

**UNIVERSIDADE DE SÃO PAULO**  
**FACULDADE DE ECONOMIA, ADMINISTRAÇÃO E CONTABILIDADE**  
**PROGRAMA DE PÓS-GRADUAÇÃO EM ADMINISTRAÇÃO**

Jose Roberto Securato Junior

**CLASSIFICATION, INVESTMENT SELECTION, AND VALUATION**  
**OF NEW VENTURE AND STARTUP COMPANIES**

**CLASSIFICAÇÃO, SELEÇÃO DE INVESTIMENTOS, E VALUATION**  
**DE NEW VENTURES E STARTUPS**

Versão Corrigida

(versão original disponível na Biblioteca da Faculdade de Economia, Administração e Contabilidade)

São Paulo

2020

---

Prof. Dr. Vahan Agopyan  
Reitor da Universidade de São Paulo

Prof. Dr. Fabio Frezatti  
Diretor da Faculdade de Economia, Administração e Contabilidade

Prof. Dr. Moacir de Miranda Oliveira Junior  
Chefe do Departamento de Administração

Prof. Dr. Eduardo Kazuo Kayo  
Coordenador do Programa de Pós-Graduação em Administração

---

Jose Roberto Securato Junior

**CLASSIFICATION, INVESTMENT SELECTION, AND VALUATION  
OF NEW VENTURE AND STARTUP COMPANIES**

Tese apresentada ao Programa de Pós-Graduação em Administração do Departamento de Administração da Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo, como requisito parcial para obtenção do título de Doutor em Ciências.

**Orientador: Prof. Dr. Jose Roberto Ferreira Savoia**

Versão Corrigida

(versão original disponível na Biblioteca da Faculdade de Economia, Administração e Contabilidade)

São Paulo

2020

---

Catálogo na Publicação (CIP)  
Ficha Catalográfica com dados inseridos pelo autor

Securato Junior, Jose Roberto.  
Classification, Investment Selection, And Valuation Of New Venture And  
Startup Companies / Jose Roberto Securato Junior. - São Paulo, 2020.  
99 p.

Tese (Doutorado) - Universidade de São Paulo, 2021.  
Orientador: Prof. Dr. José Roberto Ferreira Savoia.

1. Classification of Startup. 2. Investment selection. 3. Valuation of  
Startup. 4. New ventures. 5. The Life Cycle Valuation Method. I.  
Universidade de São Paulo. Faculdade de Economia, Administração e  
Contabilidade. II. Título.

---

*Excellence precedes success*

---

## RESUMO

Esta tese examina como a seleção de investimentos e a avaliação econômico-financeira de new ventures e startups variam ao longo do ciclo de vida destas companhias.

A abordagem de pesquisa foi estruturada em 3 fases: i) revisão da literatura em new ventures e startups, ii) um questionário para 105 investidores qualificados e entrevistas públicas sobre perspectivas dos investidores, e iii) modelagem do retorno esperado ao longo do ciclo de vida das new ventures e startups com base em regressões robustas.

Existem fortes evidências de que as expectativas dos investidores variam ao longo do ciclo de vida de uma startup ou new venture. Empreendimentos mais novos estão focados em sobrevivência, enquanto empreendimentos mais maduros buscam se tornar relevantes nos seus mercados. À medida que o novo empreendimento supera obstáculos e alcança certos marcos, a percepção de risco-retorno muda significativamente.

Esta tese de doutorado apresenta o Método de Valuation com base no Ciclo de Vida da empresa, preenchendo uma lacuna em valuation de new ventures e startups.

**PALAVRAS CHAVE:** Avaliação de Startup, Avaliação de New venture, Classificação de Startup, seleção de investimentos, ciclo de vida da empresa, expectativas dos investidores.

---

## **ABSTRACT**

This thesis examines how investment selection and valuation of new ventures and startup companies vary along those companies' life cycle.

A three-phased research approach included i) a literature review on new ventures and startups, ii) a 105-investors survey and public interviews on investors' perspectives, and iii) robust regressions of expected returns along the life cycle of new ventures and startups.

There are vital pieces of evidence that investors' expectations vary along the life cycle of new ventures and startups. Newer ventures are focused on survival, whereas older ventures aim at becoming relevant. The investors' perception of risk and expected return change significantly as the new venture overcomes obstacles and reaches certain milestones.

This thesis presents the Life Cycle Valuation Method, filling a void in the valuation of new ventures and startups.

**KEYWORDS:** Startup valuation, New venture valuation, Startup classification, investment selection, life cycle, investors' expectations.

---

## ACKNOWLEDGEMENTS

I express my deepest gratitude to Prof. Dr. José Roberto Ferreira Savoia. As my supervisor and instructor, Prof. Dr. José Roberto Ferreira Savoia taught me how to navigate the academia, connect to the entrepreneurs' practical problems, and organize our insights in a scientific framework.

Like most things in life, a Ph.D. thesis is a team's work. I thank the support from my professors, colleagues and staff at Universidade de São Paulo – USP, in particular Prof. Dr. Claudio Felisone and Prof. Eduardo Kayo for their invaluable contribution to my academic career. A special thank you to Prof. Dr. Ricardo Humberto Rocha, Prof. Dr. Marcos Bader and Prof. Dr. Daniel Reed Bergmann for their critical insights into this thesis, and Prof. Dr. Willian Toshiro Nakamura and Prof. Dr. Tabajara Pimenta Junior for reviewing this Thesis. I also appreciate the earlier support from Prof. Dr. Rubens Famá.

Many friends have contributed to this thesis, directly and indirectly. Thank you, Steve and Ian (in memoriam) and my other New York friends, my friends at digio, Saint Paul Advisors, Tábula, Deutsche Bank, and finally, the Fraga, Grotti, Miras and Paixão families.

I would never have gone so far without my family support. Their sacrifices made mine much more bearable, and my achievements meaningful. I am delighted to share this moment with my grandfather Roma, who has always invested in my education, while I am sorry that Vô Armando, Dodó and Vó Ionne are not here to enjoy this moment. My parents, Silvia and José Roberto are an example and inspiration. Caco, you are unique and taught me so much! Tuca, thank you for always being by my side. Tate is the caring and supportive big sister I have adopted. Thank you for your unwavering support!

One special thanks to you, dad! No one else has challenged and inspired me as much as you did. "Securato Master," as I like to call him, is the best.

Camila, my loving wife and my life partner. Camila has unconditionally supported me on all my adventures for the past twenty-six years including during this thesis' crafting. Camila makes me a better human being and a happier person – thank you.

I dedicate this thesis to the next generation of Securatos. Isabella, Ana Carolina and Julia, Antônio, Vicente and Helena; and Maria Eduarda, Valentina and Ana Clara, I am very proud of you. Our efforts to make the world better are so worthwhile! I love you.

Dear God, thank you for everything.



---

## TABLE OF CONTENT

<b>List of Tables</b>	<b>12</b>
<b>List of Figures</b>	<b>13</b>
<b>List of Equations</b>	<b>13</b>
<b>1. Introduction</b>	<b>14</b>
<b>1.1 Hypothesis development</b>	<b>14</b>
<b>1.2 Research question</b>	<b>16</b>
<b>1.3 Objective</b>	<b>16</b>
<b>1.4 Methodology</b>	<b>17</b>
1.4.1 Research structure	17
1.4.2 The review of the literature	18
1.4.3 Public interviews	19
1.4.4 The survey	19
1.4.5 The quantitative analysis	20
<b>1.5 Motivation and scope of this thesis</b>	<b>20</b>
<b>1.6 This thesis' contribution</b>	<b>21</b>
<b>1.7 This thesis' limitations</b>	<b>22</b>
<b>1.8 Structure of this thesis</b>	<b>23</b>
<b>2. A review of valuation methods of new ventures and startups</b>	<b>23</b>
<b>2.1 Definitions and considerations</b>	<b>23</b>
2.1.1 Methodology	24
2.1.2 Definition of new venture and startup	26
2.1.3 Valuation considerations	26
<b>2.2 Valuation based on DCF projections</b>	<b>28</b>
2.2.1 Projected cash flows	28
2.2.2 Discount rate	29
<b>2.3 Valuation based on multiples</b>	<b>30</b>
<b>2.4 Valuation based on the Venture Capital Method</b>	<b>31</b>
<b>2.5 Valuation based on real option value</b>	<b>31</b>
<b>2.6 Valuation based on decision trees</b>	<b>32</b>
<b>2.7 New venture and startup value drivers</b>	<b>34</b>
2.7.1 Methodology	34
2.7.2 Descriptive data	35

---

2.7.3	Results and Discussion	36
<b>3.</b>	<b><i>Classification of new ventures and startups</i></b>	<b>37</b>
<b>3.1</b>	<b>Most common classification criteria</b>	<b>38</b>
3.1.1	Business area	38
3.1.1	Technology	38
<b>3.2</b>	<b>Classification based on the return to the investor</b>	<b>39</b>
3.2.1	Yield companies	40
3.2.2	Capital gain companies	40
3.2.3	Potential unicorns	40
<b>3.3</b>	<b>Classification based on the return to the customer</b>	<b>42</b>
3.3.1	Platform Companies	43
3.3.2	Audience Companies	43
3.3.3	Enterprise Software Companies	44
3.3.4	SaaS Companies	44
3.3.5	Device Companies	44
3.3.6	Laboratory Companies	44
3.3.7	Traditional Ventures	44
<b>4.</b>	<b><i>New venture and startup's investment selection criteria</i></b>	<b>45</b>
<b>4.1</b>	<b>Type of investors and the life cycle of the new venture or startup</b>	<b>45</b>
<b>4.2</b>	<b>What are investors looking for?</b>	<b>46</b>
4.2.1	Investors' survey	47
a)	Methodology	47
b)	Descriptive data	49
c)	Results	55
d)	Discussion	61
4.2.2	Investors' interviews	62
a)	Methodology	62
b)	Descriptive data	64
c)	Results and discussion	65
<b>4.3</b>	<b>Criteria for investment selection</b>	<b>65</b>
4.3.1	Founders' characteristics	66
4.3.2	Product/service-market fit and scale	68
4.3.3	Financial profile	69
4.3.4	Survival	70
<b>4.4</b>	<b>The stages of the new venture and startup equity financing</b>	<b>70</b>
4.4.1	The quest for survival versus the quest for relevance	70
4.4.2	The concept of multiple on invested capital	73
4.4.3	Equity financing and survival	74
4.4.4	Gaining scale and turning into a growth capital	76
4.4.5	Pre-IPO companies	77

---

---

4.4.6	Going public	77
<b>5.</b>	<b><i>Investment model considering the new venture's and startup's life cycle</i></b>	<b>78</b>
5.1	Investor's expectations versus historical returns	78
5.2	Investors' expectations along the firm's life cycle	79
5.3	Investment selection and the life cycle valuation method	81
5.4	The Life Cycle Valuation Method	84
5.5	New Venture and Startup life cycle – selected case studies	85
5.5.1	iFood	86
5.5.2	Rappi	87
<b>6.</b>	<b><i>Conclusions</i></b>	<b>89</b>
6.1	Summary of findings and contributions	89
6.2	Paths for future research	90
6.3	Final considerations	91
<b>7.</b>	<b><i>References</i></b>	<b>92</b>
7.1	Main references	92
7.2	References to investors' interviews	97
7.3	Remissive index	99

---

## LIST OF TABLES

TABLE 1. OVERVIEW OF THE STUDIES INCLUDED IN THIS THESIS.....	18
TABLE 2. SELECTED PUBLISHED PAPERS ORDERED BY NUMBER OF CITATIONS .....	24
TABLE 3. VALUE DRIVERS OF NEW VENTURES AND STARTUP COMPANIES .....	35
TABLE 4. UNICORNS AND THEIR DRIVING TECHNOLOGY .....	41
TABLE 5. ISSUES RELATED TO VENTURE CAPITAL INVESTING AND THE NEW VENTURE STAGE .....	46
TABLE 6. SMALLER FUNDS VERSUS LARGER FUNDS IN BRAZIL .....	50
TABLE 7. DISTRIBUTION OF INVESTORS' EXPECTATIONS OF RETURN ON NEW VENTURES AND STARTUPS.....	52
TABLE 8. EXPECTED ANNUALIZED RETURNS PER STAGE IN THE LIFE CYCLE OF THE NEW VENTURE OR STARTUP ..	53
TABLE 9. $K_{\text{LATER-STAGE}}$ AS A FUNCTION OF $K_{\text{EXPANSION-STAGE}}$ , $K_{\text{EARLY-STAGE}}$ AND $K_{\text{SEED-STAGE}}$ .....	55
TABLE 10. $K_{\text{LATER-STAGE}}$ AS A FUNCTION OF $K_{\text{EXPANSION-STAGE}}$ , $K_{\text{EARLY-STAGE}}$ , $K_{\text{SEED-STAGE}}$ , AND OTHER CONTROL VARIABLES: EXPECTED RETURNS FOR VERY LARGE FUNDS, EXPECTED RETURNS FOR SMALL FUNDS AND ANGEL INVESTORS, AND SIZE OF THE FUNDS .....	56
TABLE 11. $K_{\text{SEED-STAGE}}$ AS A FUNCTION OF $K_{\text{EXPANSION-STAGE}}$ , $K_{\text{EARLY-STAGE}}$ AND $K_{\text{LATER-STAGE}}$ .....	56
TABLE 12. $K_{\text{SEED-STAGE}}$ AS A FUNCTION OF $K_{\text{EXPANSION-STAGE}}$ , $K_{\text{EARLY-STAGE}}$ , $K_{\text{LATER-STAGE}}$ , AND OTHER CONTROL VARIABLES: EXPECTED RETURNS FOR VERY LARGE FUNDS, EXPECTED RETURNS FOR SMALL FUNDS AND ANGEL INVESTORS, AND SIZE OF THE FUNDS .....	57
TABLE 13. $K_{\text{EARLY-STAGE}}$ AS A FUNCTION OF $K_{\text{SEED-STAGE}}$ , $K_{\text{EXPANSION-STAGE}}$ , AND $K_{\text{LATER-STAGE}}$ .....	57
TABLE 14. $K_{\text{EXPANSION-STAGE}}$ AS A FUNCTION OF $K_{\text{SEED-STAGE}}$ , $K_{\text{EARLY-STAGE}}$ , AND $K_{\text{LATER-STAGE}}$ .....	58
TABLE 15. INVESTORS' EXPECTED RETURNS FOR EACH STAGE OF THE LIFE CYCLE OF A NEW VENTURE OR STARTUP .....	58
TABLE 16. T-TEST WITH UNEQUAL VARIANCE FOR EXPECTED RETURNS: SEED-STAGE .....	59
TABLE 17. T-TEST WITH UNEQUAL VARIANCE FOR EXPECTED RETURNS: EARLY-STAGE .....	60
TABLE 18. T-TEST WITH UNEQUAL VARIANCE FOR EXPECTED RETURNS: EXPANSION-STAGE .....	60
TABLE 19. T-TEST WITH AN UNEQUAL VARIANCE OF EXPECTED RETURNS: LATER-STAGE.....	61
TABLE 20. SUMMARY OF T-TESTS WITH UNEQUAL VARIANCES .....	61
TABLE 21. THE MIDAS LIST: 2020 – THE TOP 35 INVESTORS.....	63
TABLE 22. THE WISH LIST OF INVESTORS IN NEW VENTURE AND STARTUPS .....	64
TABLE 23. ENTREPRENEURS CHARACTERISTICS (SEBRAE, 2018) .....	68
TABLE 24. ASSUMPTIONS FOR THE LIFE CYCLE RETURNS OF THE NEW VENTURE OR STARTUP .....	80
TABLE 25. NEW VENTURE BACKWARD VALUATION (ILLUSTRATIVE) .....	83

---

## LIST OF FIGURES

FIGURE 1. RESEARCH STRUCTURE.....	17
FIGURE 2. SEED-TO-EARLY-TO-EXPANSION-TO-LATER STAGE DECISION TREE .....	33
FIGURE 3. NUMBER OF UNICORNS BY BUSINESS AREAS.....	38
FIGURE 4. EXAMPLE OF COMPANIES' CLASSIFICATION BY TECHNOLOGY.....	39
FIGURE 5. ESTIMATED NUMBER OF UNICORNS – GLOBAL.....	42
FIGURE 6. SIZE OF THE FIRM MEASURED IN TERMS OF ASSETS UNDER MANAGEMENT (AUM) IN US DOLLARS...49	
FIGURE 7. NUMBER OF EQUITY INVESTMENTS DONE OVER THE PAST THREE YEARS .....	50
FIGURE 8. EXPECTED RETURN ACCORDING TO THE STAGE OF THE NEW VENTURE/ STARTUP .....	51
FIGURE 9. THE EXPECTED ANNUAL RATE OF RETURN ACCORDING TO THE STAGE OF THE NEW VENTURE/ STARTUP .....	54
FIGURE 10. SUMMARY OF THE SURVEY'S FINDINGS.....	62
FIGURE 11. CRITERIA FOR INVESTMENT SELECTION.....	66
FIGURE 12. PERCENTAGE OF NEW ESTABLISHMENTS OPERATING IN THE US AFTER ONE YEAR .....	71
FIGURE 13. STARTUP SURVIVAL RATES BY FUNDING ROUND .....	71
FIGURE 14. THE QUEST FOR SURVIVAL VERSUS THE QUEST FOR RELEVANCE FOR NEW VENTURES AND STARTUPS AND THE DIFFERENCE IN INVESTORS' PERSPECTIVE: CASH-ON-CASH MULTIPLE (CoCM) VERSUS THE COST OF EQUITY (Ke).....	73
FIGURE 15. SELECTED REASONS WHY HISTORICAL RETURNS ARE INAPPROPRIATE BENCHMARKS FOR INVESTMENTS IN NEW VENTURES AND STARTUPS .....	79
FIGURE 16. NEW VENTURE AND STARTUP LIFE CYCLE (RETURNS ARE ESTIMATES FOR ILLUSTRATIVE PURPOSES) 80	
FIGURE 17. AN ILLUSTRATIVE EXAMPLE OF THE LIFE CYCLE VALUATION METHOD.....	84
FIGURE 18. THE LIFE CYCLE VALUATION METHOD .....	85
FIGURE 19. IFOOD: INVESTMENT ROUNDS.....	86
FIGURE 20. RAPPI: INVESTMENT ROUNDS .....	88

## LIST OF EQUATIONS

EQUATION 1. RETURN ON INVESTMENT (% PER ANNUM).....	27
---	----

---

## 1. INTRODUCTION

### 1.1 Hypothesis development

A Startup is a new venture that intends to create new products and services under conditions of uncertainty (Eisenmann, Ries, & Dillard, 2012) and pursues a scalable business model with the potential to grow profitably (Blank & Dorf, 2012).

New ventures allure the world with new propositions and novel business models, but they require funding to grow. Uber, for example, invested USD17 billion from 2009 until 2017 to expand its business from San Francisco to more than seventy countries (Dudley, Banister, & Schwanen, 2017). According to CapIQ, it took 20 rounds of financing before Uber finally went public in the New York Stock Exchange on May 10<sup>th</sup>, 2019, at a valuation exceeding USD75 billion.

Concomitantly, investors screen the market for investment opportunities. As per Collewaert (2016), “insights have been generated on how these investors screen and select their investment targets from a pool of opportunities presented to them (e.g., Knockaert, Clarysse, and Wright 2010; Maxwell, Jeffrey, and Lévesque 2011; Zacharakis and Shepherd 2001)”.

Private investments in new ventures and startups became a very relevant market over the past 40 years. In 2018, over 5,536 deals accounted for over USD99.5 billion of funding to US startups, according to CB Insights MoneyTree 2018 report. Globally, venture capital funding accounted for USD207 billion in 14,247 transactions in 2018. It compares to a mere \$424 million invested in venture capital funds in 1978 (Clercq, Fried, Lehtonen, & Sapienza, 2006).

From the investor perspective, there are four general investments profiles: Yield Investments, Capital Gain Investments, unicorns, and Laggard Investments: those other investments that are doomed to fail. Yield Investments are new ventures that, considering the perspectives of its business plan, will, at best, pay a steady flow of dividends to the shareholders. Capital Gain Investments include more promising new ventures and startups that could provide a good return on investment that is sensibly better than a steady flow of dividends. Unicorn Investments are those new ventures and startups poised to reach billionaire valuations eventually. Aileen Lee coined the term unicorn to describe startups valued one billion dollars or more in a blog posted on Techcrunch on November 2<sup>nd</sup>, 2013.

Entrepreneurs develop new firms based on market opportunities. Entrepreneurs and investors classify new ventures and startups per technology: fintech, edtech, healthtech,

---

foodtech, govtech, funtech, among others; or business areas: communication, retail, energy. This thesis proposes a classification more adherent to valuation, focused on the customer's lifetime value and how the firm generates cash.

Investors funding innovators-entrepreneurs is a vital function in a capitalist economy (Schumpeter, 1936). New ventures backed by venture capitalists indicated a higher growth than new ventures that do not count on their support (Davila, Foster, & Gupta, 2003). Some of the vital questions regulating investor-investee relations include: 1) how do investors select a new venture to invest in among the innumerable available alternatives; 2) how do investors price the investment and time the exit; 3) how do investors constitute their portfolios; 4) how do founders influence investment decisions, and 5) how do investors influence management decisions.

Equity financing is the main form of financing new ventures and startups given the firms' profile of expected cash flow generations and credit quality. The most common types of equity financing of new ventures and startups are venture capital (VC), corporate venture capital (CVC), angel investment, crowdfunding, and accelerators (Drover, 2018). Venture capital is an equity investment in closely held private companies with no access to traditional funding sources, such as bank loans or public capital markets. Röhm, Köhn, Kuckertz, & Dehnen (2018) define CVC as "minority equity investments from incumbents in private startups."

In addition to capital, VC and CVC can provide many value-added contributions, including assistance in product development, team building, sourcing of additional funding, and more (Clercq et al., 2006; Gompers, Paul A; Lerner, 2001; Lahr & Mina, 2016).

Investment selection and valuation differ along the life cycle of new ventures and startups. Seed-stage and Early-stage new ventures and startups will pivot their business model until they find a sustainable model. Expansion-stage and Later-stage new ventures and startups already have a defined business plan and seek to scale the business to reach profitability and create more value.

Sources and uses of funds will also differ along the life cycle of new ventures. Immature firms with very high perceived risk tend to raise smaller equity checks at a very high cost of capital. As the company matures, it needs more massive capital injections at a more reasonable cost of equity and valuation. The use of funds varies substantially depending on which stage the firm is: new ventures will invest in pivoting their business and seeking product-market fit, whereas more mature new ventures will invest to gain scale.

---

At least since 2003, the academic literature claims that the valuation of new ventures and startup companies is an area of research that is under-developed (Chatsios, Foroglou, & Moutafidis, 2016; Davila et al., 2003; Köhn, 2018; Miloud, Aspelund, & Cabrol, 2012). The abundant literature on this topic, including several empirical studies reviewed in this thesis, illustrates otherwise. However, the academic literature is inconclusive about the valuation of new ventures and startups. By incorporating the new venture's life cycle into consideration of the firm's valuation in conjunction with investors' expectations, this thesis aims at bridging an essential gap in this critical research topic.

## 1.2 Research question

This thesis proposes that investment selection and valuation of new ventures and startup companies varies along the life cycle of new ventures, more distinctively from the survival phase (Seed-stage and Early-stage) to the scaling phase (Expansion-stage and Later-stage) of the new venture or startup company.

The purpose of this thesis is to provide evidence that supports our proposal and answer the following research problem/question: **How do investors make investment selection and valuation of new ventures and startups that are still developing its business model (classified as Seed-stage and Early-stage) compared to new ventures and startups with a defined business plan to be scaled to become profitable (classified as Expansion-stage and Later-stage)?**

**A secondary research question is: Which factors determine the valuation of a new venture and startup in each stage of its life cycle?**

## 1.3 Objective

This thesis's main objective is to demonstrate that investment selection and valuation of Early-stage new ventures and startups are different from investment selection and valuation of expanding new ventures and startups.

This thesis's secondary goal is to scrutinize the determinants underlying the valuation of new ventures and startups based on their life cycle.

This thesis reviews the literature on new ventures and startups with a particular interest in how they fund their operations and how investors select companies to invest. It proposes a



---

method of classification of new ventures and startups and a systematic approach to investment decisions, including its selection and valuation.

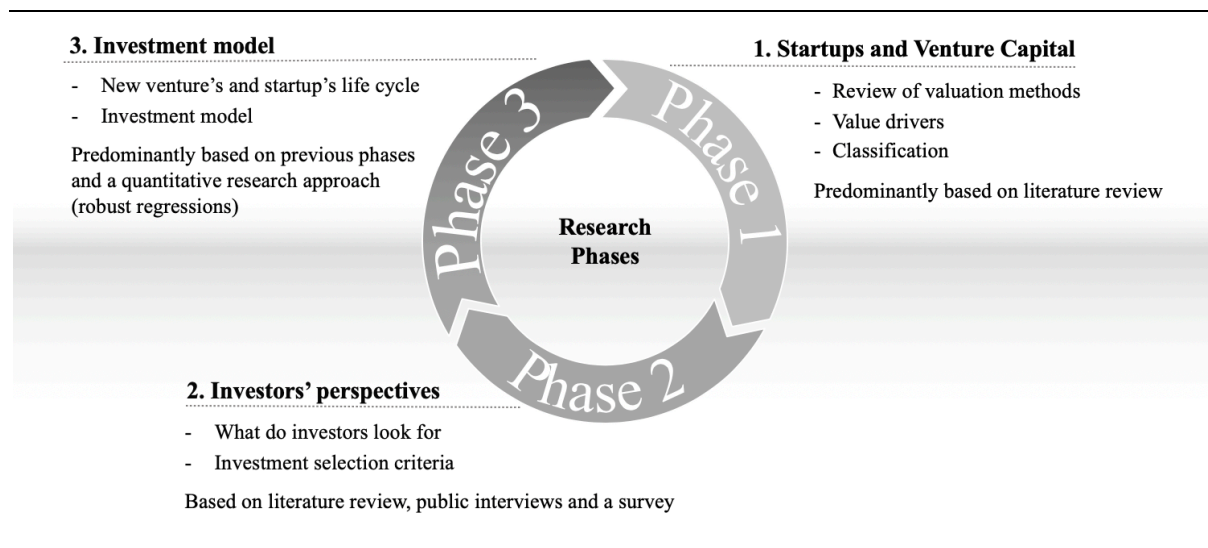
This thesis compares investors' expectations regarding new ventures and startup companies in each stage of its life cycle. This approach differs from most academic literature that relies on the actual outcome of the financial investments, which for new ventures and startups varies substantially from investors' expectations.

## 1.4 Methodology

### 1.4.1 Research structure

This thesis relied on different research methods developed in three phases.

Figure 1. Research structure



Source: The author

The first phase involved a systematic review of the literature on new ventures and startups and the application of commonly used valuation methods to assess their value.

In phase 2, this thesis reviews several published papers that discussed empirical studies about new ventures and startup's valuation and investigated investors' expectations based on public interviews, and a survey on private investor's investment expectations.

Finally, in phase 3, this thesis applied various quantitative methods on the data collected in the survey as a quantitative research approach allows gauging, through a sample, the characteristics and descriptive opinions of a target population (Freitas et al., 2000).

---

**Table 1.** Overview of the studies included in this thesis

---

Chapter	Study	Research Question	Method
2	<i>A review of valuation methods of new ventures and startups</i>	What are the most commonly used valuation methods applied to new ventures and startups?	Systematic literature review
2.7	<i>New venture and startup value drivers</i>	What are the new ventures and startups' value drivers?	Systematic literature review of empirical papers
3	<i>Classification of new ventures and startups</i>	How to classify new ventures and startups from the investors' and consumers' point of views?	Systematic literature review
4.2.1	<i>What are investors looking for? - Investors' survey</i>	What are investors' expected return on investment for each stage of the life cycle of a new venture or startup?	Survey, Robust linear regression, Robust t-test
4.2.2	<i>Investors' interviews</i>	What do investors seek in a new venture or startup?	Systematic review of public interviews
4.3	<i>Criteria for investment selection</i>	What are the main criteria for selecting a new venture or startup to invest in?	Systematic literature review
5	<i>Investment model considering the new venture's and startup's life cycle</i>	What is the investment and valuation model that reflects the new venture's and startups' life cycle?	Systematic literature review

---

Source: Elaborated by the author based on the structure of this Thesis

The research findings provided intelligence to the proposal of a valuation method for new ventures and startups that considers its different investment profile, the firm's life cycle and investors' different appetite for risk.

#### **1.4.2 The review of the literature**

The literature review focused on papers published in reputable journals and assessed published books on valuation and a few thesis and dissertation.

---

The literature review provided intelligence to perform a systematic review of i) the valuation methods and procedures used for new ventures and startups, ii) understand the new ventures and startups value drivers based solely on empirical research, iii) the classification of new ventures and startups, iv) understanding investors criteria for investment selection, and v) defining an investment model based on the life cycle of new ventures and startups.

This thesis follows Wolfswinkel, Furtmueller, & Wilderom (2013) recommendation to have a set of research questions and a well-marked scope of topic for improving the results of the literature review.

### **1.4.3 Public interviews**

This thesis relied on public interviews and public statements to assess the investors' objectives in transactions involving private companies. We based this assessment on top investors, the most reputable investment firms and specialized news agencies.

### **1.4.4 The survey**

The survey targeted reputable and qualified investors of private equity firms that made at least one investment in the previous three years. The survey's main objective was to understand investors' expectations at the time of the investment.

We had access to a moderately large sample and a broad cross-section of investors. To keep the survey short and maximize the number of respondents, the survey has four key central questions about investors' expectations in the life cycle of a new venture or startup and a handful of descriptive questions about the respondent and the firm he or she represents.

The simplicity of a survey that took less than three minutes to complete was instrumental. In a couple of weeks, 136 investors have responded to the questionnaire, comprehending a large portion of the Brazil's investors base. The structure of the survey minimized questions' misunderstanding. We excluded the responses of the only two respondents that provided very inconsistent answers from the analysis. According to Graham & Harvey (2001), "Overall, survey analysis is seldom used in corporate financial research" so this thesis provides unique information about the investors' nature and expectations.

---

#### **1.4.5 The quantitative analysis**

This thesis tested the correlation of the expected returns in each stage of the new venture's and startups' life cycle based on robust linear regressions run on the data collected on investors' expectations survey.

This thesis also tested if the investor's return expectations were statistically different, based on its nature and size.

We retrieved and performed calculations on STATA/IC 15.1.

#### **1.5 Motivation and scope of this thesis**

In today's economy, it is possible to be small and leverage technology to significantly change the globalized world. As the world rapidly transforms, new firms surpass well-established firms in technology, client satisfaction, and intrinsic value. New ventures and especially startups, became a trending topic because of the substantial impact some of them made in so little time. Young companies have a disproportionately significant effect on the economy due to i) a large number of jobs it creates, ii) the innovation not-established companies promote, and iii) the rapid economic growth they provide (Damodaran, 2013).

For every successful new venture or startup, thousands of others failed. There will be losses associated with sister companies in the portfolio for every profit a venture capitalist makes. Discussing new ventures and startups imposes the survival bias challenge as few will remember those companies that perished.

New ventures and startups are trending topics in academic research and a relatively new topic in academic literature. Whereas Schumpeter discussed the importance of the entrepreneur to the economy's development back in 1936 (Schumpeter, 1936), venture capitalists became a research topic in the 1980s (Tyebjee and Bruno, 1984; MacMillan, Siegel, and Narasimha, 1986; Timmons and Bygrave, 1986; MacMillan, Zemmann, and Subbanarasimha, 1987; Bygrave's, 1987; MacMillan, Kulow, and Khoylian, 1989; and Gorman and Sahlman, 1989). In the 1990s, the research topic evolved into the relationship between investors and entrepreneurs.

The new ventures and startups value drivers became a central research question in the 2000s. Earlier discussions focused on discounted cash flow (DCF) value drivers such as firm characteristics (Armstrong, Davila, and Foster 2006; Hand 2005), market factors (Goldman, 2008), and competition (Fairchild, 2004; Heughebaert and Manigart, 2012). Some analyses

---

focused on the characteristics (Cumming and Dai, 2011; Hsu, 2004; Collewaert, 2016) and impact of the investors (Mitteness, Sudek, & Cardon, 2012). Other studies focused on the characteristics of the founders (Securato, 2019).

The valuation of new ventures and startups is a central research question to be answered. Despite its relevance, new ventures' and startups' valuation is yet to be fully explained in the academic literature (Kohn, 2018), among other issues, due to lack of reliable data and other practical difficulties (Collewaert, 2016).

The academic literature applied various valuation methods to new ventures and startups. DCF-based valuation proved to be a challenging method to high-growth ventures with no historical and no benchmark. Keeley, Punjabi, & Turki (1996) proposed the use of options to value Early-stage ventures, along with Milanesi, Pesce, & Alabi (2013) and Herbst, Lin, & Yi (2006), among others. Scenarios and decisions trees are referenced as alternative valuation methods for assessing new ventures and startups and are the most fitted to adapt to the differences in the life cycle of the new venture or startup. However, they fail to recognize the different expectations of investors in each stage of the cycle.

For earlier stage ventures, survival is more important than valuation. Because of the high mortality rate of new ventures and startups, the valuation will be a combination of a particular value for success and zero for failure, or a succession of such events. Investment selection, and therefore, valuation, requires a method that considers the firm's life cycle.

New ventures and startups are considered drivers for economic growth and job creation in the 21<sup>st</sup> century (Blank, 2013). This thesis is motivated by advancing the understanding of investment selection and investment decisions in new ventures and startups and seeking to at least partially fill the research gaps in these areas by putting a distinct focus on the valuation of new ventures and startups.

## **1.6 This thesis' contribution**

This thesis contributes to the literature of early-stage entrepreneurship, specifically of new ventures and startup companies, by exploring each developing stage's differences and associating its capital needs with investors' selection, firm's valuation and size of equity investment and founder's dilution.

---

The most important contribution is the proposal of a model for investment selection and the valuation that considers the firms' life cycle: the Life Cycle Valuation Method, filling a void in the field of valuation of new ventures and startups.

### **1.7 This thesis' limitations**

There are limitations in the analyses this thesis presents. In many ways, those limitations can impact the analysis performed and ultimately influence the conclusions of this thesis.

This thesis' most significant limitation is the lack of information about new ventures and startups, and transactions involving those companies. Only a few of the private transactions involving these private companies require disclosure. Fortunately, it has become a market practice to disclose private transactions involving new ventures and startups because those firms expect to benefit from advertising those transactions. However, despite the data companies claiming to have computed most of the market data, it is impossible to appreciate how accurate the information is and how much information we are missing.

This thesis leveraged public interviews and statements to access a larger number of relevant investors that otherwise would not be contemplated in this research. It would be ideal to follow a pre-determined script and take control of the interviews with a clear objective in mind. However, we are confident that the benefits of accessing available public interviews overcome its drawbacks because: i) we would have access to a much more limited number of interviews, and ii) without a previous relationship, the responses tend to be very standard and in line with what investors would say in a public forum.

Another notable limitation is the survival bias caused by analyzing the available data. There is a high frequency of new ventures and startups failures. CB Insights estimates that only one in one thousand startups will become a unicorn – a company with a billionaire valuation. Analyzing the public data available generates a survival bias, which is very relevant in the case of the scope of analysis of this thesis.

The results of the survey on the expected return on private equity investments are also limited. The survey collected 136 valid responses from experienced investors, mostly from Brazil, a robust engagement level. We have sent the questionnaire to all investors we could possibly contact using the resources available, from social media to specialized web sites, and leveraging the author's personal network. When possible, we have followed-up with potential respondents to promote their engagement in the survey, characterizing a sample by

---

convenience, not by random selection. Even though we succeeded in engaging Brazilian investors, global investors proved to be more challenging to respond to our survey.

## **1.8 Structure of this thesis**

This thesis comprises seven chapters, structured as follows.

Chapter 1 introduces the hypothesis development and the research question, along with this thesis' objectives, methodologies, contributions, and limitations.

Chapter 2 defines new ventures and startups and reviews the valuation methods commonly used in the academic literature and the value drivers for new ventures and startups presented in past empirical studies.

Chapter 3 presents new ventures and startup companies: types of new ventures from investors' and entrepreneurs' perspectives.

Chapter 4 presents investment selection criteria, and the four stages of a new venture or startup company. This chapter includes a survey with investors of new ventures and startups and a summary of public interviews with investors.

Chapter 5 reviews an investment model considering the life cycle of the new venture or startup. This chapter compares investors' expectations to historical performance and introduces the Life Cycle Valuation Method.

Finally, chapter 6 presents a summary of findings and contributions, future research paths, and final considerations.

## **2. A REVIEW OF VALUATION METHODS OF NEW VENTURES AND STARTUPS**

### **2.1 Definitions and considerations**

This thesis seeks to review what other authors have already studied and addressed on the valuation of new ventures and startups, and investment selection by venture capital investors. It also seeks to identify the most significant challenges and limitations that need further studies.

---

### 2.1.1 Methodology

This thesis uses a systematic mapping study of investments in new ventures and startup, in addition to the valuation of new ventures and startups.

An initial search resulted in thirty-six published papers on “startup valuation,” which pointed to fifty-eight papers. The papers were ranked by number of citations according to Google Scholar. This thesis also reviewed several Ph.D. theses and MSc dissertations on the valuation of startups in Brazil and Globally.

**Table 2.** Selected published papers ordered by number of citations

Year	Title	Citation
2001	Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency	4,080
1985	A conceptual framework for describing the phenomenon of new venture creation	3,912
1990	The structure and governance of venture-capital organizations	3,460
1995	Optimal Investment, Monitoring, and the Staging of Venture Capital	2,438
2002	Venture Capital and the Professionalization of Start-Up Firms Empirical Evidence	2,287
2007	Discovery and creation: alternative theories of entrepreneurial action. Strategic Entrepreneurship Journal	1,714
2004	What Do Entrepreneurs Pay for Venture Capital Affiliation?	1,188
2004	Picking winners or building them? Alliance, intellectual, and human capital as selection criteria in venture financing and performance of biotech start-ups.	1,141
2005	The risk and return of venture capital	1,045
2004	A systematic review of business incubation research	1,008
1993	Venture Capitalists' Decision Criteria In New Venture Evaluation	681
2003	Venture capital financing and the growth of startup firms	676
2007	Experienced entrepreneurial founders, organizational capital, and venture capital funding	511
2012	The evolution of business incubators: Comparing demand and supply of business incubation services across different incubator generations	430
2005	Management Accounting Systems Adoption Decisions: Evidence and Performance Implications from Early-Stage/Startup Companies	387
2004	Valuation and return dynamics of new ventures	357
2000	Real-Options Valuation for a Biotechnology Company	278
2008	Venture Capitalists' Evaluations of Start-Up Teams: Trade-Offs, Knock-Out Criteria, and the Impact of VC Experience	265
2011	Business angel early stage decision making	253
1991	Some hypotheses about risk in venture capital investing	243
2003	Contracting, signaling, and moral hazard: a model of entrepreneurs, 'angels,' and venture capitalists	221
2001	Valuation and Control in Venture Finance	204
2014	Accelerating Startups: The Seed Accelerator Phenomenon	170
2016	Understanding a new generation incubation model: The accelerator	150
2000	Venture capitalists, investment appraisal and accounting information: comparative study of the USA, UK, France, Belgium and Holland	141
2011	“In pursuit of the real deal” A longitudinal study of VC decision making	137
2012	Angel investors characteristics that determine whether perceived passion leads to higher evaluations of finding potential	129



2015	Engaging with Startups to Enhance Corporate Innovation	128
2015	Does innovativeness reduce startup survival rates?	111
2014	How entrepreneurs seduce business angels: An impression management approach	107
2013	Valuation of crowdfunding: benefits and drawbacks	105
2014	The impact of human capital on the early success of necessity versus opportunity-based entrepreneurs	100
2014	Death is not a success: Reflections on business exit	81
2016	Corporate accelerators: Building bridges between corporations and startups	80
2009	Valuing Young, Start-up and Growth Companies: Estimation Issues and Valuation Challenges	79
2004	How fundamental are fundamental values? Valuation methods and their impact on the performance of German venture capitalists	64
2001	How Early Stage Entrepreneurs Evaluate Venture Capitalists	61
2013	Trademarks and venture capital valuation	61
2012	Startup valuation by venture capitalists: an empirical study	52
2016	A comparison of the effect of angels and venture capitalists on innovation and value creation	52
2017	A review and road map of entrepreneurial equity financing research: venture capital, corporate venture capital, angel investment, crowdfunding, and accelerators	52
2016	Better Together Signaling Interactions in New Venture Pursuit of Initial External Capital	51
2017	The Schumpeterian entrepreneur: a review of the empirical evidence on the antecedents, behavior and consequences of innovative entrepreneurship	46
2010	Early-stage Valuation of Medical Devices: The Role of Developmental Uncertainty	43
2017	The throne vs. the kingdom: Founder control and value creation in startups	40
1996	Valuation of Early-stage Ventures: Option Valuation Models vs. Traditional Approaches	36
2005	New Venture Valuation by Venture Capitalists: An Integrative Approach	36
2015	Social trust and angel investors' decisions: A multilevel analysis across nations	36
2003	Usefulness of financial statement components in valuation: An examination of start-up and growth firms	35
2007	Valuing technology investments: use real options thinking but forget real options valuation	34
2013	Valuation of Early Stage High-tech Start-up Companies	30
2006	An Analysis for the Valuation of Venture Capital-Funded Startup Firm Patents	25
2003	Valuation of a Startup Business with Pending Patent Using Real Options	14
2018	A world of difference? The impact of corporate venture capitalists' investment motivation on startup valuation	11
2013	Technology-Based Startup Valuation Using Real Options with Edgeworth Expansion	6
2008	Valuation of Startup and Early-stage Companies	5
2016	Valuation of Startups Investment Attractiveness Based on Neuro-Fuzzy Technologies	4
2003	Startup Valuation by Venture Capitalists: A Strategic Management Approach	3

Note: Data collected in November 2018.

Source: Google scholar and Scopus.

It is challenging to apply standard valuation procedures to new ventures and startups. Whereas commonly used valuation techniques are well known and documented in the literature, its application varies based on the appraiser, and the appraised firm. For example, standard valuation procedures are less applicable for firms influenced by the market and exposed to default risk such as high technology firms (Klobucnik & Sievers, 2013).

---

This thesis proposes to review the application of the most common valuation methods for new ventures and startups.

### **2.1.2 Definition of new venture and startup**

A new venture is a new enterprise with no recognizable brand, customer relationships, financial data, credit history, and culture. Different than startups (Blank, 2013), new ventures can be smaller versions of larger companies. Running a new venture is challenging, especially if the founder has limited managerial experience. Even though most new ventures replicate a known business model, some engage in developing new products or services, or new ways of providing available products or services.

A startup is a new organization created to launch new products (Eisenmann et al., 2012). The term startup designates a human institution intended to develop new products and services under conditions of uncertainty (Ries, 2012) and links to scalable service models with the potential to grow that are intensive and profitable (Blank & Dorf, 2012).

Venture capitalists and corporate venture capitalists finance new ventures and startups differently. According to Röhm et al. (2018), “CVCs differ in their motivation regarding the target of strategic goals, such as gaining a window on technology and financial returns (Dushnitsky and Lenox 2006; Gompers and Lerner 2000).” Röhm et al., (2018) identified four types of CVCs based on their motivations: i) strategic, ii) financial, iii) analytic, and iv) non-specified/ unfocused.

### **2.1.3 Valuation considerations**

Valuation is the exercise to attribute a monetary value to an asset or company. From an economic perspective, value is based on the asset or company’s capacity to generate value in the future, through cash flow generation, in the future. Risk is negatively correlated with value, as riskier cash flows in the future have a lower perceived value in the present.

Valuation is a determining factor for both founders and investors. As Miloud, Aspelund, & Cabrol (2012) put it: “research has shown that the valuation is important because it aligns the ambitions of the entrepreneur and investor, helps structure and assure a fair treatment (Clercq et al., 2006) and reduces the sources of potential conflict between the entrepreneur and the investor (Zacharakis, Erikson, and Bradley, 2010).”

Kohn (2018) stated that “startup valuation in the VC context is often said to be more art than science.” Damodaran (2018) corroborates with Kohn when he attributes high importance

---

to the storytelling of the new venture's business case compared to its available financial information. The high risk, high cash burn, and information asymmetries (Drover et al., 2017; Sievers, Mokwa, & Keienburg, 2013) contribute to the challenges of performing the valuation of a new venture company. Despite that, the valuation of new ventures and startups are systematically done and used as the basis for thousands of transactions annually.

How much capital does the firm need to take it from “x” to “z”? Entrepreneurs need to determine the use of proceeds for each round of capital raising, and the underlying value such capital is expected to create. Investors, the source of such proceeds, will negotiate with entrepreneurs the terms of such capital raising. Regarding equity investment, which is predominant in new ventures and startup companies, the focus of the negotiation is the valuation and the resulting dilution of the founders' stake ownership in the firm.

Valuation is essential for investors to enter and exit the company. Financial investors, such as venture capital funds, and private equity firms, have no strategic interest in the firm, and their main objective is to make a financial profit measured in terms of return on investment:

$$\text{Return on Investment (\% p. a.)} = \left( \frac{\text{Valuation at exit}}{\text{Initial Valuation}} \right)^{\frac{1}{\text{years}}} - 1$$

**Equation 1.** Return on investment (% per annum)

The investors' returns depend on the difference of the final proceeds the investor can achieve at the exit point, i.e., at an initial public offering (IPO) or sale of the company, and the resources initially invested. The fundamental valuation driver for new ventures and startups is transactional, a significant variation from the mainstream finance theory based on the net present value of projected operating cash flows. New ventures and startups usually do not pay dividends to shareholders because i) most of them are not profitable, and ii) firms are expected to reinvest the proceeds in scaling and improving its operations.

New Venture's valuation tends to reflect the supply and demand of investment opportunities versus available capital, not necessarily the new venture's intrinsic value. The supply-demand nature of the equity investment is especially true for new ventures on Seed-stage and Early-stage, where it is more important to secure the funding until the next investment round at a minimum dilution than the valuation of the new venture itself. Pierre Entremont (2015), co-founder and partner at Otium Ventures, proposed that “the optimal amount raised is the maximal amount which, in a given period, allows the last dollar raised to be more useful to the company than it is harmful to the entrepreneur.”

---

Researchers and investors use various valuation methods to assess new ventures and startups. It is best practices to use more than one method to have various references delimiting a reasonable minimum and maximum values.

The usual valuation methods must be adapted to new ventures' and startups' circumstances, mainly the lack of history, the high risk, and the sequential capital raising. Such adaptations lack a systematic basis and are made on a case by case basis, either reflected on custom-made decision trees or custom modifications to the textbook methods (Keeley et al., 1996).

There is a gap in the academic literature for the valuation of new ventures and startups: no valuation method takes into consideration the changing characteristics of the new ventures and startups over its life cycle and considers investors' different approach to expected returns in each cycle.

## **2.2 Valuation based on DCF projections**

Valuations based on discounted cash flow are widely used to estimate the intrinsic value of companies. This method depends on two main variables: projected cash flows and the discount rate.

### **2.2.1 Projected cash flows**

For companies with a changing capital structure and high expected growth, such as new ventures and startup companies, it is more appropriate to calculate the valuation based on free cash flow to the equity holder discounted by the cost of equity or a dividend discount model.

Valuation of new ventures and startup companies based on free cash flow projections is challenging because i) there is too much uncertainty regarding young companies' revenue growth and operating margins and ii) it is challenging to estimate reinvestment assumptions consistent with the young company's growth estimates (Damodaran, 2013). Commonly used valuation methods, including the discounted cash flow method, frustrates founders and investors of new ventures with massive variance of results (Miloud et al., 2012).

A DCF-based valuation is not appropriate for new ventures and startup companies that have yet to define its business model. New ventures still in the "quest for survival" stage are expected to pivot their business model as many times and as fast as it fits their short-term goals. Their underlying business plan, when there is one, will undoubtedly change, probably radically.

---

A DCF-based valuation is appropriate for new ventures and startups that have a business model that needs scaling to gain profitability. New ventures in the “quest for relevance” are expected to have a business plan detailing sources and uses of proceeds that support their short-term goals. Their underlying business plan will also change, as reality often disagree with planning, but is not expected to change radically to maintain a trusting relationship with financial sponsors.

### **2.2.2 Discount rate**

The most critical component for a DCF-based valuation is the discount rate used to discount projected cash flows to the present. The Capital Asset Pricing Model, commonly used to determine the opportunity cost and discount rates, relies on underlying assumptions that are not verifiable for companies at an expansion stage or even later stage.

Festel, Wuermseher, & Cattaneo (2013) have described the challenge of adapting the CAPM to new ventures and startup companies as follows:

“Especially for the valuation of small companies, the CAPM model of Sharpe (1964) and Lintner (1965) leads to an abnormal description of the expected returns (Banz, 1981). Based on the CAPM model, Fama and French (1992) developed an extended model that specifically addresses the risks related to the size and value. In consequence, they included a “size premium” to compensate investments in companies with a relatively small market capitalization and a “value premium” to encounter the risk related to high book-to-market values (Fama and French, 2012; Womack and Zhang, 2003).”

It is challenging to add a consistent size premium, or any other premium, to the CAPM. The data analysis company Ibbotson used to publish a report with market premia and estimates for size premia. However, both were estimated based on companies listed at a stock exchange in the United States. Ibbotson’s size premium, the most commonly referenced estimate of size premia refers to small companies relative to the 500 companies that compose the S&P 500 index, but very large compared to new ventures and startup companies. The Ibbotson’s size premium does not capture the new venture or startup risk at all and should not be considered in calculating discount rates for purposes of valuing new ventures and startup companies.

Festel et al. (2013) propose to adjust the beta at the CAPM for estimating discount rates for new ventures and startups. Using the CAPM, Festel et al. (2013) calculated the implied levered beta for a cost of equity equal to the rate of return expected by investors in Early-stage investments. For example, the implied beta for startup companies would be 6.4 considering an

---

average capitalization rate of 39.4%, a risk-free rate of 4.126%, and a market premium of 5.5% (Festel et al., 2013).

An alternative approach is to recognize that the CAPM is a model not suited for estimating the cost of capital for new ventures and startup companies, and adopt a discount rate that reflects investors' expectations of return on investment. The opportunity cost for pre-IPO companies is the cost of capital for private equity companies, for example.

### **2.3 Valuation based on multiples**

The valuation of companies based on a benchmark is also widely used because of its simplicity. The benchmark valuation method is usually two-folded: i) the relative value of a publicly traded company or ii) the relative value of a company that has been acquired. The relative value derives from value multiples, such as Total Enterprise Value (TEV) to Earnings Before Interest, Depreciation, and Amortization (EBITDA,) TEV to Sales, and Price to Net Income (P/E), among others.

Whereas most value multiples are calculated based on financial information such as EBITDA, Sales, Net Income, it is usual to calculate value multiples based on operating metrics such as the number of subscribers, units sold, megawatt sold, and others depending on the industry. Typically, the operating metrics are proxies for revenues and/or cash flow generation, such as clients and units sold, among others.

In the academic literature, several studies propose value multiples based on variables that are not financial information nor a proxy for financial information such as the number of patents (Block, De Vries, Schumann, & Sandner, 2014; Sievers et al., 2013), the number of trademarks (Block et al., 2014) and human capital proxies like team experience, CEO education, (Sievers et al., 2013) or headcount growth (Davila et al., 2003). Sievers et al., (2013) argue that i) financial information for new ventures and startups, even though limited, can be useful to estimate the value of the firm's pre-money valuation, and ii) human capital proxies are as useful as financial information for that purpose. The accuracy of such estimates is low.

An alternative approach is to consider the cost-to-duplicate as the basis for valuation. This approach is more natural to comprehend for software-based companies in which most of the capital investment is programming time, which can sensibly be estimated. If the multiple is higher than one, some incremental value probably derives from the brand, market-share, team of contributors, established partnerships, among others.

---

Valuation based on multiples is usually a secondary valuation method used to validate a valuation based on DCF. When there is no DCF-based valuation available, multiples-based valuation is the primary valuation method. We have reviewed all 145 valuation reports filed with the Brazilian exchange commission – Comissão de Valores Imobiliários (CVM) from 2007 until July 2017. A single report used Multiple-based valuation as a primary valuation method with a DCF-based valuation as a secondary method.

## **2.4 Valuation based on the Venture Capital Method**

The First Chicago Corporation Venture Capital developed a valuation method based on the weighted average of three valuation scenarios that became known as the “Venture Capital Method.” The Venture Capital Method was meant for revenue-generating firms, but it also applies to younger startups.

The Venture Capital Method combines both Industry’s Price Multiples and the DCF methods to assess a new venture’ or startup’ value under three conditions: favorable, stable, and unfavorable. The favorable scenario reflects a successful IPO at the end of the investment horizon; the stable scenario reflects a stable stream of dividends, but an IPO is never reached, and an unfavorable scenario reflects failure, and the underlying value is the recovery of the capital by liquidating the assets of the company.

For each scenario, the appraiser assigns a probability and calculates a valuation. The value of the new venture or startup is the weighted average of the valuation in each scenario for its probability.

According to Damodaran (2018, pg.78), the discount rate used for the valuation shall not be adjusted for the exceptional risk of the new ventures and startups because that risk is already captured in the scenarios and probabilities.

The Venture Capital Method is a specific format of multiple scenario analysis.

## **2.5 Valuation based on real option value**

Valuation based on real option value is also known as Contingent Claim Approach or Contingent Claim Analysis (CCA). Real options valuation is the only method that takes into consideration the upside potential for risk (Damodaran, 2013). According to Gray, Merton, & Bodie (2007):

---

“The prototypical contingent claim is an option - the right to buy or sell the underlying asset at a specified exercise price by certain expiration date. A call is an option to buy; a put is an option to sell. CCA is a generalization of the option pricing theory pioneered by Black–Scholes (1973) and Merton (1973).”

A financial sponsor such as a venture capitalist requires an exit at some point, typically in 5-7 years, depending on the fund’s by-laws. The venture capitalist’s exit strategies usually are an IPO or a merger & acquisition transaction that will result in the investment’s monetization.

As Herbst, Lin, & Yi (2006) put it: “whether the start-up firm actually goes through with an IPO depends on the realized path of growth in the value of the firm.” If the IPO goes through, the new venture should expect a high valuation, ranging from \$20 to 1,000 million (Herbst et al., 2006). The IPO price is the strike price.

Pricing an investment in a new venture can be compared to pricing a call – an option to buy a stock. Consider the underlying asset is the new venture at the IPO, which makes the option to be in the money if the IPO is successful or out of the money if the IPO fails. The acquisition price of the new venture, the call price, is a fraction of the firm at the IPO if successful, whereas the salvage value of a failed IPO tends to zero for certain types of startups (Herbst et al., 2006).

Modern real options theory is an alternative method for valuing Later-stage ventures and startups. The new venture or startup is priced based on the firm’s probability to achieve a significant valuation and provide a profitable exit to investors. Herbst et al. (2006) applied real-options to the valuation of pre-IPO high-growth firms. Milanesi, Pesce, & Alabi (2013) adjusted the real options theory to abandon the assumption of normal returns through Edgeworth's expansion to value technology-based startups. Damodaran (2018, pg. 155) criticizes the use of real options method for valuation: “the real options approach brings an optimistic view to uncertainty.” To be an effective method, real options should be used to investments that have an embedded option that have real value (Damodaran, 2018, pg. 153).

## **2.6 Valuation based on decision trees**

Valuation based on decision trees is applicable when risk is not discrete but sequential (Damodaran, 2018, pg. 79), like the life cycle of a new venture or startup company: Seed-stage, Early-stage, Expansion-stage, and Later-stage. As Damodaran (2018, pg. 79) asserted: “failure at any point can translate into a complete loss of value.” Each stage of the new venture is a

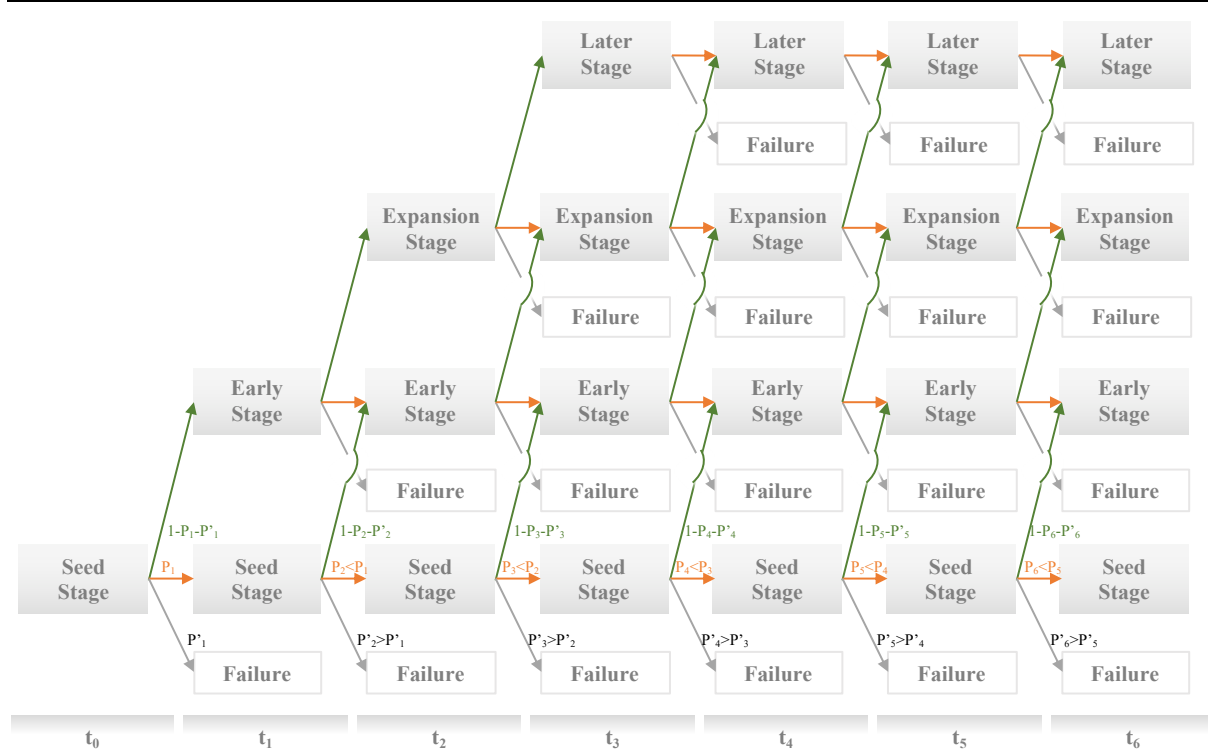


node in the decision tree representing the potential outcome of each stage, and its specific risk (Damodaran, 2013).

Whereas the most common construction of decision trees considers two outcomes of a given state, failure, or success, this thesis proposes three potential outcomes: failure, success, and no change.

The figure that follows depicts the evolution of a new venture from Seed to a Later-stage, going through early and expansion stages. It does not depict the next stage, a sale or IPO but it would follow the same rationale.

**Figure 2.** Seed-to-Early-to-Expansion-to-Later stage decision tree



Source: The author

The decision tree shows the potential outcome from a given node of the tree, to which a probability shall be established, considering that the sum of all probabilities from one node of the tree to the following node shall be 100%. Given the dynamics of the new venture and startup industry, it is improbable that a firm will remain at the seed stage indefinitely, mainly because it depends on external financing. Over time, all things being equal, the probability of remaining a Seed-stage company should decrease, and we expect the probability of failure for a Seed-stage company to increase.

---

Moving from one stage to another requires an additional cash flow or marginal cash flow (Damodaran, 2013), a negative number representing a capital increase. The final node is the financial investor's exit of the company, usually an IPO or sale, which does not appear in the figure. According to Damodaran (2013), "because it takes time to go through the phases, a time-value effect must be built into the expected cash flows for each path."

Considering the time value of money poses a new challenge: what is the correct discount rate, or discount rates, to use? Based on Damodaran (2018, pg. 88), the discount rate should be moderate, reflecting the non-diversifiable risk looking forward. Because the "failure" scenario is already accounted for in the decision tree, adjusting the discount rate for the risk of failure would mean double-counting failure risk.

Evaluating new ventures and startups based on decision trees proposes a probabilistic approach to risk assessment, depicting sequential potential outcomes that include failure and may even include a "unicorn scenario." The discount rate is less of an issue if the decision tree adequately represents failure scenarios and implicit probabilities.

## **2.7 New venture and startup value drivers**

There is plenty of empirical research on new ventures and startup valuation. Whereas most of those studies are only valid for how those models and regressions perform, valuable lessons can arise.

### **2.7.1 Methodology**

On June 16th, 2019, a search at google scholar for "startup valuation" yielded 286 results, considering no time restriction, and including citations. Searching for "start-up valuation" at google scholar or searching on other databases such as ScienceDirect yielded fewer results.

We followed Becheikh, Landry, & Amara (2006) in using an inclusion criteria to select and assess the potential of a study:

1. Pre-selected articles inclusive in a peer review journal based on the key phrase "startup valuation"
2. Published in 2012 or later, unless the article was cited in other publications
3. Have an empirical approach to the valuation of new ventures or startups

This thesis excluded 34 citations: 5 articles based on literature reviews, 2 based on conceptual models, 3 MSc or Ph.D. thesis and 2 other links were not considered because they

were not available. This thesis also excluded 3 working papers and 1 conference paper to arrive at 23 published articles, of which 18, or 78% presented empirical analysis, of which 11, or 47% presented empirical analysis that discussed the impact on value of a new venture or startup. In aggregate, the selected articles comprised 3,342 citations.

It was set an automated alert for the keyword “startup valuation” on Google Scholar, and other results were automatically forward to a pre-configured email. At least 2 new results were added to the world wide web after June 16<sup>th</sup>, 2019 and were also analyzed.

## 2.7.2 Descriptive data

The following table summarizes the main factors associated with the firm value – value drivers – and its impact on valuation.

**Table 3.** Value drivers of new ventures and startup companies

<b>Reference (most recent first)</b>	<b>Value driver with positive (+) or negative (-) impact on the value</b>
147 first-round CVC investments (Röhm et al., 2018)	- Corporate venture capital and startup have a high strategic motivation
6,130 American startups (Wasserman, 2016)	- The founder is still in control of the board of directors - The founder is the CEO
123 investment rounds in 58 Belgian companies (Collewaert & Manigart, 2016)	+ Angel investor’s human capital (experience and education) + Angel investor’s experience with law/ legislation - Number of companies founded by angel investor
50,596 funding rounds of US-based startups (Block et al., 2014)	+ Number and breadth of trademark applications
148 Financing rounds for high-tech startups (Hsu, 2004)	- Venture capital is highly reputable
370 venture-backed semi-conductor start-ups (Hsu & Ziedonis, 2013)	+ Patents (for earlier rounds of VC financing)
102 French Early-stage companies (Miloud et al., 2012)	+ Industry differentiation and expected growth + The founder has relevant industry and managerial experience + The founder has previous experience with startups + The founder has a complete management team + Size of new venture’s network (alliance partners)
362 investment rounds in 180 Belgian companies (Heughebaert & Manigart, 2012)	- The investor is a University VC or a Government VC
149 US Startups from MIT’s year-2000 E-Lab (Hsu, 2007)	+ Human capital helps to build social capital + Founder with prior financially successfully founding experience is more likely to receive VC funding + Founders of internet companies with a Ph.D. degree

340 rounds of Early-stage VC investments (Ge, Mahoney, & Mahoney, 2005)	<ul style="list-style-type: none"> <li>+ Higher product differentiation and expected growth</li> <li>+ The founder has previous experience at top management and startups</li> <li>+ Team of founders instead of a single founder</li> <li>+ The venture has external partners</li> </ul>
494 VC backed, and non-VC backed Silicon Valley Startups (Davila et al., 2003)	<ul style="list-style-type: none"> <li>+ Headcount growth</li> </ul>

Source: Elaborated by the author, based on the published empirical papers

### 2.7.3 Results and Discussion

Investors can impose lower valuations on new ventures when investors have negotiating leverage, for example, when a Corporate Venture Capital has a strategic interest in the new venture and can contribute to its development (Röhm et al., 2018), the venture capital is highly reputable and provides a certification for the new venture (Hsu, 2004), or when universities or governments benefit from a captive market in which there is less competition for the new ventures (Heughebaert & Manigart, 2012). In contrast, high-quality angel investors seem to not always benefit from lower valuations and, therefore, they do not fully appropriate the value they contribute to the new venture (Collewaert & Manigart, 2016).

Venture capital funds appraise human capital and more robust leadership. Venture capitalists valued complete management teams (Miloud et al., 2012), prefer firms founded by experienced entrepreneurs (Ge et al., 2005; Hsu, 2007; Miloud et al., 2012), and might benefit from law experience over financial experience (Collewaert & Manigart, 2016). Davila et al. (2003) identified a correlation between value and team size.

Social capital is also relevant. As Hsu (2007) stated, “training and prior professional experience (traditional conceptualizations of human capital) can not only contribute to what you know, it can also contribute to whom you know,” which favors universities, specialized co-working places and workplaces like Cubo in São Paulo as proper ecosystems for developing new ventures and startups.

Innovation is also associated with a higher valuation. For Early-stage new ventures, the number of patents represents factual and tangible information at a stage with minimal information and performance indicators (Hsu & Ziedonis, 2013). Patents and registered trademarks also provide useful information on the firm’s performance and investment level (Block et al., 2014).

---

Even though it is not possible to estimate the valuation of a new venture based on empirical studies value drivers, such studies provide insightful views of the new venture and startup value, especially from a qualitative point of view.

Cash flow generation is a secondary concern of investors in assessing new ventures and startups. Profitability was not mentioned a single time as a value driver for new ventures and startups. A possible explanation for this phenomenon is that investors will price their investment based on their exit strategy, i.e., the appreciation of their equity ownership over time and how they expect to monetize this equity investment.

The view that new ventures and startups are valued based on the sale price, not on an annual yield is corroborated by Graham & Harvey (2001): “Large firms rely heavily on present value techniques and the capital asset pricing model, while small firms are relatively likely to use the payback criterion.” Graham & Harvey (2001) surveyed 392 CFOs about the cost of capital, capital budgeting, and capital structure.

### **3. CLASSIFICATION OF NEW VENTURES AND STARTUPS**

New ventures and startups can be classified based on technology, the solution it provides, the investor perspective, or even the entrepreneurs’ perspective, to name a few. Though less useful, it is usual to classify new ventures and startups according to the technology: artificial intelligence, cybersecurity, digital health, geolocation, among others.

This thesis proposes an alternative classification based on return. The proposed classification takes into consideration the investors’ expectations or the customers’ expectations.

We favor the customer approach as oppose to technology. The use of technology and the problem it tries to solve represents the customer’s perspective and is more relevant than the technology itself. For example, a vendor willing to optimize its delivery system will look for a company that provides a solution for this problem at the best cost-benefit. The vendor is unlikely to shop around for a specific technology such as artificial intelligence or geolocation, even though the firms offering alternative solutions could leverage on either or both of these technologies.

This study focuses on investors’ and founders’ perspectives. The founder’s perspective is based on how the founder expects to add value to society. The investor’s perspective considers the potential return on invested capital and risk profile.

---

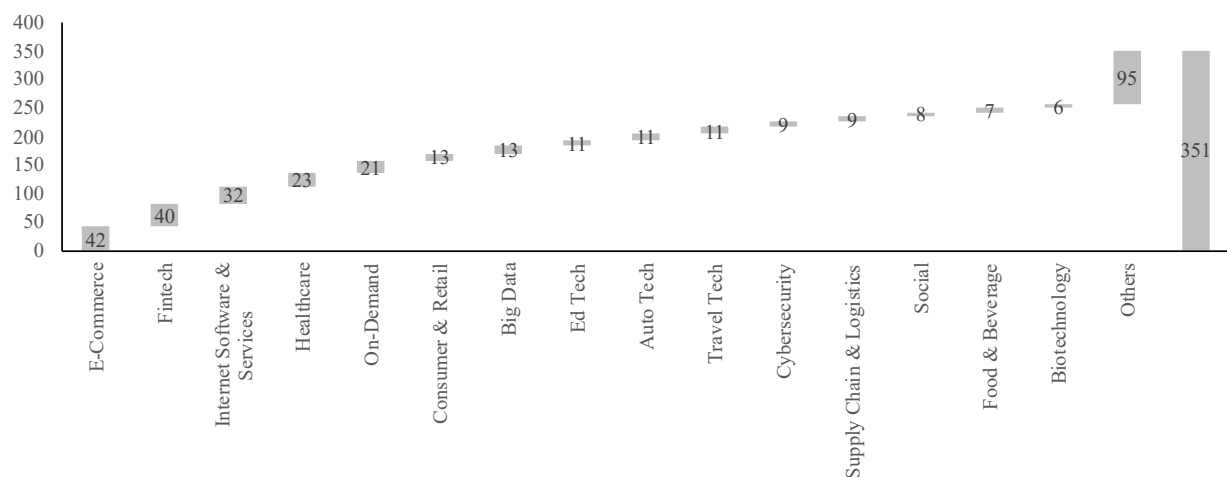
### 3.1 Most common classification criteria

The founder's perspective reflects the new venture's purpose or ambition.

#### 3.1.1 Business area

There are various methods to classify companies. Unicorns, for example, operate in more than 23 business areas, including E-Commerce, Fintech, Internet Software & Services, Healthcare, On-demand, Consumer & Retail, Big Data, Education Technologies, Auto Technologies, Travel Technologies, Cybersecurity, Supply Chain & Logistics, Social Media, Food & Beverage, and Biotechnology among others.

**Figure 3.** Number of unicorns by business areas

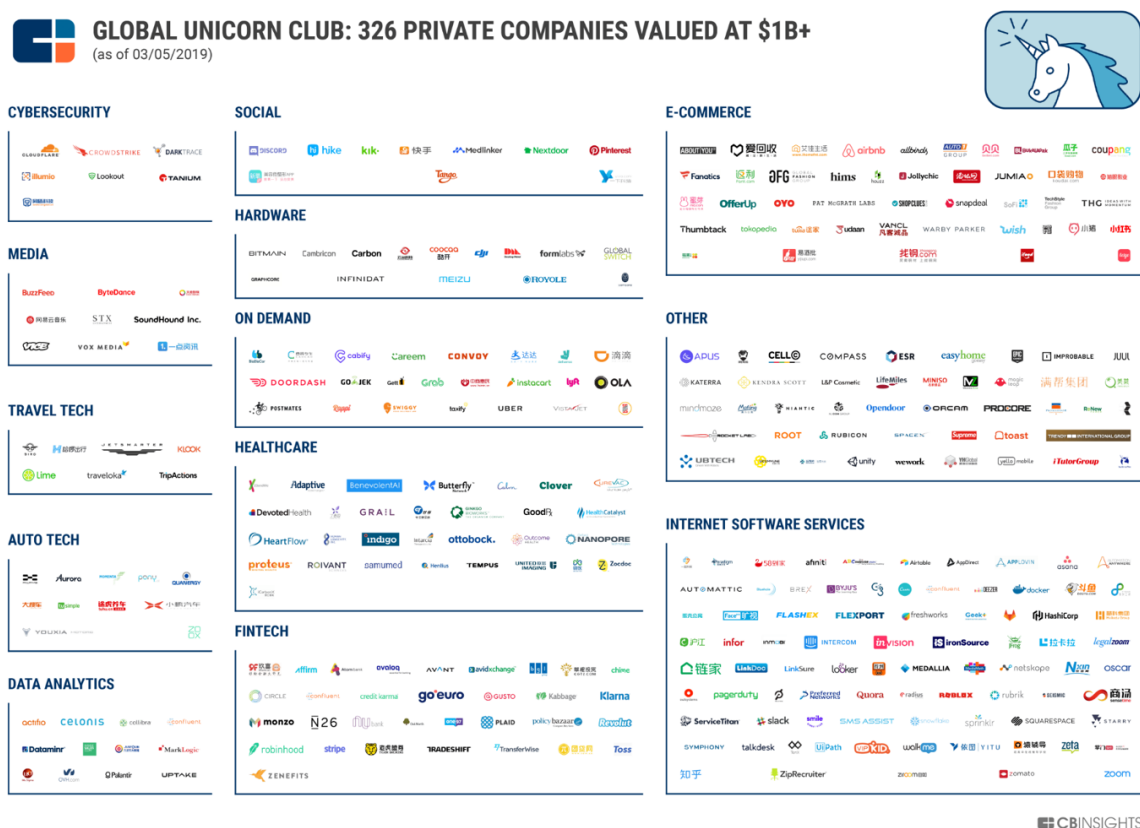


Source: CB Insights classification of unicorn companies as of April 2019

#### 3.1.1 Technology

Charts with logos separated by technology are standard, but they inform very little.

**Figure 4.** Example of companies' classification by technology



Source: CB Insights as of March 5<sup>th</sup>, 2019

### 3.2 Classification based on the return to the investor

From the investor perspective, there are four general investment profiles: Yield Investments (Cows), Capital Gain Investments (Mustangs), Unicorn Investments, and Laggard Investments. Yield, rich and Unicorn Investments must provide an exciting return on investment to investors. The Laggard Investments, however, are companies that investors do not believe will turn into a profitable investment. Therefore, by definition, Laggard Investments are not funded by investors and, as such, are excluded from this thesis.

Investors target a minimal array of firms to invest. Considering that all types of new venture and startup may eventually fail, as many fails, investors will focus on the firms with the highest potential: Capital Gain Investments and Unicorn Investments, which are more limited in number. The OECD (2018) estimates there were 44.6 million enterprises in 38 countries in 2016 (or the latest available year), compared to just over 34,000 (0.085% of total) global venture transactions in 2018 (or around 22,000 in 2016) according to Crunchbase

---

(Rowley, Glasner, & Mascarenhas, 2019), and 14.247 venture capital transactions in 2018 according to Pitchbook.

### **3.2.1 Yield companies**

Yield Companies (YC) are new ventures that, considering the perspectives of its business plan, will, at best, pay a steady flow of dividends to the shareholders. Yield Companies tend to operate in more traditional business areas where the business model is better understood and less risky. Yield Companies may promote innovations, but they tend to be small or incremental or significant to a niche market.

Venture capital funds are not attracted by Yield Companies' lower expected return on capital (Baum & Silverman, 2004). Yield Companies have a less risky profile that does not allure investors focused on high-risk, high-reward profiles.

### **3.2.2 Capital gain companies**

Capital Gain Companies (CGC) include more promising new ventures and startups that could provide a good return on investment that is sensibly better than a steady flow of dividends.

Capital Gain Companies represent most of the new ventures and startup companies that venture funds and financial investors seek to invest. CGC has a high-risk, high-reward profile.

### **3.2.3 Potential unicorns**

Aileen Lee coined the term unicorn to describe startups valued one billion dollars or more in a blog posted on Techcrunch on November 2<sup>nd</sup>, 2013. Potential unicorns are those new ventures and startups poised to reach billionaire valuations eventually. According to the data company CB Insights, "a unicorn startup or unicorn company is a private company with a valuation over \$1 billion. Variants include a decacorn, valued at over \$10 billion, and a hectocorn, valued at over \$100 billion." Aileen Lee named the \$100 billion companies super-unicorns.

Consumer-oriented companies dominate the unicorn landscape (Lee, 2015; Poli, 2019), but they raise more capital than enterprise-oriented companies (Lee, 2015). To reach a billionaire valuation, the new venture or startup must have some uniqueness that one cannot quickly or cheaply emulate. In 2015, the consumer-oriented companies had raised, on average, \$535 million compared to \$247 million for enterprise-oriented companies (Lee, 2015).



---

Though the term unicorn is relatively new, new companies reaching billionaire valuations are recurring, and there are plenty of unicorns among us. According to Lee (2013), semiconductors drove the technology in the 1960s, which originated Intel. The personal computers were created in the 1970s and gave birth to Apple, Oracle, and Microsoft. Networks in the 1980s originated Cisco. The internet revolutionized the world in the 1990s when Google and Amazon stood out. Facebook is the landmark of the 2000s and social networks. The 2010s presented mobile technology as a driving force in which the chief representative is probably Uber. Each driving technology produced at least one hectocorn. An exception occurred in the 2010s when several companies were close to the mark. The 2020s are not defined yet, but artificial intelligence will undoubtedly play an essential role in many fields.

**Table 4.** Unicorns and their driving technology

---

Decade	Driving technology	Iconic companies
The 1960s	Semiconductor	Intel
The 1970s	Personal Computer	Apple, Oracle, Microsoft
The 1980s	Networks	Cisco
The 1990s	Internet	Google, Amazon
The 2000s	Social networks	Facebook
The 2010s	Mobile	Uber
The 2020s	Artificial intelligence	Bytedance

---

Source: Welcome to the Unicorn Club: Learning From Billion-Dollar Startups (Lee, 2013) and the Author

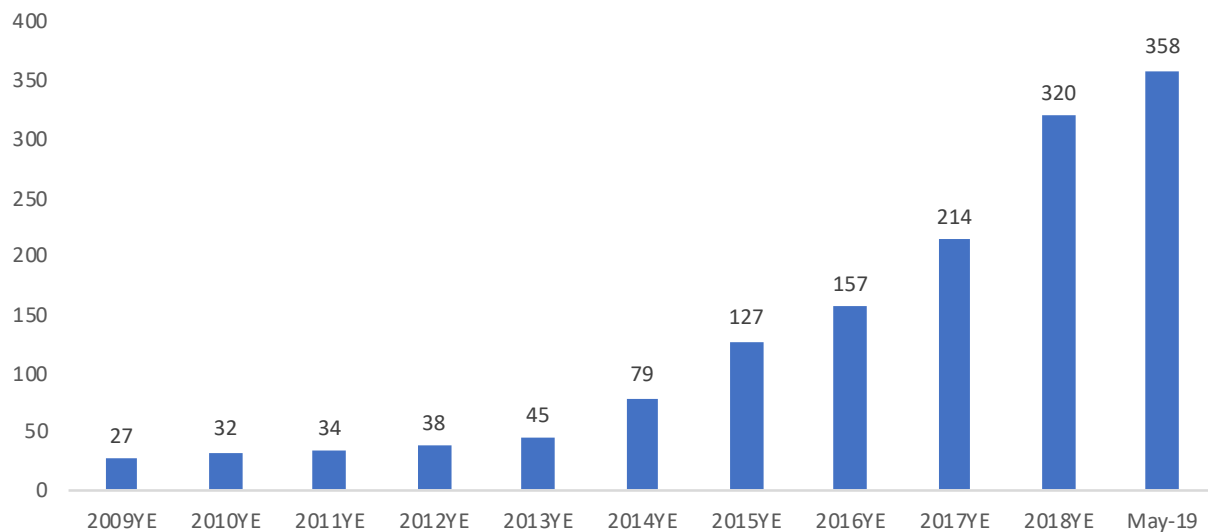
CB Insights reports that, as of May 2019, there were 351 unicorns from 26 countries with a total cumulative valuation of circa \$1,118 billion. 172 (49%) were from the United States and 89 (24%) from China. Distrito reports that in early 2019, there were 7 (2%) unicorns from Brazil: 99, Nubank, Arco Educação, Ifood, Stone, Gympass, and Loggi.

Lee (2015) had profiled the majority of unicorns as “companies with clear product visions, well-educated, tech-savvy, experienced 30-something, co-founding teams with a history together” and “too little diversity at the top.”

---

**Figure 5.** Estimated number of unicorns – global

---



---

Source: CB Insights, Techcrunch, the author

---

The number of unicorns has grown substantially over the past years to reach a record of 358 companies worth \$1 billion or more. The attention that unicorn companies tend to receive has caught the attention of the United States' Security Exchange Commission (SEC) as well. Since 2015, the SEC has been very attentive to startup companies' valuation and how it is presented to investors. According to the Business Insider, in 2019, the SEC was taking new steps to help billionaire pre-IPO companies assess the equity markets.

Billion Dollars valuation companies are among us and became a product of desire: entrepreneurs seek to create the next unicorn company, while investors hunt the next prospect unicorn to finance it. However, unicorns are extremely rare and unique as they require a particular combination of product-market fit, founders and team skills and financial perspectives. Not all companies can aspire to become a unicorn, which is ok since the probability of success is less than 1 in 1,000.

### **3.3 Classification based on the return to the customer**

A better approach is to classify the companies based on the customer's perspective. The first step is to separate companies engaged in business-to-business (B2B) from business-to-customer (B2C). Most unicorns are B2C companies (Lee, 2015; CB Insights). The customer's perspective considers the problem to be solved, which is more accurate to determine

---

competitors. Two companies providing the same service or product could use competing technologies and would be depicted in different groups on a chart based on technology.

A firm's classification based on cash flows generation respects the customer perspective and is in line with its valuation. The perspective of cash flow generation measures the success of investments and execution and how cash flows are distributed among all stakeholders. We expanded Lee's (2015) new venture classification based on how the company generates cash: Platform companies, Audience companies, Enterprise Software companies, Software as a Service (SaaS), Device companies, Laboratory companies, and Traditional Ventures.

The new venture business model relies on alternative streams of revenues: i) commissions or brokerage fees, ii) assets or product sales, iii) subscription plans, iv) advertising, v) usage fees, vi) licensing, or vii) renting or leasing.

Alternatively, the type of value creation can determine segmentation. Teixeira (2019) proposes classifying new ventures and startups based on the kind of disruption they cause in the customer's value chain: value-creating, value-eroding, or value-charging decoupling.

### **3.3.1 Platform Companies**

Platform companies provide goods or services paid for the consumer through a platform on the internet or mobile via a smartphone app. Platform companies include e-commerce operations and companies like Uber and Airbnb.

Platform companies provide a solution (good or service) in one place: a platform, usually a smartphone app. According to Dudley (2017), "the successful expansion of Uber has been based on the deceptively simple use of modern technology, in which the initial bookings, the route to be taken, the calculation of fares and, finally, payment, are all made employing a smartphone app" making it an example of a platform.

Platform companies raise the most private money: \$683 million on average but deliver the lowest multiples of valuation at 8x capital raised. Higher marketing costs and lower margins certainly play a role in the less robust valuations.

### **3.3.2 Audience Companies**

Audience companies are those companies that the product is free to use for consumers, and the company makes money thru ads or leads. Audience companies have raised \$352 million and are at a 16x multiple of value over capital raised on average.

---

### **3.3.3 Enterprise Software Companies**

Enterprise software companies are companies that business customers pay for larger-scale software, often ‘on-premises’ versus cloud-based; or hardware with software. Enterprise software companies have raised \$268 million on average. Their average valuation is at 17x capital raised.

### **3.3.4 SaaS Companies**

SaaS companies include cloud-based software often offered via a ‘freemium’ or monthly payment model, including broad or local network effects. On average, this group has raised \$267 million and is at an 18x return on raised capital (excluding Veeva).

### **3.3.5 Device Companies**

Device Companies are startups that provide a solution through a device that is engineered, sold, and made available to the final public. It includes Consumer Electronics and the Internet of Things. They are estimated to have raised \$266 million on average and reached 18x private capital raised.

According to Chatsios, Foroglou, & Moutafidis (2016):

“The Internet of Things (IoT) is an enormous network that allows interaction among physical and virtual “things.” It is used for the collection and transportation of data by taking advantage of information and communication technologies. The expression IoT was invented by Kevin Aston and was first used as a presentation title at Procter and Gamble (P&G) in 1999.”

### **3.3.6 Laboratory Companies**

Laboratory Companies are startups that are developing new products or services based on laboratory research. The most common example includes the development of new drugs or the application of known drugs.

### **3.3.7 Traditional Ventures**

Traditional Ventures are new ventures that provide solutions known to the consumer market and may or may not innovate. Traditional Ventures incorporate most new ventures that are not startups and are not usually on-target for venture capital funds or financial investors.

---

## **4. NEW VENTURE AND STARTUP'S INVESTMENT SELECTION CRITERIA**

### **4.1 Type of investors and the life cycle of the new venture or startup**

Unlike the public equity market, the valuation of new ventures and startups is not determined based on the traditional principle of supply and demand (Heughebaert & Manigart, 2012), but through direct and lengthy negotiations between investors and entrepreneurs until reaching satisfactory transaction terms, including valuation and governance.

Investors specialize to gain bargaining power. Many venture capital funds invest in companies in a determined stage of the life cycle, accumulating expertise, and credentials to leverage on negotiating investments in new ventures and in raising funds with limited partners.

For example, AB Seed in Brazil is specialized in seed investments in SaaS startups focused on business-to-business (B2B) services and products. Their value proposition goes beyond the capital they provide (equity checks up to USD500,000 targeting a 10-15% stake ownership in the company) and includes go-to-market know-how and corporate development through legal and financial advisory. Their main goal is to support firms escalating sales 10x before their Series A capitalization round. As of July 2019, AB Seed completed four investments in Brazilian SaaS startups and was closing the fifth investment (Melzer, 2019).

The bargaining power at the negotiation table can be unbalanced. University VCs and Government VCs tend to have a more favorable valuation when investing in new ventures and startups due to lower competition for those investments (Heughebaert & Manigart, 2012).

Each stage of the new venture's or startup's life cycle has a better fit with a different class of investors. The kind of value-added each investor will bring varies accordingly. The following table, prepared by Clercq et al. (2006) depicts how business angels, venture capitalists, and corporate venture capitalists, influences the life cycle of a new venture.

**Table 5.** Issues related to venture capital investing and the new venture stage

	<b>Seed Financing</b>	<b>Startup Financing</b>	<b>Expansion Financing</b>	<b>Buy-out Financing</b>
<b>Characteristics of the venture</b>	<ul style="list-style-type: none"> <li>- 1-2 entrepreneurs</li> <li>- Undeveloped technology and business concept</li> <li>- Business plan is not validated</li> </ul>	<ul style="list-style-type: none"> <li>- Management team in place</li> <li>- Product ready for marketing</li> <li>- A pilot and other information about the product are available</li> </ul>	<ul style="list-style-type: none"> <li>- Marketing has been started</li> <li>- Venture is ready to start growing and expanding</li> </ul>	<ul style="list-style-type: none"> <li>- Established company</li> </ul>
<b>Primary purpose of the funding</b>	<ul style="list-style-type: none"> <li>- Enabling research and development</li> <li>- Developing a business concept</li> </ul>	<ul style="list-style-type: none"> <li>- Establishing marketing and sales activities</li> </ul>	<ul style="list-style-type: none"> <li>- Launching full-scale marketing activities</li> </ul>	<ul style="list-style-type: none"> <li>- Management Buyout (MBO)</li> <li>- Leveraged Buyout (LBO)</li> <li>- Delisting</li> </ul>
<b>Typical venture capital investor</b>	<ul style="list-style-type: none"> <li>- Business angel (BA)</li> <li>- Sometimes corporate venture capitalist (CVC)</li> </ul>	<ul style="list-style-type: none"> <li>- Venture capitalist (VC)</li> <li>- CVC</li> <li>- Sometimes BA</li> </ul>	<ul style="list-style-type: none"> <li>- VC</li> <li>- CVC</li> </ul>	<ul style="list-style-type: none"> <li>- VC</li> </ul>
<b>Primary expertise or benefit beyond money provided by venture capitalists</b>	<ul style="list-style-type: none"> <li>- Structure, discipline, sounding board and attraction of additional (external) funding (BA, VC, CVC)</li> <li>- Insights on how to establish the venture's legal form (VC)</li> <li>- Technological insight (CVC)</li> </ul>	<ul style="list-style-type: none"> <li>- Marketing experience, recruiting help, contacts, help with follow-on financing (VC)</li> <li>- Technological insights, test marketing and piloting possibilities (CVC)</li> <li>- Reputation benefits (VC, CVC)</li> </ul>	<ul style="list-style-type: none"> <li>- Marketing experience, recruiting help, with follow-on financing, help to plan and execute the exit (VC)</li> <li>- Technological insights, test marketing and piloting possibilities (CVC)</li> <li>- Reputation benefits (VC, CVC)</li> </ul>	<ul style="list-style-type: none"> <li>- Legal and other experts on how to execute a buyout deal (VC)</li> </ul>
<b>Major trouble spots of venture capital funding from entrepreneurs' point of view</b>	<ul style="list-style-type: none"> <li>- Time-consuming to locate, negotiate and close the deal</li> <li>- Involvement (e.g., reporting requirements and governance) with a VC requires much time</li> <li>- Early-stage company does not have much to back up the valuation of the venture, and the valuation might be very low</li> </ul>	<ul style="list-style-type: none"> <li>- Time-consuming to locate, negotiate and close the deal</li> <li>- Involvement (e.g., reporting requirements and governance) with a VC requires much time</li> <li>- CVC might want to direct the strategy of the venture</li> </ul>	<ul style="list-style-type: none"> <li>- Time-consuming to locate, negotiate and close the deal</li> <li>- Involvement (e.g., reporting requirements and governance) with a VC requires much time</li> <li>- CVC might want to direct the strategy of the venture</li> </ul>	<ul style="list-style-type: none"> <li>- Time-consuming to locate, negotiate and close the deal</li> <li>- Involvement (e.g., reporting requirements and governance) with a VC requires much time</li> </ul>

Source: Clercq et al. (2006).

## 4.2 What are investors looking for?

What investors look for is different from what they get, most of the time. Whereas there are many data companies with plenty of data available for research, there is an inevitable bias for survival in the data as the unsuccessful transactions, those companies that failed, are generally not accounted for in the statistics.

The best way to understand what investors seek is to ask them. Most investors are very objective about their investment thesis and their expectations. The critical questions for any investor include the fund's size, how much money remains to invest, and how many companies

---

will compose the investment portfolio, which determines the average investment size. It is also reasonable to ask, and investors generally agree to answer, what type of investment they seek to do or try to avoid, the expected return rate over how much time. According to Wasserman (2016), "interviews can be invaluable for finding out entrepreneurs' stated motives (Amit et al., 2000)."

The academic literature has many examples of how challenging it might be to get investors and limited partners to contribute to a survey. According to Kohn (2018), "Especially in entrepreneurial and VC related articles, the population of limited partners (e.g., Kuckertz et al., 2015), IVCs (e.g., Fried, Bruton, & Hisrich, 1998) and corporate investment vehicles has proved reluctant to respond to prior surveys (Hill & Birkinshaw, 2014; Maula, Autio, & Murray, 2003; Maula et al., 2005; Proksch et al., 2017).

However, the investor community depends on proper communication to perform its business, and they are willing to contribute. Investors have shared much information publicly; they will address the questions on meetings and interviews and even contribute to academic surveys if adequately induced. This thesis levered on both strategies.

#### **4.2.1 Investors' survey**

##### **a) Methodology**

To understand how investors price their investments, i.e., the valuation of new ventures and startups, we have run a survey consisting exclusively of investors of new ventures and startups that have completed any investment over the past three years.

Graham & Harvey (2001) highlights how survey-based analysis offers a balanced alternative to extensive sample analyses and clinical studies:

"Survey-based analysis complements other research based on large samples and clinical studies. Large sample studies are the most common type of empirical analysis, and have several advantages over other approaches. Most large-sample studies offer, among other things, statistical power and cross-sectional variation. However, large-sample studies often have weaknesses related to variable specification and the inability to ask qualitative questions. Clinical studies are less common but offer excellent detail and are unlikely to 'average away' unique aspects of corporate behavior. However, clinical studies use small samples and their results are often sample-specific.

To determine the expected return on investment for each stage of the new venture or startup, this thesis uses a quantitative approach that allows gauging, through a sample, the characteristics, actions, or descriptive opinions of a target population (Freitas et al., 2000).

---

Surveys are used in conclusive quantitative research of a descriptive character whose primary purpose is to describe a phenomenon or singularity related to the research object (Gil, 2008; Marlhorta, 2006).

For the development of this thesis, we developed a survey incepted and adapted to individual interviews with investors and entrepreneurs of new ventures and startups and the contributions of several authors cited in the literature review, including Hsu, (2004, 2007), Hsu & Ziedonis (2013), Kohn (2018), Röhm et al. (2018), Miloud et al. (2012), Clercq et al. (2006), and Davila et al. (2003).

To improve the research procedure (Babbie, 1999), we have pre-tested the questionnaire before its official distribution with five private equity and venture capital investors. According to Malhotra (2006), the pre-test consists of an initial survey with a small sample of interviewees to identify and eliminate potential problems.

The survey had ten questions divided into four sections and pages and took, on average, three minutes to complete. The first section qualified the investment firm: size in terms of assets under management, number of investments globally over the past three years, and number of investments in Brazil over the past three years. The second section was the core of the research and inquired about the expected return on investment, or, more specifically, the expected rate of return for investments in the following situations: pre-IPO equity investment, growth company equity investment, new venture or startup equity investment, and Early-stage new venture or startup. The third and last section qualified seniority of the individual: corporate title, and when did he/she graduate from college.

We reached over 400 investors of all private equity classes in Brazil and abroad through the author's network, social media – mainly LinkedIn – and specialized blogs such as Anjos e VCs. We collected 139 responses from June 3rd, 2019, until June 19<sup>th</sup>, 2019, representing a 34% response rate, which compares very favorably to similar surveys. According to Graham & Harvey (2001), a 12% response rate is already considered above the average for senior executives, based on previous surveys applied by the Financial Executives Institute (FEI), and other academic surveys. This high response rate may relate to the survey's simplicity that involved only multiple-choice questions, the minimalistic scope of the survey that took less than three minutes to complete, the author's strong network among investors, and the continued individual follow up. The individual responses were promised to be kept confidential, and the respondent had the option not to identify himself or herself. However, confidentiality does not



seem to have played a significant role, as only 17% of the respondents chose to remain anonymous.

SurveyMonkey electronic form administered the survey, and we communicated by email and text message via mobile. A mobile survey proved to be the most effective way to apply it, followed by LinkedIn messaging. Our relationships and personal approach were instrumental in collecting responses. Automatic emails through the survey tool reached 100 emails but resulted in only four responses. The specialized blog resulted in 13 responses and the post on social media only four responses. Most of the responses were generated via a direct approach through LinkedIn or WhatsApp, with continued direct follow-ups.

## b) Descriptive data

This thesis surveyed 105 investors about their expectations of return on equity investments on new ventures and startups at each stage of its life cycle.

Out of the 139 responses we collected, this thesis excluded eighteen incomplete forms, eleven respondents who did not complete any investment in the last three years, and five respondents that provided very inconsistent answers. Thus, our qualified sample totaled 105 investors, of which all are from Brazil except for one from Chile and one from the USA. Based on the respondent's name, 74% of the respondents were male, and 9% female. The remaining 17% responded anonymously.

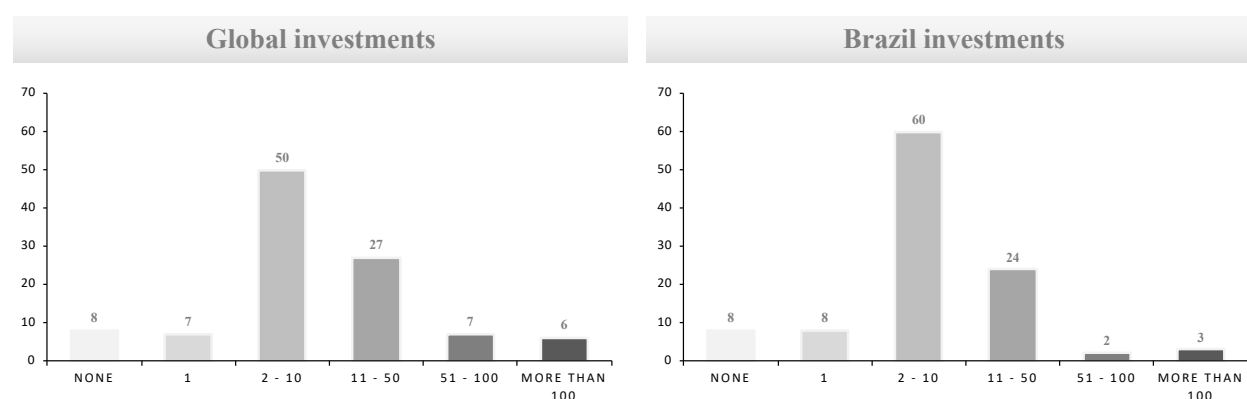
**Figure 6.** Size of the firm measured in terms of Assets Under Management (AUM) in US Dollars

Classification based on asset under management			Reclassification
AUM < USD 500,000	14	13%	14% Small or Angel investors
USD 0.5 million < AUM < USD 1 million	1	1%	
USD 1.1 million < AUM < USD 10 million	17	16%	30% Small Funds
USD 10.1 million < AUM < USD 50 million	15	14%	
USD 50.1 million < AUM < USD 100 million	12	11%	19% Medium-sized Funds
USD 100.1 million < AUM < USD 200 million	8	8%	
USD 200.1 million < AUM < USD 500 million	6	6%	10% Large Funds
USD 500.1 million < AUM < USD 1 billion	5	5%	
USD 1.1 billion < AUM < USD 10 billion	8	8%	26% Very large funds
AUM > USD 10 billion	19	18%	
<b>Total</b>	<b>105</b>	<b>100%</b>	<b>100%</b>

Source: Equity Financing for New Ventures & Startups 2019 Survey

The universe of investors equally comprises small to large investors. Most investors have made two to ten investments over the past three years.

**Figure 7.** Number of equity investments done over the past three years



Source: Equity Financing for New Ventures & Startups 2019 Survey

Note: All funds have completed at least one investment in the last three years, either in Brazil or elsewhere.

Based on the sample, larger funds with more than USD100 million in AUM, have a different market approach to smaller funds. Smaller funds are less active in general, but more active in Brazil; while larger funds are more active, but less active in Brazil. On average, smaller funds invest in two to ten companies, compared to more ten firms for larger funds. Because the sample is predominantly of investors with interests in Brazil, this consideration is limited to the sample and may not be generalized for the global market.

**Table 6.** Smaller funds versus Larger funds in Brazil

The number of transactions for each fund size is based on average scoring of the investment firms in each AUM range and the weighted or straightforward scales.

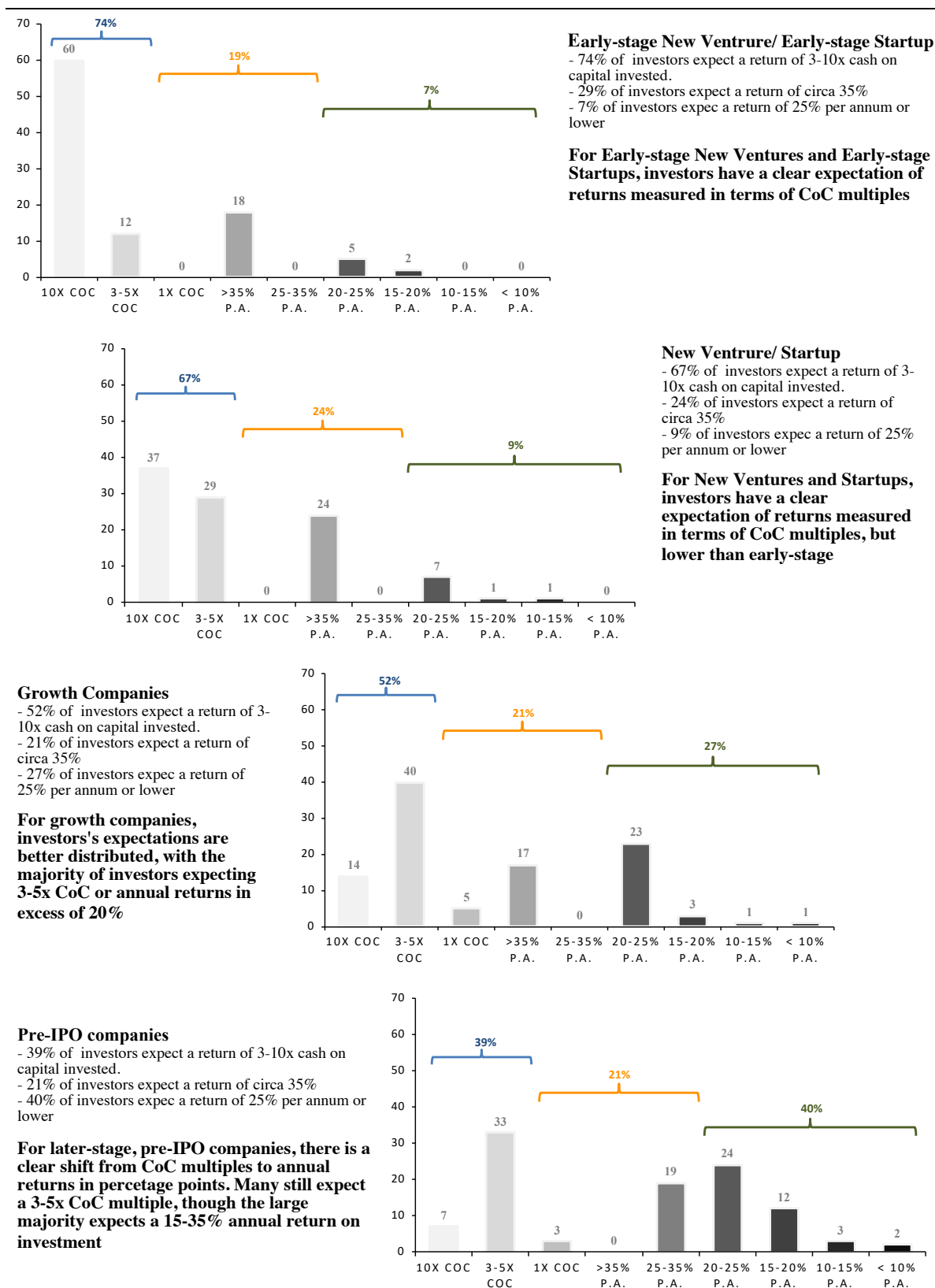
Investments	Simple <sup>1</sup> average			Number of Transactions	Weighted <sup>2</sup> average			
	Global	Brazil	Brazil/Global		Global	Brazil	Brazil/Global	
AUM < USD 500,000	2.7	2.9	108%	2 - 10	5.6	6.2	112%	Smaller funds are less active in general, but more active in Brazil
USD 0.5 million < AUM < USD 1 million	3.0	3.0	100%	2 - 10	5.0	5.0	100%	
USD 1.1 million < AUM < USD 10 million	2.5	2.8	112%	More than 2	7.7	8.5	111%	
USD 10.1 million < AUM < USD 50 million	3.2	3.2	100%	Circa 10	20.1	21.5	107%	
USD 50.1 million < AUM < USD 100 million	3.1	3.2	103%	2 - 10	8.8	12.9	146%	
USD 100.1 million < AUM < USD 200 millio	3.6	3.5	97%	More than 10	20.6	17.5	85%	Larger funds are more active in general, but less active in Brazil
USD 200.1 million < AUM < USD 500 millio	3.5	3.3	95%	More than 10	17.5	13.3	76%	
USD 500.1 million < AUM < USD 1 billion	4.2	3.8	90%	11 - 50	43.0	29.0	67%	
USD 1.1 billion < AUM < USD 10 billion	3.1	2.4	76%	2 - 10	10.8	5.9	55%	
AUM > USD 10 billion	4.5	3.3	73%	Circa 50	52.6	18.5	35%	
Smaller funds	2.9	3.0	104%	2 - 10	9.4	10.8	115%	
Larger funds	3.8	3.3	86%	More than 10	28.9	16.8	58%	

Number of transactions	(1) Simple average		(2) Weighted average	
None	1		0	
1	2		1	
2 - 10	3		5	
11 - 50	4	Simple average is based on a linear scale	30	Weighted average is based on a scale proportional to the number of the transactions in each range
51 - 100	5		75	
more than 100	6		100	

Source: Equity Financing for New Ventures & Startups 2019 Survey

**Figure 8.** Expected return according to the stage of the new venture/ startup



Source: Equity Financing for New Ventures & Startups 2019 Survey

Investors' expected return diminishes as the company moves to the next stage, indicating the perceived risk of the investment diminishes overtime. For Early-stage new ventures and

startups, most investors expect a 10x cash-on-cash return on investment. For new ventures and startups, investors' expectations are between 10x and 3-5x cash-on-cash returns. Growth companies and pre-IPO companies have little difference, with most investors expecting between 20-35% annual returns and some investors still expecting 3-5x cash-on-cash returns.

**Table 7.** Distribution of investors' expectations of return on new ventures and startups

	<b>Early-Stage</b>	<b>New Venture</b>	<b>Growth Co.</b>	<b>Pre-IPO Co.</b>
10x cash-on-cash return	<b>62%</b>	<b>37%</b>	13%	7%
3-5x cash-on-cash return	<b>12%</b>	<b>29%</b>	<b>38%</b>	<b>32%</b>
1x cash-on-cash return	0%	<b>0%</b>	<b>5%</b>	<b>3%</b>
+35% per annum	19%	<b>24%</b>	<b>16%</b>	<b>0%</b>
25-35% per annum	0%	0%	<b>0%</b>	<b>18%</b>
20-25% per annum	5%	7%	<b>22%</b>	<b>23%</b>
15-20% per annum	2%	1%	3%	<b>12%</b>
10-15% per annum	0%	1%	1%	3%
Less than 10% per annum	0%	0%	1%	2%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: Equity Financing for New Ventures & Startups 2019 Survey

We translated all expected returns into annual returns based on a four-years investment term to trace a direct comparison among the investors. The following table also includes the implied risk premium from one stage to the other in a new venture or startup life cycle.

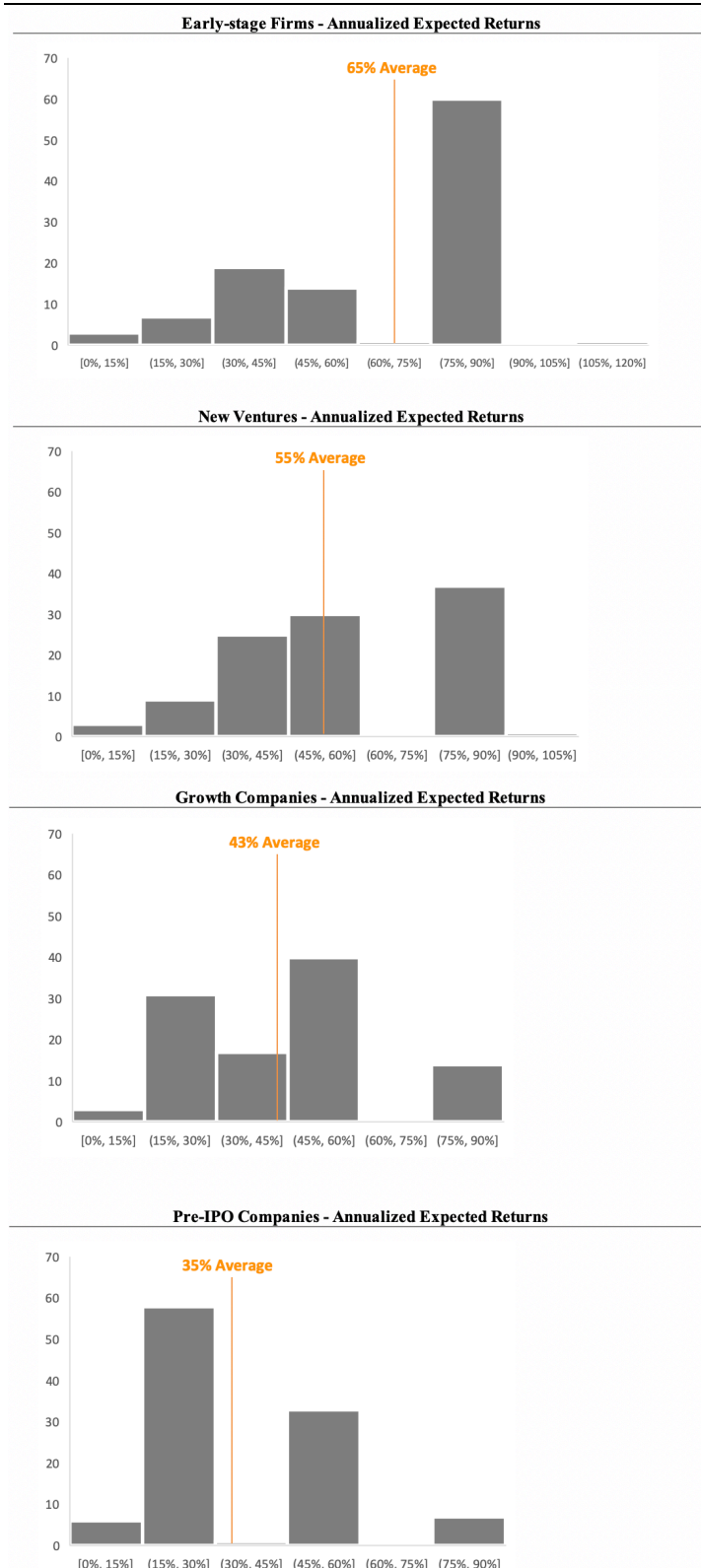
The average expected annual return for an Early-stage firm is 65% p.a., a 9% premium over new ventures. On average, New Ventures are expected to yield 55% p.a., a 13% premium over Growth Companies. Investors expect Growth Companies to return 42% p.a., a 7% premium over Pre-IPO Companies. As the risk diminishes, not only the expected return declines but the dispersion of the expected returns also declines.

**Table 8.** Expected annualized returns per stage in the life cycle of the new venture or startup

	Number of Funds	% p.a. Early-Stage	(-) Risk Premium	% p.a. New Venture	(-) Risk Premium	% p.a. Growth	(-) Risk Premium	% p.a. Pre-IPO
AUM < USD 500,000	14	65%	-2%	63%	-15%	48%	-3%	45%
USD 0.5 million < AUM < USD 1 million	1	50%	-15%	35%	-13%	23%	-5%	18%
USD 1.1 million < AUM < USD 10 million	17	66%	-3%	63%	-17%	47%	-8%	39%
USD 10.1 million < AUM < USD 50 million	15	60%	-11%	49%	-10%	39%	-11%	28%
USD 50.1 million < AUM < USD 100 million	12	61%	-9%	52%	-6%	46%	-13%	33%
USD 100.1 million < AUM < USD 200 million	8	60%	-7%	53%	-19%	34%	8%	41%
USD 200.1 million < AUM < USD 500 million	6	55%	-10%	45%	8%	53%	-8%	46%
USD 500.1 million < AUM < USD 1 billion	5	58%	-10%	48%	-9%	39%	-3%	35%
USD 1.1 billion < AUM < USD 10 billion	8	72%	-8%	64%	-25%	39%	-6%	33%
AUM > USD 10 billion	19	76%	-22%	54%	-13%	41%	-15%	26%
<b>Average</b>		<b>65%</b>	<b>-9%</b>	<b>55%</b>	<b>-13%</b>	<b>43%</b>	<b>-8%</b>	<b>35%</b>
<b>Standard deviation</b>		<b>23%</b>		<b>23%</b>		<b>20%</b>		<b>18%</b>
Small or Angel investors	15	64%	-3%	61%	-15%	46%	-3%	43%
Small Funds	32	63%	-7%	57%	-13%	43%	-9%	34%
Medium-sized Funds	20	61%	-9%	52%	-11%	41%	-3%	38%
Large Funds	11	62%	-11%	51%	-4%	47%	-6%	41%
Very large funds	27	71%	-17%	55%	-16%	39%	-10%	28%

Source: Equity Financing for New Ventures &amp; Startups 2019 Survey

**Figure 9.** The expected annual rate of return according to the stage of the new venture/ startup



Source: Equity Financing for New Ventures & Startups 2019 Survey

The investors' expected returns decline as the new venture or startup evolves in the life cycle, reflecting a lowering risk perception. If investors recognize the life cycle of a new

venture their expectations regarding the returns for Seed-stage firms, Early-stage firms, Expansion-stage firms, and Later-stage firms shall be correlated, and it would be possible to estimate the expected return of a Later-stage firm based on a discount of the return of the preceding stage. Similarly, it would be possible to estimate the return for a Seed-stage firm based on a Later-stage firm return plus a premium for risk. The second approach is more relevant because it is possible to use CAPM, or comparable methods, for Later-stage companies, but not for Seed-stage firms.

### c) Results

This thesis regresses the expected return at a given stage based on the expected return on other stages as independent variables, in addition to some other control variables, as explained in the following tables. We relied on STATA/IC 15.1 to run regressions with the vce (robust) command to account for heteroskedasticity in residual distribution.

**Table 9.**  $Ke_{\text{Later-stage}}$  as a function of  $Ke_{\text{Expansion-stage}}$ ,  $Ke_{\text{Early-stage}}$  and  $Ke_{\text{Seed-stage}}$

Investors' expected return for Later-stage firms is explained with statistical significance by expected returns for Expansion-stage firms and Early-stage firms with 99.9% and 99% significance, respectively.

Seed-stage returns are not statistically significant.

Robust linear regression based on 101 observations

$R^2 = 0.4525$ ,  $F(3,97) = 22.60$ ,  $\text{Prob} > F = 0.0000$ ,  $\text{Root MSE} = 0.13696$

$Ke_{\text{Later-stage}} = 0.47*** \times Ke_{\text{Expansion-stage}} + 0.21** \times Ke_{\text{Early-stage}} - 0.06 \times Ke_{\text{Seed-stage}} + 0.07*$

	Coefficient		Robust Standard Error	t	P >  t	[95% Conf. Interval]	
$Ke_{\text{Expansion-stage}}$	.4690977	***	.0853705	5.49	0.000	.299661	.6385345
$Ke_{\text{Early-stage}}$	.2136211	**	.0955966	2.23	0.028	.0238883	.4033538
$Ke_{\text{Seed-stage}}$	-.0566307		.0677242	-0.84	0.405	-.1910444	.0777831
Constant	.0703145	*	.0392413	1.79	0.076	-.0075686	.1481977

Key: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Note:  $Ke$  is investors' expected return on investment at each stage

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

**Table 10.**  $Ke_{\text{Later-stage}}$  as a function of  $Ke_{\text{Expansion-stage}}$ ,  $Ke_{\text{Early-stage}}$ ,  $Ke_{\text{Seed-stage}}$ , and other control variables: expected returns for very large funds, expected returns for small funds and angel investors, and size of the funds

Seed-stage returns are not statistically significant to explain the expected return at the Later-stage in any model contemplated in this thesis. The fund size and the expected returns of very large funds and small funds are relevant and statistically significant to explain the dependent variable.

Model	$Ke_{\text{Later}}$ 01	$Ke_{\text{Later}}$ 02	$Ke_{\text{Later}}$ 03	$Ke_{\text{Later}}$ 04	$Ke_{\text{Later}}$ 05	$Ke_{\text{Later}}$ 06	$Ke_{\text{Later}}$ 07	$Ke_{\text{Later}}$ 08
$Ke_{\text{Expansion}}$	.46909774***	.4614969***	.45071031***	.42990108***	.39812169***	.3925176***	.41267731***	.40718007***
$Ke_{\text{Early}}$	.21362107*	.18574933	.23163819*	.21820496*	.2547392*	.27825453*	.26430493*	.28376595*
$Ke_{\text{Seed}}$	-.05663066	-.02663652	-.01871841	-.0438427	-.00429933	-.00644354	.0205301	.01744364
Fund Size		-.00865506*				.01556508		.01320468
$Ke_{\text{Expansion}}$ (Large)			-.01426393		.04254032	-.0064396	-.4104349***	-.42584823***
$Ke_{\text{Early}}$ (Large)			-.13976794		-.1642434	-.15309235	-.25552239	-.24090246
$Ke_{\text{Seed}}$ (Large)			-.00272282		-.0931837	-.09316651	-.05014693	-.11886651
$Ke_{\text{Expansion}}$ (Small)				.35770841	.39936044	.48426918	-.44256884***	-.37728763***
$Ke_{\text{Early}}$ (Small)				-.08161359	-.11591311	-.10994613	-.27118568*	-.26705486*
$Ke_{\text{Seed}}$ (Small)				-.07693019	-.1136323	-.10215615	-.03008836	-.0189348
$Ke_{\text{Later}}$ (Small)							.99724929***	1.0038897***
$Ke_{\text{Later}}$ (Large)							.95937253***	.90406333***
Constant	.07031455	.1165885*	.06467042	.06633033	.05777501	-.02531777	.0279629	-.04100735
$R^2$	0.4525	0.4721	0.4979	0.4787	0.5172	0.532	0.6457	0.6562

Key: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Note:  $Ke$  is investors' expected return on investment at each stage

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

Inverting the construction of the regression to have  $Ke_{\text{Seed-stage}}$  as the dependent variable, and  $Ke_{\text{Later-stage}}$ ,  $Ke_{\text{Expansion-stage}}$ , and  $Ke_{\text{Early-stage}}$  as independent variables yielded the following results:

**Table 11.**  $Ke_{\text{Seed-stage}}$  as a function of  $Ke_{\text{Expansion-stage}}$ ,  $Ke_{\text{Early-stage}}$  and  $Ke_{\text{Later-stage}}$

Investors' expected return for Seed-stage firms is explained with statistical significance by expected returns for Early-stage firms only. Seed-stage and Expansion-stage returns are not statistically significant.

```
. . reg SeedstagePA LaterPA ExpansionPA EarlyPA, vce(robust)
```

Linear regression	Number of obs	=	101
	F(3, 97)	=	20.39
	Prob > F	=	0.0000
	R-squared	=	0.4015
	Root MSE	=	.18235

SeedstagePA	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
LaterPA	-.1003868	.1174067	-0.86	0.395	-.3334066 .1326331
ExpansionPA	-.0860068	.0979578	-0.88	0.382	-.2804259 .1084123
EarlyPA	.7250821***	.1016795	7.13	0.000	.5232764 .9268878
_cons	.3136732***	.0579016	5.42	0.000	.1987546 .4285917

Key: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Note:  $Ke$  is investors' expected return on investment for each stage

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1



**Table 12.**  $Ke_{Seed}$ -stage as a function of  $Ke_{Expansion}$ -stage,  $Ke_{Early}$ -stage,  $Ke_{Later}$ -stage, and other control variables: expected returns for very large funds, expected returns for small funds and angel investors, and size of the funds

Investors' expected return for Seed-stage firms is explained with statistical significance by expected returns for Early-stage in all models contemplated in this thesis and fund size in Model 01. Seed-stage and Expansion-stage returns are not statistically significant in any model.

Model	$Ke_{Seed}$ 01	$Ke_{Seed}$ 02	$Ke_{Seed}$ 03	$Ke_{Seed}$ 04	$Ke_{Seed}$ 05	$Ke_{Seed}$ 06	$Ke_{Seed}$ 07	$Ke_{Seed}$ 08
$Ke_{Later}$	-.10038677	-.04708144	-.01748855	-.08890079	.01881687	-.02286129	.04227238	.03699777
$Ke_{Expansion}$	-.08600679	-.09538562	-.10899348	-.06991176	-.08771904	-.07251643	-.05222476	-.05100783
$Ke_{Early}$	.7250821***	.72500325***	.66942776***	.70364144***	.61725717***	.66721296***	.70060506***	.70513818***
Fund Size		.01194461*				.01992948		.00234216
$Ke_{Later}$ (Large)			-.20394947		-.24788053	-.3075414	-.38289908	-.38749869
$Ke_{Expansion}$ (Large)			.09562154		.07493766	.03286625	.07102532	.06610293
$Ke_{Early}$ (Large)			.14535262		.19408773	.08840874	-.62697101***	-.62544526***
$Ke_{Later}$ (Small)				.00898701	-.09861249	-.04674091	-.06533416	-.05888605
$Ke_{Expansion}$ (Small)				-.19587596	-.17644211	-.08889788	-.19839083	-.1890506
$Ke_{Early}$ (Small)				.13125608	.21852413	.22289912	-.75829467**	-.75865402**
$Ke_{Seed}$ (Large)							.75168784***	.73890481***
$Ke_{Seed}$ (Small)							.91986222***	.92127809***
Constant	.31367317***	.23422997***	.31002526***	.31571246***	.31422896***	.19961098*	.23444536***	.22225576*
R <sup>2</sup>	0.4015	0.4246	0.4171	0.4036	0.4219	0.4384	0.5502	0.5504

Key: \* p<.05; \*\* p<.01; \*\*\* p<.001

Note:  $Ke$  is investors' expected return on investment for each stage

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

This thesis also tested for  $Ke_{Early}$ -stage, and  $Ke_{Expansion}$ -stage as the dependent variable, as follows:

**Table 13.**  $Ke_{Early}$ -stage as a function of  $Ke_{Seed}$ -stage,  $Ke_{Expansion}$ -stage, and  $Ke_{Later}$ -stage

Investors' expected return for Early-stage firms is explained with statistical significance by expected returns for all other stages: Seed-stage, Expansion-stage, and Later-stage.

Source	SS	df	MS	Number of obs	=	103
Model	3.25592288	3	1.08530763	F(3, 99)	=	48.68
Residual	2.20709201	99	.022293859	Prob > F	=	0.0000
				R-squared	=	0.5960
				Adj R-squared	=	0.5838
Total	5.46301488	102	.053558969	Root MSE	=	.14931

EarlyPA	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
SeedstagePA	.4870276***	.0651489	7.48	0.000	.357758 .6162973
ExpansionPA	.3373644***	.0939072	3.59	0.001	.151032 .5236967
LaterPA	.267507**	.0998811	2.68	0.009	.0693212 .4656928
_cons	.0025363	.0480429	0.05	0.958	-.0927913 .0978639

Key: \* p<.05; \*\* p<.01; \*\*\* p<.001

Note:  $Ke$  is investors' expected return on investment at each stage

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

**Table 14.**  $Ke_{\text{Expansion-stage}}$  as a function of  $Ke_{\text{Seed-stage}}$ ,  $Ke_{\text{Early-stage}}$ , and  $Ke_{\text{Later-stage}}$ 

Investors' expected return for Expansion-stage firms is explained with statistical significance by expected returns for Early-stage, and Later-stage only.

Source	SS	df	MS	Number of obs	=	103
Model	1.96979503	3	.656598342	F(3, 99)	=	29.06
Residual	2.2364949	99	.022590858	Prob > F	=	0.0000
				R-squared	=	0.4683
				Adj R-squared	=	0.4522
Total	4.20628993	102	.041238137	Root MSE	=	.1503

ExpansionPA	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
SeedstagePA	-.0071074	.0820259	-0.09	0.931	-.1698647	.1556499
EarlyPA	.3418587***	.0951583	3.59	0.001	.1530441	.5306734
LaterPA	.4508971***	.0937442	4.81	0.000	.2648881	.636906
_cons	.0796264	.0476959	1.67	0.098	-.0150125	.1742653

Key: \* p<.05; \*\* p<.01; \*\*\* p<.001

Note:  $Ke$  is investors' expected return on investment at each stage

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

**Table 15.** Investors' expected returns for each stage of the life cycle of a new venture or startup

Model	$Ke_{\text{Seed}}$ 01	$Ke_{\text{Seed}}$ 02	$Ke_{\text{Early}}$ 01	$Ke_{\text{Early}}$ 02	$Ke_{\text{Expansion}}$ 01	$Ke_{\text{Expansion}}$ 02	$Ke_{\text{Later}}$ 01	$Ke_{\text{Later}}$ 02
$Ke_{\text{Later}}$	-.10038677	-.04708144	.25102507*	.22327535*	.52305781***	.53224362***		
$Ke_{\text{Expansion}}$	-.08600679	-.09538562	.33865747**	.34025444**			.46909774***	.4614969***
$Ke_{\text{Early}}$	.7250821***	.72500325***			.32134682***	.32646148***	.21362107*	.18574933
Fund Size		.01194461*		-.0058732		.00256423		-.00865506*
$Ke_{\text{Seed}}$			.48065704***	.493039***	-.05409962	-.06223753	-.05663066	-.02663652
Constant	.31367317***	.23422997***	.01542625	.04832444	.09606763*	.08135005	.07031455	.1165885*
R <sup>2</sup>	0.4015	0.4246	0.5818	0.5876	0.4956	0.4969	0.4525	0.4721

Key: \* p<.05; \*\* p<.01; \*\*\* p<.001

Note:  $Ke$  is investors' expected return on investment at each stage

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

Based on the data collected in the Equity Financing for New Ventures & Startups 2019 Survey, it is possible to affirm that the returns for each stage of the life cycle of a new venture or startup are somehow correlated, at least for the sample analyzed. This correlation can be explained by investors associating a lower risk with the evolution of the new venture in its life cycle, therefore expecting a lower return on investment as the firm evolves. However, expected returns at the seed-state are not statistically significant to explain the expected returns at the following stages, indicating that the nature of such expectations at the seed stage might be indeed different, as represented by a multiple on invested capital without a rigid time frame.

The thesis also tested if large funds and small funds behave differently along with the new venture and startup life cycle. Smaller funds tend to specialize in smaller investments, whereas larger funds tend to specialize in larger investments. It would be reasonable to expect

smaller funds would be more competitive on the Seed-stage and Early-stage, while larger funds would be more competitive on the Expansion-stage and Later-stage.

To test this hypothesis, this thesis separated the expected return of the funds with less than USD1 million under management – the Small or Angel Investors, and the funds with over USD 1 billion under management – the Very Large Funds. As mentioned earlier, 15 (14%) respondents identified their funds as Small, and 27 (26%) respondents identified their funds as Large. The thesis performed t-tests for the expected returns for Large Funds versus the sample, and the expected returns for Small funds and the sample, for all four stages of the life cycle of the new venture or startup.

**Table 16.** T-test with unequal variance for expected returns: Seed-stage

```
. . ttest SeedstagePA, by(LargeFunds) unequal welch
```

---

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	77	.6270215	.027187	.2385648	.5728739	.6811691
1	25	.7148958	.0397571	.1987855	.6328411	.7969504
combined	102	.6485593	.0229361	.2316431	.6030603	.6940583
diff		-.0878743	.0481639		-.1846049	.0088563

diff = mean(0) - mean(1) t = -1.8245  
Ho: diff = 0 Welch's degrees of freedom = 50.197

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.0370 Pr(|T| > |t|) = 0.0740 Pr(T > t) = 0.9630

```
. . ttest SeedstagePA, by(SmallFunds) unequal welch
```

---

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	87	.6494619	.0243917	.227511	.6009727	.6979511
1	15	.6433242	.067878	.2628905	.4977403	.7889082
combined	102	.6485593	.0229361	.2316431	.6030603	.6940583
diff		.0061377	.0721276		-.1451972	.1574725

diff = mean(0) - mean(1) t = 0.0851  
Ho: diff = 0 Welch's degrees of freedom = 10.3373

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.5334 Pr(|T| > |t|) = 0.9331 Pr(T > t) = 0.4666

Very Large Funds are more expensive than other funds (higher annual expected returns: 71% vs. 63%) with a 3.7% significance%, **in line with this thesis hypothesis**

Small or Angel Investors are not different than other funds (the t-test does not reject H<sub>0</sub>)

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

**Table 17.** T-test with unequal variance for expected returns: Early-stage

```

. . ttest EarlyPA, by(LargeFunds) unequal welch

```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	77	.5565423	.0261178	.2291825	.5045242	.6085603
1	26	.5489839	.0430649	.2195887	.4602901	.6376777
combined	103	.5546343	.0222443	.2257549	.5105129	.5987558
diff		.0075584	.0503659		-.0938078	.1089246

diff = mean(0) - mean(1) t = 0.1501  
Ho: diff = 0 Welch's degrees of freedom = 46.2548

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.5593 Pr(|T| > |t|) = 0.8814 Pr(T > t) = 0.4407

```

.
.
. . ttest EarlyPA, by(SmallFunds) unequal welch

```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	88	.544818	.0237462	.2227588	.4976199	.592016
1	15	.6122238	.0626085	.2424816	.477942	.7465056
combined	103	.5546343	.0222443	.2257549	.5105129	.5987558
diff		-.0674058	.0669604		-.2076277	.0728161

diff = mean(0) - mean(1) t = -1.0067  
Ho: diff = 0 Welch's degrees of freedom = 18.8568

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.1634 Pr(|T| > |t|) = 0.3268 Pr(T > t) = 0.8366

Very Large Funds are not different than other funds (the t-test does not reject  $H_0$ )

Small or Angel Investors are not different than other funds (the t-test does not reject  $H_0$ )

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

**Table 18.** T-test with unequal variance for expected returns: Expansion-stage

```

. . ttest ExpansionPA, by(LargeFunds) unequal welch

```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	78	.4373918	.0232093	.2049794	.3911761	.4836076
1	26	.3851795	.0347169	.1770223	.3136786	.4566803
combined	104	.4243388	.0194967	.198828	.3856717	.4630058
diff		.0522124	.0417605		-.0316287	.1360534

diff = mean(0) - mean(1) t = 1.2503  
Ho: diff = 0 Welch's degrees of freedom = 50.9152

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.8915 Pr(|T| > |t|) = 0.2169 Pr(T > t) = 0.1085

```

.
.
. . ttest ExpansionPA, by(SmallFunds) unequal welch

```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	89	.4178856	.0215881	.2036616	.3749838	.4607874
1	15	.4626276	.0434299	.1682031	.3694798	.5557753
combined	104	.4243388	.0194967	.198828	.3856717	.4630058
diff		-.044742	.0484995		-.145165	.0556811

diff = mean(0) - mean(1) t = -0.9225  
Ho: diff = 0 Welch's degrees of freedom = 22.6165

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.1830 Pr(|T| > |t|) = 0.3660 Pr(T > t) = 0.8170

Very Large Funds are cheaper than other funds (lower expected returns: 38% vs. 43%), with a significance of 10.85%, **in line with this thesis hypothesis**

Small or Angel Investors are not different than other funds (the t-test does not reject  $H_0$ )

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

**Table 19.** T-test with an unequal variance of expected returns: Later-stage

```

. . ttest LaterPA, by(LargeFunds) unequal welch

```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	77	.3785234	.0221632	.1944812	.3343816	.4226652
1	27	.2817417	.0218031	.1132922	.2369248	.3265586
combined	104	.3533974	.017804	.1815655	.3180874	.3887073
diff		.0967817	.0310899		.0349305	.158633

diff = mean(0) - mean(1) t = 3.1130  
Ho: diff = 0 Welch's degrees of freedom = 81.6858

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.9987 Pr(|T| > |t|) = 0.0026 Pr(T > t) = 0.0013

```

.
. . ttest LaterPA, by(SmallFunds) unequal welch

```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	89	.3400962	.0185688	.1751778	.3031946	.3769978
1	15	.4323175	.0528182	.2045641	.3190337	.5456013
combined	104	.3533974	.017804	.1815655	.3180874	.3887073
diff		-.0922212	.0559872		-.2097787	.0253362

diff = mean(0) - mean(1) t = -1.6472  
Ho: diff = 0 Welch's degrees of freedom = 18.1447

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.0584 Pr(|T| > |t|) = 0.1167 Pr(T > t) = 0.9416

Very Large Funds are cheaper than other funds (lower annual expected returns: 28% vs. 37%), with a significance of 0.13%, **in line with this thesis hypothesis**

Small or Angel Investors are more expensive than other funds (higher annual expected returns: 43% vs. 34%), with a significance of 5.84%, **in line with this thesis hypothesis**

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

**Table 20.** Summary of t-tests with unequal variances

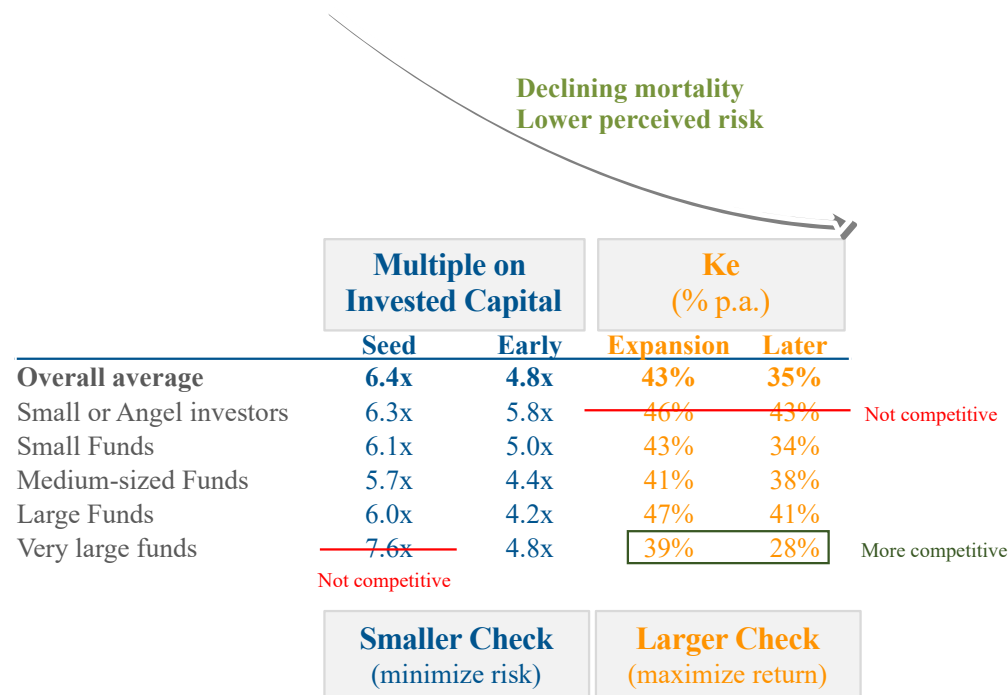
		Number of Funds	% p.a. Seed-Stage	(-) Risk Premium	% p.a. New Venture	(-) Risk Premium	% p.a. Growth	(-) Risk Premium	% p.a. Pre-IPO
Small or Angel Investors (AUM < USD 1 million)	(a)	15	64.3%	-3%	61.2%	-15%	46.3%	-3%	43.2%
Other funds	(b)	89	64.9%	-10%	54.5%	-13%	41.8%	-8%	34.0%
Premium / Discount - in percentage points	(a) - (b)		-1%		7%		4%		9%
Premium / Discount - in percentage	(a)/(b) -1		-1%		12%		11%		27%
<b>Two-sample t test with unequal variances</b>									
Is the difference statistically significantly based on t-test?			no		no		no		yes
p-value			0.9331		0.3268		0.3660		0.1167
p-value for Small or Angel Investors > Other funds			n.m.		n.m.		n.m.		0.0584
		Number of Funds	% p.a. Seed-Stage	(-) Risk Premium	% p.a. New Venture	(-) Risk Premium	% p.a. Growth	(-) Risk Premium	% p.a. Pre-IPO
Very Large Funds (AUM > USD 1 billion)	(a)	26	71.5%	-17%	54.9%	-16%	38.5%	-10%	28.2%
Other funds	(b)	77	62.7%	-7%	55.7%	-12%	43.7%	-6%	37.9%
Premium / Discount - in percentage points	(a) - (b)		9%		-1%		-5%		-10%
Premium / Discount - in percentage	(a)/(b) -1		14%		-1%		-12%		-26%
<b>Two-sample t test with unequal variances</b>									
Is the difference statistically significantly based on t-test?			yes		no		no		yes
p-value			0.0740		0.8814		0.2169		0.0026
p-value for Very Large Funds > Other funds			0.0370		n.m.		n.m.		n.m.
p-value for Very Large Funds < Other funds			n.m.		n.m.		n.m.		0.0013

Source: Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

## d) Discussion

The specific findings of the survey analysis are reassuring and in line with our expectations.

Figure 10. Summary of the survey's findings



Source: Elaborated by the author based on the Equity Financing for New Ventures & Startups 2019 Survey using STATA/IC 15.1

## 4.2.2 Investors' interviews

### a) Methodology

The ecosystem of private equity and venture capital investors is very developed. Investors have to make themselves available if they expect to access the best investment opportunities with limited competition. It is reasonable to say that it is part of the investor's job description to advertise their investment objectives, target investment structure, and deal terms, including expected returns.

There is plenty of information available on the firm's webpages, in investors' social media profiles and blogs, and in web pages dedicated to private equity and venture capital investments.

At first, we inspected the webpages of the leading private equity and venture capital investors. Following that, we investigated the top investors globally based on rankings such as Forbes', depicted in **Table 21**. The Midas List: 2020 – the top 35 investors. Finally, we have

analyzed newspapers, specialized blogs and other sources of information available on the internet.

**Table 21.** The Midas List: 2020 – the top 35 investors

Rank	Name	Firm	Notable deal
1	Neil Shen	Sequoia China (Hong Kong)	ByteDance
2	Andrew Braccia	Accel (Hillsborough)	Slack
3	Roelof Batha	Sequoia (Menlo Park)	Square
4	Ben Horowitz	Andreessen Horowitz (Atherton)	Okta
5	Navin Chaddha	Mayfield Fund (Saratoga)	Lyft
6	Richard Liu	Morningside Venture Capital (Hong Kong)	Xiaomi
7	Bill Gurley	Benchmark (Portola Valley)	Uber
8	Mary Meeker	Bond Capital (Woodside)	Spotify
9	Eric Paley	Founder Collective (Boston)	The Trade Desk
10	Hans Tung	GGV Capital (San Francisco)	Peloton
11	Rob Hayes	First Round (San Francisco)	Uber
12	Douglas Leone	Sequoia (Atherton)	Nubank
13	JP Gan	INCE Capital (Shanghai)	BiliBili
14	Kathy Xu	Capital Today	Meituan-Dianping
15	Sameer Gandhi	Accel (San Francisco)	CrowdStrike
16	Lee Fixel	Addition (New York)	Peloton
17	Bill Trenchard	First Round (Woodside)	Looker
18	Zhen Zhang	Gaorong Capital (Beijing)	Pinduoduo
19	Xiaojun Li	IDG Capital (Boston)	Pinduoduo
20	Jeff Jordan	Andreessen Horowitz (Portola Valley)	Airbnb
21	James Mi	Lightspeed China Partners	Pinduoduo
22	Brian Singerman	Founders Fund (San Francisco)	Stemcentrx
23	Neeraj Agrawal	Battery Ventures (Boston)	Brightree
24	Xiaoping Xu	ZhenFund (Beijing)	Meicai
25	Peter Fenton	Benchmark (San Francisco)	Elastic
26	Scott Sandell	New Enterprise Associates (Portola Valley)	Caudflare
27	Ravi Mhatre	Lightspeed Venture Partners (Menlo Park)	ThoughtSpot
28	Robert Nelsen	ARCH Venture Partners (San Francisco)	Vir Biotech
29	Chris Dixon	Andreessen Horowitz (Menlo Park)	Coinbase
30	Steven Ji	Sequoia China (Shanghai)	Ele.me
31	Hemant Taneja	General Catalyst (Palo Alto)	Livongo
32	Alfred Lin	Sequoia (San Francisco)	Airbnb
33	Nisa Leung	Qiming Venture Partners (Hong Kong)	Zai Lab
34	Jeremy Liew	Lightspeed Venture Partners (Menlo Park)	Affirm
35	Jenny Lee	GGV Capital (Shanghai)	Kingsoft WPS

Source: Forbes @ <https://www.forbes.com/midas/> on July 25<sup>th</sup>, 2020

## b) Descriptive data

This thesis has collected investor's statements about their investment strategy and goals, based on public interviews summarized on **Table 22**. The wish list of investors in New venture and Startups.

**Table 22.** The wish list of investors in New venture and Startups

Investor (year)	Comments	Source
Ace Startups Guilherme Lima (2019)	<ul style="list-style-type: none"> <li>- The valuation reflects the company's cash flow or its sale price at the exit</li> <li>- Key pricing factors include i) capital needs, ii) founders' dilution and iii) product-market fit</li> </ul>	Lima (2019)
BBG Ventures Nisha Dua (2019)	<ul style="list-style-type: none"> <li>- "data, substantive technology, and a clear ability to lead, hire smartly, and ultimately execute are paramount to helping investors decide to fund"</li> <li>- Be able to due diligence appropriately</li> </ul>	Zipkin (2019)
FJ Labs Fabrice Guinda (2018)	<ul style="list-style-type: none"> <li>- We invest in large, scalable markets, or companies with global ambition</li> <li>- Team with high intellect, ambition, passion, ability to execute, grit and tenacity</li> <li>- A business with a large addressable market and scalability, low risk of disintermediation, high capital efficiency, attractive unit economics</li> </ul>	SOSV (2019)
Cowboy Ventures Aileen Lee (2018)	<ul style="list-style-type: none"> <li>- Founders must demonstrate that they can parallel-path between short-term and long-term goals</li> <li>- The addressable market is expected to be substantial, and the solution to the problem extremely superior to the alternatives</li> </ul>	Lee (2018)
Sequoia Capital Shailendra Singh (2016)	<ul style="list-style-type: none"> <li>- "We invest based on whether we like an industry, a founder, a company, or a sector and take 10-15 years to view on it."</li> <li>- The 'founder's DNA' is essential, and he/she should not oversell to media or investors</li> </ul>	Julka (2016)
Tricent Capital Adam Root (2016)	<ul style="list-style-type: none"> <li>- VCs want to see product-market fit</li> <li>- Product-market fit measured by growing recurring revenues, high gross margin, low churn, high lifetime value of costumers</li> </ul>	Root (2016)
Otium Capital Pierre Entremont (2015)	<ul style="list-style-type: none"> <li>- The optimal amount raised is the maximal amount which, in a given period, allows the last dollar raised to be more useful to the company than it is harmful to the entrepreneur</li> </ul>	Entremont (2015)
Threshold Ventures Heidi Roizen (2014)	<ul style="list-style-type: none"> <li>- "I want to know that you've done your homework. I want to know that you've gotten to know the insides of your target market and that you've fully vetted your cost structure."</li> </ul>	Roizen (2014)
Tiger Management Julian Robertson (2012)	<ul style="list-style-type: none"> <li>- "The first thing is, is the management decent and honest? A lot of people don't really care about that. The way to look into that is to do some diligence."</li> </ul>	Robertson (2012)
United Square Ventures Fred Wilson (2011)	<ul style="list-style-type: none"> <li>- Founders must know their product and be able to perfect it</li> <li>- Founders can create followers and inspire people</li> <li>- Product-market fit is more important than growth</li> </ul>	Wilson (2011)

Source: The investors



---

### c) Results and discussion

Early-stage investors to pre-IPO investors seem to be concerned about the same value drivers: product-market fit (Eisenmann et al., 2012), the size of the market, the quality of the founders (Clercq et al., 2006), and the conditions that investors will monetize the investment (Kohn, 2018).

Investors in new ventures and startups look for by future value, not current profitability. Investors are concerned about equity value appreciation over time and the final sale price of their shares in the company, and less concerned about annual dividend payments. The size of the addressable market and the firm's ability to capture a significant share of this market are the main determinants of future value.

**Potential value appreciation varies along the life cycle of the firm.** Value appreciation is determined by entry price compared to the exit price, which depends on timing, or where in the life cycle of the firm these two events ought to take place.

Survival is another primary concern for investors. Survival means that the firm has overcome all shortcomings of developing a company in a competitive market. The founder's characteristics and how he/she drives and pivots the business to solve product-market fit are the primary determinant of survival.

Product-market fit is a crucial driver of value and survival, but the product-market fit is a consequence, not a cause. Investors seem to understand that given the dynamism of the market, product-market fit is a moving target. Therefore, investors sponsor the firm as a whole, not a product or idea because it will change over time.

**Changes in the product-market fit vary along the firm's life cycle, being more intense and meaningful at the beginning of the cycle and less significant, incremental, at the end of the cycle.**

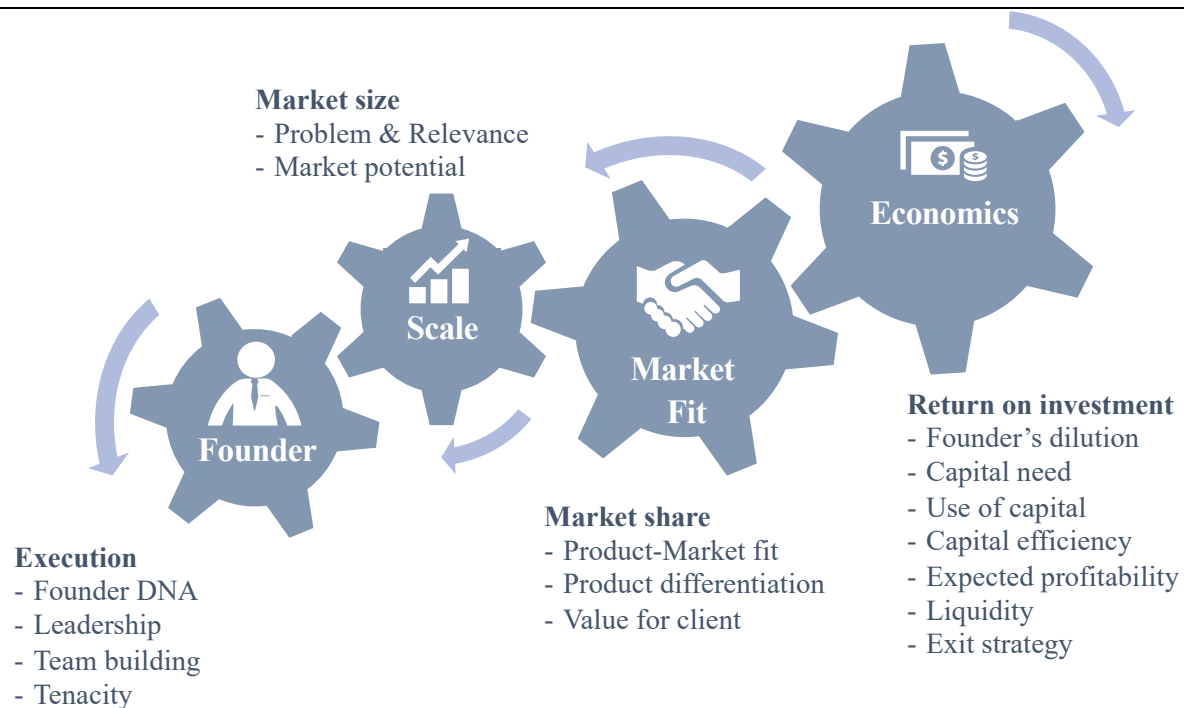
### 4.3 Criteria for investment selection

Three significant characteristics define a startup: i) the market fit of products or services, ii) the founder's characteristics, and iii) its financial profile. At first, the founders of new ventures and startups control only their human and social capital (Eisenmann, 2012), hoping soon to gain control over some desperately needed financial capital. These two dimensions of control, the founder and the capital, are then completed with the customer view through the product or service, or the perspective of a product or service.

---

Figure 11. Criteria for investment selection

---



---

Source: the author

---

#### 4.3.1 Founders' characteristics

Various studies and economic theories emphasize the entrepreneurial individual (Casson, 1982; Kirzner, 1992, 1979, 1973; Schumpeter, 1934; Miloud, Aspelund, & Cabrol, 2012) with an economic purpose (Amit, Mueller & Cockburn, 1995; Reynolds, 1988; Shane and Venkataram, 2000). In his original theory, Schumpeter saw the entrepreneur as a "solitary hero" with exceptional abilities to explore and exploit opportunities to revamp whole industries. Casson (1982) views entrepreneurs as individuals, not as a team, a committee, or an organization. Kirzner (1973) states that the discovery of an opportunity is a singular act occurring unexpectedly and spontaneously in an individual's mind.

The entrepreneur aims to create something new of value versus exploiting a product or service that already exists. The entrepreneur should engage when it makes economic sense to do so (Amit et al., 1995; Reynolds, 1988). The entrepreneur has to engage with and explore the idea commercially, with profit as a goal (Shane and Venkataram, 2000).

The specific characteristics of the entrepreneur seem to be more critical than others. Resourceful social networks increase the likelihood of entrepreneurship (Aldrich and Zimmer, 1986; Miloud et al., 2012). Cooper, Woo, and Dunkelberg (1989) have found that people are more likely to exploit an opportunity if they already have useful information from their

---

previous job since already possessing knowledge reduces the opportunity cost. Individuals with a comparative advantage over other entrepreneurs tend to assess their chances of success more positively (Cooper et al. 1988, Palich and Bagby 1995). The founder's experience is positively related to a startup's success (Harada, 2003; Miloud et al., 2012), but age is inversely related to success (Harada, 2003). Harada (2003) also indicated that female founders were less prone to success than male founders in Japan.

Some studies of entrepreneurial characteristics are built on the personality of the founder based on the Myers-Briggs Type Indicator (Ginn & Sexton, 1990). According to Ginn & Sexton (1990), growth-oriented founders privileged an intuitive approach to information gathering and a planned and systematic approach to conclusion making.

According to Hsu (2007), venture capitalists' investment decisions take into account the characteristics of the founder and the new venture's team, which impacts the perceived risk, performance expectation, and consequently valuation. Baum & Silverman (2004) found evidence that startups with larger top management teams succeed in securing more venture capital financing. Unlike the common sense that entrepreneurs are risk-takers, founders tend to be risk-averse in pursuing profit if that means lowering the risk of closure (Xu & Ruef, 2004). Xu & Ruef (2004) found that "entrepreneurs are significantly more risk-averse than the general US population."

According to Securato Junior, Adorno, Marinho, & Savoia (2019), "SEBRAE - Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (Brazilian Service of Support to Small and Micro Enterprises) has developed a tutoring program called EMPRETEC, which was developed by the United Nations (UN) and promoted in over 40 countries. This program seeks to develop characteristics of the entrepreneurial behavior profile and to identify new business opportunities (SEBRAE, 2018)."

The work developed by EMPRETEC identified the following characteristics of entrepreneurs, as presented in Table 23.

---

**Table 23.** Entrepreneurs characteristics (SEBRAE, 2018)

Characteristics	Statement
Opportunity search and initiative	<ul style="list-style-type: none"><li>- Is proactive, anticipates situations</li><li>- Looks for opportunities to expand the business</li><li>- Leverages uncommon situations to make progress</li></ul>
Persistence	<ul style="list-style-type: none"><li>- Does not quit when challenged</li><li>- Re-evaluates insists or changes plans to surpass goals</li><li>- Makes an extraordinary effort to achieve goals</li></ul>
Take Calculated Risk	<ul style="list-style-type: none"><li>- Looks for and assesses alternatives for decision making</li><li>- Tries to reduce the probability of a mistake</li><li>- Accepts moderate challenges, with reasonable chances of success</li></ul>
Demands quality and efficiency	<ul style="list-style-type: none"><li>- Continually improves the business/ products</li><li>- Meets or exceeds the client's expectations</li><li>- Creates procedures to meet deadlines and quality standards</li></ul>
Commitment	<ul style="list-style-type: none"><li>- Takes responsibility for success and failure</li><li>- Works with the team to deliver results</li><li>- Prioritizes relationship with clients over short-term needs</li></ul>
Information gathering	<ul style="list-style-type: none"><li>- Gets involved with market assessment</li><li>- Always investigates new products/services offerings</li><li>- Consults a specialist in the decision-making process</li></ul>
Goals Setting	<ul style="list-style-type: none"><li>- Targets goals that are challenging and important for him/herself</li><li>- Has a clear long-term vision</li><li>- Proposes tangible goals, with performance indicators</li></ul>
Systematic planning and monitoring	<ul style="list-style-type: none"><li>- Faces significant challenges by breaking them into steps</li><li>- Quickly adapts plans to market changes and value drivers</li><li>- Monitors financial KPIs and takes them into account in the decision-making process</li></ul>
Persuasion and network	<ul style="list-style-type: none"><li>- Comes up with a strategy to gain support for projects</li><li>- Gathers support for projects from key people</li><li>- Develops networks and builds good commercial relationships</li></ul>
Independence and self-confidence	<ul style="list-style-type: none"><li>- Trusts own opinion more than others</li><li>- Is optimistic and determined, even when confronted</li><li>- Conveys confidence in own ability</li></ul>

Source: SEBRAE (2018)

#### 4.3.2 Product/service-market fit and scale

Product-market fit (or service-market fit) means that the new venture or startup has the right product (or service) for the addressable market, which usually starts with a group of early adopter customers and has a significant profit potential (Eisenmann et al., 2012).

Investors frequently mention Product-market fit as a critical factor considered for making investment decisions. New venture's equity investors serve as a proxy for value proposition validation (Cock, Bruneel, & Bobelyn, 2019), as venture capitalists prefer investment opportunities with a tangible product-market fit (Root, 2016). Product-market fit arouse when an entrepreneur validated all key business model hypotheses (Eisenmann et al., 2012).

---

The size of the opportunity will drive the size of the investment. Investors will first assess the problem that the new venture or startup is trying to solve (Lee, 2015). The new venture's or startup's proposed solution should ideally be significantly superior to the alternatives to gain traction with the consumer base (Lee, 2015) – an indication of future market share. Finally, the addressable market is hopefully meaningful to allow the new venture or startup to grow.

New ventures and startups must pivot until they reach the product-market fit (Eisenmann et al., 2012). Pivoting the business is more straightforward and cheaper for Early-stage new ventures, and more complex and expensive for scaled-up, Later-stage enterprises.

The market fit of products or services will have a different perspective for the new ventures when they are focused on surviving than when they are focused on gaining relevance. At an earlier stage, investors will assess the ability of the new venture to pivot the business and pursue a product-market fit. At a later stage, investors will assess how market-fit are the products or services and how the venture expects to capture the opportunity.

Venture capitalists tend to reward innovation. Innovation speeds market fit and may provide a higher value to new products and services. When available, innovation is measured based on the number of patents registered by the new venture, which is positively associated with venture capital financing (Baum & Silverman, 2004; Hsu & Ziedonis, 2013) and higher valuation (Hsu & Ziedonis, 2013; Klobucnik & Sievers, 2013).

### **4.3.3 Financial profile**

New ventures and startups require revised management tools compared to established companies (Blank, 2013). The usual accounting methods for tracking revenue and cash flow and the management theories that MBA courses teach do not apply for new ventures (Blank, 2013). However, it does not mean a founder should unlearn everything he or she learned at school.

The new venture's financial profile will always be relevant: the cash flow generation (or cash burn), the capital structure, sources and uses of funds, the capitalization table, the shareholding structure, and corporate governance.

The single key factor for a new venture is the size of the equity investment. The capital increase should correlate with how much capital the new venture needs, how it expects to deploy, and how long it will last. The capital need, and therefore, the amount of capital raised

---

will define the new venture's valuation and dilution at the capital raise, and also determines the timing of the next capitalization round.

#### **4.3.4 Survival**

The high failure rate of new ventures and startups is a primary concern of all stakeholders, including entrepreneurs, investors, and clients. The factors that positively impact investment selection, the factors that drive value, and the factors that drive survival are not the same and vary along the life cycle of the firm.

The founder's characteristics are positively associated with investment selection, the firm's valuation (Hsu, 2007; Miloud et al., 2012), and the firm's survival. Whereas a determining factor for investment selection, the founders' contribution to the firm at the pre-IPO stage is many times questioned; and his or her role as CEO or chairman of the board of directors has been associated with a negative impact in the firm's valuation (Wasserman, 2016).

Innovation, measured as the number of patents and the number of product registration, has been positively associated with new ventures and startups' valuation (Block et al., 2014; Hsu & Ziedonis, 2013), especially Seed-stage and Early-stage firms. Hyytinen, Pajarinen, & Rouvinen (2015) also associated innovation to market power and cost savings based on 12 previous empirical published studies. However, Hyytinen et al. (2015) found a negative association between innovativeness and subsequent firm survival, explained by the inherent uncertainty of innovativeness, combined with the entrepreneur's risk-taking nature.

### **4.4 The stages of the new venture and startup equity financing**

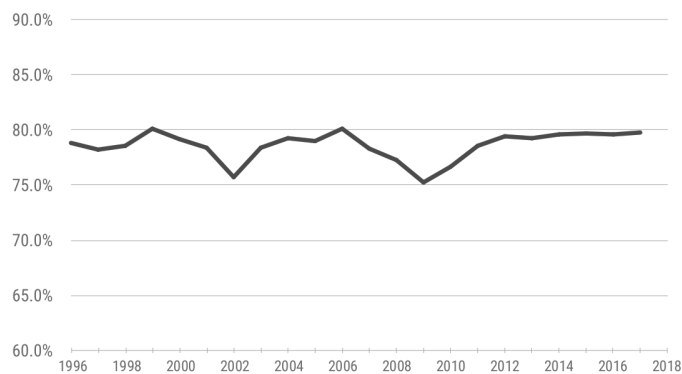
#### **4.4.1 The quest for survival versus the quest for relevance**

There are at least four clear stages for new ventures and startups: the very early-stage, early-stage, growth capital, and pre-IPO. A quest for survival characterizes the very early and the early stages in which the new venture seeks to validate the product and validate the market. A quest for relevance characterizes the growth capital and the pre-IPO stages in which the new venture seeks to penetrate the market, gain scale, and expand (Paschen, 2017) to become profitable eventually.

The majority of the new ventures and startups will fail. In Brazil, most companies will not survive past their second anniversary (IBGE, 2018). According to Bradshaw (2018), "20%

of new ventures fail in the first year, 30% fail in the second year, and by year five, about 50% of them have shuttered.” The 2017 National Report on Early-stage Entrepreneurship concluded that “since 2012, the startup early survival rate has remained relatively constant at between 79 and 80 percent” (Fairlie, Desai, & Herrmann, 2019).

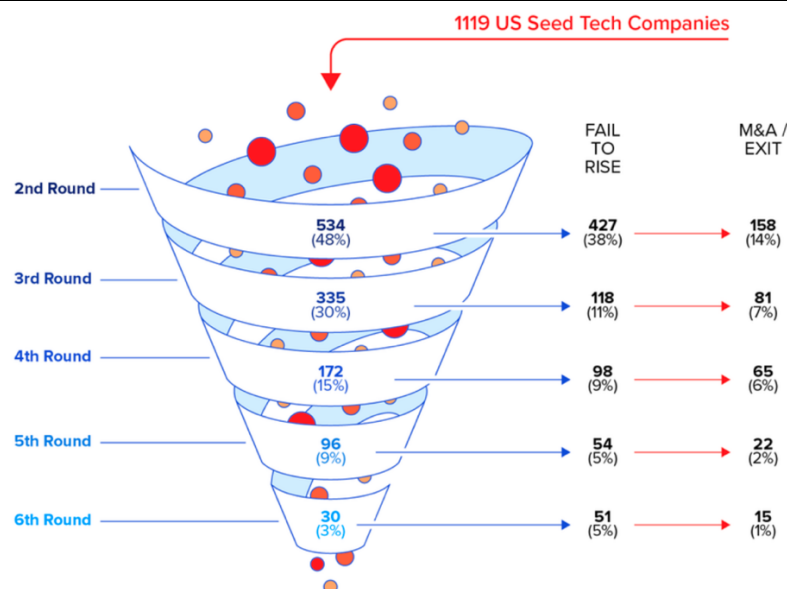
**Figure 12.** Percentage of new establishments operating in the US after one year



Source: 2017 National Report on Early-stage Entrepreneurship, calculated from the Business Employment Dynamics (Fairlie et al., 2019).

Note: The 2017 National Report on Early-stage Entrepreneurship tracks the mortality rate of new establishments in the US-based on the percentage of new employers that are still active after one-year using data collected from the Business Employment Dynamics, which is considered a proxy for startup early survival rate (Fairlie et al., 2019).

**Figure 13.** Startup survival rates by funding round



Source: CB Insights’ Q3 2018 Venture Capital Funnel

The survival phase and the relevance phase are very different.

---

During the survival phase, the new venture is pivoting and building its business model. The new venture or startup aims to take advantage of its lean structure and agility to continually pivot to reach the best product-market fit (Eisenmann et al., 2012). Capital expenditures and expenses surpass revenues – known as the cash burn, frequently referenced on a per month basis – requiring capital injections to keep the new venture operating. Eisenmann et al. (2012) define Runway as “the number of months required to exhaust a startup’s cash balance based on its expected “burn rate,” that is, negative cash flow per month.” Funding needs are primarily for research and development, product testing, generating the business plan, and launching the new venture (Paschen, 2017).

During the quest for relevance, scaling takes priority. Pivoting is more grueling and expensive (Eisenmann et al., 2012) because the firm must already have a defined business model and a medium to a long-term business plan. The new venture is supposed to scale its business, requiring capital injections (Eisenmann et al., 2012).

Revenues and cash flow generation might play a secondary role according to Eisenmann et al. (2012): “While Facebook, YouTube, and Twitter lacked an initial theory about how to make money, other platforms may have such a theory but nevertheless, choose to defer monetization for strategic reasons. Due to network effects, the value of a platform increases with the scale of its user base.”

As the new venture evolves to the next stage in their life cycle, the perceived risk declines. Investors’ expected return should also decrease to converge to the capital pricing model (CAPM).

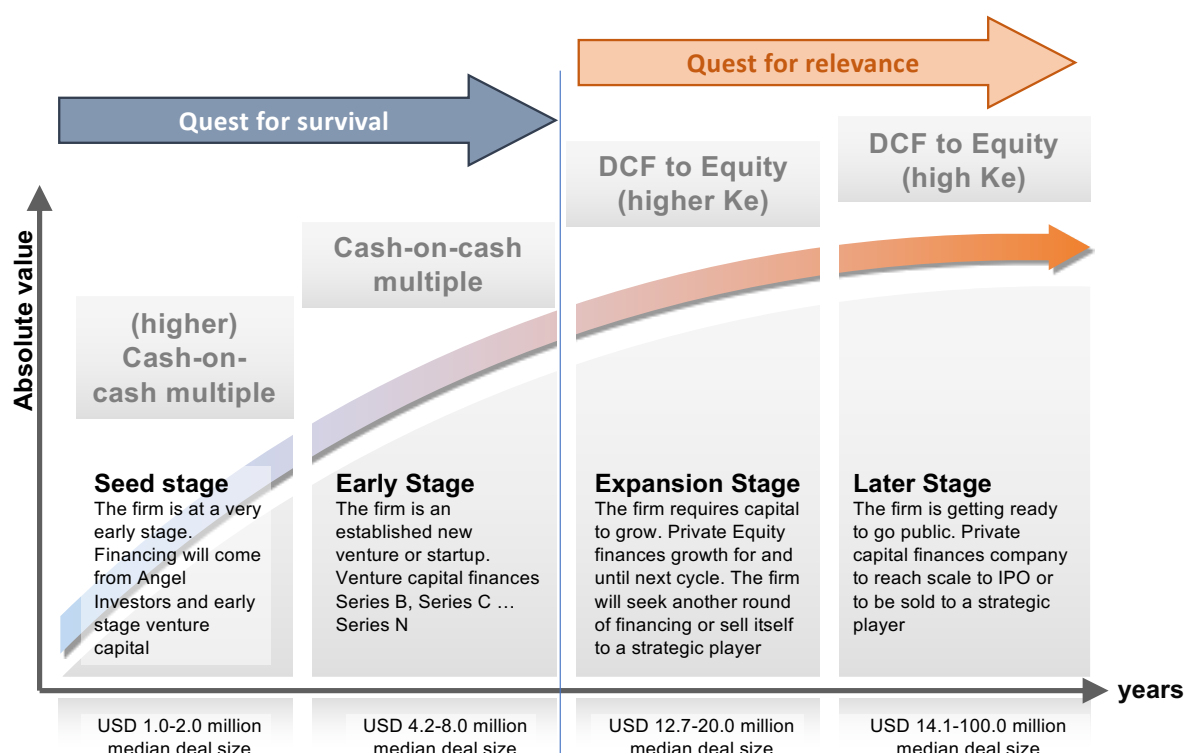
In earlier stages, when the expected return is higher, the expected committed capital is much smaller, starting in thousands of US Dollars. It is common to recommend an angel investor to commit to a very Early-stage venture only the capital he or she can afford to lose, and the angel investor will only accept the risk if the expected return is significantly high. Neither the initial investment nor the significantly high capital returns are likely to impact the investor significantly. The median deal size for Seed-stage new ventures ranged from USD1.0-2.0 million in 2018 globally (MoneyTree 2018). The median deal size for Early-stage new ventures ranged from USD4.2-8.0 million in 2018 globally (MoneyTree 2018).

In later stages, a lower perceived risk combines with a smaller expected return, though the demand for committed capital is much larger and can surpass USD100 million. As the new venture grows and investors’ perceived risk diminishes, the amount of capital raised increases.



The 2018 global median deal size for Expansion-stage new ventures ranged from USD12.7-20.0 million, compared with USD14.1-100.0 million for Later-stage new ventures (MoneyTree 2018).

**Figure 14.** The quest for survival versus the quest for relevance for new ventures and startups and the difference in investors' perspective: cash-on-cash multiple (CoCM) versus the cost of equity (Ke)



Source: The author, based on MoneyTree Report Q4 2018 by PwC and CB Insights.

#### 4.4.2 The concept of multiple on invested capital

In general, the Seed-stage and Early-stage equity financing of new ventures and startups are done through a capital increase in which the new equity holder is just a financial partner with no executive role. The transaction involves only primary proceeds to finance the firm's development, diluting the equity ownership of the founders and previous financial partners.

The financial investment is made based on the assumption that the new venture or the startup will succeed. The concept of firm survival is more relevant than the merits of the new idea. It is common to believe that the essence of the new venture or startup is the "new idea" the new firm is proposing, but more frequently than not, this "new idea" morphs into a different idea based on execution challenges, market demand, the technology available and other factors.

---

The basis for investment, therefore, must be the startup's ability to adapt and survive, not the solution it is offering and will likely change.

Especially for Early-stage investments, this notion of success and failure is captured in the investor's expected return on capital measured on cash-on-cash multiple. Investors price their investments in new ventures and startups based on how much they expect to exit the investment measured in multiples. For example, an investor that is considering providing \$500,000 of capital to a startup expects to get back 5x that in four years, or \$2.5 million. The investor will see this as a binary event: he/she either receives zero or \$2.5 million in four years. If it takes longer, six years, for example, and/or it yields only 2x the initial investment, this investment is still considered a success as this result is far better than the alternative: receiving zero.

The concept of valuing Early-stage companies based on a multiple of the initial investment is not new, though it has not been incorporated in the valuation methodology for such companies. Keeley et al. (1996) had documented this approach more than 30 years ago:

“Investors in new ventures have made ad hoc modifications to the textbook approach to deal with the challenges of high risk and multiple stages. For example, a company may raise the discount rate by 10 percentage points, or a venture capitalist may use a “rule of thumb” such as 10 to 1 multiple of the initial investment within 5 years.”

In the case of Early-stage financing, investors are not driven by yield or target internal rate of return (IRR). In our example, the expected return translates into a 50% annual IRR, while the still considered successful IRR was 12% per annum. As mentioned before, even though one can always calculate the implied yield of the investment, investors are more concerned about the chain of events that lead to survival or failure.

There is no appropriate method to calculate the cost of capital of Early-stage new ventures and startups to benchmark the return on investment. The analysis of historical returns presents a large dispersion and should be adjusted to failure rates, which challenges its value as a benchmark for the calculation of the cost of capital. Moreover, historical returns have no adherence to expected returns, which is the main value driver in the pricing of new ventures and startups.

#### **4.4.3 Equity financing and survival**

Launching a new enterprise is a hit-or-miss proposition, whether it is a new venture, a startup, or even a new initiative within a corporation (Blank, 2013). The odds of a startup fail

---

are discouraging: 75% of all startups fail, according to research by Harvard Business School's Shikhar Ghosh (Blank, 2013). In Brazil, only 58% of companies were active on their second anniversary (IBGE, 2014). CB Insight estimates the chances of a startup becoming a unicorn in less than 1%.

Guaranteeing equity financing is vital for the new venture's survival along the enterprise's full life cycle. The enterprise is a succession of success or failure events in which each capitalization round not only coronates that specific event as a success but also increases the chances of the next round of capitalization being successful as well. A venture capital investment is the single most significant contributor to the likelihood that a startup goes public in a stock exchange (Shane & Stuart, 2002).

Subsequent rounds of capital raising fund a new venture or startup. As a new round of capital financing happens, the perceived risk of the new venture or the startup decreases. Venture capital is an expensive form of financing. The founder aims at raising enough money to reach the next investment stage, minimizing the his/her dilution in the company's equity capital at that given price. The founder can usually proceed on the assumption that, if successful, he or she will be able to raise more money later at a better valuation, i.e., imposing a smaller dilution. As the venture progresses well, it raises money at a lower cost.

When a financial investor accepts to finance a new venture or startup, it also contributes to the new venture survival. Some investors have a more passive role, while others are more active and proactive. The term “smart money”, for example, refers to investors that bring intelligence to the firm.

Post-investment, the venture capitalist is engaged in monitoring the new venture or startup and providing value-added advisory (Clercq et al., 2006). Supporting a new venture involves managing and providing valuable input to the entrepreneurs in addition to providing financial capital (Clercq et al., 2006; Timmons and Bygrave, 1986). Some of the value-added roles played by venture capitalists include a certification or reputational role (Clercq et al., 2006; Bygrave's, 1987; Megginson & Weiss, 1991, Drover et al., 2017); an improved structure and corporate governance (Sahlman, 1990; Barry, Muscarella, Peavy, and Vetsuypens, 1990), including participating in the board of directors (Davila et al., 2003); a strategic role (Clercq et al., 2006); a networking role (Clercq et al., 2006; Davila et al., 2003); an interpersonal role (Clercq et al., 2006); and a discipline and risk mitigation role (Clercq et al., 2006; Drover et al., 2017).

---

Venture capital's certification lessens the cost of raising additional capital and increases the firm's net proceeds. Entrepreneurial ventures often benefited by endorsements from reputable exchange partners, as reflected in reaching IPO more quickly and obtaining higher valuations than firms without such endorsements (Stuart, Hoang, & Hybels, 1999). The credibility associated with venture capital funding also gives a strong signal about the quality of the new venture to the labor market, mitigating the problem of asymmetry of information in building management teams (Davila et al., 2003).

Until the new venture reaches a financial breakeven and does not depend on capital injection from financial sponsors, the new venture will be at the mercy of venture capitalists (Clercq et al., 2006). Despite all value-added benefits of venture capitalists, capital is still the ultimate vital resource that can dictate the success or failure of the venture. During the quest for survival, capital is a game-changer, and many ventures that seemed promising run out of cash to fail, while some others managed to raise some capital at the very last minute to become millionaire companies (Lemos, 2019).

#### **4.4.4 Gaining scale and turning into a growth capital**

As the new venture or startup evolves, its perceived risk diminishes over time, and investors tend to accept lower expected returns. In Early-stage ventures, it translates into a lower cash-on-cash value multiple until a point where it makes more sense to represent its expectations in terms of yield, i.e., a percentage per year.

Changing the mindset to yield from cash-on-cash multiples makes sense when survival is not the principal concern of the investor. Survival is less of an issue when the firm is at breakeven, recognizing there are various breakeven points at a new venture or startup considering different activity levels and depending on changing aspirations and business plans. When the firm has a proven business case, has reached or is close to reaching breakeven, and only lacks the scale to become profitable, that firm is considered a growth company. At this stage, it is possible and reasonable to make long term projections and make investment decisions based on DCF valuations. Market relevance and capital efficiency become the central issues, not survival, making the value multiple secondary and not a decision driver.

Profitability and cash flow generation should be determining factors, but companies like Amazon, UBER, and Facebook, to name a few, proved different. All these companies compromised short term cash flow generation to make significant investments to gain a larger scale and share of market and mind that proved valuable in the long term.

---

Growth capital companies pose more risk than pre-IPO companies and, therefore, should provide a premium return to potential investors.

#### **4.4.5 Pre-IPO companies**

Pre-IPO companies, or Later-stage firms, are private companies with a proven business model and reasonable scale, looking to gain size and improve its corporate governance to access the equity capital markets.

Sometimes, a Pre-IPO company is acquired by a competitor at a premium to its expected valuation at the public markets because of the strategic value, synergies, and other sources of value. A notable example is the purchase of 49.9% of XP Investimentos by Itaú Unibanco Holding SA in 2018 in Brazil.

#### **4.4.6 Going public**

Going public means completing an IPO and having shares listed and traded on a stock exchange. The IPO has different implications for the company and its shareholders.

From the company's perspective, an IPO provides access to the capital markets and cheaper sources of funding. On the other hand, the IPO requires additional disclosure for investors and other challenges. According to Feng, C., Patel, P. and Xiang, K. (2020), ventures that go public “have to deal with the challenges of transitioning to public ownership, i.e., having newer governance structures, closer scrutiny from regulators, and the need for persistent quarterly growth”.

From the investors' perspective, an IPO provides liquidity and the opportunity to mark the investment at market price (which might be relevant to certain investment funds).

To put simply, going public marks the end of the new venture and startup cycle and the beginning of the corporation cycle. The stock liquidity is instrumental for the transition from pre-IPO investors to capital market investors.

---

## **5. INVESTMENT MODEL CONSIDERING THE NEW VENTURE'S AND STARTUP'S LIFE CYCLE**

### **5.1 Investor's expectations versus historical returns**

Many previous studies on investment returns are impacted by survival bias. Financial data for discontinued operations, delisted or acquired companies are not available. Given the high mortality rate of new ventures and startups, the survival bias is an issue that requires attention.

There are two approaches to new ventures and startups returns: the expected return on equity, and the actual return on equity. Whereas investors make investment decisions based on their expectations, it is easier to measure actual performance. The difference major between expectations and actual performance is mainly those companies that failed.

The expected return on equity may be estimated by asking investors what their expectations were at the time of the investment. Despite changing the economic environment and market conditions, investors' goals tend to vary little over time and remain consistent concerning risk-return. The investors' expectations already account for their expectation of success and their portfolio approach to investments. Expected returns are not impacted by survival bias.

Historical return on equity can be estimated based on successful new ventures and startups along their life cycle. Historical returns can be estimated based on the average deal size (and implied pricing) in each stage of the life cycle, assuming that those averages do not vary significantly over time. Actual returns will be impacted by survival bias unless all failures and discontinuations are accounted for. The actual return on equity should be adjusted for the failure rate to derive the expected return on equity at the time of investment.

Investment selection should encompass the investor's expectations of return at the time of the investment. Experienced investors understand that their investment portfolio's performance is an average of the performance of their investments. Given that some investments will most certainly underperform, individual investments should perform better than the portfolio's target return. Therefore, investors' expectations incorporate eventual failures.

The historical performance of a unique investment in new ventures and startups is not a parameter for future investments in this class of assets. The historical performance has practical

limitations, including i) a survival bias of the data, ii) investors assess performance based on a portfolio of investments not individually, iii) the failure/ success ratio is unpredictable, iv) prices are not set based on demand-supply, and v) the historical data does not fit a standard normal distribution.

**Figure 15.** Selected reasons why historical returns are inappropriate benchmarks for investments in new ventures and startups

<b>1. Survival bias</b>	- Historical returns exclude companies that failed or were acquired
<b>2. Portfolio theory</b>	- Investors' expected returns at the investment are higher than the targeted return of the portfolio to offset underperforming investments
<b>3. Failure rates</b>	- Even though investors expect failures in their investment portfolios, at the time of the investment decision, they expect it to be successful
<b>4. Over the counter pricing</b>	- Price is usually set based on 1-1 negotiations that involve other issues (governance, minority rights, etc) - Price is not set based on demand-supply
<b>5. Investment returns are not normally distributed</b>	- Certain events are extreme outliers, posting an important (and desired) impact on average returns - Investment returns are consistent with power-law distribution

Source: CB Insights, CapIQ, and the author.

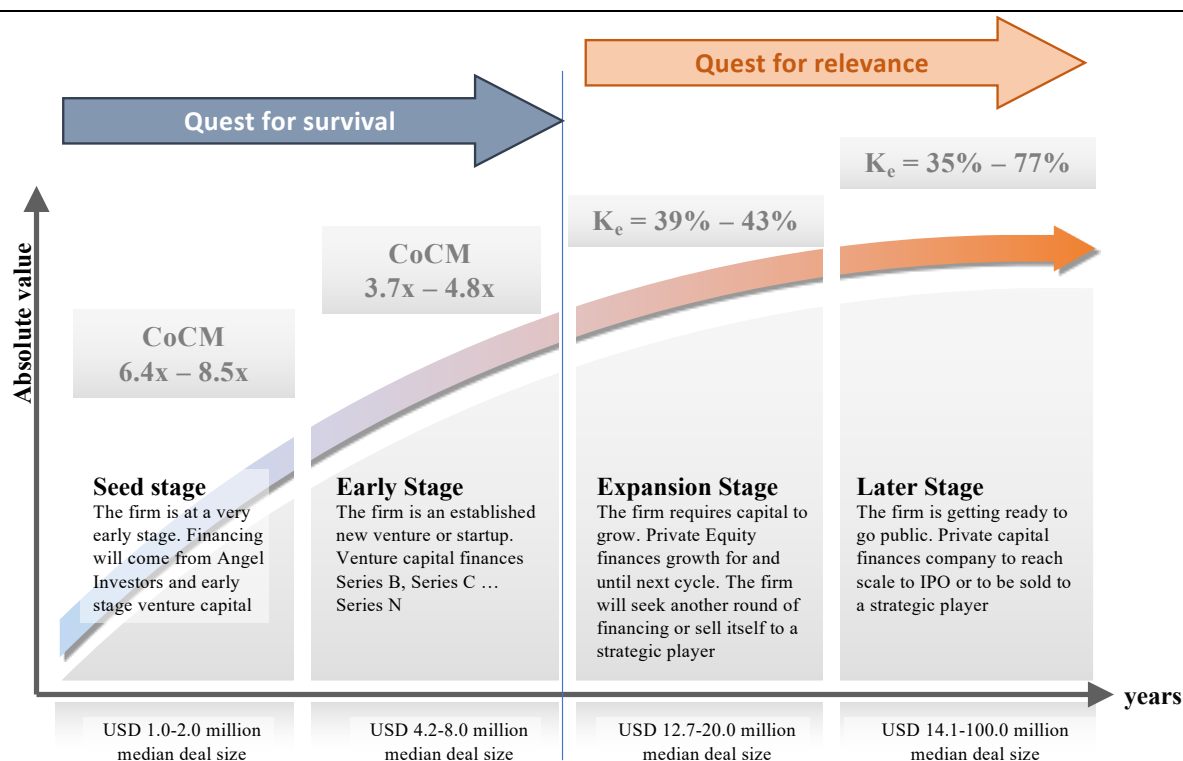
For specialized investors, expected returns are correlated to historical unbiased returns for this class of asset in their portfolios. Considering a portfolio of New Ventures and Startups in the long term, its historical performance is measured by the return of the investment and the number of failed investments, which in turn determines the expectations of future investments in this class of assets.

## 5.2 Investors' expectations along the firm's life cycle

Failure or success plays a significant role in actual results imposing qualified investors to account for it in their expectations for future investments in New Ventures and Startups.

This thesis proposes to structure the life cycle of New Ventures and Startups based on investors perception of risk and likelihood of failure in each phase. The table that follows summarizes the assumptions used to build the model for expected returns over time for new ventures and startups, considering the life cycle of the ventures.

**Figure 16.** New venture and startup life cycle (returns are estimates for illustrative purposes)



Note: CoCM stands for cash-on-cash multiple

Source: CB Insights, CapIQ, and the author.

**Table 24.** Assumptions for the life cycle returns of the new venture or startup

Implied return considering success is the implied return adjusted for the success rate of the investment or a proxy for return on investment before failure

	Seed Stage	Early Stage	Expansion Stage	Later Stage	IPO Stage
Stage (t)	1	2	3	4	5
Avg. deal size (USD million)	1.78	7.23	16.85	34.83	208.27
Estimated term (years)	2	4	4	5	
Implied return (stage <sub>t+1</sub> vs. Stage <sub>t</sub> )	4.1x	2.3x	20%	43%	
# of Ventures: Beginning of period	1119	534	335	172	96
# of Ventures: End of period	534	335	172	96	30
Success ratio	48%	63%	51%	56%	31%
Implied Return considering success	8.5x	3.7x	39%	77%	

Notes: Average deal size for the US market (PwC and CB Insights)

IPO average size for the US market (CapIQ for 2018)

Success Ratio for US tech companies (CB Insights)

Fabrice Grinda, considered the leading Angel Investor in 2018 in an article at Forbes (Cremades, 2018), delivered a 6x return on invested capital accounting for failures and net of fees and expenses (compared to 4.1x implied return at Seed-stage on Table 24.

Assumptions for the life cycle returns of the new venture or startup). This illustrates how



---

investors, in this case, angel investors, aim higher when making an investment decision, which is a strong indication that investors' expectations are already adjusted for failures.

### **5.3 Investment selection and the life cycle valuation method**

Investors specialize. Some investors add value to companies immediately before they go public, contributing to corporate governance, financial controls, and overall validation of the investment thesis before the company accesses the capital markets. On the other extreme, other investors specialize in identifying projects that will succeed in the marketplace. Each investors' skills, methods, equity checks, and valuation techniques are very different and are adapted to the very different stages each company is in the life cycle of the new venture.

For each stage of the life cycle of the new venture, valuation plays a vital role in determining how much the founders retain, but it also sets the basis for future rounds of capitalizations and future valuations (Bell, 2014). As Bell (2014) presents it: "if the valuation is set too high, future investors may be scared off, or could require a "down-round," a significantly dilutive event for founders and previous investors."

**This thesis proposes an investment selection criteria and valuation method based on the different risk-stages of the new venture's life cycle.**

During the first two stages, the Seed-stage and Early-stage, the new venture or startup is still pivoting their business plan for survival. Investors will finance the new venture or startup activities based on three assumptions: i) the new venture or startup will survive to raise another round of capital, ii) the founders will not be diluted beyond control before financial breakeven, iii) the investor will make a high return on a small equity commitment.

During the next two stages, the Expansion-stage and Later-stage, the new venture or startup is scaling the business to become profitable. At this stage, the new venture or startup should probably have defined its business model and have a medium-long term business plan with specific uses of funds. Investors will finance the new venture or startup activities based on the following assumptions: i) the new venture will either survive to raise another round of capital, or be sold to a strategic buyer, and ii) investors will make a reasonable return on a more substantial equity commitment. A reasonable return could be the CAPM return plus the private equity risk premium, but considerably smaller than the first two stages when the new venture presented significantly more risk.

---

Hence, the return on each stage of the life cycle is a function of the previous stage, converging to the CAPM when the company becomes publicly listed.

**This thesis's main conclusion is that the value proposition of a new venture is expected to hold if it can sustain a complete life cycle until the new venture IPO or strategic sale.** Alternatively, a Seed-stage new venture can only worth \$500,000 if the investor can imagine the full life cycle of this company until it is IPOed or sold. If there is no reasonable scenario in which the final exit happens, the new venture cannot be worth \$500,000 because it will probably fail to raise the capital it needs on subsequent financing rounds.

Therefore, the valuation of new ventures and startups shall be done backward, from the exit to the inception.

**Table 25.** New venture backward valuation (illustrative)

Stage	Value	Valuation (illustrative)
IPO or Sale	\$1,000	@ 11x P/BV based on industry benchmark with a 10% IPO discount

If the investor expects to exit at \$1,000 at the IPO, considering the investor expects a return on investment of 35% per annum over a four years investment, the **Later-stage Fund** should not pay more than:

$$\frac{\$1,000}{(1 + 35\%)^4} = \$301$$

Stage	Value	Valuation (illustrative)
Later-stage	\$301	Maximum price to be paid to yield a 35% annual return over four years

If the investor expects to exit at \$301 at the pre-IPO stage, considering the investor expects a return on investment of 43% per annum over a four years investment, the **Expansion-stage Fund** should not pay more than:

$$\frac{\$301}{(1 + 43\%)^4} = \$72$$

Stage	Value	Valuation (illustrative)
Expansion-stage	\$72	Maximum price to be paid to yield a 43% annual return over four years

If the investor expects to exit at \$72 at the Expansion-stage, considering the investor expects a return on investment of 4.8x cash-on-cash investment, the **Early-stage Fund** should not pay more than:

$$\frac{\$72}{4.8} = \$15$$

Stage	Value	Valuation (illustrative)
Early-stage	\$15	Maximum price to be paid to yield a 4.8x cash-on-cash return on investment

If the investor expects to exit at \$15 at the Early-stage, considering the investor expects a return on investment of 6.4x cash-on-cash investment, the **Seed-stage Fund** should not pay more than:

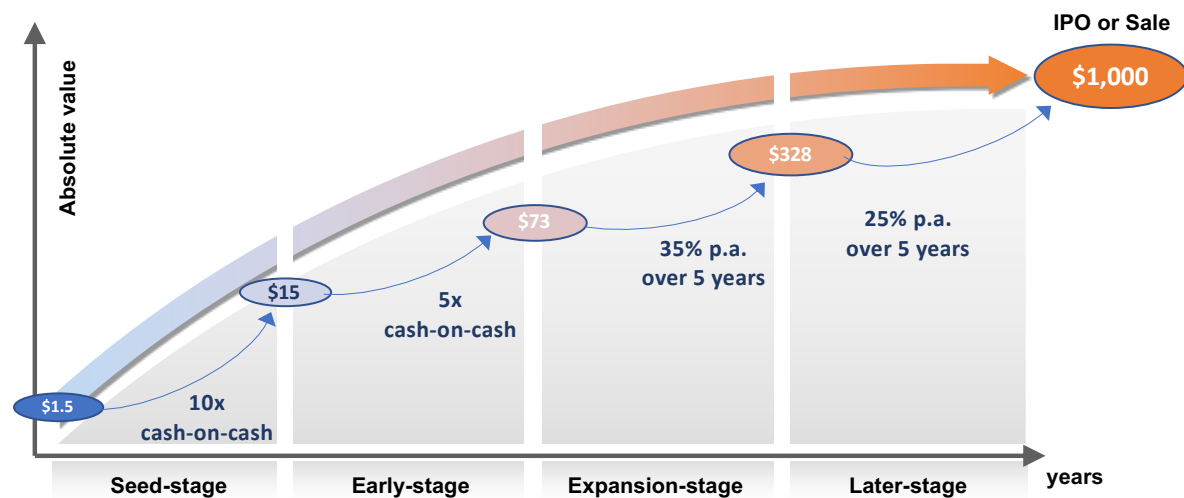
$$\frac{\$15}{6.4} = \$2.3$$

Stage	Value	Valuation (illustrative)
Seed-stage	\$2.3	Maximum price to be paid to yield a 6.4x cash-on-cash return on investment

Source: the author

The life cycle of the new venture or startup translates into the following scheme:

**Figure 17.** An illustrative example of The Life Cycle Valuation Method



Source: the author

The illustrative example proposes that the new venture would secure four rounds of private equity financing before going public or selling at \$1,000. It assumes execution risk decreases over time, which is reasonable, but not always the case. It also assumes that investors will expect a lower return on investment at the Later-stage than the Expansion-stage, which also makes sense but may not always be the case.

Whereas the expected return on investment decreases over time, the equity investment size is substantially larger. Another critical issue is the founders' dilution over time. As discussed, the founder must reach the Expansion-stage still in control of the company, which limits, in this example, the amount of cash the new venture can raise over the Seed-stage and Early-stage to 50% of \$72.

#### 5.4 The Life Cycle Valuation Method

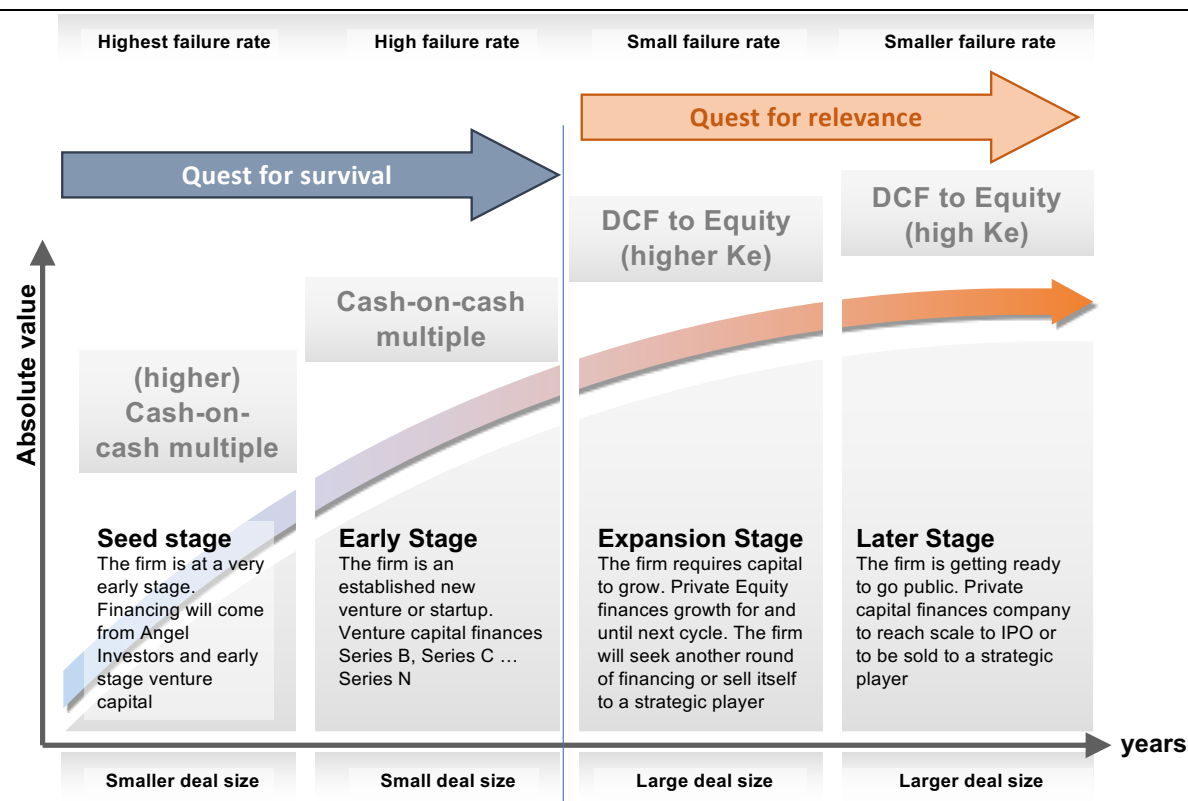
The Life Cycle Valuation Method accounts for the difference in failure rates and investors' expectations along the life cycle of New Ventures and Startups.

During the "quest for survival", failure rates are the highest and investors' expectations are better depicted in terms of cash-on-cash multiples (CoCM) or a multiple over the initial investment.

During the "quest for relevance", the lower failure rates allow investors to express their expectations in terms of annual returns, following the rationale of premia for risk taking that is the basis for the Capital Asset Pricing Model (CAPM).

Deal size is significantly different during the “quest for survival” compared to the “quest for relevance”. Investors tend to commit smaller equity investments during the riskier phase, while they seek to maximize nominal returns during the less risky and least profitable phase of a new venture’s life cycle. Founders also benefit from smaller equity investments during the “quest for survival” and larger equity investments during the “quest for relevance” because it balances the founder’s dilution over the new venture’s life cycle.

**Figure 18.** The Life Cycle Valuation Method



Note: CoCM stands for cash-on-cash multiple  
Source: CB Insights, CapIQ, and the author.

The value of the New Venture or Startup along its life cycle depends on the valuation of the New Venture of Startup at the end of the cycle (at IPO or strategic sale, for example) based on generally accepted valuation methods, and the investors’ expectations depicted on the **Figure 18.** The Life Cycle Valuation Method including failure rate, deal size, return on investment and investment time.

## 5.5 New Venture and Startup life cycle – selected case studies

The iFood and Rappi cases illustrate a new venture’s quest for survival and its quest for relevance. Since the investment rounds involve private companies and private investors, the

terms of the transactions are not public. However, in some cases like Rappi, valuation estimates are discussed in the news, based on which one can estimate implied returns for investors in each investment round. All figures are illustrative and do not represent the actual return on investments, but they clearly depict the trend discussed in this thesis.

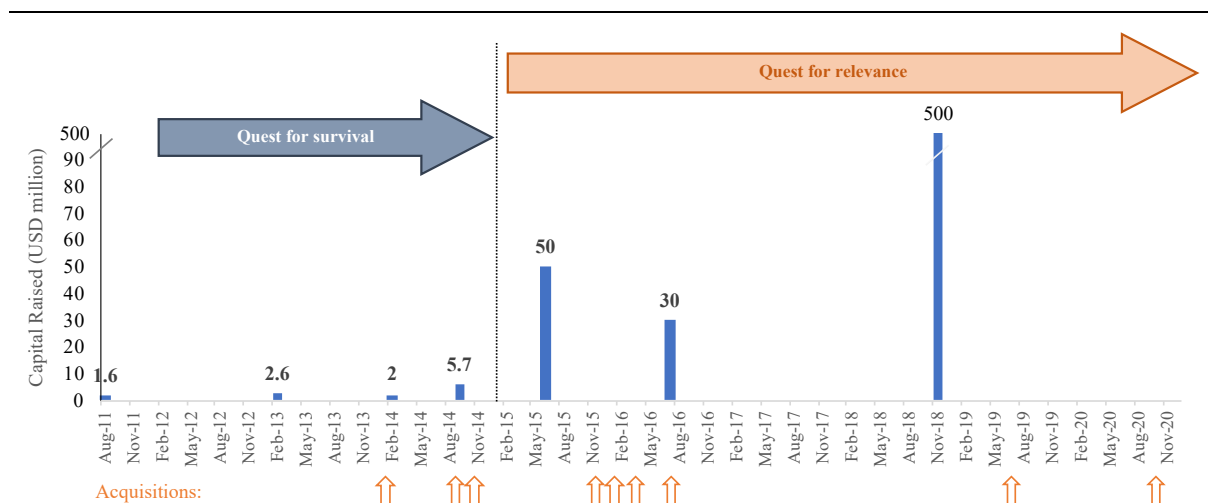
### 5.5.1 iFood

Founded in 2011 in Brazil, iFood is the pioneer application dedicated to meal deliveries. In 2019, iFood reached 26.6 million deliveries to post a 116% growth compared to the previous year. The company operated in 912 cities with 131,300 restaurants in 2019. iFood had over 4,100 self-declared employees as of November 2020 according to LinkedIn.

The company focuses on all aspects of the ecosystem it operates, especially the customers and restaurants, but also the restaurant's suppliers including logistics. For example, iFood offers insurance to 100% of the over 83 thousand registered carriers, while investing heavily in alternative delivery technologies. According to its CEO, iFood has one of the biggest artificial intelligence teams in Latin America.

According to Crunchbase, iFood has raised over USD591 million in 7 rounds of investments since 2011, as depicted below.

**Figure 19.** iFood: investment rounds



Note: Capital raised in USD million

Source: Crunchbase, [https://www.crunchbase.com/organization/ifood/company\\_financials](https://www.crunchbase.com/organization/ifood/company_financials).

---

### 5.5.2 Rappi

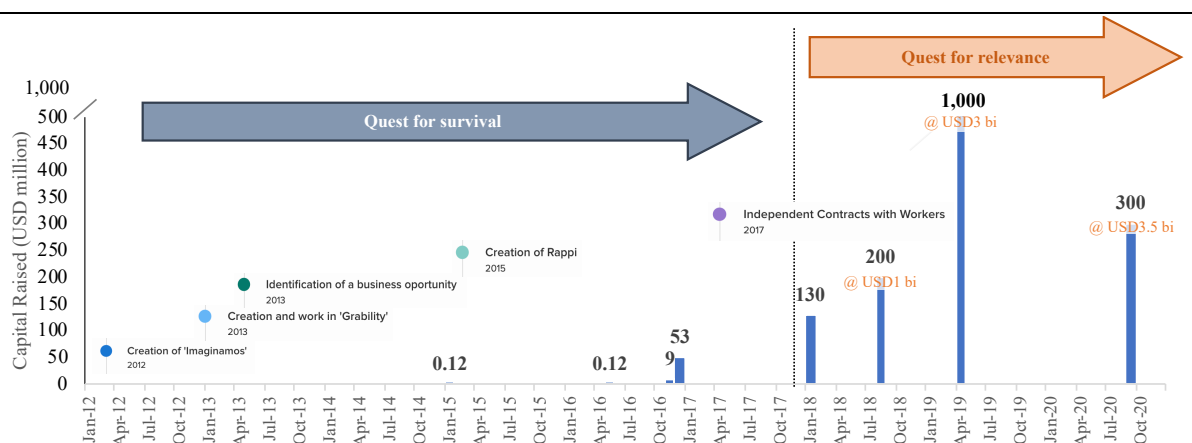
Founded in 2015 in Colombia, Rappi is a consumer tech company specialized in providing online delivery services to over 100,000 Latin American businesses as of 2019. According to Apptopia, Rappi had an average of 10 million active users per month in 2019. The company operates in over 55 cities in 9 countries. Rappi had over 5,900 self-declared employees as of November 2020 according to LinkedIn and over 25,000 delivery persons according to Wikipedia.

Rappi is a mega high growth consumer tech startup looking to be the everything-store of Latin America. It connects users who want to purchase prepared foods, groceries, clothes, and virtually anything with independent contractors who can fulfill those needs as a marketplace.

From 2012 until 2016, Rappi pivoted its business and reinvented itself in its quest for survival. Rappi's main founder, Simon Borrero, invested approximately USD1,000 to launch a web and app developer in Colombia. In 2013, Mr. Borrero launched a second technology company that presented supermarket products that could be thrown into the basket – a novelty at the time. This company led Mr. Borrero and his coworkers to identify a business opportunity that resulted in the creation of Rappi in 2015. In 2016, Rappi launched Rappifavor gaining great popularity: any favor (or service) could be ordered for a small amount of money. In 2017, Rappi signed independent contracts with workers, avoiding labor contracts and labor liabilities.

The following years mark Rappi's quest for relevance in the marketplace. Rappi introduced its payment methods Rappipay and Rappicash in 2017, and its debit card in 2019. The company raised over USD1.7 billion in capital in 9 rounds of investments since 2015 (Crunchbase) to expand its business to several new cities, develop its ecosystem, and expand its data platform.

**Figure 20.** Rappi: investment rounds



Note: Capital raised in USD million

Source: Crunchbase, [https://www.crunchbase.com/organization/rappi/company\\_financials](https://www.crunchbase.com/organization/rappi/company_financials).

The valuation of Rappi in each investment round is not public, but it is rumored that the last three investment rounds concluded at USD1 billion, USD3 billion and USD3.5 billion post-money valuation, respectively, as depicted in the chart above. A USD200 million investment at USD1 billion valuation represents a  $200/1,000 = 20\%$  stake in the company. The next investment round of USD1 billion concluded at USD3 billion post-money valuation, therefore, a  $3-1=2$  billion valuation pre-money, pricing the 20% stake at USD400 million. It is a 1x cash-on-cash multiple, or 100% return on investment from August 2018 to April 2019. Similarly, the USD1 billion investment at USD3 billion post-money valuation represents a  $1/3=33\%$  stake in the company. The following and latest investment round of USD300 million priced the company at  $USD3,500-300=3,200$  million pre-money valuation, pricing the 33% stake at USD1,066 million. This is a 7% return from April 2019 to September 2020, or a 9.5% annualized return on USD1 billion investment.



---

## 6. CONCLUSIONS

### 6.1 Summary of findings and contributions

This thesis examines the classification, investment selection, and valuation of new ventures and startup companies. With this objective, this thesis relies on a survey, various analytical methods, a comprehensive review of the academic literature, and a systematic review of the best practices in the market to create a conceptual model for new venture valuation.

**This thesis presents the Life Cycle Valuation Method in which the value of a new venture at any stage has to support the next and future rounds of capital raising through the life cycle of the new venture until the investors exit through an IPO or sale.** The Life Cycle Valuation Method does not provide a final answer to the thorny issue of valuing new ventures and startups, but it offers a definitive method to uncover an inconsistent investment thesis that is not economically viable.

We surveyed a group of global professional investors of private equity and venture capital to compare their investment expectations with their financial results. Based on the sample this thesis analyzed, investors differentiate the risk-return relation at each stage of the life cycle of the new venture or startup. Very large funds and small funds have different behavior.

The specific findings of the survey analysis are reassuring and in line with our expectations. Investors' expected returns for firms in the Early versus the Later-stage of the life cycle are different. Expected returns for a Later-stage firm depend, with statistical significance, on the expected return of all previous stages except the Seed-stage. Convincingly, expected returns for the Seed-stage depends, with statistical significance only on the following stage (early), but not on the Later-stages (expansion and later). Very large funds are competitive on the Later-stage, whereas small funds are competitive on the Seed-stage, consistent with the size of the equity check each one is used to write. This is consistent with Collewaert & Manigart's (2016) conclusion that venture capital investors and angel investors have a different valuation approach.

The academic literature review examined the classification of new ventures and startups and the valuation methods discussed in the academic literature. In the academic literature, as corroborated by the market practice, regulatory instructions, and as proposed by capital market regulatory bodies, multiple valuation methods provide more comfort for the interested parties.

---

Secondary valuation methods are sometimes limited but useful for determining the asset's minimum and maximum values.

In reviewing the best practices of investors in assessing investments in new ventures and startups, this thesis aims to close the gap between the theory and the market, highlighting where the academic literature seems to be more adherent to what happens in real life.

This thesis proposes a conceptual model that differentiates the new ventures' "quest for survival" from the following and distinct phase "quest for relevance." Early-stage new ventures have to reinvent themselves to survive until their business plan is meaningful in the medium to long term when the new venture focuses on growing and becoming relevant.

Investors' expectations regarding the new venture's performance vary along the life cycle of the new venture. Riskier ventures on their quest for survival will have access to smaller tickets at a very high cost of equity. Ventures on their quest for relevance will have access to larger tickets at a high cost of equity, but not as high as the cost of equity of the riskier ventures.

The founders' dilution along the life cycle of the new venture is an essential factor to determine the venture's success. A founder shall not be excessively diluted not to lose interest in developing the new venture or startup.

This thesis also proposes a classification of new ventures and startups more adherent to risk and valuation, focused on the customer's lifetime value and how the firm generates cash: Yield Investments, Capital Gain Investments, unicorns, and the Laggard Investments.

## **6.2 Paths for future research**

New ventures financed by risk capital providers contribute disproportionally to economic development (Collewaert & Manigart, 2016) and are a central topic for research in today's economy.

There is evidence that venture capitalists-backed new ventures reach higher valuations than new ventures not financed by venture capital funds. Several academic research documented the benefits and contributions of financial investors. An interesting research question is: Do venture capitalists indeed contribute to creating winning ventures, or they became experienced and effective at selecting the ventures that would be successful either way? Based on a study of 204 Canadian Biotech startups, (Baum & Silverman, 2004) concluded that venture capitalists could pick and nurture winners.

---

According to Heughebaert & Manigart (2012), “differences in the relative bargaining power between VC investors and entrepreneurs are hence expected to affect the outcome, namely, the valuation of the venture.” If the so-called supply-demand of investors and new ventures impacts valuation, what is the balance in developing countries like Brazil and India that have a developing new venture market? Does the limited supply of potential unicorn companies help to create them faster?

Not all new ventures and startups will reach billionaire valuations. This implies that not all new ventures have a chance to reach billionaire valuations at inception. Some exciting research questions include: What are the determining factors and conditions to create a unicorn company? What are the common factors among unicorn companies?

Most academic literature treats venture capitalists as one uniform class. Hsu (2004) highlights that “demand for affiliation with reputable actors is likely to vary with the cost of such association.” Whereas this thesis has explored the different types of new ventures and startups, there is the possibility to explore the different types of capital providers in more detail, also considering the new venture’s life cycle, distinguishing what Hsu (2004) called “extra-financial VC functions.”

### **6.3 Final considerations**

Suppose a valuation is not a pure-exact science (Damodaran, 2013). In that case, the art is to use all valuation methods applicable and incremental information available to derive a valuation range that contains the intrinsic value of the asset being evaluated with relative high confidence.

The Life Cycle Valuation Method adds to the appraiser’s tools in evaluating new ventures and startup companies. Even though it does not indicate the intrinsic value of a new venture, it is assertive to prevent venture capitalists from investing in firms that are not poised to complete the new venture’s life cycle until a favorable exit at IPO or sale. New firms that fail to complete the next round of capital raising will most likely fail.

---

## 7. REFERENCES

### 7.1 Main references

- Babbie, E. (1999). *Métodos de pesquisas de Survey*. Belo Horizonte: UFMG.
- Battistela, L. F.; Wittmann, M.L.; Casasola, F.P.; Sales, E.S. (2011). A experiência vivida da falência: o ser falido e suas múltiplas derrotas. In: *XIV SEMINÁRIOS DE ADMINISTRAÇÃO – SEMEAD*. São Paulo, 2011. Anais. São Paulo: SEMEAD, 2011.
- Baum, J. A. C., & Silverman, B. S. (2004). Picking winners or building them? Alliance, intellectual, and human capital as selection criteria in venture financing and performance of biotechnology startups. *Journal of Business Venturing*, 19(3), 411–436. [https://doi.org/10.1016/S0883-9026\(03\)00038-7](https://doi.org/10.1016/S0883-9026(03)00038-7)
- Becheikh, N., Landry, R., & Amara, N. (2006). Lessons from innovation empirical studies in the manufacturing sector: A systematic review of the literature from 1993-2003. *Technovation*, 26(5–6), 644–664. <https://doi.org/10.1016/j.technovation.2005.06.016>
- Bell, J. R. (2014). Angel Investor Sophistication: Increasing Application of Pre-Revenue Venture Valuation Methodologies. *The Journal of Private Equity*, 17(4), 59–64. <https://doi.org/10.3905/jpe.2014.17.4.059>
- Blank, S. (2013). Why the Lean Start-Up Changes Everything The Fallacy of the Perfect Business Plan. *Harvard Business Review*, 91(May), 63–72.
- Block, J. H., De Vries, G., Schumann, J. H., & Sandner, P. (2014). Trademarks and venture capital valuation. *Journal of Business Venturing*, 29(4), 525–542. <https://doi.org/10.1016/j.jbusvent.2013.07.006>
- Chatsios, G., Foroglou, G., & Moutafidis, K. (2016). Valuation Model for Internet-of-Things (IoT) Startups. In *16th Management Science and Technology Student Conference* (pp. 1–8). Athens, Greece.
- Clercq, D. De, Fried, V. H., Lehtonen, O., & Sapienza, H. J. (2006). An Entrepreneur’s Guide to the Venture Capital Galaxy. *Academy of Management Perspectives*, 20(3), 90–112.
- Cock, R. De, Bruneel, J., & Bobelyn, A. (2019). Making the Lean Start-Up Method Work The

- 
- Role of Prior Market Knowledge. *Journal of Small Business Management*, 00(00), 1–21.
- Collewaert, V., & Manigart, S. (2016). Valuation of Angel-Backed Companies: The Role of Investor Human Capital. *Journal of Small Business Management*, 54(1), 356–372. <https://doi.org/10.1111/jsbm.12150>
- Cremades, A. (2018). 50 Angel Investors Based On Investment Volume And Successful Exits. *Forbes*, August, 05. Retrieved from <https://www.forbes.com/sites/alejandrocremades/2018/08/05/top-50-angel-investors-based-on-investment-volume-and-successful-exits/#906db9f7748a>
- Damodaran, A. (2013). *The dark side of valuation: valuing young, distressed, and complex businesses*. (Pearson Education, Ed.), *Choice Reviews Online* (Vol. 47). NJ, United States: Pearson Education. <https://doi.org/10.5860/choice.47-5115>
- Davila, A., Foster, G., & Gupta, M. (2003). Venture capital financing and the growth of startup firms. *Journal of Business Venturing*, 18(6), 689–708. [https://doi.org/10.1016/S0883-9026\(02\)00127-1](https://doi.org/10.1016/S0883-9026(02)00127-1)
- Drover, W., Busenitz, L., Matusik, S., Townsend, D., Anglin, A., & Dushnitsky, G. (2017). A Review and Road Map of Entrepreneurial Equity Financing Research. *Journal of Management*, 43(6), 1820–1853. <https://doi.org/10.1177/0149206317690584>
- Dudley, G., Banister, D., & Schwanen, T. (2017). The Rise of Uber and Regulating the Disruptive Innovator. *Political Quarterly*, 88(3), 492–499. <https://doi.org/10.1111/1467-923X.12373>
- Eisenmann, T., Ries, E., & Dillard, S. (2012). Hypothesis-driven Entrepreneurship: The Lean Startup. *Harvard Business School Entrepreneurial Management Case No. 812-095*.
- Fairlie, R., Desai, S., & Herrmann, A. J. (2019). *2017 National Report on Early-stage Entrepreneurship*. Kansas City. Retrieved from [www.kauffman.org/indicators](http://www.kauffman.org/indicators)
- Feng, C., Patel, P. C., & Xiang, K. (2020). The well-trodden path: Complementing market and entrepreneurial orientation with a strategic emphasis to influence IPO survival in the United States. *Journal of Business Research*, 110(January), 370–385. <https://doi.org/10.1016/j.jbusres.2020.01.065>
- Festel, G., Wuermseher, M., & Cattaneo, G. (2013). Valuation of early stage high-tech start-
-

- 
- up companies. *International Journal of Business*, 18(3), 216–231.
- Ge, D., Mahoney, J. M., & Mahoney, J. T. (2005). *New Venture Valuation by Venture Capitalists: An Integrative Approach*. (working paper).
- Goldman, M. (2008). Valuation of Startup and Early-Stage Companies. *The Value Examiner*, (August), 8–16.
- Gompers, Paul A; Lerner, J. (2001). The Venture Capital Revolution. *The Journal of Economic Perspectives*, 15(2), 145–168.
- Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate: evidence from the field. *Journal of Financial Economics*, 60, 187–243.
- Gray, D. F., Merton, R. C., & Bodie, Z. (2007). Contingent Claims Approach to Measuring and Managing Sovereign Credit Risk. *Journal of Investment Management*, 05(4), 5–28. <https://doi.org/10.2469/dig.v38.n3.35>
- Herbst, A. F., Lin, J. B., & Yi, B. S. (2006). A Simple Application of Real-Options to the Valuation of Pre-IPO High-Growth Firms. *Journal of Financial Education*, 32(Spring 2006), 58–74. Retrieved from <https://www.jstor.org/stable/41948833>
- Heughebaert, A., & Manigart, S. (2012). Firm Valuation in Venture Capital Financing Rounds: The Role of Investor Bargaining Power. *Journal of Business Finance and Accounting*, 39(3–4), 500–530. <https://doi.org/10.1111/j.1468-5957.2012.02284.x>
- Hsu, D. H. (2004). What do entrepreneurs pay for VC Affiliation? *The Journal of Finance*, 59(4), 1805–1844. <https://doi.org/10.1111/j.1540-6261.2004.00680.x>
- Hsu, D. H. (2007). Experienced entrepreneurial founders, organizational capital, and venture capital funding. *Research Policy*, 36(5), 722–741. <https://doi.org/10.1016/j.respol.2007.02.022>
- Hsu, D. H., & Ziedonis, R. (2013). Resources as Dual Sources of Advantage: Implications for Valuing Entrepreneurial-Firm Patents, 34, 761–781. <https://doi.org/10.1002/smj.2037>
- Hyttinen, A., Pajarinen, M., & Rouvinen, P. (2015). Does innovativeness reduce startup survival rates? *Journal of Business Venturing*, 30(4), 564–581. <https://doi.org/10.1016/j.jbusvent.2014.10.001>
-

- 
- Keeley, R. H., Punjabi, S., & Turki, L. (1996). Valuation of Early-stage Ventures: Option Valuation Models vs. Traditional Approaches. *Journal of Entrepreneurial and Small Business Finance*, 5(2), 115–138. Retrieved from <http://digitalcommons.pepperdine.edu/jef/vol5/iss2/3>
- Klobucnik, J., & Sievers, S. (2013). Valuing high technology growth firms. *Journal of Business Economics*, 83(9), 947–984. <https://doi.org/10.1007/s11573-013-0684-2>
- Kohn, A. (2018). *Where entrepreneurship and finance meet: startup valuation and acquisition in the venture capital and corporate context*.
- Köhn, A. (2018). The determinants of startup valuation in the venture capital context: a systematic review and avenues for future research. *Management Review Quarterly*, 68(1), 3–36. <https://doi.org/10.1007/s11301-017-0131-5>
- Lahr, H., & Mina, A. (2016). Venture capital investments and the technological performance of portfolio firms. *Research Policy*, 45(1), 303–318. <https://doi.org/10.1016/j.respol.2015.10.001>
- Mitteness, C., Sudek, R., & Cardon, M. S. (2012). Angel investor characteristics that determine whether perceived passion leads to higher evaluations of funding potential. *Journal of Business Venturing*, 27(5), 592–606.
- Milanesi, G., Pesce, G., & Alabi, E. El. (2013). Technology-Based Startup Valuation Using Real Options with Edgeworth Expansion, 1(2013), 54–61.
- Miloud, T., Aspelund, A., & Cabrol, M. (2012). Startup valuation by venture capitalists: an empirical study. *Venture Capital: An International Journal of Entrepreneurial Finance*, (February 2012), 37–41. <https://doi.org/10.1080/13691060903184787>
- OECD. (2018). *Entrepreneurship at a Glance - Highlights 2018*.
- Paschen, J. (2017). Choose wisely: Crowdfunding through the stages of the startup life cycle. *Business Horizons*, 60(2), 179–188. <https://doi.org/10.1016/j.bushor.2016.11.003>
- Röhm, P., Köhn, A., Kuckertz, A., & Dehnen, H. S. (2018). A world of difference? The impact of corporate venture capitalists' investment motivation on startup valuation. *Journal of*
-

- Rowley, J. D., Glasner, J., & Mascarenhas, N. (2019). *Venture Capital In Q1 2019 : The World Pulls Back From Record Highs*.
- Schumpeter, J. (1936). *The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle*. (Oxford University, Ed.). New York, NY.
- Securato Junior, J. R., Adorno, O. do A., Marinho, B., & Savoia, J. R. (2019). *Successful startups: do their entrepreneurs share a common characteristic? Revista da Micro e Pequena Empresa* (Vol. (in press)).
- Sievers, S., Mokwa, C. F., & Keienburg, G. (2013). The Relevance of Financial versus Non-Financial Information for the Valuation of Venture Capital-Backed Firms. *European Accounting Review*, 22(3), 467–511. <https://doi.org/10.1080/09638180.2012.741051>
- Wasserman, N. (2016). The Throne Versus The Kingdom: Founder Control and Value Creation in Startups. *Strategic Management Journal*. <https://doi.org/10.1002/smj>
- Wolfswinkel, J. F., Furtmueller, E., & Wilderom, C. P. M. (2013). Using grounded theory as a method for rigorously reviewing literature. *European Journal of Information Systems*, 22(1), 45–55. <https://doi.org/10.1057/ejis.2011.51>
- Xu, H., & Ruef, M. (2004). The myth of the risk-tolerant entrepreneur. *Strategic Organization*, 2(4), 331–355. <https://doi.org/10.1177/1476127004047617>



---

## 7.2 References to investors' interviews

- Bradshaw, David (2018). Aligned for Success – A Guide to What Investors Look For in a Startup. *Toptal* 28 March. <https://www.toptal.com/finance/startup-funding-consultants/what-investors-look-for> (accessed May 31, 2019)
- Root, Adam (2016). “VCs Want to See Product-Market Fit: Here’s How to Prove It,” *Entrepreneur Europe*, 19 December. Available at <https://www.entrepreneur.com/article/284890> (accessed May 31, 2019)
- Julka, Harsimran (2016). “A rare insight into how Sequoia makes startup investment calls,” *Tech in Asia*, 3 May. Available at <https://www.techinasia.com/rare-insight-sequoia-startup-investment-calls> (accessed May 31, 2019)
- Lee, Aileen (2013). “Welcome To The Unicorn Club: Learning From Billion-Dollar Startups,” *Techcrunch*. 2 November. Available at <https://techcrunch.com/2013/11/02/welcome-to-the-unicorn-club/> (accessed June 08, 2019)
- Lee, Aileen (2015). “Welcome To The Unicorn Club 2015: Learning From Billion-Dollar Companies”, *Techcrunch*. 18 July. Available at <https://techcrunch.com/2015/07/18/welcome-to-the-unicorn-club-2015-learning-from-billion-dollar-companies/> (accessed June 08, 2019)
- Lee, Aileen (2018). “A Conversation with Aileen Lee - Moderated by Geoff Ralston.” *Startup School*, 21 September. Available at <https://youtu.be/vrBhB48qPUM> (accessed June 9, 2019)
- Lemos, Manoel (2019). Personal interview on June 5<sup>th</sup> at “RedPoint Eventures.” CUBO, São Paulo.
- Lima, Guilherme (2019), “Como é definido o Valuation de uma Startup?” *Medium*, 5 January. Available at <https://medium.com/ace-startups/como-%C3%A9-definido-o-valuation-de-uma-startup-9c8bb12e9571> (accessed June 6, 2019)
- Melzer, Geraldo (2019). Personal interview on June 18<sup>th</sup> at Saint Paul Capital Partners, São Paulo. More information available at <http://abseed.com.br/> (accessed July 7, 2019)

- 
- Roizen, Heidi (2014), “Why I care so much about your plan – even though I know it’s wrong.” Blog, Available at <https://heidiroizen.tumblr.com/post/81686170065/why-i-care-so-much-about-your-plan-even-though> (accessed June 9, 2019)
- Zipkin, Nina (2019). “What Do Pitching and Investing Look Like in a Post-Elizabeth Holmes and Theranos World?” Entrepreneur Europe, 31 May. Available at <https://www.entrepreneur.com/article/334616> (accessed May 31, 2019)
- O’Sullivan, Sean (2018), “42 Questions: How Fabrice Grinda And FJ Labs Invest in 1-2 Startups Per Week.” SOSV, 12<sup>th</sup> February. Available at [https://youtu.be/Q39AFKg\\_HdU](https://youtu.be/Q39AFKg_HdU)
- Poli, Marco (2019). Personal interview on June 5<sup>th</sup> at “Encontro de Investidores Anjo e VCs.” CUBO, São Paulo.
- Robertson, Julian (2012), “Interviews with Julian Robertson & Jim Chanos: Columbia Business School Newsletter” Market Folly, 10<sup>th</sup> May. Available at <https://www.marketfolly.com/2012/05/interviews-with-julian-robertson-jim.html> (accessed May 31, 2019)
- Wilson, Fred (2011), “Fred Wilson of Union Square Ventures shares what he looks for in Entrepreneurs | 2011”. Available at <https://www.youtube.com/watch?v=9ZYQ-vSlGHs> (accessed July 07, 2019)
- Distrito e KPMG (2019). Corrida dos Unicórnios.

### 7.3 Remissive index

99, 42, 57	Facebook, 42, 74, 79	Otium Capital, 66
Ace Startups, 66	FJ Labs, 66, 99	P/BV, 85
Airbnb, 44, 65	Google, 24, 26, 36, 42	P/E, 31
Amazon, 42, 79	Gympass, 42	Product-market fit, 66, 67, 70
Apple, 42	Ifood, 42	real option, 32
Arco Educação, 42	Intel, 41, 42	Sequoia Capital, 66
BBG Ventures, 66	IPO, 28, 31, 32, 33, 34, 35, 43, 49, 54, 67, 72, 78, 79, 82, 84, 85, 90, 92, 95	Stone, 42
Brazil, 19, 24, 42, 46, 49, 50, 51, 52, 72, 77, 92	Laggard Investments, 14, 40, 91	TEV, 31
Bytedance, 42	Life Cycle Valuation Method, 86, 90, 92	Threshold Ventures, 66
Capital Gain Investments, 14, 40, 91	Loggi, 42	Tiger Management, 66
Cisco, 42	Microsoft, 42	Tricent Capital, 66
Cowboy Ventures, 66	Nubank, 42, 65	Uber, 14, 42, 44, 65, 94
DCF-based valuation, 21, 29, 30, 32	Oracle, 42	Unicorn Investments, 14, 40, 91
EBITDA, 31		United Square Ventures, 66
		Venture Capital Method, 32
		Yield Investments, 14, 40, 91