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Recent trends in the Private Equity industry: KKR-Tim case study analysis

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I am infinitely grateful to my family who have always supported me, backing every decision I have made.
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Summary

Introduction

The Private Equity industry has grown significantly in recent years and, as of today, there are so many different types of private equity firms with different investment strategies. Some of them focus on buyouts, others on venture capital or growth equity.

Italy is a significant player in the global private equity landscape and its position can be attributed to the remarkable growth of the Italian private equity sector in recent years, which has been driven by the importance, size and dynamism of its economy, with many small and medium-sized enterprises that have to optimize funding sources dominated by banks, as well as opportunities for export growth. For these reasons, the number of possible deals compared to other mature markets is high, making the Italian private equity industry very attractive. Moreover, the PNRR with the injection of more than 200 billion euros planned for the coming years, will positively contribute not only to the business environment, but also to the private equity activity.

The purpose of this thesis is to examine the recent trends in private equity investments and analyze the recent acquisition of Tim's NetCo by the American fund KKR. It is crucial to notice that, despite the uncertain international scenario, the private equity and venture capital sector seems to have found a way to live with this context, continuing to represent an important lever of growth and stability for the Italian market. The thesis will address the following research questions:

- What are the recent trends in the private equity industry?
- What are the factors that have contributed to the growth of private equity industry?
- What are the challenges that the private equity industry is facing?
- What kinds of transactions are prevailing now?
- What impact will artificial intelligence have on this industry?
- How is the Italian private equity dealing with the difficult macroeconomic situation?
- Is the price offered by KKR for the acquisition of TIM’s NetCo correct?

And it will be divided into three chapters:

- Chapter 1 will provide a comprehensive overview of the private equity industry, including the different types of private equity firms, their investment strategies, the exit strategies that they use, the performance measurement and the regulatory framework in Italy.

- Chapter 2 will focus on the leveraged buyout model and it will analyze the recent trends in private equity industry.
- Chapter 3 will discuss the case study of KKR's acquisition of Tim, developing a panel of trading and transaction multiples and a leveraged buyout model to determine whether the price offered for the acquisition is correct.

Chapter 1: An Overview of Private Equity

"Private equity, in a nutshell, is the investment of equity capital in private companies"[1]. Private equity is a broad term that includes a variety of investment strategies, that involve buying and managing companies that are not publicly traded. These strategies can range from early-stage venture capital investments in companies with promising ideas or technology, to growth equity investments in established private businesses, to large leveraged buyouts in which a private equity firm buys a company, using a lot of debt in order to finance the transaction.

In the case of a publicly traded target company, the private equity fund conducts a public-to-private transaction, resulting in the delisting of the target entity from the stock market.

According to a Forbes article published in July 2023, Blackstone emerged as the largest private equity firm in the United States in terms of assets under management, boasting the incredible amount of $1.0 trillion. Following closely behind were Apollo and KKR, securing their positions as prominent players in the private equity landscape.

Fig. 1.1. "Top U.S. Private Equity Firms in terms of AUM"

Top U.S. Private Equity Firms	AUM
Blackstone	$1.0 trillion
Apollo	$598 billion
KKR	$510 billion
The Carlyle Group	$381 billion
Bain Capital	$165 billion
TPG Capital	$137 billion
Thoma Bravo	$127 billion
Silver Lake	$98 billion
Vista Equity Partners	$96 billion
Insight Partners	$90 billion

Source: "Top 10 U.S. Private Equity Firms Of 2023", Forbes, 2023

1.1 Background and history of Private Equity funds

The history of private equity goes back to the beginning of the 20th century when wealthy individuals and families began to invest in private companies. However, it is only after World War II that the modern private equity industry really started to develop.

[1] "Private Equity: A Brief Overview. An introduction to the fundamentals of an expanding, global industry", David Snow, Executive Editor & PEI Media, 2007

One of the earliest examples of private equity investing was the establishment of American Research and Development Corporation (ARDC) in 1946. ARDC was founded by Georges Doriot, a French-American businessman and professor who is considered to be the father of venture capital. In fact, he has always been involved in raising capital from institutional investors, such as pension funds and endowments, to invest in early-stage companies with promising ideas or technology.
In 1957, ARDC made its first major investment in Digital Equipment Corporation (DEC), a startup founded by Kenneth Olsen and Harlan Anderson, two engineers who had developed a new type of computer called the PDP-1. After the investment, the company grew a lot until it went public in 1968, turning the initial investment of $70,000 into more than $355 million.
The success of ARDC's investment in DEC was only the beginning and the industry began to grow rapidly in the 1960s and 1970s. It is during this period that the focus of private equity investing shifted from early-stage companies to more mature companies that were looking to expand or restructure.
Then in the 1980s, the availability of cheap debt and the allocation of capital to private equity funds by institutional investors led the industry to a boom, characterized by numerous LBO, highly leveraged, that involved the use of junk bonds to finance the acquisitions.
Famous were the acquisition of RJR Nabisco by KKR in 1988 and the acquisition of Beatrice Foods by KKR and Clayton & Dubilier in 1985.
The LBO boom ended in the early 1990s as a result of the collapse of the junk bond market. However, the private equity industry continued to grow, beginning to focus on other types of investments, such as growth equity and mezzanine finance.
Then in the 2000s, due to the increased allocation of capital to private equity funds by institutional investors, the strong performance of the stock market and the low interest rates, there was another boom in the private equity industry, which persisted into the 2010s, but with a slowed pace of growth due to the normalization of the stock market and interest rates.
Over the past year, however, the increase in interest rates by the Federal Reserve and the ECB to combat inflation has had a significant impact on private equity activity. Rising interest rates have made more expensive for private equity firms to acquire and finance companies, leading to a reduction in deal activity. In addition, rising interest rates have also led to a decline in valuations, making it more difficult for private equity firms to exit their investments at a profit. On the other hand, some companies may be able to take advantage of current market conditions by acquiring companies at a discount. All of this has negatively affected this sector by bringing the number of deals to its lowest level in years. Luckily, however, inflation has begun to fall, raising hopes for an upcoming reduction in interest rates, which would have a positive impact on the private equity industry.

1.2 Types of PE firms

Private equity firms can be classified in the following types of funds, ordered from the lowest risk/return level to the highest:

- Real estate firms utilize a range of strategies to invest in real estate, starting from core investments, which are characterized by a lower level of risk/return, to opportunistic investments, which are instead characterized by a high degree of risk/return.
- Infrastructure funds are a type of investment vehicle that pools capital from institutional and individual investors to invest in infrastructure assets. These infrastructures include essential services such as power plants, transportation networks and communication systems. Private equity firms are attracted to infrastructure investments due to their low correlation with traditional asset classes, predictable and stable cash flows, long operational life, essential service provision and high barriers to entry. Moreover, *"infrastructure assets often exhibit returns that are linked to inflation, either due to the contractual terms or the regulations that allow prices for infrastructure services to rise with inflation. For a pension scheme, cost effective inflation linkage is an attractive attribute that is provided by a limited number of asset classes in the market"*[2].
- Mezzanine private equity involves the use of a hybrid form of financing that combines elements of both debt and equity. This unique financial approach offers investors, although with higher risk, the opportunity to earn higher returns than traditional debt instruments.
- Buyout firms are the most common type of private equity firm. *"In a leveraged buyout, a company is acquired by a specialized investment firm using a relatively small portion of equity and a relatively large portion of outside debt financing"*[3]. Buyout funds typically acquire mature companies that are undervalued by the market, in order to resell them within few years at an higher price, using different strategies. Among them the two most common are the direct offer to the company's shareholders and the hostile takeover. Once they have acquired the company, they typically implement a number of changes in order to improve its performance, including restructuring the company's debt, selling off non-core assets and making changes to the company's management team. Moreover, through supply chain optimization and the realization of synergies among the various companies acquired by the fund, a better cost efficiency is usually achieved.

[2] "Infrastructure – the real deal", KPMG, 2017
[3] "Leveraged Buyouts and Private Equity", Steven N. Kaplan and Per Stromberg, 2009

- Growth equity firms invest in established companies that are looking to expand or make acquisitions. These companies are typically too large for venture capital firms, but growth equity firms are able to provide them with the capital and expertise they need to grow.
  Usually growth equity firms invest by taking minority stakes, allowing the existing management team to maintain control while benefiting from the growth equity firm's strategic support. Moreover, unlike traditional venture capital investments, where early-stage startups face high levels of uncertainty, growth equity investments are driven by the prospect of scaling up proven business models.
- Distressed private equity firms, also known as special situations, invest in companies that are struggling financially. They buy these companies at a discount and then work to improve their finances so they can sell them for a profit. *"While the returns of more traditional private equity fund types such as buyout and venture capital are generally positively correlated to economic growth, the reverse is true for distressed private equity funds; the constriction of the credit markets and slowdown in economic growth in general has equated to an abundance of viable distressed private equity investment opportunities for fund managers"*[4].
- Venture capital firms invest in early-stage companies that have the potential for high growth by taking a minority stake and without using any leverage, having the goal of helping these companies to grow and succeed so that they can be sold to a larger company or go public. "*Venture capitalists are needed to support high-risk investments in small, technology-based firms, which are often passed over by large companies and traditional financial institutions"*[5]. In fact, these companies are generally too risky for traditional investors, but venture capital firms are willing to take on the risk in exchange for the potential of high returns. To mitigate this risk, venture capital firms diversify their portfolios across multiple startups and industries.

1.3 Fundraising, Fund Structure and Waterfall model

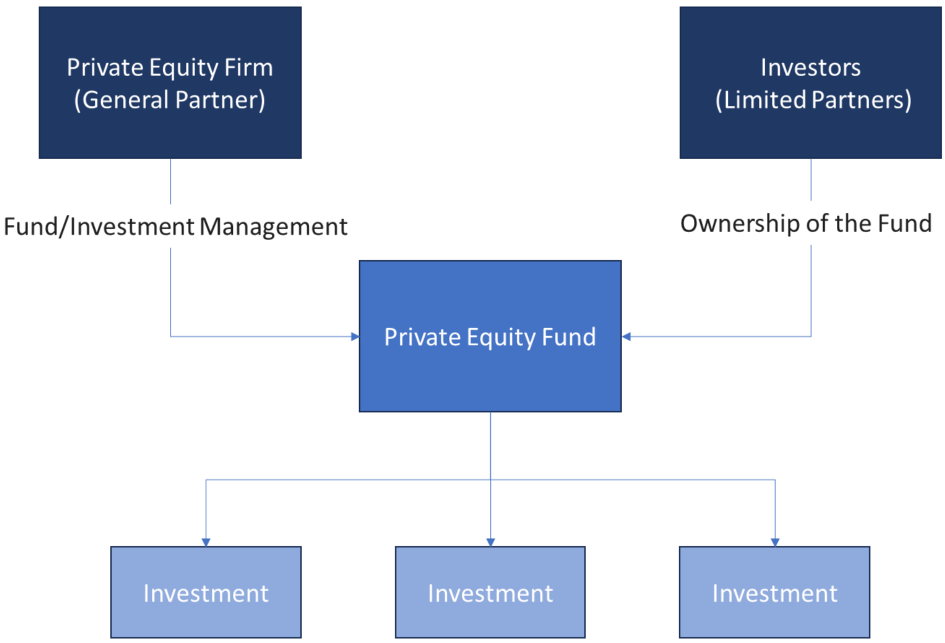
Fundraising and fund structure are two important aspects of private equity. Fundraising in private equity is a long and arduous process. A management team with a proven track record in the industry begins by developing an investment strategy and creating a private placement memorandum (PPM), that outlines the fund's goals, structure and fees.

The amount of capital raised depends on a variety of factors, including the size of the fund, the investment strategy and the track record of the management team. Once the PPM is complete, "the *private equity fund managers invite institutional investors and individuals with particular expertise*

[4] "Preqin Special Report: Distressed Private Equity", Preqin, 2011
[5] "Venture Capital and Innovation", OECD, 1996

or significant assets, to subscribe to the investment fund for a set period (on average ten years), which will take equity stakes in high-potential companies following a clearly defined investment strategy".[6] Private equity funds are typically structured as limited partnerships, with two types of investors: general partner (GP) and limited partners (LPs). GP is responsible for managing the fund and making investment decisions, while LPs provide capital to the fund and share profits.

Fig. 1.2. "Private Equity Fund Structure"



Source: own elaboration

Limited Partners who invest in the capital of these private equity investment vehicles can be classified into three main categories:

- Private institutional investors: banks, investment banks and closed-end funds;
- Private companies: operators organized as financial investment company, with the objective of acquiring equity stakes in unlisted companies;
- Public investors: public entities, including local ones, operating in particular geographic areas or product sectors, which provide equity capital and financial assistance to small and medium-sized companies to facilitate their access to regulated markets. The objective of the public investor is to focus on geographic areas that have not yet been covered by the private sector.

[6] "Guide on Private Equity and Venture Capital for Entrepreneurs", EVCA, 2007

On the other hand, the main General Partners present in Italy are: SGRs, SGAs (equivalent to SGRs but based in other countries of the EU) and public operators.
The interests of GP and LPs are aligned through the fee structure. In fact, the GP receives a management fee, which is a percentage of the fund's assets under management, as well as a performance fee, which is a percentage of the fund's profits. In this way the GP is incentivized to make sound investment decisions that will benefit both itself and the LPs.
To further solidify this alignment, private equity investment structures often employ a waterfall model, in the way that profits from an investment are distributed to the GP and LPs in a predetermined order. The waterfall is essentially a series of tiers, with each tier receiving a share of the profits until the tier is satisfied.
The tiers in a private equity distribution waterfall structure are typically as follows:

- Return of Invested Capital (ROIC): This tier ensures that the LPs receive their initial investment back before any profits are distributed to the GP.
- Preferred Return (Hurdle Rate): This tier ensures that the LPs receive a certain level of returns on their investment, typically set between 8% and 10%.
- Catch-up provision: This tier ensures that the GP makes up any losses it incurred before it starts to receive carried interest.
- Carried Interest: refers to the share of profits allocated to the GP, independent of their initial investment, typically amounting to 20% of the remaining total. On the other hand, LPs receive disbursements from the remaining profits, usually accounting for 80% of the remaining total. This segment constitutes the primary funding source for a sponsor or GP.

Moreover, there are two main types of waterfall structures used in private equity: the American waterfall model and the European waterfall model.

- American Waterfall Model: In the American waterfall model, the GP receives a larger share of the profits than the LPs. The waterfall is applied to each deal, rather than at the fund level. This means the distribution of risk becomes diversified across each investment, increasing the likelihood of the GP to obtain a larger proportion of profits before the LPs get their initial investment back and achieve the preferred return.
- European Waterfall Model: In the European waterfall model, instead the LPs receive preference. The allocation of distribution proceeds occurs at the collective fund level, with each payout reflecting the fund's overall performance rather than being linked to specific

individual investments. This means that the GP does not receive any profits until the LPs get back their initial investment and the amount owed in the preferred return, if applicable. It can take GP a long time, up to several years, before they make good on their initial investment and start seeing profits.

As for the fund, on the other hand, from a legal and structural point of view, it usually takes the form of a closed-end fund, introduced into the Italian legal system in 1993 with Law n. 344, much later than in Anglo-Saxon countries where equivalent institutions had been present since the second half of the 19th century. When the fund has a closed-end structure, the amount of the fund and the number of its units is prefixed at the time of its establishment and redemption occurs at the end of its term. In addition, the amounts subscribed are not paid out immediately, but over time according to the liquidity needs of the fund.

Unlike the open-end fund, then, the investor is not free to dispose of the units he has subscribed at any time, indeed, such a case is generally excluded. Redemption is not possible before the end of the fund's term, which, as a rule, is not less than ten years.

Therefore, the closed-end fund is the most suitable instrument for investment activities in small unlisted companies, as it guarantees managers the availability of capital of a given amount and for a medium to long period, however predefined.

Moreover, closed-end funds can be of the retail type, when units are offered for subscription to the general public of savers, and of the reserved type, when subscription is open only to institutional investors. However, funding typically comes from more highly qualified investors who are oriented toward medium to long-term investments.

1.4 Investment and Due Diligence Process

Once the fundraising is completed, the private equity fund moves to the investment, a complex phase that involves deal sourcing, evaluation and due diligence.

Deal sourcing is the initial phase of the private equity investment process, where firms actively seek potential investment opportunities from various channels, which include networking with industry contacts, attending industry events, screening investment databases and collaborating with investment bankers.

Once a potential investment opportunity is identified, the private equity firm begins a meticulous evaluation of the target company, analyzing the company's financial statements, management team and industry outlook, with the aim to assess the company's attractiveness as an investment, considering factors such as historical performance, growth prospects and competitive positioning.

However, the crucial point of the investment process lies in the due diligence stage, which is a comprehensive investigation and verification of the target company's information and operations, and it involves gathering and analyzing a vast amount of data to identify potential risks, opportunities and areas for improvement. The most important types of due diligence are the following:

- Financial due diligence analyzes the company financial data in order to assess the financial health of the business. This analysis allows private equity firms to evaluate the company's ability to generate cash flows and repay debt, ensuring the investment's financial viability.
- Commercial due diligence provides instead a more complete picture of the company as a business entity, focusing on the company's business strategy, market position, competitive landscape and customer base. It evaluates the company's products or services, its target market and its ability to compete effectively.
- Legal due diligence examines the company's legal and regulatory compliance, ensuring that it is operating according to the law and regulations.

1.5 Value creation

Once the money has been invested, there are several ways a private equity firm can create value, although not all are fully dependent on the GP nor sustainable in the long term. The three main ways are the following:

- Research has shown that operational improvements are the only consistent and sustainable source of value creation for private equity firms. As a result, many of the largest private equity firms have established dedicated teams focused on operational initiatives, with specialists in various areas such as customer acquisition, supply chain optimization and talent management, in order to increase, during the years, revenues and EBITDA of the target company.

  There are several ways to approach operational improvements. The matrix in the Fig.1.3.[7] in the next page, lists 22 potential areas, ranging from optimizing financial reporting and management information systems to enhancing sales force effectiveness and reducing expenses.

  The matrix shows the potential levels of value creation for each area, represented by the potential money multiple uplift of the PE firm's equity investment. While an IT system update may be necessary for maintaining competitiveness and company operations, it usually acts to

[7] The matrix is taken from: "Operational Improvement the Private Equity Way", G.Oldroyd, 2016

conserve rather than improve value; on the other hand, improving sales force performance can result in an instant increase in value.

However, it is probable that each area will involve varying degrees of implementation difficulty and delivery risk, as well as varying degrees of attention from senior management. Compared to, say, adopting lean manufacturing, a program to save purchasing expenses should have a lower delivery risk and take less time from top management. Moreover, the perception that various operations improvement initiatives may have both inside and outside of a company might vary a lot. It is expected that increasing energy efficiency will be well perceived both inside and outside. On the other hand, production outsourcing or offshore may be perceived in a negative way by public relations and human resources. Ticks and crosses in the matrix indicate these various factors and their corresponding magnitudes.

Fig. 1.3. "Operational Improvement Measures"

Operational Improvement	Potential Money Multiple Uplift	Complexity	Delivery Risk	Senior Executive Time Commitment	Adverse (X)/ Favourable (V) Publicity
Major Acquisition Integration	0.5x - 2.0x	X X X X X	X X X X	X X X X X	X X X
Minor Acquisition Integration	0.1x - 0.5x	X X	X X	X X	X X
Factory closure/relocation	0.5x - 1.0x	X X X X	X X X	X X X	X X X X
Change manufacturing process	0.1x - 0.5x	X X X	X X	X X	X
Lean Manufacturing	0.1x - 0.5x	X X X	X X	X X	-
Waste reduction/right first time	0.1x - 0.5x	X	X	X	V V
Energy use reduction	0.1x - 0.5x	X X X	X	X	V V
Offshoring/Inshoring/Outsourcing	0.1x - 0.5x	X X X	X X	X X	X
SG&A Overhead Reduction	0.1x - 0.5x	X X	X X	X X	X
Supply chain optimisation	0.1x - 0.5x	X X	X X	X	-
Purchasing cost reduction	0.1x - 0.5x	X X	X	X	-
Working capital optimisation	0.1x - 1.0x	X X	X X	X X	X X
Pricing	0.5x - 1.0x	X X	X X X	X X	X X
Channel strategy/optimisation	0.5x - 1.0x	X X X	X X	X X X	-
Sales Force Effectiveness	0.1x - 1.0x	X X	X X	X X	X
Marketing Strategy	0.1x - 1.0x	X X	X X	X X	X
Customer first culture change	0.1x - 0.5x	X X X	X X	X X	V V V
Distribution/Logistics optimisation	0.1x - 0.5x	X X	X X	X	-
IT System Upgrade	0.1x - 0.2x	X X X X	X X X X	X X	-
Property sale/opco-propco	0.1x - 1.0x	X X	X X	X X	X
Pensions, insurance, tax	0.1x - 0.5x	X X	X	X X	X
Financial Reporting and MIS	0.1x - 0.5x	X X	X	X	-

Source: "Operational Improvement the Private Equity Way", G.Oldroyd, 2016

In addition, as also shown in the matrix, operational improvements can be achieved either by internal lines or through mergers and acquisitions. Internal growth is realised through the use of the company own skills, knowledge and resources, putting in place investments in the production or commercial area.

The focal point in the internal growth phase is not so much the search for new resources, but the strengthening of those that one has, which can already generate a competitive advantage.

Through mergers and acquisitions, on the other hand, the strengths of the companies involved should be combined, creating synergies on the basis of complementary resources. The advantage of external growth lies predominantly in the rapid realization of set goals, as opposed to time-consuming and costly research in investment programs. Such a way of operating, defined as roll-up strategy, as shown in the matrix is very complex and has significant implementation risks. On the other hand, however, it is the one with the greatest potential for money multiple uplift. Moreover, usually companies that are acquired through a roll-up strategy are bought at a lower multiple than the multiple at which the consolidated company will be sold, therefore they realize inorganic increases in sales and EBITDA and they create large, high-multiple platforms from small, lower-multiple acquisitions.

- Multiple expansion can be a valuable strategy for private equity firms that try to acquire companies at a discounted valuation and then sell them for a higher price later, but its success is heavily influenced by broader economic conditions and this is why it should not be the key focus of the general partner.

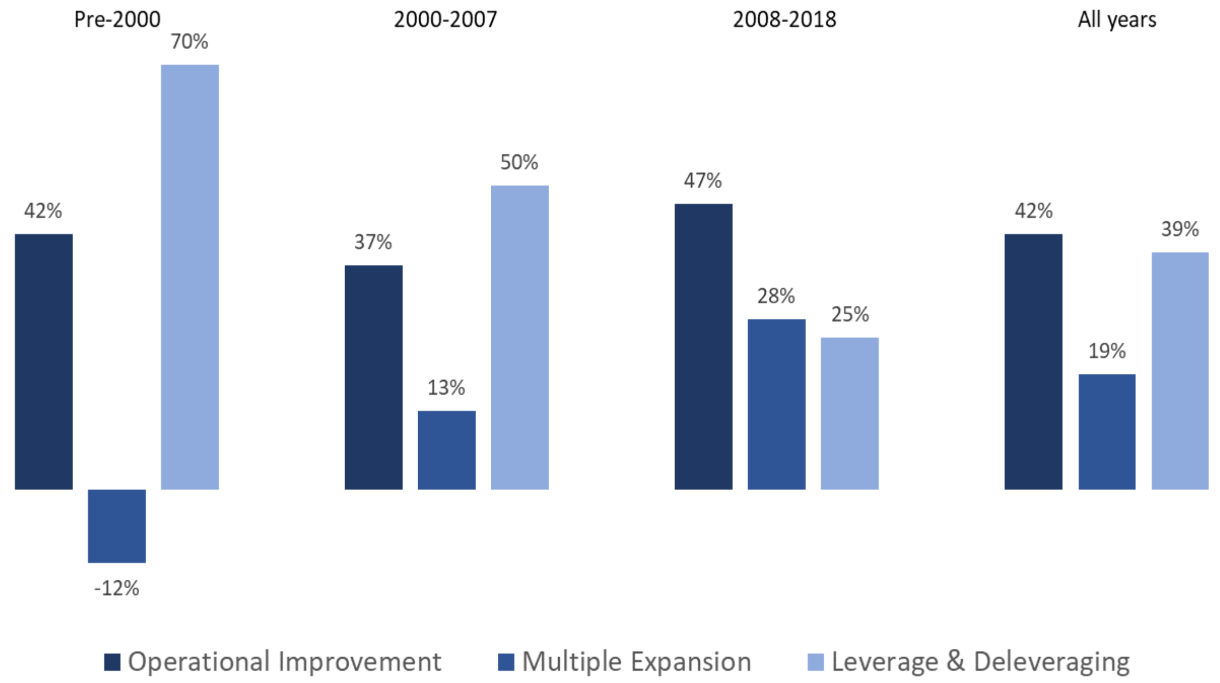
  However, private equity funds can employ strategies to try to influence multiple expansion. For example, in the case in which the company becomes a dominant player in the market through the implementation of operational improvements, it may lead the future buyer to pay a higher multiple. In addition, an increase in the exit multiple could also be determined if there is a strategic repositioning of the brand from, for example, a premium brand to a luxury brand. Moncler went through this experience, after being acquired by the French fund Eurazeo. Moncler's development was facilitated by an aggressive expansion and transformation plan with two key points. First, the products: while remaining loyal to the brand's original DNA (technical clothing), the company created an improved collection of more luxurious products. Second, the distribution: the products were sold primarily through living-space boutiques, with flagships and additional stores placed in cities such as Paris, Tokyo, London and Milan, which are closely associated with the fashion and luxury sectors.

  All of this allowed the initial investment to be multiplied within just 9 years by 4.8x, relying on a much higher exit multiple than the entry one.

- Leverage is used in order to maximize returns. In fact, greater use of debt allows for a greater interest tax shield and this leads to a reduction of the WACC. Moreover, through deleverage over the years a substantial return can be realized, even if the company is sold at the same EV at which it was acquired. For instance, a company acquired for an EV of €100 million, using €50 million of equity and €50 million of debt, even if it is sold in the future for an EV of €100 million, could generate a 2x return on the initial investment if it reduced the debt to a value of €0 during the investment period. Despite this, the heavy use of leverage has several risks including the bankrupt, in the case in which the company is not able to repay the debt.

As we can see from the Fig. 1.4., despite the strong availability of debt and favorable interest rates, private equity firms have exhibited a clear inclination towards multiple expansion and operational improvements, reducing, in the period 2008-2018, the impact of leverage on the value creation by 45% with respect to the value pre-2000. Then, since 2022 the use of leverage for the purpose of creating value has continued to decline further as the cost of debt has steadily increased, thus leading to an equitization of transactions.

Fig. 1.4. "Contribution to Total Value Creation"



Source: Institute for Private Capital

1.6 Exit strategies

"The primary goal of private equity investors is to maximise their return by selling the portfolio company at exit"[8]. That's why a well-planned and executed exit strategy is critical, as it is the key to

[8] "Venture capital and private equity financing: An overview of recent literature and an agenda for future research", Tereza Tykvova, 2018

generating attractive returns for investors, and it is for this reason that private equity firms recognize its importance from the very beginning of the investment. Timing plays a critical role in the exit process and private equity firms carefully assess market conditions, industry trends and the overall economic environment to get to the most appropriate moment to divest from an investment. Among the most prevalent exit strategies utilized by private equity firms there are:

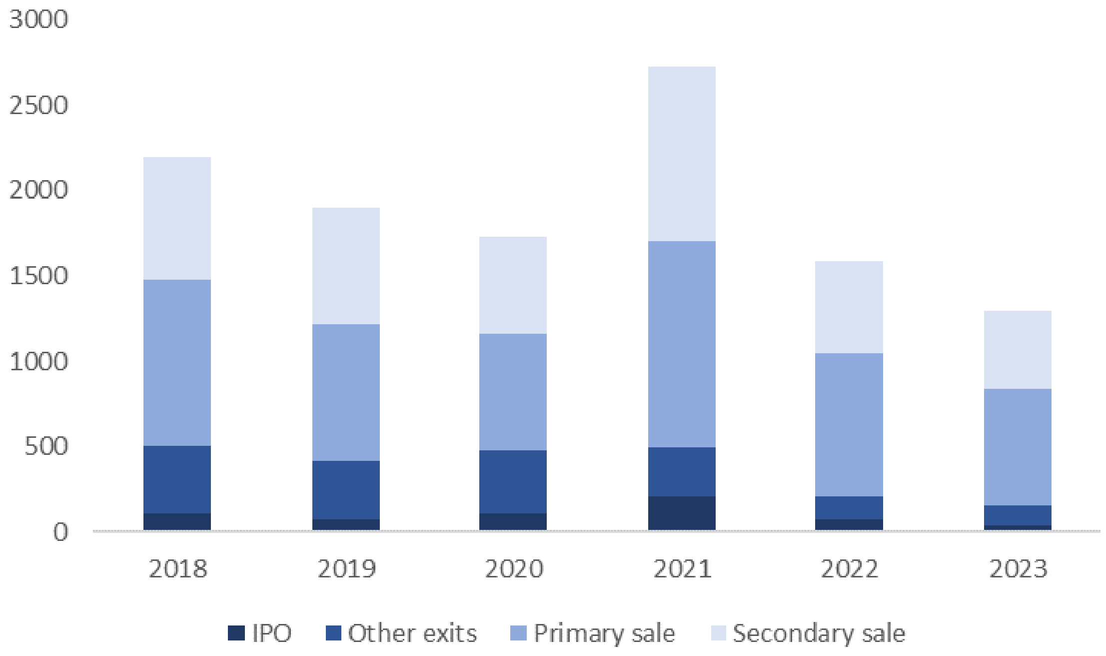
- Initial Public Offering (IPO): An IPO involves the sale of shares of a private company to the public for the first time. Although it has some positive aspects, typically it is not the preferred exit route for private equity funds as usually the IPO has a greater primary component (i.e. the issuance of new capital through capital increase), than the secondary one (i.e. the sale of the shares by the private equity fund). That's why after the IPO, the sponsor usually keeps the biggest piece of ownership in the target company. This is different from just selling everything right away. *"Therefore, as opposed to an outright sale, an IPO generally does not afford the sponsor full upfront monetization. At the same time, the IPO provides the sponsor with a liquid market for its remaining equity investment while also preserving the opportunity to share in any future upside potential".*[9] A positive factor of this exit strategy is that under good macro-economic momentum the IPO can result in higher valuation multiple, but on the other hand it is very expensive in terms of time and cost and, in addition, it does not allow to have total monetization in day 1.
- Sale to a strategic buyer: Opting for a sale to a strategic buyer is a frequently pursued exit strategy by private equity firms. This option is particularly attractive because a strategic buyer is usually willing to pay a premium for the company, as it is able to generate synergies from the acquisition. Although it is the most widely used exit route, it is not without inherent risks. In fact, the process is often complicated by resistance from the existing management, who may be concerned about significant changes, such as dismissal. Furthermore, antitrust considerations have a significant impact on these transactions, as the creation of a large company with the potential to trigger antitrust issues adds an extra layer of complexity and scrutiny to the strategic sale.
- Secondary Sales: A secondary sale occurs when a private equity firm sells a company to another private equity firm. Although less common than IPO or sale to a strategic buyer, this strategy is a viable option when it is difficult to find another route. However, the sale price in a secondary sale might be lower compared to a sale to a strategic buyer.

[9] "Investment Banking Valuation, Leveraged Buyouts, and Mergers & Acquisitions", Joshua Rosenbaum and Joshua Pearl, 2009

In addition to IPO, sale to a strategic buyer and secondary sales, several other exit strategies are available to private equity firms:

- Management Buyout (MBO): In an MBO, the management team of a company purchases the firm from the private equity investor, providing continuity in ownership and leadership.
- Dividend Recapitalization: Often referred to as a "dividend recap," offers the sponsor a practical way to convert a significant part of its investment into cash before eventually exiting. This strategy becomes particularly valuable when other exit options are limited, as it provides a means to transform the entirety of the investment into dividends through the issuance of additional debt to pay shareholders.
- Liquidation: In cases where other exit options are not available, liquidation becomes an alternative. It involves selling off a company's assets and then distributing the proceeds to investors.

Fig. 1.5. "Private equity exits by type 2018-2023"



Source: SP Global Market Intelligence

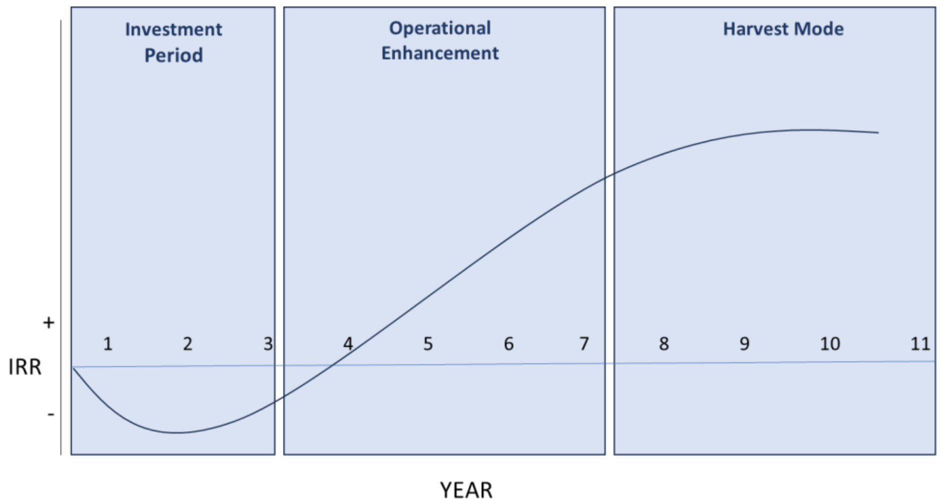
1.7 Performance Measurement

In the dynamic world of private equity, so many possible investments are screened every day, but not all of them can be completed. For this reason, it is essential to analyze some key measures in order to decide which investments to finalize, and to examine among past investments, which have been the best. Two essential metrics widely used in this field and particularly in the Leveraged Buyout model are the Internal Rate of Return (IRR) and the Multiple of Invested Capital (MOIC). Both IRR and MOIC play a fundamental role in assessing the financial viability and potential profitability of private equity investments. In fact, they represent the fundamental output of a Leveraged Buyout model and it is on the basis of their values, that decisions are made about whether or not to invest in a company. Moreover, in addition to Internal Rate of Return and Multiple of Invested Capital, there are three other key performance metrics used in the private equity industry to assess the benefits for limited partners: Total Value to Paid-In (TVPI), Distributed to Paid-In (DPI) and Residual to Paid-In (RDPI).

1.7.1 J-curve

The J-curve is a fundamental concept in the world of private equity and it illustrates the pattern of investment returns over time for a private equity fund. The term "J-curve" comes from the shape of the graph that describes the returns and it represents the typical trajectory of a private equity fund's performance.

Fig. 1.6. “J-curve”



Source: [Crystal Capital Partners website]()

In the initial years of a private equity fund's life, investors often experience negative or minimal returns. Indeed, during this phase the fund manager deploys the committed capital into various investment opportunities, there are only expenses to be incurred, such as capital commitments and management fees, and no dividends are distributed.

Then after active management of portfolio companies aimed at improving their performance and operational efficiency, the GP begins to look for strategic opportunities for divestment or exit. This

process takes time, and it is during this transition period that investment returns may remain modest or negative.
However, as the years go by and the first divestments and dividend distributions are made, returns begin to be positive and form the upward slope of the J curve.
The turning point at which fund returns turn from negative to positive, that usually occurs after 3 or 4 years, marks a significant milestone in the life of a private equity investment.
The J-curve phenomenon is essential for investors because it has significant implications for their investment decisions and risk assessment. Investors must recognize that negative returns observed in the early stages are in no way indicative of poor fund management or unsuccessful investment choices, but rather are a natural consequence of the time it takes for private equity investments to mature and realize their full potential.
Understanding how the J-curve works is critical for limited partners, because in this way they can diversify their investments to match the timing of expected cash flows among different funds. For example, an investor might smooth out his combined cash flows or schedule his purchases so that distributions from one fund can finance purchases from the other.

1.7.2 Internal Rate of Return (IRR):

In the private equity industry, the Internal Rate of Return is a crucial metric that measures the annualized rate of return on an investment over its holding period. The IRR is calculated by determining the discount rate at which the net present value of all cash flows (both positive and negative) generated by an investment becomes equal to zero. This makes the IRR a time-weighted return metric that actually considers the timing of cash flows to provide a more accurate and insightful representation of investment performance. When cash flows occur early in the investment horizon, the IRR tends to be higher while in contrast, cash flows received later in the investment period may lead to a lower IRR. In fact, dividends distributed by portfolio companies before the exit period have an impact on the overall IRR of a private equity investment, since they provide an earlier realization of cash flow, contributing to a higher IRR. However, the money that is distributed as a dividend could also be used for a cash sweep to reduce the amount of debt and consequently interest, or simply invested to generate potential future growth opportunities.
Private equity firms typically set specific IRR targets for their investments, which vary depending on several factors such as the fund's risk profile, investment stage, industry sector and prevailing market conditions. For example, venture capital funds, which focus on early-stage and high-growth investments, usually aim for IRRs above 30% to compensate for the higher risk associated with these investments. On the other hand, buyout funds, which invest in more mature and established

companies, usually define an IRR of 20-25% as their target. Finally, real estate and infrastructure funds have the lowest IRRs, usually between 5-12%.

1.7.3 Multiple on Invested Capital (MOIC):

MOIC is another key metric used in the world of private equity. This metric offers an absolute return measure, representing how many times the initial investment has grown over the investment holding period. To calculate it, it is necessary to divide the total amount of capital returned to investors through distributions plus the residual equity amount by the initial equity investment. The resulting ratio represents the multiple by which the original investment has increased.

MOIC = (Total Distributions + Residual Equity amount) / Initial Equity Investment

Unlike IRR, which considers the timing of cash flows and provides a time-weighted return, MOIC focuses only on capital returns. As a result, the MOIC offers a clear and easily understandable measure of investment success, providing investors with a direct assessment of how much value the investment has created relative to the initial capital invested, and this is the reason why an early dividend issued will not generate a higher MOIC.

1.7.4 Total Value to Paid-In (TVPI):

TVPI is a measure of the total value realized from an investment relative to the total capital contributed by LPs. It is calculated by dividing the sum of all distributions and the remaining equity value of the investment by the total amount of capital contributed by limited partners.

TVPI = (Total Distributions + Residual Equity amount) / Total Capital Contributed

TVPI is a critical metric for limited partners because it provides an overall view of the total value created by the private equity fund. A TVPI above 1.0 indicates that the fund has generated positive returns for investors, while a TVPI below 1.0 means that the fund has burned money.

1.7.5 Distributed to Paid-In (DPI):

DPI is a measure that represents the total capital that a private equity firm has returned thus far to its investors and it is calculated by dividing the total distributions received by limited partners by their total capital contributions.

DPI = Total Distributions / Total Capital Contributed

DPI is an essential metric for limited partners as it highlights the proportion of their original capital that has been returned to them as cash distributions. A DPI above 1.0 indicates that limited partners have received more cash back than they initially invested, suggesting a positive return on investment.

1.7.6 Residual to Paid-In (RDPI):

RDPI is the residual value of a private equity fund's portfolio to be distributed and is calculated simply by subtracting DPI from TVPI:

RDPI = TVPI – DPI

RDPI provides insights into the potential future returns that limited partners can earn from the remaining investments in the portfolio. A high RDPI suggests that there is still significant value to be realized from the existing portfolio holdings, indicating potential future positive return.

1.8 Benefits for investors and overall society

Investing in private equity funds determines benefits not only for the investors themselves, but also for the society as a whole.

First, investors enjoy greater access to investment opportunities, as these opportunities involve not only companies that are available in public markets (take-private transactions), but also private companies. This factor is especially crucial within the Italian market, since most of the companies are small and medium-sized and unlisted, but they have great growth potential that can be exploited through investments of this type.

In addition, historically the returns of private equity funds have been higher than those of the equity markets. In fact, according to an analysis of data performed by Cambridge Associates[10], which compared for a 25-year period, ending in December 2022, the returns of about 1,500 private equity funds with the Russell 3000, i.e. the index made by the 3,000 largest U.S. public companies, the average annual return of private equity was 13.33%, while that of the index was 8.16%. This is driven by the fact that following the investment, the General Partners, who have highly qualified and experienced staff, work closely with the portfolio companies through an active management, making changes to the company’s structure and strategy, which in most cases results in significant growth and operational efficiency.

[10] “US Private Equity: Index and selected benchmark statistics”, Cambridge Associates, 2022

Finally, Limited Partners through investments in private equity can further diversify their portfolios and thus be more protected from the risk of public markets and cyclical risk.

On the side of the overall society, the benefits are also many. First and foremost, companies that for certain reasons cannot access bank financing have access to a large amount of capital in this way. This is critical for smaller companies that are considered risky by conventional investors because they do not meet certain ratios.

In addition, as already shown, companies acquired by private equity funds grow considerably during the investment period, and this results in the creation of new jobs. In fact, according to a study of Invest Europe[11], more than 100,000 jobs were created in 2020 in Europe in companies owned by private equity funds, despite the European job market contracted by 1.6%.

Finally, governments are finding it more and more difficult to get funding for infrastructure improvements to meet population growth. This is the reason why *"more and more, we see private equity companies partner with governments to build and develop critical infrastructure assets, such as roads, airports, utilities, as well as infrastructure which encourages sustainability."*[12]

1.9 Regulatory and Legal Framework

In Italy the private equity industry began to develop in 1987 when the government allowed banks to invest in private equity through special funds called SIF (Società di Intermediazione Finanziaria), that could only invest in small shares of non-listed companies.

For several years the Italian regulatory framework stayed the same, but in 1993 the government passed a new law called the "Testo Unico in materia bancaria e creditizia" that introduced the idea of the universal bank, *"a financial institutions that may offer the entire range of financial services"*.[13]

In the same year, another important change came when the government passed the Law n.344, which created closed-end investment funds, expanding the Italian financial market, although it was later than other European countries. Then in 1998 the government passed the "Testo Unico della Finanza" (TUF), which overhauled the regulatory framework for financial services, replacing the Law of 1993 and introducing the concept of the SGR.

Finally in 2005, the Regulation on SGRs and the regulatory provisions issued by the Bank of Italy and the Ministro del Tesoro completed the process of creating the current institutional framework. These provisions helped to modernize the structure of closed-end funds under Italian law and made them more flexible and in line with the international financial environment.

[11] "Private Equity at Work: Employment & job creation across Europe", Invest Europe, 2022

[12] "Why is private equity the driving force behind innovation and job creation in Europe, and Luxembourg?", EY, 2023

[13] "Universal Banking", George J. Benston, 1994

Moreover, a key role is played by AIFI (Associazione Italiana del Private Equity, Venture Capital e Private Debt) and EVCA (European Venture Capital Association), two leading organizations that actively engage with policymakers and regulators to promote a robust regulatory framework, that encourage innovation, attract investment and protect investors.
AIFI was founded in 1986 and it assists private equity and venture capital firms in Italy, providing support through research, analysis, networking events and conferences.
EVCA, instead, was founded in 1973 and it is a pan-European body for the venture capital industry, which conducts research, supporting favorable regulatory frameworks and promoting collaboration among venture capital firms across the continent.

Chapter II: Leveraged Buyouts, valuation methods and recent trends in the industry

As shown in the previous chapter, a Leveraged Buyout is a transaction in which a company is acquired through the utilization of a significant amount of debt (typically ranging between 60% - 70%). The remaining portion of the purchase price is provided by a financial sponsor through equity.
Private equity firms utilize debt in leveraged buyouts to maximize returns, benefit from the tax shield and have more dry powder (more equity to invest in future deals).
Moreover, in contrast to strategic buyers, where the debt is owned by the buyer, with private equity firms the debt is owned by the target company and this allow them to take much more risk.
In fact, typically a dedicated financial structure known as special-purpose vehicle (SPV) is created with the debt and equity that have been raised. This SPV, which takes the name of NewCo, is used as a means to carry out the acquisition of the target company.
Once 100% of the target's capital is acquired, the NewCo in addition to having control of the company will be entitled to the profits produced in the form of dividends.
Moreover, often following the acquisition of the target company there is a merger with the NewCo, which can be upstream, in the case in which it is the NewCo that incorporates the target, or downstream when it is the target that incorporates the NewCo.
It is important to work toward completing the merger as soon as possible during this transitional phase, particularly for the sake of operational and tax efficiency. Regarding the operational component, the target's revenue stream must be combined with the outflows for debt and interest repayment of the NewCo. In this way the NewCo has direct access to cash flows and not just dividends. Concerning tax efficiency, instead, as the NewCo is a nonoperating firm, the interest originating from the debt will not benefit from the tax shield, as long as the merger does not occur. Moreover, the benefit is also for the creditors of NewCo's debt, as the debt comes to bear on the assets of the target company, replacing the pledge on its shares with collateral on the assets.
Regarding Italian law, the 2003 reform of corporate law legitimized the Merger Leveraged Buyout operation, previously considered an illegal practice in violation of the art. 2358 of the Italian Civil Code, which stated that *"the company may not grant loans or provide guarantees for the purchase or subscription of its own shares. The company may not even through a trust company or a third party accept treasury shares as a guarantee."*[14] As of today, with an ad hoc rule of the Civil Code, the art. 2501 bis, this thorny problem has been solved, as this rule sanctions the lawfulness of merger

[14] Art. 2358 Italian Civil Code

following acquisition with indebtedness, as long as the following procedural requirements are met and placed to protect the transparency of the transaction:

a) The merger plan must contain an indication of the financial resources with which the merged company will be able to meet its obligations;

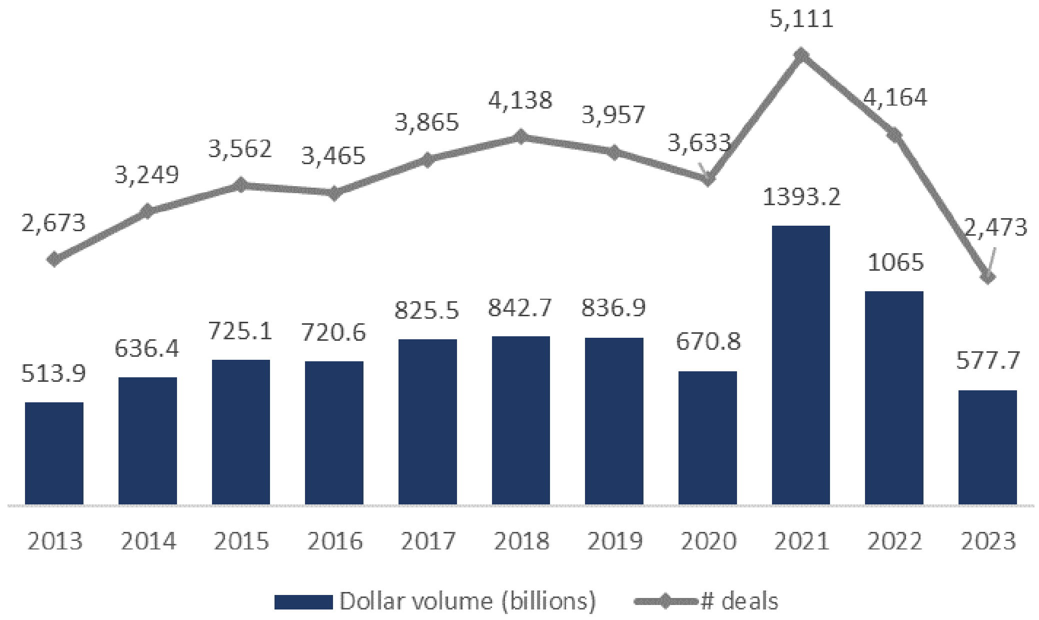
b) The directors report must state the reasons justifying the transaction and contain a business and financial plan, indicating the source of the necessary resources, as well as indicating the objectives to be achieved;

c) The experts report must certify, in addition to the appropriateness of the exchange ratio, the reasonableness of the indications contained in the merger plan;

d) A report by the person appointed to conduct the statutory audit of the accounts of the target company or the acquiring company must be attached to the merger plan.

As we can see from the Fig. 2.1., in 2023 due to the continued increase in interest rates by the FED and ECB to fight inflation, resulting in higher cost of debt and thus consequently making LBO more expensive due to the large percentage of debt used, the number of deals has been greatly reduced compared to 2021-2022, a period in which, in response to the pandemic emergency, interest rates had been lowered close to 0. As of today, according to Blackrock, *"the private capital industry's dry powder has touched the $4 tn mark"*[15].

Fig. 2.1. "Global private equity LBO deal volume[16]"



Source: Pitch Book Data

[15] "The private capital industry's 'dry powder' has hit $4tn. What could go wrong?", R. Wigglesworth, 2023

[16] For 2023, the data are as of 30 September 2023

2.1 Key participants in a LBO transaction

Besides the financial sponsor, a key role within a Leveraged Buyout transaction is played by investment banks, banks and institutional lenders, bond investors and the target company's management.

Investment banks are essential to LBOs as strategic M&A advisors, as well as a provider of financing. They may be hired by private equity firm as buy-side or sell-side M&A advisors in exchange for their knowledge, connections and internal resources, as well as for the assistance in finding transactions.

Investment banks go through a rigorous internal credit procedure, conduct in-depth due diligence on LBO targets to verify the target's business plan and establish together with private equity funds the optimal financial structure for the operation.

After the sponsor decides the preferred LBO financing structure, the transaction team submits it for final approval to the bank's internal credit committee. The investment banks are allowed to offer a funding commitment to support the sponsor's proposal after the credit committee gives its approval. Under the proposed terms and circumstances, this commitment provides financing for the debt portion of the transaction in exchange for a specific amount of fees and based on certain criteria, such as the sponsor contributing to a certain amount of cash equity (underwritten financing).

Then each bank debt arranger plan to hold a certain amount of the revolving credit facility in its loan portfolio and aims to syndicate the remaining amount in addition to any term loan. *"As underwriters of the high yield bonds or mezzanine debt, the investment banks attempt to sell the entire offering to investors without committing to hold any securities on their balance sheets. However, in an underwritten financing, the investment banks typically commit to provide a bridge loan for these securities to provide assurance that sufficient funding will be available to finance and close the deal".*[17]

In addition, on the financing side, private equity relies on both banks, institutional lenders and bond investors. Traditional banks provide shorter-term revolving credit and amortizing loans, while institutional investors offer longer-term loans, usually with limited amortization. All lenders perform due diligence on the target company and its ability to repay the debt, often requiring covenants.

On the other side, bond investors (mutual funds, hedge funds and insurance companies) evaluate potential purchases by reviewing documents and attending different presentations (roadshows), during which the company executives pitch the deal.

In the end, also the target management in an LBO plays a critical role, marketing the company to potential buyers and lenders. They prepare information, present the investment opportunity and hold a significant equity stake post-acquisition, aligning in this way their interests with the sponsor.

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[17] "Investment Banking Valuation, Leveraged Buyouts, and Mergers & Acquisitions", J. Rosenbaum and J. Pearl, 2009

2.2 The ideal candidate for a LBO

Although any company can be a potential target for a LBO, there are some specific characteristics that make some companies more attractive candidates than others. These characteristics include:

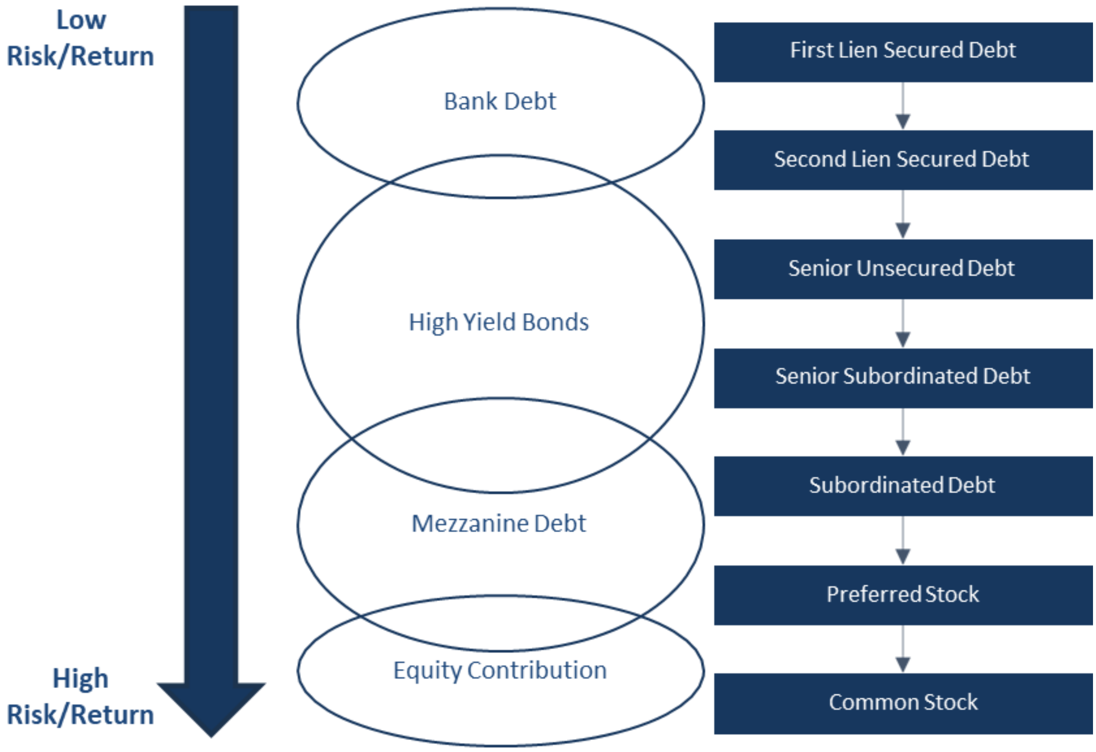
- Steady and predictable cash flows. They are of critical importance because they are used to repay principal and interest on debt. For this reason, companies that have demonstrated the ability to generate cash in a stable and predictable way are favored by lenders because the likelihood of being able to repay loans is higher.
- Balance sheet with little debt, to avoid having a large amount of debt to refinance, and large amount of assets, in the way that it can be used as collateral.
- Operating in a mature market with a strong market position secured by barriers to entry, that make it difficult for new competitors to enter. Mature markets are characterized by stable and predictable demand patterns, which makes it easier for companies to generate steady and predictable cash flow. Moreover, mature markets often have a well-established customer base, which can provide companies with a competitive advantage.
- Strong management team able to lead the society for years to come, since the real experts in the industry in which the acquired company operates are them.
- Low CAPEX and NWC requirements, since they reduce cash flow.
- No industry cyclicality, because revenue and demand fluctuations that are highly sensitive to economic conditions (or other external forces), make a company less appealing from a risk perspective. For this reason, sectors such as automotive, restaurant and hospitality are not ideal targets.
- No customer concentration. As a rule of thumb due to the inherent risk associated with over-reliance on a single customer, it is suggested to limit the contribution of any single client to no more than 5-10% of total revenue. The loss of such a critical client, either due to unforeseen circumstances or the client's cessation of business, can be a financial threat.
- A clear exit strategy, since the final return depends almost entirely on it. For this reason, having already a defined idea about the exit strategy, even before acquiring the company (which may even change later over the years), is increasingly crucial, so as to avoid exits such as liquidation of assets or dividend recap that would in no way allow the IRR target to be reached.

While it is ideal to find a target company that possesses all of these characteristics, it is not always possible to do so. However, steady and predictable cash flow is definitely the most attractive factor for private equity firms.

2.3 Financing structure

As discussed in the beginning of the chapter, in a leveraged buyout most of the financing comes from debt, typically 60% - 70%, while the remaining 30% - 40% is typically funded by a sponsor's equity contribution and management's equity contribution.

Fig. 2.2. "General Ranking of Financing Sources in an LBO Capital Structure"



Source: "Investment Banking Valuation, Leveraged Buyouts, and Mergers & Acquisitions", J. Rosenbaum and J. Pearl, 2009

Bank debt is a crucial component of leveraged buyouts, as it is a primary source of financing for the acquisition of target companies and it is characterized by lower interest rates compared to other debt instruments, but it has strict repayment terms and covenants. In addition to first lien secured debt and second lien secured debt, the category of bank debt also includes the revolver, which is a line of credit that can be activated when there is no sufficient cash to meet mandatory payments.

On the other hand, high-yield debt, also known as junk bonds, is another important financing instrument in leveraged buyouts. Unlike bank debt with its stringent covenants and repayment terms, high-yield debt offers greater flexibility and access to a broader pool of investors, making it an attractive option to finance large acquisitions.

The major differences between the two are the following:

- Interest Rates: High-yield debt has substantially higher interest rates than bank debt. This higher yield compensates investors for the increased risk associated with the unsecured nature of high-yield debt. Bank debt, on the other hand, generally offers lower interest rates due to the lender's secured position.
  In addition, high yield bonds have fixed interest rates, while bank debt, usually has variable interest rates, in the sense that they vary depending on interest trends from the FED, ECB, LIBOR and EURIBOR.
- Repayment: Bank debt typically follows an amortized repayment scheme, where the principal is gradually paid down over time. In contrast, high-yield debt has a bullet maturity structure, where the entire principal amount is due at the end of the loan term.
- Covenants: Covenants serve as contractual obligations imposed on borrowers to safeguard the lender's interests. High-yield debt has incurrence covenants, which restrict the borrower from making certain financial decisions, such as selling assets or acquiring new businesses. Bank debt, on the other hand, has maintenance covenants, which require the borrower to maintain minimum financial ratios, such as a Debt/EBITDA ratio below a specified threshold.

Mezzanine debt, instead, represents a form of financing that lies between debt and equity because it has characteristics of both. It is subordinated to the other types of debt and for this reason, being riskier, has a higher yield and, moreover, it has the possibility of being converted to common stock under particular conditions. In addition, it is characterized by both cash interest and PIK interests, *"a periodic form of payment in which the interest payment is not paid in cash but rather by increasing the principal amount of the security in the amount of the interest (e.g., a $100 million bond with an 8% PIK interest rate will have a balance of $108 million at the end of the period but will not pay any cash interest)*"[18].

Finally, the remaining part is financed by equity, most of which is provided by the private equity fund, while, in some cases, the management team of the target company may choose to invest in the new company through an equity rollover. This equity rollover creates a shared ownership structure, aligning the interests of the management team with those of the private equity firm and the debt holders.

The continued increase in interest rates by the FED and ECB, and consequently of the cost of debt, has led to a decrease in the use of debt for LBO over the past two years, leading to a greater reliance on equity and cash financing. The reduced use of debt in turn has implied lower returns for private

[18] "Mezzanine Finance", C. Silbernagel, D. Vaitkunas and I. Giddy, 2008

equity firms, leading to less investor interest in private equity firms and a shift toward capital credit, that offers better risk-adjusted returns.

2.4 Steps to build a LBO model

A LBO model serves as a crucial tool to evaluate potential acquisitions and assess the financial viability of LBO transactions. Building a LBO model typically involves the following steps:

1. Assumptions: Develop a set of assumptions about the target company, including the revenue growth, the EBITDA margins, the working capital changes, the capital expenditures, the entry multiple and the percentage of debt and equity that will be used for the acquisition, considering the various types of debt used and the presence of equity rollover.
2. Sources and uses table: Develop this table in order to summarize the total amount of funding that will be used to complete the transaction. The uses side includes the total amount of money needed to complete the acquisition. Within it we find the EV, the cash to balance sheet, the transaction fees and the financing fees. On the other side, the sources show how the deal will be funded, considering the amount of debt, equity and the presence of equity rollover.
3. Adjusting the Balance Sheet: In order to complete this step, it is first necessary to calculate the goodwill generated and then replace the old debt and equity with the new ones in the sources and uses table[19], add the deferred tax liabilities if there is a write-up of assets, change the value of fixed assets by adding the write-up if any, replace the total amount of cash with the cash to balance sheet, capitalize the financing fees and replace the goodwill with the new one.
4. Projecting the Income Statement, Balance Sheet and Cash Flow Statement: Forecasting the three statements according to the assumptions that have been defined and calculate the annual debt payoff amount based on the needed interest payments and the available cash flow, through the development of the debt schedule. In some cases, to avoid wasting time, some bankers avoid preparing a complete balance sheet, but make assumptions about the change in working capital, rather than looking at each item individually.
5. Calculate the IRR and the MOIC of the model: Calculate the two main outputs of the model, defining the exit year and the exit multiple.
6. Perform a sensitivity analysis: Since there are several assumptions behind the model, which may in some cases be different from what will actually occur in the future, sensitivity analysis, by varying one or more input parameters and holding the other assumptions constant, observes

[19] The value of the equity has to be reduced by the amount of the transaction fees

the resulting changes in the model outputs, such as IRR and MOIC. If even in the downturn scenario, IRR and MOIC are acceptable, then the acquisition can proceed.

2.5 Entry and exit multiples

The multiple approach is a method of valuing a company by comparing its valuation metrics to those of comparable companies. *"A comparable firm is one with cash flows, growth potential, and risk similar to the firm being value"*[20]. This approach, that is not based on fundamentals, is often used for valuing private companies or companies with limited financial information.

Relative valuation is a widely used method for valuing companies because of its simplicity, efficiency and responsiveness to market sentiment. Unlike discounted cash flow models, which require numerous assumptions and complex calculations, relative valuation is based on the analysis of comparable companies, allowing for a faster and more intuitive valuation process. In addition, relative valuation is easier to communicate to clients and stakeholders due to its simple nature, and it captures the current market mood on the value of comparable companies, providing insight into the company's valuation relative to its peers.

On the other hand, the benefits of the multiple approach are also its weaknesses. First, its simplicity can lead to inconsistencies if crucial factors like risk, growth and cash flow potential are not considered. Second, the market sentiment reflected in multiples can result in overvaluation or undervaluation if the comparable firms are themselves mispriced. Third, the lack of transparency in relative valuation assumptions makes them susceptible to manipulation. For these reasons, a biased analyst can justify any valuation by cherry-picking multiples and comparable firms.

From the equity side, the most important multiples are the P/E and P/BV, while from the asset side, the most used are the EV/Sales, EV/EBITDA and EV/EBIT.

The following table analyzes the factors that influence each multiple:

Fig. 2.3. "Determinants of multiples"

Multiples	Determinants
P/E	Payout, Cost of Equity, g
P/BV	ROE, Payout, Cost of Equity, g
EV/Sales	Cost structure, D&A, CAPEX, Delta NWC, WACC, g
EV/EBITDA	Tax shield of D&A, CAPEX, Delta NWC, WACC, g
EV/EBIT	D&A, CAPEX, Delta NWC, WACC, g

Source: Own elaboration

[20] "Valuation Approaches and Metrics: A Survey of the Theory and Evidence", A. Damodaran, 2006

Multiples are of fundamental importance to private equity firms because the basis of building an LBO model is the choice of entry and exit multiples. The entry multiple represents the price a private equity firm pays for a company, while the exit one reflects the price at which the private equity firm expects to sell the acquired company.

As was discussed in the first chapter, one of the ways used by private equity firms to create value is to expand multiples, that is, to sell the company at a higher multiple than the entry multiple. The problem with this is that in most cases this expansion does not depend on the private equity firm, but rather on market trends and is, therefore, outside the control of the fund. The only case in which this depends on the private equity firm is when the company benefits from a brand repositioning, for example, moving from being a premium brand to a luxury brand.

On the other hand, it is difficult to imagine that a lower exit multiple than entry multiple could be used, since the goal of private equity is to make money and therefore, they would not go out and acquire a company knowing that it will then be sold at a lower multiple in the future. However, a slight decline in valuation multiples may be acceptable for larger-sized leveraged buyouts, due to the limited number of potential buyers that can afford to acquire such assets.

However, beyond this, in a leveraged buyout model a stable multiple (i.e. entry multiple equal to the exit one) is typically assumed.

Moreover, in the case in which a LBO model is used for valuation purposes, in order to find the correct valuation of the target company, a target IRR is first defined and then the model is back-solved to find the purchase price that allows it to arrive at the target IRR.

This valuation is usually referred to as "floor valuation" because it is generally considered as a lower estimate compared to valuations from other buyers. This disparity arises from the ability of strategic buyers to extract synergies from the acquisition, allowing them to offer a higher price than private equity firms.

Since most of the companies that are acquired are private, the most used multiples are those on the asset side and, among these, usually the choice falls on EV/EBITDA and EV/EBIT.

The key difference between the two is that by carrying out a decomposition of the multiple, it can be seen that the EV/EBITDA considers only the tax shield of D&A, while the EV/EBIT considers the total effect of D&A, which is why when the company is characterized by high levels of D&A (capital intensive business), it is better to use the EV/EBIT multiple.

Moreover, due to the amount of uncertainty about the condition of the market and unforeseen circumstances that may significantly affect the exit multiple, it is essential to perform a sensitivity analysis on multiples, in order to assess the impact of changes on IRR and MOIC.

2.6 Discounted Cash Flow

Although private equity firms in most cases do not use the Discounted Cash Flow (DCF) to evaluate companies, they still consider it as an important benchmark, because they can use it to determine how much strategic buyers are willing to pay for a company.

Discounted cash flow is a widely used valuation methodology that assesses the value of a company based on its projected free cash flows (FCF). Free cash flows are usually referred to as unlevered free cash flows because they represent the cash flows that are available to all investors, including both shareholders and debtholders and they are calculated as follows:

Fig. 2.4. "FCF calculation"

EBIT
-Taxes on EBIT
= NOPAT
+ D&A
- CAPEX
- Delta NWC
= FCF

Source: Own elaboration

By discounting the expected FCF to their present value, DCF provides an estimate of the target's intrinsic value.

In a DCF analysis, the projected FCF are typically estimated for a period of five or ten years. *"The projection period, however, may be longer depending on the company's sector, stage of development, and the underlying predictability of its financial performance*"[21]. Moreover, it is of fundamental importance the terminal value, that represents the target's ongoing value beyond the projection period, and it usually accounts for most of the valuation. This value can be calculated in two ways:

- Through the Gordon Growth model, by establishing that the growth of the FCF after a given period is at a constant rate g forever. In this case, the terminal value is calculated through the following formula:

$$TV = \frac{FCF_n * (1 + g)}{WACC - g}$$

[21] "Investment Banking Valuation, Leveraged Buyouts, and Mergers & Acquisitions", Joshua Rosenbaum and Joshua Pearl, 2009

where FCF_n represents the normalized FCF, calculated by considering CAPEX equal to D&A and delta NWC equal to 0. The constant growth rate g, instead, is set equal to long-term GDP growth rate or long-term inflation rate.

- Through the Multiple method, by multiplying the relevant measure expected for the normalized year by the appropriate multiple (EV/Sales, EV/EBITDA, EV/EBIT etc…).

The projected FCF and terminal value are then discounted to the present using the target's WACC.

$$EV = \frac{FCF_1}{(1+WACC)^1} + \frac{FCF_2}{(1+WACC)^2} + \cdots + \frac{FCF_n}{(1+WACC)^n} + \frac{TV}{(1+WACC)^n}$$

The sum of the discounted FCF and terminal value represents the enterprise value, which is the market value of the operating assets of the company, and it forms the basis of the DCF valuation.
Then to arrive to the Equity value, that represents the value for the shareholders, Net Debt and Minorities have to be subtracted and Associates have to be added.
Moreover, debt policy is an important factor to be considered in DCF valuation. In fact, the choice between a debt rebalancing policy and a predetermined debt policy can have a significant impact on the value of the company.
In the case of a rebalancing debt policy, the company maintains a constant ratio of debt to equity over time. In this case, the company's free cash flows have to be discounted by the levered WACC[22], that is the classic Weighted Average Cost of Capital.
On the other hand, when the company follows a predetermined debt policy (i.e. the specific debt amounts to be incurred in the coming years is known, but not the D/E ratio, that it is not constant), the APV method has to be used. This involves discounting the free cash flows using the unlevered WACC[23] and then adding the present value of future interest tax shields.
The assumptions beyond the WACC, the FCF and the TV play a crucial role in determining the DCF valuation. Even slight variations in these assumptions can significantly impact the valuation results. Therefore, DCF outputs are often presented as a range of values based on different assumptions rather than a single estimate using sensitivity analysis.
The DCF methodology is particularly useful when market-based valuation techniques, such as comparable company analysis and precedent transaction analysis, are considered unreliable due to market anomalies or lack of comparable data. However, the main problem with this valuation method

[22] $levered\ WACC = \frac{D}{D+E} * cost\ of\ debt * (1-t) + \frac{E}{D+E} *$ cost of equity
[23] $unlevered\ WACC = \frac{D}{D+E} * cost\ of\ debt\ + \frac{E}{D+E} *$ cost of equity

lies in the fact that it is very subjective, since it is based on multiple assumptions such as revenue growth, operating margin, CAPEX, delta NWC etc...

2.7 Recent trends in the private equity industry

In order to understand the recent trends that are characterizing the private equity industry, it is essential to first summarize the current macroeconomic situation. Underlying it, a key role is played by geopolitical risks.

On one side, the conflict between Russia and Ukraine that has now been going on for more than two years; on the other hand, the conflict between Israel and Hamas that began in October 2023. Both could further shake the global economy, generating shocks, especially in the energy complex. In addition to this, the significant tensions between the United States and China, which now make it clear that governments are seeking to develop independent supply chains, in a dynamic that could lead to the fragmentation of the world economy into rival trading blocks.

This, together with the rapid reopening of economic activity post-pandemic and the expansionary monetary policies aimed at coping with Covid-19, has contributed to a significant rise in inflation over the past few years, with values, in Italy[24], of 8.1% in 2022 and 5.7% in 2023.

For this reason, the intervention by the ECB and the Fed to raise key interest rates was necessary and consequently, the cost of debt has risen sharply, reaching its highest value since the last two decades. Thanks to this restrictive monetary policy, inflation has begun to slow down even more than predicted, which is why central banks are expected to cut rates by the summer of 2024. Rate cut that will be necessary to push GDP growth and thus avoid recession. In fact, in 2023, Italy's GDP only grew by 0.7% and the European one only by 0.5%, according to Istat Data.

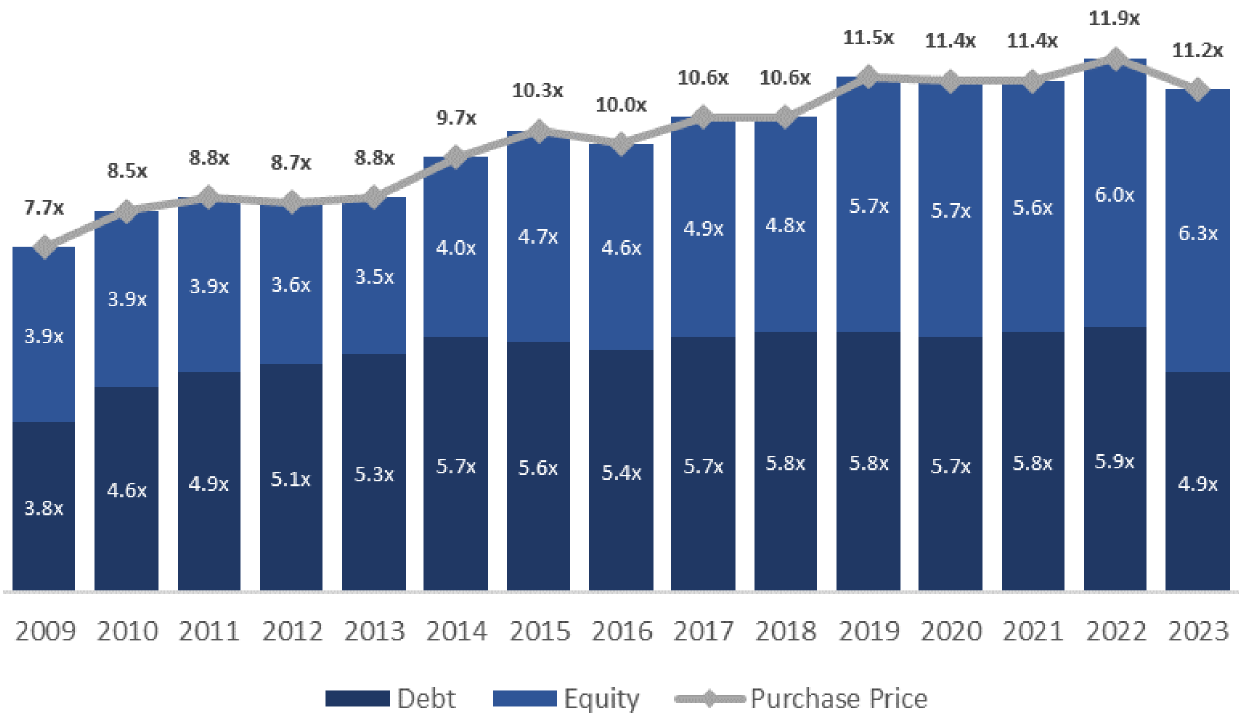
Private equity is therefore adapting to a new reality of higher interest rates and increased market volatility. Despite a decrease in deal activity and valuations, there are still attractive opportunities for investors who are prepared to adapt their strategies. The current landscape is marked by several key themes:

- Deal activity: Slower deal activity is observed due to rising rates, inflationary pressure, economic and geopolitical uncertainty. As shown in the Fig. 2.1., the number of deals went from 5,111 in 2021 to 2,473 in 2023, marking a -52%.
- Valuations: Private equity valuations have declined from their peak levels due to the increase in the cost of debt and consequently of the WACC. As shown in the Fig.2.5. in the next page,

[24] ISTAT Data

till 2022, the median EV/EBITDA multiple of private equity valuations rose, while in 2023 it fell to a value of 11.2x.[25]

Fig. 2.5. "Median EV/EBITDA in Private Equity valuations"



Source: "2024 Private Markets Outlook", BlackRock, 2023

- Types of transactions: Although overall deal volume has decreased, the private equity market remains active with a focus on take-private transactions, taking advantage of very low public equity valuations and on add-on acquisitions. The current macroeconomic context, in fact, provides a solid cause for build-ups to be increasingly prevalent. Even if a lot of economies seem to be avoiding recessions that were previously predicted, slow economic dynamics have made organic growth more difficult to reach. A good strategy to boost portfolio value is to strategically increase sales and EBITDA, particularly if there is multiple arbitrage to be realized by combining smaller companies into bigger ones. However, the biggest obstacles that businesses have when implementing add-ons, are coming up with a plan to create growth and synergies for the expanded business and updating the current management group to handle a bigger and more complicated footprint.

[25] For 2023, the data are as of September 2023

- Distressed investments: Companies have experienced declining corporate profitability and growing debt servicing costs over the past year. Interest rates are at the highest level in over 20 years in both the US and Europe, leading to a rising in debt defaults and insolvencies. Based on Pitchbook data, 2023 has been ranked third worst year ever for leveraged loan defaults, behind the pandemic period of 2020 and the 2008-2009 financial crisis.

  However, because firms can no longer refinance their way out of trouble, due to the tightening financing markets, there are now opportunities for distressed investors to intervene and provide enterprises facing financial difficulties with rescue options.

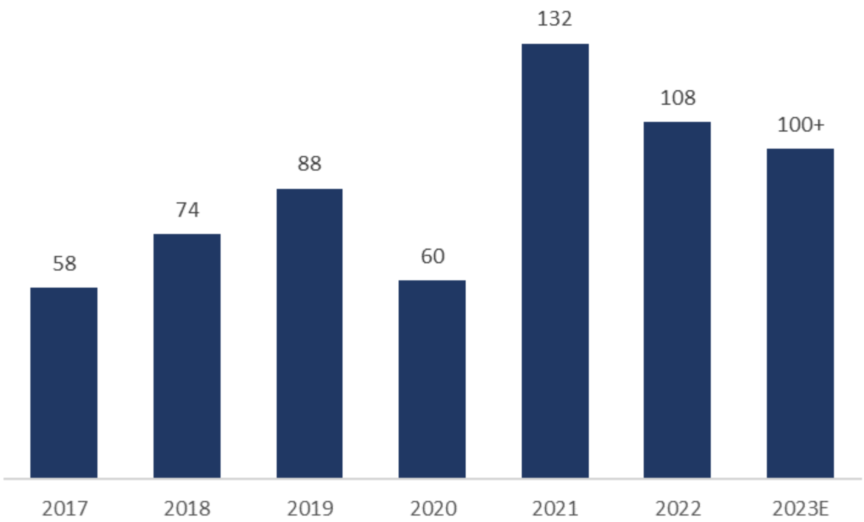
  The main goal of distressed debt investors is to acquire company debt at discounts to par value, in order either to sell it when secondary debt markets prices rise again or utilize it as leverage in restructuring and bankruptcy cases.

  Loan-to-own distressed debt investors, instead, buy debt of financially troubled firms as a means of acquiring ownership through debt-for-equity swaps, and then they implement operational changes, in an attempt to bring the assets back to profitability.
- Regulatory scrutiny: Under the present administration, US antitrust regulators have become more and more litigious on M&A activity, blowing up many deals. Although the European Commission has not focused as much on private equity as American agencies have, it has been closely examining transactions that it feels might threaten competition, putting the digital industry at the center. In keeping with the trend of increased scrutiny in these areas, general partners are much more likely to see government involvement as a potential danger to their upcoming transactions. As a general rule, PE companies should anticipate and be ready for the questions of regulatory authorities about any competition problems, in order to proactively manage and limit antitrust risk.
- Equitization of transactions: Due to less availability and higher cost of debt, private equity buyers are increasing equity contributions to complete deals. In 2023, this value was on average more than 50%.
- Demand for quality: Investors are focusing on industry-leading companies with strong fundamentals, mainly belonging to the healthcare and tech sector.
- Increase in corporate divestitures: As a result of economic instability, large corporations are expected to carry out more corporate carve-outs, which will present chances to purchase undervalued non-core divisions.
- Creative structuring: In order to deal with challenging situations, private equity owners are taking into consideration minority sales and structured capital raising, which create appealing risk-return dynamics. In fact, the process of raising new financing has been increasingly

difficult for many. Due to market headwinds, GP must spend more time before closing their funds. According to Preqin data, as of today, the average time for fundraising turns out to be 19 months, while before 2019 it was on average 15 months. This is because the high returns on Private Credit nowadays are driving investments in this sector rather than Private Equity, since it has a better risk-adjusted returns.

- Growing need for secondaries: The exit transaction volume over the past two years has been significantly below normal due to limited access to the IPO market and poor interest from buyside sponsors. This has resulted in a greater need for secondaries in the market for liquidity and distribution needs, and this is driving further discounts.

Fig. 2.6. "Annual global transaction volume in $ bn of secondaries[26]"



Source: "H1 2023 Global Secondary Market Review", Jefferies, 2023

- Continuation funds: Given the current market conditions, general partners are increasingly turning to continuation funds as a more strategic approach to managing their portfolios. Continuation funds offer GPs an attractive option to avoid unsatisfactory exits and potentially realize higher returns when market conditions improve. These funds allow GPs to transfer assets from existing funds to new vehicles, enabling them to extend the investment horizon and make additional follow-on investments. Existing LPs, in turn, have two choices: they can either roll their interests into the continuation fund or sell their shares to new LPs, effectively exiting the investment. The popularity of continuation funds has grown significantly in 2023, driven in part by the challenging market environment. With valuations currently low, exiting investments at this time would likely result in suboptimal returns for LPs. In contrast,

[26] For 2023 the data are annualized on the basis of June 2023

continuation funds provide a mechanism to maintain high-quality assets and potentially benefit from future valuation appreciation.

- Artificial intelligence: Artificial intelligence (AI) may initially leave its mark in the technology sector, but its influence is expected to spread far beyond this industry. As AI applications become increasingly integrated into business processes, significant investment opportunities are expected to arise in companies that can effectively utilize these technologies. However, AI for private equity firms could also be widely used beyond just financial investments. In fact, in the private equity sector, completing deals requires a high degree of analytical expertise in a variety of fields. Generative AI has the potential to completely change the way private equity companies operate, by analyzing huge volumes of data, extracting insights and automating procedures, helping them make wiser investment decisions and discover new growth opportunities. For instance, parsing enormous amounts of data can help speed up due diligence, since machine learning models can identify trends and possible red flags that would otherwise go unnoticed in traditional manual analysis, reducing the possibility of missing important information.
- Infrastructures: Infrastructure as an asset class is experiencing a boom. With persistently high inflation and recent volatility in bond and equity markets, the intrinsic benefits of many infrastructure expenditures have been highlighted. In fact, compared to other asset classes, infrastructure delivers cashflows that are less dependent on economic cycles, because they are of critical importance to both the economy and our everyday lives. *"Investors are looking at a variety of assets to help weather inflation"*[27]. Long-term and inflation-linked contracts for infrastructure assets are common and can last for decades, and this is a big benefit in such a turbulent market. This is why according to an interview conducted by the Nuveen Pension Fund on a sample of 800 global institutional investors, 58% of the interviewed respondents said they would increase their investments in infrastructure in the coming years.

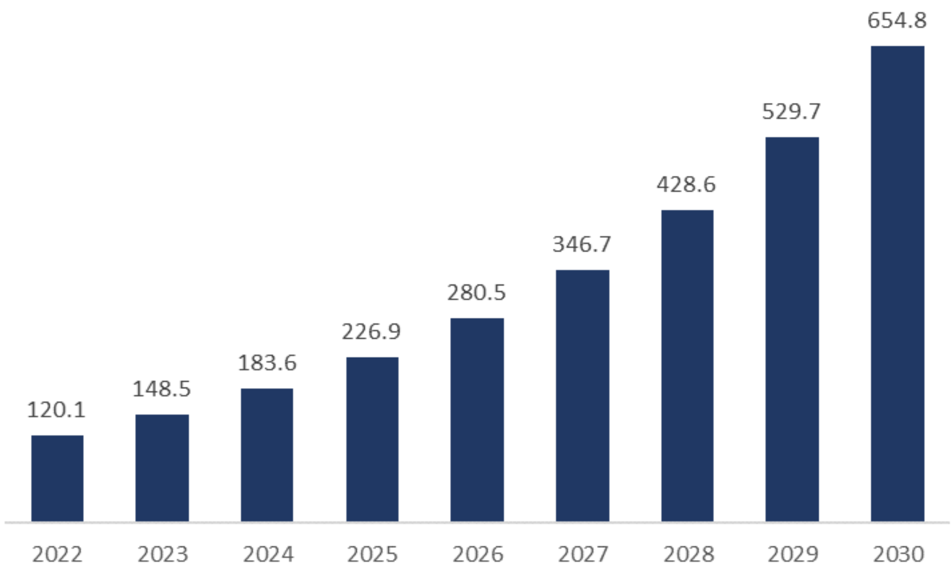
  The world is changing and in order to decarbonize, a reorganization in the energy system is needed, making investments in every industry.

  In addition, more people and organizations worldwide are becoming able to access the internet and go digital thanks to declining device and connection prices. The demand for advanced telecommunication and 5G infrastructure is rising significantly as a result of this expanded access, population expansion and the emergence of the Internet of Things. The COVID-19 pandemic-related shift to remote work has accelerated similar tendencies even in areas where internet access was previously widely available. More usage, in turn, generates an increasing

[27] "Nuveen's Equilibrium Global Institutional Investor Survery", Nuveen, 2023

amount of data, which in turn motivates the collection and analysis of big data. All of these developments are driving up demand for data centers, fiber internet and mobile towers and, as it is shown in Fig. 2.7., the market size of digital infrastructure is expected to reach $655 billion by 2030, with a CAGR of 23.6%.

Fig. 2.7. "Global Digital Infrastructure Market size 2022-2030 in USD billion"



Source: "Global Digital Infrastructure Market", Facts & Factors, 2023

Moreover, along with supply chains being disconnected and rewired, onshoring, nearshoring and friend-shoring are growing phenomena that are being accelerated by geopolitical fragmentation, and this is prompting new investments in ports and other vital logistics infrastructure.

- Middle market opportunities: Mega-cap private equity funds usually have to employ a considerable quantity of debt in order to make investments. On the other hand, middle-market private equity firms have traditionally had less access to debt and have, instead, been forced to drive returns through multiple arbitrage and company growth.
  Moreover, middle-market firms have more potential to grow than bigger ones, due to their smaller size and earlier position in the company life cycle, and in the current environment, this is a trait that is getting more and more valuable.

To summarize, the private equity industry faced numerous challenges in 2023, the most significant of which were rising interest rates, slowing growth and an increasingly difficult fundraising environment. However, among these challenges, private equity firms have shown great resilience and adaptability, employing innovative strategies to cope with changing market conditions. Smaller deals and the use of creative structures have become the norm, reflecting the industry's willingness to adapt to the new reality. Although the future outlook remains uncertain, there have been some encouraging signs, such as the awakening of the public stock market and the easing of recessionary pressure, that could suggest a turnaround in the industry. In addition, as a result of central bank monetary policy, inflation has begun to decline, suggesting that rising interest rates may not become the norm.

For these reasons, as the market continues to evolve, private equity firms must remain cautious, leveraging their skills and experience to meet challenges and seize opportunities as they arise.

Chapter III: KKR-Tim case study analysis

On November 6^{th} 2023 Tim approved by a majority vote (with 11 votes in favor and 3 against) the binding offer submitted by the American fund KKR. The deal involves the acquisition of Tim's fixed network assets (the so-called NetCo), including FiberCop, by a company (Optics BidCo) controlled by KKR.

3.1 Brief overview of the Italian Private Equity sector

As emerged from a recent interview with AIFI president Innocenzo Cipolletta, it has been several years that international institutional investors have been looking at Italy with particular interest, as the landscape is characterized by small and medium-sized companies that need capital to grow, and which today are led by the younger generations, that are becoming more open to this than in past years.

Italian SGRs are playing an important role in this process, in fact they are not only agents of finance but also agents of change, through the imposition of a more transparent and efficient governance system and through the ability to connect different businesses in the best way possible.

The optimism that the Italian private equity and venture capital sector has been developing in recent years is expected to be further consolidated for the first semester of 2024. The forecasts of Deloitte[28] show a less pronounced sensitivity to macroeconomic and geopolitical challenges with respect to the rest of the world and an environment that, within the limits, still remains attractive, thanks to the main transformative trends, such as technological improvements, driven by artificial intelligence. These elements, along with the incentives such as PNRR and Next Generation EU, continue to be an important driver of growth, despite the uncertainty that is characterizing this historical period, and because of this, investment in infrastructure has been increasing significantly in recent years.

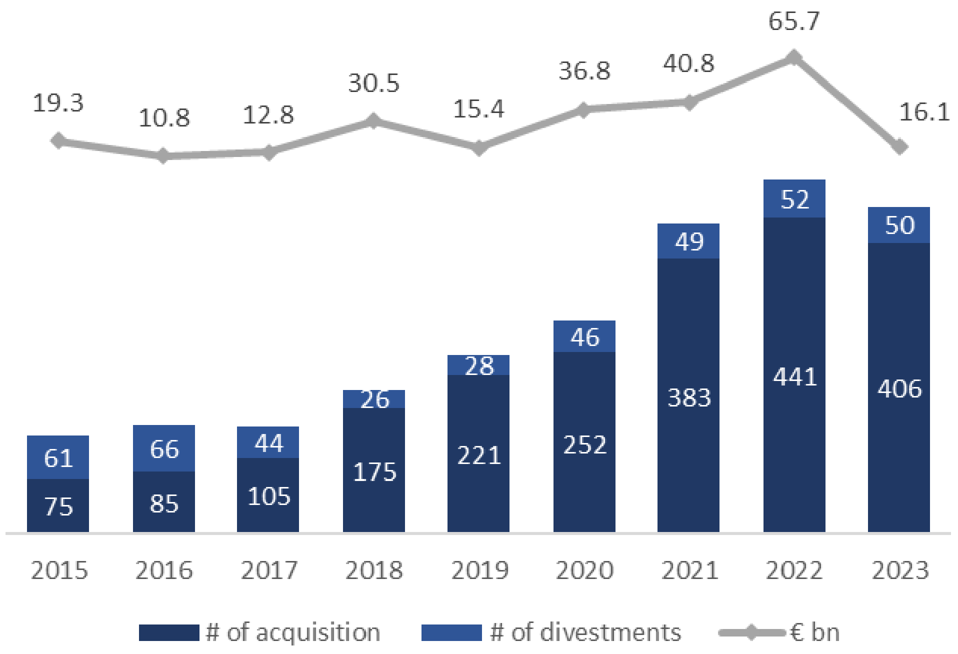
In addition, the emergence of private credit funds, as a substitute source of acquisition financing, in the face of investor demand that is not fully met by the conventional banking system, constitutes a crucial boost to further support the industry in an environment of restrictive monetary policy.

For these reasons, as can be seen in the Fig. 3.1. in the following page, private equity transactions in 2023 did not experience a large decrease in number compared to 2022, but on the other hand the reduction from a value perspective was huge, falling from €65.7 bn in 2022 to €16.1 bn in 2023, highlighting a predilection for middle market opportunities.

[28] “Italy Private Equity Confidence Survey: Outlook for the first semester 2024”, Deloitte, 2024

In fact, it must be remembered that most Italian companies are small and medium-sized and therefore in the moment in which market conditions worsen, it is mainly the large-mega deals that are affected, as they are fewer in number and require particularly favorable market conditions to occur.

Fig. 3.1. "PE transactions trend in Italy[29]"



Source: [Osservatorio Private Equity Monitor PEM]

Regarding the deals, *"during the second half of 2023, the sectors that most attracted the interest of PE operators were Industrial products, and Other professional and social services, followed by Consumer goods and ICT."*[30] The following are some of the deals that produced the largest deal value in the last six months of 2023:

- The acquisition of 9% of Eni Plenitude S.p.A. by Energy Infrastructure Partners, for about €10.0 billion.
- The €1.2 billion acquisition of the 86% of Fabbrica Italiana Sintetici S.p.A. by Bain Capital.
- The €600 million acquisition of Banco BPM's digital payments division by Fondo Strategico Italiano.

In addition, as in the rest of the world, secondaries and funds of funds have become increasingly important in Italy over the last period, so as to make private equity investments more liquid and to continue to attract various investors, even though the rates offered by bond yields are very high.

[29] Only transactions with disclosed deal value
[30] "Italy Private Equity Confidence Survey: Outlook for the first semester 2024", Deloitte, 2024

3.2 Tim's overview

The Tim we know today has its origins in 1923, when the fascist government reorganized the telecommunication industry, dividing the Italian territory into five zones run by different operators. In 1964 out of this fragmentation came SIP (Società Italiana per l'Esercizio Telefonico), which unified the five entities under one company.

However, it was not until 1994, with the merger of SIP with Iritel, Telespazio, Italcable and Sirm, that Telecom Italia was formally born.

The following year, a further split led to the birth of TIM, the mobile telephony division.

Until 1996, Telecom Italia was controlled at 62.5% by STET, a financial holding company controlled by IRI. In preparation for the privatization, Telecom Italia was merged with STET in 1997, and in October of the same year, the government led by Romano Prodi launched the privatization of the company, with the sale of 35.26% of its capital and the almost complete exit of the Treasury Ministry from the shareholding structure. Two years later, Olivetti through Tecnost launched an OPA on Telecom Italia, that led to the control of the company. Tecnost was later merged with Olivetti.

In 2001, a consortium led by Pirelli and Benetton took over the stake in Olivetti held by Bell, the Luxembourg based company at the head of the chain of control, which although it represented a minority (about 23%), allowed the consortium to govern the group. Telecom was at that point controlled by Olimpia, held by Pirelli, Edizione Holding of the Benettons, Banca Intesa, Unicredito Italiano and Hopa.

In 2003, in order to shorten the chain of control, Olivetti was merged with Telecom Italia, and two years later Telecom Italia itself launched an OPA on TIM, strengthening control over its mobile phone division. Then Mediobanca, Generali, Intesa Sanpaolo, Sintonia (Benetton) and Telefonica took over Pirelli's stake in Olimpia, beginning a period of confusion and lack of industrial strategy.

In 2007, Telefonica, the Spanish telecommunications giant, entered the scene by taking over Pirelli's stake in Olimpia, aiming to create a major European player, and established a new vehicle, Telco, which held the usual 23% of the capital, the golden minority that allowed it to govern Telecom.

Between 2013 and 2014, Telefonica took full control of Telco, making it look like everything was set for the final takeover of Telecom Italia, but the Brazilian antitrust authority required the Spanish company to choose between the Italian and South American markets. Telefonica opted for Brazil, gradually exiting Telecom Italia.

At that point in the absence of a major shareholder, Vivendi (the French media and communications group) took over a significant stake in Telecom Italia in 2015, becoming its largest shareholder. Since then, the company has replaced the Telecom Italia brand with Tim and embarked on a new path of growth and innovation, under the leadership of Luigi Gubitosi first, and Pietro Labriola then.

As of today, TIM, with its cutting-edge services and technology, is the first Italian telecommunications operator and is leading the digital transformation in both Italy and Brazil, where it is pioneering 4G coverage.

In 2022, the group's revenue was €15.8 billion, with EBITDA of €5.3 billion, net debt of €25.4 billion and a resulting Net Debt/EBITDA ratio of 4.8x.[31]

TIM provides mobile and fixed-line telephone services and communication and entertainment goods to individuals and families. It also supports small and medium-sized businesses in their digital transformation by offering them a customized portfolio of products.

The core components of TIM Enterprise's end-to-end solutions for businesses and public administrations are the Cloud, the IoT and the Cybersecurity. The company also creates fixed fiber-optic network infrastructure accessible to the entire market, not only in Italy but also worldwide, through Sparkle. These solutions enable the country's digital transformation through the largest data center network in Italy, different partnerships with key organizations and the knowledge of Group companies like Noovle, Olivetti and Telsy.

In addition, TIM has adopted a sustainability plan focusing on the goals of gender equality, digital growth, circular economy and climate strategy to achieve zero net emissions by 2040 and to become carbon neutral by 2030.

In March 2022, following the approval of the 2022-2024 business plan, TIM's business model has changed. The TIM Group has deliberately divided its businesses into ServiceCo and NetworkCo to increase concentration and efficiency.

Broadband Internet, digital television, mobile and landline phone service, IT services and other telecommunications services began to be provided by ServCo, the customer-focused division. This sector is committed to acquiring, keeping and satisfying customers, while keeping up with technical advancements and market trends. Into ServCo, Noovle, Olivetti, Telsy, the consumer business and Tim Brasil were integrated.

On the other side, NetCo is in charge of the essential infrastructure that makes these services possible, which is why the fixed-line business, the domestic wholesale business and the international Sparkle business were transferred to it.

3.3 KKR's overview

The American global investment firm KKR & Co. Inc., also known as Kohlberg Kravis Roberts & Co., was founded in 1976 by Jerome Kohlberg Jr., Henry Kravis and George R. Roberts. The company manages a variety of alternative asset classes, including credit, real estate, infrastructure,

[31] See the Income Statement, the Cash Flow Statement and the Balance Sheet in the Appendix for more information

energy, private equity and hedge funds and over the years it has invested in more than 650 companies, with a total enterprise value of nearly $700 billion.
Among the most important deals of KKR there are the 1989 LBO of RJR Nabisco and the 2007 LBO of TXU, that is the biggest one in history.
The purchase of Tim's network is just the latest Italian deal for KKR. The fund first invested in our country in 2005 with Selenia, a lubricant oil company bought for 835 million euros and resold two years later to Petronas for 1 billion. Then came Sistemia, Argenta, Inaer, Sirti, Industria chimica emiliana, Cmc and Fedrigoni.
Moreover, KKR has a broad experience in digital infrastructure. In fact, starting in 2008, with the creation of the Global Infrastructure Business, KKR began to invest intensively in infrastructure, reaching about 50 billion euros infrastructure assets as of June 2022.
Among its most recent investments in telecommunication infrastructure there are Telxius, Vantage Towers and Open Dutch Fiber.
In addition, in 2021 together with TIM and Fastweb, KKR entered the capital of FiberCop, the new company into which TIM's secondary network and the fiber network developed by FlashFiber were incorporated, acquiring its 37.5% for a price of 1.8 billion euros, based on an Enterprise Value of about 7.7 billion euros and an Equity Value of 4.7 billion euros.

3.4 Italian telecommunications network

Tim has had control of the national telecommunications network for more than 25 years, starting when the company, then known as Telecom Italia, entered the public market in 1997, as a result of the Prodi administration's decision to privatize it.
In recent years, however, the government's focus on the network has shifted: a private monopoly operator was not the best option for a reliable, competitive and effective network. Meanwhile, the operator had accumulated a net debt of about 25 billion euros, making it Europe's most indebted telecommunications company. Thus, the plan was to have a single operator, with the public participation, to build a nationwide fiber-optic network infrastructure. For this reason, Open Fiber was founded with the intention of developing a pure fiber optic technology to offer a wholesale service and give a stand-alone network that could reach up to 20 different operators for each area served, thus increasing offerings and competitiveness. As a result, the main operators managing the network infrastructure in Italy became two: Tim-NetCo and Open Fiber (initially owned by Enel and Cassa Depositi e Prestiti). The two companies were then supposed to merge.
In reality, however, there are several smaller entities besides Tim and Open Fiber. Numerous networks, ranging from the most well-known ones like Fastweb and Vodafone to smaller or more

localized ones like Intred, Retelit, Convergenze and Unidata, are dispersed throughout Italy and offer connectivity to millions of people. Naturally, the figures change significantly when we take into account that Tim, with its ultimate generation network, covers 89.4% of households with over 23 million kilometers of fiber, while Open Fiber connects more than 14 million housing units with 7.6 million kilometers of fiber.

Perhaps Vodafone Italia and Fastweb are two of the most well-known alternative networks, in part because of the dimension of the firms who own them. The first one, with the help of Open Fiber, provides broadband services to 23.6 million households. With a fiber-optic network spanning over 68 thousand kilometers, the second one covers more than 20 million residences and companies nationwide, 8.4 million of which are connected to a Ftth[32] network. To achieve this, Fastweb has invested about €11 billion on its fiber network since its foundation, initially for proprietary Ftth in Milan, Turin, Genoa, Bologna, Rome, Naples and Bari, and subsequently for Fttc[33]. As of October 2023, with 600,000 ultrawideband lines available to other national operators, 22 million households and companies are currently served by Fastweb's wholesale network.

Retelit, a TLC operator with a concentration on the B2B market and 50 thousand kilometers of fiber in Italy, has a network that is not far behind in terms of extension, at least in terms of kilometers. It is owned by Asterion Industrial Partners, a Spanish private equity firm that specializes in TLC infrastructure. It links several critical areas, including important Italian airports, military installations and hospitals, and provides exclusive fiber service to 14,000 client locations.

FibreConnect, as well, focuses on businesses, especially in certain industrial sectors. Although the company, which was founded in 2022, is still young, institutional investors and well-known private equity TLC players like Azimut and Macquarie support it. By 2027, the company hopes to have invested approximately $300 million to wire a thousand industrial areas for 200 thousand work units.

Then there are entities that were local or regional in the past. For instance, Unidata, an operator primarily serving the Lazio area, has expanded nationwide through the acquisition of Twt and through partnerships spread across Italy.

Convergenze is a similar example; it began in the province of Salerno and expanded to include additional regions, such as Trentino, eventually becoming a nationwide operator with a network of 9,200 kilometers.

In the end, Intred, which serves the Lombardy region, expanded in 2023 from 9,500 to 11,000 total kilometers by the end of the third quarter, serving around 100,000 clients in all, including private citizens, commercial clients and public administration.

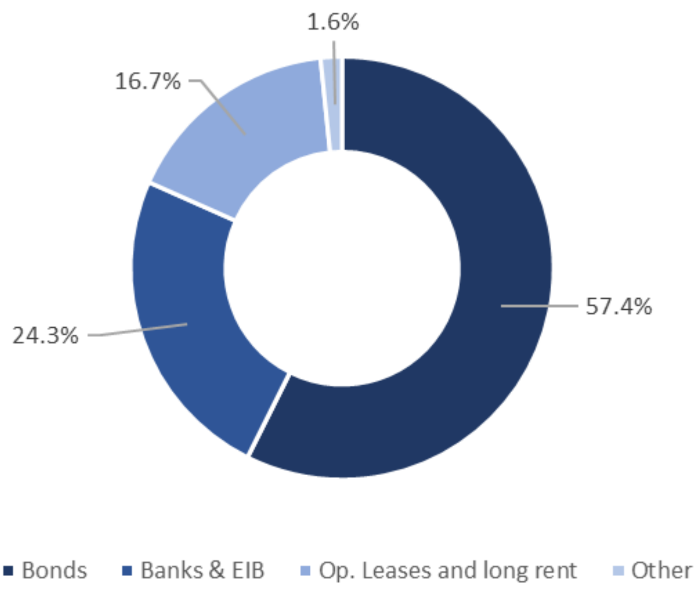
[32] Fiber to the home
[33] Fiber to the cabinet

3.5 Overview of the deal

TIM is now facing severe financial problems, with €25.4 billion in net debt and a 4.8x Net Debt/EBITDA ratio. For this reason, along with the company's declining income and profitability, on October 2022 S&P decided to downgrade TIM's debt rating from BB- to B+, making access to new debt increasingly difficult and interest payments increasingly expensive.

In this situation, the planned acquisition by the international private equity company KKR seems not only appropriate, but also crucial, as the cash injection from this transaction will be essential for debt repayment and reducing TIM's financial burden.

Fig. 3.2. "Debt structure[34]"



Source: [Tim Website]

The TIM group's large amount of debt has been marked by strategic financial decisions and market dynamics dating back to the beginning of the new millennium. As can be seen from the Fig. 3.2., more than 50 % of this debt consists of bonds, most of which were issued between 2001 and 2005. Indeed, during that period, the telecommunications industry faced significant challenges, due to the intense competition and continuous technological innovations. For this reason, most telecommunications companies began to take on debt in order to meet the growing demand for internet and mobile services. Unfortunately, however, as a result of the Internet bubble burst, the market began to slow its growth and most companies found themselves with a high level of debt, due to the money spent on developing new infrastructure and technologies.

[34] As of 30 September 2023

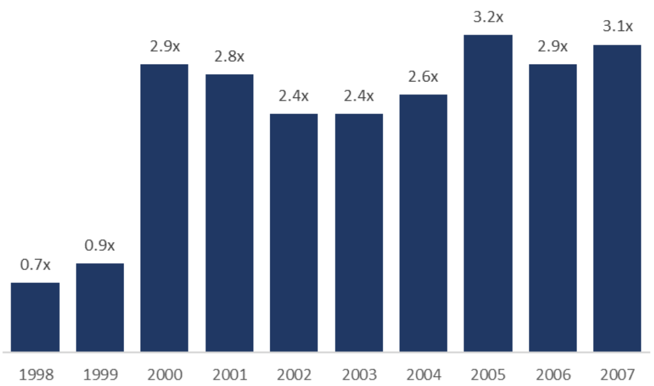
Moreover, the company's high level of debt is also the result of the Olivetti's LBO operation of Telecom Italia in 1999. This transaction was strongly desired by Olivetti because the company was losing a lot of money, due to the loss of market share in the personal computer division. Therefore, the company's management thought of diversifying the business by launching a hostile takeover for Telecom Italia. The main problem with this deal, however, was that Olivetti's market valuation was six times lower than the one of Telecom Italia. For this reason, the leverage used was extremely high, and among the largest components there were:

- €22.5 bln of Syndacated loan package
- €13.7 bln in new Tecnost bonds

Telecom Italia shares were acquired at a 42% premium, valuing them at €11.5 compared to the market valuation of €8.1 and this is the reason why 52% of shareholders accepted the offer.

Subsequently, in July 2001, there was another LBO this time by Olimpia SPA, a company owned by Pirelli SPA, aimed at acquiring Olivetti, and this led to a further worsening of Telecom Italia's financial situation.

Fig. 3.3. "Net Debt/EBITDA ratio"



Source: Slides "M&A and Investment Banking" De Vecchi

Unfortunately, in the following years the company failed to increase its EBITDA as had been planned before the LBO and therefore, as shown in the Fig. 3.3., the debt burden continued to grow.

KKR's new LBO, therefore, appears to be a key operation, as there are numerous benefits for both companies from the transaction. For KKR, the deal is very important because, at such a difficult time for private equity industry, it represents an ideal transaction since telecom service infrastructure is a sector characterized by constant, predictable and inflation-linked Free Cash Flows. On the other hand, for TIM, the capital injection by KKR, in addition to ensuring better management of the large debt, could enable greater technological innovation and investment in digital infrastructure.

"The binding offer values NetCo (excluding Sparkle) at an Enterprise Value of 18.8 billion euros, without considering any upsides associated to the potential transfer of part of the debt to NetCo and

to earn-outs linked to the occurrence of certain conditions that may increase the value up to 22 billion euros"[35]

The closing of the transaction is scheduled for the summer 2024 and includes price adjustments based on certain parameters such as liquidity, transferred debt and working capital. As for the earn-out, instead, this is mainly related to two factors:

- the completion of a potential NetCo consolidation transaction within 30 months of the closing date, as well as the potential introduction of regulatory changes that could benefit NetCo;
- the introduction and implementation of sector incentives by December 31st 2025.

This transaction will enable TIM to reduce its financial debt by approximately €14 billion, bringing the Net Debt/EBITDA ratio below 2x.

The offer on Sparkle, on the other hand, is currently considered unsatisfactory.

In order to protect the strategic interests of the State, alongside KKR in the acquisition of NetCo there will be as shareholders both directly the Treasury, with a 20% stake and the F2i fund (through the vehicle F2i-Rete Digitale) with a stake of 10-15%. On the other hand, KKR's co-investors will include Canada Pension Plan Investment Board and the Abu Dhabi sovereign wealth fund.

3.6 Trading multiples

Leading European telecommunications companies from 12 different countries were considered for the reference panel in the Fig. 3.4 in the next page: Spain (Telefonica SA), England (BT Group PLC and Vodafone Group PLC), Norway (Telenor ASA), Belgium (Proximus SADP), Germany (Deutsche Telekom AG), Sweden (Telia Co AB), France (Orange SA), Netherlands (Koninklijke KPN NV), Finland (Elisa Oyj), Austria (Telekom Austria AG), Greece (Hellenic Telecommunications Or) and Switzerland (Swisscom AG).

The average values of 2022 reported on Bloomberg Terminal were used as reference values for the calculation of trading multiples, thus considering doing the valuation on January 1st 2023[36].

Among them, the average EV/EBITDA was used, keeping Elisa Oyj out of the panel because it had very different multiples from other companies. Multiples on the equity side were not considered because they also depend on the capital structure and show very different values. On the asset side, on the other hand, neither the EV/Sales was considered, because as discussed in Chapter 2 it depends on many variables including cost structure, which is very different from company to company, nor the EV/EBIT multiple, because it depends on D&A and again it is very different from company to

[35] *"TIM: approved by the Board of Directors KKR's offer on NetCo"*, TIM website, 2023

[36] The same will be done for the LBO model, since the non-binding offer was submitted in the first half of 2023 and the binding offer in October 2023. Therefore, considering January 1st 2024 as the reference date would not have been correct.

company, as some own their physical infrastructure and others lease it; in addition this multiple also depends on the depreciation policy adopted (straight-line or accelerated for example).

Considering NetCo's EBITDA of €1.5 billion for 2022 and 2023 (from a document sent by KKR to some Italian banks[37]), the implied EV/EBITDA (12.5x) resulting from TIM's valuation in KKR's offer (€18.8 billion excluding earn-outs) is significantly higher than that resulting from the average of the reference panel (5.3x). That value appears to be closer to what TIM's multiple actually traded at in 2022 (6.5x). For this reason, it is essential to analyze transaction multiples of precedent infrastructure carve-outs in the telecommunication industry, as they are more meaningful.

Fig. 3.4. "Trading Multiples 2022A"

Company	Country	EV/SALES 2022A	EV/EBITDA 2022A	EV/EBIT 2022A	P/E 2022A	P/BV 2022A
Telefonica SA		1.90x	3.40x	5.53x	2.81x	1.63x
BT Group PLC		1.60x	4.57x	11.56x	11.57x	0.97x
Vodafone Group PLC		1.98x	4.68x	16.62x	16.23x	0.65x
Telenor ASA		2.96x	5.53x	16.30x	29.31x	6.30x
Proximus SADP		1.39x	4.20x	11.90x	10.28x	1.53x
Deutsche Telekom AG		2.43x	6.52x	20.75x	21.96x	2.10x
Telia Co AB		2.51x	5.51x	14.56x	12.68x	1.80x
Orange SA		1.56x	5.93x	26.24x	12.71x	1.02x
Koninklijke KPN NV		3.65x	5.80x	10.36x	10.31x	4.02x
Elisa Oyj		4.96x	14.22x	23.03x	24.13x	6.94x
Telekom Austria AG		1.52x	4.14x	9.38x	8.26x	1.20x
Hellenic Telecommunications Or		2.43x	5.48x	10.00x	16.45x	3.72x
Swisscom AG		3.13x	7.82x	16.94x	14.79x	2.51x
Average Ex-Elisa Oyj		**2.26x**	**5.30x**	**14.18x**	**13.95x**	**2.29x**
Median		**2.43x**	**5.51x**	**14.56x**	**12.71x**	**1.80x**

Source: Own elaboration on Bloomberg Terminal data

3.7 Telecom infrastructure carve-outs

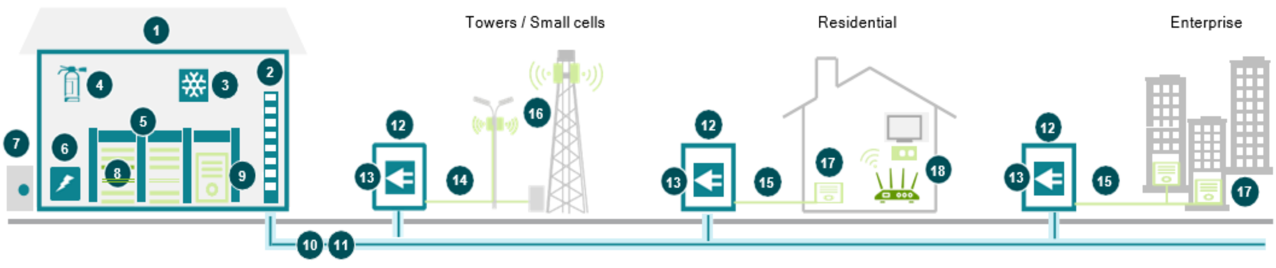
In recent years, the digital sector has been involved in numerous carve-outs of its infrastructural assets. Telco infrastructure carve-out is a two-stage complex and intricate process. The first step is to carve-out the infrastructure into a related company of which the Telco owns 100% (the NetCo).

[37] Values were taken from the CorCom paper "Tim, Netco's financials 2023-2031 in a Kkr paper" and the 2022 EBITDA value was assumed to be the same as the 2023 value

The aim is to establish a firm that can work independently and disclose its financial information to outside investors. In the second phase, the affiliate must either be sold or made available to outside investors. Then after first partnering with a financial investor, some telecommunications companies sell their remaining share to an independent Tower company. This is what happened with Telxius, Telefonica's infrastructure company, that sold its 40% to KKR in 2017, then 9.99% to Pontegadea in 2018 and in the end the remaining part to American Tower Corporation in 2021.

The following figure describes the division of assets between NetCo and ServCo.

Fig. 3.5. "Division of assets between NetCo and ServCo"



Inside plant – Type of asset	Ownership
1 Exchange/ Point of presence (PoP)	Passive equipment: Netco
2 Optical distribution frame	
3 Cooling system	
4 Emergency equipment	
5 Racks	
6 Power equipment	
7 Contractual right to occupy PoP area	
8 Physical servers	Active equipment: Servco
9 Optical line termination (OLT)	

Outside plant – Type of asset	Ownership
10 Ducts	Passive equipment: Netco
11 Fibre cabling	
12 Outdoor cabinet	
13 Optical splitter and distribution point	
14 Fibre backhaul to the site	Servco / Netco
15 Fibre drop/ last mile to the premise	
16 Cell antennas/ small cell antennas	Active equipment: Servco
17 Optical network terminal (ONT)	
18 Customer premises equipment (CPE)	

Source: "The Rise of the Netcos", Deloitte, 2021

The financial and strategic reasons behind this decision include:

- Increasing ROIC or shareholder value: assets like the copper network that are no longer profitable or that are expected to depreciate quickly would be the only ones whose removal would increase ROIC or shareholder value. On the other hand, the profitability of FTTH and mobile towers is greater than that of the telecoms service industry as a whole. Consequently, a carve-out has the risk of reducing the shareholder value of the core service firm, even if it offers the possibility to increase the value of current assets. However, it doesn't seem that the recent carve-outs of telecom firms have significantly decreased shareholder value.
- Debt reduction.
- Optimizing OPEX through infrastructure sharing.

- Decrease CAPEX requirements and investment financing by opening NetCo capital to financial partners.
- Making companies more flexible through vertical disintegration, which, however, on the other hand, involves the removal of barriers to entry.
- Enable greater interactional consolidation.

Moreover, a NetCo is capable of being an extremely lean and efficient company. Indeed, it is much more complicated to provide telecommunications services to millions of customers and small businesses than to enter into wholesale agreements with other telecommunications companies. For this reason, NetCos need fewer IT systems and employees.

In addition, by not being forced to purchase spectrum or obtain licenses, NetCos can avoid providing regulatory obligations, such as emergency call support, and providing connectivity to a specific percentage of the population, thus being able to focus on diversifying their infrastructure portfolio and increasing their geographic coverage, by acquiring existing assets from Telcos or growing organically.

"These challenges will push the infrastructure to become fully separated from the services and will definitely question the existing business models, relying on revenue growth and innovation accelerators."[38]

3.8 Transaction multiples

As was shown in section 3.6, the average value of the EV/EBITDA trading multiple for traditional European telecom operators is 5.3x. This value is much lower than the implied one (12.5x) resulting from KKR's bid for Tim's NetCo.

This difference is due to the fact that KKR launched an offer only for Tim's NetCo, i.e. the company that focuses on telecom infrastructure ownership, and not also for the ServCo. This valuation disparity is mainly because: *"NetCos are regarded as low-risk businesses that will generate steady cash flows over long periods by leasing their infrastructure to service providers. Serving a small number of customers on long-term (often inflation-protected) contracts, NetCos are relatively straightforward and predictable businesses that share many similarities with utilities – only with less regulation."*[39]

Moreover, Deloitte's analysis also shows that, in general, as a result of the separation of NetCo from ServCo, the integrated value of TelCo will be 20-40% higher than before, implying no loss of value for the company.

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[38]"Beyond carve-out: How telecom infrastructure carveouts are transforming industry landscape?", Sofrecom, 2022

[39]"The Rise of the Netcos", Deloitte, 2021

For this reason, considering the case of KKR's acquisition of TIM, it is more appropriate to use the transaction multiples summarized in the Fig. 3.6, as they represent transactions similar to it. As can be seen, the multiples are, in fact, significantly higher than the panel of trading multiples and even higher than the implied one (12.5x) derived from KKR's offer, with an average EV/EBITDA value of 14.9x. This is why the price offered for the acquisition of Tim's NetCo is considered by the market to be slightly lower than expected. However, considering within the EV offered also the possible earn-outs we would arrive at an implied multiple of 14.7x, perfectly in line with the average of transaction multiples. This is the reason why I disagree with the higher valuation demanded by Vivendi, Tim's largest shareholder, for the sale of the company, also considering Tim's poor financial condition.

Fig. 3.6. "Transaction multiples[40]"

Target Company	Target Country	Buyer	Announcement Date	% Acquired	EV/EBITDA
Vantage Tower AG		Vodafone, KKR and GIP	Nov-22	81.7%	16.1x
GD Towers Holding		DigitalBridge Group and Brookfield	Jul-22	51%	18.6x
FiberCop S.p.A.		KKR	Mar-21	37.5%	9.0x
MEO FTTH		Morgan Stanley Infrastructure	Dec-19	49.9%	19.5x
Telxius Telecom SA		KKR	Feb-17	40%	11.4x
Average					**14.9x**
Median					**16.1x**

Source: own elaboration

3.9 Analysis of the LBO model

Using the limited data available on Tim's NetCo, as it was established only in 2022, a simplified LBO model was created to calculate a rough IRR and MOIC of KKR's transaction. As for general assumptions, the 2023E and 2031E EBITDA values found in a KKR document issued to some Italian banks[41] were considered. The model was created considering January 1st 2023 as the reference date and 2031 as the exit year, thus considering an investment period of 9 years, in line with the average one of private equity funds in infrastructure. For the sake of simplification, LTM EBITDA was considered equal to EBITDA 2023E, as there is no data on this. Considering KKR's offer of €18.8

[40] Vantage Towers AG (Vodafone), GD Towers Holding (Deutsche Telekom), FiberCop S.p.A. (Tim), MEO FTTH (Altice Portugal), Telxius Telecom SA (Telefonica)

[41] "Tim, Netco's financials 2023-2031 in a Kkr paper", CorCom, 2022

billion (excluding any earn-outs) and LTM EBITDA of €1.5 billion, the implied entry multiple was 12.5x. This value was also considered as the exit multiple, since this practice, as described in Chapter 2, is used in most LBO models. Transaction and financing fees were assumed to be 2% and 0.5%, respectively, considering the average value of previous transactions. Cash to Balance Sheet was considered equal to €0, while as for the values of the equity owned by the Italian Treasury (20%) and the Italian fund F2i (12.5%), newspaper leaked values were taken as reference, resulting in a sponsor's implied ownership of 67.5%.

Fig. 3.7. "Entry Valuation and Transaction Assumptions"

Entry Valuation	
LTM EBITDA	€1,500
Implied Entry Multiple	12.5x
Purchase Enterprise Value	**€18,800**

Transaction Assumptions	
Transaction Fees	2.0%
Financing Fees	0.5%
Cash to B/S	-
Treasury Equity	20.0%
F2i Equity	12.5%
Exit Multiple	12.5x

Source: own elaboration

Regarding the value of the debt used, € 8.5 billion was taken as a reference, as reported by a Barclays broker report found on Bloomberg Terminal, and it was assumed to belong entirely to Term Loan A (bank debt). This value resulted in a Debt/EBITDA ratio of 5.7x and a percentage equal to about 45% of the Enterprise Value (with equity equal to 55%), a value in line with that of current deals described by the Fig. 2.5 in Chapter 2. All of this resulted in a Total Uses of €19.2 billion, as described by the Sources & Uses Table in the Fig. 3.9.

Fig. 3.8. "Debt Assumptions"

Debt Assumptions		
Tranche	**x EBITDA**	**€ Amount**
Term Loan A	5.7x	€8,500
Total Debt	**5.7x**	**€8,500**

Fig. 3.9. "Sources & Uses Table"

Sources & Uses			
Sources	**€ Amount**	**Uses**	**€ Amount**
Term Loan A	€8,500	Purchase Enterprise Value	€18,800
Total Debt	**€8,500**	Cash to B/S	-
F2i Equity	€1,340	Transaction Fees	€376
Treasury Equity	€2,144	Financing Fees	€43
Sponsor Equity	€7,235	**Total Uses**	**€19,218**
Total Equity	**€10,718**		
Total Sources	**€19,218**	*Check*	-

Source: own elaboration

Considering a value of EBITDA in 2031 of €2.5 billion and assuming that in the exit year the Debt/EBITDA ratio falls to a value of 2.5x (personal assumption), it would mean that the value of Debt in 2031 should be €6.25 billion, so the total amortization of debt should be €2.25 billion over 9 years, implying an amortization rate of 3% per year.

Due to the absence of data, Levered Free Cash Flow was not calculated by starting from Net Income, adding D&A and subtracting CAPEX, delta NWC and Debt Amortization, but a very strong assumption was used, which is that there is no production of extra cash, as it is used entirely to amortize debt, pay interest and CAPEX investments.

Therefore, to calculate the exit Enterprise Value, the value of the exit EBITDA (€2.5 billion) was multiplied by the exit multiple (12.5x). From this value, the final debt value of €6.25 billion was subtracted, considering a final value of cash of 0 euro, to arrive at the exit equity value. Then multiplying this value by the implied sponsor ownership of 67.5%, resulted in exit proceeds to sponsor of €16.9 billion. To calculate the IRR and MOIC, this value was then simply considered in comparison with the initial value of the equity invested by the sponsor of €7.2 billion, since there are no other cash outflows/inflows over the years, resulting in an IRR value of 9.9% and MOIC of 2.3x, as shown in Fig. 3.10.

Fig. 3.10. "Return Analysis"

Exit Valuation	2022A	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Exit LTM EBITDA										€2,500
Exit Multiple Assumption										12.5x
Exit Enterprise Value										€31,333
Less: Net Debt										€6,250
Exit Equity Value										**€25,083**
Sponsor Implied Ownership %										*67.5%*
Exit Proceeds to Sponsor										**€16,931**

Cash (Outflows) / Inflows	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
	12/31/22	*12/31/23*	*12/31/24*	*12/31/25*	*12/31/26*	*12/31/27*	*12/31/28*	*12/31/29*	*12/31/30*	*12/31/31*
Exit Year 2031	**(€7,235)**	-	-	-	-	-	-	-	-	€16,931

IRR	**9.9%**
MOIC	**2.3x**

Source: own elaboration

The IRR value resulting from this transaction is, therefore, perfectly in line with the average target returns of infrastructure funds, which are usually between 8 and 12 percent. It must be remembered, however, that this model is super simplified and was made only for the purpose of getting a rough idea of the possible returns to be expected from this operation.

Moreover, in this way it becomes clear the difficult period for the private equity industry because referring, for example, to the return of a 10-year Italian BTP, the value is about 4% and compared to

an investment in a private equity fund is much better from a risk-return point of view and, above all, such an asset enjoys much more liquidity than the share of a LP within a fund.
In addition, the key role of the entry and exit multiples within an LBO model emerges from the Fig. 3.11. The table summarizes the values of MOIC and IRR as the entry and exit multiples change over a range from 9.5x to 15.5x. Acceptable values of the model's two key outputs are highlighted in green, while those below typical infrastructure investment targets are highlighted in red.
As can be seen, in the case where the exit multiple was higher than the entry multiple, for example, considering 13.5x and 12.5x respectively, the IRR would increase by more than 1%, from a value of 9.9% to a value of 11.1%. On the other hand, in the case in which the exit multiple was lower than the entry one, for example 11.5x, the investment would still be within the target limits of infrastructure investment, with an IRR of 8.6%.

Fig. 3.11. "IRR and MOIC Sensitivity Analysis"

Internal Rate of Return (IRR)

		Exit Multiple						
		9.5x	10.5x	11.5x	12.5x	13.5x	14.5x	15.5x
	9.5x	12.4%	14.1%	15.6%	17.0%	18.2%	19.3%	20.4%
	10.5x	9.7%	11.3%	12.8%	14.1%	15.3%	16.4%	17.5%
Entry Multiple	11.5x	7.5%	9.1%	10.5%	11.8%	13.0%	14.1%	15.1%
	12.5x	5.7%	7.2%	8.6%	9.9%	11.1%	12.1%	13.1%
	13.5x	4.1%	5.6%	7.0%	8.3%	9.4%	10.5%	11.5%
	14.5x	2.7%	4.3%	5.6%	6.9%	8.0%	9.1%	10.0%
	15.5x	1.6%	3.1%	4.4%	5.6%	6.8%	7.8%	8.8%

Multiple on Invested Capital (MOIC)

		Exit Multiple						
		9.5x	10.5x	11.5x	12.5x	13.5x	14.5x	15.5x
	9.5x	2.9x	3.3x	3.7x	4.1x	4.5x	4.9x	5.3x
	10.5x	2.3x	2.6x	2.9x	3.3x	3.6x	3.9x	4.3x
Entry Multiple	11.5x	1.9x	2.2x	2.5x	2.7x	3.0x	3.3x	3.5x
	12.5x	1.6x	1.9x	2.1x	2.3x	2.6x	2.8x	3.0x
	13.5x	1.4x	1.6x	1.8x	2.0x	2.3x	2.5x	2.7x
	14.5x	1.3x	1.5x	1.6x	1.8x	2.0x	2.2x	2.4x
	15.5x	1.1x	1.3x	1.5x	1.6x	1.8x	2.0x	2.1x

Source: own elaboration

Therefore, even considering a downgrade scenario, from KKR's point of view the transaction should be profitable.

3.10 Final considerations

Despite the binding offer signed on November 6th 2023 the stock price of Tim has not reacted much. One of the reasons is that the price offered (€18.8 billion) was below market expectations (€21 billion). However, the offer does not include the sale of Sparkle and the potential earn-outs are higher than expected (€3.2 billion vs €2 billion), thus bringing the final possible value to be in line with previous similar transactions.

Fig. 3.12. "Telecom Italia Stock"

Source: Borsa Italiana

Another key concern is Vivendi's position, Tim largest shareholders, that has consistently indicated publicly that it considered the NetCo to be worth more than €30 billion. Moreover, in a note Tim announced that it has received *"the notification of an ordinary writ of summons from Vivendi, in which it challenges the legitimacy of the board resolution taken by the company on November 5th, by which the sale of the so-called Netco was approved."* [42] The French media company challenged the manner of approval of the transaction, which involved only the board of directors without going through the shareholders meeting and the failure to activate the procedure provided for transactions with related parties.

[42] "TIM: ricevuto atto di citazione di Vivendi, avanti con operazione NetCo", Tim Website, 2023

In addition, the Italian government's possible use of Golden Power also contributed to this situation of uncertainty. However, in January 2024 came the green light from the government, on the condition that it will participate in the definition of NetCo's strategic choices, through the direct participation of the Treasury and the F2i fund.
Moreover, as can be seen from the Fig. 3.12. on the previous page, on March 7th 2024, following the presentation of the new business plan, TIM's stock dropped 24%. What caused the massive selling of the stock was a surprise about the debt numbers (€1 billion more than the end 2024 baseline), which disoriented analysts and their forecasts causing uncertainty, and in uncertainty, as is well known, the market first sells, then if anything regrets.

Conclusion

Private equity is assuming an increasingly important role within the economic-financial landscape since, unlike the use of bank loans, it offers not just capital injection but also invaluable expertise, knowledge transfer, managerial support and access to extensive networks crucial for business growth and development.

Italy has become a significant player in the global private equity landscape, driven by the importance, size and dynamism of its economy, with many small and medium-sized companies that need to optimize bank-dominated sources of financing.

Meanwhile, however, as was pointed out in Chapter 2, the geopolitical risk, with the conflicts between Russia-Ukraine and Israel-Hamas, and the significant tension between China and the United States, the rapid reopening of post-pandemic economic activity and the expansionary monetary policies aimed at coping with Covid-19, have determined a significant increase in inflation in recent years. For this reason, the intervention by the ECB and the Fed to raise key interest rates was necessary and consequently, the cost of debt has risen sharply, resulting in a higher cost for leveraged buyouts.

For this reason, in Italy the value of total deals in 2023 was significantly lower compared to 2022 and 2021, although the number remained almost unchanged, thus showing greater resilience for middle market opportunities. In addition, rising interest rates have also led to a decline in valuations, making it more difficult for private equity firms to exit their investments at a profit and, therefore, many continuation funds have spread, in order to avoid unsatisfactory exits and realize greater returns when economic conditions improve.

All of this led to a reduction in IRRs and MOICs of major deals, prompting investors to switch to other forms of investment including primarily capital credit, which is characterized by a better risk/return profile.

Despite this, the private equity and venture capital industry seems to have found a way to live with this context, continuing to represent an important lever of growth and stability for the Italian market. The private equity market has indeed remained active with an increased focus on take-private transactions, taking advantage of low valuations, and especially on add-on acquisitions, in order to realize inorganic increases in sales and EBITDA and to create large, high-multiple platforms from small, lower-multiple acquisitions.

Moreover, as has already been pointed out in Chapter 2, investments in infrastructures have experienced a boom, because compared to other asset classes, they offer inflation-linked cash flows that are less dependent on economic cycles, as they are critically important to both the economy and

our daily lives. Among these, digital infrastructures are increasingly in demand as a result of the development of artificial intelligence, 5G and the Internet of Things.
Inflation, however, has begun to decline, and as was pointed out by the governor of the bank of Italy Fabio Panetta, an interest rate cut by the ECB now seems inevitable. This will certainly bring a positive environment for private equity funds, that will be able to start using a lot of debt for their transactions again and, more importantly, exit their investments counting on higher exit valuations. In the meantime, however, despite the current macroeconomic situation, the acquisition of Tim's NetCo by the American fund KKR has almost been completed.
As shown in Chapter 3, the deal turns out to be a key transaction for both companies, since for KKR, at such a peculiar time for the private equity industry, it represents an ideal transaction because telecommunications services infrastructure is a sector characterized by constant, predictable and inflation-linked Free Cash Flows. On the other hand, for TIM, the capital injection by KKR, in addition to ensuring better management of the large debt, could enable greater technological innovation and investment in digital infrastructure.
Moreover, this transaction is part of a much larger phenomenon that is affecting most telecommunications companies, which are reorganizing themselves into two entities: the ServCo, the customer-focused division, and the NetCo, the division that deals with infrastructures, that in most cases is being sold through a carve-out transaction. Among the companies involved in this phenomenon in recent years there have been, in addition to Tim, Vodafone, Deutsche Telekom, Telefonica and Altice Portugal (Portugal's leading telecommunications company).
Underlying this trend, as has already been pointed out throughout the thesis, is primarily the goal of debt reduction, cost optimization and growth in shareholder value, through an exclusive focus on the customer with the ServCo.
Tim's NetCo will be acquired for 18.8 billion euros (excluding earn-outs), implying an entry multiple EV/EBITDA of 12.5x. At first glance, this seems an excessive valuation, as it is much higher than the average trading multiples of the largest European telecom companies, equal to 5.3x. In this regard, it is crucial to remember that the acquisition concerns only the NetCo of Tim, and for this reason, analyzing similar past carve-outs, it can be seen that this acquisition multiple turns out to be even lower than the average one, equal to 14.9x. However, considering within the EV offered also the possible earn-outs we would arrive at an implied multiple of 14.7x, perfectly in line with the average of transaction multiples. This is the reason why I disagree with the higher valuation demanded by Vivendi, Tim's largest shareholder, for the sale of the company, also considering Tim’s poor financial condition.

Obviously, the value of such transaction does not lie in operating this business as a stand-alone activity, but rather in the consolidation opportunities it may offer. The consolidation of assets with a complementary base would greatly improve market position and bargaining power, thus allowing for price control. It is for this reason that KKR has not only limited itself to the LBO of Tim's NetCo, but also to other acquisitions such as that of Vantage Towers AG, FiberCop S.p.A (37.5%) and Telxius (40%) for example.

Moreover, in KKR's plans there is a merger with OpenFiber, the Italian fiber-optic company controlled at 60% by Cassa Depositi e Prestiti and at 40% by the Australian fund Macquarie, in order to create a single Italian network.

As shown by the analysis of the simplistic LBO model in Chapter 3, considering an EV/EBITDA entry and exit multiple of 12.5x and a debt value of €8.5 billion (5.7x EBITDA), corresponding to about 45% of the Enterprise Value of Tim's NetCo, the final IRR, considering the exit in 2031 and with the strong assumption that there is no extra cash generation during the investment years, turns out to be 9.9%. This value is perfectly in line with the target average for infrastructure funds, which is usually between 8 and 12 percent. Having then also conducted a sensitivity analysis as the entry and exit multiples change, it turned out that even in the case in which the exit multiple is lower than the entry one, 11.5x and 12.5x respectively, the final IRR would still be within the target limits of infrastructure investments, with a value of 8.6 percent. This scenario, however, is very unlikely as multiples values are very low at the moment and, since they are cyclical, we expect them to rise in the coming years. Moreover, if the merger with OpenFiber goes through, certainly the exit multiple would be higher than the entry one. Therefore, considering the entry one to be 12.5x and the exit one to be 13.5x, the IRR would be equal to 11.1%. Considering an even better situation with a exit multiple of 14.5x or 15.5x, the IRR would even be higher, 12.1% and 13.1% respectively. It is crucial to remember that, as was already mentioned in Chapter 3, this model is super simplified and was made only for the purpose of getting a rough idea of the possible returns that can be expected from this operation. Therefore, the final values of IRR and MOIC could be very different, since, for example, the payment of an early dividend in case there is extra cash generation during the investment years would increase IRR, as would an additional debt reduction through a cash sweep.

Moreover, to conclude, it is crucial to point out that carve-outs can create significant value for a company, but success is not always guaranteed, and a carve-out that goes wrong can cause substantial damage to both the new company and the company from which it is carved out.

"Companies that do not strategically and operatively plan a carve-out in detail oftentimes end up destroying substantial value – both for the new standalone and the remaining entity."[43]

[43] "The carve-out challenge: A roadmap for success", Roland Berger, 2019

Therefore, in order to enable NetCos and ServCos to differentiate themselves and take advantage of growth opportunities, a line between them must be drawn. NetCos need to focus on maintaining and diversifying their network infrastructure, increasing coverage, increasing network speed and resilience, and developing their network infrastructure. To do this, they will have to innovate by working with larger ecosystems of suppliers and embrace new technology.
On the other hand, to get closer to consumers and corporate clients, ServCos should focus on the application and customer layer, and in order to distinguish themselves from competitors, they will also need to make several investments in innovation.

Only by keeping this in mind, Tim's operation will be a success for both parties and carve-outs within the telecommunications sector will continue to be an important source of value.

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Appendix

"TIM Income Statement"

(million euros)	Notes	Year 2022	of which with related parties	Year 2021	of which with related parties
Revenues	26)	**15,788**	171	**15,316**	62
Other income	27)	213	3	272	12
Total operating revenues and other income		**16,001**		**15,588**	
Acquisition of goods and services	28)	(7,239)	(491)	(6,550)	(497)
Employee benefits expenses	29)	(3,180)	(100)	(2,941)	(108)
Other operating expenses	30)	(816)	-	(1,502)	(3)
Change in inventories		22	-	10	-
Internally generated assets	31)	559	-	475	-
Operating profit (loss) before depreciation and amortization, capital gains (losses) and impairment reversals (losses) on non-current assets (EBITDA)		**5,347**		**5,080**	
of which: impact of non-recurring items	42)	(682)		(1,143)	
Depreciation and amortization	32)	(4,777)	(33)	(4,490)	(50)
Gains (losses) on disposals of non-current assets	33)	36	-	1	-
Impairment reversals (losses) on non-current assets	34)	-	-	(4,120)	-
Operating profit (loss) (EBIT)		**606**		**(3,529)**	
of which: impact of non-recurring items	42)	(682)		(5,263)	
Share of losses (profits) of associates and joint ventures accounted for using the equity method	9)	23	-	38	-
Other income (expenses) from investments	35)	206	-	126	-
Finance income	36)	1,115	-	1,124	1
Finance expenses	36)	(2,538)	(12)	(2,274)	(18)
Profit (loss) before tax from continuing operations		**(588)**		**(4,515)**	
of which: impact of non-recurring items	42)	(490)		(5,144)	
Income tax expense		(2,066)	-	(3,885)	-
Profit (loss) from continuing operations		**(2,654)**		**(8,400)**	
Profit (loss) from Discontinued operations/Non-current assets held for sale		-		-	
Profit (loss) for the year	37)	**(2,654)**		**(8,400)**	
of which: impact of non-recurring items	42)	(2,437)		(8,653)	
Attributable to:					
Owners of the Parent		**(2,925)**		**(8,652)**	
Non-controlling interests		271		252	

(euros)	Year 2022	Year 2021
Earnings per share:		
Basic and Diluted Earnings Per Share (EPS)		
Ordinary Share	(0.14)	(0.40)
Savings Share	(0.14)	(0.40)
of which:		
from Continuing operations attributable to Owners of the Parent		
Ordinary Share	(0.14)	(0.40)
Savings Share	(0.14)	(0.40)

“TIM Cash Flow Statement”

(million euros)	Notes	Year 2022	Year 2021
Cash flows from operating activities:			
Profit (loss) from continuing operations		(2,654)	(8,400)
Adjustments for:			
Depreciation and amortization		4,777	4,490
Impairment losses (reversals) on non-current assets (including investments)		9	4,118
Net change in deferred tax assets and liabilities		2,645	3,894
Losses (gains) realized on disposals of non-current assets (including investments)		(242)	(120)
Share of losses (profits) of associates and joint ventures accounted for using the equity method		(23)	(38)
Change in employee benefits		156	(83)
Change in inventories		(35)	(39)
Change in trade receivables and other net receivables		(81)	257
Change in trade payables		484	337
Net change in income tax receivables/payables		(478)	(313)
Net change in miscellaneous receivables/payables and other assets/liabilities		337	233
Cash flows from (used in) operating activities	**(a)**	**4,895**	**4,336**
Cash flows from investing activities:			
Purchases of intangible, tangible and rights of use assets on a cash basis		(6,305)	(4,013)
Capital grants received		3	3
Acquisition of control of companies or other businesses, net of cash acquired		(1,316)	-
Acquisitions/disposals of other investments		(26)	(100)
Change in financial receivables and other financial assets (excluding hedging and non-hedging derivatives under financial assets)		969	(1,183)
Proceeds from sale that result in a loss of control of subsidiaries or other businesses, net of cash disposed of		1,278	172
Proceeds from sale/repayments of intangible, tangible and other non-current assets		62	4
Cash flows from (used in) investing activities	**(b)**	**(5,335)**	**(5,117)**
Cash flows from financing activities:			
Change in current financial liabilities and other		(436)	704
Proceeds from non-current financial liabilities (including current portion)		2,288	4,082
Repayments of non-current financial liabilities (including current portion)		(4,615)	(3,072)
Change in hedging and non-hedging derivatives		(36)	103
Share capital proceeds/reimbursements (including subsidiaries)		2	(42)
Dividends paid(*)		(68)	(368)
Changes in ownership interests in consolidated subsidiaries		(4)	1,757
Cash flows from (used in) financing activities	**(c)**	**(2,869)**	**3,164**
Cash flows from (used in) Discontinued operations/Non-current assets held for sale	**(d)**	-	-
Aggregate cash flows	**(e=a+b+c+d)**	**(3,309)**	**2,383**
Net cash and cash equivalents at beginning of the year	**(f)**	**6,904**	**4,508**
Net foreign exchange differences on net cash and cash equivalents	**(g)**	(40)	13
Net cash and cash equivalents at end of the year	**(h=e+f+g)**	**3,555**	**6,904**
(*) of which from related parties		-	51

“TIM Balance Sheet Assets Side”

Assets

(million euros)	Notes	12/31/2022	of which with related parties	12/31/2021	of which with related parties
Non-current assets					
Intangible assets					
Goodwill		19,111	-	18,568	-
Intangible assets with a finite useful life		7,656	-	7,147	-
		26,767	-	**25,715**	-
Tangible assets					
Property, plant and equipment owned		**14,100**	-	**13,311**	-
Rights of use assets		**5,488**	38	**4,847**	301
Other non-current assets					
Investments in associates and joint ventures accounted for using the equity method		539	-	2,979	-
Other investments		116	-	156	-
Non-current financial receivables arising from lease contracts		49	1	45	1
Other non-current financial assets		1,602	-	2,285	-
Miscellaneous receivables and other non-current assets		2,365	1	2,266	-
Deferred tax assets		769	-	3,513	-
		5,440	-	**11,244**	-
Total Non-current assets	(a)	**51,795**	-	**55,117**	-
Current assets					
Inventories		322	-	282	-
Trade and miscellaneous receivables and other current assets		4,539	81	4,358	80
Current income tax receivables		147	-	79	-
Current financial assets					
Current financial receivables arising from lease contracts		69	11	56	-
Securities other than investments, other financial receivables and other current financial assets		1,600	-	2,391	-
Cash and cash equivalents		3,555	-	6,904	-
		5,224	-	9,351	-
Current assets sub-total		**10,232**	-	**14,070**	-
Discontinued operations/Non-current assets held for sale					
of a financial nature		-	-	-	-
of a non-financial nature		-	-	-	-
		-	-	-	-
Total Current assets	(b)	**10,232**	-	**14,070**	-
Total Assets	(b+a)	**62,027**	-	**69,187**	-

“TIM Balance Sheet Liabilities and Equity Side”

Equity and liabilities

(million euros)	Notes	12/31/2022	of which with related parties	12/31/2021	of which with related parties
Equity					
Share capital issued		**11,677**	-	**11,677**	-
less: Treasury shares		(63)	-	(63)	-
Share capital		**11,614**	-	**11,614**	-
Additional paid-in capital		2,133	-	2,133	-
Other reserves and retained earnings (accumulated losses), including profit (loss) for the year		1,314	-	3,667	-
Equity attributable to owners of the Parent		**15,061**	-	**17,414**	-
Non-controlling interests		3,664	-	4,625	-
Total Equity		**18,725**	-	**22,039**	-
Non-current liabilities					
Non-current financial liabilities for financing contracts and others		21,739	-	23,437	-
Non-current financial liabilities for lease contracts		4,597	10	4,064	269
Employee benefits		684	-	699	-
Deferred tax liabilities		84	-	245	-
Provisions		910	-	926	-
Miscellaneous payables and other non-current liabilities		1,146	21	1,413	27
Total Non-current liabilities	**(d)**	**29,160**		**30,784**	
Current liabilities					
Current financial liabilities for financing contracts and others		5,039	-	5,945	1
Current financial liabilities for lease contracts		870	13	651	74
Trade and miscellaneous payables and other current liabilities		8,199	149	9,473	265
Income tax payables		34	-	295	-
Current liabilities sub-total		**14,142**		**16,364**	
Liabilities directly associated with Discontinued operations/Non-current assets held for sale					
of a financial nature		-	-	-	-
of a non-financial nature		-	-	-	-
Total Current Liabilities	**(e)**	**14,142**	-	**16,364**	-
Total Liabilities	**(f=d+e)**	**43,302**	-	**47,148**	-
Total Equity and Liabilities	**(c+f)**	**62,027**	-	**69,187**	-

Summary

The Private Equity industry has grown significantly in recent years and, as of today, there are so many different types of private equity firms with different investment strategies. Italy is a significant player in the global private equity landscape and its position can be attributed to the remarkable growth of the Italian private equity sector in recent years, which has been driven by the importance, size and dynamism of its economy, with many small and medium-sized enterprises that have to optimize funding sources dominated by banks, as well as opportunities for export growth. For these reasons, the number of possible deals compared to other mature markets is high, making the Italian private equity industry very attractive. Moreover, the PNRR with the injection of more than 200 billion euros planned for the coming years, will positively contribute not only to the business environment, but also to the private equity activity.

The purpose of this thesis is to examine the recent trends in private equity investments and analyze the recent acquisition of Tim's NetCo by the American fund KKR.

Private equity, in a nutshell, is the investment of equity capital in private companies. Private equity is a broad term that includes a variety of investment strategies, that involve buying and managing companies that are not publicly traded. In the case of a publicly traded target company, the private equity fund conducts a public-to-private transaction, resulting in the delisting of the target entity from the stock market.

Private equity firms can be classified in the following types of funds, ordered from the lowest risk/return level to the highest:

- Real estate firms utilize a range of strategies to invest in real estate, starting from core investments, which are characterized by a lower level of risk/return, to opportunistic investments, which are instead characterized by a high degree of risk/return.
- Infrastructure funds are a type of investment vehicle that pools capital from institutional and individual investors to invest in infrastructure assets. These infrastructures include essential services such as power plants, transportation networks and communication systems. Private equity firms are attracted to infrastructure investments due to their low correlation with traditional asset classes, predictable and stable cash flows, long operational life, essential service provision and high barriers to entry.
- Mezzanine private equity involves the use of a hybrid form of financing that combines elements of both debt and equity. This unique financial approach offers investors, although with higher risk, the opportunity to earn higher returns than traditional debt instruments.

- Buyout firms are the most common type of private equity firm. In a leveraged buyout, a company is acquired by a specialized investment firm using a relatively small portion of equity and a relatively large portion of outside debt financing. Buyout funds typically acquire mature companies that are undervalued by the market, in order to resell them within few years at an higher price, using different strategies.
- Growth equity firms invest in established companies that are looking to expand or make acquisitions. These companies are typically too large for venture capital firms, but growth equity firms are able to provide them with the capital and expertise they need to grow.
- Distressed private equity firms, also known as special situations, invest in companies that are struggling financially. They buy these companies at a discount and then work to improve their finances so they can sell them for a profit.
- Venture capital firms invest in early-stage companies that have the potential for high growth by taking a minority stake and without using any leverage, having the goal of helping these companies to grow and succeed so that they can be sold to a larger company or go public.

Private equity funds are typically structured as limited partnerships, with two types of investors: general partner (GP) and limited partners (LPs). GP is responsible for managing the fund and making investment decisions, while LPs provide capital to the fund and share profits.
The interests of GP and LPs are aligned through the fee structure. In fact, the GP receives a management fee, which is a percentage of the fund's assets under management, as well as a performance fee, which is a percentage of the fund's profits. In this way the GP is incentivized to make sound investment decisions that will benefit both itself and the LPs.
As for the fund, on the other hand, from a legal and structural point of view, it usually takes the form of a closed-end fund, introduced into the Italian legal system in 1993 with Law n. 344, much later than in Anglo-Saxon countries where equivalent institutions had been present since the second half of the 19th century. When the fund has a closed-end structure, the amount of the fund and the number of its units is prefixed at the time of its establishment and redemption occurs at the end of its term. In addition, the amounts subscribed are not paid out immediately, but over time according to the liquidity needs of the fund.
As for the ways in which a private equity firm can generate value, instead, they are different, although not all of them are completely dependent on the GP nor are they sustainable in the long run. The three main ways are as follows:

- Operational improvements are the only consistent and sustainable source of value creation for private equity firms. As a result, many of the largest private equity firms have established teams dedicated to operational initiatives, with specialists in various areas such as customer acquisition, supply chain optimization, and talent management, in order to increase the target company's revenues and EBITDA over the years.

- Multiple expansion can be a valuable strategy for private equity firms that try to acquire companies at a discounted valuation and then sell them for a higher price later, but its success is heavily influenced by broader economic conditions and this is why it should not be the key focus of the general partner.
- Leverage is used in order to maximize returns. In fact, greater use of debt allows for a greater interest tax shield and this leads to a reduction of the WACC. Despite this, the heavy use of leverage has several risks including the bankrupt, in the case in which the company is not able to repay the debt.

In addition, it should be considered that the main goal of private equity investors is to maximize their profits by selling their portfolio companies upon exit. This is why a well-planned and executed exit strategy is critical, as it is the key to generating attractive returns for investors, and it is for this reason that private equity firms recognize its importance from the very beginning of the investment. Among the most prevalent exit strategies utilized by private equity firms there are:

- Initial Public Offering (IPO): An IPO involves the sale of shares of a private company to the public for the first time. Although it has some positive aspects, typically it is not the preferred exit route for private equity funds as usually the IPO has a greater primary component (i.e. the issuance of new capital through capital increase), than the secondary one (i.e. the sale of the shares by the private equity fund). That’s why after the IPO, the sponsor usually keeps the biggest piece of ownership in the target company.
- Sale to a strategic buyer: Opting for a sale to a strategic buyer is a frequently pursued exit strategy by private equity firms. This option is particularly attractive because a strategic buyer is usually willing to pay a premium for the company, as it is able to generate synergies from the acquisition.
- Secondary Sales: A secondary sale occurs when a private equity firm sells a company to another private equity firm. Although less common than IPO or sale to a strategic buyer, this strategy is a viable option when it is difficult to find another route. However, the sale price in a secondary sale might be lower compared to a sale to a strategic buyer.

Since so many possible investments are screened every day and not all of them can be completed, it is essential to analyze some key measures in order to decide which investments to finalize, and to examine among past investments, which have been the best. Two essential metrics widely used in this field and particularly in the Leveraged Buyout model are the Internal Rate of Return (IRR) and the Multiple of Invested Capital (MOIC).

The Internal Rate of Return is a crucial metric that measures the annualized rate of return on an investment over its holding period. The IRR is calculated by determining the discount rate at which the net present value of all cash flows (both positive and negative) generated by an investment becomes equal to zero. This makes the IRR a time-weighted return metric that actually considers the timing of cash flows to provide a more accurate and insightful representation of investment performance. When cash flows occur early in the investment horizon, the IRR tends to be higher while in contrast, cash flows received later in the investment period may lead to a lower IRR. In fact, dividends distributed by portfolio companies before the exit period have an impact on the overall IRR of a private equity investment, since they provide an earlier realization of cash flow, contributing to a higher IRR. Private equity firms typically set specific IRR targets for their investments, which vary depending on several factors such as the fund's risk profile, investment stage, industry sector and prevailing market conditions. For example, venture capital funds, which focus on early-stage and high-growth investments, usually aim for IRRs above 30% to compensate for the higher risk associated with these investments. On the other hand, buyout funds, which invest in more mature and established companies, usually define an IRR of 20-25% as their target. Finally, real estate and infrastructure funds have the lowest IRRs, usually between 5-12%.

MOIC is another key metric used in the world of private equity. This metric offers an absolute return measure, representing how many times the initial investment has grown over the investment holding period. To calculate it, it is necessary to divide the total amount of capital returned to investors through distributions plus the residual equity amount by the initial equity investment. The resulting ratio represents the multiple by which the original investment has increased. Unlike IRR, which considers the timing of cash flows and provides a time-weighted return, MOIC focuses only on capital returns.

Having said that, it is crucial to analyze the type of transaction most used by private equity funds: the Leveraged Buyout. The Leveraged Buyout is a transaction in which a company is acquired through the use of a significant amount of debt (typically between 60 percent and 70 percent). The remainder of the purchase price is provided by a financial sponsor through equity.

Private equity firms utilize debt in leveraged buyouts to maximize returns, benefit from the tax shield and have more dry powder (more equity to invest in future deals).

Moreover, in contrast to strategic buyers, where the debt is owned by the buyer, with private equity firms the debt is owned by the target company and this allow them to take much more risk.
In fact, typically a dedicated financial structure known as special-purpose vehicle (SPV) is created with the debt and equity that have been raised. This SPV, which takes the name of NewCo, is used as a means to carry out the acquisition of the target company.
Although any company can be a potential target for a LBO, there are some specific characteristics that make some companies more attractive candidates than others. Among them, steady and predictable cash flows is the most important one because they are used to repay principal and interest on debt. For this reason, companies that have demonstrated the ability to generate cash in a stable and predictable way are favored by lenders because the likelihood of being able to repay loans is higher. In addition, a strong management team capable of leading the society for years to come is another key feature, as it is through them that the growth of the acquired company is achieved.
Moreover, in order to understand the recent trends that are characterizing the private equity industry, it is essential to first summarize the current macroeconomic situation. Underlying it, a key role is played by geopolitical risks. On one side, the conflict between Russia and Ukraine that has now been going on for more than two years; on the other hand, the conflict between Israel and Hamas that began in October 2023. Both could further shake the global economy, generating shocks, especially in the energy complex. In addition to this, the significant tensions between the United States and China, which now make it clear that governments are seeking to develop independent supply chains, in a dynamic that could lead to the fragmentation of the world economy into rival trading blocks.
This, together with the rapid reopening of economic activity post-pandemic and the expansionary monetary policies aimed at coping with Covid-19, has contributed to a significant rise in inflation over the past few years, with values, in Italy, of 8.1% in 2022 and 5.7% in 2023.
For this reason, the intervention by the ECB and the Fed to raise key interest rates was necessary and consequently, the cost of debt has risen sharply, reaching its highest value since the last two decades. Thanks to this restrictive monetary policy, inflation has begun to slow down even more than predicted, which is why central banks are expected to cut rates by the summer of 2024. Rate cut that will be necessary to push GDP growth and thus avoid recession. In fact, in 2023, Italy's GDP only grew by 0.7% and the European one only by 0.5%, according to Istat Data.
Private equity is therefore adapting to a new reality of higher interest rates and increased market volatility. Despite a decrease in deal activity and valuations, there are still attractive opportunities for investors who are prepared to adapt their strategies. The current landscape is characterized by several key issues, the most important of which are:

- Deal activity: Slower deal activity is observed due to rising rates, inflationary pressure, economic and geopolitical uncertainty.
- Valuations: Private equity valuations have declined from their peak levels due to the increase in the cost of debt and consequently of the WACC.
- Equitization of transactions: Due to less availability and higher cost of debt, private equity buyers are increasing equity contributions to complete deals. In 2023, this value was on average more than 50%.
- Artificial intelligence: Artificial intelligence (AI) may initially leave its mark in the technology sector, but its influence is expected to spread far beyond this industry. As AI applications become increasingly integrated into business processes, significant investment opportunities are expected to arise in companies that can effectively utilize these technologies. However, AI for private equity firms could also be widely used beyond just financial investments. In fact, in the private equity sector, completing deals requires a high degree of analytical expertise in a variety of fields. Generative AI has the potential to completely change the way private equity companies operate, by analyzing huge volumes of data, extracting insights and automating procedures, helping them make wiser investment decisions and discover new growth opportunities.
- Infrastructures: Infrastructure as an asset class is experiencing a boom. With persistently high inflation and recent volatility in bond and equity markets, the intrinsic benefits of many infrastructure expenditures have been highlighted. In fact, compared to other asset classes, infrastructure delivers cashflows that are less dependent on economic cycles, because they are of critical importance to both the economy and our everyday lives. Investors are looking at a variety of assets to help weather inflation. Long-term and inflation-linked contracts for infrastructure assets are common and can last for decades, and this is a big benefit in such a turbulent market. This is why according to an interview conducted by the Nuveen Pension Fund on a sample of 800 global institutional investors, 58% of the interviewed respondents said they would increase their investments in infrastructure in the coming years.

  More people and organizations worldwide are becoming able to access the internet and go digital thanks to declining device and connection prices. The demand for advanced telecommunication and 5G infrastructure is rising significantly as a result of this expanded access, population expansion and the emergence of the Internet of Things. The COVID-19 pandemic-related shift to remote work has accelerated similar tendencies even in areas where internet access was previously widely available. More usage, in turn, generates an increasing amount of data, which in turn motivates the collection and analysis of big data. All of these developments are driving up demand for data centers, fiber internet and mobile towers and the market size of digital infrastructure is expected to reach $655 billion by 2030, with a CAGR of 23.6%.

Moreover, the optimism that the Italian private equity and venture capital sector has been developing in recent years is expected to be further consolidated for the first semester of 2024. The forecasts of Deloitte show a less pronounced sensitivity to macroeconomic and geopolitical challenges with respect to the rest of the world and an environment that, within the limits, still remains attractive, thanks to the main transformative trends, such as technological improvements, driven by artificial intelligence. These elements, along with the incentives such as PNRR and Next Generation EU, continue to be an important driver of growth, despite the uncertainty that is characterizing this historical period, and because of this, investment in infrastructure has been increasing significantly in recent years.

On November 6th 2023 Tim approved by a majority vote (with 11 votes in favor and 3 against) the binding offer submitted by the American fund KKR. The deal involves the acquisition of Tim's fixed network assets (the so-called NetCo), including FiberCop, by a company (Optics BidCo) controlled by KKR.

In order to understand what Tim's so called NetCo is, it is essential to go back to March 2022, when following the approval of the 2022-2024 business plan, TIM's business model has changed. The TIM Group has deliberately divided its businesses into ServiceCo and NetworkCo to increase concentration and efficiency. Broadband Internet, digital television, mobile and landline phone service, IT services and other telecommunications services began to be provided by ServCo, the customer-focused division. This sector is committed to acquiring, keeping and satisfying customers, while keeping up with technical advancements and market trends. Into ServCo, Noovle, Olivetti, Telsy, the consumer business and Tim Brasil were integrated. On the other side, NetCo is in charge of the essential infrastructure that makes these services possible, which is why the fixed-line business, the domestic wholesale business and the international Sparkle business were transferred to it.

However, TIM is now facing severe financial problems, with €25.4 billion in net debt and a 4.8x Net Debt/EBITDA ratio (data as of December 31, 2022). For this reason, along with the company's declining income and profitability, on October 2022 S&P decided to downgrade TIM's debt rating from BB- to B+, making access to new debt increasingly difficult and interest payments increasingly expensive. In this situation, the planned acquisition by the international private equity company KKR seems not only appropriate, but also crucial, as the cash injection from this transaction will be essential for debt repayment and reducing TIM's financial burden.

For KKR, instead, the deal is very important because, at such a difficult time for private equity industry, it represents an ideal transaction since telecom service infrastructure is a sector characterized by constant, predictable and inflation-linked Free Cash Flows.
The binding offer values NetCo (excluding Sparkle) at an Enterprise Value of 18.8 billion euros, without considering any upsides associated to the potential transfer of part of the debt to NetCo and to earn-outs linked to the occurrence of certain conditions that may increase the value up to 22 billion euros. The closing of the transaction, that will enable TIM to reduce its financial debt by approximately €14 billion, bringing the Net Debt/EBITDA ratio below 2x, is scheduled for the summer 2024.
To protect the strategic interests of the State, alongside KKR in the acquisition of NetCo there will be as shareholders both directly the Treasury, with a 20% stake and the F2i fund (through the vehicle F2i-Rete Digitale) with a stake of 10-15%. On the other hand, KKR's co-investors will include Canada Pension Plan Investment Board and the Abu Dhabi sovereign wealth fund.
In order to asses if the price offered for the acquisition is correct, leading European telecommunications companies from 12 different countries were considered for the reference panel of trading multiples: Spain (Telefonica SA), England (BT Group PLC and Vodafone Group PLC), Norway (Telenor ASA), Belgium (Proximus SADP), Germany (Deutsche Telekom AG), Sweden (Telia Co AB), France (Orange SA), Netherlands (Koninklijke KPN NV), Finland (Elisa Oyj), Austria (Telekom Austria AG), Greece (Hellenic Telecommunications Or) and Switzerland (Swisscom AG).
The average values of 2022 reported on Bloomberg Terminal were used as reference values for the calculation of trading multiples, thus considering doing the valuation on January 1st 2023 (the same has been done for the LBO model since the non-binding offer was submitted in the first half of 2023 and the binding offer in October 2023. Therefore, considering January 1st 2024 as the reference date would not have been correct).
Among them, the average EV/EBITDA was used, keeping Elisa Oyj out of the panel because it had very different multiples from other companies. Multiples on the equity side were not considered because they also depend on the capital structure and show very different values. On the asset side, on the other hand, neither the EV/Sales was considered, because it depends on many variables including cost structure, which is very different from company to company, nor the EV/EBIT multiple, because it depends on D&A and again it is very different from company to company, as some own their physical infrastructure and others lease it; in addition this multiple also depends on the depreciation policy adopted (straight-line or accelerated for example).
Considering NetCo's EBITDA of €1.5 billion for 2022 and 2023 (from a document sent by KKR to some Italian banks), the implied EV/EBITDA (12.5x) resulting from TIM's valuation in KKR's offer

(€18.8 billion excluding earn-outs) is significantly higher than that resulting from the average of the reference panel (5.3x). That value appears to be closer to what TIM's multiple actually traded at in 2022 (6.5x). For this reason, it is essential to analyze transaction multiples of precedent infrastructure carve-outs in the telecommunication industry, as they are more meaningful.
Indeed, in recent years, not only Tim but also many other telecommunications companies (including Vodafone, Deutsche Telekom, Altice Portugal and Telefonica) have been involved in numerous infrastructure asset carve-outs to increase their efficiency and reduce debt and CAPEX requirements. Therefore, when considering the case of KKR's acquisition of TIM, it is more appropriate to use the transaction multiples, as they represent transactions similar to it. Considering this, the multiples are, in fact, significantly higher than the panel of trading multiples and even higher than the implied one (12.5x) derived from KKR's offer, with an average EV/EBITDA value of 14.9x. This is why the price offered for the acquisition of Tim's NetCo is considered by the market to be slightly lower than expected. However, considering within the EV offered also the possible earn-outs we would arrive at an implied multiple of 14.7x, perfectly in line with the average of transaction multiples. This is the reason why I disagree with the higher valuation demanded by Vivendi, Tim's largest shareholder, for the sale of the company, also considering Tim's poor financial condition.
Moreover, in order to assess the transaction from KKR's perspective, using the limited data available on Tim's NetCo, as it was established only in 2022, a simplified LBO model was created to calculate a rough IRR and MOIC of KKR's transaction. As for general assumptions, the 2023E and 2031E EBITDA values found in a KKR document issued to some Italian banks were considered. The model was created considering January 1st 2023 as the reference date and 2031 as the exit year, thus considering an investment period of 9 years, in line with the average one of private equity funds in infrastructure. For the sake of simplification, LTM EBITDA was considered equal to EBITDA 2023E, as there is no data on this. Considering KKR's offer of €18.8 billion (excluding any earn-outs) and LTM EBITDA of €1.5 billion, the implied entry multiple was 12.5x. This value was also considered as the exit multiple since this practice is used in most LBO models. Transaction and financing fees were assumed to be 2% and 0.5%, respectively, considering the average value of previous transactions. Cash to Balance Sheet was considered equal to €0, while as for the values of the equity owned by the Italian Treasury (20%) and the Italian fund F2i (12.5%), newspaper leaked values were taken as reference, resulting in a sponsor's implied ownership of 67.5%.
Regarding the value of the debt used, € 8.5 billion was taken as a reference, as reported by a Barclays broker report found on Bloomberg Terminal, and it was assumed to belong entirely to Term Loan A (bank debt). This value resulted in a Debt/EBITDA ratio of 5.7x and a percentage equal to about 45% of the Enterprise Value (with equity equal to 55%), a value in line with that of current deals.

Considering a value of EBITDA in 2031 of €2.5 billion and assuming that in the exit year the Debt/EBITDA ratio falls to a value of 2.5x (personal assumption), it would mean that the value of Debt in 2031 should be €6.25 billion, so the total amortization of debt should be €2.25 billion over 9 years, implying an amortization rate of 3% per year.
Due to the absence of data, Levered Free Cash Flow was not calculated by starting from Net Income, adding D&A and subtracting CAPEX, delta NWC and Debt Amortization, but a very strong assumption was used, which is that there is no production of extra cash, as it is used entirely to amortize debt, pay interest and CAPEX investments.
Therefore, to calculate the exit Enterprise Value, the value of the exit EBITDA (€2.5 billion) was multiplied by the exit multiple (12.5x). From this value, the final debt value of €6.25 billion was subtracted, considering a final value of cash of 0 euro, to arrive at the exit equity value. Then multiplying this value by the implied sponsor ownership of 67.5%, resulted in exit proceeds to sponsor of €16.9 billion. To calculate the IRR and MOIC, this value was then simply considered in comparison with the initial value of the equity invested by the sponsor of €7.2 billion, since there are no other cash outflows/inflows over the years, resulting in an IRR value of 9.9% and MOIC of 2.3x.
The IRR value resulting from this transaction is, therefore, perfectly in line with the average target returns of infrastructure funds, which are usually between 8 and 12 percent. It must be remembered, however, that this model is super simplified and was made only for the purpose of getting a rough idea of the possible returns to be expected from this operation.
Considering then a sensitivity analysis on the exit multiples, in the case in which the exit multiple was higher than the entry multiple, for example, considering 13.5x and 12.5x respectively, the IRR would increase by more than 1%, from a value of 9.9% to a value of 11.1%. This situation could occur if the merger with OpenFiber, the other main operator managing the network infrastructure in Italy, goes through, thus creating a single Italian network. On the other hand, in the case in which the exit multiple was lower than the entry one, for example 11.5x, the investment would still be within the target limits of infrastructure investment, with an IRR of 8.6%.
Therefore, even considering a downgrade scenario, from KKR's point of view the transaction should be profitable.
Moreover, to conclude, it is crucial to point out that carve-outs can create significant value for a company, but success is not always guaranteed, and a carve-out that goes wrong can cause substantial damage to both the new company and the company from which it is carved out.
Companies that do not strategically and operatively plan a carve-out in detail oftentimes end up destroying substantial value – both for the new standalone and the remaining entity.

Therefore, in order to enable NetCos and ServCos to differentiate themselves and take advantage of growth opportunities, a line between them must be drawn. NetCos need to focus on maintaining and diversifying their network infrastructure, increasing coverage, increasing network speed and resilience, and developing their network infrastructure. To do this, they will have to innovate by working with larger ecosystems of suppliers and embrace new technology. On the other hand, to get closer to consumers and corporate clients, ServCos should focus on the application and customer layer, and in order to distinguish themselves from competitors, they will also need to make several investments in innovation.

Only by keeping this in mind, Tim's operation will be a success for both parties and carve-outs within the telecommunications sector will continue to be an important source of value.