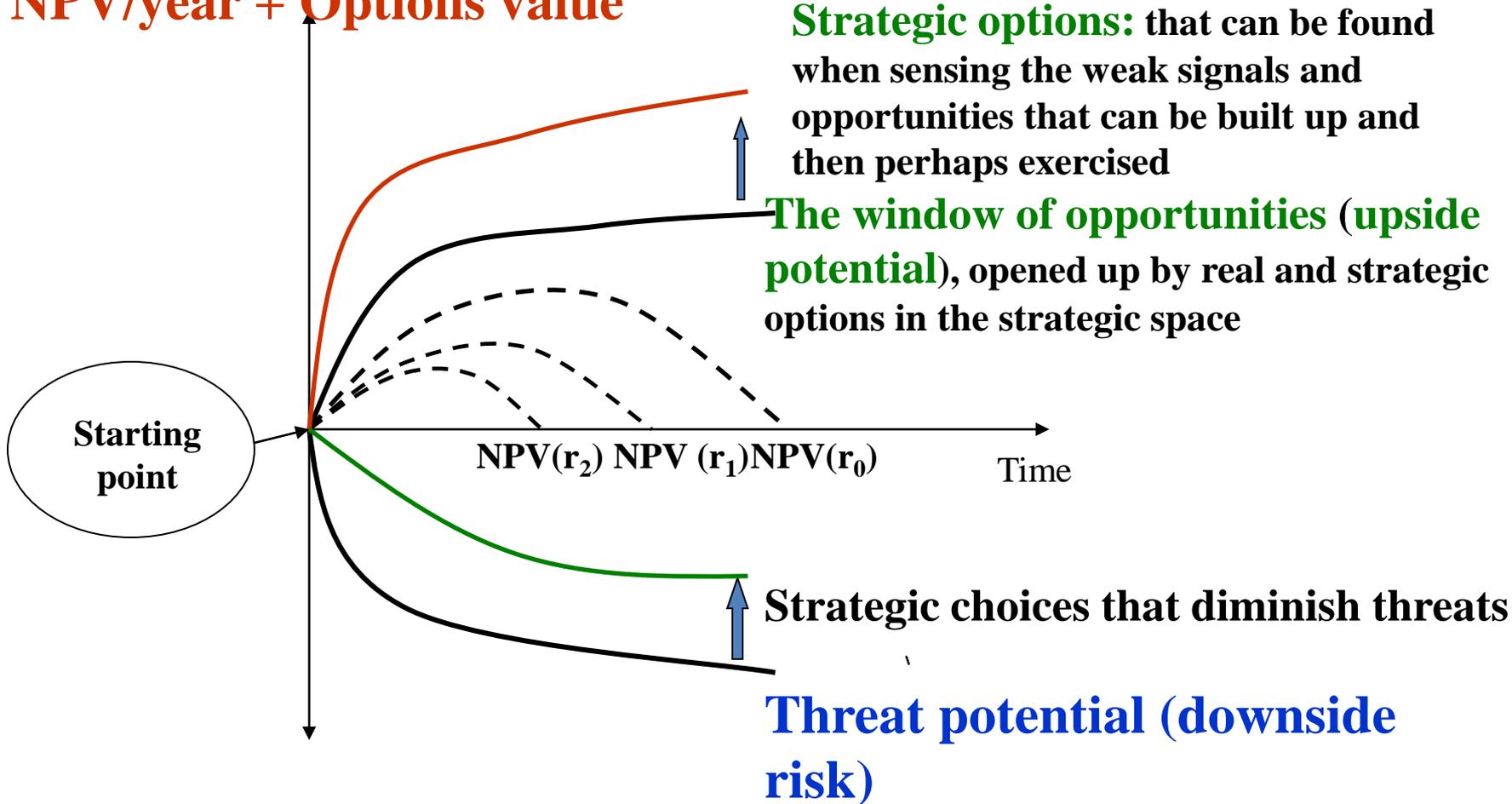
INTEGRATION of different knowledge bases

TRANSFER of different knowledge bases

EXTERNAL CAPABILITIES AND RESOURCES

STRATEGIC OPTIONS LOGIC

The value of the resource acquiring project ,
NPV/year + Options value



MAIN LESSONS:

- The **upside opportunity frontier** crucially depends on the strategic moves taken by the firms, institutional actors, and customers.
- Strategic management is partly about **shifting** upside opportunity frontier upwards, thus improving the competitive advantage of the firm over rivals.
- The **exploitation** of firm-specific, tacit, and cumulative capabilities through continuous **learning** always shifts the curve upwards, thus demonstrating the strength of **growth and learning options**
- All the new incremental capability-enhancing **incremental innovations** shift the opportunity frontier upwards (**scaling options**).
- All the new capability-enhancing **partnerships** that extend the knowledge pool shift the frontier upwards.
- The partnerships also **reduce** the sunk fixed costs => reduce downside risks (**deferral and time-to-build options**)

MAIN LESSONS CONTINUED:

- ***Explorative innovative acts*** that generate new capabilities or result in radical innovations shift the frontier upwards (**growth and learning options**).
- Since these innovations are often **capability-destroying** in nature they can also create organizational rigidities. If the explorative acts fail, the curve can shift drastically downwards. Hence, the strategic options that are related to capability-destroying innovations have to be started incrementally => **deferral & learning options**.
- **Strategic maneuvers of rivals** shift the opportunity frontier either downwards (if the moves are profitable for rivals) or upwards

MAIN LESSONS CONTINUED

- Since initially radically uncertain new technologies become less uncertain over time it is often advisable to take time to learn more. The **downside risk curve** shifts upwards when a firm takes the **option to wait**.
- If there are strong **first movers' advantages** because of the network externalities and economies of scale and scope, it is most advisable to exercise the strategic option as soon as possible in order to be able to set standards for further competition.

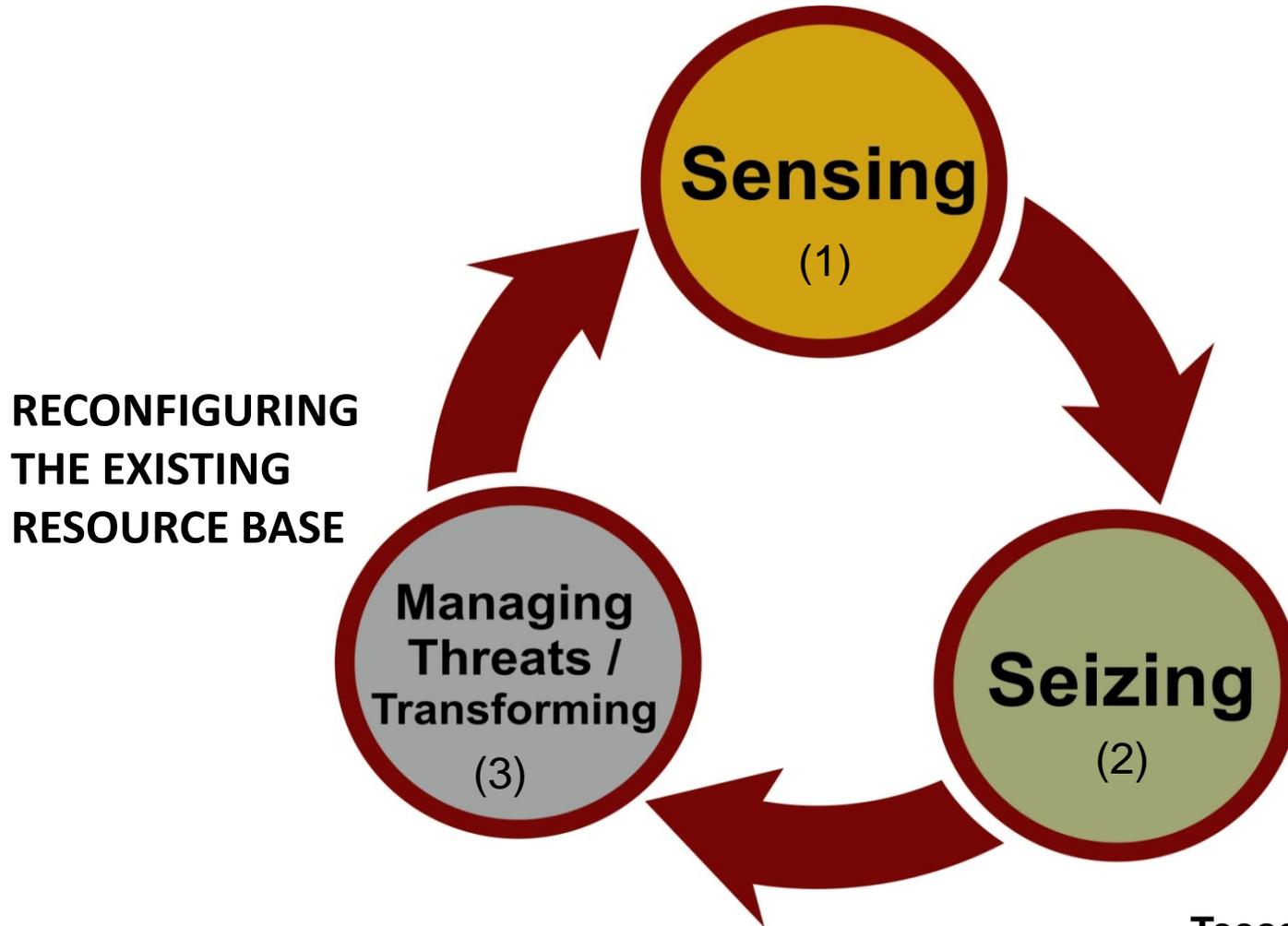
To conclude the main lessons in terms of strategic options

- A firm can generate new capabilities either incrementally in terms of *exploitation* of existing capabilities (**learning and scaling options**) or in terms of *exploration* of radically new capabilities (often **switching options**). **ENTREPRENEURSHIP!**
- It is always necessary to keep the portfolio of ***growth options*** in tact.
- A firm can often avoid the downside risks **simply by waiting**. One can also reduce the risks **by staging the investments** or by paying the license fee for the project and waiting and seeing until radical uncertainty decreases. These actions reduce the risk of fixed sunk costs as well.

Dynamic capabilities: a newer view

- Teece : Explicating Dynamic Capabilities: (SMJ, 2007) based on the Viipuri lecture given at LUT 2006
- Dynamic capabilities have *“the ability to develop, deploy, and orchestrate value creation and capture it through sensing, seizing, and transformative skills”*.
- Preconditions:
 - thin (or non-existent) markets for many intangible assets
 - If capabilities cannot be bought, you have to build them alone or together with the partners
 - entrepreneurship within organization (“intrapreneurship”)

CLASSES OF DYNAMIC CAPABILITIES



Teece, *SMJ*, 2007

Dynamic capability view: micro foundations

- **Sensing:**

- recognizing changes and identifying opportunities
- interpreting weak signals
- monitoring technological development and changes in markets

- **Seizing :**

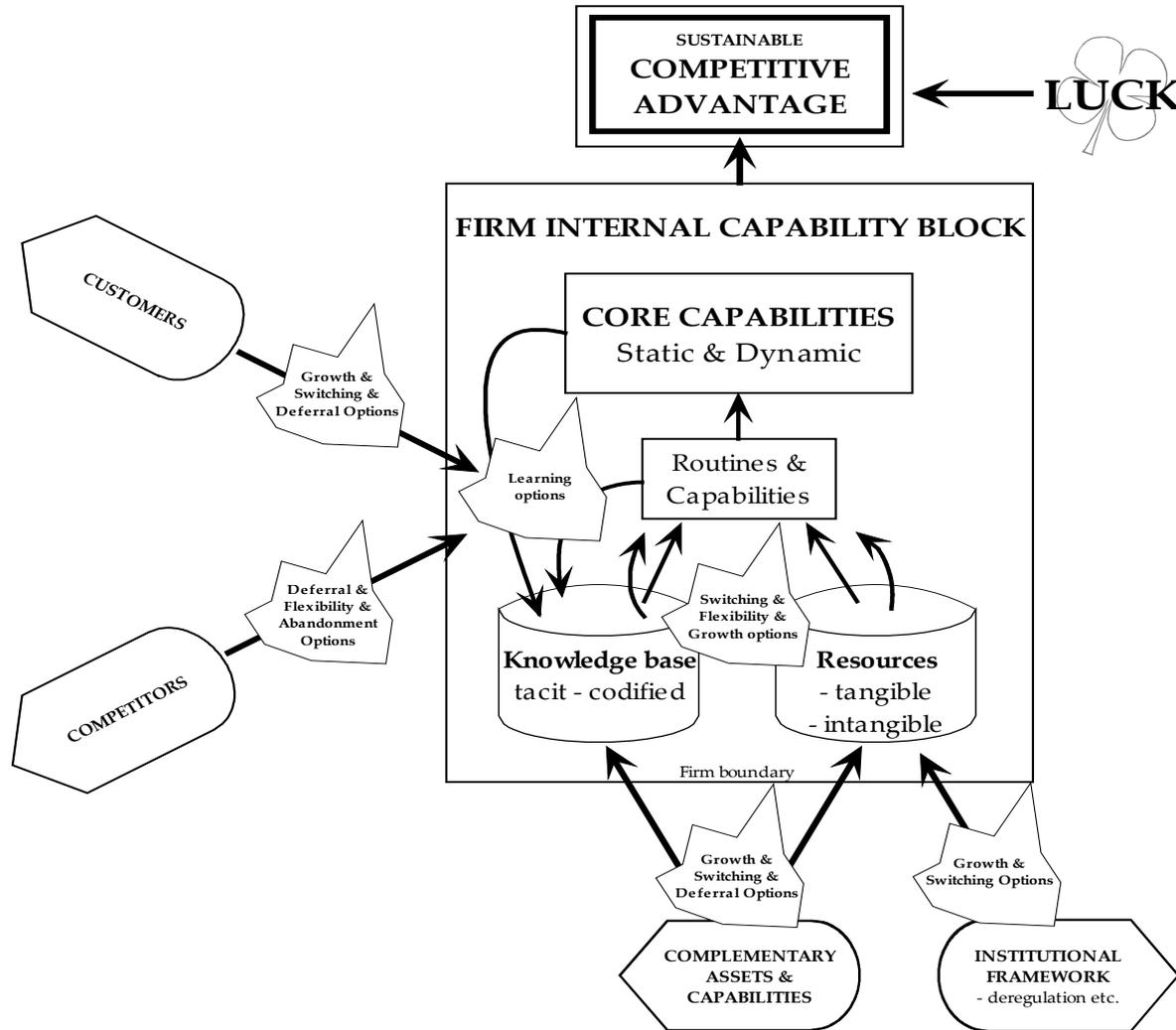
- utilizing opportunities, investments in
 - business models
 - Strategic R&D

Dynamic capability view

- **Reconfiguration:**

- re-allocation and combination of assets
- “asset orchestration”
- decay of not any more value creating assets

Dynamic capabilities as strategy options



TOWARD THE SYNTHESIS: A STRATEGIC OPTIONS APPROACH

- The main problem of TCE and RBV is their **static** nature => they have to get dynamized to tackle the real world problems
- Real options theory or, as we shall call it, **strategic options theory**, is **forward-looking** and copes with **uncertainty**.
- Background: Sanchez (1993), Foss (1998), Kyläheiko et al. (2002, 2006, 2007), and **Foss &Roemer (2010)**.
- **RBV**: the idea of heterogeneous firm-specific VRIN resources
- **DCV**: core capabilities related to the use of VRIN resources, dynamic capabilities: **sensing new signals** (= finding new strategic options), **seizing the opportunities** (exercising them = investing in them), and **reconfiguring the resource base** (exploiting learning and growth options by means of flexibility)
- **TCE**: where are the dynamic boundaries of the firm, which options can be exercised within the firm and which options through partnerships and/or through open markets

RBV + DCV + SOA + Dynamic TCE

SENSING NEW OPPORTUNITIES

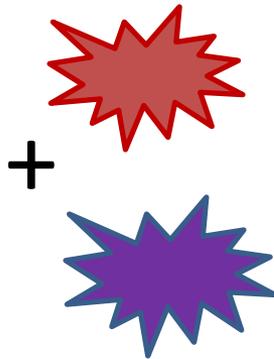
SEIZING THE OPPORTUNITY

RECON-FIGURING

DYNAMIC TRANSACTION COSTS

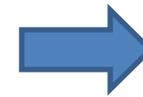
STRATEGIC CALL OPTIONS

DYNAMIC TRANSACTION COSTS



Flexibility:
Deferral and learning options

Exercise of the resource options



If and when the VRIN resource & capability markets are **not efficient** all this results in high search & information & learning costs relating to new opportunities and potential partners and high identification, monitoring and exercising cost when seizing the opportunity => they are called **dynamic transaction cost** by Langlois! The higher they are, the larger share of new strategic options will be realized within the firm and vice versa!

Dynamic TCE +RBV +DCV from the options perspective

- Foss & Roemer (2010): higher uncertainty results in **hybrid partnerships** that help share the risks and fixed sunk costs .
- **Hybrid networks can be seen as a tool to exploit deferral and learning options.**
- The smaller the uncertainty, the clearer becomes the “real” value of the strategic option and the more advisable it is to exercise or not to exercise the call option i.e. to acquire the venture thus taking the step towards vertical integration or to abandon it.
- From the **dynamic** perspective, the conclusions are almost **opposite** when compared to the static Williamsonian lesson: the higher the uncertainty, the higher TC’s and the more integrated structure .
- **The reason is that we are living in the structurally uncertain world with thin markets of capabilities!**