



Facultad de Ciencias Económicas y Empresariales

PRIVATE EQUITY: INVESTOR & INVESTMENT PROFILES AND VALUATION METHODS

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Table of Contents

ABSTRACT	4
KEY WORDS	4
RESUMEN	5
PALABRAS CLAVE	5
1. INTRODUCTION	6
1.1. OBJECTIVES	7
1.2. METHODOLOGY	7
2. PRIVATE EQUITY: THE INDUSTRY AND GENERAL THEMES	9
2.1. HISTORY OF PRIVATE EQUITY	12
3. PRIVATE EQUITY ECOSYSTEM: HOW DOES A PRIVATE EQUITY FUND WORK?	16
3.1. FEE STRUCTURE IN PRIVATE EQUITY FUNDS	18
3.2. AGENTS IN THE PRIVATE EQUITY FUND ECOSYSTEM	20
3.3. CREATION AND MANAGEMENT OF A PRIVATE EQUITY FUND: STAGES AND TIMING	22
3.4. RETURNS IN PRIVATE EQUITY: "J-CURVE"	24
4. PARTICULARITIES OF PRIVATE EQUITY MARKETS	25
5. VALUATION IN PRIVATE EQUITY	27
5.1. COMPARABLES VALUATION METHOD: CONCEPT, ADVANTAGES AND DISADVANTAGES	28
5.2. NET PRESENT VALUE METHOD: CONCEPT, ADVANTAGES AND DISADVANTAGES	29
5.3. ADJUSTED PRESENT VALUE METHOD: CONCEPT, ADVANTAGES AND DISADVANTAGES	33
5.4. VENTURE CAPITAL VALUATION METHOD: CONCEPT, ADVANTAGES AND DISADVANTAGES	35
6. VALUATION EXAMPLE FROM A PRIVATE COMPANY	37
6.1. ABOUT REVOLUT LTD.	38
6.2. COMPARABLES VALUATION OF REVOLUT LTD.	40
6.3. NET PRESENT VALUE OF REVOLUT LTD.	43
6.4. ADJUSTED PRESENT VALUE OF REVOLUT LTD.	45
6.5. VENTURE CAPITAL VALUATION OF REVOLUT LTD.	48

7. CONCLUSIONS	50
APPENDIX	52
BIBLIOGRAPHY	53
BIBLIOGRAPHY FOR DIAGRAM	55

Abstract

The objective of this paper is to discover how the Private Equity industry functions. The aim is to provide the reader with a global understanding of this industry and a toolkit of how to value private companies through the main four methods used in the field, with real life examples so that concepts are easier to grasp and replicate. The first aspects this paper covers are the history of Private Equity and how its importance has grown through the years. Then, it shifts towards Private Equity funds, their structure, agents and stages of their life. The paper then briefly touches on the peculiarities of the Private Equity market before a full submersion into valuation in Private Equity settings. Finally, the paper illustrates an example of the methods described by performing a full valuation on the popular FinTech company, Revolut Ltd.

Key Words

Private Equity, Private Equity Fund, General Partner, Limited Partner, Capital, Return, Risk, Valuation

Resumen

El objetivo de este trabajo es descubrir el funcionamiento de la industria del Capital Riesgo. La meta es proporcionar al lector una comprensión global de esta industria a la vez de dotarle con un conjunto de herramientas para valorar las empresas privadas a través de los cuatro métodos principales utilizados en este campo, con ejemplos de la vida real para que los conceptos sean más fáciles de entender y replicar. Los primeros aspectos que trata este trabajo son la historia del Capital Riesgo y cómo ha crecido su importancia a lo largo de los años. A continuación, se centra en los fondos de capital riesgo, su estructura, agentes que lo conforman y las etapas de su vida. A continuación, el trabajo aborda brevemente las peculiaridades del mercado de Capital Riesgo antes de sumergirse de lleno en la valoración en entornos de Capital Riesgo. Por último, el documento ilustra un ejemplo de los métodos descritos realizando una valoración completa de la popular empresa FinTech, Revolut Ltd.

Palabras Clave

Capital Privado, Fondo de Capital Privado, Socio General, Socio Comanditario, Capital, Retorno, Riesgo, Valoración

1. Introduction

Since it was introduced as an alternative investment asset class in the late 1940s, Private Equity has grown to become one of the most prominent investment options for both private and institutional investors. Over the decades, its popularity and global assets under management have seen both periods of success and misfortune. This has helped clean the market from poorly skilled Private Equity managers and rewarded those with solid knowledge and understanding of the industry's trends with astronomical returns, unseen in the public market.

The star players of this industry are the Private Equity funds, which are pools of capital from which investments are made. They are the centerpiece, legally binding together a variety of agents, over long periods of time on a journey with very little guarantees of success.

High risk levels characterize this space, as high rewards come at a cost for investors. However, conducting proper due diligence for the target investments has proven to help in the hedging of this risk. A key part of due diligence reports is the valuation of target companies. This is a very difficult task as another characteristic of this industry is the lack of publicly available information. The lack of information is usually compensated with an overdose of assumptions, making the valuations highly subjective to the degree of accuracy of the data assumed. Furthermore, analysts will argue there is no one correct way to value a company, as every valuation method comes with advantages and flaws.

This paper goes into great detail on all of these points in order from broader generalizations to industry specifics. At the beginning of this work, the foundations will be set, explaining the importance of the industry and its history, from its creation, through its evolution, to its present form. Then, I will go into the previously mentioned, Private Equity fund ecosystem, describing the agents that conform it, legal structure, timing and stages, compensation structures and how returns are delivered in the space. We will then go further into specifics, looking at the peculiarities that only Private Equity segments share.

The main focus of this work is placed towards the end of the paper, where I will dissect each of the four most common valuation methods in the Private Equity industry (according to the famous Private Equity manager Cyril Demaria, 2013). I will also give my educated opinion on each listing a set of advantages and disadvantages for each. After providing a detailed review of each of the valuation methods, I will be putting them into practice by conducting my own proprietary valuation on one of the leading private companies in the financial technology space, valued at \$33 Billion by Goldman Sachs.

Overall, this paper aims to aid those interested in the space with a deep understanding of the Private Equity industry and provide them with a toolkit of one of the industry's key stress points; valuation.

1.1. Objectives

The main objective of this paper is to understand the Private Equity market from all its perspectives. From its history to the main agents that make it function, to the methods of valuation used to estimate investments. Even though the paper is going to touch on a number of subtopics, the main emphasis is placed on the valuation techniques used to estimate the value of private companies, as these differ to the ones used in public equity markets. Another key objective is to understand the relationship between the key agents that conform a Private Equity fund, their relationship with one another and what they each gain from the partnerships they create.

1.2. Methodology

The main methodology employed for this work has been deductive, as from the theory and data gathered by using a wide bibliographic review, I have drawn a set of assumptions and concluded on a singular valuation for a private company. Furthermore, the paper starts with generalizations about the Private Equity industry, looking at its history and trends, then transitions towards a smaller element within the market, Private

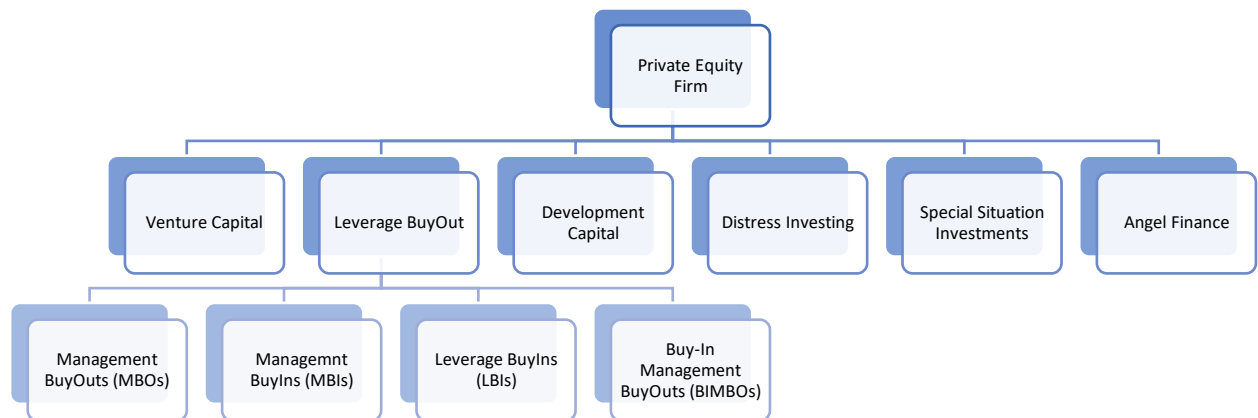
Equity funds, to finally move towards the agent within this ecosystem that gives a purpose to the industry, the target companies or investments.

The research unit for this work is mainly qualitative, focusing on the theory of how the Private Equity industry works and how the formulas and assumptions behind the valuation methods denote a company's value. However, the research unit shifts to quantitative in the latter sections of the paper where I put into practice, through detailed examples, the theory gathered in the previous sections.

2. Private Equity: The Industry and General Themes

When a startup company is created the founder may not count with the necessary funds to finance the venture by himself, therefore he must seek external capital (Demaria, 2013). Furthermore, some private, established companies also face unfavorable management or debt situations, and need financial aid and restructuring. Due to the risks these businesses carry, such as large portions of intangible assets, years of net losses or bankruptcy risks, these companies are unattractive for banks, which makes it harder for them to obtain debt financing (loans) from these institutions. Private equity firms fill these voids in the market as, by nature, they are able to take riskier investments, and have the knowledge to help with the management of these firms. The private equity industry is divided into multiple segments, each focusing into individual vehicles of investment into private companies. The diagram below depicts the most common segments within private equity and the subsequent categories within the largest one (Leverage Buyouts).

Diagram 1:

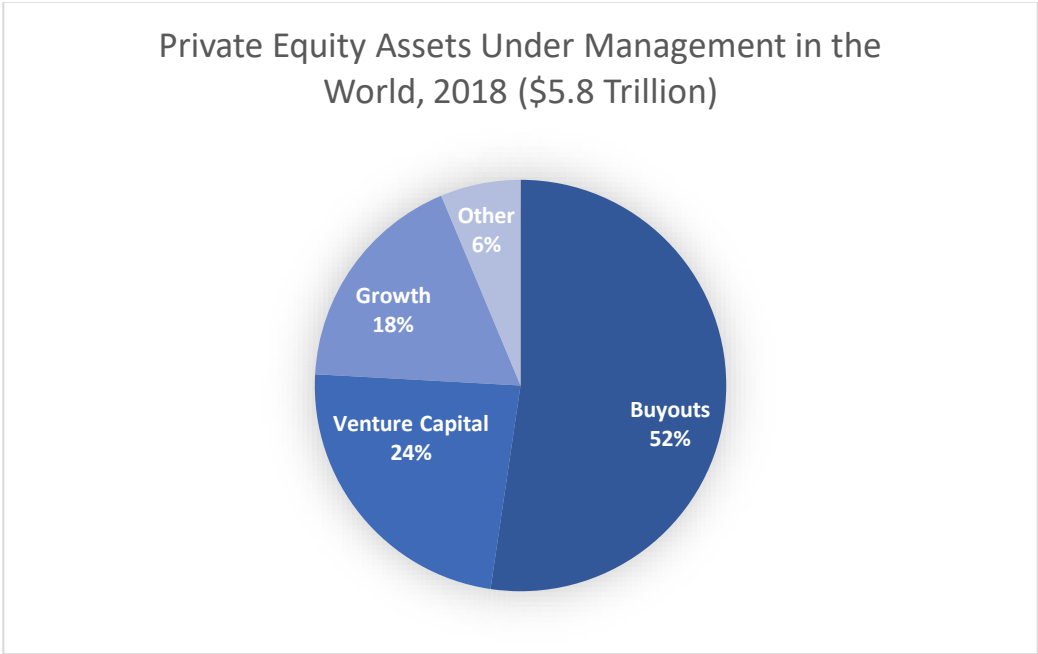


Source: Prepared by the author

Even though there are many segments within private equity, two thirds of the assets under management are comprised within two areas: Venture Capital and Leverage Buyouts. The largest segment is Leverage Buyouts, and these funds focus on

investments into established, private companies that are in an unfavorable financial situation, usually with high levels of debt, and need both financial and managerial help to stay afloat. Venture Capital, on the other side is a type of private equity investments made into early-stage startups. The subsequent segment to private equity (Development Capital, Special Situation Investments, Distressed Investing and Angel Finance) are very niche and together they only account for a third of the assets under management of the Private Equity industry, therefore I will not go into further detail. The pie chart below depicts the division of assets under management between the different segments of Private Equity.

Diagram 2:

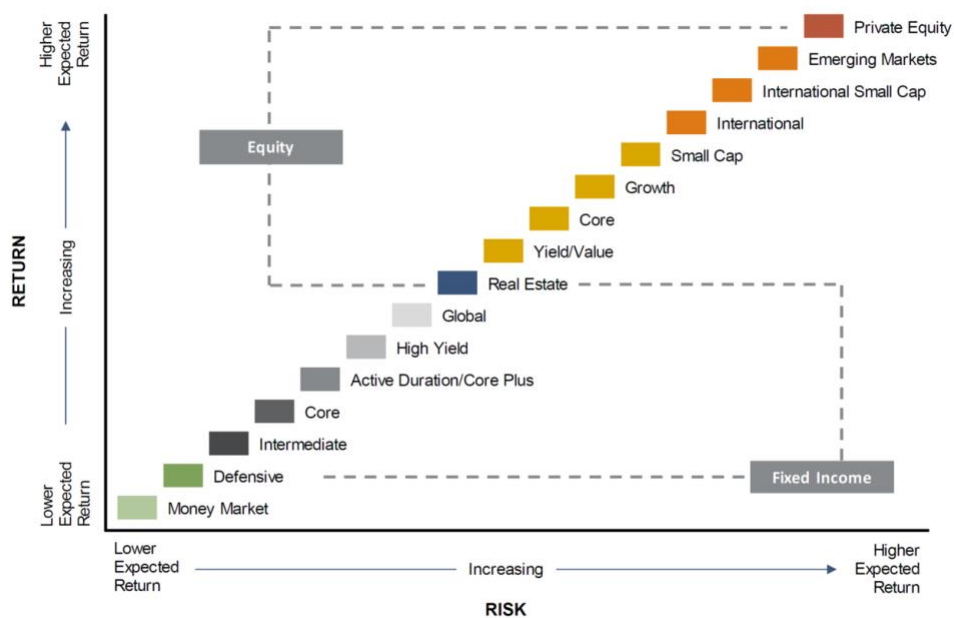


Source: Prepared by the author

In the diagram above, Growth Equity encompasses both the Development Capital and the Special Situation Investments segments of Private Equity. Therefore, the remaining category (“Other”) includes Distressed Investing and Angel Finance.

As mentioned, Private Equity firms deal with exceptional levels of risk, and the ways they hedge these risks are by undertaking extensive due diligence prior to investing and by agreeing to power full oversight rights on their target investments through atypical equity instruments (Demaria, 2013). Even though the industry’s risk levels are outstanding, the investments they undertake are highly attractive as Private Equity funds have historically delivered higher returns than the public equity market. In economic terms this makes sense, as the payoff for a higher risk tolerance when investing should be higher than if less risk is undertaken. This relationship is known as the “risk-reward tradeoff”. The graph below shows most assets classes graphed into according to their riskiness and the potential rewards they offer, forming a spectrum.

Diagram 3:



Source: St. Louis Trust & Family Office

On a global level, fixed income securities are less riskier assets when compared to equities and also carry the lowest potential returns, therefore, they appear on the bottom left-hand corner of the spectrum. We can see how the Private Equity asset class is at the top righthand corner of the spectrum. This translates into the highest potential returns out of all asset classes considered, but also the one with the highest risk level.

The way Private Equity funds work is by raising bulks of cash from a variety of investors (institutional and private) based either on a prior track record of success or a prospectus of very exciting target companies they are planning on investing in. Through extensive negotiations they can lure these investors into providing capital with the promise of above market returns on long-term, illiquid investments. “Large institutional investors, such as pension funds and university endowments, are likely to want illiquid long-run investments in their portfolios. Often these groups have neither the staff nor the expertise to make such investments themselves” (Demaria, 2013).

2.1. History of Private Equity

The origins of private equity date back to the late nineteenth century through to the first decades of the twentieth century. At that time, family offices managed the assets of the wealthier families in the United States, such as the Rockefellers, Vanderbilts and Whitneys and invested into very successful firms, such as AT&T, Eastern Airlines or McDonnell Douglas (which merged with Boeing in 1997). These were the first private investors that started to introduce third parties to oversee and manage their investments.

The year after World War II ended, 1946, American Research Development (ARD) was created, this was the first formal private equity firm. The reason for the creation of this firm was to invest into high risk, emerging companies, following technological developments from the war. ARD’s best transaction over their 26-year life was a \$70,000 investment into Digital Equipment Company in 1957, which grew to over \$350 Million. Even though they saw great success in their venture investments, institutional investors were reluctant to invest into them as they were seen as taking astonishingly high-risk levels. This is why they changed their approach to a close-ended fund marketed mostly towards individuals (Demaria, 2013).

“Limited partnerships accounted for a minority of the venture pool during the 1960s and 1970s. Most venture organizations raised money either through close-end funds or

small business investment companies (SBICs), federal guaranteed risk-capital pools” (Demaria, 2013). However, due to incentive issues in the SBIC sector, these companies collapsed leaving a void in the market that was slowly filled by private equity firms, which were universally referred to as VC funds at the time.

Even though at the time they defined the same type of entity, as private equity firms primarily focused on venture investments, we should make the distinction between the private equity industry and venture capital funds in today’s investment landscape. They sometimes get confused as private equity encompasses venture capital as one of its main branches, and because originally, Venture Capital funds were the term that described private equity firms that undertook venture investments. In big picture terms, “Private Equity means the buyout of a stable firm using both equity and debt, whereas Venture Capital means the investment of equity into a newer, high-growth potential company when the chances of success are riskier” (Brock, 2021). There are other factors to consider when making the distinction between these two realms of investment.

Private equity focuses on the investment or acquisition of stable companies through a combination of equity and debt and comprehend a greater spectrum of industries that might be performing well. While venture capital has a much smaller range of investment opportunities focusing on younger firms (mainly startups) with high growth potential, usually found in booming sectors such as technology, information technology and biotechnology in current times, and usually only invest via equity instruments.

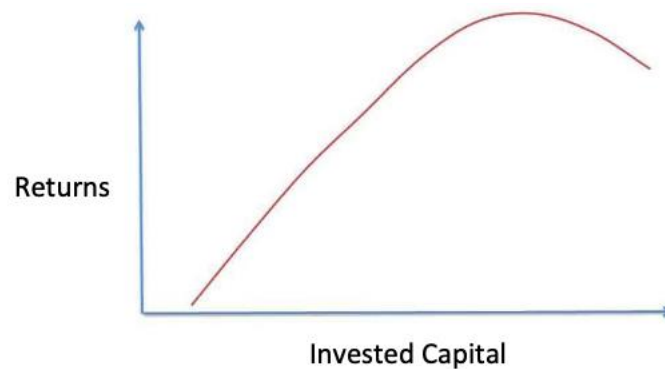
Coming back to the history of private equity, during the late 1970s and 1980s, private equity activity increased drastically. Up until this point, almost their complete array of investors were affluent individuals. However, in 1979, the U.S. Department of Labor launched a clarification of the Employee Retirement Income Security Act (ERISA) “prudent man” rule. Before, pension funds were limited by law in investing substantial amounts of money into highly risky assets such as private equity. However, the clarification explicitly mentioned that pension fund managers were allowed to invest into these highly risky asset classes, even encouraging them to increase diversification and

returns. This brought a massive influx of capital into the market from a previously absent institutional investor profile. With the new increase of business opportunity in the private equity industry, specialized funds in different subsectors of the market rapidly sprung and the sector as a whole saw a massive professionalization. Furthermore, during this transition, limited partnerships became the dominant organizational form in the private equity industry.

The first half of the 1980s saw a surge in private equity investing due to very successful acquisitions in the high-technology industry, with deals such as Cisco Systems and Microsoft, and a number of successful buyouts, including Avis and Dr. Pepper. These investments generated outstanding returns for private equity investors, garnering greater public attention and flooding the market with capital. This caused an over investment into several industries, such as computer hardware, and the entry of inexperienced venture capitalists, increasing competition (Demaria, 2013). Due to these two factors, returns saw a massive decrease during the back end of the decade, and investors started to invest less capital into the space.

The 1990s saw a very similar pattern. At the beginning of the decade, inexperienced agents started to exit the market and the talented ones remained, decreasing competition. Furthermore, technological advancements surged increasing investment opportunities and the Initial Public Offering (IPO) market was very healthy, making it easier for venture capitalists to exit their investments. With these changes, capital started to flow back in at a pace that could not be sustained. As it had previously happened, firms started to lurch under the weight of capital. The graph below depicts how returns in the private equity market work, when too much money enters the market, and funds are overcapitalized, returns are hinder.

Diagram 4:



Source: San Román (2016)

Returns on the PE market tend to suffer when the market is overcapitalized due to two reasons. On one side we have investment decisions, which can have better or worse outlooks in terms of returns. The best target companies with the most potential returns will secure capital first. When there is not enough capital in the private equity market, managers will do deeper due diligence prior to investing, hence riskier companies with less upside will not be able to secure capital. The overall return of the PE market will, therefore, only be based on top class private companies. When money is flooded into the market, and the offer for target companies remains constant, those riskier companies can now secure funding, but will inevitably perform worse. On the other side, when managers find it easier to secure financing, more funds are going to appear. These new funds tend to incorporate less experienced or skilled fund managers, as the best managers usually remain during tougher periods. This ultimately also increases competition. Investors that invest with these new fund managers are not going to obtain the returns they could with the elite ones, and overall returns in the market are going to fall.

Due to past performance, the scaling of Venture Capital funds had become a major issue of concern by the start of the century. However, the buyout side of private equity experienced a tremendous boom, with institutional investors seeking alternate investment opportunities. As with previous booms in the private equity industry, money pouring into the market caused investment standards to decrease, and the massive downturn in the market following the 2007-2008 financial crisis came to no surprise. This said, the

recovery was very speedy, and by 2011, many problematic investments had been recouped. The structure of private equity firms remains unchanged for the most part, functioning as limited partnerships since the 1960s, however the competitive landscape has changed drastically. Whereas at the earlier stages of the industry there were a few funds that worked alongside one another, nowadays firms are continuously searching for ways to differentiate themselves, invest more efficiently and attract larger amounts of capital. In the buyout sector, for example, many funds are including new products such as real estate, mezzanine, distressed debt or bond funds. We can also see some firms expand overseas, increasing the diversity they offer and generating strategic partnerships.

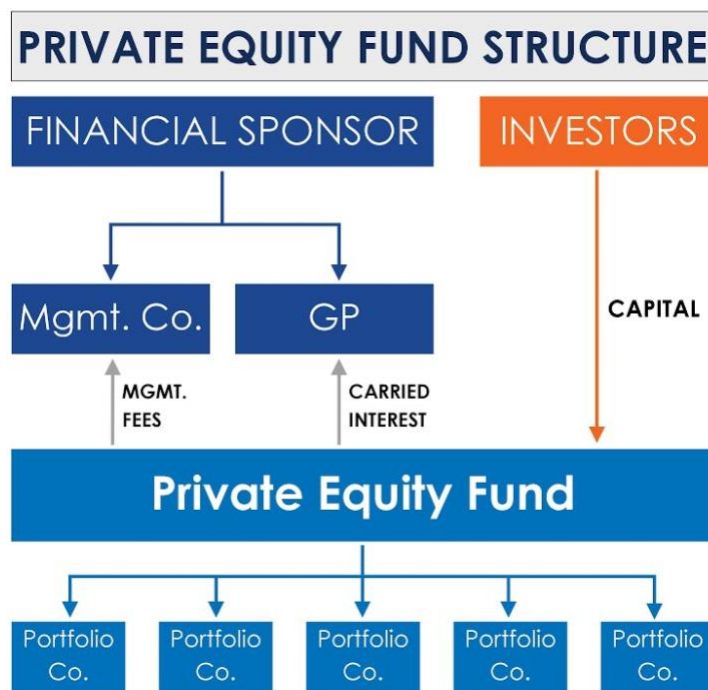
With the increased professionalization in the market, we can divide the private equity industry into two groups: a vast array of small, typically niche, private equity firms and a select group of larger leading firms which are much more systematized, have formalized management structures and offer a wider product selection. This transformation over time is not unprecedented as the investment banking industry saw a similar transition during the 1950s, where the bulge bracket firms erupted.

3. Private Equity Ecosystem: How does a Private Equity Fund work?

As we have previously seen, private equity funds are separate legal entities designed with the sole purpose of investing into equity instruments of private companies. Ultimately, this entity formalizes an agreement between partners of different natures, each committing different assets and undertaking different responsibilities towards the outcome of the fund. The legal structure of these funds will either be a Limited Partnerships, or a Limited Liability Companies and it is ultimately where the capital is going to come in and where it is going to be invested from. On one side of the partnership, we have the General Partners (referred to as GPs) which oversee the management of the fund and have the ultimate say over the investment decisions. On the other side we have the Limited Partners (referred to as LPs), which are the investors who commit the

capital. The nature of these LPs can also vary drastically, depending on who they represent (either a private or public entity). However, they can all be placed into one of two categories: institutional investors or private investors. Below we can see a depiction of the agents within a Private Equity fund. I will go into more detail about these agents further on in this section, as well as the movements of capital and returns within a fund.

Diagram 5:



Source: Lynch, 2022

The eventual goal of this agreement is to generate abnormal returns through investments into private companies. However, from the moment the fund is created until the fund is closed, the capital is going to move around in a particular fashion, which usually differs from fund to fund. For this purpose, before the fund is created, two crucial documents are drafted that will detail the subsequent partnership and all of its terms. These are Limited Partnership Agreement (LPM) and Private Placement Memorandum (PPM, also referred to as Private Offering Memorandum (POM)). Colloquially, these two documents are referred to as the “Bible” of the fund as they detail all the rules the fund must follow throughout its life and cannot be changed once the agreement is finalized. These documents contain the fee structure, the industry the fund is going to invest into,

the capital distribution method that is going to be used and many further caveats that all parties must adhere to.

In today's Private Equity landscape, most venture organizations raise money through closed-end funds. Closed-ended funds differ from open-ended funds in that once the period to subscribe capital is over, no further capital can be injected into the fund, and the investments will be done with the pool of capital that has been gathered during that time. Furthermore, "unlike an open-end fund, in which an investor's subscription capital is due at the time the equity interests are purchased, closed-end funds simply close on an investor's promise to fund in the future" (Chertok & Braendel, 2010). This means that Limited Partners do not have to disburse their committed capital when they subscribe to the fund. There is a specific period, usually called the "commitment period" or "investment period", during which the General Partner of the fund can withdraw capital from the Limited Partners in an amount not exceeding its unfunded obligation, these withdrawals of capital are called "capital calls".

3.1. Fee Structure in Private Equity Funds

The main component of the LPM and POM is the fee structure the fund is going to follow. There are two crucial fees that almost all funds contain: management fees and performance fees.

- Management fees are paid to a separate entity within this ecosystem; Registered Investment Advisor (RIA), which is not part of the limited partnership but an external agent in charge of identifying potential firms for the firm to invest in and advising throughout the life of the fund. This fee is paid annually and do not depend on the performance of the fund, in other words, the Registered Investment Advisors will receive this fee yearly no matter the outcome. This fee tends to fluctuate around the 1-2.5% of the committed capital. The variation of the percentage is up to the deal the General Partner is able to close with the

Registered Investment Advisor and will usually depends on the size of the fund and the firm's past record of success. Management fees tend to decrease as years go by as companies exit the fund. The money to pay off this fee comes from a source called "dry powder" in the Private Equity industry, and it refers to the committed capital, cashed in by the fund, that has not yet been invested. In other words, cash in hand.

- Performance fees help Limited Partners ensure General Partners have their interests in mind, as with these, the gross dollar value fluctuates depending on the returns of the fund, namely, performance. This fee is also called carried interests or "carry" and usually falls between 20-30% of the returns obtained by the fund, therefore, they are paid as companies exit the fund, following a precise order called "waterfall method"; also stipulated in the LPM and PPM.

Let's illustrate how fees work with an example:

A fund has managed to raise \$1.5 Billion in committed capital, with the following fee structure stipulated in its LPM: 2% in management fees and 20% in performance fees. Every year, the RIA company will receive \$30 Million in management fees no matter the outcome of the investments they advise on. This quantity will decrease as the firm divests from exiting target companies. This means the GPs will invest the remaining capital after these fees are subtracted. After the ten-year life of the fund, the GPs manage to realize \$5 Billion of investments, meaning \$3.5 Billion in profits. From these \$3.5 Billion, the split between GPs and LPs would be 20-80, meaning that the GPs will earn \$700 Million as carried interests, and the LPs will earn \$2.8 Billion from their committed capital (an 86.7% return on investment).

3.2. Agents in the Private Equity Fund Ecosystem

At this point, I am going to go into further detail on the different agents within this ecosystem and their role towards the fund, explaining their duties and peculiarities, as well as the relationship each agent has with the others.

- **General Partners (GPs)**

In the context of a Private Equity fund, the General Partners are the agents who create the fund and manage it. This entails crucial stages such as seeking capital, deciding on the investments, and managing to divest from the portfolio companies before the end of the fund's life. Furthermore, this is the entity with legal responsibility to make investment decisions for the fund, meaning that even though they may contract advising by third parties, it is the ultimate decision of the General Partner if the fund is going to peruse investment into a target company or not. As mentioned previously, the way General Partners receive compensation for their services is through performance fees. Therefore, if they do not manage to generate sufficient profit for the Limited Partners (as agreed by in the LPM and PPM), they will not receive any compensation from their work during the lifetime of the fund, which could well be up to 13 years.

- **Limited Partners (LPs)**

The other side of the Limited Partnership belongs to the Limited Partners. These are the investors, the agent in charge of providing capital and therefore finance the investments. Apart from choosing the fund they want to invest in (in context to their risk profile), Limited Partners have an entirely passive role within the management of the fund and its investments. This said, they can ensure their interests are being preserved through covenants, which are clauses that prevent General Partners from acting against what is stipulated in the LPM and PPM. When it comes to Limited Partners, these may fall into one of two groups: Private Investors or Institutional Investors. The main differentiation is who they represent; while private investors represent themselves (or

agents representing High Net Worth Individuals), institutional investors represent institutions such as Universities, Pension Funds or the State. The main categories of investors are listed below:

- High Net Worth Individuals (HNWI)
- University endowments
- Pension funds
- Funds of funds (funds that provide their investors with investments into subsequent funds, basically intermediaries)
- Foundations
- Financial Institutions (Banks and Insurance Companies)

Even though there are many more investor categories, most of the capital is concentrated in just a few; “pension funds, university endowments, and foundations account for 70% of the money in the top 100 private-equity firms while the remaining 30% is with HNWI, Insurance & bank Companies” (Vaidya, 2022).

Back tracking on their presence within the Limited Partnership, while the General Partners have unlimited liabilities, Limited Partners perceive limited liabilities on the outcome of the partnership. This is a great advantage for this group as, in the case of an unfavorable event such as a lawsuit or bankruptcy, they can only lose their committed capital, while General Partners shall respond with all their assets.

- **Registered Investment Advisor (RIA)**

The organization that employs the investment professionals who make investment decisions and allocate capital. The management company is not the same entity as the GP. The GP will enter into a management agreement with the management company. This will allow the GP to have direct control over the management of the investment portfolio. Under this agreement, the fund pays the management company fees to employ

the investment team, evaluate opportunities, manage the portfolio, and manage all day-to-day operations (Lynch, 2022).

- **Target/Portfolio Companies**

The target companies are the investments the fund makes, which for Private Equity funds only include private firms. Once the investment is made into the firm, target companies become portfolio companies and are factored into the assets under management of the fund. The amount invested into each portfolio company will depend on a variety of factors. The allowed maximum investment of the fund, the stage at which the company finds itself and the nature of investments of the fund itself (early stage, mid stage or late stage) are a few.

- **Special Purpose Vehicles (SPVs)**

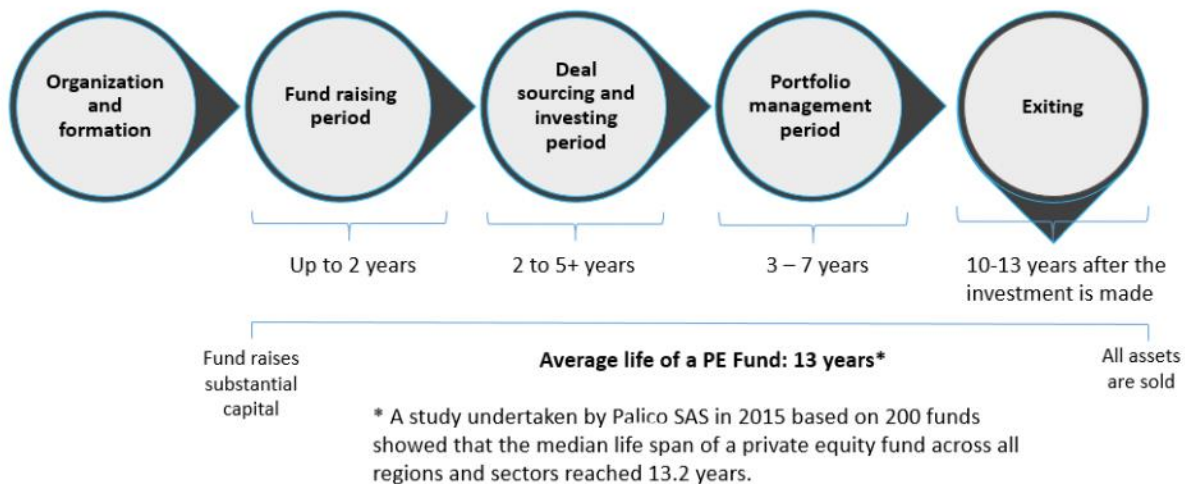
Special Purpose Vehicles are legal entities designed to fulfill specific, temporary objectives. As legal entities, SPVs have their own operating and ownership structures, and are financially independent entities. They are found between the fund or Limited Partnership and the Portfolio Companies. They can be attractive investment structures for private equity, venture capital, hedge fund, and real estate investment managers. Some of the benefits of utilizing SPV may include protect parent or subsidiary assets and separate liabilities, hold investments from private sponsors, avoid dilution in future venture capital funding rounds, and invest in holdings outside of hedge fund investment philosophy (Slant Partners, 2021).

3.3. Creation and Management of a Private Equity Fund: Stages and Timing

The Private Equity fund ecosystem encompasses a series of stages from its formation to the divestment of its assets. What is commonly named as the “life of a Private Equity fund” describes the period from when financing from LPs is secured until the last company

exits the fund. According to a study conducted by Palico SAS, a private equity marketplace for institutional investors, in 2015 based on 200 Private Equity funds, the median life span of a Private Equity fund is 13 years. This said, each Private Equity fund can differ drastically from the next. The following diagram by San Román (2016) illustrates the stages and timing of a Private Equity fund.

Diagram 6:



Source: San Román (2016)

Organization and Formation: As explained by the author in his paper “Private Equity: The Essence”, once the fund complied with its legal requirements for operation, the Fund Agreement is signed between the parties, pledging both parties to protect investors. This includes a set of covenants to ensure that both parties live up to their obligations. This period can take any amount of time and depends on the regulatory regulations as well as the LPs.

Fund Raising Period: Once the fund's legal structure is established, the governing documents usually allow the fund to raise capital for a limited period of time (usually ranging from 12 to 18 months). After this period the fund usually stops accepting new investors. Most fundraising for Private Equity funds is secured through private placement of securities (aimed at institutional investors and high net worth individuals only), and in order to raise as much capital as possible, the GP attends one-on-one meetings where

marketing materials are distributed and, most importantly, so, the previously mentioned Private Placement Memorandum (PPM) is delivered to potential investors.

Investing Period: During this period, the fund will be looking for opportunities to invest in securities under the conditions laid down in the fund's operating agreement. Many of these agreements allow investments to be made until around six to seven years after the fundraising. After this period, the organization will be able to invest only if the predetermined limits set in the agreements allow it.

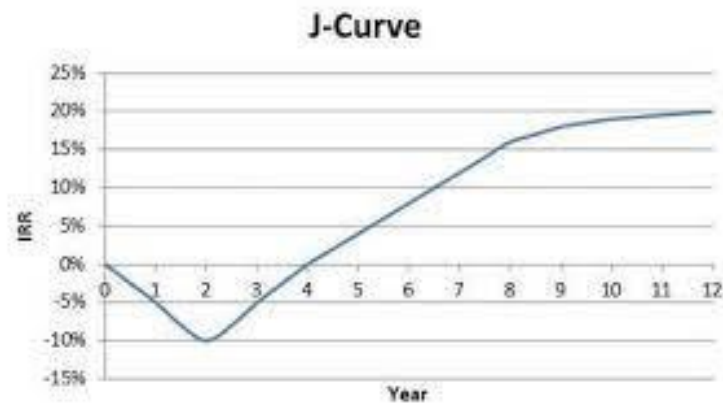
Portfolio Management: Once an investment is made, the PE team must perform exceptionally well, and they must do so on a daily basis, as potential buyers, those to whom the GP will attempt to sell the investment at the exit stage, will be looking at historical performances of the firms.

Divestments or Exits: When liquidating the fund, usually the money is not cashed all at once, but rather progressively. When exiting an investment, the fund must divest and exit through different strategies, and in this process, GP's will always seek to find an effective and early exit once they have decided to divest.

3.4. Returns in Private Equity: “J-Curve”

After understanding the different stages of a Private Equity fund's life, it is crucial to also understand how returns in a Private Equity fund usually operate. As with many different industries, these returns usually follow a “J-Curve” pattern. A J-Curve is a graph in which the drawn line descends first and then gradually rises above the starting point to form the shape of the letter J. This reflects the phenomenon that a period of unfavorable returns is followed by a period of gradual recovery that rises to a point higher than the starting point. This phenomenon has been applied in various fields such as private equity funds, economics, medicine, and political science. Below we can see an example of a J-Curve in a private equity scenario.

Diagram 7:



Source: Allen (2017)

As we can see above, in private equity, the J-Curve shows that funds tend to record negative returns initially and increase returns in later years as investments mature. Negative returns on early investment can result from investment costs, management fees, immature investment portfolios, and early amortized unprofitable portfolios. However, as portfolio companies start to exit the fund (via acquisition or IPO), the returns start to increase, hopefully becoming positive.

4. Particularities of Private Equity Markets

Even though the private equity market is a form of equity investment, such as public equity markets, private companies hold many differences with public ones. Within the different types of private equity mentioned above we could also point out many differences, however, there are certain common themes shared throughout the whole industry. Demaria's paper: "Private Equity Today and Tomorrow. In Introduction to private equity: Venture, growth, LBO and turn-around capital." (2013), identifies the following themes as common between all forms of private equity.

- **Illiquidity:** The term illiquid when talking about investments means the asset cannot be turned into cash easily. With public equities there is a regulated market

where most positions in equities can easily be sold and bought if the investor is not content with how the company is being run, as there is a constant supply and demand. Private equity investing is set on longer-horizons and demand investors remain active in the duties of their invested companies. Therefore, the investor has more direct options to influence the direction of the company rather than selling their position. The theme of illiquidity also heavily influences the typical structure of private equity funds, with a long-term limited partnership agreement, usually lasting ten years or longer. Furthermore, illiquidity, paired up with risk in that returns are highly uncertain, also motivates the vehicle through which funds invest in companies. Venture Capital funds generally seek preferred stock with liquidation preferences and control over the direction of the firm, and Leverage Buyout funds often create deals that allow for recapitalization through dividends.

- **Information Gaps:** The private equity sector is, by nature, much more opaque than the public sector, which makes it very hard to evaluate performance on the investments, as these equities are not continuously priced. Henceforth, valuation of private companies is very limited as the prevalent valuation techniques incorporate continuous pricing of assets. Furthermore, investors must act on very little information not just from the target company itself, but the booming industries within private equity investments tend to be obscure. Overall, information asymmetries create more inefficiencies in the market but at the same time increase the uncertainty and risk of the investment.
- **Cyclicality:** From fund-raising to Initial Public Offerings (IPOs), the whole private equity ecosystem is highly cyclical. When a new trend in the market erupts, PE funds exploit it until the next one arises, meaning they have to be constantly on the look for new niches and have to act upon them as fast as they can. Therefore, the fund-raising window for private equity firms is very tight. Portfolio companies must follow the same rapid fund-raising strategy before they become obsolete or competitors act on them, which heightens the cyclical nature of the industry. Furthermore, as mentioned in the history of private equity, the market follows cycles of overcapitalization and undercapitalization. These tend to coincide when

traditional asset classes, such as public equities, are underperforming, and investors seek alternative investment opportunities.

- **Reputation:** As we have seen in the history of private equity described above, over the past century, many private equity firms have failed due to lack of knowledge. In the private equity industry, past success is key as it builds a reputation with which it is easier to attract investments (Limited Partners) and close deals with target companies. Furthermore, when a Private Equity firm signs a deal with a target company, they usually go further than just providing capital, they also help run the business to ensure their success. Therefore, having a past track record of success usually translates into higher expertise with IPOs and corporate ties that can give portfolio companies a boost; ultimately benefiting the whole ecosystem.
- **Incentives:** As mentioned, the illiquid nature of the industry and the heavy information asymmetries creates a long-term bond between the parties of the fund (typically from 8-10 years). Incentives are put in place so that the interest of all the parties are aligned during this period. These incentives include the aforementioned fee structures (management fees and carried interests) and preference percentages. All of these incentives are compiled into the LPM and PPM.

5. Valuation in Private Equity

With publicly traded firms, potential investors can determine the value of a company with relative ease, as there is a market value with the market capitalization of the company, furthermore all the financial statements for public companies are public, making it also very easy to find out exactly how much the actual business is worth. For private firms the narrative varies drastically, especially for those in the earlier stages of their life cycle, where the model typically has to account for a period of negative cashflows with uncertain future rewards. The process is very difficult and often the approach is subjective, as many assumptions must be made due to the lack of data.

In this section I am going to address the five main methods of valuation used in the private equity industry according to Lerner & Willinge (2011), two reputable economists and founders of investment companies. These methods of valuation are: Comparables, Net Present Value, Adjusted Present Value, Venture Capital method and Options method. I am going to describe in detail each method, including the mathematical calculations each require, then I am going to assess each method analyzing their advantages and disadvantages. I will be excluding the Options method, as for the purpose of this article I am only considering one-time investments into target companies for simplicity.

5.1. Comparables Valuation Method: Concept, Advantages and Disadvantages

The comparables approach can also be referred to as market approach or relative valuation method, as it estimates the value of a certain asset relative to the value of similar assets in the market, usually competitors or companies with similar business models. As previously mentioned, the private equity market is characterized by low levels of information, as private companies are not required to publicly publish financial data further than yearly sales. This is a pressing issue when evaluating a firm and the way the comparables valuation method goes about it is by utilizing firms with similar value characteristics. “These value characteristics include risk, growth rate, capital structure, and the size and timing of cash flows” (Lerner & Willinge, 2011). These characteristics are compared through underlying attributes that both firms share and can be incorporated through a multiple, therefore, the assumption that the asset we are trying to value will behave in a similar way to the asset we are comparing it to has to be made.

An example of the comparables valuation method would be to estimate the price of a house based on previous houses sold recently within the same neighborhood with similar characteristics to the house we are trying to value. This can be expanded by calculating the price per square foot, using it as a valuation multiple, and increase or decrease the value if our target investment is larger or smaller than its peers. In a private equity scenario, the approach involves searching for public companies that resemble our target

private firm. The best comparable valuations include direct competitors; however, these are very hard to find as the nature of private and public companies differs. Therefore, companies within the same industry and have similar parameters are a good option. These parameters may include size of the company, its annual growth rate or its age (Murphy, 2022). Ideally, we should not only search for one similar company, but a peer group within the same industry and average their value characteristics to better understand where our private company would fit in the market. In this context, when valuing an equity stake in an apparel retailer, for example, we would need to search for publicly traded apparel companies more or less with the same size, geography and stature as our target firm. Then, once this group is established, we would calculate averages for variables such as operating margins, revenue per employee or sales per square meter; all very important in this industry.

This valuation method provides a quick and easy way of obtaining a very general estimation of the value of a firm. It includes, however, many potential issues when used in the private equity realm. First, when comparing firms, if another private company is used, we will most possibly be falling into the same issue again; a lack of publicly available information, destroying the purpose of this method. Therefore, using public firms as comparison points might seem like the solution, however, on many occasions it is very hard to compare private firms to public ones, mainly in the earlier stages of the private firm's life. This is due to a notorious difference in size, structure,

Comparables are best used in junction to other valuation methods, as they help compare the target investment to similar assets, however, by itself it can be very vague and, in private equity scenarios, very hard to perform correctly. This method of valuation is solely external; therefore, it pairs well with internal valuation methods such as Discounted CashFlows (DCFs).

5.2. Net Present Value Method: Concept, Advantages and Disadvantages

The Net Present Value (NPV) method is one of the most common methods of cash flow valuation. This valuation method brings to the present (time when the valuation is being conducted) all future cash flows, through a discount rate called the Weighted Average Cost of Capital (WACC). In order to avoid double counting, the NPV method also incorporates the benefit of tax shields from tax-deductible interest payments within this discount rate.

The first step is to calculate the company's current and future cash flows. The equation to calculate cash flows is the following:

$$CF_t = EBIT_t * (1 - \tau) + DEPR_t - CAPEX_t - \Delta NWC_t + other_t \quad (1)$$

Where:

CF	= cash flow
EBIT	= earnings before interest and tax
τ	= corporate tax rate
DEPR	= depreciation
CAPEX	= capital expenditures
ΔNWC	= increase in net working capital
other	= increases in taxes payable, wages payable, etc.

The following step is to calculate the Terminal Value (TV). The Terminal Value of a company is its estimated value at a specific investment horizon. This estimate is very important as the majority of the company's value, especially if it is at an early stage, may be in Terminal Value. The Terminal Value of an enterprise can be estimated using the perpetuity method, which is the method followed for NPV. Equation (2) below, gives a formula for calculating the Terminal Value (TV) at time "T" using the perpetual method, assuming a perpetual growth rate "g" and a discount rate of "r". The cash flows and discount rates used in the NPV method are usually nominal meaning they are not adjusted for inflation. If the projections indicate that cash flow will be constant in inflation-adjusted dollars, a final growth rate equal to the inflation rate should be used:

$$TV_T = [CF_T * (1 + g)] / (r - g) \quad (2)$$

Once the Terminal Value has been calculated, we can then calculate the Net Present Value with the following formula:

$$NPV = [CF_1 / (1 + r)] + [CF_2 / (1 + r)^2] + [CF_3 / (1 + r)^3] + \dots + [(CF_T + TV_T) / (1 + r)^T] \quad (3)$$

The discount rate used for the NPV is the Weighted Average Cost of Capital (WACC), and is calculated with the formula below:

$$r = (D/V) * r_d * (1 - t) + (E/V) * r_e \quad (4)$$

Where:

- r_d = discount rate for debt
- r_e = discount rate for equity
- τ = corporate tax rate
- D = market value of debt
- E = market value of equity
- V = $D + E$

To an appropriate figure for the discount rate for debt we should look at the rate at which the firm is borrowing money. As this may be very hard to find, an adequate solution would be to find the average cost of borrowing for corporate loans from the Central Bank from which the firm depends on. On the other side, to obtain the discount rate for equity we would use the following formula:

$$r_e = r_f + \beta * (r_m - r_f) \quad (5)$$

Where:

- r_e = discount rate for equity
- r_f = risk-free rate
- β = beta, or degree of correlation with the market
- r_m = market rate of return on common stock
- $(r_m - r_f)$ = market risk premium

Estimating the value of a corporation by discounting its relevant cash flows to the moment of the valuation is generally considered an appropriate method. Real company values should be biased in a way that is less pronounced than in when using comparables from the public and private markets. Given all the assumptions and estimates made during the valuation process, it is not possible to come up with a single, point value that represents a company. It is important to use several scenarios for the best, most likely, and worst-case assumptions when estimating a cash flow. Next, you need to use the WACC value range and the final growth rate (g) to specify the estimated range. The weighted average determines your company's expectations, depending on how well the probabilities are assigned to them. Even with these steps, the NPV method still has some drawbacks.

First, the method utilizes betas to calculate the discount rate. Therefore, an equivalent company, with similar financial performance, growth prospects, and operational characteristics as the company being evaluated must be found. In many industries, there may not be companies with these characteristics. Furthermore, the target capital structure is often estimated using benchmarks. Using an equivalent company to estimate the target capital structure has the same drawbacks as looking for a beta approximation. Third, the typical cash flow profile for a startup with high initial spending followed by a distant inflow means that all of the value is included in the final value. The final value is very sensitive to the assumptions about discounts and final growth rates. Recent financial research has raised the question of whether beta is the best measure of corporate risk. Many studies suggest that the size of the company or the book-to-market ratio are better predictors.

Another disadvantage of the NPV method is the assessment of companies with a variable capital structure or effective tax rate. Changing capital structures are often associated with high-value transactions such as leveraged buyouts. Changes in the effective tax rate may be due to the amortization of tax credits such as: Net Operating Loss (NOLs), or the phasing out of tax subsidies, which are sometimes given to start-up companies. Under the NPV method, both the capital structure and the effective tax at the

discounted rate (WACC) are assumed to be constant. Therefore, the following valuation method; Adjusted Present Value (APV) works best for these scenarios.

5.3. Adjusted Present Value Method: Concept, Advantages and Disadvantages

The Adjusted Present Value (APV) valuation method is a variation of the former Net Present Value method. The APV method is chosen over the NPV method when the firm being evaluated has a changing capital structure or for the cases where it has Net Operating Losses (NOLs) at the moment of the valuation, that can be used to offset future taxable income.

The Net Present Value method assumes that the capital structure of the company will remain constant at a specific target level. This makes little sense in situations where the capital structure is initially heavily leveraged, such as Leveraged Buyouts (LBOs), where debt declines as repayments occur. In this case, the "target" capital structure is changing over time. One way to explain this problem is to consider an LBO company with a final target capital structure of zero. In other words, the goal for the company is to repay all debt after a period of time. In the Net Present Value method, the discounted rate (WACC) is calculated using an all-equity capital structure, which ignores the fact that the company has been leveraged. The way the Adjusted Present Value overcomes this issue is by considering the cash flow generated from a company's assets on one side, while ignoring its capital structure. Then, the savings from tax-deductible interest payments that are assessed individually, and factored in.

The Net Present Value method also makes the assumption that the company's effective tax rate, which is factored into the WACC, will remain constant. For the cases where a firm's effective tax fluctuates over time, this is not a correct assumption. Let's take, for example, start-up companies. It is the norm for start-up companies to incur in NOLs for several years before they are able to make a profit. These NOLs can be carried forward, to the years where the company does make a profit, to reduce the tax rate they are being charged for those incomes. The Adjusted Present Value method values the

NOLs separately to account for the changing status of the tax situation of the company; from tax deductible losses to taxable income, netting them out in the future.

Valuations under APV is done through a three-step procedure. First, the cash flows are valued disregarding the capital structure of the firm. Then, the company's cash flows are discounted in the same way as the NPV method, with the exception of using different discount rates. Instead of using the WACC as in the NPV method, we make the assumption that the company will receive complete equity financing. This translates into an unleveraged calculation for beta (only accounting for equity and not a combination of debt and equity). The discount rate is therefore calculated using the Capital Asset Pricing Model shown in Equations (5) and (6).

Lastly, the value of NOLs for the company also have to be quantified. These NOLs are paired against future pre-tax positive income, offsetting future taxes, and eventually providing the firm with a useful source of cash in its first profitable years. For example, if during the first years of operation, a start-up has \$15 Million in NOLs and the tax rate is 40%, the company can ensure \$6 Million in future tax savings. The \$6 Million, however, will only be realized if the firm makes \$15 Million in taxable income in the first year after the valuation is made, otherwise the \$6 Million will have to be discounted using the pre-tax rate on debt.

As with the NPV method, the APV method is also theoretically sound, and more specific than the comparables method. However, while being more complicated to calculate than the NPV, the APV is more suitable for situations where the capital structure is estimated to change throughout the following years (which is the case for Leverage Buyouts). It also goes one step further than the NPV method in situations where the company being valued has NOLs, which is the case for most start-ups during their initial years of business. This helps the valuation adhere closer to reality as it accounts for a changing effective tax rate. Overall, the APV method is more suited towards Private Equity than the NPV method, solving the shortfalls of the WACC assumptions, and becoming more specific towards the financing side of each company.

5.4. Venture Capital Valuation Method: Concept, Advantages and Disadvantages

Most Private Equity investments are often incurring in negative cash flows and earnings at the time of their valuation, and, while highly uncertain, have the potential of delivering considerable future returns for their investors. Therefore, the Venture Capital method aims to value the firm in the future, when it attains positive cash flows, typically by using a multiple. This “terminal value” is then discounted to the present using a large discount rate, usually between 40% and 75%.

Instead of valuing the company and then deciding how much to invest into it, the Venture Capital method works inversely. The investor has to first decide the desired ownership he or she wants from the future terminal value of the target company. Then discount its value to the present to assess the investment that should be made in the present to attain said future percentage ownership. Take for example a company with a \$20 Million discounted terminal value, from 10 years' time when it will be making positive cash flows. If the investor would like to invest \$5 Million into this company, he would be seeking 25% ownership of the firm for his investment. This is how the Venture Capital method works in its simplest form, however, reality is very different, and it is unrealistic to think that a company that is currently taking losses is not going to take further rounds of financing during the 10-year span. Furthermore, successful venture-backed companies become public, through IPOs, to increase their equity financing through the creation and selling of new shares. Therefore, for the investor wanting to invest \$5 Million into the company, his 25% share would be diluted. To properly calculate the investment that has to be made to ensure a concrete future percentage ownership of the company, we have to take this factor into account.

The mechanics of this method is done through four steps. First, the method values the target company at some future year of interest for the investor. The typical span used is shortly after he or she envisions taking the firm public. Then, the “Terminal Value” needs

to be calculated, and this is done through the use of a multiple, for example the price to earnings (P/E) average for the industry of the company. We would multiply the estimated future positive net income in the exit year of the investment by the P/E ratio of the industry to obtain the firm's Terminal Value. There are other methods of obtaining the terminal value, such as discounted cash flows.

The second step would be to discount said Terminal Value to obtain the Discounted Terminal Value. In this step, venture capitalists differ from the cost of capital (WACC) and typically use a Target Rate of Return. As described by Lerner & Willinge (2011), "the Target Rate of Return is the yield the venture capitalist feels is required to justify the risk and effort of the particular investment". The formula for the Discounted Terminal Value is the following:

$$\text{Discounted Terminal Value} = \text{Terminal Value} / (1 + \text{Target})^{\text{years}} \quad (7)$$

Then we would need to calculate the Required Final Percentage Ownership, which is the ownership amount on the target company the investor is willing to attain, assuming there is no subsequent dilution of the investment made. The equation is the following:

$$\text{Required Final Percent Ownership} = \text{Investment} / \text{Discounted Terminal Value} \quad (8)$$

The last step is to estimate and factor in the future dilution to calculate the required current percentage ownership at the time of the investment necessary to obtain the final ownership percentage at Terminal Value. As it is unrealistic to assume that the target company is not going to take any further rounds of financing (including IPOs), in order to exit the investment with a specific percentage ownership, the initial percentage ownership at the time of the investment has to be greater. This is calculated through the Retention Ratio, which is the expected dilutive effect of future rounds of financing on the investor's initial percentage ownership, in other words, the expected retained investment once subsequent rounds of finance occur. The percentage final percentage ownership the

investor wants to end up with will be divided by the Retention Ratio to obtain the Required Current Percentage Ownership, therefore the equation is the following:

$$\text{Required Current Percent Ownership} = \text{Required Final Percent Ownership} / \text{Retention Ratio} \quad (9)$$

The main advantage of the Venture Capital valuation method is its simplicity, both of use and conceptualization. Furthermore, it is a very frequently used valuation method within the Venture Capital segment of Private Equity, hence the name. On the other side, many assumptions have to be made for the method to work, and it also relies heavily on terminal values obtained from other methods. Furthermore, some see this valuation method as an oversimplification of reality, deeming it unrealistic.

6. Valuation Example from a Private Company

In this section of the paper and for the purpose of illustrating how the previous methods of valuation work, I am going to conduct a full valuation on a private company. The company I have chosen to value is Revolut Ltd., an English FinTech startup that was founded in 2015. The reason I have chosen to value this company is because it is one of the most prominent firms in such a relevant industry such as financial technology, and it is set to storm the market in the next few years with an IPO. Furthermore, I have been a user of Revolut for the past three years and I have seen, firsthand, the value and revolution it brings to the banking industry.

The way this section is going to be structured is by, first, analyzing Revolut and its difference business models, and then conducting a valuation of the company following the four valuation methods described in section five of the paper. In section seven, conclusions, I will give my final valuation for Revolut and will compare it to the value given by other investors. The end goal of this section, however, is not to end up with the same valuation as fellow analysts (as, at the end of the day, valuations are based on subjective assumptions), but to provide the reader with a practical example of how the valuation

methods are put into practice so they can use understand them and use them to value other private companies of their liking.

It is also worth mentioning that there is no official, publicly available financial data for Revolut after 2020 and, as I want to stay as true to official sources as possible, I will be placing my time of valuation at that year. Further adjustments and assumptions will be made during this section in order to approximate the valuation as close as possible to reality.

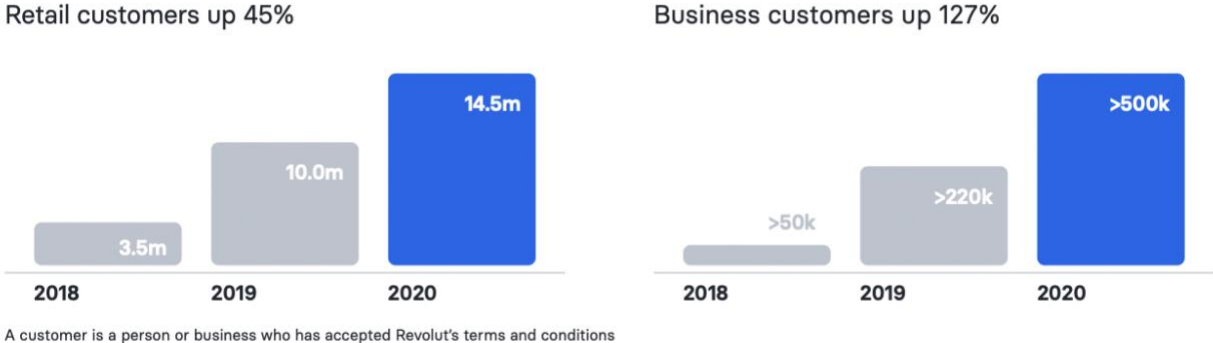
6.1. About Revolut Ltd.

Founded in 2015, by Nik Storonsky and Vlad Yatsenko in London (England), Revolut Ltd. is a Financial Technology (FinTech) company that offers banking services. Per their website, Revolut's mission is "to unlock the power of a borderless economy, for everyone", meaning they want to provide accessible financial products to the general market, including both retail and business customers. Revolut's culture evolves around the phrase "never settle", which can easily be seen in the wide portfolio of financial products they continuously keep expanding on. Up until 2022, Revolut offers currency exchange, commission free stock trading, cryptocurrencies, commodities, several card plans and many more. Furthermore, they serve over 18 Million retail customers and over half a Million business accounts in 200 countries worldwide, accounting for over 150 Million transactions per month. Revolut's service lines are centered around their plans which range from a free version to several subscription models, with the largest monthly fee coming just shy of \$15.

In terms of funding, Revolut has managed to amass \$1.7 Billion in over 18 rounds. The most important one is their Series E round, conducted in 2021, that returned them \$800 Million. This company is also showing their worth through outstanding results, maintaining at least a 40% growth year-over-year in their most important segments. The

graph below, retrieved from Revolut’s latest published annual report (2020), depicts their growth during the past years in both of their broader customer segments.

Diagram 8:

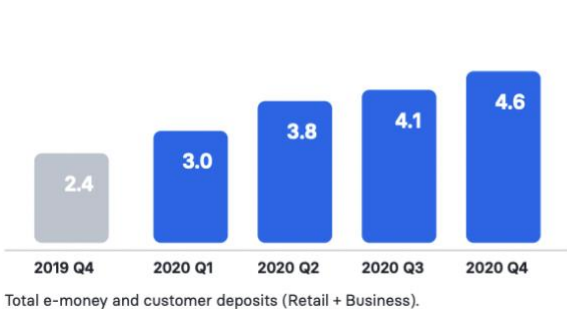


Source: Annual report & financial statements - Revolut Ltd. (2020)

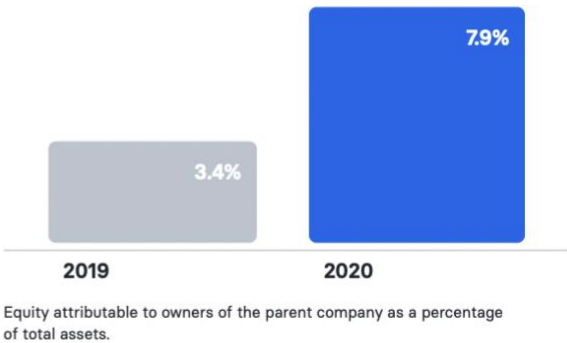
Functioning as an online depository institution, Revolut’s customer deposits are also experiencing a rapid surge over the past years, with a 96% growth from 2019 to 2020, as seen in diagram 9 below. It is also worth mentioning that their rapid growth has come at a cost. The service Revolut is providing are costly for banks (such as currency exchange), however they are offering them basically for free. This has translated into massive amounts of debt for the FinTech, coming close to 1:1 with their assets in their balance sheet. However, over the past years they have been fighting to become more financially sustainable while still maintaining their growth percentages. Diagram 9 below shows how Revolut is managing to push back on their debt, increasing their equity to asset ratio in 2020 to double the figure in 2019.

Diagram 9:

Customer balances **up 96%** vs. 2019
(£bn)



Equity:asset ratio increased to **7.9%**



Source: Annual report & financial statements - Revolut Ltd. (2020)

Even though there are some drawbacks with Revolut’s business model, it is still a very solid company. They have managed to win numerous awards over the years, such as the Tech company of the year in the United Kingdom (2020) and Europe’s All Star company in the Investor All Star Awards (2018), and they have secured finance from very powerful investors, such as Goldman Sachs investing \$69 Million (2021). Overall, Revolut is a tremendously solid company with a great upside potential and a very strong leadership team, it should continue to succeed during the upcoming years.

6.2. Comparables Valuation of Revolut Ltd.

As we have seen in the previous section of the paper (Section 5), the essential element to conduct a comparables valuation on a private company is to gather a peer group of competing, public companies to our target company. As Revolut has a variety of business models, there is no clear, one-to-one competing firm in all fronts to which we can compare it too. This said, there are a series of relatively young FinTech companies that have gone public in recent years and resemble some sections of Revolut’s business model, which are:

- Coinbase Global Inc.: Largest cryptocurrency marketplace in the world with over 60 Million users (2022). Coinbase went public in 2021. Coinbase is a good comparison to Revolut's investments business lines.
- TransferWise Inc.: London based FinTech that enables users to send money abroad, in over 50 currencies, with minimal charges. TransferWise also IPOed in 2021. They offer a very similar service to one of Revolut's top competitive advantages, transactions to other countries.
- Green Dot Corporation: Similarly to Revolut, Green Dot is both a FinTech company and a registered bank, which is an uncommon practice in the Financial Technology space. With over 20 years since its creation, they offer "banking as a service" to massive technology companies such as Apple or Uber, as well as to retail customers. They compare well to Revolut's banking business line.

After selecting a peer group, the following step would be to gather data from both the peer companies and the target company. Table 1 below shows the data I have gathered to perform this valuation. Even though there is more recent public data for these three companies, as I am valuing Revolut from 2020, I have gathered the appropriate data for these three firms from that year.

Table 1: Peer Analysis of Revolut's Competitors

Peer Group Consisting of Other FinTechs							
Company Name	Market Data	Financial Data				Company Data	
	Total Enterprise Value (2020) (\$M)	Sales 2020 (\$M)	EBITDA 2020 (\$M)	EBIT 2020 (\$M)	Net Income 2020 (M\$)	Employees 2020 (# ppl)	Total Retail Customers 2020 (M# ppl)
CoinBase	\$ 28,000	\$ 1,277	\$ 439	\$ 408	\$ 108	1,249	43
Transferwise	\$ 5,000	\$ 419	\$ 29	\$ 27	\$ 28	2,100	7
Green Dot	\$ 1,500	\$ 1,253	\$ 183	\$ 30	\$ 23	1,200	33
Revolut	-	\$ 296	-	\$ (276.00)	\$ (224.00)	2,158	15

As seen above, I have split the data into three main categories: market data, financial data and company data. Market data comprehends the Enterprise Value for the public, peer companies. According to the Corporate Finance Institute, Enterprise Value is a measure of a company's total value. It looks at the value of the company as a whole, including both the equity value and any debt or other liabilities that may be attached to it (2022). The formula to calculate it is the market capitalization of the firm plus its

outstanding debt and other Liabilities minus their cash and cash equivalents. Therefore, it is the effective cost of buying a company, which is the theoretical price of the target company before any takeover premium is taken into account. This is the figure from which most Comparable Analyses derive from, and the end goal of this valuation is to find an approximate Enterprise Value for Revolut.

Financial data includes the main line items of the income statement (Sales, Earnings Before Interests Tax Depreciation and Amortization, Earnings Before Interests and Tax, and Net Income). Finally, as I saw that Revolut had negative or inconclusive figures for three of the past four subcategories mentioned, I decided to add a third category named company data. Here, I included the number of employees and the total retail customers for each company, as these are two figures that can be compared and makes sense to compare between the four companies. Total deposits, for example, is a variable that has little sense in this analysis as not all of the peer companies are banks.

The following step is to calculate ratios for the previous variables, always with EV as the base of the calculation (i.e., the numerator). I have chosen to analyze TEV to Sales ratio, TEV to EBITDA ratio, TEV to EBIT ratio, TEV per employee (in Millions) and TEV per retail customer. The purpose of obtaining these ratios would be to multiply them by Revolut's Sales, EBITDA, EBIT, employees and retail customer values (as these are known to us) with the goal of obtaining the Enterprise Value for Revolut from these. The ratios for the three peer companies, their averages and their medians can be seen in Table 2 below.

Table 2: Peer Ratios & Revolut's Comparables Valuation

Company Name	Ratios				
	TEV/Sales x	TEV/EBITDA x	TEV/EBIT x	TEV/Employee (\$M)	TEV/TRC (\$)
CoinBase	22	64	69	\$ 22.42	\$ 651.16
Transferwise	12	172	184	\$ 2.38	\$ 714.29
Green Dot	1	8	50	\$ 1.25	\$ 45.45
Average	12	81	101	\$ 8.68	\$ 470.30
Median	12	64	69	\$ 2.38	\$ 651.16
Revolut TEV Avg	\$ 3,459	-	-	\$ 18,738	\$ 6,819
					VALUATION
					\$ 9,672.21

As mentioned, the last step is to multiply each average, by the data gathered from Revolut in Table 1. Unfortunately, as I was commenting, Revolut has an inconclusive EBITDA (does not appear in their 2020 annual report) and a negative EBIT. Therefore, these two ratios are of no use, as product of a negative number and a multiple is a larger negative number; and this is not a logical valuation for a company. We are going to carry on with the remaining three ratios for which Revolut has positive data: TEV to Sales, TEV per employee (in Millions) and TEV per retail customer. The valuation obtained from each is \$3.5 Bn, \$18.7 Bn and \$6.8 Bn respectively. To obtain the final valuation I took the average of these three and ended up with \$9.7 Bn as the Enterprise Value for Revolut.

6.3. Net Present Value of Revolut Ltd.

The first step to conduct the NPV valuation is to estimate the future cash flows of Revolut. For the purpose of this valuation, the horizon has been set nine years after the moment of the valuation (i.e. 2020, considered as year 0), therefore, cash flows from 2021 to 2029 will be estimated. The first step to calculate cash flows is to estimate sales for the following years. The average growth rate in sales for Revolut between 2018 and 2020 was 35%, therefore, I assumed this was going to continue to be the case for the following years. Then costs are factored in. Even though the average cost growth rate for the same period (2018 to 2020) is larger (around 40%), as Revolut is emphasizing cost reduction mechanisms in their following years of operations, I decided to decrease the value to 15% cost growth rate. Subtracting one from the other, we obtain the Earnings Before Interests and Tax. With these estimations, Revolut will generate a positive EBIT in year 5 (2025). This data can be seen in Table 3 below.

Table 3: Cashflow Calculations for Revolut (NPV Method)

Cashflow Calculations											Assumptions
	Year 0 2020	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9 2029	
Sales (\$M)	\$ 296.00	\$ 399.60	\$ 539.46	\$ 728.27	\$ 983.17	\$ 1,327.27	\$ 1,791.82	\$ 2,418.96	\$ 3,265.59	\$ 4,408.55	35% Growth Rate YoY
Costs (\$M)	\$ 572.00	\$ 657.80	\$ 756.47	\$ 869.94	\$ 1,000.43	\$ 1,150.50	\$ 1,323.07	\$ 1,521.53	\$ 1,749.76	\$ 2,012.23	15% Growth Rate YoY
EBIT (\$M)	\$ (276.00)	\$ (258.20)	\$ (217.01)	\$ (141.67)	\$ (17.27)	\$ 176.78	\$ 468.75	\$ 897.43	\$ 1,515.83	\$ 2,396.32	
Tax (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 847.15	\$ 288.01	\$ 455.30	Tax Table Below
EBI (\$M)	\$ (276.00)	\$ (258.20)	\$ (217.01)	\$ (141.67)	\$ (17.27)	\$ 176.78	\$ 468.75	\$ 50.28	\$ 1,227.82	\$ 1,941.02	
ΔNWC (\$M)	\$ 29.60	\$ 10.36	\$ 43.59	\$ 29.24	\$ 69.08	\$ 63.65	\$ 115.53	\$ 126.37	\$ 200.19	\$ 240.66	NWC Table Below
Free Cash Flow (\$M)	\$ (305.60)	\$ (268.56)	\$ (260.60)	\$ (170.91)	\$ (86.34)	\$ 113.13	\$ 353.22	\$ (76.09)	\$ 1,027.63	\$ 1,700.36	
Discount factor		0.95	0.91	0.86	0.82	0.78	0.74	0.71	0.67	0.64	5.11% WACC
PV of each CF (\$M)	\$ (305.60)	\$ (255.49)	\$ (235.85)	\$ (147.16)	\$ (70.72)	\$ 88.16	\$ 261.86	\$ (53.66)	\$ 689.51	\$ 1,085.39	
PV of CFs (\$M)	\$ 1,056.42										
Terminal Value (\$M)										\$ 52,875.50	3% Terminal Growth Rate
PV (Terminal Value) (\$M)										\$ 33,751.89	
NPV (\$M)	\$ 34,808.32										

From year 0 through to year 4, Revolut has produced \$910 Million in NOLs, which can be carried forwards to offset taxation in future positive income. The calculation of this effect can be seen on Table 4 below. As we can see, they would not have to pay taxes on their first two years of positive EBITs, and only on less than a third of their EBIT for year 7.

Table 4: Tax Calculations for Revolut (NPV Method)

Tax Calculations										
EBIT (\$M)	\$ (276.00)	\$ (258.20)	\$ (217.01)	\$ (141.67)	\$ (17.27)	\$ 176.78	\$ 468.75	\$ 897.43	\$ 1,515.83	\$ 2,396.32
NOLs Added (\$M)	\$ 276.00	\$ 258.20	\$ 217.01	\$ 141.67	\$ 17.27	\$ -	\$ -	\$ -	\$ -	\$ -
NOLs Used (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 176.78	\$ 468.75	\$ 264.62	\$ -	\$ -
Tax (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 847.15	\$ 288.01	\$ 455.30

Then we would calculate the EBI (or EBIAT) which is EBIT minus Tax. Finally, we need to calculate the change in NWC for each year, which I have made the assumption of NWC being 10% of sales. The calculations for change in NWC can be seen in Table 5 below.

Table 5: Change in NWC Calculations for Revolut (NPV Method)

NWC Calculations										
Beg NWC (\$M)	\$ 29.60	\$ 10.36	\$ 43.59	\$ 29.24	\$ 69.08	\$ 63.65	\$ 115.53	\$ 126.37	\$ 200.19	
Ending NWC (\$M)	\$ 29.60	\$ 39.96	\$ 53.95	\$ 72.83	\$ 98.32	\$ 132.73	\$ 179.18	\$ 241.90	\$ 326.56	\$ 440.85
ΔNWC (\$M)	\$ 29.60	\$ 10.36	\$ 43.59	\$ 29.24	\$ 69.08	\$ 63.65	\$ 115.53	\$ 126.37	\$ 200.19	\$ 240.66

Once we obtain our changes in NWC, we would subtract them from the EBIs to obtain the free cash flows for each year. At this point we need to calculate the discount factor in order to discount the free cashflows to year 0. For the purpose of the NPV method we are going to use the WACC. The calculations for the WACC can be seen in Table 6 found in the Appendix. The main assumptions made are the following. As Revolut does not have a beta, I averaged the betas for the three peer companies used in the previous valuation. According to the Central European Bank, the average cost of borrowing for corporate entities in 2018 was around 5%. Revolut took most of its debt in 2018 and as Revolut is a firm based in England, which was part of the EU in 2018, this is a reasonable assumption to make.

Using Formula (4), I obtained a WACC (or discount rate) of 5.11%. This is then used to discount each cash flow to year 0. Simultaneously, using Formula (2), I calculated Revolut's terminal value. I assumed a terminal growth rate of 3% to stay conservative. Then I also discounted the terminal value to year 0. Finally, I added the present value of all the cash flows to the present value of the terminal value to find the NPV valuation for Revolut, which came out to be \$34.8 Billion.

6.4. Adjusted Present Value of Revolut Ltd.

For the Adjusted Present Value valuation, some data was carried through from the previous valuation (NPV), as we are still valuing the same company and within the same time parameters. Therefore, the assumptions of sales growth rate (35% YoY), cost growth rate (15% YoY), NWC percentage of sales (10%) and terminal growth rate (3%), and the reasoning behind all of them still remain. The main difference between these two valuations are the discount rates each use to find the present value of cash flows. While the NPV method uses the WACC as the discount rate, the APV method separates the discount rate into cost of equity and cost of debt, and uses each to discount different items.

Up until the net cash flow calculations everything remains the same as in the NPV valuation, as seen in Table 7 below. The discount factor used to bring cash flows to year 0 (2020), differs. Here we use the cost of equity which is calculated by multiplying the Revolut's beta by the subtraction of the risk-free rate from the market risk, and then adding the risk-free rate back in. These values can be seen in Table 6 in the Appendix and are the same for the NPV method. The cost of equity came out to be 10.92%. Then we calculate the Terminal Value in the same way as in the previous valuation, however, we discount it using the cost of equity once again.

Table 7: Cashflow Calculations for Revolut (APV Method)

Cashflow Calculations											
	Year 0 2020	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9 2029	Assumptions
Sales (\$M)	\$ 296.00	\$ 399.60	\$ 539.46	\$ 728.27	\$ 983.17	\$ 1,327.27	\$ 1,791.82	\$ 2,418.96	\$ 3,265.59	\$ 4,408.55	35% Growth Rate YoY
Costs (\$M)	\$ 572.00	\$ 657.80	\$ 756.47	\$ 869.94	\$ 1,000.43	\$ 1,150.50	\$ 1,323.07	\$ 1,521.53	\$ 1,749.76	\$ 2,012.23	15% Growth Rate YoY
EBIT (\$M)	\$ (276.00)	\$ (258.20)	\$ (217.01)	\$ (141.67)	\$ (17.27)	\$ 176.78	\$ 468.75	\$ 897.43	\$ 1,515.83	\$ 2,396.32	
Tax (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 33.59	\$ 89.06	\$ 170.51	\$ 288.01	\$ 455.30	19% of EBIT
EBI (\$M)	\$ (276.00)	\$ (258.20)	\$ (217.01)	\$ (141.67)	\$ (17.27)	\$ 143.19	\$ 379.69	\$ 726.91	\$ 1,227.82	\$ 1,941.02	
ΔNWC (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	NWC Table Below
Net Cash Flow (\$M)	\$ (276.00)	\$ (258.20)	\$ (217.01)	\$ (141.67)	\$ (17.27)	\$ 143.19	\$ 379.69	\$ 726.91	\$ 1,227.82	\$ 1,941.02	
Discount factor		0.90	0.81	0.73	0.66	0.60	0.54	0.48	0.44	0.39	10.92% Cost of Equity
PV of each CF (\$M)	\$ (276.00)	\$ (232.79)	\$ (176.40)	\$ (103.83)	\$ (11.41)	\$ 85.30	\$ 203.93	\$ 352.01	\$ 536.06	\$ 764.04	
PV of CFs (\$M)	\$ 1,140.92										
Terminal Value (\$M)										\$ 9,942.70	3% Terminal Growth Rate
PV (Terminal Value) (\$M)										\$ 3,913.74	
NPV (\$M)	\$ 5,054.66										

The next items that need to be valued are the Tax Shields. These are obtained from the long-term debt Revolut had outstanding in 2020, and to value them we first need to find out the interest rate they paid for that debt and the duration it had.

Per their 2019 annual report, during that fiscal year, Revolut took out \$199.5 Million in long term debt, that had to be paid in the following five years. As no official interest rate for this debt was given in the annual report, I tried to approximate it by subtracting the interest payables in 2019 (before the debt was acquired) from the interest payables in 2020 (first year of repayments and interest installments). I assumed; the remaining interest payables would account for short term debt. I found the difference to be \$7.8 Million per year, representing a 6.55% of the new debt they took out. This value is from here on in considered as the interest on long term debt (or cost of debt). All of these figures can be seen in Table 11 below.

Table 11: Interest Rate Calculations for Revolut

Interest rate	
Long term debt	\$ 119.50
Interest payables 2019	\$ 1.43
Interest payables 2020	\$ 9.25
Difference	\$ 7.83
Interest on LT debt	6.55%

To maintain simplicity, I assumed the payment stream will be constant during the five years, meaning each year Revolut would repay a fifth of their debt, or \$23.9 Million per year. Then, I proceeded to calculate the interest expense, by multiplying the beginning debt from each year by the interest on long term debt. That value was then multiplied by the corporate tax rate (19%) to obtain the interest tax shields, as seen on Table 8. Using the interest on long term debt once again, I discounted these interest tax shields to year 0.

Table 8: Tax Shield Calculations for Revolut (APV Method)

Interest Tax Shields Valuation												
Beginning Debt (\$M)	\$ 119.50	\$ 95.60	\$ 71.70	\$ 47.80	\$ 23.90	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Repayments (\$M)	\$ 23.90	\$ 23.90	\$ 23.90	\$ 23.90	\$ 23.90	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Ending Debt (\$M)	\$ 95.60	\$ 71.70	\$ 47.80	\$ 23.90	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Interest Expense (\$M)	\$ 7.83	\$ 6.26	\$ 4.70	\$ 3.13	\$ 1.57	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	6.5% Interest Rate
Interest Tax Shield (\$M)	\$ 1.49	\$ 1.19	\$ 0.89	\$ 0.59	\$ 0.30	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Interest expense * Tax Rate
Discount Factor	1.00	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.60	0.57		Interest Rate as Discount Rate
PV of Interest Tax Shields (\$M)	\$ 1.49	\$ 1.12	\$ 0.79	\$ 0.49	\$ 0.23	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
NPV (\$M)	\$ 4.11											

The following step is to calculate the effect of Net Operating Losses. The total NOLs produced by Revolut were \$910.2 Million during the first five years of analysis, where they were posting negative EBITs. These then offset positive EBITs from the following years. Finally, we obtain the NOLs tax shield, then discount it to year 0 using the interest on long term debt.

Table 9: NOLs Calculation for Revolut (APV Method)

Net Operating Losses Valuation										
EBIT (\$M)	\$ (276.00)	\$ (258.20)	\$ (217.01)	\$ (141.67)	\$ (17.27)	\$ 176.78	\$ 468.75	\$ 897.43	\$ 1,515.83	\$ 2,396.32
Interest Expense (\$M)	\$ 7.83	\$ 6.26	\$ 4.70	\$ 3.13	\$ 1.57	\$ -	\$ -	\$ -	\$ -	\$ -
EBIT less Interest Expense (\$M)	\$ (283.83)	\$ (264.46)	\$ (221.71)	\$ (144.80)	\$ (18.83)	\$ 176.78	\$ 468.75	\$ 897.43	\$ 1,515.83	\$ 2,396.32
NOLs Used (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 176.78	\$ 468.75	\$ 264.62	\$ -	\$ -
Beginning NOLs (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 910.15	\$ 733.37	\$ 264.62	\$ -	\$ -
Ending NOLs (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 733.37	\$ 264.62	\$ -	\$ -	\$ -
NOLs Tax Shield (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 33.59	\$ 89.06	\$ 50.28	\$ -	\$ -
Discount Factor	1.00	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.60	0.57
PV of NOLs (\$M)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 24.46	\$ 60.87	\$ 32.25	\$ -	\$ -
NPV (\$M)	\$ 117.58									

The last step of this valuation method is to add up all of the pieces that have been calculated; PV of cash flows, PV of terminal value, PV of tax shields and PV of NOLs. The addition amounts to a valuation of \$5.2 Billion, as seen below.

Table 10: Final for Revolut (APV Method)

Final APV	
APV of CFs (\$M)	\$ 1,140.92
APV of TV (\$M)	\$ 3,913.74
APV of Interest Tax Shields (\$M)	\$ 4.11
APV of NOLs (\$M)	\$ 117.58
Final APV (\$M)	\$ 5,176.35

6.5. Venture Capital valuation of Revolut Ltd.

The Venture Capital valuation method is highly subjective and is based on the assumption of retaining an equity share after further rounds of financing (and usually an IPO). The end goal of this valuation is to obtain a post money valuation after the investor has purchased a desired equity stake in the target company.

As this valuation is not performed by Private Equity analysts to value firms, but by investors to calculate how much they should invest in order to retain a desired equity share in a company, I will depict a scenario where “Fund ABC” will be assessing a

potential investment into Revolut Ltd. making use of a combination of real data and made up data.

Scenario:

The year is 2020 and Fund ABC is planning on investing \$1.5 Billion into Revolut Ltd. following their Series D financing round in July 2020. The projections they developed show net income of \$2 Billion by 2027. Revolut's peer companies, Coinbase, TransferWise and Green Dot trade at an average price to earnings ratio of 12.28. Revolut currently has 10 Million shares outstanding. Fund ABC believe they require a 30% target rate of return for a company at this risk level, as they are a established, growing business, but still are posting negative earnings. Fund ABC then perform the following calculations:

- *Discounted Terminal Value = $(2,000 * 12.28) / (1 + 0.3)^5 = \$3,914$ Million*
- *Required Percentage Ownership = $1,500 / 3,914 = 38\%$*
- *Number of New Shares = $10,000,000 / (1 - 0.38) - 10,000,000 = 6,200,000$ shares*
- *Price Per New Share = $1,500,000,000 / 6,200,000 = \242*
- *Implied Pre-Money Valuation = $10,000,000 * 242 = \$2,420$ Million*
- *Implied Post-Money Valuation = $16,200,000 * 242 = \$3,920$ Million*

Fund ABC thinks Revolut is going to go through a further round of financing, launching Series E, where they are going to increase common equity by 15%. Furthermore, they believe that at the time Revolut goes public, they are going to launch a further 30% share of the company. Therefore, Fund ABC amend their calculations as followed:

- *Retention Ratio = $(1 / (1 + 0.15)) / (1 + 0.30) = 67\%$*
- *Required Current Percentage Ownership = $0.38 / 0.67 = 57\%$*
- *Number of New Shares = $10,000,000 / (1 - 0.67) - 10,000,000 = 20,300,000$ shares*

As we have seen in this scenario, many assumptions have had to be made, and the result does not help us achieve a valuation for Revolut. This said, I find this valuation method very interesting for individual investors with knowledge on the Private Equity industry as they can estimate the amount, they need to invest today to ensure a certain return in the future. However, for the purpose of obtaining a valuation for Revolut that resembles reality as much as possible, this method is going to be disregarded, and only the previous three are going to be considered when calculating the average valuation.

7. Conclusions

Private Equity is increasingly becoming an attractive investment option for a variety of investors, ranging from wealthy individuals to state owned organizations, due to the potential it possesses to generate abnormal returns. However, the Private Equity industry is very difficult to navigate and even when the market is filled with opportunity, only a few skilled managers remain successful. With the constant development of technological advancements, and the growing popularity of startup companies, the future is bright for Private Equity. The Financial Technology industry is currently booming with companies being IPOed every other month.

Valuation within the Private Equity industry still remains a challenge and the subjectivity, due to the lack of information in the market, makes it very hard to pinpoint an exact valuation for an investment. This said, by using a variety of methods to value the same private firm, we can take a glance at the company from different perspectives and understand both its intrinsic value (NPV and APV methods) and its potential against competitors (Comparables method).

The conclusion on the valuation performed, and the reasoning behind them, are the following.

On July 24th, 2020, Revolut raised a Series D financing round worth \$580 Million, giving them a \$5.5 Billion valuation. The following year, on July 15th (2021), Revolut raised

a further \$800 Million as a Series E financing round, which was done at a \$33 Billion valuation. Even though it may not be the most legitimate way of comparing the paper's results to what other analysts estimate for the same company. The average from both valuations (Series D and Series E; \$5.5 Bn and \$33 Bn respectively) came out to be \$19.3 Billion. The valuation conducted in section 6 of this paper placed the moment of valuation at yearend 2020, which falls in between the two valuations mentioned. The total obtained by averaging the three methods of valuation was \$16.5 Billion, as seen on Table 12 below. This means that the paper's valuation was only \$3 Billion away from analyst estimates.

Table 12: Average Valuation for Revolut

Valuation Method	Value (\$M)
Comparables	\$ 9,672.21
NPV	\$ 34,808.32
APV	\$ 5,176.35
Average Value	\$ 16,552.29

We can conclude that, even though the valuations in Section 6 of the paper did not pinpoint the same value as other analyst estimates, it did come relatively close. However, as mentioned, valuations are highly subjective and will depend heavily on the assumptions made by each analyst. Therefore, neither our valuation nor those from other analysis are objectively correct. This said, I will consider coming within a 15% error margin against average analyst estimates, a success.

Appendix

Table 6: WACC Calculations for NPV Valuation on Revolut Ltd.

WACC Calculations		
Corporate Tax Rate		19%
Beta		
Company		Beta
Coinbase		2.64
Transferwise		2.35
Green Dot		0.95
Average		1.98
Rates		
R(Market)		6.75%
R(Free)		2.50%
R(Market) - R(Free)		4.25%
Capital Structure		
Assets (\$M)	\$	2,851.00
Liabilities (\$M)	\$	2,409.00
Equity (\$M)	\$	442.00
E / V		16%
D / V		84%
Discount Rates		
Discount Rate for Debt		5.00%
Discount Rate for Equity		10.92%
WACC		5.11%

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