Department of Business and Management

Master's Degree Management

Chair of *Advanced Corporate Finance*

Characteristics and valuation methods for IPOs: the TrenDevice case

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Introduction

The role of IPOs (Initial Public Offering) has evolved over the last decades and today is still pivotal in the context of financial disciplines.

The following research explores the peculiar nature of IPO operations identifying the process through which a company goes public on the stock market.

This topic has been a subject of great interest in academic studies because of the transformational impact these operations have during the life of a company.

Given the centrality of this topic in the economic landscape, it is still actively studied nowadays, as the stock market is an ever-changing environment attracting companies of different sizes operating in different sectors.

In addition, research and analysis shift from cases of over/underperforming IPOs to more contemporary cases of SPACs (Special Purpose Acquisition Vehicles). The IPOs market proves to be an attractive and innovation-fostering context.

The objective of the present study is to understand the dynamics that characterize IPOs.

In particular, starting from the existing analysis in the field, the objective of the thesis is threefold. First, an in-depth review is conducted on main theoretical contributions studying the stages and the managerial considerations of an IPO process. Second, a focus is dedicated on major valuation models. Third, an overview of the practical implications affecting the valuation process is provided by means of an empirical case study.

The thesis is structured as follows:

- Chapter 1 provides an extensive overview of the IPO, embracing the main stages of the process, the involved subjects, the costs and the last trends emerging from the market.
- Chapter 2 presents a theoretical discussion of the methodologies adopted by analysts dealing with the task of evaluating public companies.
- Chapter 3 is based on the TrenDevice case study. Starting from the analysis of the competitive scenario, the company valuation is determined through approaches discussed in Chapter 2 and dedicated considerations are elaborated on the listing price determination.

Finally, in the Conclusions section, observations and evidence that emerged during the company evaluation process have been reported.

CHAPTER 1: A source of financing for enterprises

Before taking on the discussion of IPOs, an overarching question regards the issue on why companies go public. Probably, the most important and the only undisputed reason refers to the access to financing. From the firm's viewpoint, an IPO is the most direct route to receive an equity capital infusion to finance new projects, sustain growth and ultimately improve financial structure and credit standing. At the same time, access to new cash resources, is a key driver for shareholders as well, since not only an IPO is a mean for founder to get liquidity and capitalize on his initial investment, but also it may represent a viable solution for exit or succession and to establish a stock currency for future acquisitions or sale processes. IPO is notably an alternative to other financing opportunities such as debt (either bank financing of bonds) or other risk capital investments (i.e. private equity funds or other strategic investors). Compared to alternative options however, an IPO stand for a unique process in terms of criticalities and activities conducted, and represents a transformative stage for the company.

1.1Definition of IPOs

Generically, the terms IPO refers to the first issuance of shares by a company to the public and the listing of the shares on the stock exchange[1]. This means that the company status changes from being private to listed, as its shares become subject to public transactions and the company needs to comply to exchange market regulations. Also, since the IPO is aimed at a wide spectrum of investors (both individuals and professionals), it is therefore a form of solicitation to invest. From a technical perspective an IPO can be conducted as a public offer for sale or as a public subscription offer or it can have the characteristics of both. In the former case there is an offer proposed by one or more shareholders of a company who sell all or part of the shares held with the intention of enlarging or in any case modifying its ownership structure. In the latter case instead, IPO is an operation by which a company invites one or more categories of investors to subscribe to newly issued shares, created as a result of a capital increase operation. However, what makes both modalities to take the shape of an IPO is that they are aimed at admission to listing.

An IPO is a complex operation, both in respect to the procedural requirements necessary to be implemented and regarding the interactions between the parties participating in the listing.

In particular, regarding the procedural aspects, an IPO has a duration that varies from case to case, but in principle is between six months and two years in the most complex cases. This timing does not consider the initial preparation phase prior to the actual procedure, which also may extend according to circumstances between 6 and 12 months. In the next section, the IPO process is detailed in each constituting aspect.

[1] Iannotta, G. (2010). Investment Banking: A Guide to Underwriting and Advisory Services. Springer, Milano.

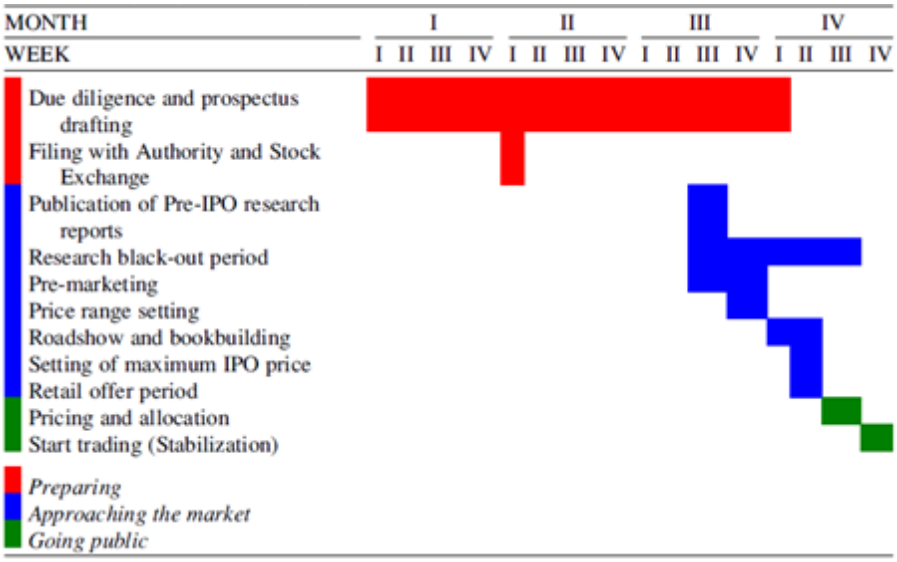
1.2 IPO Process, costs and benefits of IPOs

1.2.1 The Conventional IPO Process

The academic literature, over the decades has extensively investigated multiple aspects of the IPO process, such as the reasons that push a company to go public[2], the behavior of prices and financial performances[3] and the degree to which IPOs volumes fluctuate over time[4], and still today there is not a univocal explanation to many of the phenomena analyzed. In particular, the debate on which factors are actually capable of influencing a company's decision to list itself still appears to be quite open.

The process of determining the value of a listed company is divided into several phases which involve further investigations and subsequent updates until, starting from a wide range, the offer price is determined and shares are collocated on the market (Figure 1).

Figure 1: Main Phases of an IPO Process (timeline is indicative)



Source: A Guide to Underwriting and Advisory Services

Although defined in macro-phases, the process is substantially seamless. As shown in Figure 1, it can be sub-divided into three stages, defining the entire evaluation activity, from a wide value range during the initial stages up to a narrower range before starting the book building.

The main steps are:

- IPO Preparation: the initial evaluation is carried out through the pitch and during the preparation for the listing. At this stage there could be preliminary meetings with selected investors
- Market Approach: pre-marketing and identification of the price range

[2] Pagano, M., Panetta, F., Zingales, L. (1998). Why do Companies Go Public? An Empirical Analysis. The Journal of Finance 53(1), 27-64.

[3] Larrain, B., Phillips, G., Sersios, G., Urzua, I. (2021). The Effects of Going Public on Firm Performance an Strategy: Evidence from International IPOs.

[4] Lowry, M (2003). Why does IPO volume fluctuate so much? Journal of Financial Economics, 67, 3-40.

- Going Public: book building and final pricing

Preparing (Due Diligence and Filing)

The IPO process kicks off with the pitch. This is the moment in which the company, assisted by its financial advisor(s), selects one or more intermediaries who will support it during the listing. At this stage, the investment banks submit a proposal for the assignment of the role of global coordinator (which may coincide with the sponsor of the listing), generally including a preliminary assessment of the listed company. This valuation is generally presented 4-6 months before the conclusion of the IPO and represents a preliminary value determination, to be refined during the listing process. In fact, this estimation normally disregards the in-depth knowledge of the company, its business plan, interaction with investors and the results of due diligence, which will be carried out by the bank only after receiving the assignment. In choosing the global coordinator, therefore, the listing company gives importance to the quality of the intermediary (track record in previous IPOs, knowledge of the sector, distribution capacity, quality of the team of analysts, etc.), rather than relying exclusively on the proposed value, not very significant before due diligence and especially before the comparison with the market.

When global coordinator is appointed, the company starts the process of preparing for listing and the placement bank simultaneously begins its due diligence activity on the basis of information that is made available. At the end of this process the bank will be able to understand in detail the company's business and above all to carry out an in-depth analysis of the business plan. The latter document makes it possible to assess the future prospects of the issuer both in terms of consistency with the strategic-organizational structure and with the trends of the reference market, and in terms of sustainability and soundness of the main underlying assumptions. During this phase, the financial advisor and the placement bank, also because of the knowledge acquired during the due diligence, begin to define the so-called “equity story”, or the profile of the issuing company that will be presented to investors able to make the most of the elements of attractiveness of the investment in order to convince them to adhere to the offer of shares. During this phase, a so-called early marketing activity is carried out, aimed at obtaining feedback from a restricted audience of investors on the potential attractiveness of the equity story (but not on the value proposed for the company). At the end of this phase, the placement bank generally presents the company with a first pre-money valuation hypothesis (preliminary valuation range). This expression refers to the estimation of the value of the company's economic capital with a view to listing, which does not take into account the discount IPO and the indications coming from the premarketing activity.

Market Approach

During market approach, a presentation of the issuer to the financial analysts of the placement consortium (analyst presentation) is organized, aimed at the subsequent preparation and publication by the latter of the research on the issuer. For this purpose, a document is prepared and distributed to the analysts present at the meeting that aims to describe the investment case and contains a detailed analysis of the company, the business model and growth strategies, as well as a presentation of the structure and timing of the offer. The analyst

presentation is an important moment in the process of preparation for listing, as it guarantees the consortium analysts an adequate knowledge of the listed company, which will then be reflected in the research distributed by the placement banks to their client investors in order to get them sensitive to the equity story before to meet the management of the issuer. Prior to the publication of the research, a survey of institutional investors is usually carried out by the global coordinator (the so-called pilot fishing, expanding the sample of investors previously probed during early marketing), in order to assess the potential attractiveness of the proposed equity story and obtain a first feed-back on the value of the list.

A presentation to the sales force of the global coordinator is also organized in order to allow it to interact with interested investors and to collect any expressions of interest in buying the shares. The publication of research, which generally takes place after approximately one month from the analyst presentation, in addition to informing the investment community before and during the roadshow, is useful to enrich the evaluation process with further elements represented by the independent evaluation indications by the consortium analysts (sometimes the research also contains evaluation ranges), useful to further refine the preliminary evaluation range previously determined. At the end of this phase, the real investor education activity conducted by the analysts of the placement consortium and the equity sales force of the global coordinator begins, leveraging on the published research. During the meetings that are held with interested investors, in-depth indications are collected regarding the attractiveness of the investment case and the levels of valuations considered acceptable. Only at this point the bank, having received the feedback on the price that institutional investors are willing to pay, engages the issuing company, any selling shareholders and the financial advisor reaching the definition of the indicative pre-money price range and the maximum price to be reported in the prospectus. In general, the price range should be set so that the minimum price represents a threshold of attractiveness for investors whereas the maximum price, on the other hand, taking into account the expectations of valuation of the reference shareholder and the valuation thresholds expressed by investors during pre-marketing activities. The process described usually leads to the definition of price ranges characterized by a gap of about 20-25% between the maximum price and the minimum price. The price range set will serve as a reference for the next phase targeting the collection of orders from institutional investors (the so-called book building) and possibly retail investors.

The actual marketing activity, which is conducted through a roadshow towards institutional investors in the main financial centers into a promotional campaign, provides fundamental indications for the determination of the final price. During the roadshow (lasting around two weeks) the top management of the company, together with the representatives of the global coordinator, holds meetings with groups of investors or with individual investors (one-to-one meetings), potentially interested in subscribing to the offer. This is a crucial phase of the entire process: in fact, although investors have already been introduced by the financial analysts of the consortium, namely from the comparison with the management team of the list (typically made up of at least CEO and CFO), ultimately depends on the willingness to send a purchase order that will feed the institutional book. Therefore, the ability of management to convey the equity story is essential for the success of the transaction. To this end, during the entire preparation process, the global coordinator and the financial advisor carry out an intense training activity towards the members of the list on the best ways to conduct these meetings. In this phase, institutional investors send expressions of interest in the purchase of a certain amount

of securities that feed the so-called institutional book (electronic system managed in real-time by all the banks involved in the collection of orders), at a price that takes into account not only the fundamentals of the company and the information present in the analysts' research, but also of soft elements such as: valuation levels of comparable companies, corporate governance, management team, risks of the transaction and relations with related parties (described in the prospectus), managerial systems, market conditions, etc. Expressions of interest, rarely without a price indication, may contain a fixed price or different volumes with respect to different price levels. Overall, this phase represents the most extensive commitment in terms of activities and plays a crucial role in the overall IPO.

Going Public

The final offer price is identified by the placement banks together with the shareholders, the members of the management team and their financial advisor, considering both the number of requested shares registered in the book and the price that institutional investors are willing to pay. Following pricing and share allocation on the market, trading starts up. The role of the investment bank at this stage is to maintain the price during the first days of exchanges through so-called price-stabilization mechanisms in case of either price drops or prince increases (i.e. overallotment and green shoe option).

1.2.2 Alternative IPO Processes

Dual Track

Sometimes companies interested in capital raising processes and/or the disposal of shareholdings by the majority shareholder may undertake a dual-track process, meaning a process of preparation for listing accompanied by a simultaneous and alternative private process (Mergers & Acquisitions or M&A) of the entry of a new shareholder into the capital (majority or minority, through a capital increase and/or sale by existing shareholders). The dual track process, keeping the two options in place until a certain stage, aims to maximize the value of the company, considering that the latter may differ depending on the type of investors or buyers such as private equity funds, institutional investors, industrial companies or holding companies. In addition, it is plausible that a company adequately prepared for a listing process is even more attractive to a potential strategic buyer and that the presence of a listing process can increase the bargaining power of the company and its shareholders in an M&A process. During the listing preparation process, for instance, the consequences of any downturn in market conditions would jeopardize the successful conclusion of the IPO, making more viable the M&A option. In the dual track, the due diligence phase is common to both capital raising processes, which therefore make use of a very similar information base made available to all parties involved (including potential private buyers); therefore, from this point of view, there are clear synergies in terms of costs and processes for the company. After the due diligence activity, as illustrated above, premarketing aimed at identification, as part of a listing process, the indicative price range, which will be the reference for the order collection and book building phase. At the same time, during the M&A process, the potential investors involved in the competitive auction, after carrying out their own analysis and evaluations, present to the company, through the financial advisor involved, their purchase proposals that define the potential contractual

conditions, including the price offered. At this point, a crucial moment of analysis and comparison between the price range proposed by the global coordinator and the price proposals collected by the financial advisor as part of the M&A process opens up for the company and its shareholders. This could lead to the decision to interrupt the listing process, if the range proposed by the placement banks is lower than the price of the proposals collected during the M&A process, or, in the opposite case, to continue with the listing process, suspending the M&A process. In the latter case, the company continues with the listing process and starts the book building and pricing phase that leads to the collection of expressions of interest and the potential definition of the price of share assignments. If, therefore, the price is confirmed to be higher than the price proposals collected in the M&A process, the company may decide to proceed with the IPO, setting the final price and allocating the shares to investors. Otherwise, however, the company will complete the M&A process with the choice of the selected buyer or investor. It is evident that there may be situations of greater uncertainty than those represented in a standard case, determined by the extreme proximity or overlap between the price range presented by the global coordinator and the prices proposed by potential buyers in the M&A process. This increases the uncertainty in the dual track process and the need to determine only in the final stage which of the two processes will prevail. Finally, where the listing process should prevail over the M&A process, if private buyers have had access to relevant information about the issuer not contained in the prospectus (e.g. prospective data included exclusively in the business plan), should refrain from placing orders in the book building process or from buying the securities on the market after the start of trading (at least until they can be considered exceeded the above information).

Seasoned Equity Offerings

Seasoned Equity Offerings are processes aimed to allocate on the market new shares from already-listed entities. Seasoned Equity Offerings can be defined as primary when entail newly-issued shares resulting in the collection of new capital or secondary when old shares from existing shareholders are allocated on the market, diluting their position. Most of Seasoned Equity Offerings are carried out through either a bought deal (i.e. a bank buys shares and thereafter sell these shares to institutional investors at a profit) or an accelerate book-building. (i.e. targeted marketing to a small group of investors over a short time interval). In most cases, Seasoned Equity Offerings follow a period of strong performance from both issuer stock and market fundamentals, but this process sends a mixed message to investors as it becomes clear that the launch of a new equity offering depends on the assumption that the current firm's stock price is considered above company's fundamentals, with the effect being particularly strong in secondary Seasoned Equity Offerings, whereby there is a mere change of ownership of issued shares from incumbent to new shareholders.

American Depositary Receipts

As discussed in this chapter, disclosure requirements represent a major hurdle for companies pursuing a listing process. With particular regards to the U.S. market, an alternative to overcome this issue is represented by the so-called American Depositary Receipts. These instruments are dollar-denominated claims directly issued by U.S. banks and certify the ownership of shares of a foreign company's shares deposited on a U.S. bank account domiciliated in the issuer's home country. American Depositary Receipts are a win-win solution for both issuer

company, which can benefit from a facilitated listing process and investors who can rely on a regulated and low-cost diversification option (note that the American Depositary Receipts are covered under the U.S. security law and pay U.S. dollar denominated dividend). A possible issue relating to these certificates concerns the tendency toward a liquidity restriction as over time, as liquidity tend to migrate to the "home" market (the so-called flow back effect).

1.2.3 Timing

Another issue of fundamental importance to be analyzed to have a complete vision of the perspective of companies that intend to list, is to consider when it is better to perfect an IPO for a company. This is because an IPO can be structured as efficiently as possible, it can have a fair issue price, agents that support it that minimize costs, but if the IPO results in a poor timing, this can be enough for the whole thing to result in a failure. Timing is a key variable and can be understood fundamentally in two ways at the conceptual level: timing in the life cycle of the enterprise and timing related to market conditions.

The first can be defined as an internal timing, which must be identified by comparing the current situation of a company with its life cycle, or by asking whether that phase in which the company is today is the best time in which to list the company, or if it is appropriate to wait for a new phase.

The identification of the internal timing is a highly subjective matter and therefore there are no univocal rules to be applied. The other timing assumption refers to a context external to the company, and therefore it is much more difficult to evaluate, as it is an exogenous variable and therefore not under the direct control of the company. External timing is certainly difficult to assess, because the best moment related to market conditions is created by a multitude of variables that intersect with each other. It is widely believed that market timing is one of the biggest challenges in the IPO process, given its complexity in identifying the right time and given the fact that this kind of timing is crucial in determining the outcome of a listing. Accordingly, different approaches emerged to that extent.

A first approach refers to the recognition of the key to identify the best historical moment in the market at a general level, understood as the one in which companies are overvalued.

Proponents of this approach, argues that firms successfully conduct their IPO during a temporary window of opportunity, usually characterized by industry or market-wide share overvaluation resulting in a lower cost of equity. This overvaluation of stock prices is based on the belief that the market is not efficient, but rather is driven by investor sentiments, understood as a mistranslation of the information available in the market, thus interpreted as more positive than it should be. This brings the stock market valuation above its real value in certain periods (i.e. during sustained economic expansion). The interpretation of such market behavior is found

to be a significant component in CEO's choices to proceed with IPO processes in such periods of market overvaluation, leading to the so-called IPO waves[5] [6].

1.2.4 Benefits and Costs

Benefits

The decision to go public is a very important step in the life of a company and it is driven by several and varied reasons. Following the main ones are summarized and described.

The management of the financial structure of the company

Through access to regulated markets, the company has the possibility of accessing the provision of risk capital, in order to be able to finance investment projects through different sources of financing and less expensive than the use of debt. Thanks to an IPO, the company can therefore concretely finance high rates of development, the stock market in fact allows volumes of funding of enormous magnitude. Through listing, the company can therefore diversify its sources of collection, making financial management much more flexible. In addition, equity financing is a medium-long term oriented source of financing that does not require special guarantees, as the value of the company is valued as collateral. The synthesis of this advantage is linked to the management of level of financial leverage. In fact, while in a first phase the use of leverage is value enhancing thanks through the tax shield deriving from the deductibility of interest expenses, when the level of indebtedness exceeds the optimal threshold the costs of failure revert such positive effects. To overcome this problem, the use of risk capital makes it possible to improve the ratio between debt and equity, allowing the reduction of instability costs and the consequent approach to optimal levels of leverage. In conclusion, the financial advantage an undertaking can obtain from access to the risk capital market is clear.

Improving the status of company

When a company decides to go public, it can immediately benefit from advantages deriving from superior image and reputation compared to a private company. Clearly, these benefits will be greater the more important the market to which you have access to, where there are many competitors. First of all, the company makes contacts with various stakeholders such as customers, suppliers, national and international partners and above all institutional investors, who will recognize in the improvement of the corporate image also an increase in bargaining power. Although companies may not be large, the fact that they have laid all the necessary foundations to be able to expand can help to attract the interests of these subjects. A listed company is also subject to elements such as the certification of the financial statements and controls carried out by the market regulatory authorities, which result in greater transparency of the company and consequently the attention of

[5] Batnini, F. Hammami, M. (2015). IPO Waves: How Market Performances Influence The Market Timing of IPO? The Journal of Applied Business Research – September/October 2015, 31(5), 1679-1692.

[6] Benninga, S., Helmantel, M., Sarig, O. (2005). The timing of initial public offerings. Journal of Financial Economics, 75, 115-132.

potential investors. More transparent companies therefore benefit from greater bargaining power, a fundamental step for the future expansion of the shareholding structure, especially for companies that intend to start an internationalization process. Another significant advantage for the status of the company derives from its expansion on the mass media, a means nowadays fundamental to better advertise the products and services offered by the company in order to quickly and effectively increase the image of the company.

Creating a market for stocks

From an internal point of view, through listing, shareholders can diversify their assets and create value creation: basically, after the company completes its IPO process, they have an opportunity to divest and realize on their investment in the company. From an external point of view, shares become tradable, and therefore attractive to the market. This aspect assumes a fundamental importance especially with regard to the concept of liquidity of the share: the listed securities will in fact be more liquid and will favor the sale especially for institutional investors, also guaranteeing an efficient price formation mechanism, which represents the last and fundamental step of the entire IPO process. In addition, the creation of a market for shares allows to obtain a clear and objective valuation of the stock that allows to give an estimate as truthful as possible of the actual value of the company. This will be crucial for the future of the company in order to facilitate transactions such as subsequent offers on the market, capital increases, mergers and acquisitions in which shares can be used as a form of payment. Thus, in general terms, the increase in liquidity following the listing on the stock exchange helps the company to finance external growth, favouring a dimensional development as quickly and efficiently as possible.

Improvement of managerial resources and activities

When a company is about to start the listing process, a series of organizational and managerial changes are necessary in order to adapt to the rules of the market. These are a series of adjustments concerning: the information system, management control, the adoption of corporate governance principles and communication policies. In order to comply with these changes, the company is therefore forced to expand and improve the quality of management. Access to regulated markets produces a greater attractiveness of the company in the eyes of qualified managers: the superior status enjoyed by a listed company, the greater visibility it enjoys on the market and the possibility of incentive plans based on stock options contracts are characteristics that facilitate the entry to management levels of increasingly qualified important figures. In particular, stock options generate positive effects on the company's top management, minimizing possible divergences between ownership and control. These are plans that give employees the right to purchase or subscribe to securities representing the company's risk capital: they are substantially call options on the company's capital. The fundamental objective of these incentive plans is to link part of the remuneration of managers to the trend of the stock price on the market, in order to stimulate employees to maximize their contribution to company results and long-term goals.

Costs

Opposing to the advantages listed above that derive from the listing process, a series of costs and limitations are connected, which in certain cases may compromise the success of the entire IPO. As discussed, this is a complex process both from a procedural point of view and from an economic point of view, which includes a number of relevant issues. Especially in the preparation phase of the public offer, a huge amount of work and company resources are required in order to prepare all the necessary documentation, which takes away huge management efforts form company's business. These aspects could be evident when defining the placement price, generating an underpricing scenario that does not represent the success of the entire process. IPO downsides effect may materialize with the de-listing decision, that is the choice to take-back the company as private (this is due to company's decision, exclusion from market authorities or acquisition of the listed company by a private entity). Among the different problems that the company can run into when deciding to list on a regulated market, below are identified some of most widespread.

Increased formalization of the decision-making process

Listing on a regulated market results in access to a particular corporate form that requires a series of formalities, both formal and substantial, which can significantly complicate the decision-making process. When a company is listed, it must therefore comply with a series of rules such as: protection of minority shareholders, supervision and prevention of situations of conflict of interest and defense of market integrity just to mention a few. For violations to such principles, penalties may consist of monetary fines or, in some cases, leading to criminal allegations. The analysis of these aspects reveals a very complex and articulated framework of the decision-making process, which must take into account and try to prevent these problems; hence the need to follow decisions in compliance with criteria of formalization, transparency, autonomy.

Higher compliance costs

In light of the high level of complexity of current regulations and the obligations borne by companies, listed companies are mandated to put in place a dedicated unit entirely dedicated to the management of compliance risk. This is the risk associated with non-compliance with laws or regulations that can lead to penalties, fines, revocation of authorizations or, in the worst cases, suspension of activity. It is therefore necessary to set up a specific structure that evaluates and monitors the company's compliance with the rules in force in the appropriate listing market, in order to avoid economic sanctions that can often be very burdensome for the company itself. Another crucial aspect related to corporate compliance is the protection of the company's reputation, of which a possible deterioration could damage the relationship with customers, partners and all stakeholders in general, causing negative effects that spill over into the performance of the entire company. In listed companies, trust is essential to preserve the relationship with investors, and in the event that this should fail, the effects could be very harmful: hence the importance of an efficient corporate compliance activity. This is a cyclical process, characterized by organizational and operational control mechanisms aimed to avoid misalignments with respect to the rules of the market in which the company operates, ensuring full and continuous compliance with current legislation. From an operational point of view, the function must: assess

the sources of risk of non-compliance to which the company is subject, verify the current business situation, establish the policies and procedures to be implemented to counteract the risks identified, encourage the development of skills and professionalism necessary to ensure an effective application of the rules and processes defined, draw up a periodic plan of compliance checks, draw up a periodic report of compliance activity, prepare any corrective actions. In order to operate properly, it is necessary that the compliance structure is independent from the company's operational areas and that it is equipped with qualitatively and quantitatively adequate processes and resources with respect to the tasks to be fulfilled. In order to comply with the rules of the market in which it operates and to preserve the company's image and reputation, to have a solid and efficient structure responsible for compliance and risk management related to this activity, which inevitably requires a more or less significant economic expenditure based on the type of structure adopted.

Costs and increasing pressure related to short-term performance

Companies listed on the stock exchanges are obliged to draw up the quarterly reporting on the economic and financial performance of the company: they are therefore required to disclose to the market key financial and operational data (i.e. profits, net result, sales, earnings per share and other key performance indicators). This information is then used by analysts and investors who evaluate the company's operations and its attitude to generate value. An interim report therefore aims to inform the public about the evolution of current business management, both for the patrimonial and income aspects, and thus responds to the need of the financial markets to have accounting information available more frequently than in the annual period. This activity leads to two important outcomes for the company: the cost of using resources for the preparation of the timely financial statements and the risk that business decisions will be distorted by the search for economic results in the short-term, to the detriment of options with development in the medium to long term. In fact, with regards to the second issue, market tend to overreact to negative (or below-expectations) results, exposing the company shares to sales and value decrease on the market.

Higher exposure to takeover risk

In markets where the practice of the public company prevails and in cases where, after the placement, the controlling stake is contestable, the companies are exposed to the risk of takeover from another company. Takeover is an operation in which an economic entity, generally an industrial enterprise or a financial company, gains control of a listed company by purchasing a sufficient share of its shares on the market to hold control. Friendly takeovers are distinguished from hostile takeovers as whereas in the first case the target company makes an agreement with the acquiring company, in the second case, there may be reasons either of an economic or speculative nature. From a purely economic point of view, the reasons are linked to the objective of rapidly penetrating new markets in which the target company has a significant presence and a good market position, or the objective of allying with a strong competitor in order to neutralize possible conflicts in the future.

Generally, such takeover operations are carried out when the target company has a good quality management. When, on the other hand, it is considered that the management of the target company is of low quality, the

takeover objective is speculative: the acquiring company replaces the management of the target company with a new management team, oriented to policies of maximization of the patrimonial and financial performance in the short term. The hope is to make high profits by replacing the management team, enhancing the value of the company itself and possibly selling it entirely or via breakups. As in the case of pressure for short-term performance, exposure to the risk of takeover is on the one hand an incentive and on the other a threat as if on the one side it represents an incentive for management to align with the interests of shareholders, on the other side, in case of under-performance, it is a mechanism leading to the restructuring of the company.

However, this process contributes to improving the level of market efficiency. This reflects the importance of the quality of business management in listed markets, where situations of negative economic performance lead to the possible collapse of a company much more quickly than companies that do not operate on equity markets.

1.3 Actors involved in the IPO Process

IPOs feature a series of actors involved in the process. In addition to the issuing company, in fact, institutional and individual investors, shareholders who participate in the offer by selling the shares owned, advisors and banks of the placement syndicate, the listing market management company, the supervisory authority that authorizes the offer are involved, among others. Overall, the role of the investment banks that are part of the placement syndicate and the issuer's advisor is particularly relevant as their primary goal is to the most value of the issuing company, making it attractive to investors, and of coordinating the pricing process in a manner consistent with the valuations that will be expressed by the market. Below, the main actors and relative activities are summarized[7].

The company

Several objectives, both of a financial and of a more general nature, can be the basis of the company's choice to undertake the path of going public. In general terms, access to the capital market expands the company's ability to finance growth and improves the status of the company. The positive effects arise, for example, from strictly market reasons (presence of institutional investors in the capital) or from the credibility associated with having passed the selection of the listing process to the ability to attract managerial resources.

As already pointed out, the issuing company and its shareholders have a fundamental role in the process of defining the price for the purpose of listing on the stock exchange, since, on the one hand, they will want to obtain the best valuation of the stock and see the efforts made so far rewarded, on the other, in order to make the investment attractive and ensure the success of the operation, they will may have to grant a reasonable price discount (underpricing) to investors in order to allow them to achieve a return appropriate to their expectations. Issuing company faces a series of conflicting motivations over the IPO process, and in some

[7] Bochner, S. E., Avina, J. C., Cheng, C. Y. (2016). Guide to the Initial Public Offering, 8th Ed. Merrill Corp.

cases either endogenous or exogenous factors (or a combination of both) can lead to the suspension of the process.

Financial Advisors

The financial advisor plays a central role in an IPO operation. The financial advisor, although not a mandatory figure, is the subject who generally assists the shareholders and the company throughout the listing process, coordinating and managing relations with other actors involved. The advisor carries out a whole series of activities, represented below, in the phase of preparation for listing, due diligence, pre-marketing, book building and pricing. During the preparatory phase, the financial advisor assists the company in the preparation of the business plan, according to criteria and guidelines generally accepted by the market. In fact, although financial projections contained in the plan are not generally communicated to the market, it is mainly on the basis of the indications contained therein that the equity story is built, or the profile of the issuing company that will be presented to investors in order to induce them to adhere to the offer of shares, able to make the most of the elements of attractiveness of the investment. At this stage, the financial advisor prepares a preliminary feasibility study of the transaction, defines the characteristics of the securities to be issued, the guidelines of the transaction and the indicative structure of the offer; it also assists the company in the selection of other actors to be involved, such as the global coordinator, the sponsor, the other consultants and the communication company. Also at this stage, the advisor draws up a first rough assessment, which allows the shareholders of the issuer to judge the convenience or otherwise of the listing operation.

During the due diligence phase, the financial advisor coordinates, together with the placement bank, the process of elaboration of the equity story to be presented to the market, collaborates in the preparation of the prospectus, assists the company in the relationship with the banks of the consortium and with its financial analysts and is responsible for promoting the corporate image by supporting the lists in relation with the communication company. At the end of this phase, together with the placing bank, it presents the company with a first valuation hypothesis (preliminary valuation range). During the pre-marketing activity, the financial advisor, in agreement with the placement bank, assists the issuer in the preparation of the presentation to be made to the consortium analysts (analyst presentation), coordinates the pilot fishing, investor education and the setting of the target price range as well as the maximum price to be reported in the prospectus. During book building, the advisor, together with the coordinating bank, assists the issuer in carrying out the roadshow, verifies the formation of the book, assists in the definition of the final price and in the allocation of securities to investors. What has just been described highlights the importance of the role of the financial advisor in the IPO process: for these reasons, the company and its shareholders should choose him accurately, only after having carried out an appropriate beauty contest. The selection criteria should give priority to those accredited to the investment community for having successfully and on time to assist other companies during the listing process. Since the role of the financial advisor is different from that of the global coordinator, described below, it can also be covered by non-bank structures, or by the so-called corporate finance boutiques.

The Syndicate banks

The placement syndicate consists of the set of banks that, with different roles, carry out the activities necessary for the placement of shares with investors. In IPO above a certain size, the structure of the syndicate is typically pyramidal: at its top there is the global coordinator (or more global coordinators, in the most complex cases) and then, a few ranks of banks with positions of lesser importance and responsibility. The leading banks of the syndicate performs management and coordination function (and benefit from a higher level of commissions) whereas the others are dedicated to the distributive function. There are different syndicate formulas in share placement operations.

It is possible to distinguish preliminarily between placement unions in the strict sense and placement and guarantee unions. In the first case, the banks are essentially engaged in performing a function of distribution of securities to investors through a process that includes all marketing activities and the final settlement, without guaranteeing the successful completion of the offer (i.e. best effort). In the second case of placement and guarantee the syndicate performs not only the distribution function described above but also that of assuming the commitment to guarantee the successful completion of the offer, with particular regard to the securities subject to purchase orders collected during the book building but not regulated. In fact, the syndicate banks, in order to limit the position risk related to the provision of the guarantee, tend to sign before the start of the placement only a guarantee contract relating to the retail tranche (when provided), conditional on the subsequent signing of the placement and guarantee contract of the institutional tranche. This latter guarantee is generally signed only at the end of the institutional order collection phase, only if the outcome of the offer has been satisfactory. Therefore, the guarantee provided by the syndicate concerns only the settlement of the institutional orders that have been actually allocated. All these activities reflect on a cost for the issuer consisting of the part of the total commission that will have to pay to the banks called underwriting fee (guarantee fees). Accordingly, the main activities carried out by the placement syndicate include are collecting preliminary feedback from investors, ensure the reliability of the issuer and carry out the placing and pricing activity. These are fundamental activities in order to reach the final definition of the terms of the offer and the performance of the order collection and pricing process.

As mentioned above, the placement syndicate, especially in the largest IPO processes, assumes a pyramidal structure that has the global coordinator at the top (also in joint form) and is articulated in such a way as to manage the different tranches of the global offer, namely the retail offer, typically intended for individual investors in the domestic market, and the institutional offer, aimed simultaneously at international and domestic institutional investors. To address these two components, banks are organized by levels of responsibility and by functions. The latter refer, roughly, to the division of the union's activities between those of execution, underwriting and placement. In this regard, a distinction is made between: (i) banks belonging to the managing group of the consortium, which have the responsibility of managing the union and oversee the execution of the operation (global coordinator, bookrunner, co-lead manager); in addition, they assume the guarantee commitment (underwriting) and can also carry out the placement activity placement), (ii) non-managing underwriter banks (i.e. banks undertaking) the guarantee commitment and carry out the placement activity and (iii) banks belonging to the selling group, operating exclusively in the placement activity without providing guarantee. The roles and activities described above correspond to a remuneration scheme for banks

within the overall margin (gross spread) that the issuing company pays to the syndicate. This is a percentage calculated on the amount of funds raised through the placement and can reach 7% in particular cases.

The gross spread is divided into three components that correspond to the responsibilities and tasks of the banks in the syndicate: management fee, underwriting fee and selling fee. It is useful to highlight that the components represented by the selling fee is normally the highest (about 50-60% of the total) and this reflects how relevant and critical the placement activity is in terms of the ability to reach and solicit the interest of investors. The process of setting up the placement syndicate starts from the choice of the global coordinator, that is, the investment bank (or investment banks, in the case of joint mandates) that had the mandate to coordinate the capital raising operation. The appointment of one or more global coordinators, and more generally the number of the union, is related to the size of the operation and therefore to the need to split the risks, to the level of competition between the investment banks at a given historical moment and the specific interest of the issuer in the participation of certain banks. The correct choice of the banks of the placement and guarantee consortium is a fundamental step for the success of IPOs, therefore it is also necessary to take into account the specializations that characterize these subjects in terms of categories of investors (mutual funds, hedge funds, insurance, pension funds), geographical coverage, size of operations, sectors to which the issuers belong. Finally, it is also necessary to consider, where the global offer also includes the retail tranche, the need to establish the consortium for the retail public offer which is typically composed of domestic banks with a strong territorial presence in the issuer's home country.

Consortium banks analysts

The financial analysts of the banks of the consortium play a key role in an IPO process since their credibility and reputation can affect the interest of the main institutional investors and therefore the success of the operation Although the analyst is part of the working group of the placement bank, he must be seen as an independent third party whose task is to study and understand the equity story and then represent it in an *ad hoc* document (research or equity research), which will be circulated to the target investors of the consortium banks in order to approach them on the profile of the proposed investment. The content of the equity research elaborated by the analysts can also represent a further element of comfort for the banks of the consortium on the validity of the equity story that will be conveyed to the target investors and therefore a significant safeguard for the defense of their reputation. It follows that the reputation of the financial analysts of the consortium banks involved in the transaction is a fundamental element of an IPO. It is also expressed through public rankings drawn up by specialized companies also with reference to some industrial sectors or geographical areas of reference. The ability of these subjects to stimulate and solicit the interest of the most important investors (the so-called opinion leaders or price makers), who in turn can act as a catalyst for other investors generating a very important cascading effect, is fundamental for the success of the operation. The issuing company should therefore consider the financial analyst as an independent external entity to be involved and convinced as an institutional investor, precisely because its research is one of the most important factors to influence investors' opinion about the competitive positioning of the issuer and its evaluation. Furthermore, the research represents a very useful tool during the pre-marketing activity to collect preliminary indications on the attractiveness of the proposed investment and on the range of values that will then be the reference

during the book building. The research is generally structured according to consolidated guidelines and consists of the following key areas: (i) the investment case (i.e. the main reasons for buying the security), (ii) the analysis of the strengths and weaknesses of the company, (iii) the analysis of the sector and competitive positioning of the company, (iv) the risk factors of the investment, (v) the evaluation criteria of the company and sometimes a range of values, (vi) the history of the company and description of its activities, (vii) the biography of management and shareholders, (viii) the analysis of the business units and the business model; (ix) the analysis of the company's product/service portfolio and brands and (x) historical financial data and estimation of prospective financial data. It should be noted that the financial projections reported in the research are the result of the work of the analyst and do not represent the estimates contained in the business plan drawn up by the listed company; in the preparation of the research, the analyst may not have access to information and data other than those present in the Prospectus. Often, the research published at IPOs does not contain an explicit assessment of the listed company but tends to identify a representative sample of listed companies with similar characteristics to the listed company (peer group), which listing multiples can represent a comparable proxy for the evaluation of the listing company. The content of the research usually follows the indications present in the Research Memorandum (or Memorandum) prepared by the law firm that follows the listing operation on behalf of the banks of the consortium. The Memorandum contains procedures and rules regarding the structure of the research and the method of publication and distribution, as well as the obligations following publication, which typically provide for the so-called black out period. During this phase, which begins with the publication of the research and ends approximately 40 days after the closing of the IPO, the analyst will no longer be able to publish or distribute further notes or studies regarding the company subject to the offer. Once published, the research will also serve in supporting the placing bank's sales activities in order to interact with interested investors.

1.4 IPOs at different stages of a company

Despite the majority of IPO processes may show similar characteristics from the preliminary activities to the first day of market trading, not all companies being listed are alike. Companies in fact may reach the IPO gate for a series of different reasons and, most importantly, in different stages of their lifecycle. Assuming that all IPOs are ultimately driven to collect fresh financial resources from the market, the strategic rationale behind such choice may significantly vary from case to case. Below are summarized some of the key traits of companies embarking onto an IPO process at different stages of their development pattern.

Early-Stage Companies

An IPO is conventionally one of the main exit strategies for financial investors backing up startups or early-stage companies. Most notably, for private equity funds the exit is a crucial step as it is only at this time that after fees are distributes the limited partners will know if the fund has performed in line with expectations or has underperformed. In fact, despite interim valuations are constantly updated, representing an attempt of fair value of the portfolio company, these do not represent a guarantee a successful outcome of the investment

process. Since the holding perspective of private equity funds is for a limited time and with the announced target of selling the equity stake at a profit the ultimate goal of private equity funds is therefore to find a viable exit solution maximizing the value of their investment. This on turn, reflects on the capacity of private equity fund to return capital and excess profits to investors and approach the same or new institutional investors for future fundraising rounds. Thus, the so-called exit shaping, that is the preparation and positioning for the sale of participation held in a portfolio company represent a key priority for a private equity management team from the beginning of the investment period. Portfolio companies engaging in an IPO process generally feature stable consolidated income and a winning business model.

However, it may happen that very early-stage companies with poor financial track record may be listed, as investors are increasingly interested in start-up investments. In spite of the fact that historically the IPO option for smaller and early-stage company has been seen as non-recurrent, in recent years, with the boom of digital and high-tech business models, IPOs have increasingly interested this category of company which listing process has been sustained more by well-grounded entrepreneurial ideas and less by solid financials.

Intermediate Companies

Exit strategies may not solely lead to IPO process. Private equity investors may in fact consider disposal of their ownership to other private equity funds or strategic buyers (public or private), or eventually combine their portfolio company with another entity. Hence, a company can actually pursue its growth path as a private entity for several years or decades before considering the possibility to go public via IPO. If this is the case, the company which is an established entity with consolidated revenues and profitability look at the listing option not as an option to allow its previous shareholders to capitalize on their investment, but most likely to access capital to sustain growth for its operations. In these cases, it is possible to find a strong controlling group of shareholders who are not interested in disposing entirely their stake but rather to retain control even after the IPO. Listing processes for these companies usually refer to a minority shareholding stake being collocated on the market, a solution which on the one side channels the needed capital inflows to the company and on the other allows incumbent shareholders to maintain control over the entity. Overall, IPO cases regarding intermediate companies represents a quite meaningful share of annual listing.

Mature, Multinational and State-Owned Companies

Finally, it may be the case of large multinational companies deciding to go public in their later stages. These cases, despite far less common than the other two categories previously discussed, may take place because such entities, beyond access to fresh capital, are interested into promoting better standards of governance, disclosure and transparency. Among this kind of companies, there are also large state-owned companies, for which government authorities decide to recur to market in the pursuit of privatization efforts. Also in these circumstances, besides the main goal of collecting capitals, reasons for IPO span from the alignment to market-based best practices to improvement of management and governance. In many cases, IPO processes conducted by large, mature listed companies can entail at a later stage single assets or divisions. In fact, taking the case of large entities which expanded their operations through diversification over the time and operating different

across business, it may happen that under certain circumstances, the market recognizes a discount to the single company valuation compared to the sum of its part. In such cases, the controlling company has several options to increase the market value of its businesses. First of all, it can proceed to the deconsolidation and separate listing of one business unit which fundamentals (i.e. beta, profits seasonality, market dynamics, etc.) are uncorrelated with those of core business(-es). The separation of the business unit is therefore finalized to provide better visibility to investors in terms of financial results and management focus. This route is also defined as equity carveout, that is an IPO of a subsidiary in which shares of such subsidiary are separately sold in the market, allowing the parent company to raise new funds. An equity carveout does not constitute a full divesture because the parent company maintains a controlling interest in the subsidiary.

Additionally, large multi-business companies can rely on additional strategies to maximize shareholders value through and spin-offs and tracking stocks. A spin-off process is a pro rata distribution of the subsidiary's shares to existing parent company shareholders without involving a cash transaction, and the firm value of the parent company decreases correspondently. After spin-off, the subsidiary is independent both from an operating and managerial point of view, as there is a separate board of directors. Formally, no connections persist between the parent company and the subsidiary after the and the shareholder may elect to sell the received shares. To a different extent, tracking stocks are shares which cash flows are related to the performance of a subsidiary. Tracking stocks issuances have features similar with both equity carveouts and spin-offs, however, similarly to equity carveouts, under a tracking stock option the subsidiary is eventually controlled by the parent company. It is clear how the peculiarities of such transactions make them a solution fit for large companies in an advanced phase of their development, in which opportunities for immediate growth become more selective and the quest for shareholders returns replace the need of cash to sustain corporate growth. A final element refers to the complexity, as in several cases, equity carveouts, spinoffs and tracking stocks involve two or more entities in the same ownership structure.

1.5 Evolution and key trends in IPO activity

1.5.1 IPO Market Overview

2021 marked a record year for global IPO activity, as the post-2020 recovery brough on the market 3,022 new companies worldwide for a total of US$601.2 billion proceeds raised (Figure 2). These values provide an immediate term of comparison with regard to 2020 as they represent respectively an 88% (in volume terms) and 87% (in value terms) increase over the previous year. This trend has been sustained by an all regions and industrial sectors posting a positive increase over 2020.

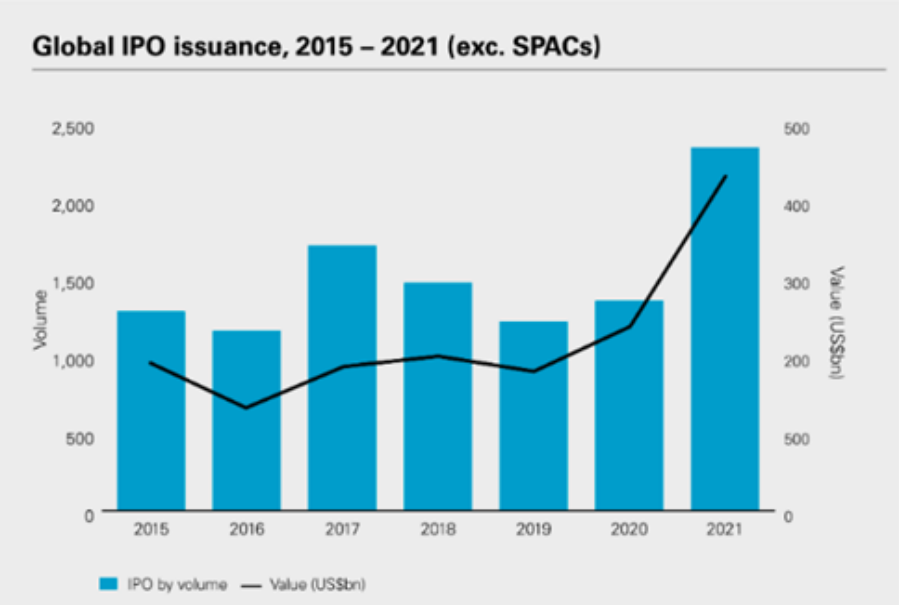
In particular, at geographical level:

- Americas confirmed to be the largest IPO market with 1,094 deals and US$293.8 billion collected (133% and 83% increase)
- Asia Pacific market recorded 1,338 IPOs with a countervalue of US$188.6 billion in 2021 (48% and 47% increase)

- Europe, the Middle East and Africa market posted 590 deals corresponding to US$118.8 billion (150% and 271% increase)

Looking at the main deals, the largest IPO was conducted by the electric vehicle manufacturer Rivian Automotive, which collected US$13.7 billion, witnessing an increasing interest from market players to technology, innovation and sustainability. To this extent, the COVID-19 downturn confirmed the need for a quick transformation as consumers adapted their behavior and new fast-growing startups are proving increasingly capable to address consumer's needs. The market increase in technology sector IPOs is contextualized within convergence trend, in which a large share of the major deals in 2021 involved companies which potential is being enabled by technology.

Figure 2: Global IPO Issuance Including and Excluding SPACs (2015-2021)



Source: Harvard Law School Forum on Corporate Governance[8]

The role of COVID-19 pandemics in this trend can be analyzed at different levels. Already in the second half of 2020 IPO market showed a sustained rebound over the previous months, as the ease of restrictions sustained a quick recovery in economy.

Despite the emergence of new disease variants led to increased market volatility in 2021, the market proved its resilience and more IPOs were successfully conducted on the wake of sustained demand. Also, 2021 figures benefits from the delay of IPO processes initially planned for 2020, which were conducted as it became clearer the positive trend in the economic environment. Looking at the demand side of the story, increasing savings and from retail investors and firepower from institutional ones, couple with the supportive monetary policies

[8] Rubinstein, J., Immordino, M., Guzman, J. (2022). Backed by SPACs, IPOs Hit New Heights in 2021. Harvard Law School Forum on Corporate Governance. Article published on 24 March 2022.

enacted from the central banks around the world to fend off the effect of COVID-19 effects, increased the market appetite for IPOs.

Regarding the key sectors, technology, finance and life science accounted for the largest part of the activity raising more than half of the total proceeds. The technology sector was the main sector realizing 631 IPOs in the year for a cumulative value of US$158.2 billion (an increase of 80% in deal volumes and 106% by value over 2020). Life sciences sector, leveraging on the higher attention on medical conditions brought about by COVID-19, accounted for a total of 366 IPOs and US$60.5 billion in proceeds (an increase of 67% and 34% respectively over 2020). Finally, finance collected 176 IPOs fetching US$25.9 billion in 2021, with the most sustained increases of 238% and 150% in terms of activity volume and value.

Despite not captured in the analysis some preliminary insights are collected for 2022 as well. After the record-breaking levels witnessed in 2021, volatile market conditions emerging in the first months of 2022 have reflected into a significant slowdown during the first quarter of 2022. Despite a positive start of the year, in continuity with the strong momentum of Q4 2021, in the second part of the first quarter, global stock market drastically inverted the trend declines with a downturn shift in market valuation and a significant contraction in global IPOs activity. During first quarter of 2022, IPO globally accounted for 321 deals and total proceedings of US$54.4billion, a contraction of 37% and 51% respectively compared to 2021. This quick market reversal can be explained with the convergence issues of different issues. Just to mention some of the most meaningful are: the surge in geopolitical tensions due to the Ukraine invasion by Russia, increase in stock market volatility due to price correction in overly positive market valuations, growing inflations pressure both in commodity and energy prices, likely reversal of expansive monetary policy in the near terms and, last but not least, the continuous risk related to restrictions and closure in major economies due to resurgence of COVID-19 contagion.

1.5.2 Focus on SPACs

The Special Purpose Acquisition Company, or more commonly SPAC is a particular corporate vehicle that is set up by some subjects, defined promoters (or alternatively founders, management teams or sponsors), characterized by high professional standing as well as specialized in specific industries and supported by operators with high experience in the M&A and private equity sectors. The goal of a SPAC is to complete listing, through an IPO, in order to raise capital from investors and subsequently proceed with the combination with an unlisted company, defined as a target, within a certain relatively short period of time (usually 18 – 24 months), so that the latter assumes the status of listed company. First of all, at the time of the listing of the SPAC on the market, specific units are placed consisting of shares and one or more warrants, which since the placement are "in the money", therefore they are convenient for the investor himself. Investors may include institutional investors, High Net Worth Individuals as well as retail investors.

After placing on the market, the resources collected are separated through particular mechanisms, represented by trusts (alternatively, escrow accounts or tied funds) on which interest accrues from so-called risk-less investments (i.e. U.S. T-Bond) in such a way as to be unavailable to promoters and to be destined for the

completion of the transaction through corporate integration with the target company. As mentioned above, the SPAC has a limited time horizon, as within, and no later than, 24 months (except in special cases where there may be an extension of a further 6 months to complete the business combination), the management team must identify the target company and proceed with the business combination. This must be approved with special qualified majorities, about 75-80%, by the shareholders/investors' meeting.

Alternatively, if the deal is rejected, the management team has two alternative ways to go: either present a new target or liquidate investors, with the latter option being pursued even in the event that no business combination is approved. In this case the investors who will be repaid with the liquidity held on the tied funds (generally corresponding to the IPO funds collected plus an interest).

A specific mention, for the sake of completeness, always in the context of the phase relating to corporate integration, therefore after the IPO has taken place, a SPAC may fall under four different categories[9]:

1. No target found: the SPAC has not announced its intention to acquire a target company;
2. Target found: the SPAC has announced, but not completed, the purchase proposal;
3. Acquisition completed: the SPAC has completed the acquisition of one or more target companies;
4. Acquisition withdrawn: the SPAC, after announcing the acquisition, withdraws it.

One of the most important with regard to the success of the entire operation, is that relating to the ways in which the business combination can take place:

- the shares of the target company can be purchased from the current shareholders
- new shares issued by the target company may be subscribed
- a direct or reverse merger between the SPAC and the target company may take place

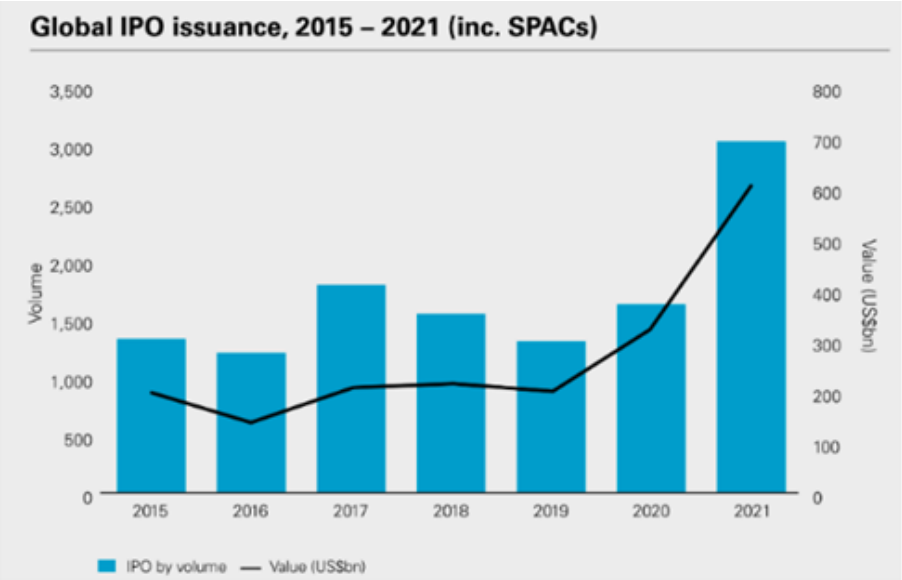
The most used method to complete the operation is the merger alternative.

Over the last years, SPAC have accounted for a large role in the U.S. and global IPO market for a series of reasons. First of all, the polices adopted over the last years by central banks have prompted an accumulation of funds in the hands of institutional investors, eager to find extra returns in a context of low rates. Another important point refers to the surge in venture capital investments needing a viable exit strategy. As discussed in previous paragraphs, conventional IPO listings are most fit for companies with a strong track record in terms of profitability. However, SPAC schemes allowed startup with high potential, mostly in technology, research and innovation to join the public markets just with a potential business model.

As can be seen from Figure 3, SPACs volume were quite sustained since 2015 and they accounted for the most of IPO growth in 2021.

[9] Lewellen, S. (2009). SPACs as an Asset Class. PhD dissertation. Yale University.

Figure 3: Global IPO Issuance Including and Excluding SPACs (2015-2021)



Source: Harvard Law School Forum on Corporate Governance[10]

SPACs literally recorded a boom in terms of deals volume and value during first months of 2021 (Figure 4), and the full 2021 posted 681 SPACs IPOs fetching a total US$172.3 billion in proceeds.

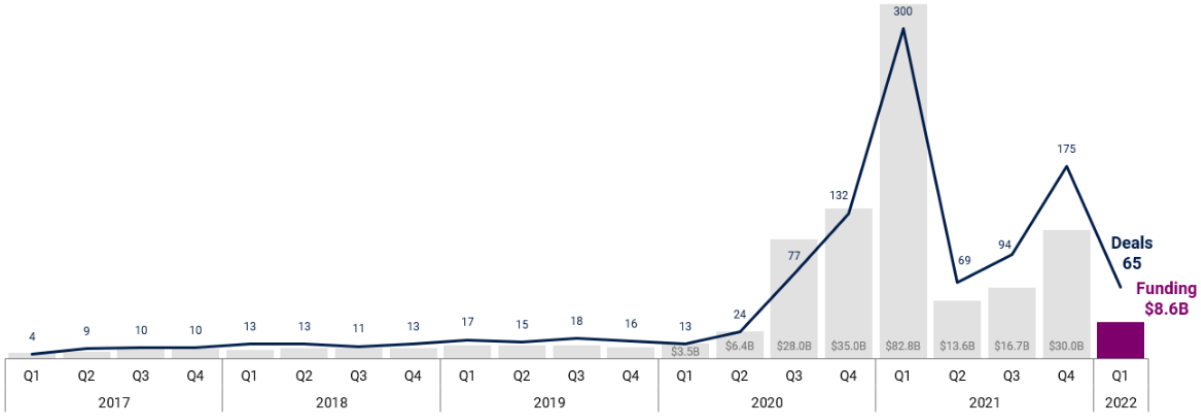
As seen for IPOs, also SPACs marked an uptick over 2020 with an increase of 166% in terms of volume and 105% in terms of value.

Despite SPACs IPOs tend to collect lower proceeds compared to conventional IPOs, seven SPACs IPOs raised more than US$1 billion each in 2021.

However, already during 2021, the U.S. market regulatory authority, the SEC started a process of review to increase transparency of these instruments. In March 2022, the SEC have finalized new rules that would limit market misbehavior by applying the same investor protections to SPACs that traditional IPOs have. Also, increased market uncertainties and increases in interest rates represented significant headwind for the sector. These issues combined resulted into a substantial cooling off of the market (in line with the wider IPO market trend) which accounted for 65 SPAC IPOs and US$8.6bn in the first three months of the year as shown in the figure below.

[10] Rubinstein, J., Immordino, M., Guzman, J. (2022). Backed by SPACs, IPOs Hit New Heights in 2021. Harvard Law School Forum on Corporate Governance. Article published on 24 March 2022.

Figure 4: U.S. SPACs Quarterly Activity (2017-2021)



Source: CBInsights[11]

[11] CBInsights (2022). What is a SPAC? Research Report, 5 April 2022.

CHAPTER 2: Company Value Assessment Methods

This Chapter 2 focuses on the description of the valuation methodologies adopted from analysts and financial practitioners to determine company or asset value. Each approach draws upon different theoretical foundations and best fits according to the valuations needs emerging from case to case.

Nonetheless, in the majority of circumstances results calculated under the different valuation methodologies are used in conjunction to determine a valuation range providing possible value boundaries and provide more comfortable estimations based on multiple assumptions. The valuation approaches hereby presented are: Discounted Cash Flow, Multiples and Economic Value Added.

2.1 Discounted Cash Flow

The Discounted Cash Flow (DCF) method compares the net present value of costs and revenue streams, in order to appraise economic viability of a project or a company. In particular, this methodology, also referred to as intrinsic valuation, estimates the value of a company based on the present value of the net cash flows generated after sustaining the necessary investments to ensure operations continuity. In this case, the definition corresponds to Free Cash Flow to Firm (FCFF) that is, the cash flow going to all investors, and does not take into consideration the financial structure of the company. The DCF method therefore quantifies the value of the company as expected cash flow in relation to the investment flows necessary to sustain its growth in the future and therefore it is strictly related to the company's ability to produce future cash flows to be made available to shareholders and creditors, after accounting for investments in working capital, as well as in fixed assets, necessary to ensure the conduct of business for the company. In summary, the value of the company's economic value under the DCF approach is given by the present value of the residual prospective cash flows.

The application of the methodology therefore requires the elaboration of explicit forecasts of future business results and to identify the appropriate discount rate to be applied to the cash flows, to convert them into discounted values referred to the date on which the assessment is carried out. The DCF model formula will be better discussed in following paragraphs. However, from the general formulation of DCF, it is possible to understand the importance of three key inputs:

1. Cash flows. Cash flows are estimated through the realization of a business plan of the company whereby, starting from subjective hypothesis about the dynamics of the main variables of the business (i.e. expected turnover growth, investment dynamics, prospective financial structure, competitive dynamics, etc.) it is possible to build up a prospective income statements and balance sheets and, consequently, the annual cash flow statement from which it is possible to derive the cash flows for each of the years taken into account. In this regard, typically a financial plan covers up to 5 years following its drafting and constitutes a key starting point for the evaluation process as it is realized through management direct assumptions and values can be considered a reliable proxy of the future CF over that time span. Nevertheless, in particular cases, in which revenues and costs are fairly predictable (i.e. concessions or regulated businesses) the time horizon of the plan may reach up to 15

or 20 years, limiting the need for dedicated assumptions regarding the period after the plan. As discussed, in this analysis FCFF are considered.

2. Discount rate. The discount rate expresses the risk and time value associated with prospective flows, which on turn depend on the overall risk of the company being assessed as well as on the reliability of the assumptions used to draw up the financial plan. For the scope of this analysis, and for consistency with the choice of FCFF, the chosen discount rate is the Weighted Average Cost of Capital (WACC) that is an average, weighed by company's financial structure, of the returns going to equity-holders and bond-holders. In some cases, it is possible to adopt different discount rates according to the growth stage of the company.

3. Terminal value. Represents the value of the company at the end of the period for which flows are analytically available. Therefore, assuming that the cash flows analyzed are those accrued between the current year 1 and year 5 of the business plan, the value of the enterprise at year 5 will be equal to the sum of all the cash flows generated from year 5 to infinity, which identifies the generic life horizon of the company. As will be discussed, terminal value calculation can be conducted in two different ways, reflecting the most appropriate approach to deal with time uncertainty in cash flow estimation.

The DCF formula to estimated firm value is explicated below[12]:

$$Value\ of\ firm = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1+WACC_{hg})^t} + \frac{FCFF_{n+1}/(WACC_{st} - g_n)}{(1+WACC_{hg})^n}$$

Where:
$FCFF_t$ = Free Cash Flow to Firm in period t
$WACC$ = Discount rate required by the riskiness of expected cash flows (*hg* and *st* refer to the time span of high growth and stable growth respectively, assuming the WACC may vary after the estimation period. Alternatively, only one WACC shall apply to the formula)
t = year of valuation
g_n = growth rate expected at year n
n = period of estimation

To determine the value of cash flows, alternative methodological configurations can be adopted, to which different sets of input correspond. Indeed, whereas to determine the unlevered firm value it must be ensured consistency between unlevered cash flows and WACC, if the valuation process focuses on equity value of the firm, the analysis will be conducted through Free Cash Flow to Equity (FCFE) discounted at K_e. Then by

[12] Damodaran, A. (2012). Investment Valuation: Tools and Techniques for Determining the Value of Any Asset, Wiley, 3rd Ed.

summing up the Net Debt (overall financial debt minus cash and cash equivalents) to DCF company value based on FCFE, it is possible to determine a company value consisted to the result determined with FCFF.

Elaborating on the case of firm valuation calculated though FCFF (or asset-side perspective) DCF approach allows the calculation of the market value of the net assets of a company (also referred to as enterprise value EV, or firm value FV) considering the cash flows from operational management, and without considering those related to financial management. Therefore, the flows generated by the characteristic management and therefore net of its own needs, can be defined as follows[13]:

Earnings Before Interest and Taxes

- Taxes (Calculated as per the Marginal Tax Rate)

Earnings Before Interest After Taxes

+ Depreciation & Amortization

- Capital Expenditure

- Variation in Net Working Capital

FCFF

After cash flows, it is necessary to estimate the discount rate. The WACC represents the cost that the company must bear to collect financial resources both from shareholders and third party lenders. The determinants of WACC are the cost of equity capital, the cost of debt, the tax rate, and the leverage ratio. The WACC formula is then[14]:

$$WACC = R_e \cdot \left(\frac{E}{D+E}\right) + R_d \cdot (1 - t_c) \cdot \left(\frac{D}{D+E}\right)$$

Where:

R_e = is the estimated cost of equity

R_d = is the estimated cost of debt

t_c = is the marginal tax rate

D = market value of debt

E = market value of equity

It is possible to appreciate how the R_e constitutes indeed a component of WACC. Where the equity flows are to be discounted, the rate to be used is the cost of equity, which represents the opportunity cost for equity holders. The generic formula for the estimation of R_e is:

[13] Damodaran, A. (2012). Investment Valuation: Tools and Techniques for Determining the Value of Any Asset, Wiley, 3rd Ed.

[14] Damodaran, A. (2012). Investment Valuation: Tools and Techniques for Determining the Value of Any Asset, Wiley, 3rd Ed.

$$R_e = R_f + \beta \cdot (R_{mkt} - R_f)$$

Where:
R_f = is the rate of return investors expect from risk-free assets
β = is a measure of the sensitivity of the security to the market risk premium
R_{mkt} = rate of returns investors expect from an investment in a portfolio replicating the market composition (where the weight of each asset is represented by such asset's market capitalization)
$Rm - Rf$ = is the term constituting the market risk premium, that is the premium investors expect to receive from risky investments over risk-free investments.

Within the R_e formula, the β term corresponds to the risk-specific (or non-diversifiable) risk component attributable to a generic security i relative to the broader market. Therefore, in general terms, securities replicating the market have a β of 1, whereas $\beta < 1$ is associated with securities with lower riskiness than the market and $\beta > 1$ to securities with a higher riskiness than the market. The risk level of a given security is determined as volatility around the market return, according to the following formula[15]:

$$B_i = \frac{Covariance\ of\ asset\ i\ with\ market\ portfolio}{Variance\ of\ the\ market\ portfolio} = \frac{\sigma_{im}}{\sigma_m^2}$$

The final key input of the model refers to the Terminal Value.
Terminal value should be calculated when using two-stage analytical financial methods. Terminal value is an important component of company evaluation as it embeds a considerable portion of firm value.
For this reason, some care is necessary to properly estimate it, since, as a rule of thumb for a reliable valuation to be made, terminal value should be lower than the value portion determined during the estimation period. When estimating the terminal value, which represents the ability to produce flows once the period of analytical forecasts has ended, particular attention must be paid, since it may vary according not only to the asset/equity-side perspective being taken, but also depending on and to the time period considered:

1. In the steady state hypothesis, it is assumed that the enterprise can maintain in the long term the ability to produce a predictable cash flow, growing steadily at a growth rate *g*. To this end, some assumptions are needed: revenues and unit costs remain constant in relative terms; capital expenditure and innovation investments substantially equal yearly depreciation and there is no change in net working capital; (3) the debt ratio is kept constant. In this way, it is possible to estimate the residual value of the firm at the year *t* in terms of a perpetuity and then discounting it back to present for the purposes of firm valuation.

[15] Damodaran, A. (2012). Investment Valuation: Tools and Techniques for Determining the Value of Any Asset, Wiley, 3rd Ed.

2. Alternatively to this approach, estimation of terminal value can be conducted through multiples estimation. This methodology, drawing upon the multiples approach, can be helpful whenever there are no clear assumptions on the company discount rate and growth rate beyond the estimation period and only terminal cash flow is available. Under the exit multiple approach, a multiple for company value is estimated (i.e. EV/EBITDA) and applied to the EBITDA corresponding to the last year of the estimation period. In such way it is estimated to residual company valuation at that year in future and then discounted to present.

To conclude this overview on DCF approach, it is necessary to outline some considerations. First of all, the methodology enjoys the great advantage of being an intrinsic method, based on more solid and analytical rationale than multiples for instance. DCF puts emphasis on the cash flow dimension of the company, providing flexibility to assess company value under different perspectives (equity or asset-side) and circumstances. In addition, it is based on values that explicitly take into account the extent and temporal distribution of financial flows over the years. It also takes into account the risk factor and uncertainty inherent in the economic calculation of the value of an investment. When all these inputs can be determined, DCF constitutes the most complete valuation tool for analysts, given the comprehensive value consideration of the firm.

2.2 Method of Multiples

The multiples approach refers instead to relative valuation, that is the company value is determined based on current prices on the market for similar companies' assets. The method based on multiples relies upon the fundamental assumption that a company valuation can be determined based on the comparison with other trading companies (or trading comparables) or transactions conducted in the past (previous transactions). Starting from this premise, multiples methodology represents a simpler and less time-consuming solution compared to DCF, to verify the adequacy of the valuation in relation to the market exchange prices found for comparable companies. It is therefore a solution aimed at ascertaining whether the value attributed to the company is in line with the normal average market value. The evaluation through multiples has reached a considerable success, specifically because it allows to formulate a judgment on the value of the company, based on a restricted set of data and hypotheses easily available and with substantial convenience from an operational point of view.

The aim of this method is to develop ratios (or multiples) through which it is possible to assess the value of the company.

The multiple, which can be defined as the ratio between a price (typically the EV or the price of a share) and a company economic metric (EBIT/EBITDA, net profit, etc.), must be multiplied by the same business economic magnitude as the company to be evaluated. The simplicity and speed of the method have allowed it to be widely adopted in financial sector as it is often used as a first check for company over/under valuation compared to similar firms. The application of multiples can be divided into four main phases:

1. The identification of a sample of comparable enterprises (i.e. a set of enterprises operating in the same sector and homogeneous from several points of view) is taken as a reference for the analysis. In particular, the company being compared, with respect to the sample of reference companies, should have most of the similarity characteristics in terms of: operating in the same sector, being comparable in terms of size, operating geography, financial and operational risks, markets segments, historical trends in results, development prospects and stage of life of the company, end customers, etc. Of course, it is very difficult to find a fully homogeneous sample of companies belonging to the same sector and listed on the same national market, especially in countries, where the stock market is not yet very developed and has small dimensions, with few listed companies. For this reason, although it is not the optimal solution, the evaluator may expand the sample with companies listed on foreign markets (even if they do not belong to the same sector), but which at least have similar quantitative and qualitative characteristics, such as growth rate, risk profile, degree of indebtedness, size. This phase of the process often includes a judgmental component to establish the best possible sample to return a reliable valuation.

2. The choice of the configuration of an enterprise value to refer to, namely the asset-side and equity-side configuration. With the first solution, multiples are referred to enterprise value (EV) and then to ensure consistency, relevant unlevered metrics shall be applied (Revenues, EBIT/EBITDA). In the second case, multiples refer directly to shareholder value (generally identified per share price of equity) and the key metrics refer to earnings or dividends.

3. The choice of a suitable business variable, through the use of economic, financial or patrimonial quantities. The economic reference quantities are revenues, EBITDA, EBIT and/or earnings. The balance sheet metrics refer instead to equity at book values (BV). From a financial perspective, on the other hand, the main aggregate is represented by cash flows.

4. Finally, after calculating the multiples of the company being evaluated and its comparables, the comparison of the values is carried out, drawing the conclusive considerations and also identifying the average value of the multiples. This last phase may involve a preliminary stage in which results are collected and ranked to define and rule out possible outliers. Then, the analysis is refined with the determination of the final valuation range, from which mean or median are taken as basis for target company valuation.

Asset Side Multiples

Asset-side multiples express the total enterprise value (EV), in relation to a variable that affects all investors (equity investors, creditors, minority interest holders) in the business. Asset-side multiples directly estimate the market value of venture capital added to the net financial position, where the numerator is represented by the market value of the company and the denominator coincides with a magnitude indicative of the economic

results. From an operating point of view, asset-side multiples are considered more attractive than equity-side multiples, as they focus on the assets as a whole, rather than just the value of equity holders' rights. In addition, asset-side multiples are less affected by differences in capital structure, because they measure the company with no need to reassess financial leverage and, finally, allow the use of data less affected by accounting differences. Below are described the main asset-side multiples.

- EV/EBIT or EV/EBITDA indicate the ratio between the market value of operating invested capital and operating income (either before or after depreciation and amortization). The reason why EV/EBIT and EV/EBITDA are the most widespread refers to the fact that as for most industrial and commercial companies, EBIT and EBITDA represent the capacity of the company to generate income from their core operations. A fundamental advantage of these multiples is that of being able to relate companies with different levels of debt. In fact, is likely to lose its meaning if there are differences in financial structure, capital intensity and taxation. Taking the case of EBITDA, when applicable, this represents a fair approximation of cash flow and is a magnitude poorly influenced by accounting measures. Although EBITDA is similar to cash flow, it should be noted, it represents a different magnitude. It does not take into account tax payments or changes in net working capital. These variables can increase or decrease enterprise value and affect EV/EBITDA multiple. Another advantage of the EV/EBITDA multiple is attributable to the fact that the estimate is not affected by different investment policies, translating into depreciation and amortization components in the income statement.

- EV/Revenues: is the ratio of the company's market value to sales. Sales tend to be largely comparable between companies operating in markets, sectors and countries that are also different from that of the company being evaluated, since turnover is not greatly affected by accounting policies. In addition, revenues, unlike other variables, do not have negative values, thus allowing the application of the multiple and comparison with other companies, regardless of the stage of development and situations. Revenue multiples tend to be more stable over time and less affected by extraordinary items than earnings or particularly cash flow. However, the turnover does not take into account the costs incurred to obtain that economic result and therefore is not a truthful expression of profitability. Changing pricing policies, increased competition, and strategic decisions often impact revenues in the first place, so these can provide a good indication of the future situation of changing companies or industries. Normally, revenue multiples are strongly correlated with the growth of the company's revenues; the higher the revenue growth, the higher the multiple and are particularly fit for commercial companies.

Equity Side Multiples

Equity side multiples regards the valuation of the equity component of the company. The most well-known equity side multiples are the so-called Price-Earnings ratio (P/E), that is, the comparison between the two

metrics relevant for shareholders and the Price to Book value. Generally speaking, due to their nature, equity side multiples are mainly applied in sectors with consolidated profitability.

- P/E ratio synthetizes the market price of a share to earnings per share. Whereas the market value of the stock is considered at current values, earnings per share can be referred to different time horizons. A first option regards the use of current earnings per share, leading to the comparison of both market price and profits at the given moment in which the multiple is calculated. A second way is defined as P/E trailing and takes into account trailing earnings per share calculated on an annual basis (considered the most accurate and most reliable method). Finally, the forward P/E is defined, with at the denominator estimated earnings for the future period (instead of not earnings achieved per share) and when the ratio returns a lower forward P/E ratio higher dividends per share are expected in the future. Apart from the calculation technicalities, the P/E ratio, one of the most widely adopted multiples in financial sector, provides a quick measure on company equity value based on earnings per share. There are nevertheless three fundamental shortcomings of the P/E multiple. The first we have listed even before and is related to the companies that are taken into account. This multiple cannot be used to compare companies that do not belong to the same industry. In fact, it takes on value when it is put in relationship with as many companies as possible that belong to the same market segment. Another limit assuming a substantial relevance is related to differences in financial structures, which can influence both the price and the earnings. As a result, two companies with different levels of debt will have different P/E but not always realistic as a company can have higher revenues but given by the fact that it takes more risks. Finally, accounting policies has an impact as two companies treating differently depreciation and amortization may have substantially different P/E.

- P/BV ratio reflects the market price of a share to the book value of equity per share. The value of this index defines the company based on its dispersion around the value 1. A value of less than 1 of this multiple implies that the enterprise has a market capitalization lower than the amount of equity. A value higher than 1, on the contrary, indicates that the market is willing to pay a higher price than book value for that share as market investors perceive the company as value creating. Usually, this multiple is used for investment-intensive companies, while it is less significant for companies with low levels of investment. The financial structure affects the P/BV ratio as well. A company that finances growth through debt has a lower BV than a company that finances itself by withholding profits and not by distributing dividends. Accordingly, in the construction of the peer group, the evaluator must therefore consider companies that have a homogeneous debt-to equity ratio. Such considerations may be related to the specific circumstances or market conditions, leading to an undervaluation of the company. Despite its adoption for companies presenting negative economic results, one limit of P/BV is that this multiple has is that it cannot be applied to firms that record a loss of money for long periods as they will record a negative net capital market value.

Once the same multiple has been calculated for the company peer group, it is sufficient to take its average (or median) value and multiply it by the same magnitude as the denominator of the company to be evaluated. Finally, in case asset-based multiple has been calculated, to obtain the value of the equity it is necessary, in the case of multiple asset side subtract the net financial position and divide the resulting value by the number of shares. A further distinction that can be made on multiples is inherent in the measures adopted at the denominator:

- current multiples: values are taken from the last available interim financial statement;
- trailing multiples: the value is an average of the results obtained in the recent quarters;
- forward multiples: both the numerator and the denominator refer to future results.

A final consideration regarding multiples can be made in reference to the approach used for price estimation. These, in fact, can be calculated using the prices found in the listed markets (stock market multiples) or on the basis of prices referable to transactions of companies (deal multiples). Analysis based on precedent transactions (or transaction comparables) similarly to comparable companies approach, deploys multiples-based approach to derive an implied valuation range for a given company or asset subject to a merger and acquisition transaction (M&A). The main premise relies to the fact that a company can be evaluated based on multiples paid for comparable companies in prior M&A deals. This methodology has a broad range of applications, most notably to help determine a potential sale price range for a company, or part thereof, in an M&A transaction. The selection of an appropriate set of comparable acquisitions is the foundation for performing precedent transactions. This process incorporates a similar approach to that for determining a universe of comparable companies. The best comparable acquisitions typically involve companies sharing similar characteristics to the target from a fundamental point of view.

Assuming conventional market conditions, valuation conducted through precedent transaction tends to return a higher range than trading comparable multiples for two main reasons. First, this approach is based not much on market conditions, but on M&A deals, wherein buyers generally pay a control premium in order to receiving the right to control decisions regarding the target activities. A second reasons regards the nature of the transaction, as strategic buyers often seek synergies realization when conducting acquisitions. Synergies refer to the expected cost savings, growth opportunities, and other financial benefits that occur as a result of the combination of two businesses and supports the buyer's capacity to pay a higher acquisition price. The necessary process to reach company valuation under precedent transactions approach resembles the steps characterizing the multiples methodology described in the previous paragraphs. As such, multiples valuation based on comparable transactions analysis shares the same characteristics of trading comparables valuation.

2.3 Economic Value Added

The last model under analysis is the Economic Value Added, more commonly known as EVA®. This method, labeled under a registered trademark since it was proposed by the consulting company Sten Stewart & Co, had a strong diffusion around since the 1990s and today still constitutes an innovative model for evaluating the

economic-financial performance of a company. This methodology is based on the concept of residual income, that is, the one that remains from the economic result after the coverage of the cost of capital[16].

As mentioned, the EVA® is an indicator that measures the ability to generate value, intended as residual income. Subsequently, over the years, it has also been used as a method of evaluating the company since it compares the return on invested capital with the cost of the same and determines whether the firm has created or destroyed value. EVA® method can be represented by the following formula[17]:

$$EVA® = NOPAT - WACC * IC$$

Where:

NOPAT = Net Operating Profit After Taxes

WACC = Weighted Average Cost of Capital

IC = Invested Capital

In order to carry out a more in-depth analysis it is necessary to make some re-arrangements to the formula expressed above, to compare the return on invested capital (*r*) with the weighted average cost of capital:

$$r = NOPAT / IC$$

And then, it is possible to derive:

$$EVA® = (r - WACC) * IC$$

This formula indicates that if the difference between the return on invested capital and the average cost of capital is greater than zero, then the increase in IC will correspond to an increase in value (EVA® greater than zero). Otherwise (i.e. when the term *r – WACC is* negative), we will have a reduction in value (negative EVA®).

This evaluation criterion is nothing more than a useful model for determining the wealth created by the company over a given period of time, based on the ability to offer a superior remuneration after covering the entire cost of capital.

[16] Stern, J. M., Stewart, G. B., Chew, D. H. (1995). The EVA Financial Management System. Journal of Applied Corporate Finance, 8(2), 32-46.

[17] Stern, J. M., Shiely, J. S., Ross, I. (2001). The EVA Challenge Implementing Value-Added Change in an Organization. John Wiley & Sons, Inc.

From these considerations it is possible to deduce that there will be an increase in the EVA® when:

- The rate of return of existing assets increases, that is, when the NOPAT increases, without investing additional resources
- When new resources are invested in cost-effective projects, and are invested until the return exceeds the cost of capital
- The company divest in assets that do not produce an affordable return

It is interesting to understand the calculation of the main component of EVA®, that is the NOPAT.

With regard to this first component of the formula, it is necessary to consider that for the calculation of the ability of the company to remunerate the invested capital, NOPAT is the best measure. This configuration looks like that part of monetary income available for the remuneration of those who have invested capital in the company, either as bearers of risk capital or as external lenders. NOPAT expresses the operating income generated in the year net of tax, but gross of financial charges, representing an intermediate result that is not affected by the company's financing choices. It is determined through the following reference scheme:

Numerical operating income

- Numerical operating costs

= Gross operating result (EBITDA)

- Depreciation and operating provisions

= Gross operating result (EBIT)

- Taxes on operating income

= NOPAT

NOPAT is influenced on the revenue side by several value drivers such as: prices, sales mixes and volumes; on the cost side, the efficiency of operating activities and that of support activities. Following the logic of the EVA® model, the taxes assumed in the calculation are proforma (i.e. taxes that do not take into account the tax shield effect exerted by financial charges). Considerations referred to WACC calculation follow the process discussed under Section 2.1.

At this point it is necessary to understand what changes should be made to the variables used in the EVA® model. According to the EVA® theoretical construction[18], about 160 possible adjustments has identified with the aim to eliminate any possible inconsistencies deriving from the application of accounting methods. The objective here is to describe only the main ones, which impact on NOPAT and Invested Capital, in order to eliminate any risk that the indicators do not provide information suitable in the perspective of value creation. These adjustments have to be evaluated specifically on the basis of the actual need from case to case, if there

[18] Stern, J. M., Stewart, G. B., Chew, D. H. (1995). The EVA Financial Management System. Journal of Applied Corporate Finance, 8(2), 32-46.

is a significant impact on the calculation of the EVA® and when the cost/benefit considerations in the activity of finding the necessary information provide positive contribution to the analysis. Concluding this brief discussion on adjustments we can say that their functions are first of all to bring the value of equity closer to the value of the company's economic capital, netting it from the possible distortions that the pursuit of accounting principles can generate and in addition to this, report the effect of adjustments on the real behavior of managers, empowering them around their objectives. From now on, therefore, only the main corrections will be listed[19]:

- Accounting of investments in R&D
- Costs recorded only according to the criterion of successful investments rather than on the total costs incurred
- Deferral of the positive effects of the investment with respect to the time of its execution
- Value of real options
- Goodwill depreciation
- Inventories
- Methods of carrying out the amortization of investments
- Funds having the same nature as capital
- Treatment of deferred taxes
- Financial leasing operations

In the previous paragraphs the discussion has been focused on the description of the EVA® model, mainly with regard to its formulation. However, it is useful to dig deeper and understand, through a critical vision, what are the real strengths of this model, that is, what it allows to obtain over the other valuation methodologies. Surely a primary positive effect that this methodology allows analysts to obtain is that it incorporates the risk factor (that is, through the process of estimating the beta it is possible to appreciate the degree of systemic riskiness that weighs on the company) and on top of this it returns the added value from the company activities.

It is also a valid tool for evaluating company performance as it aligns employee behavior and performance with company value creation and can be used to detach incentive compensation from the traditional accounting measures. From the perspective of corporate management, EVA® increases managerial accountability as a result of its ability to measure the required economic return on all investments through a flexible process adaptable to each company configuration.

Additionally, EVA® combines income statement and the balance sheet measures and fundamentally helps to sustain company in achieving sustainable long-term objectives. Compared to DCF, EVA® makes possible to transform cash flows (adopted as basis to evaluate investments over a multi-year horizon) into a simple, readily

[19] Stern, J. M., Shiely, J. S., Ross, I. (2001). The EVA Challenge Implementing Value-Added Change in an Organization. John Wiley & Sons, Inc.

adaptable measure of annual corporate operating performance showing a direct connection between operating and strategic investment decisions.

2.4 The limits of the three different valuation methods

The methodologies exposed so far in this Chapter are all largely adopted in financial word across industries. As discussed, for each it is possible to define some clear advantages according to the specific case. Likewise, different valuation methodologies present shortcomings and attributes which the user must take into account in the process. Below a series of limitations and considerations are elaborated according to each approach.

Discounted Cash Flow

Despite the analytical process leading to an intrinsic valuation the DCF methodology carries at the same time some limitations. First, the large input base means that DCF value determination is based on numerous assumptions, and then there is a risk of a lack of reliability of the results, and loss of objectivity. Focusing on future cash flows, and therefore on elements that vary and become more uncertain along with the time, formulating multiple hypotheses in order to estimate future flows creates a high degree of uncertainty. Obviously, the more reliable information available to the evaluator, the lower the degree of uncertainty of the evaluation carried out. For large companies, especially those listed on the stock exchange that are subject to certain standards in terms of reporting, uncertainty is diminishing. The discounted cash flow method is mainly suitable for companies that have a financial dynamic such as commercial, retail, services or financial companies. On the contrary, it is not suitable for those firms with a high capitalization of assets and cash flows are non-existent, irrelevant or low.

Looking more specifically at the model, beyond the estimation period, there a strongly limited reliability of value forecasts and the solution relating to terminal value still represents high-level estimation which needs to be treated carefully. Regarding the WACC, some practical problems are related to the determination of the K_e in the case of non-listed companies. The difficulties increase if the company to be evaluated belongs to economic systems in which the securities markets are poorly developed. In summary, relatively small changes in key assumptions, such as growth rates, margins, WACC, or exit multiple, can produce meaningfully different valuation ranges.

Multiples

The already mentioned conceptual difference between the trading price and the economic value of a company is the main point of consideration. An overarching issue is the fact that multiples analysis is influenced by the characteristics of the selected companies and the results are inherently based on the subjects involved. Additionally, for several reasons from case to case there could be a limited availability of comparable companies (conversely, the same applies to comparable transactions as the number of transactions within which to choose comparable ones is often small and depends on the context in which you operate). On turn, this can lead to the choice of companies that are significantly different from the one being evaluated when

there is absence of relevant comparables, such as in the case of pure play companies (i.e. few or just one company operates in the market or in a niche sector), whereby the valuation implied by multiples can be less meaningful as determined on a restricted information base.

Concerning the quality of input data, trading information is often difficult to access and excessively rely on market conditions. Since valuation that is completely determined on market fundamentals, it can be skewed during periods of irrational exuberance or bearishness. Further, despite adopting EBITDA-based multiples, comparable valuation shows a potential disconnect from cash flow, as the valuation is determined on prevailing market conditions or expectations that can be totally unrelated from company's projected cash flow generation capacity and therefore such valuation may provide a diverging result compared to DCF analysis. Also, this may fail to incorporate into the analysis those target-specific strengths, weaknesses, opportunities, and risks which may all affect company value.

Concerning the adoption of multiples methodology in terms of previous transactions, another issue regards the singles transaction's basis for valuation. Indeed, acquisition rationales may consistently vary due to projections on future financial performance, current product/service base and other factors which may not be included into the scope of valuation being conducted. Hence, the nature of valuation should be accounted for as not all comparables are really a reliable source for value determination.

Finally, it should be noted that over/undervaluation considerations should always be referred in connection to relative sample of companies included in the analysis. In fact, over/undervaluation are relative to an average (or median) value of similar companies that can lead to distortions such as underestimating companies with excellent capabilities and overestimating poorly managed companies solely based on the adopted financial metric resulting at that point in time.

Economic Value Added

Among the main limitations, analysts need to take into account that the effects of the value of company strategy beyond the horizon of the plan is neglected. This means that the EVA® model looks only and exclusively at the achievement of the strategic objectives it sets itself, without however paying attention to what will be the effects in subsequent periods.

In addition, the EVA® model does not consider the financial value of time. For the elimination of this type of problem, some adaptations to the basic EVA® methodology can be introduced, corresponding to the difference between the market value and the book value of a company. If this value is positive, it indicates that there has been an increase in the value of the capital invested in the company, due to a return greater than the cost of capital. If, on the other hand, there is a negative value, this will indicate a decrease due to a yield lower than this cost.

The EVA® approach requires, a rather high know-how of financial knowledge, which many companies in our country do not have, especially due to the fact that most are small-medium in size and often what is missing is precisely the necessary convenience to implement a system capable of measuring business performance from the point of view of value. This is because it costs the company too much, in terms of finding resources, to develop such a system; large companies, on the other hand, for some years now seem to show a certain

interest in these new performance evaluation systems. A final point regards the necessary adjustments due to accounting purposes (i.e. under GAAP application). In fact, despite being a bridge from operating economic results to cash flow generation, the degree and the nature of adjustments required is often criticized as may render not clear the information content based on which the EVA® is estimated. Finally, in order to materialize the prospected benefits, EVA® method must be implemented properly. EVA® proves limited viability for some firms in which management implements EVA® too fast, resulting in a lack of understanding.

CHAPTER 3: TrenDevice presentation and evaluation

The third chapter is developed in two parts: in the first part, the company and its target market will be presented, while in the second part the company will be analysed using three different evaluation methods.

3.1 Company overview

TrenDevice is an Italian e-commerce company, forerunner in the distribution and supply of refurbished smartphones, tablets and electronics, founded in 2013 by Antonio Capaldo and Alessandro Palmisano.
Through direct management and control over the value chain, the company holds a middle position between sellers of new and used phones.
Their sale offer includes fully functional phones with perfect or great appearance, costs up to 30 percent lower, and a one-year warranty.
Moreover, the categories of goods offered are determined by the device conditions: A+ is used when the phone is literally brand new, and C when there are evident scratches on it.
TrenDevice operates as instant buyer of high-quality second-hand products by performing free pickups. Specifically, product procurement occurs through various supply channels, the majority of which are international wholesalers and B2C online customers, accounting for 59% and 30%, respectively. The remainder is constituted of smaller channels such as physical store pick-up and enterprise.
Subsequently, all devices are examined for any defects and problems that require repair before being sold. The "reconditioning" phase is completed in-house and includes over 30 hardware and software tests; by performing this operation in-house, the company gives its customers full quality control of the products, ensuring greater safety compared to used phones.
Aside from the core business, additional services such as "TrenDevice+ Membership" and the "TrenDevice Academy" are made available in order to provide customers with the most complete experience possible.
In the former case, buyers are entitled to extra services such as free shipping on all purchases and specialized technical support, whereas in the latter case they have access to contents that allow them to explore and learn about functions and tricks of high-tech products.

3.1.1 Environment- friendly

TrenDevice provides a distinctive sustainable solution in a sector where planned obsolescence is the rule. As one of the fastest-growing device refurbishing businesses, TrenDevice's mission is to extend the life cycle of high-end hi-tech devices by bridging the gap between manufacturers and consumers.
By providing an alternative to the business models of tech giants, TrenDevice is transforming the device industry. By establishing a circular economy that prioritizes sustainability, the company hopes to transform the device industry. With the sale of more than 100.000 devices and the reduction of nearly 80% of the carbon footprint of buying new without sacrificing quality, their business is succeeding.

3.1.2 Market analysis

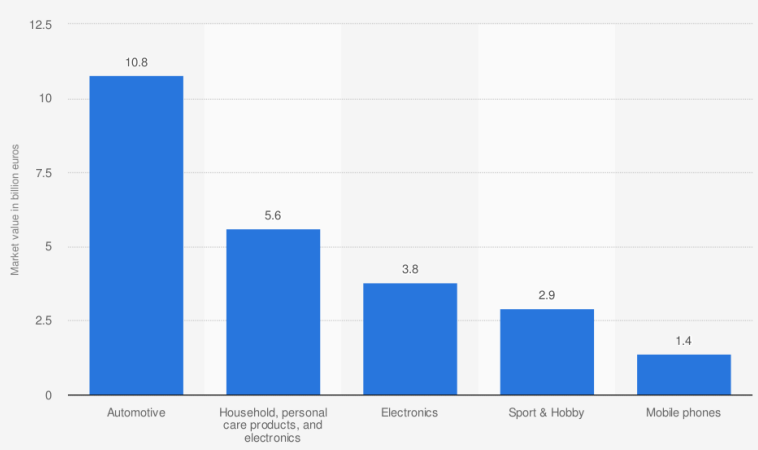
The second-hand market has grown exponentially over the last few years, accompanied by an increased inclination of consumers to opt for second-hand goods.

According to Deloitte report "Digital (Green) Evolution, L'impatto ambientale degli smartphone e i comportamenti dei consumatori (2020), the CAGR for the used and refurbished market will be 9.8% from 2018 to 2026, with growth rates four times of the market for new phones.

Furthermore, the estimated worldwide value for refurbished phones will be 64Mld in 2023 compared to 17Mld in 2018.

The graph below shows the value of the Italian second-hand market in 2020, broken down by category. The smartphone market in Italy is worth approximately 1.4 billion, which, when merged with the electronics market, totals approximately 3.8 billion.

Figure 5: Market value of second hand products in Italy in 2020 by category (in billion euros)



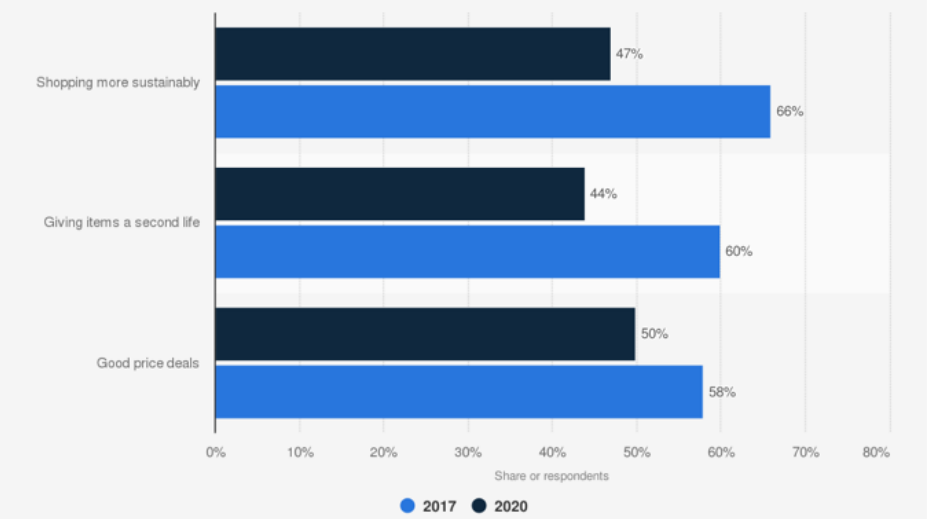
Source: Statista

The exponential growth of the market has been supported by a change in consumer habits. The main motivation lies in the fact that consumers desire to purchase environmentally friendly products.

According to the graph below, the propensity to buy sustainable goods in Italy has increased from 47% to 66% in just three years.

Additionally, the ability to purchase products at lower prices without compromising the quality is a fundament aspect to bring into consideration.

Figure 6: Main reasons of Italians for buying Second-Hand products



Source: Statista

3.1.3 Competitive positioning

Supply chain control, ease of service, price, and geographic area are the primary criteria for comparing the performance of the various players in the market where the company competes. In the reference market the main players are Swappie, ReBuy, BackMarket and Refurbed.

When considering the first criterion, the majority of the company's direct rivals, such as Swappie, have complete control over the supply chain and all have the same level of "peace of mind".

Additionally, companies typically align with one another in terms of product selling prices.

However, TrenDevice is the only company that operates in Italy through specialized shops in major Italian cities and due to this characteristic, it is able to maintain a dominant position over the competition.

Figure 7: Corporate Positioning

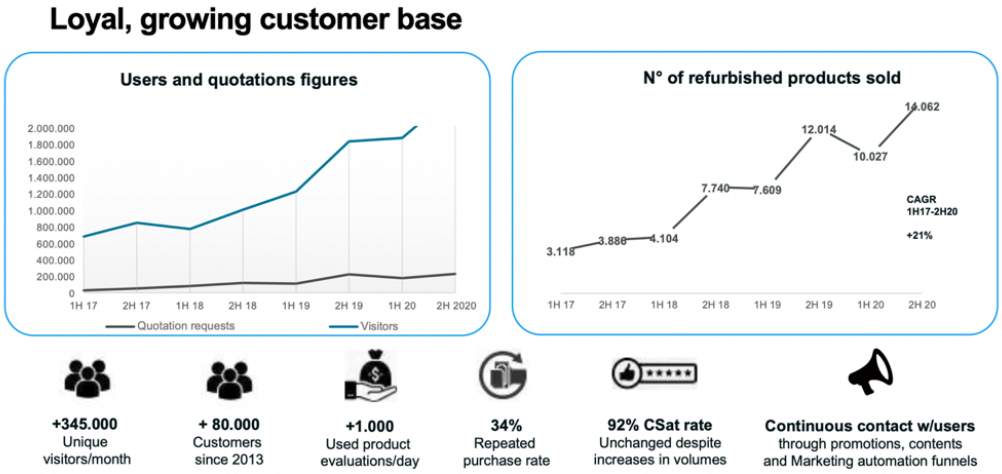
Company	Value chain control	Peace of mind	Savings	Territorial presence in Italy
TrenDevice	●●●	●●●	●●	●●●
Swappie	●●●	●●●	●●	
reBuy	●●●	●●●	●●	
Back Market	●●	●●●	●●	
refurbed	●●	●●●	●●	
Lombardo shop	●	●	●●	●
ebay	●	●	●●●	
subito			●●●	
kijiji			●●●	

Source: Company presentation

3.1.4 Result and future prospection

Over the years, the company has boosted online visibility to about 345,000 monthly visitors and daily product evaluations to more than a thousand. In addition, as evidenced by the image below, TrenDevice has reached a 92% customer satisfaction rate and a 34% repeated purchase rate.

Figure 8: TrenDevice Customer Base



Source: Company presentation

Furthermore, TrenDevice's future plans include opening new stores in major Italian cities, as well as offering technical support and pick-up locations.

The company's strategic goal is to increase revenues by leveraging retail stores to engage more traditional consumers as well as those who are completely new with the “refurbished” concept.

Ultimately, TrenDevice will provide a C2C marketplace for the purchase and sale of 'certified' products. TrenDevice will generate revenue by mediating transactions between buyers and sellers. The C2C marketplace will improve supply-demand matching and make transactions more appealing.

3.2. Company valuation

TrenDevice's business valuation was completed using the three valuation methods described in the previous chapter. Specifically, the valuation methods used are Discounted Cash Flow, the Multiples method and EVA model.

In the estimation phase of the projections, for 2020 the pro forma balance published at the IPO was considered.

3.2.1 Discounted Cash Flow Method

The Discounted Cash Flow (DCF) method was used for the first analysis.

For the purpose of calculating operating cash flows (FCFO), all future projection estimates for the years 2021–2025 were made.

For revenue projection, the average revenue growth rate calculated as the annual increase divided by the number of years considered was used. The average revenue growth rate for 2018-2020 is 35.11%, as depicted in the table below.

Figure 9: Average Revenues Growth Rate

	31/12/18	31/12/19	31/12/20
Revenues	5,09	7,21	9,27
g		41,65%	28,57%
Average g	35,11%		

Source**:** Excel Personal elaboration

Because the average revenue growth rate was very high due to the initial company's sustained growth, it was assumed that the average growth rate would decrease by 20% per year over the next five years.
The figure below depicts the revenue projection to 2025.

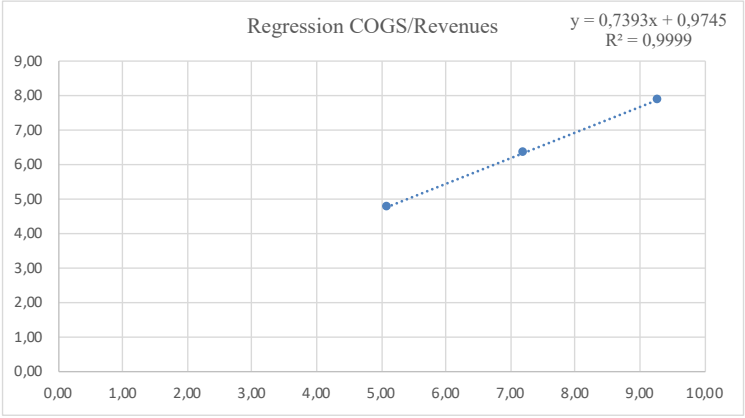
Figure 10: Revenues projection 2021-2025

	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
Revenues	12,52	16,04	19,65	23,18	26,51
g	35,11%	28,09%	22,47%	17,98%	14,38%

Source: Excel Personal elaboration

To estimate the COGS, a regression of the COGS of the previous 3 years on the turnover of the same period was performed, identifying the slope and intercept of the straight line that linearly approximates the two variables. The angular coefficient of the straight line is 0.7393 while the intercept is 0.9745.
Since COGS are linearly related to revenues, this method was adopted.
Furthermore, as the quantities produced and sold increase, there may be a recovery of efficiency within supplier relationship.

Figure 11: Regression COGS/Revenues



Source**:** Excel Personal Elaboration

Then, from the revenues estimated in the previous point, the COGS projections over the next five years were calculated.

Figure 12: COGS Projection 2021-2025

	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
COGS	10,23	12,83	15,50	18,11	20,58
COGS/Revenues	81,71%	80,00%	78,89%	78,13%	77,61%

Source**:** Excel personal elaboration

For the calculation of General and Administrative Expenses (SG&A), the average incidence on revenue was determined with reference to the previous three years, with a value of 5,30%.

Figure 13:Average SG&A/Revenues

	31/12/18	31/12/19	31/12/20
SGA	0,10	0,25	0,97
SGA/Revenues	1,96%	3,47%	10,46%
Average SGA/Revenues	5,30%		

Source: Excel Personal Elaboration

The estimated SG&A costs for the years 2021-2025 are shown in the table below:

Figure 14: SG&A projection 2021-2025

	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
SGA	0,66	0,85	1,04	1,23	1,40
SGA/Revenues	5,30%	5,30%	5,30%	5,30%	5,30%

Source: Excel Personal elaboration

In relation to Property, Plan and Equipment (PPE) and Depreciation and Amortization (D&A), the average ratio of PPE plus Intangibles to Revenues and D&A/(PPE + Intangibles) was calculated as is shown in the table below.

Figure 15: Average (PPE+Intangibles)/Revenues and D&A/(PPE+Intangibles)

	31/12/18	31/12/19	31/12/20
PPE	0,03	0,08	0,15
Intangibles	1,95	2,47	3,96
PPE + Intangibles	1,98	2,55	4,11
(PPE + Intangibles) /Revenues	38,90%	35,37%	44,34%
AVG (PPE + Intangibles)/ ReV	39,53%		

	31/12/18	31/12/19	31/12/20
Depreciation	0,10	0,42	0,86
Amortization	0,02	0,02	0,04
D&A	0,12	0,44	0,90
D&A/(PPE + Intangibles)	6,06%	17,25%	21,90%
Average D&A/ (PPE + Intangibles)	15,07%		

Source: Excel Personal elaboration

By calculating ratios, projections for EPP + Intangibles and D&A can be estimated.

Figure 16: PPP + Intangibles and D&A Projections 2021-2025

	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
PPE + Intangibles	4,95	6,34	7,77	9,16	10,48

	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
D&A	0,75	0,96	1,17	1,38	1,58

Source: Excel Personal elaboration

Using D&A calculation and projections, the Capex estimate was determined using the following formula:

$$Capex_t = PPE_t - PPE_{t-1} + D\&A_t$$

As the value of PPEs and Intangibles increases, the value of Capex also increases over the next five years as depicted in the image below.

Figure 17: Capex projection 2021-2025

	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
PPE + Intangibles	4,95	6,34	7,77	9,16	10,48
D&A	0,75	0,96	1,17	1,38	1,58
Capex	1,59	2,35	2,60	2,78	2,90

Source: Excel Personal elaboration

Furthermore, it is necessary to calculate the Net Working Capital (NWC) and the change in Net Working Capital (ΔNWC) for the determination of FCFOs.

To determine Net Working Capital, the average incidence of account receivables on revenues, the average incidence of inventory on revenues, and the average incidence of accounts payables on COGS must be calculated.
The table below shows the values of accounts receivable, accounts payable, and inventory for the three-year period 2018-2020.

Figure 18: Average Account Receivables/Rev, Inventory/Rev and Account Payables/COGS

	31/12/18	31/12/19	31/12/20
Account Receivables	0,13	0,23	0,96
Inventory	0,59	0,72	1,53
Account Payables	0,00	0,63	1,13

	31/12/18	31/12/19	31/12/20
Account Receivables/Revenues	2,55%	3,19%	10,36%
Inventory/Revenues	11,59%	9,99%	16,50%
Account Payables/COGS	0,00%	9,97%	14,45%

	Average
Account Receivables/Revenues	5,37%
Inventory/Revenues	12,69%
Account Payables/COGS	8,14%

Source: Excel Personal Elaboration

Future accounts receivable, accounts payable, and inventory could be calculated after estimating the three ratios previously defined, as shown in the graph below.

Figure 19: Account Receivables, Inventory and Account Payables Projections 2021-2025

	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
Account Receivables	0,67	0,86	1,05	1,24	1,42
Inventory	1,59	2,04	2,49	2,94	3,37
Account Payables	0,83	1,04	1,26	1,47	1,67

Source: Excel Personal elaboration

Net Working Capital and the change in net working capital can now be calculated with the following formulas:

$$NWC = Account\ Receivebles + Inventory - Account\ Paybles$$

$$\Delta\ NWC\ = NWC_t - NWC_{t-1}$$

The table below shows the calculations described above.

Figure 20: NWC and ΔNWC Projections 2021-2025

	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
Account Receivables	0,67	0,86	1,05	1,24	1,42
Inventory	1,59	2,04	2,49	2,94	3,37
Account Payables	0,83	1,04	1,26	1,47	1,67
NWC	1,43	1,85	2,29	2,71	3,11
Change in NWC	0,07	0,42	0,43	0,43	0,40

Source: Excel Personal elaboration

Through the projection of all data, previously calculated, FCFOs can now be estimated with the following formulas:

$$FCFO_t = NOPAT_t + D\&A_t - \Delta NWC_t - Capex_t$$

The table below summarizes all the information gathered from the prior calculations.

Figure 21: FCFOs projection 2020-2025

Date	31/12/20	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25	Normalized
Revenues	9,27	12,52	16,04	19,65	23,18	26,51	
COGS	7,82	10,23	12,83	15,50	18,11	20,58	
Gross Profit	1,45	2,29	3,21	4,15	5,07	5,94	
SGA	0,97	0,66	0,85	1,04	1,23	1,40	
EBITDA	0,48	1,63	2,36	3,11	3,84	4,53	
D&A	0,90	0,75	0,96	1,17	1,38	1,58	
EBIT	-0,42	0,88	1,40	1,94	2,46	2,95	
Taxes	-0,10	0,21	0,34	0,46	0,59	0,71	
NOPAT	-0,32	0,67	1,07	1,47	1,87	2,24	1,17
D&A	0,90	0,75	0,96	1,17	1,38	1,58	1,58
Change in NWC	1,04	0,07	0,42	0,43	0,43	0,40	0,00
Capex	2,47	1,59	2,35	2,60	2,78	2,90	1,58
FCFO	-2,93	-0,24	-0,75	-0,39	0,05	0,52	1,17

Source: Excel Personal elaboration

For the tax calculation, the corporate tax rate identified was 24%, since TrenDevice is an Italian company.
As is illustrated in the figure above, from 2024 the operating cash flows become positive.

After estimating FCFOs until 2025, the WACC in its components of cost of equity (Re) and cost of debt (Rd) must be computed to discount the flows.
The cost of equity was calculated with the Capital Asset Pricing Model (CAPM) using the following formula:

$$R_e = R_f + \beta \cdot \left[E(R_{Mrk}) - R_f + CRP\right]$$

Where:
$R_f = Risk\ free$
$\beta = Beta\ Equity$

CRP = Country Risk Premium

$(R_{Mrk} - R_f) = Equity\ Risk\ Premium$

$[E(R_{Mrk}) - R_f + CRP] = Total\ Equity\ Risk\ Premium$

To determine the Risk Free Rate, the 10-year German Bund was considered. The characteristics of the selected security are clearly illustrated in the table below.

Figure 22: 10Y Germand Bund features

ISIN	DE0001102507
Settlement Date	30/10/20
Maturity Date	15/08/30
Coupon Rate	0,00%
Clean Price	106,32
Dirty Price	106,32

Source: Refinitiv database

Since the bond used to compute the risk free rate has a negative Internal Rate of Return (IRR) (equal to -0.62%), as shown in the graph below, a rate of 0% was considered.

Figure 23: IRR Calculation

Date	Cash Flow
30/10/20	- 106,32
15/08/21	-
15/08/22	-
15/08/23	-
15/08/24	-
15/08/25	-
15/08/26	-
15/08/27	-
15/08/28	-
15/08/29	-
15/08/30	100,00

TIR	-0,62%

Source**:** Excel Personal Elaboration

Subsequently, the bottom-up approach was used to determine the TrenDevice Beta.
A sample of comparable companies was determined. The companies identified to calculate the Beta were defined according to the sector in which TrenDevice operates.

Companies that sell high-tech products, such as Unieuro, or companies that sell used products, such as eBay, and ultimately companies that manufacture devices, such as Apple, were selected because no direct competitors are listed.
Of the selected companies, 5-year levered betas were derived (considering monthly intervals) and D/E leverage was calculated as the ratio of Market Capitalisation to Net Financial Position.
Subsequently, the Unlevered Beta was calculated to remove the weight of debt from the systematic risk coefficient using Hamada's formula:

$$B_u = \frac{B_l}{\left[1 + \frac{D}{E} \cdot (1 - t_c)\right]}$$

Where:
$B_u = Beta\ Unlevered$
$B_l = Beta\ Levered$
$D = Debt$
$E = Equity$
$t_c = Corporate\ Tax\ Rate$

The results are provided in the table below.

Figure 24: D/E and Beta Unlevered Calculation

Identifier	Company Name	Beta Levered	Market Cap	Enterprise Value	NFP	Tax rate	D/E	Beta Unlevered
UNIR.MI	Unieuro SpA	1,33	179,00	579,87	400,87	0,24	2,24	0,49
EBAY.O	eBay Inc	1,23	34639,26	38719,26	4080,00	0,27	0,12	1,13
DELL.K	Dell Technologies Inc	0,85	35589,21	83701,21	48112,00	0,27	1,35	0,43
B4B.DE	METRO AG	0,50	3094,84	6606,84	3512,00	0,30	1,13	0,28
AAPL.O	Apple Inc	1,23	1920272,74	1942426,74	22154,00	0,27	0,01	1,22

Source**:** Excel Personal Elaboration using Refinitiv data

Following the determination of all unlevered betas, the average unlevered beta was calculated, as shown in the table below.

Figure 25: Average Beta Unlevered

Average Beta Unlevered	0,71

Source: Excel Personal Elaboration

After determining the average of the unleveraged betas, the relevering was performed applying the Hamada formula:

$$B_l = B_u \cdot \left[1 + \frac{D}{E} \cdot (1 - t_c)\right]$$

Where:

$B_l = Beta\ Levered$

$B_u = Beta\ Unlevered$

$D = Debt$

$E = Equity$

$t_c = Corporate\ Tax\ Rate$

The average D/E of the selected companies, as shown in the table below, was used to calculate the company's target leverage ratio, which was used as the value for the leverage ratio, while the previously calculated average beta unlevered was used as the beta unlevered.

Figure 26: D/E Target

D/E target	0,97

Source: Excel Personal Elaboration

Finally, the Beta levered was calculated as indicated in the table below.

Figure 27: TrenDevice Beta Levered

		Beta Levered
TDE.MI	Trendevice SpA	1,21

Source: Excel Personal Elaboration

In relation to the Total Equity Risk Premium, was calculated as the sum of the Market Risk Premium (market risk of the e-commerce sector of high-tech products minus risk free rate) and the Country Risk Premium, which in this case is Italy.

Both values used were derived from Damodaran's database.

Figure 28: Total Equity Risk Premium

Market Risk Premium	5,20%
Country Risk Premium	2,17%
Total Equity Risk premium	7,37%

Source: Excel Personal Elaboration

Using the data obtained, it is now possible to determine the Cost of Capital, which is equal to 8.95%.

The missing element for the WACC calculation is the Cost of Debt.

To estimate the cost of debt since the company has no listed debt securities, the conversion method was used to assign a rating to the debt by determining the Interest Coverage Ratio (ICR).

The ICR is obtained as the ratio of EBIT to interest expense. The different ranges assumed by the ICR are associated with a rating level, which, in turn, is converted into spread points. This value is then added to the 10-year interest rate swap to then determine the cost of borrowing.
Since the interest coverage rate is equal to 1.0625, the rating associated with this value is Ca3/CC, with a spread of 880 basis points (8.80%). Because the IRS assumed a negative value on the valuation date, it was assumed to be 0%, hence the cost of debt is 8.80%.

Figure 29: ICR and Rd calculation

ICR	1,0625
Rating	Ca2/CC
Spread	8,80%
IRS	-0,28%
IRS	0,00%
Rd	8,80%

Source**:** Personal Excel Elaboration

Furthermore, The D/V and E/V ratios should be calculated in order to identify WACC. D/E is equal to 0.97, hence D/V and E/V are both equal to 0.49 and 0.51 as a result of the following formula:

$$\frac{D}{V} = \frac{\frac{D}{E}}{1 + (\frac{D}{E})}$$

$$\frac{E}{V} = 1 - \frac{D}{V}$$

Each of the inputs required to calculate the WACC have now been achieved. The WACC is calculated with the formula reported below:

$$WACC = R_e \cdot \frac{E}{V} + R_d \cdot \frac{D}{V} \cdot (1 - t_c)$$

Where:
$R_e = Cost\ of\ Equity$
$R_d = Cost\ of\ Debt$
$D = Debt$
$E = Equity$
V = (Debt + Equity)
$t_C = Corporate\ Tax\ Rate$

The WACC assume a value of 7.84% considering Re equal to 8,95%, Rd equal to 8,80% and t_c equal to 24%.

With the calculation of the WACC, it is possible to discount FCFOs by determining the Enterprise Value as the sum of the Present Value of the flows in the analytical period and the Present Value of the Terminal Value obtained as the Present Value of an increasing perpetual annuity.
To calculate the Terminal Value, a normalised cash flow from an average NOPAT was used, assuming Capex equal to depreciation and considering a change in Net Working Capital of 0.
The present value and the terminal value are estimated with the two following formulas:

$$PV = \sum_{t=1}^{5} \frac{FCFO_t}{(1 + WACC)^t}$$

$$TV = \frac{FCFO_t \cdot (1 + g)}{(WACC - g)}$$

Present value, Terminal Value and the present value of the Terminal Value are shown in the table below.

Figure 30: Present Value and Terminal Value

PV(2021-2025)	-3,66
Terminal Value	20,39
PV(TV)	13,80

Source: Excel Personal Elaboration

For the determination of TrenDevice's share price, it is necessary to compute the Equity value.
The Equity value is equal to the difference between Enterprise Value and Net Debt. The figure below depicts the associated values.

Figure 31: Enterprise Value, Net Debt and Equity Value

Enterprise Value	10,14
Net Debt	1,25
Equity Value	8,89

Source: Excel Personal Elaboration

TrenDevice's share price is calculated as the ratio of Equity Value to the number of shares issued.
The value of the share is 0.65.

Figure 32: Share Price Value (DCF Method)

Number of shares outstanding	13,77
Share Price	0,65

Source: Excel Personal Elaboration

Sensitivity Analysis

Additionally, it is possible to demonstrate how changes in one or both of the independent variables affect how much the stock price changes. In connection with this, sensitivity analysis was carried out to examine how the price changes in response to variations in g and/or WACC.

Based on the price obtained, a sensitivity analysis was undertaken based on the deviation of the long-term growth rate and WACC of +/- 1.0% on the data used as the base case.

For instance, if g was 3% and the WACC was 8.34%, the share price would be 0.61.

Figure 33: Share price sensitivity analysis

		g				
	0,65	0,0%	1,0%	2,0%	3,0%	4,0%
WACC	9,84%	0,17	0,24	0,32	0,43	0,57
	8,84%	0,26	0,35	0,46	0,61	0,82
	7,84%	0,37	0,49	0,65	0,86	1,20
	6,84%	0,52	0,68	0,91	1,26	1,85
	5,84%	0,72	0,96	1,32	1,94	3,22

Source: Excel Personal Elaboration

3.2.1. Multiples method

For the application of the multiples method, the sample considered is the equivalent as that used for the calculation of Beta in the bottom-up process.

The multiples examined are EV/EBITDA and EV on Sales from an asset side perspective and P/Sales from an equity side perspective.

The drivers chosen are mainly at the top end of the income statement (revenues and EBITDA), as the subsequent TrenDevice income measures (EBIT and Net Income) were negative at the time of listing.

With regard to asset-side multiples, the EV was determined on the basis of the average value of the multiple. Subsequently, the Net Debt was subtracted from the EV to determine the Equity Value. Dividing the Equity Value by the number of outstanding shares, the share value was estimated.

For the equity side multiple, on the other hand, the Equity Value was directly determined by multiplying the average P/Sales by the revenues of TrenDevice.

The equity value was then divided by the total number of issued shares to determine single share's price.

Figure 34: Multiple Method Analysis

Company Name	P/Sales	EV/ EBITDA	EV/Sales
Unieuro SpA	0,07	3,58	0,24
eBay Inc	4,06	10,85	4,35
Dell Technologies Inc	0,22	9,67	0,99
METRO AG	0,12	6,28	0,26
Apple Inc	7,17	25,11	7,08
Average	2,33	11,10	2,58
Median	0,22	9,67	0,99
Revenues	9,27		
EBITDA	0,69		
Enterprise Value		7,66	23,95
Net Debt		1,25	1,25
Equity Value	21,58	6,41	22,70
number of shares outstandigs	13,77	13,77	13,77
Share Price	1,57	0,47	1,65

Source: Excel Personal Elaboration

As denoted by the table above, the results of the multiples approach range from 0.47 for the EV/EBITDA multiple to 1.65 for the EV/Sales multiple. As this method, is essentially used as a control methodology for the result obtained through the application of the DCF, it is possible to state that the value identified with the application of the indirect method (0.65) lies within the range calculated with the direct method.

3.2.3 EVA Model

To apply the EVA model, the NOPAT and WACC projections determined earlier in the application of the DCF method were used.

However, to calculate the Invested Capital, current assets and fixed assets were added together. The accounting flow to be paid to the lenders was calculated by multiplying the Invested Capital (equal by analogy to the total sources of financing) by the WACC.

Abnormal Earnings are given by the difference between the NOPAT and the accounting flow pertaining to the lenders and were assumed to be perpetual.

The value of the perpetual annuity increasing at a rate of g=2% as of 31/12/2025 was first derived and, subsequently, financially bring back to time 0.

The present value of the terminal value was added to both the present value of the abnormal earnings derived in the analytical period ('20-'25) and the value at the date of analysis of the invested capital, to then derive the estimated Enterprise Value.

Subtraction of net debt from enterprise value achieves the Equity Value, which is then divided by the number of outstanding shares to determine the estimated value of a single share.

Figure 35: EVA Model

Date	31/12/20	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
Nopat	-0,32	0,67	1,07	1,47	1,87	2,24
Invested Capital	6,60	7,21	9,24	11,32	13,35	15,27
Invested Capital*WACC	0,27	0,52	0,57	0,72	0,89	1,05
Nopat-Invested Capital*WACC	-0,59	0,15	0,50	0,75	0,98	1,20
PV(Nopat-CI*WACC)	2,09					

TV	20,94
PV(TV)	14,17
EV	19,76
Net Debt	1,25
Equity Value	18,51
Number of shares outstandigs	13,77
Share Price	1,34

Source: Personal Excel Elaboration

In this case, the value obtained is 1.34, higher than that determined with the DCF, but still within the range of values obtained through market multiples.

Conclusion

As has been discussed in earlier stages of this thesis, most of the entire listing process revolves around one fundamental issue: the offering price.

The determination of the issue price is a crucial aspect for the success of an IPO as it has to be as close as possible to the real value of the company in order for the issuer and the underwriters to both achieve the same degree of satisfaction from a value-maximising perspective.

If the price is not in line with the company's real value, the risk of not getting sufficient underwriters or not raising adequate capital increases.

Furthermore, although there is a common theoretical basis behind valuation methods, under different circumstances the same valuation processes may lead to different results, as they are largely based on multiple assumptions and subjective judgment factors.

Moreover, in addition to the determination of the company's placement price, it is necessary to take into account the timing, listing market and economic conditions, all of which are contingent factors in determining the success of an IPO.

With regard to the valuation of Trandevice, three valuation models were applied, the DCF, the market multiples method and the EVA.

The estimated value of a share obtained through the DCF was 0.65, while the value obtained through the EVA was 1.34.

According to the control method, the expected range between the EV/EBITDA multiple, EV/Sales, and P/Sales (0.47-1.65) includes both values obtained through the two direct methods.

The table below summarize all values estimated through the three different valuation methods.

Figure 36: Share price estimation with the three different methods

Share Price with DCF Model	0,65

Share Price calcluted with P/Sales	1,57
Share Price calcluted with EV/EBITDA	0,47
Share Price calcluted with EV/Sales	1,65

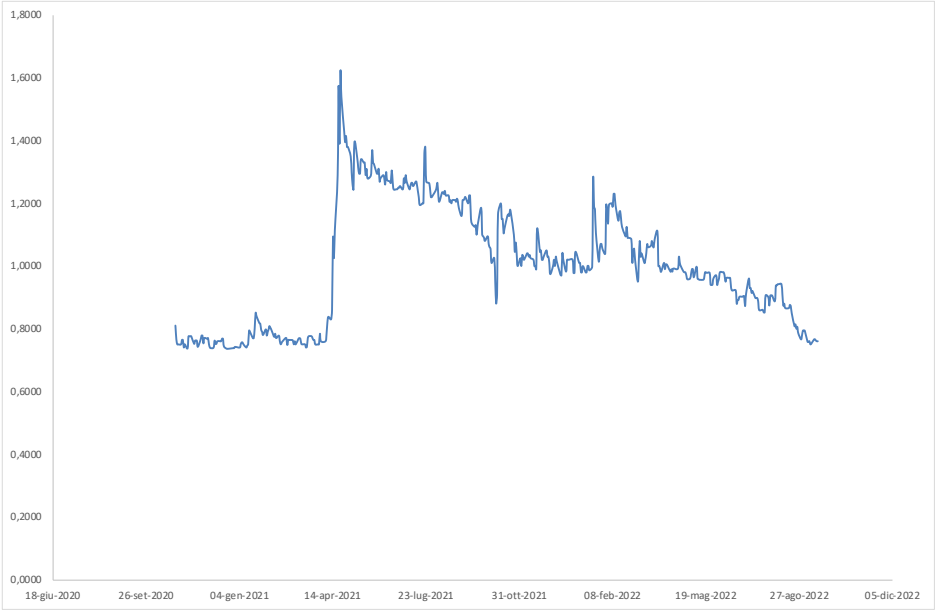
Share Price with EVA Model	1,34

Source: Excel Personal Elaboration

As the company's placement price at the time of listing was 0.81, it is possible to consider it to be slightly overvalued (about 24.5% higher) compared to the value estimated with DCF method, whereas with the EVA, the conclusion is the opposite (about 40% lower).

The market quickly confirmed the placement price's overvaluation because, as can be seen from the post-listing price trend graph reported below, the first trading day's closing price of €0.75 indicates that the market thought the placement price was slightly excessive.

Figure 37: Share price performance after stock exchange listing



Source: Excel Personal Elaboration with Refinit Data

Of the three valuation models used, the DCF valuation model, which is significantly based on company fundamentals, more accurately reflects the value of TrenDevice two years after listing.

While the value provided by the market multiples model, provides a range of value that is more affected by the construction of the sample of comparable companies, the driver chosen to calculate the value and the stage the company has reached within its life cycle.

Confirming what was stated before, it should be underlined that this valuation model does not allow the calculation of a concrete price, but rather provides an estimate of a price range within which the value of the company under analysis can be placed with a high degree of certainty.

To prevent inaccuracies, future cash flows should be estimated using reasonable assumptions in order to forecast growth that is consistent with the company's fundamentals and the investments required to implement the underlying strategic plan.

Furthermore, when estimating valuation factors using a sample of comparable companies (as in the case of beta with a bottom-up approach), it is crucial that the sample is as homogeneous as possible and consistent with the characteristics of the company being valued.

This is the only way to avoid over- or underestimations, which would have an impact on the fair valuation of the company taken into consideration.

Because the company has not yet completed the development cycle, the key issues in the case under examination are estimating future growth when using the DCF approach and selecting drivers for market multiples. Furthermore, at the time of the decision to enter a regulated market, operating income and operating cash flows were still negative.

Additionally, direct competitors were not listed, making the construction of a homogeneous sample more difficult.

In conclusion, based on the assumptions settled throughout the valuation process, the DCF approach represents definitely the method that most closely approximates the company's true economic value.

TABLE OF FIGURE

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SITOGRAFY

- **https://www.TrenDevice.com**
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SUMMARY

INTRODUCTION

The role of IPOs (Initial Public Offering) has evolved over the last decades and today is still pivotal in the context of financial disciplines.

The following research explores the peculiar nature of IPO operations identifying the process through which a company goes public on the stock market.

This topic has been a subject of great interest in academic studies because of the transformational impact these operations have during the life of a company.

Given the centrality of this topic in the economic landscape, it is still actively studied nowadays, as the stock market is an ever-changing environment attracting companies of different sizes operating in different sectors.

In addition, research and analysis shift from cases of over/underperforming IPOs to more contemporary cases of SPACs (Special Purpose Acquisition Vehicles). The IPOs market proves to be an attractive and innovation-fostering context.

The objective of the present study is to understand the dynamics that characterize IPOs.

In particular, starting from the existing analysis in the field, the objective of the thesis is threefold. First, an in-depth review is conducted on main theoretical contributions studying the stages and the managerial considerations of an IPO process. Second, a focus is dedicated on major valuation models. Third, an overview of the practical implications affecting the valuation process is provided by means of an empirical case study.

The thesis is structured as follows:

- Chapter 1 provides an extensive overview of the IPO, embracing the main stages of the process, the involved subjects, the costs and the last trends emerging from the market.
- Chapter 2 presents a theoretical discussion of the methodologies adopted by analysts dealing with the task of evaluating public companies.
- Chapter 3 is based on the TrenDevice case study. Starting from the analysis of the competitive scenario, the company valuation is determined through approaches discussed in Chapter 2 and dedicated considerations are elaborated on the listing price determination.

Finally, in the Conclusions section, observations and evidence that emerged during the company evaluation process have been reported.

CHAPTER 1: A source of financing for enterprises

The only indispensable reason why companies go public is access to funding. From the firm's viewpoint, an IPO is the most direct route to receive an equity capital infusion to finance new projects, sustain growth and ultimately improve financial structure and credit standing. Moreover, access to new cash resources, is a key driver for shareholders as well, since an IPO represents a viable solution for exit or succession and to establish a stock currency for future acquisitions or sale processes.

IPO is notably an alternative to other financing opportunities such as debt or other risk capital investments.

Definition of IPOs

Generically, the terms IPO refers to the first issuance of shares by a company to the public and the listing of the shares on the stock exchange. From a technical perspective an IPO can be conducted as a public offer for sale or as a public subscription offer or both. However, what makes both modalities to take the shape of an

IPO is that they are aimed at admission to listing. An IPO has a duration that varies from case to case, but in principle is between six months and two years in the most complex cases. This timing does not consider the initial preparation phase prior to the actual procedure, which also may extend according to circumstances between 6 and 12 months.

1.6 IPO Process, costs and benefits of IPOs

The process of determining the value of a listed company is divided into several phases which involve further investigations and subsequent updates until, starting from a wide range, the offer price is determined, and shares are collocated on the market. The process can be sub-divided into three stages

- IPO Preparation: the initial evaluation is carried out through the pitch and during the preparation for the listing. At this stage there could be preliminary meetings with selected investors
- Market Approach: pre-marketing and identification of the price range
- Going Public: book building and final pricing

1.6.1 Alternative IPO Processes

Dual Track: a process of preparation for listing accompanied by a simultaneous and alternative private process (Mergers & Acquisitions) of the entry of a new shareholder into the capital. This process aims to maximize the value of the company, considering that the latter may differ depending on the type of investors or buyers. In the dual track, the due diligence phase is common to both capital raising processes, which therefore make use of a very similar information base made available to all parties involved. After the due diligence activity, premarketing begins aimed at identifying the indicative price range. At the same time, during the M&A process, the potential investors present to the company, their purchase proposals that define the potential contractual conditions, including the price offered. At this point, a crucial moment of analysis and comparison between the price range and the price proposals opens up for the company and its shareholders. This could lead to the decision to interrupt the listing process or to continue with it. In the latter case, the company starts the book building and pricing phase that leads to the potential definition of the price of share assignments. If, therefore, the price is confirmed to be higher than the price proposals the company may decide to proceed with the IPO; otherwise, the company will complete the M&A process with the choice of the selected buyer or investor.

Seasoned Equity Offerings: Seasoned Equity Offerings are processes aimed to allocate on the market new shares from already-listed entities. Seasoned Equity Offerings can be defined as primary when entail newly-issued shares resulting in the collection of new capital or secondary when old shares from existing shareholders are allocated on the market, diluting their position. In most cases, Seasoned Equity Offerings follow a period of strong performance from both issuer stock and market fundamentals.

American Depositary Receipts: These instruments are dollar-denominated claims directly issued by U.S. banks and certify the ownership of shares of a foreign company's shares deposited on a U.S. bank account domiciliated in the issuer's home country. These are a win-win solution for both issuer company, which can benefit from a facilitated listing process and investors who can rely on a regulated and low-cost diversification option.

1.6.2 Timing

In the IPO process, timing is a key variable and can be understood fundamentally in two ways at the conceptual level: timing in the life cycle of the enterprise and timing related to market conditions. The first can be defined as an internal timing, which must be identified by comparing the current situation of a company with its life cycle, or if it is appropriate to wait for a new phase. The other timing assumption refers to a context external

to the company, and therefore it is much more difficult to evaluate. It is widely believed that market timing is one of the biggest challenges in the IPO process, given its complexity in identifying the right time and given the fact that this kind of timing is crucial in determining the outcome of a listing.

1.6.3 Benefits and Costs

The decision to go public is a very important step in the life of a company and it is driven by several and varied reasons. On the one hand, benefits can be represented by the management of the financial structure of the company, improving the status of company, creating a market for stocks and improvement of managerial resources and activities. On the other hand, among the different problems that the company can run into when deciding to list on a regulated market, some are represented by increased formalization of the decision-making process, higher compliance costs, costs and increasing pressure related to short-term performance and higher exposure to takeover risk.

1.7 Actors involved in the IPO Process

The company: the issuing company and its shareholders have a fundamental role in the process of defining the price for the purpose of listing on the stock exchange, since, on the one hand, they will want to obtain the best valuation of the stock, on the other, in order to make the investment attractive and ensure the success of the operation, they will may have to grant a reasonable price discount (underpricing) to investors in order to allow them to achieve a return appropriate to their expectations.

Financial Advisors: The financial advisor is the subject who generally assists the shareholders and the company throughout the listing process, coordinating and managing relations with other actors involved. During the preparatory phase, the financial advisor assists the company in the preparation of the business plan. At this stage, he prepares a preliminary feasibility study of the transaction, defines the characteristics of the securities to be issued, the guidelines of the transaction and the indicative structure of the offer; it also assists the company in the selection of other actors to be involved. During the due diligence phase, the financial advisor coordinates, together with the placement bank, the process of elaboration of the equity story to be presented to the market and collaborates in the preparation of the prospectus. At the end of this phase, together with the placing bank, it presents the company with a first valuation hypothesis. During the pre-marketing activity, the financial advisor, assists the issuer in the preparation of the presentation to be made to the consortium analysts and coordinates the pilot fishing. During book building, the advisor, together with the coordinating bank, assists the issuer in carrying out the roadshow, verifies the formation of the book, assists in the definition of the final price and in the allocation of securities to investors.

The Syndicate bank: The placement syndicate consists of the set of banks that carry out the activities necessary for the placement of shares with investors. The structure of the syndicate is typically pyramidal: at its top there is the global coordinator and then, a few ranks of banks with positions of lesser importance and responsibility. There are different syndicate formulas in share placement operations. It is possible to distinguish preliminarily between placement unions in the strict sense and placement and guarantee unions. Accordingly, the main activities carried out by the placement syndicate include are collecting preliminary feedback from investors, ensure the reliability of the issuer and carry out the placing and pricing activity. These are fundamental activities in order to reach the final definition of the terms of the offer. The correct choice of the banks of the placement and guarantee consortium is a fundamental step for the success of IPOs, therefore it is also necessary to take into account the specializations that characterize these subjects in terms of categories of investors (mutual funds, hedge funds, insurance, pension funds), geographical coverage, size of operations, sectors to which the issuers belong.

Consortium banks analysts: The financial analysts of the banks of the consortium play a key role in an IPO process since their credibility and reputation can affect the interest of the main institutional investors and therefore the success of the operation. Although the analyst is part of the working group of the placement bank, he must be seen as an independent third party whose task is to study and understand the equity story and then represent it in an *ad hoc* document, which will be circulated to the target investors of the consortium banks in order to approach them on the profile of the proposed investment. The issuing company should consider the financial analyst as an independent external entity to be involved and convinced as an institutional investor, precisely because its research is one of the most important factors to influence investors' opinion about the competitive positioning of the issuer and its evaluation. The research consists of the following key areas: the investment case, the analysis of the strengths and weaknesses of the company, the analysis of the sector and competitive positioning of the company, the risk factors of the investment, the evaluation criteria of the company and sometimes a range of values, the history of the company and description of its activities, the biography of management and shareholders, the analysis of the business units and the business model; the analysis of the company's product/service portfolio and brands and historical financial data and estimation of prospective financial data. Once published, the research will also serve in supporting the placing bank's sales activities in order to interact with interested investors.

1.8 IPOs at different stages of a company

Companies may reach the IPO gate for a series of different reasons and, most importantly, in different stages of their lifecycle.

Early-Stage Companies: An IPO is conventionally one of the main exit strategies for financial investors backing up startups or early-stage companies, Most notably, for private equity funds the exit is a crucial step as it is only at this time that after fees are distributes the limited partners will know if the fund has performed in line with expectations or has underperformed.

Intermediate Companies: Private equity investors may in fact consider disposal of their ownership to other private equity funds or strategic buyers, or eventually combine their portfolio company with another entity. Hence, a company can actually pursue its growth path as a private entity for several years or decades before considering the possibility to go public via IPO. Overall, IPO cases regarding intermediate companies represents a quite meaningful share of annual listing.

Mature, Multinational and State-Owned Companies: finally, it may be the case of large multinational companies deciding to go public in their later stages. These cases may take place because such entities, beyond access to fresh capital, are interested into promoting better standards of governance, disclosure and transparency.

1.9 Evolution and key trends in IPO activity

IPO Market Overview: 2021 marked a record year for global IPO activity, as the post-2020 recovery brough on the market 3,022 new companies worldwide for a total of US$601.2 billion proceeds raised. To this extent, the COVID-19 downturn confirmed the need for a quick transformation as consumers adapted their behavior and new fast-growing startups are proving increasingly capable to address consumer’s needs. The market increase in technology sector IPOs is contextualized within convergence trend, in which a large share of the major deals in 2021 involved companies which potential is being enabled by technology. After the record-breaking levels witnessed in 2021, volatile market conditions emerging in the first months of 2022 have reflected into a significant slowdown during the first quarter of 2022.

Focus on SPACs: The Special Purpose Acquisition Company, or more commonly SPAC is a particular corporate vehicle that is set up by some promoters, characterized by high professional standing as well as specialized in specific industries and supported by operators with high experience in the M&A and private equity sectors. The goal of a SPAC is to complete listing, through an IPO, in order to raise capital from investors and subsequently proceed with the combination with an unlisted company, so that the latter assumes the status of listed company. The SPAC has a limited time horizon, within 24 months, the management team must identify the target company and proceed with the business combination. This must be approved with special qualified majorities, about 75-80%, by the shareholders/investors' meeting. One of the most important is that relating to the ways in which the business combination can take place: the shares of the target company can be purchased from the current shareholders; new shares issued by the target company may be subscribed.

The most used method to complete the operation is the merger alternative. Over the last years, SPAC have accounted for a large role in the U.S. and global IPO market for a series of reasons. First of all, the polices adopted over the last years by central banks have prompted an accumulation of funds in the hands of institutional investors, eager to find extra returns in a context of low rates. Another important point refers to the surge in venture capital investments needing a viable exit strategy.

CHAPTER 2: VALUTATION METHODS

This Chapter 2 focuses on the description of the valuation methodologies adopted from analysts and financial practitioners to determine company or asset value. Each approach draws upon different theoretical foundations and best fits according to the valuations needs emerging from case to case.

Nonetheless, in the majority of circumstances results calculated under the different valuation methodologies are used in conjunction to determine a valuation range providing possible value boundaries and provide more comfortable estimations based on multiple assumptions. The valuation approaches hereby presented are: Discounted Cash Flow, Multiples and Economic Value Added.

2.5 Discounted Cash Flow

The Discounted Cash Flow (DCF) method compares the net present value of costs and revenue streams, in order to appraise economic viability of a project or a company. In particular, this methodology, also referred to as intrinsic valuation, estimates the value of a company based on the present value of the net cash flows generated after sustaining the necessary investments to ensure operations continuity. In this case, the definition corresponds to Free Cash Flow to Firm (FCFF) that is, the cash flow going to all investors, and does not take into consideration the financial structure of the company. The DCF method therefore quantifies the value of the company as expected cash flow in relation to the investment flows necessary to sustain its growth in the future and therefore it is strictly related to the company's ability to produce future cash flows to be made available to shareholders and creditors, after accounting for investments in working capital, as well as in fixed assets, necessary to ensure the conduct of business for the company. In summary, the value of the company's economic value under the DCF approach is given by the present value of the residual prospective cash flows.

The application of the methodology therefore requires the elaboration of explicit forecasts of future business results and to identify the appropriate discount rate to be applied to the cash flows, to convert them into discounted values referred to the date on which the assessment is carried out.

2.6 Method of Multiples

The multiples approach refers instead to relative valuation, that is the company value is determined based on current prices on the market for similar companies' assets. The method based on multiples relies upon the

fundamental assumption that a company valuation can be determined based on the comparison with other trading companies (or trading comparables) or transactions conducted in the past (previous transactions). Starting from this premise, multiples methodology represents a simpler and less time-consuming solution compared to DCF, to verify the adequacy of the valuation in relation to the market exchange prices found for comparable companies. It is therefore a solution aimed at ascertaining whether the value attributed to the company is in line with the normal average market value. The evaluation through multiples has reached a considerable success, specifically because it allows to formulate a judgment on the value of the company, based on a restricted set of data and hypotheses easily available and with substantial convenience from an operational point of view.

The aim of this method is to develop ratios (or multiples) through which it is possible to assess the value of the company.

The multiple, which can be defined as the ratio between a price (typically the EV or the price of a share) and a company economic metric (EBIT/EBITDA, net profit, etc.), must be multiplied by the same business economic magnitude as the company to be evaluated. The simplicity and speed of the method have allowed it to be widely adopted in financial sector as it is often used as a first check for company over/under valuation compared to similar firms.

Asset Side Multiples

Asset-side multiples express the total enterprise value (EV), in relation to a variable that affects all investors (equity investors, creditors, minority interest holders) in the business. Asset-side multiples directly estimate the market value of venture capital added to the net financial position, where the numerator is represented by the market value of the company and the denominator coincides with a magnitude indicative of the economic results. From an operating point of view, asset-side multiples are considered more attractive than equity-side multiples, as they focus on the assets as a whole, rather than just the value of equity holders' rights. In addition, asset-side multiples are less affected by differences in capital structure, because they measure the company with no need to reassess financial leverage and, finally, allow the use of data less affected by accounting differences.

Equity Side Multiples

Equity side multiples regards the valuation of the equity component of the company. The most well-known equity side multiples are the so-called Price-Earnings ratio (P/E), that is, the comparison between the two metrics relevant for shareholders and the Price to Book value. Generally speaking, due to their nature, equity side multiples are mainly applied in sectors with consolidated profitability.

2.7 Economic Value Added

The last model under analysis is the Economic Value Added, more commonly known as EVA®. This method, labeled under a registered trademark since it was proposed by the consulting company Sten Stewart & Co, had a strong diffusion around since the 1990s and today still constitutes an innovative model for evaluating the economic-financial performance of a company. This methodology is based on the concept of residual income, that is, the one that remains from the economic result after the coverage of the cost of capital.

As mentioned, the EVA® is an indicator that measures the ability to generate value, intended as residual income. Subsequently, over the years, it has also been used as a method of evaluating the company since it compares the return on invested capital with the cost of the same and determines whether the firm has created or destroyed value.

2.8 The limits of the three different valuation methods

The methodologies exposed so far in this Chapter are all largely adopted in financial word across industries. As discussed, for each it is possible to define some clear advantages according to the specific case. Likewise, different valuation methodologies present shortcomings and attributes which the user must take into account in the process. Below a series of limitations and considerations are elaborated according to each approach.

Discounted Cash Flow

Despite the analytical process leading to an intrinsic valuation the DCF methodology carries at the same time some limitations. First, the large input base means that DCF value determination is based on numerous assumptions, and then there is a risk of a lack of reliability of the results, and loss of objectivity. Focusing on future cash flows, and therefore on elements that vary and become more uncertain along with the time, formulating multiple hypotheses in order to estimate future flows creates a high degree of uncertainty. Obviously, the more reliable information available to the evaluator, the lower the degree of uncertainty of the evaluation carried out. For large companies, especially those listed on the stock exchange that are subject to certain standards in terms of reporting, uncertainty is diminishing. The discounted cash flow method is mainly suitable for companies that have a financial dynamic such as commercial, retail, services or financial companies. On the contrary, it is not suitable for those firms with a high capitalization of assets and cash flows are non-existent, irrelevant or low.

Looking more specifically at the model, beyond the estimation period, there a strongly limited reliability of value forecasts and the solution relating to terminal value still represents high-level estimation which needs to be treated carefully. Regarding the WACC, some practical problems are related to the determination of the K_e in the case of non-listed companies. The difficulties increase if the company to be evaluated belongs to economic systems in which the securities markets are poorly developed. In summary, relatively small changes in key assumptions, such as growth rates, margins, WACC, or exit multiple, can produce meaningfully different valuation ranges.

Multiples

The already mentioned conceptual difference between the trading price and the economic value of a company is the main point of consideration. An overarching issue is the fact that multiples analysis is influenced by the characteristics of the selected companies and the results are inherently based on the subjects involved. Additionally, for several reasons from case to case there could be a limited availability of comparable companies (conversely, the same applies to comparable transactions as the number of transactions within which to choose comparable ones is often small and depends on the context in which you operate). On turn, this can lead to the choice of companies that are significantly different from the one being evaluated when there is absence of relevant comparables, such as in the case of pure play companies (i.e. few or just one company operates in the market or in a niche sector), whereby the valuation implied by multiples can be less meaningful as determined on a restricted information base.

Concerning the quality of input data, trading information is often difficult to access and excessively rely on market conditions. Since valuation that is completely determined on market fundamentals, it can be skewed during periods of irrational exuberance or bearishness. Further, despite adopting EBITDA-based multiples, comparable valuation shows a potential disconnect from cash flow, as the valuation is determined on prevailing market conditions or expectations that can be totally unrelated from company's projected cash flow generation capacity and therefore such valuation may provide a diverging result compared to DCF analysis.

Also, this may fail to incorporate into the analysis those target-specific strengths, weaknesses, opportunities, and risks which may all affect company value.

Concerning the adoption of multiples methodology in terms of previous transactions, another issue regards the singles transaction's basis for valuation. Indeed, acquisition rationales may consistently vary due to projections on future financial performance, current product/service base and other factors which may not be included into the scope of valuation being conducted. Hence, the nature of valuation should be accounted for as not all comparables are really a reliable source for value determination.

Finally, it should be noted that over/undervaluation considerations should always be referred in connection to relative sample of companies included in the analysis. In fact, over/undervaluation are relative to an average (or median) value of similar companies that can lead to distortions such as underestimating companies with excellent capabilities and overestimating poorly managed companies solely based on the adopted financial metric resulting at that point in time.

Economic Value Added

Among the main limitations, analysts need to take into account that the effects of the value of company strategy beyond the horizon of the plan is neglected. This means that the EVA® model looks only and exclusively at the achievement of the strategic objectives it sets itself, without however paying attention to what will be the effects in subsequent periods.

In addition, the EVA® model does not consider the financial value of time. For the elimination of this type of problem, some adaptations to the basic EVA® methodology can be introduced, corresponding to the difference between the market value and the book value of a company. If this value is positive, it indicates that there has been an increase in the value of the capital invested in the company, due to a return greater than the cost of capital. If, on the other hand, there is a negative value, this will indicate a decrease due to a yield lower than this cost.

The EVA® approach requires, a rather high know-how of financial knowledge, which many companies in our country do not have, especially due to the fact that most are small-medium in size and often what is missing is precisely the necessary convenience to implement a system capable of measuring business performance from the point of view of value. This is because it costs the company too much, in terms of finding resources, to develop such a system; large companies, on the other hand, for some years now seem to show a certain interest in these new performance evaluation systems. A final point regards the necessary adjustments due to accounting purposes (i.e. under GAAP application). In fact, despite being a bridge from operating economic results to cash flow generation, the degree and the nature of adjustments required is often criticized as may render not clear the information content based on which the EVA® is estimated. Finally, in order to materialize the prospected benefits, EVA® method must be implemented properly. EVA® proves limited viability for some firms in which management implements EVA® too fast, resulting in a lack of understanding.

CHAPTER 3: TRENDEVICE OVERVIEW AND VALUATION

3.1 Company overview

TrenDevice is an Italian e-commerce company, forerunner in the distribution and supply of refurbished smartphones, tablets and electronics, founded in 2013 by Antonio Capaldo and Alessandro Palmisano.

Their sale offer includes fully functional phones with perfect or fairly great appearance, costs up to 30 percent lower, one-year warranty, free pickups and high product quality, tested numerous times in the reconditioning phase. In terms of sustainability, TrenDevice records a strong positive impact, in fact the company as a pioneer in the industry is trying to transform the device industry, establishing a circular economy by decreasing the obsolescence problem and reducing nearly 80% of the carbon footprint.

Over the last few years, the second-hand market has grown exponentially, accompanied by an increased inclination of consumers to opt for second-hand goods. According to Deloitte report "Digital (Green) Evolution, L'impatto ambientale degli smartphone e i comportamenti dei consumatori (2020), from 2018 to 2026, the CAGR for the used and refurbished market will be 9.8% with growth rates four times of the market for new phones. Furthermore, the estimated worldwide value for refurbished phones will be 64Mld in 2023 compared to 17Mld in 2018. Overall, the exponential growth of the market has been supported by a change in consumer habits. The main motivation lies in the fact that consumers desire to purchase environmentally friendly products, as evidence, the propensity to buy sustainable goods in Italy has increased from 47% to 66% in just three years.
However, TrenDevice is the only company that operates in Italy through specialized shops in major Italian cities and due to this characteristic, it is able to maintain a dominant position over the competition.
Over the years, the company has boosted online visibility to about 345,000 monthly visitors and daily product evaluations to more than a thousand. Furthermore, TrenDevice's future plans include opening new stores in major Italian cities, as well as offering technical support and pick-up locations.
The company's strategic goal is to increase revenues by leveraging retail stores to engage more traditional consumers as well as those who are completely new with the «refurbished» concept.

3.2. Company valuation

TrenDevice's business valuation was completed using the three valuation methods described in the previous chapter.
Specifically, the valuation methods used are Discounted Cash Flow, the Multiples method and EVA model.
In the estimation phase of the projections, for 2020 the pro forma balance published at the IPO was considered.

3.2.1 Discounted Cash Flow Method

The Discounted Cash Flow (DCF) method was used for the first analysis. For the purpose of calculating operating cash flows (FCFO), all future projection estimates for the years 2021–2025 were made.
For revenue projection, the average revenue growth rate calculated as the annual increase divided by the number of years considered was used. The average revenue growth rate for 2018-2020 is 35.11%.
Because the average revenue growth rate was very high due to the initial company's sustained growth, it was assumed that the average growth rate would decrease by 20% per year over the next five years.
Since COGS are linearly related to revenues, a linear regression was used to estimate future COGS.
Then, from the revenues estimated in the previous point, the COGS projections over the next five years were calculated.
For the calculation of General and Administrative Expenses (SG&A), the average incidence on revenue was determined with reference to the previous three years, with a value of 5,30%. The estimated SG&A costs for the years 2021-2025 were projected using the average incidence previously calculated.
In relation to Property, Plan and Equipment (PPE) and Depreciation and Amortization (D&A), the average ratio of PPE plus Intangibles to Revenues (39,53%) and D&A/(PPE+Intangibles) (15,07) was calculated.
By calculating ratios, projections for EPP + Intangibles and D&A were estimated.
Using D&A calculation and projections, the Capex estimate was determined using the following formula:

$$Capex_t = PPE_t - PPE_{t-1} + D\&A_t$$

As the value of PPEs and Intangibles increases, the value of Capex also increases over the next five years as depicted in the image below.

Furthermore, it was necessary to calculate the Net Working Capital (NWC) and the change in Net Working Capital (ΔNWC) for the determination of FCFOs.
To determine Net Working Capital, the average incidence of account receivables on revenues (5,37%), the average incidence of inventory on revenues (12,69%) and the average incidence of accounts payables on COGS (8,14%) were calculated.
The table below shows the values of accounts receivable, accounts payable, and inventory for the three-year period 2018-2020.
Future accounts receivable, accounts payable, and inventory were computed using the three ratios previously described.
Net Working Capital and the change in net working capital were determined with the following formulas:

$$NWC = Account\ Receivebles + Inventory - Account\ Paybles$$
$$\Delta\ NWC\ = NWC_t - NWC_{t-1}$$

Through the projection of all data, previously calculated, FCFOs were estimated with the following formulas:

$$FCFO_t = NOPAT_t + D\&A_t - \Delta NWC_t - Capex_t$$

The table below summarizes all the information gathered from the prior calculations.

Figure 38: FCFOs projection 2020-2025

Date	31/12/20	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25	Normalized
Revenues	9,27	12,52	16,04	19,65	23,18	26,51	
COGS	7,82	10,23	12,83	15,50	18,11	20,58	
Gross Profit	1,45	2,29	3,21	4,15	5,07	5,94	
SGA	0,97	0,66	0,85	1,04	1,23	1,40	
EBITDA	0,48	1,63	2,36	3,11	3,84	4,53	
D&A	0,90	0,75	0,96	1,17	1,38	1,58	
EBIT	-0,42	0,88	1,40	1,94	2,46	2,95	
Taxes	-0,10	0,21	0,34	0,46	0,59	0,71	
NOPAT	-0,32	0,67	1,07	1,47	1,87	2,24	1,17
D&A	0,90	0,75	0,96	1,17	1,38	1,58	1,58
Change in NWC	1,04	0,07	0,42	0,43	0,43	0,40	0,00
Capex	2,47	1,59	2,35	2,60	2,78	2,90	1,58
FCFO	-2,93	-0,24	-0,75	-0,39	0,05	0,52	1,17

Source: Excel Personal elaboration

For the tax calculation, the corporate tax rate identified was 24%, since TrenDevice is an Italian company.
As is illustrated in the figure above, from 2024 the operating cash flows become positive.

After estimating FCFOs until 2025, the WACC, in its components of cost of equity (Re) and cost of debt (Rd), was computed to discount the cash flows.
The cost of equity was calculated with the Capital Asset Pricing Model (CAPM) using the following formula:

$$R_e\ =\ R_f\ + \beta\ \cdot \left[E(R_{Mrk}) - R_f + CRP\right]$$

To determine the Risk Free Rate, the 10-year German Bund was considered. Since the bond choosen has a negative Internal Rate of Return (IRR) (-0.62%), a rate of 0% was considered.

Subsequently, the bottom-up approach was used to determine the TrenDevice Beta.

A sample of comparable companies was determined. The companies identified to calculate the Beta were defined according to the sector in which TrenDevice operates.
Companies that sell high-tech products, such as Unieuro, or companies that sell used products, such as eBay, and ultimately companies that manufacture devices, such as Apple, were selected. Direct competitors were not chosen as they are not listed.
Of the selected companies, 5-year levered betas were derived (considering monthly intervals) and D/E leverage was calculated as the ratio of Market Capitalisation to Net Financial Position.
Subsequently, the Unlevered Beta was calculated to remove the weight of debt from the systematic risk coefficient using Hamada's formula:

$$B_u = \frac{B_l}{\left[1 + \frac{D}{E} \cdot (1 - t_c)\right]}$$

The results are provided in the table below.

Figure 39: Beta Unlevered and D/E ratio calculation

Identifier	Company Name	Beta Levered	Market Cap	Enterprise Value	NFP	Tax rate	D/E	Beta Unlevered
UNIR.MI	Unieuro SpA	1,33	179,00	579,87	400,87	0,24	2,24	0,49
EBAY.O	eBay Inc	1,23	34639,26	38719,26	4080,00	0,27	0,12	1,13
DELL.K	Dell Technologies Inc	0,85	35589,21	83701,21	48112,00	0,27	1,35	0,43
B4B.DE	METRO AG	0,50	3094,84	6606,84	3512,00	0,30	1,13	0,28
AAPL.O	Apple Inc	1,23	1920272,74	1942426,74	22154,00	0,27	0,01	1,22

Source**:** Excel Personal Elaboration using Refinitiv data

Following the determination of all unlevered betas, the average unlevered beta was calculated and was equal to 0,71.
After determining the average of the unleveraged betas, the relevering was performed applying the Hamada formula again:

$$B_l = B_u \cdot \left[1 + \frac{D}{E} \cdot (1 - t_c)\right]$$

The average D/E ratio (0,97) of the selected companies, was used to calculate the company's target leverage ratio, which was used as the value for the leverage ratio, while the previously calculated average beta unlevered was used as the beta unlevered. Finally, the Beta levered was calculated (1,21).

In relation to the Total Equity Risk Premium (7,37%), was calculated as the sum of the Market Risk Premium (market risk of the e-commerce sector of high-tech products minus risk free rate) and the Country Risk Premium, which in this case related to Italy. Both values used were derived from Damodaran's database and were respectively equal to 5,20% and 2,17%

Using the data obtained, the Cost of Capital was determined, which was equal to 8.95%.
Moreover, to estimate the cost of debt since the company has no listed debt securities, the conversion method was used to assign a rating to the debt by determining the Interest Coverage Ratio (ICR).
The ICR was obtained as the ratio of EBIT to interest expense. The different ranges assumed by the ICR are associated with a rating level, which, in turn, is converted into spread points. This value is then added to the 10-year interest rate swap to then determine the cost of borrowing.

Since the interest coverage rate was equal to 1.0625, the rating associated with this value is Ca3/CC, with a spread of 880 basis points (8.80%). Because the IRS assumed a negative value on the valuation date, it was assumed to be 0%, hence the cost of debt is 8.80%.

Furthermore, The D/V and E/V ratios were computed in order to identify WACC. D/E is equal to 0.97, hence D/V and E/V are both equal to 0.49 and 0.51 as a result of the following formula:

$$\frac{D}{V} = \frac{\frac{D}{E}}{1 + (\frac{D}{E})} \qquad \frac{E}{V} = 1 - \frac{D}{V}$$

After acquiring all the necessary data, the WACC was calculated with the formula reported below:

$$WACC = R_e \cdot \frac{E}{V} + R_d \cdot \frac{D}{V} \cdot (1 - t_c)$$

The WACC assume a value of 7.84% considering R_e equal to 8,95%, R_d equal to 8,80% and t_c equal to 24%.
With the calculation of the WACC, the FCFOs were discounted, thus determining the Enterprise Value equal to the sum of the Present Value of the flows in the analytical period and the Terminal Value obtained as the Present Value of an increasing perpetual annuity.
To calculate the Terminal Value, a normalised cash flow from an average NOPAT was used, assuming Capex equal to depreciation and considering a change in Net Working Capital of 0.
The present value and the terminal value were estimated with the two following formulas:
Present value, Terminal Value and the present value of the Terminal Value were respectively equal to -3,66, 20,39 and 13,80.
For the determination of TrenDevice's share price, was computed the Equity value (8,89). The Equity value is equal to the difference between Enterprise Value (10,14) and Net Debt (1,25).
TrenDevice's share price was calculated as the ratio of Equity Value to the number of shares issued (13,77).
The value of the single share was 0.65.

Sensitivity Analysis
Additionally, it is demonstrated how changes in one or both of the independent variables affect how much the stock price changes. In connection with this, sensitivity analysis was carried out to examine how the price changes in response to variations in g and/or WACC.
Based on the price obtained, a sensitivity analysis was undertaken based on the deviation of the long-term growth rate and WACC of +/- 1.0% on the data used as the base case.
For instance, if g was 3% and the WACC was 8.34%, the share price would be 0.61.

Figure 40: Share price sensitivity analysis

		g				
	0,65	0,0%	1,0%	2,0%	3,0%	4,0%
WACC	9,84%	0,17	0,24	0,32	0,43	0,57
	8,84%	0,26	0,35	0,46	0,61	0,82
	7,84%	0,37	0,49	0,65	0,86	1,20
	6,84%	0,52	0,68	0,91	1,26	1,85
	5,84%	0,72	0,96	1,32	1,94	3,22

Source: Excel Personal Elaboration

3.2.1. Multiples method

For the application of the multiple's method, the sample considered was the equivalent as that used for the calculation of Beta in the bottom-up process.

The multiples examined were EV/EBITDA and EV on Sales from an asset side perspective and P/Sales from an equity side perspective.

The drivers chosen were mainly at the top end of the income statement (revenues and EBITDA), as the subsequent TrenDevice income measures (EBIT and Net Income) were negative at the time of listing.

With regard to asset-side multiples, the EV was determined on the basis of the average value of the multiple. Subsequently, the Net Debt was subtracted from the EV to determine the Equity Value. Dividing the Equity Value by the number of outstanding shares, the share value was estimated.

For the equity side multiple, on the other hand, the Equity Value was directly determined by multiplying the average P/Sales by the revenues of TrenDevice.

The equity value was then divided by the total number of issued shares to determine single share's price.

Figure 41: Multiple Method Analysis

Company Name	P/Sales	EV/ EBITDA	EV/Sales
Unieuro SpA	0,07	3,58	0,24
eBay Inc	4,06	10,85	4,35
Dell Technologies Inc	0,22	9,67	0,99
METRO AG	0,12	6,28	0,26
Apple Inc	7,17	25,11	7,08
Average	2,33	11,10	2,58
Median	0,22	9,67	0,99
Revenues	9,27		
EBITDA	0,69		
Enterprise Value		7,66	23,95
Net Debt		1,25	1,25
Equity Value	21,58	6,41	22,70
number of shares outstandigs	13,77	13,77	13,77
Share Price	1,57	0,47	1,65

Source: Excel Personal Elaboration

As denoted by the table above, the results of the multiples approach ranged from 0.47 for the EV/EBITDA multiple to 1.65 for the EV/Sales multiple. As this method, is essentially used as a control methodology for the result obtained through the application of the DCF, it is possible to state that the value identified with the application of the indirect method (0.65) lies within the range calculated with the direct method.

3.2.3 EVA Model

To apply the EVA model, the NOPAT and WACC projections determined earlier in the application of the DCF method were used.

However, to calculate the Invested Capital, current assets and fixed assets were added together. The accounting flow to be paid to the lenders was calculated by multiplying the Invested Capital (equal by analogy to the total sources of financing) by the WACC.

Abnormal Earnings were given by the difference between the NOPAT and the accounting flow pertaining to the lenders and were assumed to be perpetual.

The value of the perpetual annuity increasing at a rate of g=2% as of 31/12/2025 was first derived and, subsequently, financially brought back to time 0.

The present value of the terminal value was added to both the present value of the abnormal earnings derived in the analytical period ('20-'25) and the value at the date of analysis of the invested capital, to then derive the estimated Enterprise Value.

Subtracting the net debt from the Enterprise Value provides the Equity Value, which is divided by the number of outstanding shares to determine the estimated value of a single share.

Figure 42: EVA Model

Date	31/12/20	31/12/21	31/12/22	31/12/23	31/12/24	31/12/25
Nopat	-0,32	0,67	1,07	1,47	1,87	2,24
Invested Capital	6,60	7,21	9,24	11,32	13,35	15,27
Invested Capital*WACC	0,27	0,52	0,57	0,72	0,89	1,05
Nopat-Invested Capital*WACC	-0,59	0,15	0,50	0,75	0,98	1,20
PV(Nopat-CI*WACC)	2,09					

TV	20,94
PV(TV)	14,17
EV	19,76
Net Debt	1,25
Equity Value	18,51
Number of shares outstandigs	13,77
Share Price	1,34

Source: Personal Excel Elaboration

In this case, the value obtained was 1.34, higher than that determined with the DCF, but still within the range of values obtained through market multiples.

CONCLUSION

As has been discussed in earlier stages of this thesis, most of the entire listing process revolves around one fundamental issue: the offering price.

The determination of the issue price is a crucial aspect for the success of an IPO as it has to be as close as possible to the real value of the company in order for the issuer and the underwriters to both achieve the same degree of satisfaction from a value-maximising perspective.

If the price is not in line with the company's real value, the risk of not getting sufficient underwriters or not raising adequate capital increases.

Furthermore, although there is a common theoretical basis behind valuation methods, under different circumstances the same valuation processes may lead to different results, as they are largely based on multiple assumptions and subjective judgment factors.

Moreover, in addition to the determination of the company's placement price, it is necessary to take into account the timing, listing market and economic conditions, all of which are contingent factors in determining the success of an IPO.

With regard to the valuation of Trandevice, three valuation models were applied, the DCF, the market multiples method and the EVA.

The estimated value of a share obtained through the DCF was 0.65, while the value obtained through the EVA was 1.34.

According to the control method, the expected range between the EV/EBITDA multiple, EV/Sales, and P/Sales (0.47-1.65) includes both values obtained through the two direct methods.

The table below summarize all values estimated through the three different valuation methods.

Figure 43: Share price estimation with the three different methods

Share Price with DCF Model	0,65

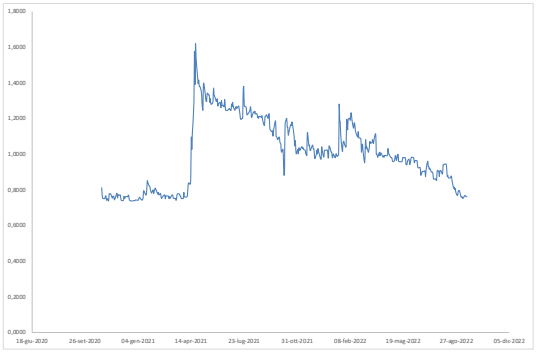
Share Price calcluted with P/Sales	1,57
Share Price calcluted with EV/EBITDA	0,47
Share Price calcluted with EV/Sales	1,65

Share Price with EVA Model	1,34

Source: Excel Personal Elaboration

As the company's placement price at the time of listing was 0.81, it is possible to consider it to be slightly overvalued (about 24.5% higher) compared to the value estimated with DCF method, whereas with the EVA, the conclusion is the opposite (about 40% lower).
The market quickly confirmed the placement price's overvaluation because, as can be seen from the post-listing price trend graph reported below, the first trading day's closing price of €0.75 indicates that the market thought the placement price was slightly excessive.

Figure 44: Share price performance after stock exchange listing



Source: Excel Personal Elaboration with Refinit Data

Of the three valuation models used, the DCF valuation model, which is significantly based on company fundamentals, more accurately reflects the value of TrenDevice two years after listing.
While the value provided by the market multiples model, provides a range of value that is more affected by the construction of the sample of comparable companies, the driver chosen to calculate the value and the stage the company has reached within its life cycle.
Confirming what was stated before, it should be underlined that this valuation model does not allow the calculation of a concrete price, but rather provides an estimate of a price range within which the value of the company under analysis can be placed with a high degree of certainty.
To prevent inaccuracies, future cash flows should be estimated using reasonable assumptions in order to forecast growth that is consistent with the company's fundamentals and the investments required to implement the underlying strategic plan.
Furthermore, when estimating valuation factors using a sample of comparable companies (as in the case of beta with a bottom-up approach), it is crucial that the sample is as homogeneous as possible and consistent with the characteristics of the company being valued.
This is the only way to avoid over- or underestimations, which would have an impact on the fair valuation of the company taken into consideration.
Because the company has not yet completed the development cycle, the key issues in the case under examination are estimating future growth when using the DCF approach and selecting drivers for market multiples. Furthermore, at the time of the decision to enter a regulated market, operating income and operating cash flows were still negative.
Additionally, direct competitors were not listed, making the construction of a homogeneous sample more difficult.

In conclusion, based on the assumptions settled throughout the valuation process, the DCF approach represents definitely the method that most closely approximates the company's true economic value.