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Business Valuation
The Valuation of Small and New Businesses

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"It is not the strongest or the most intelligent who will survive but those who can best manage change.”

(Charles Darwin)

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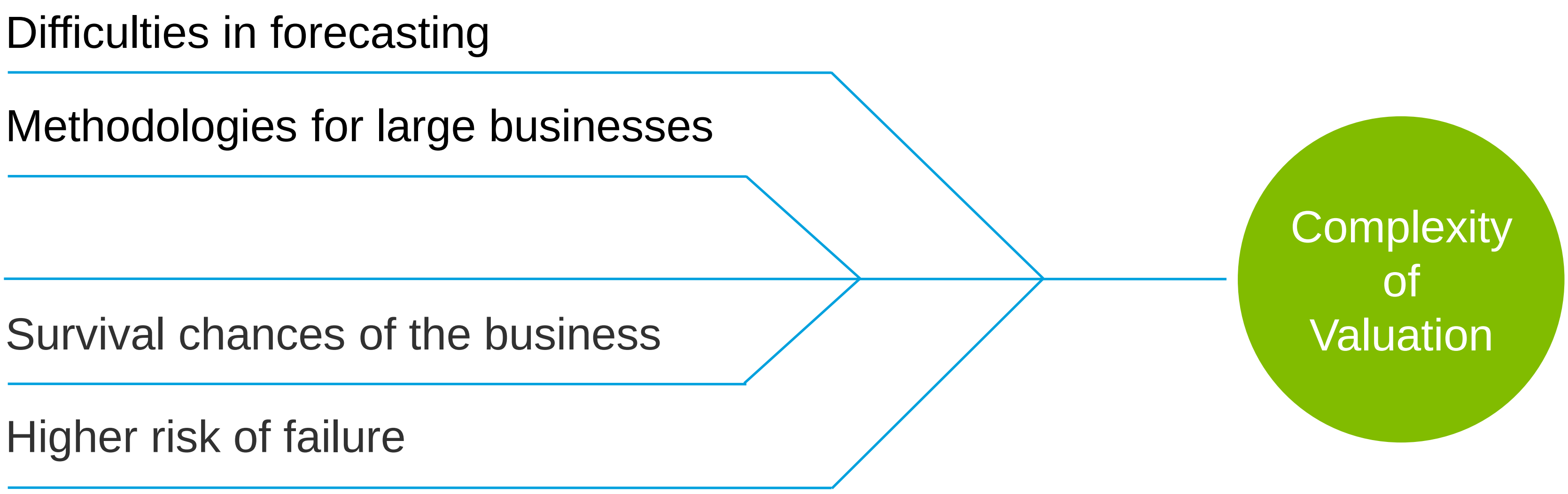
The Valuation of Small and New Businesses

Introduction

- The valuation of new and small businesses features specific complexities for several reasons:



The Valuation of Small and New Businesses
Introduction

Maybe the internet bubble was caused mainly by groundless valuations of internet start–ups (i.e. companies with no history and unforecastable future growth) on the basis of methodologies and assumptions developed for large businesses.

- Empirical research on privately held SMEs (Small and Medium Enterprises) and new firms (Start-ups) is very poor and the vast majority of empirical research on the different approaches to firm valuation has been almost exclusively focused on large firms.

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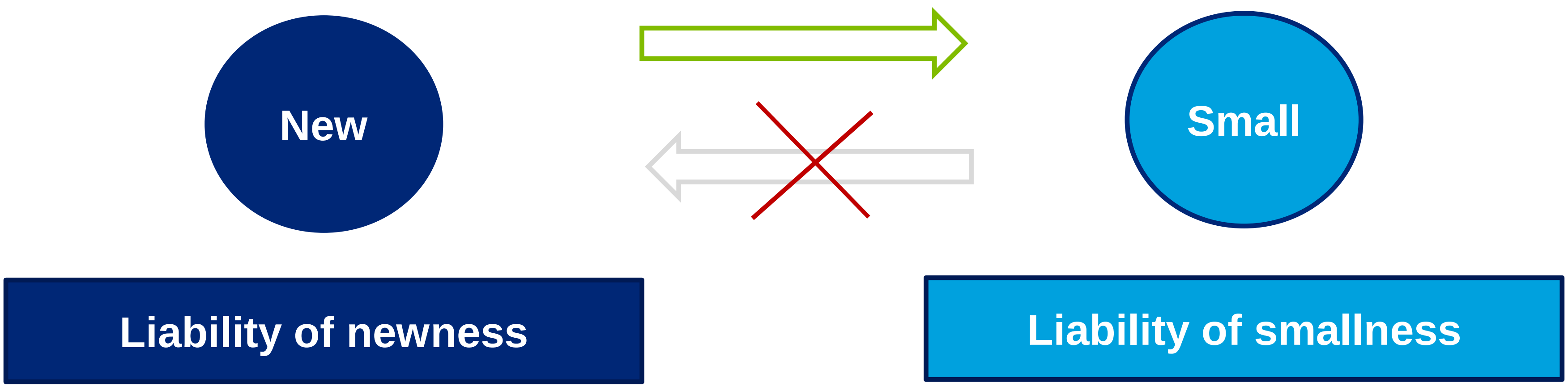
Why Small and New Businesses are Riskier

- Several studies on enterprise evolution are quite convergent in concluding that being small or new implies for a business a higher risk of mortality.



- New companies are generally Small, by definition, but the opposite is **not always** true.
- According to some scholars (Wholey D.R. and Brittain J.W., 1986; Cafferata R. et al, 2009), the “liability of newness” can be directly related to the “liability of smallness”, hence the two phenomena can be analyzed jointly sometimes.
- Moreover measuring the effects of age and size on initial mortality rates separately presents some difficulties.

The Valuation of Small and New Businesses

Why Small and New Businesses are Riskier

When can a business be considered "new"?

It depends on several factors, such as the kind of product offered /industry: if the company sells an innovative product/service, it may be considered “new” even after a long time in business.

Example

A new project in the aerospace business takes about twenty years from kick-off to the operating launch.

The Valuation of Small and New Businesses

Why Small and New Businesses are Riskier

Why should a new business be riskier?

"…transient social conditions encourage entrepreneurs to found organizations destined to fail when the conditions change…"

[Stinchcombe, 1965; Kimberly, 1975; Meyer and Brown, 1977]

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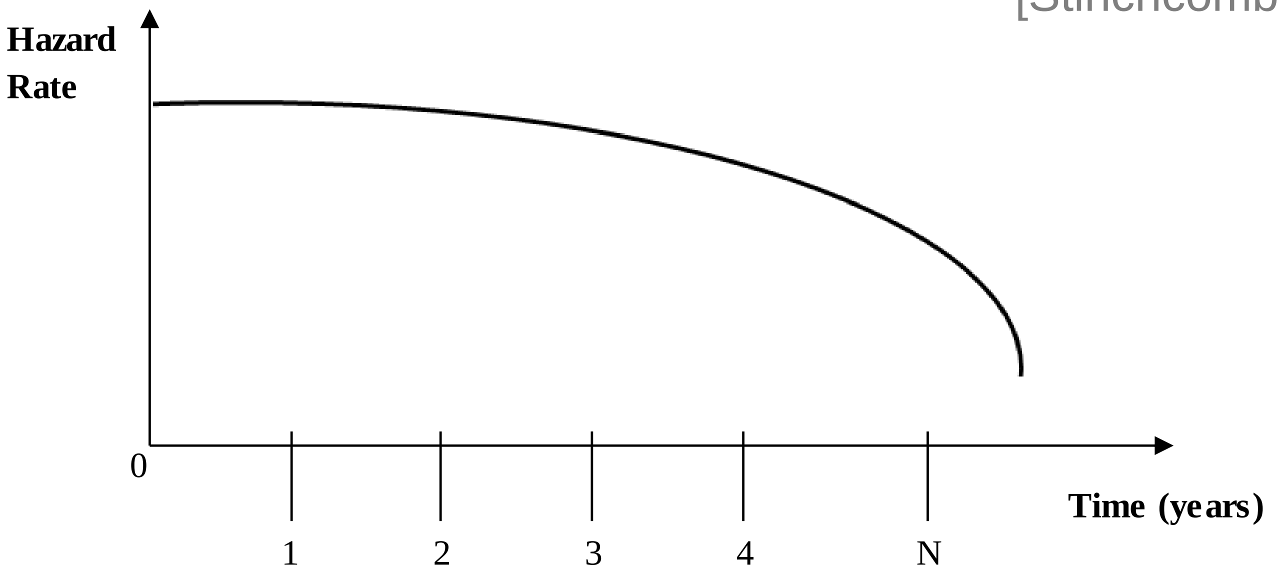
Why Small and New Businesses are Riskier

> *"…the process of inventing new roles… have high costs …" "…new organizations must rely heavily on social relations among strangers…"*

[Stinchcombe, 1965]



- According to Stinchcombe mortality rate tends to decline with time.

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Why Small and New Businesses are Riskier

Why should a small business be riskier?

"(i)…the lack of financial resources…; (ii) the impossibility to attract the same skilled work force..; (iii) the difficulty to meet high interest rate payments and to handle the administrative costs "

[Abatecola G., et al, 2012]

- There is evidence that failure rates decline with increased size.
- Nonetheless, newness and smallness are generally found to be existing simultaneously, though the effect of newness on mortality rates is often stronger [Halliday T. C. et al, 1987].

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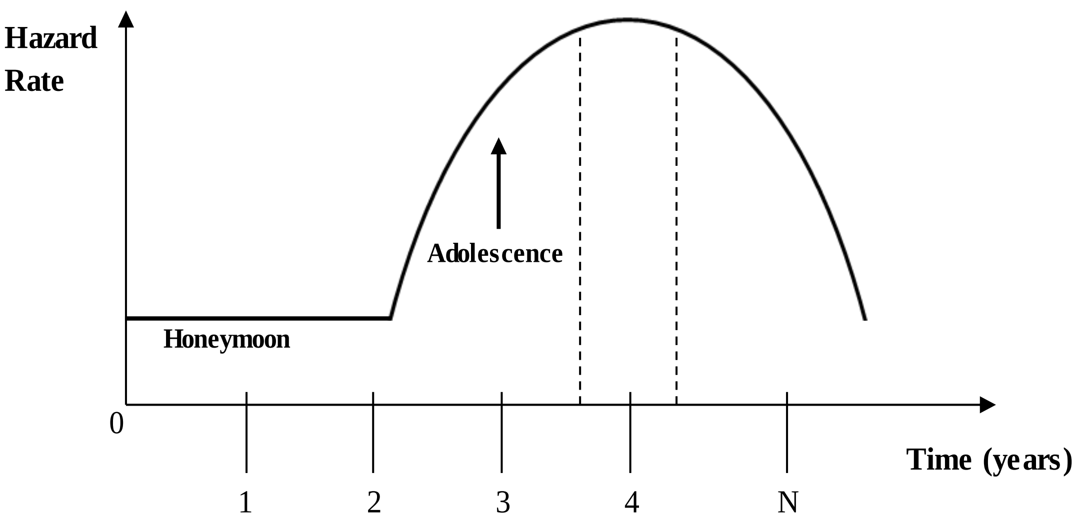
Why Small and New Businesses are Riskier

Liability of Adolescence



"…newly established firms may have an initial stock of assets…", "…the greater the initial assets, the greater will be the buffering from early selection pressures…".

[Levinthal D. A. & Fichman M., 1988]

- This situation is frequently met in companies which are **part of groups** that can strongly support their start-up phase.

- Stinchcombe model seems to be consistent with the less frequent case of a company set up without initial capital.

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Why Small and New Businesses are Riskier

In summary: new businesses, in most cases, show high mortality rates in their early years in operation.

↓

Most of the difficulties met by companies are related to the early years of activity, when they face the highest mortality rates(*).

↓

This is referred to as "natural selection" phase of the Darwinian model

(*) Gray C. and Stanworth J., 1986; Bannock G. and Stanworth J., 1990; Gray C. & Stanworth J., 1991; Baldwin J. R. & Rafiquzzaman M., 1995

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Why Small and New Businesses are Riskier

Still, there are some small businesses which are not "new" anymore.

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Some businesses could be unable to increase revenues above certain levels (e.g. for limited credit capacity).

↓

Smallness is a risk to be considered **in addition to** that of newness.

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The Valuation of Small and New Businesses

The Applicability of Possible Methods

Methods	New Businesses	Small Businesses
Asset-based Methods	✗ / ✓	✗ / ✓
Relative Methods	✗	✗
Income Methods	✓	✓

The Valuation of Small and New Businesses

The Applicability of Possible Methods

Asset-based methods

- Asset-based methods are **generally not appropriate**, in a new business, the company's initial assets are but a small fraction of the potential value of the business
- This approach could be used just in some specific case (e.g. a start-up founded by a large group to build a plant dedicated to the production of a new product).

Relative methods

- Any application of available multiples derived from larger, mature companies **is a serious mistake**, because of clear inconsistency (large vs small), and, in particular, the failure to give due consideration to the proven higher risk of small and new businesses.

Income methods

- Income Methods, and in particular the Discount Cash Flow Method (DCF), **are considered the most suitable** for the valuation of SME and new businesses, thanks to their flexibility in reflecting the specificity of the company under valuation.

The Valuation of Small and New Businesses
The Applicability of Possible Methods

- In particular, Discounted Cash Flow, unlike other methods based on income, takes into due consideration the **level of investments** needed to finance the start-up and development phase of the business.

↓

- The critical issue in the application of Discounted Cash Flow consists in how to better embody the higher risk of mortality of new and small businesses in the valuation process.

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Small Businesses: a Possible Approach

A possible approach in the valuation of Small Businesses consists in reflect the higher risk in the cost of capital.

+ Smoothed Risk Premium Over CAPM ("Size Premium"), RP_s

+ Beta * ERP

Risk-Free Rate, RP_s

Basic CAPM

Expanded CAPM

The Valuation of Small and New Businesses

Small Businesses: a Possible Approach

- The approach is based on empirical evidences that small company equities have been shown to **yield higher returns than larger companies**' ("size effect").

$$K_e = R_f + \beta(RP_m) + RP_s + RP_u$$

K_e = cost of equity capital

R_f = risk free rate

β = beta

RP_m = general equity risk premium for the market

RP_s = risk premium for small size

RP_u = risk premium attributable to the specific company or to the industry (u stands for unique or unsystematic risk).

The addition of a size premium over CAPM is one way to quantify the risk associated with smaller companies

The Valuation of Small and New Businesses
Small Businesses: a Possible Approach

Duff & Phelps approach

- In the Duff and Phelps Risk Premium Report (Duff & Phelps, 2013), the relationship between equity returns and size of the companies is analyzed.

- The analysis highlights that the "size effect" affects also large companies and groups:

> *"…To perform the analysis required for their Size Study, 25 portfolios have been created from companies that are similarly-sized, with Portfolio 1 made up of the largest companies and Portfolio 25 made up of the smallest companies. …".*
> *"…The equity returns for each of the 25 portfolios returns are calculated using an equal-weighted average of the companies in the portfolio…"*

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Small Businesses: a Possible Approach

Duff & Phelps approach

- In the Duff and Phelps Risk Premium Report (Duff & Phelps, 2013), the relationship between equity returns and size of the companies is analyzed.

"Size" is defined by eight size measures

1. Market value of common equity
2. Book value of common equity
3. 5-year average net income
4. Market value of invested capital (MVIC)
5. Total assets
6. 5-year average EBITDA
7. Sales
8. Number of employees

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Small Businesses: a Possible Approach

Duff & Phelps approach

- They determined **portfolio breakpoints** for the 25 portfolios ("*the upper and lower "boundaries" of each portfolio")*.

- *"…Once portfolio breakpoints are determined, companies from the NYSE MKT universe and the NASDAQ universe are added to the appropriate portfolio…"*

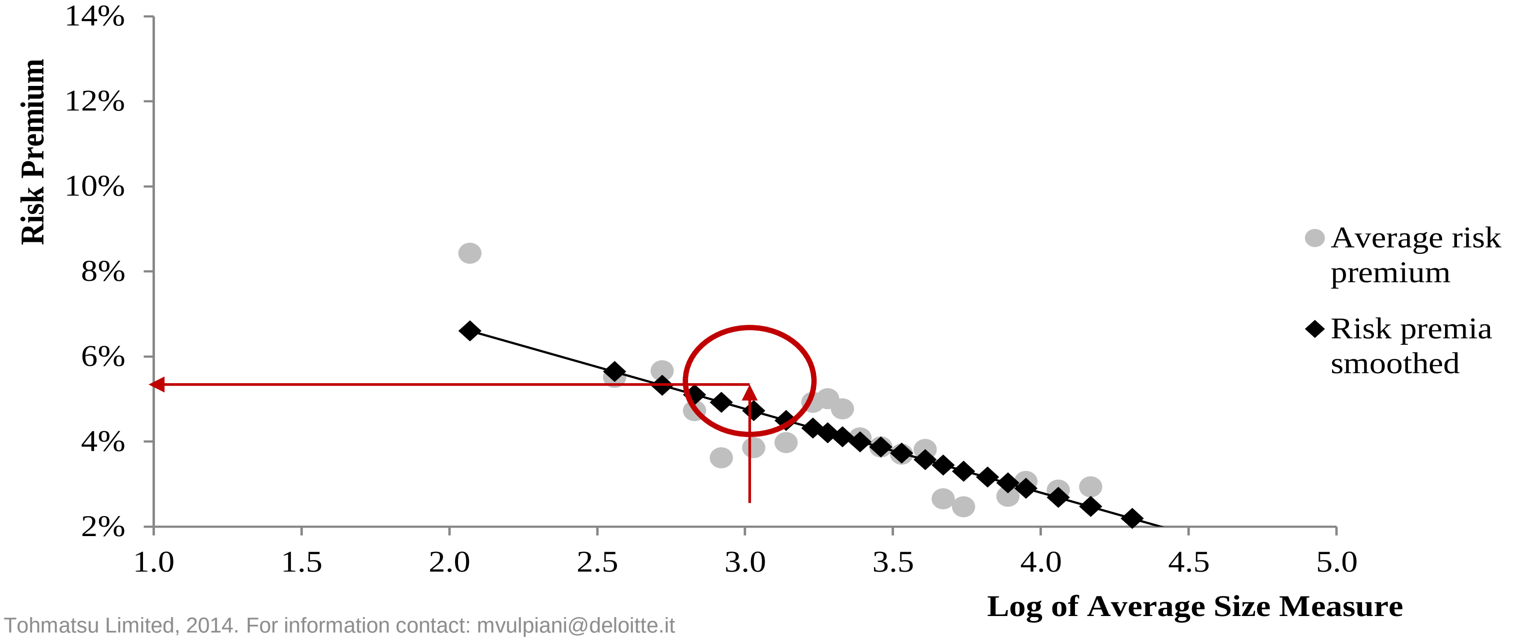
The study highlights a negative correlation between size and rates of return

Source: ***Duff & Phelps Risk Premium Report 2013*** *- Business Valuation Resources (BVR)*

The Valuation of Small and New Businesses
Small Businesses: a Possible Approach

Duff & Phelps approach

- On the basis of the differences between **market** and **risk-free returns**, the size premium is determined for each percentile ("**Average risk premium**").
- In the graph the points represent a scatter plot of size (on the horizontal "x" axis – independent variable) and the average risk premium (on the vertical "y" axis – dependent variable).



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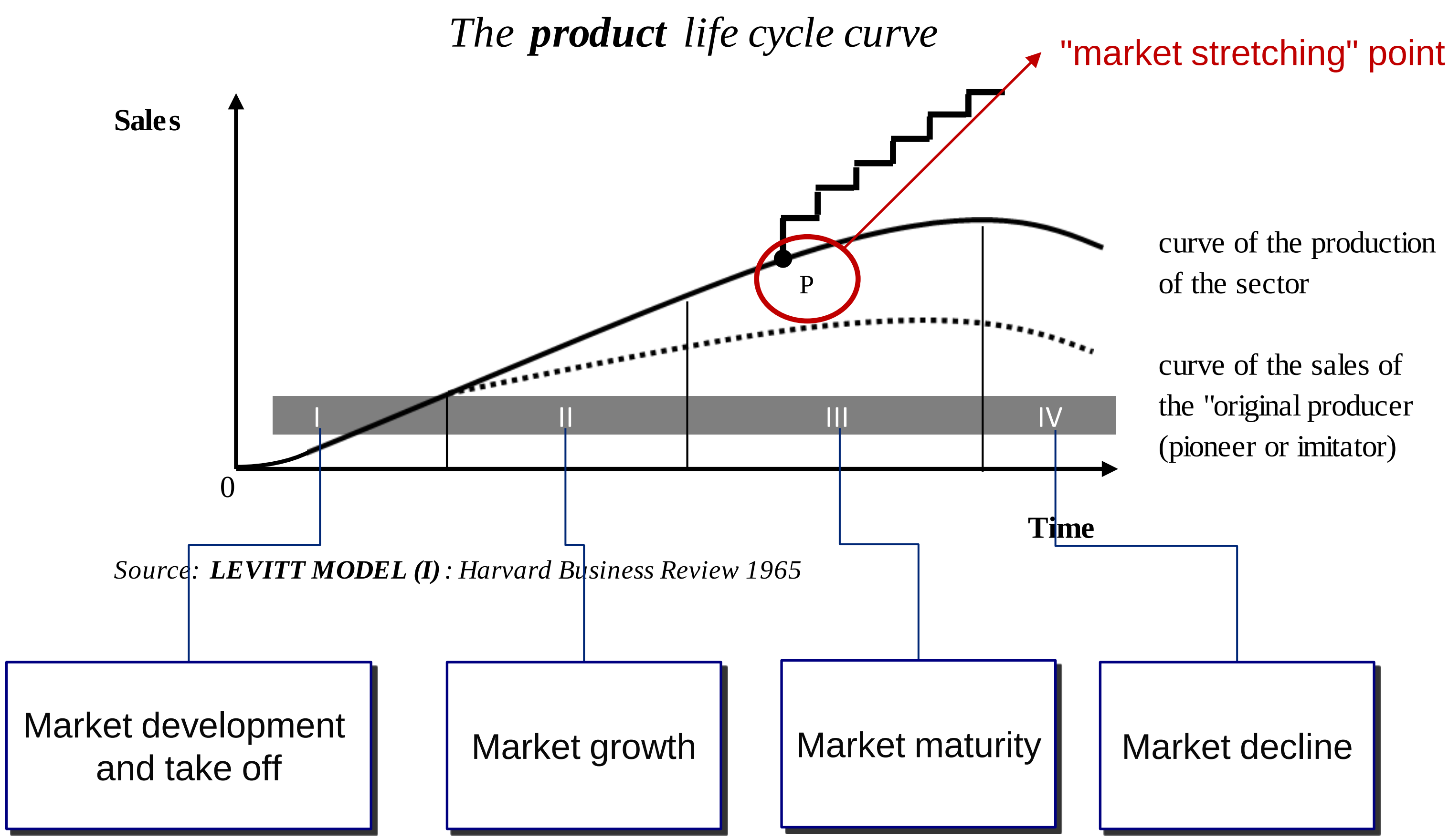
New Businesses: a Possible Approach

According to Levitt, the typical business cycle is represented by the following phases:



*Source: **LEVITT MODEL (I)** : Harvard Business Review 1965*

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New Businesses: a Possible Approach

Variable Cost of Capital Approach	Valuation of the company with different, specific assumptions for each stage.
Total Beta Approach	It suggests reference to total beta to include the specific risk associated to newness in beta.
Expected Value Approach	It takes into consideration the risk of survival for new businesses in terms of likely scenarios and the relevant expected value.

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New Businesses: a Possible Approach

According to some authors(*), the Company should be valued with different assumptions about its cost of capital in each phase, with **higher cost of capital in the start-up phase**.

BUT

Critical Issue 1

Usually companies have negative Cash Flows, hence the setting of a higher discount rate at the early stage entails a possible underestimation of the negative value inherent in the start-up phase.

Critical Issue 2

Lack of reference to estimate the specific risk premium.

(*) Damodaran A.,2009

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New Businesses: a Possible Approach

Variable Cost of Capital Approach

Total Beta Approach

Expected Value Approach

Some authors(*) suggest reference to **total beta** to include the specific risk associated to newness in beta, based on the consideration that, generally, in a new business the owner invests all his available capital and the assumption of a **well-diversified** investor underlying the CAPM is definitely **not** met.

"**Total Beta** *will be much higher than the market beta and the resulting cost of equity will reflect the cost of equity to an investor who is completely invested only in this business.”*

Critical Issue

According to some scholars(**) the approach of Total Beta lacks of theoretical grounds.

(*) Damodaran A.,2009
(**) Von Helfenstein S., 2009

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New Businesses: a Possible Approach

Variable Cost of Capital Approach

Total Beta Approach

Expected Value Approach

$$\textit{Total Beta} = \frac{\textit{Market Beta}\ \text{Publicly traded firms in business}}{\textit{Correlation with Market}\ \text{Publicly traded firms in business}}$$

Captures all of the risk of being in a specific business

"the resulting cost of equity will reflect the cost of equity to an investor who is completely invested only in this business."

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New Businesses: a Possible Approach

The value of the new business can be estimated as the expected value of the two possible scenarios.

$$\mathbf{NBEqV} = \overbrace{\text{EqVbest}}^{\text{Success scenario}} * (1 - \text{Pw}) + \underbrace{\text{EqVw}}_{\text{Worst scenario}} * \text{Pw}$$

NBEqV = New Business Equity Value

EqVbest = Equity Value in case of success (survival)

Pw = Probability of failure

EqVw = Equity Value in case of failure or distress

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New Businesses: a Possible Approach

Variable Cost of Capital Approach

Total Beta Approach

Expected Value Approach

EqVbest

The company can be valued as a going concern on the basis of the valuation approach for **Small Businesses**.

EqVw

The firm's residual value is referred to as **liquidation** or **distress** value (if any).

Pw

Reference to the empirical research that shows the percentage of start-up failures in different industries:

- Sector averages (*Knaup and Piazza, 2007*)
- Probits
- Simulations.

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Thank you for Your Attention