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"Initial Public Offering process and financial valuation: the Technogym case"

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Firma dello studente

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Ai miei genitori,

che mi hanno insegnato che con l’impegno si può raggiungere ogni obiettivo.

SUMMARY

1. INTRODUCTION

The optimal ownership structure of a firm changes over its life. During some phases of the its development it is optimal to keep the company private, lately, as the firm progresses through different stages of its life cycle, the optimal ownership structure also changes. Nevertheless the change in ownership structure does not only depend on what is optimal for the firm life cycle, but also on the interests of the various owners.

A fundamental step in the life of a firm is the Initial Public Offering (IPO), which not only allows firms to raise new capital to finance growth, but it allows also current investors to divest completely or partially their participation. This important step has many benefits and drawbacks, that need careful examination. Moreover for a public firm there is an information asymmetry between insiders and outsiders, which in private firms does not occur, so the valuation and pricing process of firm's shares has a fundamental importance.

This thesis will present a study of the determinants influencing the Initial Public Offering (IPO), analyzing the influences that this change has on the firm, the different pressures of the equity holders of the firms and the valuation done on the company by the market. Once those forces will be understood, a practical case will be analyzed: the IPO of Technogym, an Italian based company which went public in May 3rd 2016.

Firstly, I will draw attention to the benefits and costs of both the going public process and of the fact of being a public held company instead of a private one. The main benefits of becoming a publicly traded company will be presented, putting emphasis on the possibility of raising new capital to finance growth's projects, and how this is influenced by market conditions. More in detail, a firm will be more willing to go public if market tends to overvalue firm's peer group, because in this way it will be able to raise more capital, while, in case of a market "cold" period, it will tend to wait, because in this case it will raise much less capital (Lucas and McDonald, 1990). Later I will highlight how this way of raising capital has the major benefit of maintaining the control over the hands of the entrepreneur, since market shareholders are widely dispersed (Zingales, 1995). After this the theory of Chemmanur & Fulghieri (1999) will be explained: they state that there are several ways to finance the firm, in fact it is costly to go public for a young firm, which has very high costs of producing information for shareholders, so in this case the best way of financing is a venture capital. The venture capital will own a great stake on the company, so it will be more interested in monitoring firm performance and operating strategy, but will require high grow rates. Later, when the company will had reached an higher stability, cost of producing information for

shareholders will be lower, and on the contrary it will be difficult to respond to venture capital requirements of high growth, so going public will represent a good option. There are many other benefits deriving from the public market, analyzed by Pagano et al. (1998), like the possibility of reducing bargaining power of banks or debt holders in general, the chance to monitor widely managers' behavior enhanced by market analyst and professional investors and the perspective of reaching an higher reputation in the global market thanks to the indirect advertising deriving from the IPO process. Different dynamics of the industry such as scales economies also influence IPO convenience according to Schultz & Zaman (2001).

Later also costs of being a public company and of the IPO process will be presented, putting a particular emphasis on the underpricing cost. The starting framework for analyzing costs of IPOs will be the guidelines of EY (2015).

The thesis continues with the analysis of the influence of the presence of a private equity firm inside the company's proprietary structure. Private equities, for their nature, invest in a portfolio firm for a limited period of time. So the way of divestment is a fundamental step to study, because it influences both the private equity profitability and the portfolio firm's growth path. This is particularly important because it could happen that a portfolio firm decides to go public with the primary scope to allow the investor to sell its shares. Jenkinson & Sousa (2015) analyzed in detail some factors that could make the exit via an IPO more or less likely and profitable for the private equity. In particular they found macroeconomic conditions such as low cost of debt make less likely an IPO and more likely a leveraged buyout, or a secondary sale, instead, when equity market is particularly favorable an IPO is more probable and profitable. Also private equity history and characteristic has a strong influence: the need to build up a positive reputation, for example, supports an IPO, which allows to have an higher visibility in the market than an LBO. Also portfolio firm's characteristic influence exit way: a company with high level of debt will be less likely to go public, for example.

It is also useful to analyze from an entrepreneur's perspective: LBOs or trade sales as way of divestment of the private equity could harm their power of controlling the firm. So it is likely that if the founder/entrepreneur is still present in the company, an IPO would occur.

Later the techniques most widely used to access firm value are presented, highlighting their usefulness and significance in IPO valuation: Multiples of peer group, Discounted Cash Flow and Economic Profit. After their presentation, it is explained how underwriters pass from fair value assessment to pricing of the IPO, analyzing the fair value discount practiced in order to

attract investors in the road show phase and the subsequent underpricing resulting in the first days after the IPO. Finally, it is also pointed out that in many cases IPO firms result in low performance in the long run, and it is highlighted that this could depend on the fact investors, when a firm has low profitability but very high growth perspectives, give too much importance on growth paths, ignoring actual profitability. To avoid this long term underperformance it would be important to give greater importance to actual profitability.

Lastly those issues are examined in the analysis of Technogym, an Italian based company founded in 1973 by the entrepreneur Nerio Alessandri and his brother. This firm, which produces and commercializes premium gym and wellness equipment, went public in the Milan stock exchange on May 3rd 2016. The IPO was aimed at allowing Arle Capital Partner, a private equity who invested in 40% of firm equity, to divest. The various influences of private equity firm and of the entrepreneur, together with the benefits deriving from the IPO will be presented. Finally a firm valuation will be done, and the issues on market pricing will be analyzed.

2. BENEFITS AND COSTS OF THE IPO PROCESS

Taking a company public is a long process that requires much time and effort. So deciding to start this process is a fundamental decision during the company life.

There are several costs that must be taken into considerations, which are not only the costs related to the process of going public- such as stock exchange fees, road show costs, advisors fees and so on- but also costs related to changes that has to be done inside the firm to respond to extra requirements of the public firms- such as extra personnel, additional accounting and reporting required. A consistent cost that also needs to be taken into consideration is related to the underpricing phenomenon, that entails a low amount of money to be raised by the firm going public.

Being a public firm ensures many advantages for the firm: such as agility in raising new capital, flexibility in investor liquidation, high visibility in the market, higher ability in attracting valuable employees. Anyway many factors make the IPO more or less a convenient option for a firm in a certain moment. Those factors are related to market conditions (such as IPO windows), to industry factors (such as first mover advantage), particular risk factors typical of an industry, or needs to maintain control together with the need to cash the investment.

The proceeds of this chapter is organized as follows: firstly the benefits of going public are presented, together with some conditions that can make this process being more convenient for the firms. Secondly the costs related with the IPO process and public status versus the private status are discussed. Finally the problem of the underpricing, together with an explanation of the phenomenon is discussed.

2.1. Benefits and factors influencing the decision of going public

The IPO process has the major advantage of answering to the need of raising new capital for the firm. It also creates a liquid market for the firm's shares, allowing funders and shareholders to convert part of their participation in cash. EY (2015) explained briefly that major benefits of the IPO are the following:

- Better access to capital markets to raise money through equity and bond offerings
- Flexibility to trade shares with high liquidity and daily valuation
- Greater visibility and brand recognition with consumers
- Higher valuations as greater disclosure of information reduces uncertainty regarding performance

- Potential to diversify wealth on shareholder side
- Enhanced ability to attract, retain and reward valued employees through share option plans
- Opportunity to bond and incentivize key people in your business with long-term incentive plans

It is interesting to notice that motivation to do an IPO is stronger in certain situations and times, more than others (Ritter & Welch, 2002). Many times literature focused on these different situations that influences the benefits related to the IPO, which are the following:

- Market undervaluation/overvaluation influence in timing of the IPO
- Possibility to raise capital and maintain corporate control
- Firm's lifecycle stage and its effect in market investors' information asymmetry
- Industry influences, such as innovation possibilities or first mover advantage
- Influence of firm characteristics such as: high leverage and high growth potential
- Possibility for diversification of investments for entrepreneurs and ability to monitor managers
- Possibility of indirect advertising
- Ability to gain market share and create a disadvantage for investors.

These issues will be analyzed more in detail in the following paragraphs.

2.1.1. Raising capital and timing influence

Ritter and Welch (2002) pointed out that in most cases firms go public in order to raise new equity capital to finance growth, and over 70% of the CFOs confirm that. Therefore, the investment opportunity is the most important benefit of going public. Also Lucas and McDonald (1990) assumed that the major benefit of going public is the possibility to raise capital to finance new projects. Nevertheless an IPO is not always convenient, and its benefits can vary a lot according to the situation . In particular asymmetric information have a strong influence on choosing the moment to go public.

Lucas and McDonald (1990) analyzed how information asymmetry, in particular, the adverse selection problem influences the decision on the moment of starting the initial public offering process. Few issues were relevant for their model: firstly in a considerable number of cases firms experience a decline in price before the issue of the new stocks; secondly, the fact that issues on average follow the market trends.

The idea behind their model is the following: managers have an information advantage over the investors and this implies that they will not identify correctly the real value of the firm. They can estimate a higher value for the firm than the real one, so they overvalue the firm, or they can estimate a lower value for the firm, which turns out to be undervalued. An information announcement helps investors to correct their valuation. After the announcement the share price could rise: this implies that the firm was undervalued. On the contrary, if the share price falls after the announcement, the firm was overvalued.

Ritter and Welch (2002) say that if the firm needs an equity increase to finance growth, managers will pay attention on how the market values the firm. If the firm is undervalued by the market it is likely that managers will wait before starting a capital increase. This implies that on average companies have above the average performance before the equity issue, due to the fact that they wait for the undervaluation to vanish before issuing. In the other hand overvalued firms will issue immediately, if they wait there is the possibility that prices will decrease so the firm will lose the opportunity to collect more money.

Given these two price paths, equity issuers on average have positive abnormal returns preceding the issue, and this is the best moment to start the IPO filing process, when the firm is overvalued from the market (Lucas and McDonald, 1990).

The valuation depends also on the general market mood: it is more likely to have equity issues when there is a general increase in the market, in this way the firm valuation will be higher and the company will collect more funds. To explain this fact Lucas and McDonald (1990) supposed that the percentage of firms in the economy that are overvalued or undervalued is unsystematic over time. In a period in which an above average number of firms are undervalued, when the information about these firms becomes public, it is expected to create a general market rise, since the market will notice the real value of those firms. After this raise, many firms will raise new capital: managers understand that the market was undervaluing the company, so they waited for a market rise. Thus, it is expected an increase in equity issues in a period of market growth. This highlights that, because of the information asymmetry of investors, the timing of the issuing is fundamental to have a successful operation.

2.1.2. Cash flow rights and corporate control

Zingales (1995) pointed out that also corporate control is an important factor to consider: by going public the initial owner can change the proportion of cash flow rights and control rights he retains. Therefore, the initial owner uses the IPO to optimize the structure of ownership of

the company and to maximize his profit from an eventual sale. There are two sources that increase a buyer's valuation: the increase in cash flow, which is enjoyed by all shareholders, and the increase in private benefits of control, which is captured only by the controlling shareholder.

In addition the markets for these two benefits are different: the first one is populated by many small investors and it is fully competitive, while the second one is restricted to a few large investors and is not fully competitive. Therefore, the incumbent in general will not be able to extract the buyer's full reservation value through direct bargaining. As a result these two components are better sold through two separate selling techniques: cash flow rights should be auctioned off to dispersed shareholders, private benefits of control should be bargained over a direct negotiation. With the sale of cash flow rights to dispersed shareholders without selling control, the initial owner can divest part of her investment and will gain some free cash flow. However, by retaining control, the incumbent succeeds in extracting some of the surplus deriving from the buyer's larger private benefits in a direct negotiation (Zingales, 1995).

2.1.3. Influence of life cycle stage

Chemmanur & Fulghieri (1999) analyzed that in different stages of a firm's life there can be optimal or non-optimal moments to go public. Selling the shares to a single large investor (the "venture capitalist") has an advantage: that it minimizes the information production cost. However, the disadvantage is that the venture capitalist, which remains less than fully diversified and exercises considerably more bargaining power against the entrepreneur than public shareholders, will demand in equilibrium a significantly greater rate of return. On the other hand selling shares to a large number of investors in the equity market has the advantage that each investor is fully diversified and has almost no bargaining power relative to the entrepreneur, but there is some duplication in information production and consequently a larger aggregate information production cost is burned by the firm.

The resolution of this trade-off depends on the magnitude of outsiders' information production costs: older firms have more stable and predictable free cash flow, therefore also for outside investors it is less costly to gather information about an older firm's fair value and performance. In addition the accumulation of as much information possible about the firm by the market helps the valuation. This implies that older firms, with a sufficient amount of information about them accumulated in the public domain, will be more likely to be publicly traded. Younger firms, which entail a greater information acquisition cost, choose the venture capitalist as investor. Moreover while some amount of duplication in information acquisition

is unavoidable, the price in the equity market conveys information across investors so that only a fraction of these investors will incur the information production cost, thus lowering the extent of such duplication.

2.1.4. New markets and investors perception

Maksimovic & Pichler (2001) analyzed the initial public offerings in technological firms, studying the forms of financing in developing industries. They found that innovating firms face the following dangers: the risk that a new technology will make their investment outdated and the risk that new entrants can reproduce a similar technology and can reduce their profit. Moreover the timing and kind of financing depends on: the public perception that the industry is viable, the probability that a superior technology will appear, and the cost of research and development, that must be paid by new entrants.

In earlier stages of the firm it is likely to have private financing. This is when industry is perceived to be risky, with high development investment but low probability of entry of new competitors. Instead, in this stage of firm life cycle, it is likely to have a public financing when industry is perceived to be feasible and less risky, and initial investment is not of high amount, but also the probability of being displaced by new entrants is low.

In addition a public offering creates a secondary market for firm's securities that reveal much information not known by the issuer. This additional information is revealed also to potential entrants and can benefit also the incumbent: more information available in the market will make more clear the viability of the industry, so it will avoid both an excess and an insufficient number of entries (Maksimovic & Pichler, 2001). As a conclusion an IPO in new markets will widespread information, and this can reduce problems of information asymmetry: competition will develop in a more equilibrate way. The IPO has another benefit that cannot be exerted by the incumbent firm: the widespread of information will reduce the risk for investors, so the underpricing will be lower, especially if compared with private financing.

2.1.5. Growth opportunities and size

According to Pagano et al. (1998) the determinants of the decision to go public depends from the ex ante characteristics of the companies that go public and from the ex post consequences of this decision. They summarized the benefits that previous research had highlighted and then looked if those were determinants of the decision of going public.

The first benefit that literature pointed out and that they analyzed is the overcoming of borrowing constraints, in particular to find sources alternative to banks. Following this way of reasoning IPOs should be fitting for companies with large current investments and future investment opportunities, with high leverage and high growth.

Second implication of the IPO should be the possibility of reducing the high bargaining power of banks: the widespread of information regarding the company can increase the proposal of bargaining from other lenders, and competition at the end ensures a reduction in credit cost. So companies facing higher interest rates and having more concentrated credit sources should be more likely to go public to make their credit cheaper.

Thirdly, the decision to go public should influence the liquidity of firm's stocks. Shares of private companies can be traded only by informal searching for a counterpart, at considerable cost while in an organized market it is possible to exchange cheaply and on short notice. However, the liquidity of a company's shares is an increasing function of their trading volume, so that this liquidity benefit may be effectively reaped only by sufficiently large companies, and also for this reason there should be a positive relationship between size and likelihood of an IPO. Moreover going public increases the possibilities of diversification for the founders both directly, by divesting from the company and reinvesting in other assets, and indirectly, because the company with new equity after the IPO can acquire stakes in other companies. If diversification is an important motive in the decision to go public riskier companies should be more likely to go public, and also the probability that controlling shareholders sell a large portion of their shares at the time of the IPO or soon afterward should increase.

Another benefit should be the instrument of monitoring that the market provides and that is not present in private firms: both through the possibility of hostile takeovers and through the opportunity of market assessment of managerial decisions. Moreover, in a public firm, the shares' trading is influenced by the information about firm. Thus, linking the managers' compensation plans to the stock performance can improve their behavior and their effort in enhancing firm value production. Unfortunately Pagano et al. (1998) were not able to test this hypothesis since their sample was made by Italian firms, and at the time of the study, the information about the management compensation was not mandatory information for the disclosure.

A benefit for the firm is the indirect advertising deriving from IPO: most investors hold portfolios that contain a small fraction of the existing securities, often because they simply

ignore that a certain company exists, but listing works as an advertisement for the company. This is very important because the more a firm is known, so the higher is the number of investors, the higher is the stock price. This is confirmed for example by the fact that when a company already listed announces to list in New York Stock Exchange its stock price experience an abnormal return of 5%.

Another situation creating positive benefits for the firm is the presence of a window of opportunity: companies recognizing that other companies in their industry are overvalued have an incentive to go public because managers can exploit the overvaluation by the market to raise more capital. A measure of the willingness to overvalue of the market is the median market-to-book-ration of public companies in the same industry, so if this measure is high firms should be more likely to go public. A high market-to-book ratio can also indicate that market considers that the firm has a high potential of growth for the future. To discriminate between these two hypotheses are needed some ex post evidences: if newly listed companies invest at an abnormal rate and earn large profits, then the relationship between market-to-book and IPOs is likely to be driven by expectations of future growth opportunities; otherwise, it is likely to reflect the desire to exploit a window of opportunity.

Analyzing the sample they found that main factor affecting the probability of an IPO is the market-to-book ratio at which firms in the same industry trade: an increase in market-to-book ratio augment the possibilities of an IPO. This positive relationship can be caused by the increase in growth opportunities in an industry, which is reflected in market prices, and which has as therefore the augmented the need of investments. A second could be that entrepreneurs wait to issue new stocks when market overvalue stocks, and this is in line with the previously explained theory of Lucas and McDonald (1990). Pagano et al. (1998) suggest that this second explanation is the most plausible.

The second most important determinant is the size of the company: larger companies are more likely to go public. IPOs also tend to involve companies that before the IPO grew faster and were more profitable. Regarding other hypothesis taken from the literature that were tested it emerges the following: both the variables that measure a firm's financing needs—i.e., investment and growth—increase the probability of listing, but not in a statistically significant way. The proxies for the cost and availability of credit didn't resulted to have much explanatory power: the relative cost of bank credit and a firm's leverage have a negative impact on the likelihood of an IPO, but neither is statistically significant. By contrast, the

concentration of bank credit appears to increase the likelihood of an IPO, but this effect also is not statistically significant (Pagano et al., 1998)

2.1.6. Industry influences: the case of technology market

Another benefit deriving from IPO is studied by Schultz and Zaman (2001) who noticed that firms go public to gain the first mover advantage. They analyzed a sample of Internet companies that included all stocks that went public between January 1996 and March 2000 that are in the Internet Stock List. They found that this is particularly true in Internet industry. Between January 1999 and March 2000, 321 Internet companies went public, and most of them had little revenues. Only 28 of the 321 were profitable in the previous quarter. Many had been in business for only a few months: this is particularly unusual since a younger firm going public faces an higher underpricing than an older one, simply because there is an higher information asymmetry between the firm and the market, so it is more profitable to go public later on the firm life cycle.

According to Schultz & Zaman (2001) there are two commonly offered explanations for this uncommon behavior. The first is that managers are hurrying to take their companies public because the market was irrationally overpricing Internet stocks. The second explanation is that companies were rushing to grab market share in an industry in which economies of scale ensure that only a few firms will survive in each niche.

Nevertheless managers' behavior does not bring evidences to the thesis that they start the Initial Public Offering process to sell overpriced stock. It would be more reasonable for them to sell a great stake of their shares and to raise as much capital as possible, if they thought that stocks were overvalued at the moment of the IPO. However, insiders sell very few shares and this finding is consistent with insiders believing that Internet stocks are fairly priced.

In contrast, there is a stronger evidence that managers are taking Internet companies public to capture market share. It can give to an Internet firm a decisive advantage over potential entrants: firstly because it may be able to charge more, and secondly because with higher market share economies of scale increases and so costs faced are lower than ones for potential competitors.

In conclusion, from Schultz & Zaman (2001) it is possible to understand that in industry with high economies of scale where the first mover has a strong advantage firms can benefit from IPOs since they can increase in size and enlarge their market share very fast.

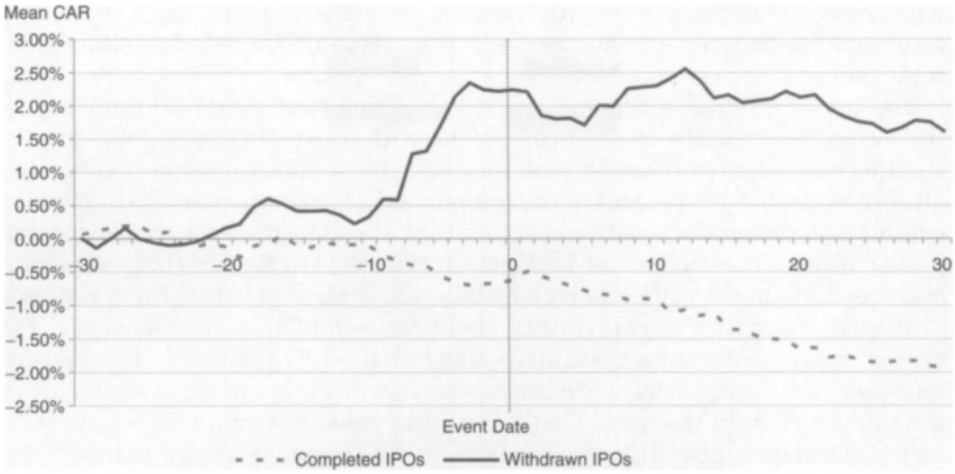
2.1.7. Gain market share and disadvantages for competitors

The competitive effects of IPOs have important implications not only for issuing firms, but also for industry competitors and investors. Existing publicly traded firms represent 97.5% of the total post-IPO market capitalization occur, while IPO firms comprise only 2.5%. This is why it is important for investors to know how an IPO affects the operating and stock market performance of existing public firms. Correspondingly, firms competing with a firm that is filing for an IPO need to understand how this can affect the competitive environment and have to prepare strategic reactions.

Hsu et al. (2010) tried to measure the performance of the already public firms in periods of IPO. In fact, if IPO firms can successfully compete against publicly traded competitors a reduction in performance of firms already traded is expected. So Hsu et al. (2010) wanted to test whether stock prices of competing firms react to a large IPO in their industry. While an IPO is announced and registered some time before the intended first day of trading, there is substantial uncertainty at that point, about whether the IPO will in fact be completed. The IPO announcement and its subsequent completion or withdrawal is thus expected to have an impact on rivals' stock return.

So they firstly analyzed if the completion of an IPO has negative effect on price of public rival firms, then they checked if the withdrawal of an IPO has positive price impact and then they focused also in the initial step of the IPO, analyzing if the initial filing has negative impact on public firms in the same industry. They went further testing if operating performance of existing firms deteriorates after the IPO. Finally, they tested non-price reactions, checking if leverage, certification, and knowledge are significant determinants of cross-sectional variation in firm performance around IPOs and so if they are significant determinants in firm’s ability to survive. For example competitors with low leverage may be more flexible in their investments to compete with the recently recapitalized issuing firms, competitors with better certification by investment banks may fare better against recently certified issuing firms, and players with more knowledge capital may perform better against new entrants with nonfinancial advantages.

Exhibit 1: Incumbent firm abnormal returns around completed and withdrawn IPOs



Source: Hsu et. al (2010)

To test the first and second hypothesis, concerning the stock price changes of public rival firms at the completion of the IPO, they analyzed the stock returns of industry incumbents at and around the completion date or withdrawal date of IPO competitors. It resulted that while cumulative abnormal returns are very similar until 20 days before the IPO event, in withdrawal case they start to become slightly positive over the next 10 days and close to zero in completed IPOs. After day 10 a major difference arises and become completely opposite in case of withdrawal or completion: in the first case they show a significantly positive reaction that continues for a substantial period of time, while in the second case the reaction is significantly negative. This suggests that the market perceives IPOs as bad news for industry competitors. This is illustrated in Exhibit 1.

Accordingly, it is expected to obtain negative evidence also concerning the operating performance of incumbents. Hsu et al. (2010) found that operating performance of incumbents is significantly lower after IPO: firstly they earn less on existing assets, in fact ROA declines significantly; secondly firms invest less, so Asset Growth declines also significantly; and leverage increases, so both Interest Coverage Ratio and Leverage Ratio get worse. It results are evidenced in Exhibit 2, where they reports the univariate statistics for 9494 incumbent firms before and after an IPO event in Panel A and before and after a withdrawal event in Panel B.

Exhibit 2: Incumbent firm ratios

Period	ROA1	ROA2	Sales Growth	Asset Growth	Interest Coverage Ratio	Leverage Ratio	K-Z Financial Constraint Index
Panel A: Performance Measures for All Firms							
Four-year average before the IPO	3.18%	11.61%	14.01%	18.02%	2.92	0.12	−1.21
Four-year average after the IPO	0.73%	8.87%	10.76%	9.59%	2.04	0.13	−0.55
Wilcoxon test significance	***	***	***	***	***	***	***
Panel B: Comparisons of Performance Measures between Surviving and Nonsurviving Firms							
Surviving Firms							
Four-year average before the IPO	4.17%	12.90%	13.07%	16.10%	3.60	0.12	−1.42
Four-year average after the IPO	2.28%	10.56%	11.27%	11.13%	2.91	0.12	−0.94
Wilcoxon test significance	***	***	***	***	***	***	***
Nonsurviving Firms							
Four-year average before the IPO	−7.21%	0.10%	22.42%	34.04%	−0.87	0.10	−0.19
Four-year average after the IPO	−22.44%	−8.43%	6.96%	−2.32%	−3.65	0.18	1.43
Wilcoxon test significance	***	***	***	***	***	***	***

Source: Hsu et al. (2010)

Finally they analyzed whether cross-sectional differences in IPO-period incumbent performance can be explained by three factors previously recognized as influencing IPO performance, that are leverage, certification, and knowledge.

They found that companies perform better, and are more likely to survive, if they are less leveraged and thus have more financial flexibility, if their IPO has been underwritten and thereby certified by a top investment bank or by a venture capitalist. Moreover, if they spend more on research and development and therefore possess a competitive advantage through the accumulation of knowledge capital they perform better in case of competitors IPO.

To summarize, the research of Hsu et al. (2010) suggest that IPOs have competitive effects on other companies that operate in the same industry. This research has proven to be useful for investors, because, with a new IPO, industry risk changes. It was also useful for incumbent companies, that need to understand how to react to competitive changes induced by new IPOs. More importantly, this research was significant for the firm that need to raise new capital: the IPO has proven to be a method to raise new capital that increase competitive advantage of the firm. They explained this fact firstly with the improvement in debt-to-equity ratio that generally results from the new issuing: if the IPO firm is less leveraged than

industry competitors are, this difference is expected to be an advantage for the issuers. Secondly, issuing firms have the advantage to be recently certified by investment banks: this enhances investors' willingness to purchase new issues as opposed to shares of other firms in the same industry. Thirdly, new entrants may have some nonfinancial advantage over industry competitors and this may make issuing firms more attractive to investors. In fact, higher quality firms are more likely to go public than lower quality firms are.
Ergincan et al. (2016) went further in this field of research focused their attention not on issuers, investors, or other third parties such as government bodies but on the firm itself. They used a sample of 60 Turkish IPOs starting from 1993.

Main finding of the study is that going public seems to be a good option if an industrial firm needs to improve its relative market share. Thus, it also provides support to the idea that an IPO is generally bad news for the rivals. In fact, in many cases, their performance ratios and their profitability are negatively affected, and their market share decreases. This can be explained in the following way: going public, the firm loosens its financial constraints and increases the possibility of improving market share.

2.2. Costs of going public

IPO process guarantees many benefits and new opportunities, but also have consistent costs and drawbacks. In making the decision of taking their company public, decision makers should carefully consider all the potential benefits, as well as the costs.

EY (2015) analyzed the cons of starting an IPO process as following:

- The IPO process may become distracting and time-consuming relative to running the business
- Significant IPO project costs
- Recurring incremental costs associated with the requirements of being a listed company
- New investors with voting rights
- Greater transparency to all stakeholders
- Pressure to deliver on your promises
- Corporate governance duties

According to PwC (2015) the two kinds of cost that need to be considered are: the cost of going public, so the cost of preparing the required financial, marketing, and business information, as well as determining the optimal tax and legal structure; and the cost of being

public, so preparing the financial reports, which implies many times upgrading firm financial reporting capabilities and meeting the governance and internal controls standards and the listing requirements of the selected exchange.

2.2.1. Cost of going public

There are several cost associated with the listing process. They can be distinguished between cost directly attributable to registration (offering costs), and incremental cost incurred in preparation for the offering (start-up costs).

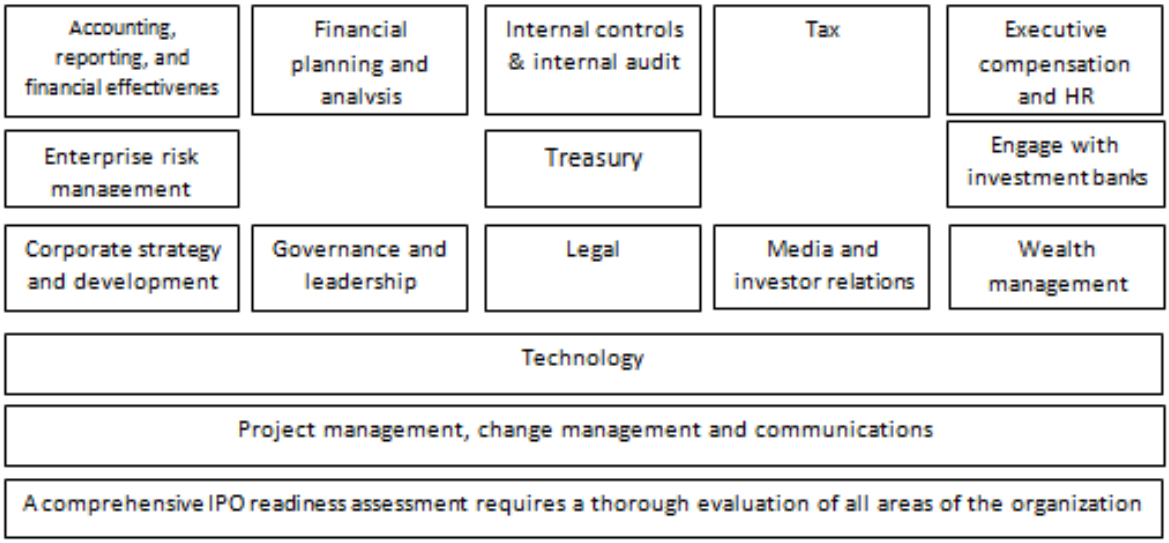
Offering costs are cost incurred in direct connection with registration and distribution of company shares. They include the underwriter discount (usually 4-7% of gross proceeds), the legal fees of consultants related to draft the registration statement and other advices related to the offering, the external auditor, that usually issues the comfort letter, review the registration statement (but doesn't include the year end auditing), the financial reporting advisor, in charge of preparing the pro forma financial statements, advising on the financial statements, and help to convert financial reporting from the ones of a private company to the ones of a public one, printing of all the documentation, registration fees to state and rating agencies, exchange listing fees to the stock exchange, and all the road show expenses (PwC, 2015).
Start up costs include all the incremental organizational costs such as tax and legal entity restructuring costs that occurs before the IPO, additional audit and accounting to make the financial statement compliant with stock exchange regulation, valuation reports, costs to draw new articles of incorporation, audit committee charter, by-laws and other agreements (PwC, 2015).

2.2.2. Cost of staying public

There are significant expenses related to the public company status: most private companies do not have the infrastructure to operate in a public environment. Since they need to satisfy the new level of regulatory and reporting rules, they will incur a series of one-time and incremental costs.

PwC uses a framework of the areas that usually private firms need to improve or create to get ready to operate into a public market. Many times firms choose to upgrade some of these areas and so incur significant incremental costs.

Exhibit 3: IPO readiness Framework



Source: PwC (2015)

Broadly speaking, there are five major sources of additional costs related to the fact of being public instead of being private: accounting and reporting effectiveness, additional employees need, need of external resources and additional regulatory requirements, audit fees.

Accounting, reporting and financial effectiveness: A very important change for many companies is the need to report publicly their financial results on a rigorous timeline. The firm needs to prepare to meet these requirements, because an inability in this field could damage investor confidence in the firm and potentially prohibit the company from completing capital market transactions while out of compliance. Adapting to these requirements is a long process, it doesn't happen in one day.

Adding needs of employees: In many cases the adaptation also requires to hire and retain employees with some specific skills, which usually a private company does not have. This additional staff requirement accounts for a large portion of the incremental cost of being public. For example:

- **Taxation group**: the size of taxation team may need to be incremented, since in a public company usually there is more emphasis on income tax provision and on tax planning strategies. The taxation group is typically responsible for ensuring compliance with state and international tax requirements, as well as compliance with indirect taxes (sales/use taxes, property taxes, and value-added taxes) and it is responsible for quarterly tax provision preparation and interim reporting rules that needs to be applied.

- **Internal Audit**: Many stock exchanges as the NYSE requires that listed firms establish an Internal Audit (IA) function that has to be developed and requires extra staff. This function usually works as independent assurance and consulting department with several responsibilities, like internal control and support to the accomplishment of strategic objectives, alleviate risks, ensure conformity with internal policies, and support financial reporting. Given the cost and time needed to hire the company's IA resources. Many companies will look to hire external resources, but the cost to engage external resources could be higher than the cost to hire IA resources internally. Anyway this option has several advantages: it allows to scale up rapidly and it allows to have specialists that provide significant added value that can be transmitted to internal resources (PwC, 2015).
- **Financial planning and analysis (budgeting and forecasting)**: It is critical for a successful IPO and for the life of the public company to have a dependable financial planning team, because analysts rely on this information and because firm's ability to meet its own forecast and earnings estimates have a significant impact on stock performance (PwC, 2015).
- **Treasury and financial risk management**: This function is obligatory for a public company and it also helps to adequately manage the liquidity, the foreign currency exposure and derivatives to hedge interest rates (PwC, 2015).
- **Human resources**: public firms will have increased need of human resources, and so human resource function itself will need to be increased(PwC, 2015).
- **Technology support**: Companies must also consider the need to increase the number of members in their technology function because of becoming a public company. Systems and processes must be documented and tested to comply with market requirements and that their technology infrastructure adequately supports compliance efforts (PwC, 2015).
- **Board of directors**: "Public companies can also expect to pay director fees to independent members of their board of directors and fees to recruiting firms to identify the better people to cover this role" (PwC, 2015).
- **Internal staff assessment**: Together with the more specialized employees needed by a public company, "*more personnel across all functions may be needed to satisfy the incremental reporting and analysis requirements that come with public reporting*". This requires to verify that current staff is adequate in terms of quantity and quality (PwC, 2015).

Need of engage external resources: Many companies will need to pay external resources to provide technical expertise, which usually include:

- **Company securities counsel**: It is engaged during IPO process to deal with underwriters, but usually is retained to assist firm in complying with new regulatory requirements and advising about securities-related litigation.
- **Financial reporting advisors**: Firms can hire also firms other than their own auditors, in to gain extra support, for example in implementing new financial reporting protocols, adopting new accounting, reporting and disclosure standards, training accounting and finance staff.
- **Compensation advisors**: After the IPO these advisors help to integrate the compensation committee inside the governance structure of the firm.
- **Investor relations**: This team of internal or external advisors works together to build relationships with shareholders, investors and analysts, providing relevant information to better position the firm in the marketplace. Usually a new public company opts to externalize this team or part of it (PwC, 2015).

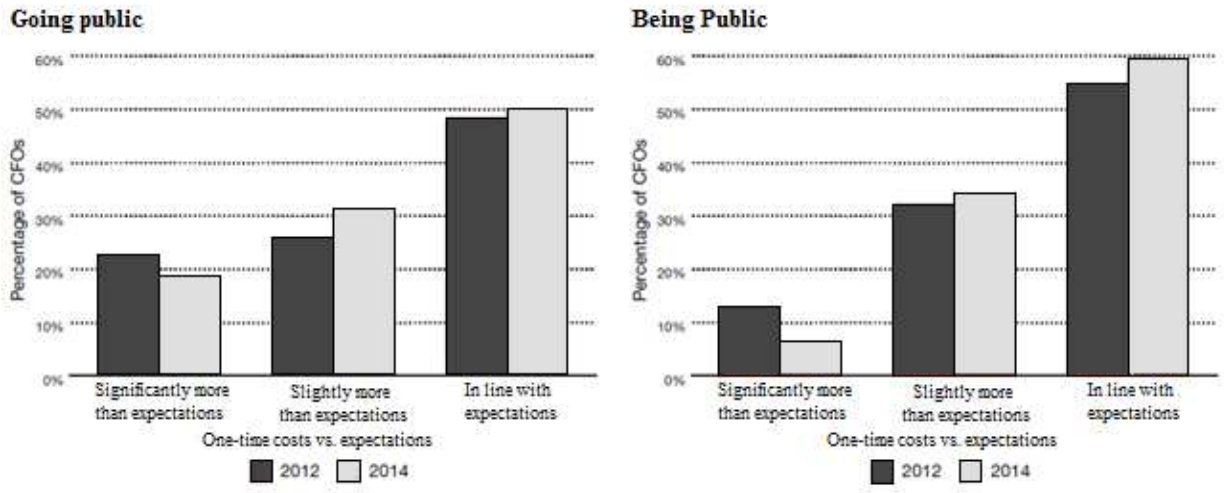
Necessity to comply with new regulatory requirements: every stock exchange has its own corporate governance listing standards that every firm must fill. These standards deal with board of directors, structure and process, and can be sometimes stricter than the national regulations and laws. "*A private company will be required to evaluate its governance structure, especially its committee charters and composition, to ensure it complies with the requirements of its chosen exchange. Companies should prepare for the time and costs required to create, implement, and maintain stricter corporate governance policies as well as retain high-quality members in the committees*" (PwC, 2015).

Audit fees: Public companies find an increase in audit fees, both to meet additional regulatory requirements that require more time for auditors. Moreover, when an auditor issues an opinion on a public firm it faces a higher risk, and this reflect in higher audit fees (PwC, 2015).

2.2.3. Perform an IPO readiness assessment

Since costs related to IPOs take many forms and remains present in the firm during the rest of its life, it is important to valuate accurately the benefits and costs of this process. In fact, it often happens the managers find the costs associated with going and stay in public higher than expected, as highlighted by PwC (2015).

Exhibit 4: CFO expectation of the costs of going public and being a public company



Source: PwC (2015)

So for firms preparing for an IPO is important to very if they are ready to cope with all the challenges and requirements of going and staying public and to avoid unexpected negative situations. The right preparation can help companies to reduce costs as they establish a time-table and work plan based on the offering's strategic objectives, specific business issues, and the actual work that needs to be performed.

Since the success of the IPO depends also on the execution, PwC (2015) suggests introducing a project management system focused on the IPO. The project management principles will support IPO leader, to create an IPO plan, monitor the progresses, maintain the timetable and keep the overall process and decision making on track. Early identification of emerging issues, in particular, can be critical to a successful launch. For example not understand the "*need to provide an additional set of financial statements in the registration statement for a recent acquisition or the taxation effects of the post-IPO capital structure can derail the IPO process*" (PwC, 2015). So the understanding the points of strengths and the weaknesses of a firm relating to the IPO process, together with an effective planning and monitoring of the process are critical for the final success.

2.3. Money left on the table

The valuation of shares of an unlisted company is challenging because historical prices are missing, so the benchmark for the evaluation lacks. There is an information asymmetry between insiders and market investors, and this lead to adverse selection problems, which manifests in persistent average initial return in the market.

This issue is particularly important for firms going public, because firms usually face an underpricing phenomenon when they issue public stocks. Share price increasingly goes up after the issuing of stocks and this means that the firm loses a considerable part of the capital that it could have raised, or, from another point of view, it could have raised the same amount of capital with less share dilution. From the opposite point of view, the investors who buy the shares at the issuing have purchased a financial instrument that could provide a very high positive return in a short period.

This factor is particularly important and has to be evaluated and taken into account by firms that are considering to go public, because it can influence strongly the convenience of an IPO: so this part of the chapter will present several factors influencing the underpricing phenomenon and its extent.

2.3.1. Underpricing and mispricing phenomenon

The literature offers three main explanations for the underpricing phenomenon: deliberate underpricing in the premarket, mispricing in the early aftermarket as result of trading activity, underwriter price stabilization in early aftermarket. (Reber & Vencappa, 2015)

Deliberate underpricing is described as a method for insiders to signal positive information on firm value to outside investors. This can be described as an outcome of the principal-agent conflict: the principal (issuing firm) cannot directly observe the marketing and distribution effort of the underwriter (agent). Therefore, the underwriter can induce the issuing firm to agree to a low offer price **.** Underpricing is helpful to reduce lemon problem: the issuer is more informed than investors are, so they face the lemons problem. Only issuers with worse-than-average quality are willing to sell their shares at the average price. "*To distinguish themselves from the pool of low-quality issuers, high-quality issuers may attempt to signal their quality*". As in many other signaling models, "*high-quality firms demonstrate that they are high quality by throwing money away*" (Ritter & Welch, 2002). One way to do this is to leave money on the table in the IPO. So high quality issuers deliberately sell their shares at a lower price than market valuation, so they lose some money at the moment of issuing, but expect to recoup some of the sacrifice later with a future issuing activity (Ritter & Welch, 2002). Moreover IPOs have to be on average underpriced to compensate less informed investors for a winner course problem and to induce them to participate in the new issues market: a winner course arises because better informed investors only apply for underpriced new issues and less informed investors obtain overpriced stocks (Rock, 1986).

Mispricing in the aftermarket strain of literature asserts that stocks are correctly priced in the premarket but trading activity in the early aftermarket misprices the stocks. This is due to the valuations of overoptimistic investors. Loughran & Ritter (1995) said that this happens because investors are "*betting on long shots*". They assert that, "*if the true probability that a given IPO will be the next Microsoft is 3 percent, but investors have instead estimated that it is 4 percent (resulting in a 33 percent overvaluation)*". Then it will take a very long period before they adequately revise their estimates. Therefore, investors seem to be systematically misestimating the probability of finding a big winner. Going more deeply, issuing firms typically have had recent improvements in their operating performance. The market appears to overweight short-term improvement and underweight long-term tendencies. Therefore, when the IPO starts "*market prices reflect the capitalization of transitory operating improvements*" (Loughran & Ritter, 1995). When the transitory nature becomes apparent, the stocks underperform. However, this underperformance does not start soon after Initial Public Offering. This over optimism leads to an excess demand of shares so prices go up and initial return in the aftermarket increases.

Also Friesen & Swift (2009) analyzed overreaction of investors to new information on the initial day of trading and found evidence that long-run returns are negative and are unambiguously explained by a pricing above the fundamental value. Going more in detail, the returns are positive until 6 months after the IPO and insignificant in the second semester of first year: this suggests that prices remain above fundamental value until a year following the IPO. From year two, abnormal returns are significantly negative: prices are revised and become linked to the fundamental value of the firm.

Another explanation attributes positive average initial return to underwriter price support. Aggarwal (2003) examined in detail what kind of aftermarket activities underwriters do, how long these activities last, what costs the underwriters incur, and how the combination of these activities helps to provide price support to weak IPOs. These activities are generally referred as stabilization activities, because they provide price support for weak offerings that tend to trade at or below their offer price. They include exercise of the overallotment option, short covering in the aftermarket, and the use of penalty bids to restrict flipping.

The initial stock price performance of IPOs partly depends also on what investors do with these shares. Investment banks have the discretion to allocate IPO shares, and investors have the option to hold their allocated shares or to sell them immediately in the aftermarket.

Investors who sell their shares in the first few days are called flippers and investment banks discourage this activity since it puts downward pressure on the stock price (Aggarwal, 2003).

2.3.2. Flipping activity and underwriters role

Flipping is the term used when shares are sold in the immediate aftermarket by investors who receive an initial allocation at the offer price, and does not include purchases in the aftermarket. The lead underwriter does not disclose the proportion of shares allocated to institutions versus individuals. So the public does not know who has flipped shares, but the lead underwriter and each syndicate member have these details. High trading volume, that usually occurs in IPO aftermarket, is not just due to flipping, which, on average, accounts for 18.95% of trading volume and 15.00% of shares offered in the IPO. Therefore the original investors hold their shares for the most part. However, when this small percentage of shares is flipped, the shares are traded several times, resulting in high volume. The high volume does not result from the sale of a large proportion of shares by the original owners; instead, it results from the same shares being sold repeatedly. Therefore a small percentage of flipped share have a large multiplier effect on trading volume. It is partly a result of the buying and selling by investors who are not necessarily original buyers, and partly of trading activity between market makers (Aggarwal, 2003).

Market makers have an important role, particularly wholesalers, who are not the original investors in IPOs but conduct several transactions to satisfy customers orders so add to trading volume. In addition, institutional investors play an important role: it is generally argued that large portions of an IPO are allocated to them, since they should not flip IPOs, because they are long-term oriented. Actually institutions are found to consistently flip a much larger percentage of the shares allocated to them than retail customers do.

Underwriters also are fundamental in the IPO process: they start by doing the due diligence and examining every aspect of the issuing company; they arrange the road show, after which the offering is priced. During the road show, the investment bank starts to build the book and gets a sense of the demand for the offering and the type of investors interested in buying it. Based on information provided by potential investors, the underwriter decides how to price the issue and whether to revise the filing range. At this time, investors might also indicate what they will do with their shares: a mutual fund with an allocation of only 50,000 may decide either buying more shares in the aftermarket or selling them for a quick profit. Investment banks keep track of flipping activity by investors because the immediate reselling of shares in the aftermarket can exert downward pressure on the stock price, particularly for

weak offerings. The lead underwriter considers the impact of flipping in pricing the offering (Aggarwal, 2003).

The road show and the book-building process help the underwriter to estimate demand for an offering. Offerings oversubscribed several times can absorb the flipped shares and still result in the aftermarket price rising above the offer price. Investment banks are frequently pleased to see flipping in hot IPOs because this generates trading commissions for the firm. However, in weak offerings they do not want investors to flip the stock because it creates selling pressure that can lower the price even below the offer price and investment banks end up buying flipped shares in the aftermarket. Excessive flipping also implies that shares are not placed with long-term investors and this disappoints the issuer (Aggarwal, 2003). Underwriters use some methods to reduce flipping. One of these is penalizing flippers by excluding them in future deals. Another one is imposing penalty bids, which is a portion of gross spread they flipped to customers.

A factor to consider in understanding the variation of flipping activity is the offer price relative to filing range. Trading volume varies a lot in the three cases where IPO is priced below, above or within the filing range. Trading volume (as a percentage of shares offered) is, on average, only 44.13% for IPOs priced below the filing range, 82.71% for IPOs priced within the range, and 99.80% for IPOs priced above the trading range. Flipping accounts for a somewhat larger percentage of trading volume for IPOs priced below the range: 22.75% of trading volume for IPOs priced below the filing range is due to flipping, compared with 19.12% for IPOs priced within the range, and 17.50% for IPOs priced above the range. Anyway, the result that flipping relative to total volume is highest for weak offerings is due to the low total volume in weak offerings. By other, more appropriate measures, flipping activity is actually lower in cold IPOs.

From Aggarwal (2003) analysis it emerges that there is more institutional and retail flipping in hot IPOs. This is consistent with the idea that underpricing induces flipping: it increases revenues for the investors and for the underwriter. For underwriters in fact underpricing reduces gross spread income but increases profits from market-making function. In addition penalty bids have a stronger impact in case of weak IPOs, while in hot IPO, notwithstanding the penalty, flipping is still profitable.

2.3.3. Selling mechanism and underpricing limitation

Derrien & Womack (2003) worked on what kind of underwriting procedure might be preferred for controlling its amount. "*Underpricing is considered almost an universal feature*

of IPO market" (Derrien & Womack, 2003) and appears to be like an necessary cost for the issuers, because it is money not available to the firm issuing the stocks and to the earlier investors, however it has some positive sides too. The question is when it is too much, and practitioners suggest that a array of 10-20% underpricing is optimal for first-day.

Some literature suggests that some selling mechanisms are more efficient than others. For example bookbuilding procedure is considered efficient since "*it encourages investors to reveal their beliefs about issue value*" (Derrien & Womack, 2003), while fixed-price procedure can cause informational cascades: investors updates their expectations according to the choice made by previous investors, and this forces firms to underprice their shares in order to create this cascade.

The main goal of owners when listing a firm is to obtain the maximum potential value from the offering, but the typical aim of underwriters is to underprice a little to control the price variation after the listing. Taking into consideration these two objectives, an efficient selling mechanism will be the one that minimize underpricing . In the US and in the rest of the world, the mechanism that dominates is the bookbuilding process, but Derrien & Womack (2003) analyzed specifically French market, where 3 different mechanisms of pricing are used: the bookbuilding, the auction-like mechanisms, and the fixed price mechanism.

The fixed-price offering entails that price is set before the IPO day, usually one week before, and the day before the IPO potential investors place orders, specifying the number of share they want to buy at the fixed price. The shares are then allocated on a pro rata basis.

In the auction underwriter sets a minimum acceptable price. The day before the IPO, investors make bids on price/quantity. In this way the stock market authority can compute the cumulative demand curve, and then the issuer and the authority decide for an offer price and a maximum price. Investors that have made bids inside this range will receive shares on a pro rata basis. If demand is too high, the IPO can be postpones and changed to a fixed-price offering.

In the bookbuilding approach the issuing firm together with the underwriter decides a price range, later, in the marketing phase (the roadshow) the firm presents itself to institutional investors, who transmit nonbinding indications of interest to the underwriter. Then the issuing firm and the underwriter establish the price, regarding also the indications received, and then the underwriter chooses to which investors allot the shares.

They evidenced that auction offerings include more information about the current market conditions, and so underpricing is lower. Therefore, auctions mechanism is the optimal one from the issuing firm perspective, but in reality this pricing method is almost unused. This is a strange result, because therefore every market should prefer this method, while basically everywhere now is used the bookbuilding mechanism.

The possible explanation of this preference for this process is that mitigating underpricing is not the only purpose of issuers: bookbuilding allows issuers to reveal their quality credibly to investors, it allows them to obtain an higher pricing for their share compare to fixed price mechanism but still underpricing remains. In particular, it seems that controlling underpricing is not the most important issue to underwriters, consequently issuing firms suffer an agency conflict. It appears that underwriters prefer to favor investors interests to issuing clients interest, and this is because investors are repeated customers, that can buy many times investments presented by the underwriter. In this way some funds are left on table for the issuing firms, that has to choose the second-best underpricing outcome (Derrien & Womack, 2003).

2.3.4. Role of information circulation in IPO underpricing

Initial public offerings usually have a high level of information asymmetry between potential investors and issuers which makes difficult for IPO issuers to easily communicate their capabilities and future perspective to market investors. As a result, it becomes difficult for investors to price properly the new issue, making IPOs a risky investment. To attract investors, IPO firms tend to offer a discount on issue price, but this represent a very high cost for the firm, because it gains less money to finance internal operations. Therefore, firms can use other signaling channels, to distinguish themselves in the market. Indirect IPO quality signaling channels include the retaining of substantial ownership by insiders, hiring quality auditors or appointing reputable underwriters. A direct channel to signal IPO quality is the use of news stories about the IPO firm (Carey et al., 2016).

Information flows is a key factor in pricing patterns: stock prices are based on forecasts of future performance, and optimal forecasts require weighing both hard and soft information about the company, the industry and the overall economy. Given all these factors it is difficult to find market's consensus at one time, but media attention can create consensus: many journalists and professionals reflect and shape their idea to reach this consensus. That is why having media attention is particularly important during the bookbuilding period. In this precise moment, issuers try to convince investors to approve the stock valuation. Since it is

not possible to purchase market approval, it is possible and valuable to purchase market attention, through media attention (Liu et al., 2013).

Let us try to understand media behavior. Media sources compete to attract readers (and hence advertising revenues). Thus, their goal is not to be "fair" about covering all companies equally. They try to identify stories that will be of interest to their readers, which often includes companies that are doing better or worse than expected. Editors expect their reporters to cover stocks that end up attracting investors' attention, so to anticipate future demand. What journalists usually do is trying to find opinions of traders, analysts, rating services, and other journalists, and if their opinion is in disagreement. They usually try to understand why. Therefore, it happens that there is a general leakage of opinion in all directions. When an investment bank sets the offer price for a book building IPO, it cannot observe analyst attention, but it can observe two other indications: direct feedback from investors during the book building process, and the attention that the company has so far managed to attract the media. A measure of media attention can be the number of articles mentioning the company from the day after the filing date to the day before the offering date. This measure, like feedback from investors during book building, is observable by the time the offer price is set but not when the initial filing range is chosen. Both investor demand during the road show and the number of articles mentioning the company are the aggregations of the opinions of many individuals, resulting from many discussions among market participants, so at the end there is convergence between them (Liu et al., 2013).

A legitimate question is whether the underwriter could not, much more cheaply, skip the road shows and the rewards for regular investors, and simply monitor media attention for a few weeks before setting the price. First, this would be risky, since there is no way to guarantee that the media will discover every company that deserves attention. Secondly, bookbuilding allows coordinating the entry of investors. Coordination is also important because investors prefer to evaluate stocks similarly to other investors, because even if one has identified an undervalued stock to take advantage of it, he would have to wait until the rest of the market recognize the misevaluation. The underwriter can overcome this coordination problem by giving many investors an incentive to become familiar with the stock during the IPO. Moreover, the goal of media attention is to attract investors, and many institutional investors prefer to analyze the firm by themselves instead of relying on journalists and analysts' opinion.

Using all these argumentations Liu et al. (2013) affirmed that media coverage tends to coincide to market demand in IPO, and so represent a good proxy for it. Even if it cannot substitute the road show to enter in direct contact with institutional investors. Liu et al. (2013) also argued that if media coverage is a good proxy for demand, then there should be a relationship with price revisions and also with underpricing.

For what concerns the relationship with price revision, the underwriter should use media attention to revise the offer price: it will revise upwards when investors' demand is high and downwards when demand is low. Analyzing their sample Liu et al. (2013) found that when the offer price is revised upwards, one extra piece of media attention is related to a 1.9% greater offer price increase and to a 2.0% greater initial return. When the offer price is revised downwards, one extra piece of media attention is related to a 2.1% greater offer price decrease

For what concerns relation between media coverage and underpricing Liu et al. (2013) defined demand as "high" when offer price is revised upwards and "low" when offer price is revised downward. This is because private information of investors will be reflected in price revisions. Anyway there can be underpricing also in low demand offerings, when high underpricing is needed to induce sufficient information collection, but in these cases underpricing should be lower than in cases of high demand.

Carey et al. (2016) also notice that media information can help uninformed investors to overcome adverse selection problems. Uninformed investors may lack specific knowledge of the IPO firm's future cash flow and avoid the risk of investing because of high information asymmetry, but news reports , by providing streamlined information through public channels, may attract individual investors' attention and bring them into trading.

"*The media facilitates the formation of opinions about firms and potentially provides more comprehensible, desirable and therefore more legitimate channels for information communicated during the IPO listing process*"(Carey et al. ,2016). They analyzed if optimistic news stories can lead to lower first day underpricing and they actually found a negative correlation between optimistic news stories and first-day pricing, as evidence that they reduce investor's level of uncertainty.

Because underpricing does not measure whether an issue is under-valued or over-valued relative to its industry benchmark, Carey et al. (2016) tested whether the first-day price of IPOs subject to optimistic news are over-priced or under-priced relative to the industry benchmark valuation. They found that the first-day price of IPOs subject to optimistic news is

not over-priced relative to their industry benchmarks. Therefore optimistic news stories are informative and reduce information asymmetry.

3. PRIVATE EQUITY FIRMS IN IPOS

Private Equity funds are organized as limited partnerships, with the general partners (GPs), managing the fund, and large institutional investors and wealthy individuals providing the bulk of the capital as limited partners (LPs). These limited partnerships typically last for ten years, and partnership agreements signed at the funds' inceptions clearly define the expected payments to GPs. These payments consist of both fixed and variable components. Successful private equity firms stay in business by raising a new fund every three to five years. If the current fund performs well, and LPs interpret that performance as "skill" rather than "luck", they are prone to provide again funds for a new PE contract. (Metrick & Yasuda, 2010).

PE firms are involved in two main areas of activity – the provision of early stage venture capital and the provision of equity capital for buyouts. Buyouts are the principal focus of PE investments. PE investors, and often a management team, pool their own money (together with debt finance) to buy shares in a company from its current owners. Such transactions are called Leverage Buyouts (LBOs). The debt is usually provided by institutions, such as commercial banks, investment banks, and hedge funds. (Wright et al., 2009). VCs instead have as major characteristic the fact that they invest in young ventures, and do not have an high level of debt. In this chapter VC and buyouts will be examined together for what concerns the general partners behavior and potential agency problems, while speaking about leverage and performance the required distinctions will be done.

The remainder of this chapter is organized as follows: firstly the main exit strategies for a private equity are presented; secondly is discussed the private equity point of view and its convenience, under certain conditions, on a secondary leverage buyout; thirdly the point of view of the entrepreneur of the portfolio firm and his preferences is presented; further the ways and speed of divestment after the IPO are discussed; finally various studies on PE backed IPOs performance are presented.

3.1. Different exit strategies for Private Equity funds.

Exit strategy is one of the most important decision for a private equity fund. There are five main exit strategies: Initial Public Offerings (IPOs), trade sale to another company, secondary sales (often called "pass the parcel" deals), buybacks and write-offs. (Soloma, 2015).

Exhibit 5: Exit way in Europe in 2014 % number of companies

	Venture capital	Buyout	Growth
Trade sale	21,70%	24,80%	11,10%
Initial public offering	0,80%	4,30%	1,10%
Sale of quoted equity	8%	5,10%	1,90%
Write-off	26,30%	5,80%	15,30%
Repayment of silent partnerships	17,50%	2%	46,50%
Repayment of principal loans	7,80%	15,40%	7,70%
Sale to another private equity firm	6,30%	26%	6,10%
Sale to financial institution	1,10%	3,80%	1,60%
Sale to management	8,70%	8,90%	6,60%
Other measn	1,90%	3,80%	1,90%
	1003 Companies	776 Companies	611 Companies

Source: EVCA / PEREP_Analytics

According to EVCA, the most common route is the sale of the company to a strategic (nonfinancial) buyer, together with the sale to another private equity in buyout companies. While in growth companies it is the repayment of silent partnership; in the case of a venture capital is the write off together with trade sale. There is not an agreement in the literature about which is the most profitable exit strategy for private equity funds: Jenkinson & Sousa (2015) assert that majority of private equity exits happen with trade sale or secondary sales, while Soloma (2015) suggests that the most common exit route in Poland and all CEE region is the IPO.

Of course, this disagreement depends on the different samples used in the various studies: many factors influence which is the most profitable exit choice during the time and in different geographical area.

According to Jenkinson & Sousa (2015), there are three main sets of factors influencing timing and method of exit: market conditions, PE features, company structure.

The first factor is the market condition that can be described also as macroeconomic factor. Market conditions exert a strong influence on what type of exit strategy creates the higher value: favorable conditions in debt market for example increase the possibility of secondary sales to other PE (Shivdasani & Wand, 2011). According to Shivdasani & Wand (2011), from 2004 to 2007, when cost of debt was low, ten times more LBOs (leveraged buyouts) than the previous ten years were completed. This boom collapsed very quickly, with LBO volume

dropping by 94% in the fourth quarter of 2007 from the prior-year level. They suggest that structured credit markets played an important role in easing the availability and pricing of bank credit, thereby affecting the LBO market.

On the other side, positive IPO window periods represent an opportunity to have positive returns from the divestment (Minardi, et al. 2013). Lowry & Schwert (2002) suggest that periods of high initial returns are followed by a period of many IPOs. They suggest that this positive relation is driven by the by the information that is learned during the registration period but only partially incorporated into the offer price. In the process of marketing the IPO (after the IPO has been filed), the firm and its underwriters gain information about how investors value their firm. This information is a determinant of both the pricing of that IPO, as well as the number of private companies that find it optimal to issue public equity in the near future. Having more positive information in the form of higher expected valuations results in higher initial returns and more companies filing to go public soon thereafter.

This positive relation appears puzzling at a first glance because it seems that firms wait to go public when there will be more underpricing, but Lowry & Schwert (2002) solved this issue. If more companies go public following periods of high initial returns, this does not mean that they also will be especially underpriced. The level of initial returns at the time a company files its IPO contains no information about that firm's eventual underpricing. Rather more companies file IPOs following periods of high initial returns because the high returns are related to positive information learned during the registration periods of those offerings, suggesting that companies can raise more money in an IPO than they had previously thought.

The second factor is the private equity characteristics. In particular, the moment during PE lifetime can change a lot the exit method. Private equity funds have a contractually finite life, which can be extended only with the consent of the limited partner. When a private equity fund is near the end of contractual life, it has more pressure to realize the investments. In this situation, it could happen that the portfolio firm is not ready yet for a public offering, but a secondary sale could be an attractive way to divest quickly and without leaving too much money on the table, because the portfolio firm is not ready yet to go public (Jenkinson & Sousa, 2015).

Moreover, according to Bock & Schmidt (2015) there is evidence that also reputation exert a great influence on exit strategy. Venture Capitals have to build a reputation towards limited partners to incentivize future fundraising. This is particularly a problem for young funds, which did not have the possibility to build their own reputation. Reputation is a difficult

characteristic to measure, but it can be expressed by the firm's age: time since incorporation includes investment experience and states that the fund has an intrinsic ability of survival in such a competitive and performance-oriented industry (Bock & Schmidt, 2015). When it has to build reputation to incentivize future fundraising, PEs tend to realize an IPO. Lee & Wahal (2004) described examples of VC firms that, once they took a portfolio company public, were quickly able to raise additional capital, because taking a company public signals their quality. More precisely, going public is a way to grandstand, so to attract visibility in the market: in this way the PE firm can quickly signal its ability in operating a profitable exit and so in managing profitably limited partners funds.

In addition, general partners' specialization (for example in early stage investment, in expansion or in late-stage investment) lead to different exit moment and exit strategy accordingly to the portfolio firm stage in its lifecycle (Jenkinson & Sousa, 2015).

Last factor to consider are the company characteristics: in fact, some firms can be more suitable for particular kind of exits than others can. For example, some companies can operate well with an high debt level: usually in this case they have stable cash flow and do not need to operate high-level investments. This kind of firm is more suitable to remain in the hand of a private equity, since PE operates with an high leverage: in fact for this kind of firm the high leverage is unlikely to negatively influence its stability. From another point of view, companies that are more profitable are more likely to be exited through an IPO and less profitable through a trade sale. (Jenkinson & Sousa, 2015).

Moreover, firms in their later stage of their lifetime or firms with business models more viable against market competition are more likely to go public. This is because these kinds of firms will be able to compete in the marketplace without the help of a controlling firm. Instead, firms in the earlier stage of their life, less viable against market competition, will more likely choose to be acquired. Through the acquisition, this kind of firm can gain valuable help both in term of financial resources and in term of strategic support. Moreover, in an industry where there is a dominant player the firm will benefit more in being acquired by such a firm: in this way it will avoid to compete against the dominant player. Also the nature of the industry will influence the exit choice, for example IPOs will fit more capital intensive industries: here external analysts have less information asymmetries and they are more likely to do an estimate of more in line with the valuation of internal people. (Bayar & Chemmanur, 2011).

3.2. Sale to a public firm vs IPO

Takeovers of private firms by publicly traded firms (sellouts) and initial public offerings (IPOs) are both ways to allow PE to divest the investment into a private firm and to raise new capital. However there are some important differences to highlight: in an IPO, the firm continues to exist as a separate entity, although it is now owned by public shareholders, in a sellout the control of assets is moved to another publicly traded firm.

Previous studies (Bayar & Chemmanur , 2006) found out that there are five key drivers in the choice between trade sale and IPO. Firstly, the probability of success for a firm's product in the market: the higher the probability of success for the product alone, the lower is the probability of a trade sale. Secondly, the amount of information asymmetry with the acquirer influence the decision: if it is high, it is likely to have an IPO. Thirdly they also suggest that synergies with the acquirer in the product market. Fourth factor is the relative bargaining power of the private firm and the potential acquirer. Last factor considered by Bayar & Chemmanur (2006) is the presence of the entrepreneur inside the firm: an IPO increases the benefit of control, while an acquisition will drastically reduce it.

Poulsen & Stegemoller (2008) identified 1,074 IPOs and 735 sellout made between 1995 and 2004 to analyze the factors influencing the decision. They firstly analyzed the costs of the two types of transactions and the regulations that affect them. The costs of an IPO include initial registration with the SEC and continuing mandated disclosures, investment banking fees, and underpricing in the initial equity sale. A sellout has a similar costs but they are probably lower, since the sellout firm is incorporated into the existing regulatory obligations of the acquirer.

Both sellout and IPO firms benefit from access to public debt and equity markets (in the case of the sellout, through the parent). Both types of transactions also benefit from liquidity of ownership for managers and investors, and the possibility of linking management and employee compensation to traded securities (Poulsen & Stegemoller, 2008).

However, the management of the selling firm is more likely to lose its ability to set firm policy after a sellout than an IPO. This factor influences not only the firm policy but also the ability to have access to capital: it may be difficult to raise capital for the sellout firm's projects, since, as Stein (1997) notes, the sellout firm would be competing with other projects of the acquiring firm in internal capital markets. As Stein (1997) highlighted, big corporations are not more successful in raising capital for their business units than if they were stand-alone businesses. Consequently, funds may be allocated in a suboptimal way. Instead, by

undertaking an IPO, the firm may have greater flexibility in accessing resources, especially through its new access to the equity markets. Moreover, investors in IPOs may be especially willing to invest in high-growth firms, making it easier to raise capital through a public sale of shares. Thus firms with greater growth potential will go public through an IPO rather than through a sellout (Poulsen & Stegemoller, 2008).

3.3. IPO versus secondary LBO: the private equity perspective.

According to Kaplan & Stromberg (2008), the sale to another PE is an exit strategy that is becoming increasingly popular in the private equity market, and it is more used than IPO. The scope of this part of the chapter is to highlight what are the advantages for PE firms and the value created by this exit strategy compared to the IPO.

LBOs are typically thought to create value through high leverage, high performance pay, and active monitoring of the portfolio companies' management. It is arguable that if the initial buyout was successful, a second LBO should be able to do minimal additional changes to the target firm. That is why many times literature has said that secondary LBOs do not occur for the benefit of improving the target firms, but rather as a way for private equity firms to help each other solve their investing and exiting problems. Other times literature has said that the phenomenon of secondary buyouts cannot be explained given the usual arguments about the reasons for buyouts (Wang, 2012).

Wang's (2012) searched for some evidence that firms are more likely to exit through secondary buyouts in some situations: firstly when the equity market condition, measured by industry IPO volume, is "cold"; secondly when the debt market condition is favorable, suggesting buyers' greater abilities to borrow; thirdly when private equity firms' liquidity demand changes, so when they face a higher pressure to exit and make their investments liquid.

To prove this, Wang (2012) tested the probability of firms exit through secondary buyouts, through IPOs, and to sales to a strategic buyer when market conditions vary and when sellers' liquidity change. Industry IPO volume in the UK in the exit year was used as a proxy for equity market conditions. The higher the industry IPO volume, the better the equity market. This variable should be negatively associated with probability of exit through secondary buyout. In order to measure the condition of the debt market, the size of the high-yield market in the year of exit was used, this variable should be positively correlated with the probability of exiting through a secondary buyout. The results from the sample showed evidence in support of secondary buyouts varying with capital market conditions. A "hotter" equity

market is significantly negatively correlated with firms exit through secondary buyouts. The debt market condition, on the other hand, is significantly positively associated with the probability of firms exiting through secondary buyouts. This is consistent with the notion that greater borrowing ability is correlated with a higher number of secondary buyouts.

These two factors combined together led to the following percentage results:

Exhibit 6: Exiting through secondary buyouts in different market conditions

Exiting through secondary buyouts in different market conditions.

		Debt market	
		Hot	Cold
Equity market	Hot	60.0%	32.1%
	Cold	77.6%	53.4%

Source: Wang (2012)

Wang (2012) also noticed that private equity firm should hold the portfolio company until the maximum payoff can be achieved, whether it be sales to the public market, strategic buyers, or other private equity firms. However, there are factors that constrain their maximization. One such factor is their liquidity needs. When there is a higher demand for liquidity, firms would face a higher exit pressure, and this could affect their likelihood of exiting through a secondary buyout. Since PE liquidity demand changes when they need to raise a new fund, to test for this case he used as variable the seller's fundraising activities within the two years from exiting the portfolio company, since two years is the typical fundraising period. He found that raising a new fund significantly increases the probability of exiting through secondary buyouts. With a 22.7% increase, the result is both statistically and economically significant. He also found evidence showing that fundraising during a “cold” equity market influences the probability of exiting through secondary buyouts. Another situation that can change private equity firms' liquidity demand, and therefore influence their exit decisions, is when the portfolio company has been held for a long time. Wang (2012) find also a positive correlation between holding period and probability of exit through a secondary buyout.

Wang (2012) also decided to put a clear evidence ahead or against the general idea that PE firms use secondary buyouts to benefit each other, so through collusive behaviors. The idea is that if some PE firms use collusive behavior there should be a significant increase in the trading activity between them. He found that active acquirers in the secondary-buyout market are not likely to trade more frequently with each other than with other players in this market. As private equity firms have other ways of paying each other off besides trading assets, it is

possible that collusion occurs in a way that is not captured by trading patterns alone. However, the concern investigated was that firms are trading poorly performing portfolio companies, pushing those companies closer to financial distress, or trading assets at above-the-market prices, from his results both cases are unlikely.

Moreover, it results that secondary buyouts have higher deal prices compared to first-time buyouts. This price premium surely depends on firm characteristics, such as strategy, governance, market positioning, capital structure, but most of all Wang (2012) found evidence that higher deal prices are driven by better debt market conditions.

Overall, it resulted that secondary buyouts are particularly good deals when PE has liquidity pressure and needs to divest quickly, which is something that cannot be realized through an IPO at all. These deals are more favorable when debt conditions are positive, since buyouts are characterized by higher level of debt, consequently SBOs result also in higher prices. Moreover, when equity market is "cold" SBO represents a valuable alternative.

Degeorge et al. (2014) examined whether SBOs are just "pass-the-parcel" deals and whether the motivations for the buying fund are to spend capital and collect fees. They also tried to investigate what additional value, if any, an SBO buyer can bring to the portfolio company compared to that of the first private equity owner.

PE funds have superior governance structures and incentive mechanisms, so a secondary LBO should be aimed to benefit their investors. If, for example, PE funds specialize in different stages of restructuring, then funds specializing in the first stage would sell to those with expertise in the second stage and each fund would create value for its own investors along the way. Alternatively, some general partners (GP) may have unique skills that others do not possess and when their funds acquire firms from other funds, they generate additional returns. For example, funds that are more reputable may have better access to deal financing. From this point of view SBO should be a more valuable way than IPO, for the unique skills and knowledge that GP may have.

To demonstrate that buyer with complementary skills to those of the seller might be able to further enhance the value of the portfolio company, Degeorge et al. (2014) collected information of 1978 general partners of 138 PE firms, and financial performance information on 2137 companies owned by 121 PE firms. They classified PE firms as Finance-oriented or Operations-oriented; MBA dominated or not MBA dominated; regional or global; and "margin-grower" or "sales grower." Analyzing the sample it turned out that SBO transactions

between firms with complementary skill sets generate significantly higher returns for buyers than SBOs between firms with similar skills. BOs perform better, and create value for investors, when they occur between a PE firm focusing on margin growth and a PE firm focusing on sales growth, or between two PE firms in which the general partners have different educational backgrounds or career paths. SBOs also create value when a global fund buys from a regional fund. To summarize Degeorge et al. (2014) proved that SBOs can effectively create an additional value to the portfolio firm, which is generated by the specific complementary characteristics that the seller PE and the buyer PE have: this is something that cannot be achieved through other exit strategies.

According to Arcot et al. (2015), on the sell side, SBOs offer a quick exit for GPs who cannot sell via trade sale or Initial Public Offering. Arcot et al. (2015) go on explaining that when funds are close to their end and when they have substantial investments still non-exited they are more willing to do a quick sale, to improve their chances to raise new capital, and they can do so through an SBO. Many times funds also postpone the exit moment to gain additional management fees, but in this way, frequently they find themselves under selling pressure, and the quick way to exit is through a SBO.

For the fund buying, SBOs have many advantages: are quicker to complete, fill the fund's investment record, and accrue additional management fees even if the transaction is not in the best interest of the buyer's limited partners. Moreover Arcot et al. (2015) explain that PE funds with substantial unspent capital during the period close to the end of the PE contract, could face a negative feedback from limited partners: if the fund still has a substantial amount of unspent capital near the end of its investment period, the LPs are unlikely to commit capital to a new fund. This puts further pressure on PE funds to invest their dry powder in order to boost their investment record.

Analyzing these cases previously explained, Arcot et al. (2015) arrive to the conclusion that secondary buyouts are widely used when the private equity is under pressure, and many times this behavior is backed by an agency conflict with limited partners and thus with different signaling needs.

To conclude, in this part of the chapter it emerged that SBOs could effectively benefit the portfolio firms, since PEs have specific skills and characteristics that vary across the different PE firms and that other players in the market do not have. In this case, SBOs represent not only a valuable exit strategy but also a valuable change in ownership for the portfolio firm. Moreover, many authors pointed out that SBO has a bigger advantage that IPOs do not have:

it is the speed of exit, since SBOs are relatively quick to realize. This speed benefits PEs in some situations where they face pressure to sell, accordingly to their lifecycle.

3.4. IPO versus trade sale: the entrepreneur perspective.

The ratio of acquisitions to IPOs among private firm exits has increased dramatically in recent years. Moreover the proportion of firms withdrawing their offerings after filing to make IPOs and choosing to be acquired instead has also risen steadily. This indicates that the costs of going public rather being acquired have risen significantly. It becomes important so, to analyze what are the advantages and disadvantages of both exit possibilities.

A crucial factor driving a private firm's choice between IPOs and acquisitions is competition in the product market: a stand-alone firm has to compete alone after an IPO, while an acquirer may be able to provide considerable support to the firm in the product market, thus increasing its chances of succeeding against competitors.

Moreover, while atomistic buyers in IPO can have informational disadvantage, potential firm acquirers will be able to value the firm better by virtue of their industry expertise regarding the viability of alternative business models in the product market. On the negative side, acquirers can be expected to have considerable bargaining power, allowing them to extract the firm's net present value (NPV) from insiders. In contrast, atomistic investors in the IPO market would price the firm's equity competitively (so that insiders can retain the entire NPV of the firm's project) (Bayar & Chemmanur, 2011).

Concerning acquisition, it is also important to point out which is the entrepreneur position after it: it is likely that she will lose the control after the acquisition. Many times it happens that after the acquisition the founding entrepreneur of the target either leaves the firm shortly after or is fired. Even if the entrepreneur remains inside the combined firm, her benefits of control will be negligible. She will only be in charge of one division of the combined firm, and she will have to implement the policies formulated by the top management of that firm even with respect to the division she manages. In contrast, if the entrepreneur will continue as the CEO of a stand-alone firm after an IPO, will thus be able to maintain a substantial extent of her benefits of control (Bayar & Chemmanur, 2011).

Interestingly, there could be different points of view between the entrepreneur and the Private Equity: while the first prefers the IPO because it will allow him to maintain the control, the second could prefer the acquisition for financial considerations. Moreover, the entrepreneur is typically a long-term investor that is planning to continue most of his pre-exit equity stake in

the firm, even after an IPO (low liquidity demand). In constrast the VC may often be a short-term investor planning to liquidate much of his pre-exit stake soon after the IPO, but liquidating such an equity stake after an IPO requires much time (Bayar & Chemmanur, 2011). Bayar & Chemmanur (2011) also point out that if entrepreneurs think that their firm is not able to survive in the market in the long run and that IPO market valuations are not sustainable in the future they are more prone to make their firm be acquired, due to the fact that insiders are able to liquidate only a small part of their shares through an IPO, their long run expected payoff could be greater with an acquisition.

3.5. Private Equity ways and speed of divestment after an IPO.

Unlike for other types of investors, for Private Equity firms the process of exit is a process intrinsic in its nature, because for its nature PE is a temporary form of ownership. Many time the literature has pointed out that for Private Equity the IPO is a very slow exit way. Normally private equity firms have to remain invested after the IPO with a certain number of shares for a lockup period: the underwriter as a signal of quality for new investors imposes this condition (Hoskisson & Johnson, 2009).

In this part of the chapter are analyzed PE behavior and its motivations after the IPO. Firstly is studied why is necessary a slow exit after the public offering and it is discussed if the average length that is contractually agreed by insiders is optimal or a longer lockup provides higher benefits. Secondly is explored the behavior of some PE firms which stay invested even after the expiration of the lockup. Finally, different ways to divest after the IPO are presented.

Lockup period is particularly important because it helps to reduce the information asymmetry about firm's quality, which is particularly strong in case of new ventures: by retaining some stocks the selling investor certificates that she is not trying to divest quickly before sock prices go down. Remaining invested in the firm for this period is a costly signal because it creates a liquidity charge for the original investor, but for the firms is particularly important to reduce the information asymmetry: in this way the firm can minimize the inherent underpricing resulting from this asymmetry (Arthurs et al., 2009).

The typical lockup period for IPOs 180 days, but when the selling investors are also managers in the firms this period is often longer, because they want to signal that key employees will remain with the firm for some time and that insiders are not seeking to divest quickly before bad news become public.

To reduce investors' uncertainty, before the IPO, the firm presents a prospectus, which contains the details about firm's past performance and future opportunities. In the prospectus, high quality firms do not have incentive to state unreal situations, but low quality firms instead have incentive to oversell their prospectus. Thus, high quality firms need to take some signaling actions that can unequivocally state their superior characteristics. To be credible, the signal must be difficult or costly for others to imitate. A strong signal is the percentage of ownership that the insiders retain after the IPO: by retaining a high undiversified risk they provide a signal the firm has projects of high value. Remaining tied for a certain period is surely a strong bonding mechanism: it states that information presented is correct, otherwise, insiders will suffer a loss.

Because the lockup period is very costly in terms of liquidity, maybe other signals can be preferred by insiders. Arthurs et al. (2009) analyzed this point and found out that the presence of a PE firm reduces the need for a longer lockup. Firstly because PE firstly provides a signal of the veracity of the information in the prospectus, secondly PE is an expert in minimizing moral hazard and thirdly it is an expert in the strategic management of the firm, so it assures against incompetence of managers. Going more deeply, they found that in the case of a very prestigious PE investor this need is even lower. Therefore, it appears that the presence of a PE is a stronger signal than a longer lockup period, because while lockup is an insurance against moral hazard of previous owners, presence of PE also assures against incompetence of insiders.

So usually, lockup period after the IPO is six months. Notwithstanding this agreement, in some cases it has happened that the PE funds have retained IPO shares far beyond the lockup period and this is considered controversial, since limited partners that do not agree in venture capitals stay invested in public companies: from their point of view General Partners don't gain the fees to remain invested into public companies, which is something that Limited Partners can do by their own. (Bock & Schmidt, 2015). Let us try to investigate the reasons of this behavior.

One reason to avoid a quick sale is that a massive trade of shares from an internal actor can give a negative signal to the market and, consequently, market price will fall. If this happens, the fund will experience a loss in reputation (Neus & Walz, 2005).

Reputation can be described as the level of trust of the market in the accuracy of a statement that the PE does about a portfolio firm. So it implicitly have a positive influence on the pricing of the firm, since it allows to overcome the costs associated with informational

asymmetries in the IPO market (Neus & Walz, 2005). Therefore, reputation is particularly important, and it is a big issue for young VCs, which still have to create their own reputation to signal their ability to investors. Demonstrating to have managed exit investments successfully, mainly through an IPO, is the main way to build trust between limited partners (Lee & Wahal, 2004).

One way that many young VC firms use to build reputation is underpricing: they underprice high-quality firms, so in the equity market price will raise consistently and VC will appear to be particularly good in investing and managing firms. So with the use of underpricing, young VCs are able to overcome the information asymmetry with market investors that are latter overcome with the reputation(Neus & Walz, 2005). This is in line with empirical research that Neus & Walz (2005) presented: IPOs with a mature VC does not present significant signs of underpricing, but a strong underpricing is present when the VC is young (Neus & Walz, 2005). This is a different way of looking at underpricing, which is usually considered by literature as a signal of quality. Lee & Wahal (2004) evidence this behavior emphasizing that low reputation PE use underpricing for grandstanding: they look for attention from market participants to gain a positive reputation and they reach it through an high level of underpricing.

As a result, VC firms with higher reputation have less incentives to underprice heavily, since they do not need to gain more in reputation. Moreover, if underpricing is low VC firms do not need to wait until market price rises to a valuable level. They can divest early after the IPO as soon as the lockup period has occurred, while VC with lower reputation could have the incentive to wait after the lockup period has expired to divest (Bock & Schmidt, 2015).

The lifetime cycle of the VC fund has an additional impact on the speed of divestment: when a fund get closer to the period of the termination it has more pressure in liquidating the portfolio company quickly. Usually after the fourth or the fifth year general partners move their attention on raising new funds. Then, when the end of the contract approaches they are forced to split their attention between raising new funds and divesting firms currently in the portfolio (Metrick & Yasuda, 2011). This creates an agency problem: from fund's managers point of view, it is optimal to put a high effort in divesting from current portfolio firms quickly, in order to put less effort in monitoring and continuing the board presence after the firm went public. So they prefer to sell retained stocks soon after the lockup period expired, even if market price is low at that moment. Liquidation pressure thus lead to suboptimal

decision making since managers stop monitoring some good investment opportunities even if higher gains could be realized by remaining invested (Bock & Schmidt, 2015).

A last factor influencing speed of divestment after an IPO might be explained with prospect theory. Usually in PE firms, general partners receive a fee of about 2% and if they reach a breakeven point, they receive also 20% of the fund's return (Metrick & Yasuda, 2010). If this is the case, according to prospect theory, managers keep in their portfolio a firm until breakeven point is reached: not taking care about the fact that limited partners could be better remunerated with a quicker divestment. Consequently, it could happen that managers keep on holding stocks for an inefficient period, waiting that the stocks' price rises up (Bock & Schmidt, 2015).

Paeglis & Veeren (2013) went further in this field of analysis, and found out that the speed of divestment is widely influenced by an effect called liquidity effect: the sale of shares by VC increase liquidity of a firm's shares. The increased liquidity is a positive attribute for the equity market, consequently also the stock price will augment . Therefore, if VC stages its exit it will experience higher returns. In their study Paeglis & Veeren (2013) also analyzed the effect of the post-exit ownership structure on the speed of divestment. They explained that VC exit would be most detrimental for firms with intermediate levels of founder ownership: founder's stake will not be high enough to ensure control over the firm and too high to ensure his incentives are aligned with those of minority shareholders. With VC exit, also VC monitoring activity will lack and therefore firm value will suffer of this new situation. In this situation the best option is sell quickly its shares before the market becomes aware of the firm's reduction in value.

Instead, for firms with higher levels of founder ownership the VC exit will not significantly change the firm's ownership structure (i.e., the founder will remain the controlling shareholder of the firm as before in the presence of venture capitalists). But in this case the owner's presence will be an impediment for liquidity. Investors are aware of this so they will value shares at a discount. To avoid to sell all the shares at a discount the VC will improve its payoff by selling in various stages its shares, benefiting from the improved liquidity. Finally, in case of lower levels of founders ownership the market for corporate control will substitute the monitoring of the founder from the departing VCs: again by staging its exit VC can gain more from the improved liquidity.

As Dong (2015) noticed, there are five major ways that usually PE firms typically employ to divest their block of shares after the IPO of the portfolio firms.

The first way is to sell the block of shares to another buyer. In such transactions, it is in the interests of the seller of the block (that is, PE) to provide sufficient information to eliminate the information asymmetry. However, these transactions can be expected to be rare since acquirers of majority stakes will typically extinguish the minority interest to eliminate free rider problems. In the second way, strategic buyer that buys also the minority interest in the equity of the portfolio company acquires the shares. Thirdly, the private equity can gradually sell the shares through trading activity, but since it is legally an insider, it faces SEC restrictions. Another way is to spin-off the holdings to limited partners via a pro rata dividend, so each limited partner can decide if keeping the shares or selling them in the equity market. This in-kind distribution allows each limited partner to control the timing of the liquidation of its stake, but, in this case, the private information held by the general partner is in effect dissipated since it cannot be transferred to the limited partners. Moreover, the portfolio company can engage in a dividend recapitalization, which provides for a substantial cash dividend payment to all shareholders, including the private equity owners, without any actual reduction of equity interest in the portfolio asset. This process is not properly an exit, but it provides substantial cash flow to limited partners. Finally, private equity can start a secondary offering, or better, an equity issuance, so, the entity is transformed into a publicly traded firm with the limited partners as initial shareholders, and shares are sold to capital market investors (Dong, 2015).

3.6. PE backed IPOs performance

In this part of the chapter various studies analyzing in different circumstances the performance of PE backed IPOs are reported.

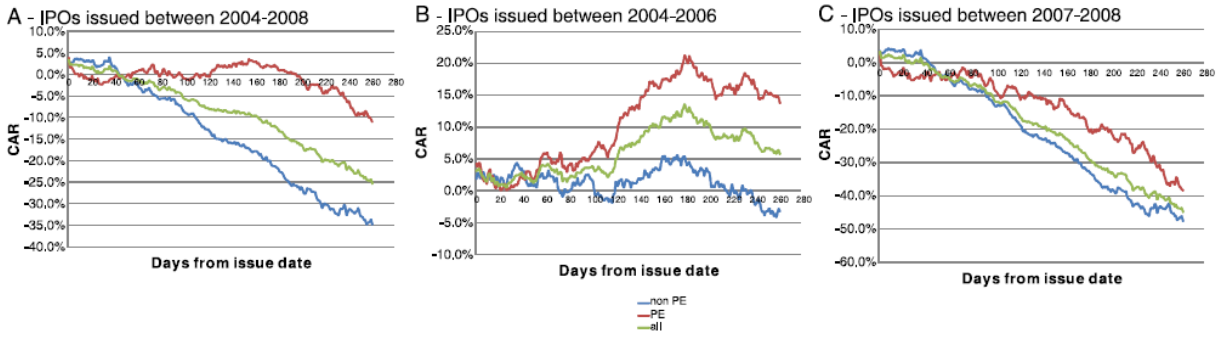
Many times the literature has discussed whether PE (buyouts and venture capitals) organizations created additional value for the companies in their portfolio. Harris et al. (2014) analyzed PE performance and found that on average U.S. buyout fund returns have exceeded those of public markets for most vintages since 1984. The public market equivalent (PME) method, which compares how much a PE fund investors actually earned net of fees to what the investor would have earned in an equivalent investment in the public market, showed that outperformance versus the S&P 500 was between 20% to 27% over the life of the fund and more than 3% per year. Buyout fund outperformance remained similar in magnitude using other benchmarks, such as the Nasdaq.

There are many explanations for this outperformance. Some PE/VC organizations hire consultants to improve operations, develop managerial tools, and redesign organizational

structures. PE portfolio firms should have higher quality governance practices and healthier organizational structures: they seat on the board, they bring industry specific competencies since they usually focus on particular industries, and have strong relationships with high quality executives who manage their portfolio companies. For these reasons, and for the prominent role that IPO has on PE activity, IPO performance should be higher than the one of non-PE backed firms (Minardi et al., 2013).

Minardi et al. (2013) give evidence of this analyzing the Brazilian market between 2004-2007. They used a sample of 108 IPOs and studied the one-year cumulative abnormal returns (CAR). In particular, the registration date represents the day zero to estimate the CAR. The PE backed IPOs resulted to have on average a lower book to market ratio and a lower debt to equity ratio. The CAR evolution is illustrated in the following figures. Panel A shows the evolution during the period 2004-2008, panel B during the period 2004-2006, and panel C during period 2007-2008.

Exhibit 7: Cumulative Abnormal Returns in Brazilian IPOs



Source: Minardi et al. (2013)

PE backed IPOs perform better than non-PE backed IPOs after 1 year of issuance. At the same time PE-backed IPOs are not immune to crises, and on average performed much worse in 2008. This is explained by authors saying that PE in Brazil are mostly foreign investors that during the crises were forced to sell liquid assets to cover other losses, causing this drop. They also analyzed first day performance and they found that there is on average underpricing in Brazil, but they found no evidence that PE backed IPOs have less underpricing than non PE backed.

Also Levis (2011) studied this topic. He argued that PE brings in the portfolio firm operational efficiencies, achieved by closer monitoring, management expertise, and higher levels of debt. He assumed that only PE gains from these practices, but it is reasonable that management and financial practices started during PE presence inside the firm will be

maintained at least for some time after the exit. This is particularly the case since the involvement of PE sponsors is not completely terminated at the time of the IPO. Lock-up agreements, performance incentives, and liquidity considerations often result in PE original sponsors retaining significant holdings for a considerable period after the IPO.

Levis (2011) brought evidence of this examining a sample of 1595 IPOs in the two London Stock Exchange markets (the Official List and the Alternative Investment Market) from January 1992 to September 2005. He distinguished between PE backed IPOs (including company returning public following a LBO) and VC backed IPOs (using companies that received start-up, development or expansion VC backing) using various sources and various criteria including financing and governance issues. Of the 1595 UK IPOs 250 were VC-backed, 204 were PE backed and 1141 were ordinary IPOs. PE-backed IPOs accounted for 12,8% of the volume and 21,7% of the amount raised, while VC-backed IPOs accounted for 15,7% of volume and only 9,9% of amount raised. Therefore, PE-backed IPOs are on average larger companies in term of market capitalization compared to VC-backed counterparts and other IPOs. Interestingly, a closer examination revealed that only 28 IPOs in the sample have a market capitalization larger than £1 billion: 24 of them were not backed, 3 were VC-backed and only one was PE-backed. PE-backed IPOs were larger also in term of operational characteristics, for example, they were about four to seven times larger than non-backed or VC-backed IPOs in net sales and total assets. This difference anyway was not surprising since PE and VC investors apply different criteria in their selection of portfolio companies. He analyzed the first-day percentage returns of the three groups from 1992 to September 2005. He also highlighted the returns during 1999-2000 dot-com bubble.

Exhibit 8: First-Day Percentage Returns for the Three Groups of IPOs

First-Day Percentage Returns for the Three Groups of IPOs

	ALL	NB	VC	PE
Average (equal-weighted) (%)	18.6	21.1	14.9	9.1
Average (value-weighted) (%)	9.9	9.8	8.5	5.7
Median (%)	7.3	7.4	8.8	6.3
Normal period average (equal-weighted) (%)	13.8	14.7	13.8	9.2
Bubble period average (equal-weighted) (%)	75.1	83.5	39.5	7.3
Standard deviation (%)	53.7	61.9	23.1	15.9
Proportion starting below offer price (%)	13.0	12.7	14.0	13.7
Average money left on the table (£m)	12.4	12.4	16.9	7.3
Total number of issues	1,595	1,141	250	204

Source: Levis (2011)

From the table it is possible to notice that first-day percentage returns are consistently lower for PE than for VC-backed and non backed, moreover the dot-com bubble amplified this effect. It is important to notice that not only PE-backed firms experienced a lower underpricing than non backed firms, but also VC-backed firms performed better. The lower underpricing of PE-backed IPOs, both in equal- and value-weighted terms, is probably the combined result of lower risk, more aggressive pricing, and PE group certification. A similar figure emerges from money left on the table: for PE-backed IPOs it is much lower than for other groups.

Levis' study (2011) also reported the buy-and-hold abnormal returns for the sample calculated until the earlier of the three-year anniversary of the listing date, excluding the first-day returns. The 36-month buy-and-hold abnormal returns are negative and statistically significant, confirming the established pattern of average long-term underperformance. The results, however, also reveal remarkable differences in the long-term performance across the three groups : non-backed IPOs have a consistently poor performance, while VC-backed performance is not statistically significant from zero. PE-backed IPOs outperform all three benchmarks in the aftermarket.

Meles et al. (2014) confirmed Levis findings analyzing a sample of 236 Italian firms (118 PE-backed and 118 non PE-backed) showing that PE-backed firms outperform their matched firms over the post-exit period. The paper also states that PE-backed IPOs (meaning buyouts backed IPO) achieve positive and significant cumulative abnormal returns more than Venture Capital backed and other non-backed IPOs, that emerged as poor performers.

The superior performance of buyouts in IPOs are mainly related to the leverage ratio used. Buyouts IPOs are, on average, offered at reasonable valuations, but due to the widespread market perception of aggressive pricing by PE sponsors and the high debt ratios at the time of the issue, these issues start trading at relatively modest first-day returns. Investors appear to be taken by surprise by the robustness of their operating performance, the continuing involvement of PE sponsors, and the marked reduction of debt immediately after the IPO. The realization of these aspects of their operations eventually leads to positive aftermarket performance (Meles et al., 2014).

The result of Meles et al. (2014) regarding the fact that a firm with a higher level of debt is offered at a reasonable price and resulting in a lower underpricing was also analyzed by Barry & Mihov (2005), who compared the IPO performances of VC backed firms and of highly leveraged firms, using a sample of more than 6000 IPOs during 1980–2012. They

found that the characteristics of firms with high levels of debt financing are consistent with less uncertainty about the firm's value than those being backed primarily by VC. Concluding that debt backing is associated with lower underpricing, especially pronounced in periods of high uncertainty.

Barry & Mihov (2005) went more deeply in understanding the differences between VC and debt as major sources of financing and their performance after IPO. They found that VC backed firms perform much better in the long run than highly leveraged firms do. They explained this difference saying that, unlike venture capitalists, the lenders do not generally share in the upside of equity value from the companies that they finance, and so their tendency is to provide financing to firms with characteristics that make the lending relatively safe: predictable cash flows, less volatility, and comparatively easier to value. These characteristics tend to be associated with less valuation uncertainty, therefore, less underpricing at the IPO stage. Those same characteristics may be associated with lower upside potential in equity value and hence lower long-term equity performance on average, in contrast with VC-backed IPO firms that perform better in the long-run, on average (Barry & Mihov, 2005). This again supports Meles et al. (2014) evidence that venture capitalists provide favorable long-term effects for the firms, thus confirming their widespread reputation to be 'buildwinners'.

This chapter has presented the Initial Public Offering in relation to a Private Equity firm, as a way to divest its participation to a portfolio company. Beginning with the illustration of all the main exit strategies for a private equity, continuing with the convenience for private equity and the conditions influencing such ease for the IPO being discussed. The point of view of the entrepreneur of the portfolio firm and his preferences were presented. Later the speed of divestment after the IPO was discussed and finally various studies on PE backed IPOs performance were illustrated. It was strongly proved that in the short period a PE-backed IPO outperforms rivals that are non PE-backed, while in the long run they have a general tendency of underperformance.

4. VALUATION AND PRICING PROCESS OF AN IPO

When the valuation of a firm is done in the context of the initial public offering of the firm itself, the aim is to contribute to the pricing process. All the success of the operation and the reputation of the firm with the rest of the community, including all the stakeholders of the firms (creditors, customers, employees, suppliers…) depend on the result of the valuation. In addition in the IPO process, like in many other processes (M&A, restructuring…) the valuation is based usually on the multiples evaluation, but with some peculiarities:

- Absence of a control premium, since usually for a firm going public not all of firm's shares are sold.
- Absence of potential synergies, which instead have to be evaluated in a M&A process.

The Listing Guidelines of Borsa Italiana (2004) make some considerations about the most used valuation methods: multiples and discounted cash flow methods. The multiples method is considered particularly important in an IPO valuation, since it is synthetic and easy for the comparison with other listed firms. In fact, most of the times institutional investors compare the ratio of the IPO firms with the ones of other public companies in the same industry. It is simple and obvious, if it is applied to a mature industry. But still, it has some problems: firstly, the definition of comparable corporations is subjective, it is not a finer method to take other companies of the same industry as reference, because it is likely to have many differences between firms in the same market segment in terms of operations, risk and growth potential, making it hard to avoid personal bias. Secondly, even if a group of suitable and comparable companies can be selected, differences persist in basic aspects between the evaluated company and these companies (Wang, 2010). Discounted Cash Flow method instead is widely used, and it is based on the idea that firm value equals the discount of future cash flow that firm can produce for stakeholders. This method is considered fairly precise, anyway it is fundamental to estimate precisely many factors, which could be complicated in some cases (Wang, 2010).

Also Roosenboom (2012) concentrated his research in this field. He found that, together with: the multiples valuation and discounted cash flow, also dividend discount model has to be taken into account. He found out that these three techniques have similar bias, accuracy and explainability.

Concerning multiples methodology, Roosenboom (2012) found that the most popular multiples are price-earnings ratios, price-to-cash flow ratios, price-to-sales ratios and

enterprise value ratios. A fFirm's estimated value is calculated by multiplying the average or median multiple of the peers group with the corresponding accounting number of the IPO firm. Data is usually forecasted for the current and the following year to calculate the multiples. While underwriter select six comparable firms on average.

Multiples are used in 87% of the cases, in 59.2% the dividend discount model to estimate the equity value is also used, and economic value added valuation is used only in 19,3% of the cases. Underwriters sometimes use specific valuation techniques such as discounting sales, discounting earnings, and sum-of-the-parts valuation. These underwriter-specific techniques are used in 11.4% of the cases. Roosenboom (2012) also points out that different weights are given to the valuation estimates deriving from different methods: multiples valuation has the highest weight, followed by dividend discount model and then discounted cash flow model. The economic value added and underwriter-specific techniques play a minor role. While among different multiples, the price-earnings multiple is the most important one.

The following analysis will concentrate on two methods. The first one is the Enterprise DCF, which it remains the preferred method of practitioners and academics, because it relies solely on the flow of cash in and out of the company, rather than on accounting-based earnings, according to Koller et al. (2015). The second one is the multiples method, which is very helpful in preparing a quick and insightful assessment of the firm.

4.1. Discounted cash flow method

Discounted Cash Flow (DCF) method is considered one of the most accurate way to determine firm value, according to its capacity of producing a level of financial cash flow adequate to remunerate investors expectation (Borsa Italiana, 2004). The praxis says that capital value of the firm is the sum of:

- Actualized value of operative free cash flow the firm will generate in the future (Enterprise Value) discounted for a rate which is the Weighted Average Cost of Capital (WACC)
- Consolidated net financial position expressed at market value
- Market value of activities not inherent with operating activities (surplus assets)

The formula can be synthesized as follows:

$$E = \sum_{t=1}^{n} \frac{Operating\ expected\ free\ cash\ flow_t}{(1+WACC)^t} + \frac{V_f}{(1+WACC)^t} + D - M + SA$$

Where:

E= is the market value of equity

n = number of years for the explicit forecast,

Vf= is the continuing value,

D= is the net financial position,

M= is the minorities value,

SA= is the surplus assets, so the value of non operating activities.

Where the Enterprise value is defined as follows:

$$EV = \sum_{t=1}^{n} \frac{Operating\ expected\ free\ cash\ flow_t}{(1+WACC)^t} + \frac{V_f}{(1+WACC)^t}$$

Operating expected free cash flow (FCF) is the cash flow available to all investors (equity holders, debt holders and any other non-equity investors), so it is independent of the capital structure. Consistently with this point, FCF are discounted using a weighted average cost of capital, so the WACC. The debt and other non equity claims on cash flow are subtracted from enterprise value to determine equity value (Borsa Italiana, 2004).

Free cash flow, which is the measure of the cash generated by the operating activity of the firm, so it does not account for financing and non-operating assets, is calculated as follows:

$$FCF = NOPLAT + Non\ cash\ operating\ Expenses - Net\ Increase\ in\ Invested\ Capital$$

What is mentioned above as continuing value (V_f)is also called terminal value. This concept assumes that a certain level of cash flow will grow in perpetuity at a certain established grow rate. This avoids to individually forecast cash flow for many years. The formula to calculate it is the following.

$$V_f = \frac{FCF\ (t+1)}{WACC - g}$$

FCF(t+1) represents the estimated cash flow in perpetuity. The grow rate here captures the net total expectation about individual line items. This grow rate has a very important impact in

the estimated value: the higher it is, the higher is the value, so it is really important to establish a confidence regarding the assumptions used to estimate it (Mils, 2005).

4.1.1. Weighted average cost of capital calculation

WACC is the average opportunity costs faced by investors for investing funds in the firm. It is one of the most important values that have to be estimated for the implementation of DCF methodology. Since WACC must be used in the contest of DCF, it must be consistent with its other major component, which is the free cash flow calculation. This consistency requires that WACC:

- Takes into consideration the opportunity cost for all kind of investors that put funds into the company, not only equity holders
- Weight the securities' required return for its market weight, not for its historical book weight
- Incorporates any financing benefits, such as interest tax shields, that are not included in free cash flow
- Is computed after corporate taxes
- Is calculated in the same expectation of inflation of FCF and also with the same duration of securities

Starting from these considerations the formula results as follows:

$$WACC = \frac{D}{EV} k_d (1 - T_m) + \frac{E}{EV} k_e$$

Where : $\frac{D}{EV}$ is the portion of debt using market values and $\frac{E}{EV}$ instead is the level of equity. k_d is the cost of debt, k_e is the cost of equity and T_m is the marginal tax rate (Koller et al., 2015).

Cost of equity calculation

"Cost of equity is the rate of return investors require on an equity investment in a firm" (Damodaran, 2002). It can be determined using Capital Asset Pricing Model, through riskless rate and a risk premium, as follows:

Expected return= Riskless rate + Beta(Risk premium)

Risk free rate is estimated looking at government default-free bonds. Ideally each cash flow should be discounted using a government bond with the same maturity. Actually few times each FCF is discounted matching it with the risk free rate of the related maturity, and normally a single risk free rate value is used. Since DCF valuation is done in a long term

perspective, it is a good idea to not use short term treasure bill to determine the risk-free rate: short term risk free rate usually is lower than the long term one, since investors when short term matures can reinvest at higher rates (Koller et al., 2015).

Market risk premium is the difference between market expected return and risk free rate, unfortunately it is unobservable so it has to be estimated. There are several methods to estimate it:

1. Measuring and extrapolating historical returns. This method starts from the idea that, if level of risk aversion hasn't changed over time, historical returns should be a reasonable proxy for future returns. Koller et al. (2015) suggest to calculate market risk premium over long term government bonds, that better match duration of firms' cash flows, and to use the longest time interval possible, to find a stable market premium. This is valid only if market risk premium is stable, but if there is a premium change is better to use a smaller period. Finally it is important to convert into average long date intervals, such as creating annual numbers starting from a ten-years observation.
2. Using regression to link current financial ratios to expected market return. This methodology starts from the idea that market risk premium is predictable using observable variables, such as financial ratios or forward looking estimation models, for instance as follows:

   $$R_m - r_f = \alpha + \beta \ln\left(\frac{Dividend}{Price}\right) + \varepsilon$$

   This method was demonstrated to be reliable, but has a drawback: market risk premium can be negative, so investors ask to be rewarded to keep in their portfolio a risky asset.

   Moreover regression ignores that dividends depend on their expected grow, and that they are just on form of corporate payout.
3. Using forward looking models. Since stock price value is the present value of its dividend, assuming that they are growing at a constant rate, we can re arrange the perpetuity to calculate expected market risk premium:

   $Price = \frac{Dividend}{k_e + g}$ that converts into $k_e = \frac{Dividend}{Price} + g$. Once cost of equity is calculated, using risk free rate and beta estimation it is possible to know market risk premium.

According to Koller et al (2015) an appropriate range for market premium is between 4.5 and 5.5., even if financial crisis has increased dramatically risk premium to 6,8 in 2007 and 7,8 in 2008.

The beta measures how much the stock and the entire market move together. According to KPMG(2014) it expresses the degree to which the company's specific risk is comparable to market's risk. Also beta cannot be observed directly and has to be estimated. To do this, the starting point is using the regression. The most common regression to estimate beta is the following market model:

$$R_i = \alpha + \beta R_m + \varepsilon$$

Here stock return is regressed against market return. The slope represent the beta, which usually ranges between 0 and 2. According to Koller et al. (2015) raw regression should be based on monthly returns, to avoid the systematic inclusion of short term biases. It should also contain at least 60 data points (5 years of monthly results), in this way it could take into consideration any systematic changes in a stock's risk. Market portfolio should be estimated with a very well diversified market portfolio, to avoid any distortion due to market bubbles (Koller et al., 2015).

On this point KPMG (2014) report the existence of many difficulties in determining the historical beta factors: for example, the cash generating units are not listed on the stock market so they cannot be individually estimated. In practice, in situations where the beta for single cash generating units need to be calculated, listed peer groups that best reproduce the operative risk of the CGUs are employed.

Beta estimation done with raw regression has to be improved by deriving an unlevered industry beta and then re-levering the industry beta to the company target structure. Since companies in the same industry face similar operating risks and so have similar operating betas. Anyway using the simple industry median or average does not consider the leverage: company's beta depends also on financing risk, not only on operating risk. To remove the effect of leverage it is possible to use the theory of Modigliani and Miller, who say that weighted average risk of company equals the weighted average risk of a company's economic assets:

$$\frac{V_u}{V_u + V_{txa}}\beta_u + \frac{V_{txa}}{V_u + V_{txa}}\beta_{txa} = \frac{D}{D+E}\beta_d + \frac{E}{D+E}\beta_e$$

When the debt is not that high it is possible to assume that the beta debt is equal to zero. In this case, with some calculation, the equation becomes the following:

$$\beta_e = \beta_u \left(1 + \frac{D}{E}\right)$$

This equation can be used to convert equity betas into unlevered betas: for each competitor firstly it has to be regressed the equity beta with OLS regression, than with the above formula the beta unlevered is found, finally the average is calculated. Finally the unleveraged industry beta can be re-leveraged with firm's debt-to-equity ratio (Koller et al., 2015).

Estimating cost of debt

Cost of debt k_D is estimated as the average medium-long term debt net of tax effect (Borsa Italiana, 2014). For firms with bonds that rarely trade, k_D is calculated in an indirect method. Firstly it has to be determined the company's credit rating on unsecured long term debt. Then it has to be determined the yield on a portfolio of long-term bonds with the same credit rating. The determination of credit rating is usually done by professional rating agencies, that will examine the most recent financial ratios and firm environment (Koller et al., 2015).

Moody's (Tennant, 2007) suggest the use ratios, which are a good foundation to start a rating analysis. After ratios' analysis Moody starts also a qualitative forward-looking analysis and also takes a deep look at industry's variation.

Financial data must be of the most recently available fiscal year-end filings. The metrics studied include measures of coverage, leverage, cash flow-to-debt, profitability and revenue stability, and are the following:

Exhibit 9: Ratios explanation

Ratio	Explanation
EBITA/Average Assets	EBITA/Average of Current and Previous Year Assets
EBITA/Interest Expense	
EBITA Margin	EBITA/Net Revenue
(FFO+Interest Expense) /Interest Expense	Free Cash Flow from Operations + Interest Expense) /Interest Expense
FFO/Debt	Free Cash Flow from Operations /(Short-Term+Long-Term Debt)
RCF/Debt	(Free Cash Flow from Operations –

	Dividends)/ (Short-Term+Long-Term Debt)
Debt/EBITDA	(Short-Term+Long-Term Debt)/EBITDA
Debt/Book Capitalization	(Short-Term+Long-Term Debt)/ (Short-Term+Long-Term Debt+Deferred Taxes+Minoirty Interest+Book Equity)
Operating Margin	Operating Profit/Net Revenue
CAPEX/Depreciation Expense	Capital Expenditure/Depreciation Expense
Revenue Volatility	Standard Deviation of Trailing Five Years of Net Revenue Growth

Source: Tennant, 2007

Moody's, using its database, created a classification for each ratio of the ranges for each rating category. The result is the following:

Exhibit 10: Rating by ratios

	EBITA/ Average AT	Operating Margin	EBITA Margin	EBITA/ IntExp	(FFO + IntExp)/ IntExp	Debt/ EBITDA	Debt/ BookCap	FFO/ Debt	RCF/ NetDebt	CAPEX/ DepExp	Rev Vol
Aaa	15.3%	14.9%	14.8%	17.0	15.5	0.9	22.7%	117.3%	96.3%	1.6	5.6
Aa	15.6%	17.0%	17.5%	13.7	15.5	1.0	32.5%	68.4%	38.4%	1.4	4.4
A	12.5%	13.8%	15.2%	8.2	9.6	1.7	39.1%	43.8%	38.7%	1.3	5.5
Baa	10.1%	12.6%	13.9%	5.1	6.6	2.4	44.8%	29.2%	27.7%	1.2	7.2
Ba	9.6%	12.2%	13.4%	3.4	4.7	3.3	53.5%	21.8%	20.0%	1.2	10.7
B	7.3%	8.5%	9.4%	1.5	2.6	5.0	70.2%	12.0%	11.7%	1.1	9.2
Caa-C	2.0%	1.6%	2.4%	0.3	1.5	6.3	92.5%	4.3%	4.6%	0.9	11.1

Source: Tennant, 2007

4.2. Economics Profit method

Economics profit technique measures the value created by the company in a single period (Koller et al., 2015). This method is very useful since, if it is applied correctly, leads to the same valuation of the DCF method so it can be used as a way of checking if DCF method was calculated correctly. It is defined as follows:

$$Economic\ Profit = Invested\ Capital\ \times\ (ROIC - WACC)$$

Since $ROIC = \frac{NOPLAT}{Invested\ Capital}$, equation can be written as follows:

$$Economic\ profit = NOPLAT - (Invested\ Capital\ \times\ WACC)$$

This methodology can be used to value a company, in equivalence with DCF technique, as follows:

$$Value_0 = Invested\ Capital_0 + \frac{Economic\ Profit_1}{WACC - g}$$

Here it is possible to value future economic profit with a growing perpetuity:

$$Value_0 = Invested\ Capital_0 + \sum_{t=1}^{\infty} \frac{Invested\ Capital_{t-1} \times (ROIC_t - WACC)}{(1 + WACC)^t}$$

This demonstrates that if expected economic profit is zero, the value of operations equals invested capital.

Economic profits usually are explicitly forecast for 10 years; the remaining years are valued using an economic-profit continuing-value formula.

$$Value_0 = IC_0 + \frac{IC_1 \times (ROIC_1 - WACC)}{(1 + WACC)^1} + \cdots + \frac{IC_{10} \times (ROIC_{10} - WACC)}{(1 + WACC)^{10}} + \frac{CV}{(1 + WACC)^{10}}$$

$$NOPLAT_{cv} = NOPLAT_{10} \times (1 + g)$$

$$EP_{cv} = NOPLAT_{cv} - (WACC - IC_{10})$$

$$CV = \frac{EP_{cv}}{WACC} \times \frac{NOPLAT_{cv} \times \left(\frac{g}{RONIC}\right) \times (RONIC - WACC)}{WACC \times (WACC - g)}$$

In the continuing value formula RONIC must equal historical ROIC in the continuing-value year.

4.3. Valuation through multiples

Much of the literature on IPOs suggest that, for valuing IPOs, an important point is comparing the operational and financial performance with the one of the other public firms in the same or similar industry. Valuation is factored with market ratios, with some firm-specific adjustments. Many market multiples can be used in the comparable firms approach, including industry-specific ratios. Anyway there is not a real clear answer about which is the best multiple to be used.

4.3.1 Multiples choice and calculation

Theoretical models draw the relevance of price on earnings (P/E) and market to book value (M/B) ratios. P/E ratio is implemented by capitalizing the earnings per share (EPS) of the firm under consideration at the average or median price earnings (P/E) ratio of comparable publicly traded firms. If earnings forecasts are available, these are commonly used for the comparables. Other market multiples, such as market-to-book, price-sales, price-operating

earnings, enterprise value-to-sales, and enterprise value-to-operating earnings ratios, are sometimes employed. P/E ratio can be used in two different ways: comparing it with the one of a random firm from the same industry, or using a firm in the same industry with the most similar ten-year average growth rate of earnings. In fact it was proven that there is an high relevance of long term growth, while short term growth and risk are less important. The second way has proved to be the most accurate. Not only growth is considered relevant, but also dividend payout and size of the firm (Kim & Ritter, 1999).

Choosing the comparables is fundamental in using the P/E valuation: it was proven that selecting comparables by industry with the three-digital SIC code is relatively effective (Kim & Ritter, 1999). Although, SIC codes are frequently used to classify firms by industries, unfortunately they are not without problems. The number of multiproduct firms and the prevalence of diversification strategies make classification by product difficult and sometimes arbitrary. Moreover by restricting our comparables to firms in the same SIC code, valuation is subjected to the arbitrariness of these classification.

Also Koller et al. (2015) highlighted that it is important to keep in mind this problem. They said that it is fundamental to understand which are the exact industries where comparables are operating: many times it happens that companies operate in many sub industries whose product areas vary a lot in terms of competitive dynamics. So, also return on invested capital from the various sub industries changes significantly, leading to substantial variations in multiples. At the end each business unit will have different multiples.

Koller et al. (2015) also pointed out that it is essential to have as a denominator to forecast profits, preferably normalized for unusual items, rather than historical profits. According to them, it is much better to use forward earnings estimates, because they usually have a lower variation between pears, leading to a narrower range of uncertainty in value. Koller et al. (2015) in fact, said that for the same group of firms, the backward looking P/Es ratio ranged from 12 to 28 times, while looking at enterprise value to projected EBITA of next year variation ranged from 12 to 17, and going to a five year estimation, variation across companies disappeared. Moreover, forward-looking multiples are consistent with the principles of valuation: in fact the idea is valuing the cash flow of the future, more than looking at backward-looking multiples. Forward-looking multiples also contain future expectation, so they are better multiples than the ones created with historical data. Koller et al. (2015) pointed out that in IPO multiples based on forecast earnings outperformed those based on historical earnings.

Many websites and newspapers use price-to-earnings of last the 12 months as a ratio to analyze a firm's value. Koller et al. (2015) reports that it is much better to use as multiple net enterprise value (EV) to EBITA or NOPLAT. The use of this measure rather than P/E eliminates the distorting effect of different capital structures, non operating assets, and non operating income. So any items that are not useful to estimate a firm's ability to generate cash flow in the future is eliminated. The point of avoiding P/E ratio is that this mixes capital structure and non-operating items, with expectations of operating performance.

Koller et al. (2015) also found out that it is important to use EBITA or NOPLAT, which are much better than EBIT or EBITDA. They explain that EBITA is preferable to EBITDA because when a company purchases a physical asset such as equipment, it capitalizes the asset on the balance sheet and depreciates the asset over its lifetime. Since the asset wears out over time, depreciation has to be included in operating expenses, as a rough proxy for the deterioration of that asset and saving future capital expenditure required to replace the asset. This is a very important proxy to include because the firm will face the capital expenditure in the future and will use that cash flow to replace the equipment. If we try to understand why EBITA is more adapt than EBIT, Koller et al. (2015) states that organic investment in intangibles such as new customer lists and product brands are expensed and not capitalized. Then, when the acquired intangible loses value and get replaced through additional investment, but the investment is already expensed, and the company is penalized twice: once through amortization and a second time through reinvestment. Using EBITA avoids double-counting. Now let us consider the differences between EBITA and NOPLAT in the multiples valuation. It happens many times that EBITA is used instead of NOPLAT because EBITA does not require the calculation of operating taxes, which differ a lot from reported taxes, and need to be calculated with care. Moreover, EBITA works well when peer groups have the same tax rate or operate within a single tax jurisdiction, but when tax rates are different NOPLAT is a better measure.

There is a general consensus that for the EV/EBITA calculation it is important to adjust the multiple for non operating items, that are embedded in EBITA. Consequently, to calculate the nominator it is important to exclude non operating items. That is why many times EV is called "Net" Enterprise Value. The general rule says that any non-operating asset that does not contribute to EBITA should be removed. This includes excess cash and market value of non-consolidated subsidiaries, but also excess real estate, other investments, and the market value of prepaid pension assets. It also includes debit and equity claims such as minority interest, unfunded pension liabilities and employee grants.

Referring back to the choice of the right peer group, the common practice is to select from 8 to 15 peers and take the average of their multiples. A reasonable valuation anyway requires judgment about the companies and if their multiples are truly relevant. Also Koller et al. (2015) points out that identifying comparable firms using the SIC code (Standard Industrial Classification) or the GICS code Global Industry Classification Standard) could be dangerous, because classifications often are too broad, so it should be used only as a starting point. Another approach could be to use the peers group provided by the firm, but too often this represents more an aspirational group than a group of truly comparable firms. Koller et al. (2015) suggests using a smaller group of comparables that actually compete in the same markets, with similar products and services.
Even for companies that compete head-to-head there might be relevant differences in performance that justify differences in multiples. For example both ratios, EV/EBITA and EV/NOPLAT depend on growth, ROIC and WACC. If one of these variables varies between the firms, than multiples must be different. Moreover while WACC is often similar between competitors, this is not true for growth and ROIC, which depend a lot on specific firm's characteristics. To avoid a misleading valuation due to these variables, a firm's multiple is usually compared to the average multiple of peer companies, but it is much better to use a smaller sample with similar performance. A comprehensive approach should imply that, once the list of comparables and their measured multiples are collected, some issues must be analyzed to understand why there is a variation in multiples. It is important to understand if some firms have superior products, for example, better access to customers, economies of scales, recurring revenues or other kind of strategic advantages that translate to superior ROIC and growth rate. In this case better-positioned companies should be traded at higher multiples (Koller et al., 2015).

4.3.2. Usefulness of comparable firm approach

Under the comparable firm approach, the worth of a company is determined by capitalizing an accounting measure with an average price-multiple of firms with similar attributes. This approach works when a group of comparable firm exists. The approach is relatively easy to implement in highly populated and traded stock markets, as in the US, where appropriate comparable firms are readily available, but it is not so clear if it works in a less populated market (How et al., 2007).

How et al. (2007) analyzed the Australian equity market to understand whether there is a positive association between the price multiples of IPO firms and those of comparable firms. The Australian market is particularly adequate for this analysis for three reasons. Firstly, in

Australia, some industries contain only a few companies and firm's characteristics vary considerably, so it can be difficult to find comparable firms. Secondly, the disclosure regime in Australia makes it easy to have useful information such as earnings forecasts, surely more valuable than historical earnings, to calculate price-multiples based on forecast of earnings. Thirdly in Australia the fixed-price offerings are typically used: so, while with the road-show and the bookbuilding mechanism the offer price is adjusted to market demand step by step, with fixed price regime the price is established for a significant period of time. Based on a sample of 275 Australian industrial IPO firms, they proved that comparable firm approach is useful for the IPO pricing. They discovered that IPO price multiples are positively associated with comparable firms' multiples. Without adjustments, IPO price-earnings (P/E) and market-to-book (P/B) multiples based on management forecasts of earnings, and book values of equities provided in prospectuses are strongly associated with the average P/E and P/B multiples of two comparable firms (matched on industry, growth and size).

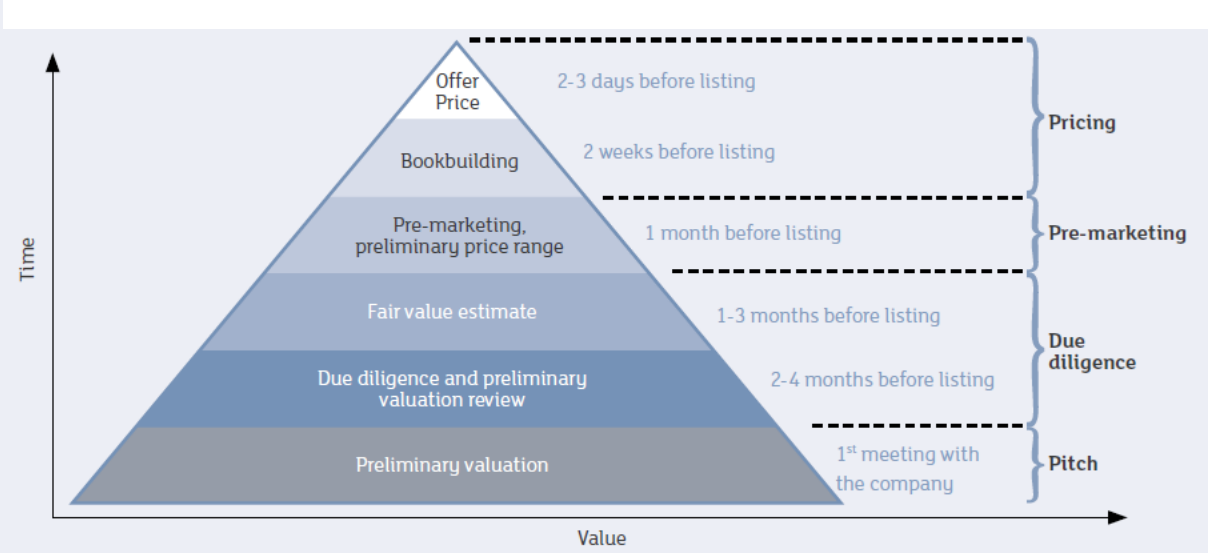
This results are in contrast to Kim & Ritter (1999), who say that comparables approach has a modest usefulness without further adjustments, but this difference can be attributed to the unique institutional feature present in Australia. They add that comparable firm approach works better when the average of two firms' multiples are used in a less populated market such as Australia, and also Kim & Ritter (1999) say that in average, the multiples apply better if the spread in comparable firms' multiples is lower. So, using more firms with greater variation in price multiple does not result in a better valuation. To summarize, according to How et al. (2007), by using the adequate earnings forecasts of the competitors to calculate a comparable firm's multiples and using the multiples that have the lower spread, it is possible to obtain a firm's value, that maximizes IPO returns.

4.4. Valuation and pricing process in an IPO

In the case of an IPO, the valuation starts with the first pitch with the firm and it is the result of a continuous analysis and verification. Therefore, valuation is an integral part of the due diligence. When a fair value is estimated, the valuation should start to take into consideration the investors' instructions, as well as the stock market trends and potential liquidity of the stock to determine an IPO discount, that maximizes the level of demand and leads to a good return on investment for who invests in the firm during the placement.

The phases of the value determination process are described in the following graph.

Exhibit 11: Value determination process



Source: Borsa Italiana (2014)

Acoording to the Listing Guidelines of Borsa Italiana (2014) the process of examination is divided into four phases, which start from a wider look, to achieve a more detailed examination and to a narrower determination of price. These phases can be summarized as follows:

1. Pitch.

   In this phase, the firm chooses the intermediaries of the listing. Investment banks present a proposal, which also includes a firm's valuation, which is usually very rough compared to the ones that will be done in the following months, since it does not include a detailed knowledge of the business plan and the results of the due diligence.

2. Due diligence.

   The investment bank analyzes the business plan and proposes a range of values for the firm. This valuation accounts the business details such as future trends in the reference market, strategic organization of the firm and sustainability of main hypotheses. On the other hand, it does not account for IPO discount and information coming from possible investors. This Valuation Document is part of the listing application submitted to Borsa Italiana.

3. Pre-marketing.

   Investment bank carries a survey on institutional investors and collect preliminary independent valuations published by the bank of the institutional consortium. With this new information the investment bank defines an indicative price range and meets

with the issuing firm. They define together a price range and a maximum price, which will be the reference for the collection of orders by institutional investors (bookbuilding process).

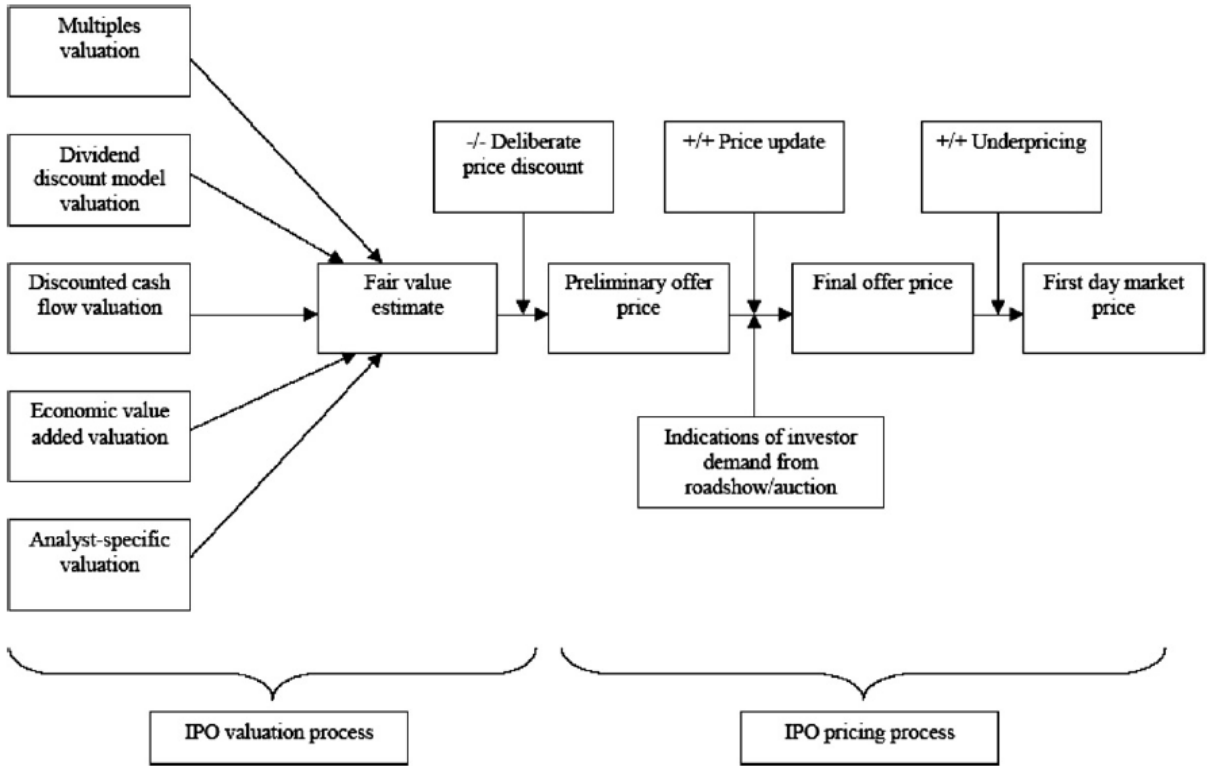
4. Pricing.

   After the publication of the prospectus a road show for institutional investors and a promotional campaign for the general public will begin. This helps gathering declarations from institutional investors of interest to buy at a certain price. The offer price is then determined by taking into consideration the number of shares requested for each price. Also, investors characteristics are taken into consideration, such as portfolio management strategy, investment policy, portfolio size and market sector of interest, etc . With this information, a final price is determined to effectively allocate shares to institutional and retail investors, leaving also part of the demand unsatisfied to increase interest in buying and to support stock performance in the market.

4.5. From value to price : voluntary price discounts

According to Roosenboom (2012), underwriters establish shares value using many valuation techniques, where fair value is just an ex-ante estimate of the market value of the IPO.

Exhibit 12: IPO valuation and pricing process



Source: Roosenboom (2012)

After the underwriter has determined the fair value using the several techniques presented before, he applies a deliberate price discount to arrive at the preliminary offer value. This intentional price discount equals 18.2%, evaluated at the mean and the median. The deliberate price discount is often advertised in the underwriter report. For example: ‘‘The preliminary offer price offers a substantial discount from our fair value estimate. We therefore issue a strong buy recommendation for this stock’’. This is calculated before the underwriter learns about investor demand for the IPO. On average, the minimum tender price for IPO auctions and the price range for book build IPOs are chosen two weeks before the shares start trading on the stock market. Then the underwriter collects information about investors’ demand for the shares, and the preliminary offer price is adjusted to arrive to the final offer price.

Equilibrium market value is determined as the number of shares outstanding after the IPO times the market equilibrium price at which shares transact. Roosenboom (2012), analyzing his sample, found that average market value is above the average final offer value. Therefore, investors earn a return by paying a lower stock price than the full information equilibrium market price.

Many authors pointed out that price discount will depend on many factors. Some factors are associated with the need to discover an investor’s demand: discount makes it profitable for them to reveal their interest in the share. Other factors are associated with compensation for the risk taken by investors, who bid on an unknown firm, so they have to be rewarded in some way for this additional risk they take.

Roosenboom (2012) went through this analysis and he actually confirmed that one reason of value discounting is to induce investors to disclose information about their actual demand of IPO shares. Underwriters are willing to make such discount because investors will be more likely to bid up the price during the bookbuilding procedure, and, if demand is positive, then the price will be updated positively. In this way, underwriters also expect to recoup the price discount given to investors: with such a simple method they expect to gain precious information about market valuation of the IPO firm, with a very low cost operation. However, it is important to emphasize that only part of the discount is recouped through price updates during the roadshow, the remaining part is not recouped and results in higher returns for investors. What is important for our study is that this underlines that the major reason for discounting stock value is to foster investors’ demand. Of course, this is not an unique motivation.

Roosenboom (2012) said also, that price discount helps to compensate investors for the risk they take, this is confirmed by many authors and institutions.

According to the Listing Guidelines of Borsa Italiana (2004) discount is justified in the following way: it would be preferable to buy shares of a firm with similar characteristics, similar risks already quoted in the market, a known equity story, a management already recognized in the financial community, and an overall lower information asymmetries than a firm that is going public for the first time.

In addition, Chahine & Filatotchev (2008) have concentrated on information asymmetries in IPOs, between insiders and small investors. Those investors anticipate the costs deriving from this asymmetry and price-protect themselves and this leads to IPO price discount. They said that the cost can be reduced by two kind of firm signals. On one hand, firms can disclose strategic information in issuing documents, but this is a very risky option, since it may lead to reduction of a valuable competitive advantage. On the other hand, IPO firms can use governance parameters such as board characteristics to signal their value and ability to reduce managerial opportunism. Corporate governance parameters, like board independence, may be a good signal of a firm's value and thus reduce IPO discount. . They verified this using a sample of 140 IPOs in France. Results say that increasing information disclosure IPO firms can reduce information asymmetries and therefore, mitigate the costs associated with adverse selection problem. However, in this way they could disclose too much information and this could be viewed as putting the strategic advantage of the firm in a risky position. Moreover, they suggest that investors may become skeptical about the willingness of manager in disclosing so many information. They also point out that different types of information have different values for informing investors: information about human resources or the risk that the firm is facing are effective in reducing information asymmetries, while information about marketing, R&D and technology might induce investors to think that the disclosure of this proprietary information may harm firm's competitive advantage. On the other side, board independence has a positive effect on IPO offer price: investors may think that the board independence may reduce agency costs associated with adverse selection and moral hazard problems in IPO firms (Chahine & Filatotchev, 2008).

In a latter work Chahine & Filatotchev (2011), analyzed if audit and non-audit fees have an importance in affecting investors' evaluation of the firm. They found that audit fees may help to reduce information asymmetries associated with the IPO while non-audit fees add uncertainty to the quality of earnings. Therefore, the IPO firm's managers and early stage

investors should carefully evaluate costs and benefits of engaging their auditor, in consultancy-related services: they could result in harming the stock market performance of the firm. They went even further, to say that audit services do not work in isolation: a firm that has paid audit and non-audit fees and that have also independent board's members or members of the audit committee with higher financial and accounting expertise have a negative association with underpricing. Hence, the credibility of services provided by external auditors, may be reinforced by the credibility of internal governance mechanisms, reducing the need to use large price discounts on the IPO price.

Another, very important way to reduce investors risk is that an IPO firm should the right underwriter. Roosenboom (2012) said that it seems that an underwriter with a higher reputation usually practices lower price discounts: this could result from the fact that this kind of underwriter has a higher market share, so they do not need to offer larger price discounts to attract investors, but they uses their reputation to certify quality of the IPO firm.

This was already pointed out by Carter and Manaster (1990), who studied this phenomenon: they argue that IPO price run-up compensates for the uninformed investors that are at risk of trading against superior information. Anyway, underpricing is costly for the issuing firm, therefore low risk firms attempt to reveal their low risk to the market, making it unnecessary to underprice. One way to do this is selecting underwriters with high prestige. They supported this thesis observing a sample of 501 IPOs between 1979 and 1983. Prestigious underwriters, to maintain their reputation, only market IPOs of low risk firms. As a result, a signal in the form of an underwriter reputation is provided to the market. More in detail, they found a significant negative relation between underwriter prestige and price run-up. They also found a negative relation between prestige and magnitude of price run-up.

Concerning underpricing level, Roosenboom (2012) found out that older companies are associated with lower level of underpricing, while the technology industry is associated with a higher level. Other firms' characteristics seem to have no affect, significantly, on underpricing. Also firms that are forecasted to be more profitable are not subject to high discounts: it seems that investors are attracted by the expectation of having a high profitable firm in their portfolio, for the future. Then the dimension of the discount depends also on the financial structure and on management track record. Not to forget that the equity market conditions, the situation of the industry where the firm operates, the competitors situation, the tracking of other shares quoted in the recent period, the general economic conditions and the level of trust of investors can all influence the discount.

So part of the underpricing seems to be associated with a compensation for investors to disclose their demand for the IPO firm, another part instead, depends on the intentional price discount to compensates the risk that investors take in investing on an unknown firm.

4.6. Accurancy of the valuation methods in IPOs

Roosenboom (2012), after presenting the methods that are frequently used to calculate an IPO firm's value, he went further in the analysis and calculated signed prediction errors of each valuation technique as :

$$\frac{(\text{estimated value} - \text{equilibrium at market value})}{(\text{equilibrium market value})}$$

Assuming an efficient stock market, these prediction errors capture the bias that is associated with the different methods. He found that most methods are associated with positive average prediction errors. This suggests that underwriters overestimate market values ex-ante. Comparing the different value methods he observed that the comparable firms/transaction multiples method is the least biased valuation method.

One of the reasons for this overvaluation could be that this gives the possibility to underwriters to offer a larger discount to investors. Later in this chapter it will be pointed out that the value discount is recouped only partially through price bids up by investors.

In the second part of his research, he investigated whether s firm's or an industry's characteristics change the biases and accuracy of the valuation. More profitable IPO firms show less biased valuations. Higher reputation underwriters are associated with lower bias for most of the valuation methods. Moreover, underwriters seem to more accurately value older companies with established track records, but are less accurate when the stock market is more volatile. There are no other firm's and offer's characteristics besides company age, underwriter reputation and pre-valuation market volatility that can consistently explain the cross-sectional variation in accuracy.

The underwriter decides which methods are appropriate to value the IPO stock and which are not. For example, the difference between the signed prediction error of the multiples method and the dividend discount model could be caused by companies for which the underwriter uses the multiples method but not the discounted dividend model.

Roosenboom (2012) calculated also the absolute prediction errors, which measure the valuation accuracy of the different systems:

$$\left|\frac{(\text{estimatedvalue} - \text{equilibrium market value})}{\text{equilibrium market value}}\right|$$

In the sample he found that multiples valuation technique has the lowest average absolute prediction error and the highest accuracy, while the economic value added method has the highest average absolute prediction error and the lowest valuation accuracy, from additional considerations it results that multiples approach and the discounted cash flow valuation perform equally well.

Roosenboom (2012) also analyzed explainability, so the ability of values estimates to explain cross-sectional variation in equilibrium market values. He found that dividend discount model has the highest explanatory power and the economic value added method is associated with the lowest explanatory power.

Roosenboom (2012) investigated whether underwriters can improve their valuation estimate when using different valuation methods together, using the three most popular techniques for which we have sufficient number of observations (multiples valuation, the dividend discount model and the discounted cash flow model): adding an additional method increases the explanatory power of the model significantly for all combinations.

4.7. Long-run performance of IPO

According to the Listing Guidelines of Borsa Italiana (2004) a more prudent valuation could be more profitable in the long run than a very positive valuation due to very favorable market conditions. Considering that in the long run the equity market will discount every expectation, it is important that valuation does not incorporate any short run positive courses in the market.

Also Purnanandam and Swaminathan (2004) analyzed whether IPOs pricing in relation to their fair value. They computed IPOs value using multiples such as price/EBITDA, price/sales, price/earnings of non-IPO industry peers and by comparing their enterprise value and offer price. From their analysis it resulted that IPOs are systematically overvalued at the offer price relative to peer firms. In a sample of 2000 large capitalization IPOs from 1980 and 1997 the median IPO is overvalued, compared to industry peers by about 14% to 50%, depending on the matching criteria. A match done by using industry, sales and profitability resulted in overvaluation of 50%. By adding the analyst earnings growth forecasts, overvaluation decreases at 33%. If match is done only with analyst earnings growth forecasts overvaluation is about 14%. This suggests that IPO investors may focus too much on optimistic earnings growth forecasts and too little on profitability in valuing IPOs.

The overvaluation result is inconsistent with the notion of underpricing that is widely discussed in the literature, presented also in the previous paragraph, but it is consistent with the long-run underperformance of IPOs. Going further in their analysis Purnanandam and Swaminathan (2004) showed that overvalued IPOs provide 5% to 7% higher returns than undervalued IPOs on the first day after the IPO, but 20% to 30% lower long-run risk-adjusted returns. This result suggests that the procedure to distinguish undervalued and overvalued IPOs is reasonably correct. From this result, it is also possible to say that overvalued IPOs have lower initial sales, lower EBITDA and lower profit margins, but higher first-day share turnover, higher overallotment, higher analyst earnings growth forecasts. The key differences with undervalued IPOs have to do with profitability and expected growth. Overvalued IPOs have lower current profitability, but higher expected earnings growth. Ex post projected that a high growth rate does not materialize . In general, Purnanandam and Swaminathan (2004) found that IPO investors pay too much attention to optimistic growth forecasts and too little on current profitability, giving rise to overvaluation at the offer price. Eventhough, concentrating less on optimistic forecasts would easily avoid misevaluations.

Regarding long run IPO underperformance Miller (1977) assumed that investors have heterogeneous expectations regarding the valuation of a firm, but only investors that are optimistic about IPO value buy the stocks. Over time, as the variance of opinions decreases, the marginal investor's valuation will converge towards the mean valuation, and its price will fall. This argument works better when the float is small and not too many investors are required. This is consistent with the drop in share price at the end of the lockup period.

This chapter concentrated on valuation and pricing process of the IPO firm. The most used techniques to investigate firms' value were firstly presented: DCF, the multiples analysis and Economic Profit. The IPO pricing steps were then presented next, and the reasons of the price discounts were discussed. Finally, the accuracy of those techniques in relation to IPO value was analyzed, presenting Roosenboom (2012) analysis. It resulted that underwriters on average overvalue IPOs, for many reasons: to recoup price discounts offered to investors, or for high forecasts of profitability that usually stands around. This, together with distorted investors' expectations, leads to an average long run underperformance of IPO firms.

5. THE TECHNOGYM CASE OF STUDY

5.1. Firm's history

Technogym was founded in 1983 in Cesena (Italy) when Nerio Alessandri started to project his first machine for training. From the beginning he worked in strict collaboration with the brother Pierluigi. They started to operate in fitness sector producing machines with an extreme attention for product design and for incidents prevention.

In the first half of Eighteen's fitness sector was just a niche in Italy, and gyms were attended mainly by bodybuilders. The founders understood that, to improve their business, it was fundamental to make their machines more technological and functional and to push to make the fitness world more spread in the public, promoting the idea that exercise benefits heath.

In 1984 Nerio Alessandri introduced a new line of products, completely innovative for the Italian market: a line of isotonic machines. They were extremely simple to use and facilitated the training of specific muscles. With this line of products, the business started to operate at a national level.

In 1986 Technogym S.r.l. (a limited liability company) was founded. In the same year the first machine for home was launched, and its advertising campaign increased the firm visibility and notoriety in the Italian market. The firm kept on investing in research and development of new fitness solutions, thanks to the institution of a research centre, where it combined competences of engineering, biomechanics, sport medicine, new materials and electronics.

In the Nineteen's fitness market has increased its popularity and so the number of competitors spread. To face this increased competition Technogym started to produce also machines linked with the culture of movement, supporting the idea that making exercise increase the psycho-physical wealth: in this period Technogym started to present itself as "The Wellness Company", moving from the concept of fitness to the concept of wellness. In this period Technogym also launched a line of product for physical rehabilitation, opening the new line of business of medical products. It also started to operate in the cycling sectors and created a complete software to manage the entire traineeship of the person. In the end of the Nineteen's Technogym operates in 60 countries in the world, generating a relevant percentage of its turnover abroad.

In years 2000s Technogym started a phase of growing turnover and consolidation of its image at an international level. The new line launched in 2000 started also to be commercialized in the US. In the same year the firm became also the official supplier of the Paralympics Games of Sydney, starting a collaboration with the Olympics and Paralympics games that continued also for Athen 2004, Pechin 2008, London 2012 and Rio de Janeiro 2016. The presence in this international events has increased firm notoriety at the international level and amplified the possibilities of building relationships with sportive federations.

In 2012 new digital platforms Technogym Ecosystem and Mywellness came to life: they allowed to maintain the contact with final users and professional operators and to obtain an higher personalization of the traineeship programs. This has permitted to augment the possibility of fidelization of both the final users and the trainers, incrementing also the turnover. In the same year was also opened the Technogym Village, the headquarter that gathered together the various plants of the firm. The Village represent a real wellness campus: it is the meeting point for final users, trainers, medical operators, architects, researchers and institutions to experiment the Technogym "wellness experience".

Last years of activity were characterized by an increase in turnover and development of new products. In 2013 the campaign "Let's move for a better world" was also launched through professional operators and final users. In 2015 Technogym also participated to Milan Expo as official wellness partner, creating a dedicated wellness walk.

In 2015 Technogym worked on the acquisition of the Technogym Village, which was property of TGB group and which was located to Technogym. In 2016 Technogym also 50,01% of Exerp ApS, a Dannish firm which operates in provision of software for the managing of fitness centers, to amplify firm offering in digital solutions for fitness and wellness. Going more in detail, Exerp produces modular systems used for managerial aspects by fitness chains, so its software is complementary to the digital systems of Technogym.

Now Technogym operates in 130 countries in the world, with 13 commercial branches, 85 local distributors and 1 joint venture company, creating 90% of its turnover outside Italy.

5.2. Corporate evolution

July 15th 1986 Technogym S.r.l. (limited liability company) was constituted with a capital of 50 million Lire, owned by Nerio Alessandri for 63% and by Pierluigi Alessandri for the other 37%.

In 1990 capital was increased to 1,2 billion Lire, using extraordinary reserves and options from owners.

In 1997 capital was again increased to 10 billion. In this year Nerio and Pierluigi Alessandri submitted their rights on Technogym S.r.l to Technogym Group S.p.A, owned by the two brothers. Next year they moved on in this field and it resulted that Technogym S.r.l was owned by: Technogym Group S.p.A for 98,8%, Nerio Alessandri for 0,9% and Pierluigi Alessandri for 0,3%.

In 2001 share capital was converted from 10 billion Lire to 5,2 million Euro. Then in 2002 Technogym S.r.l. changed its juridical form, from limited liability company to share-based company and increased its capital from 5,2 bilion Euro to 10 bilion Euro. Tios capital is represented by 100 000 share whose nominal value is 100 Euro each. In 2003 Nerio and Pierluigi Alessandri transferred their shares of Technogym S.p.A. to Technogym Group S.p.A., so it resulted that Technogym S.p.A. was completely owned by Technogym Group S.p.A.. Six months later Technogym Group S.p.A. merged with Technogym S.p.A..

In 2008 brothers Alessandri wanted to divest part of their participation in Technogym S.p.A., so they made a new minority shareholder enter. This minority owner was Salhouse, a vehicle owned and managed by Arle Capital Partners Limited, a society partially owned by Candover Investments plc. During this operation Salhouse and Wellness Holding (75% owned by Nerio Alessandri and 25% by Pierluigi Alessandri) conferred in a firm called Scott S.r.l.: Salhouse 330 million, while Wellness Holding conferred 50,77% of Technogym S.p.A. Financial resources conferred by Salhouse together with a financial loan of 150 milion were used to buy from brothers Alessandri their 49,23% of Technogym S.p.A.. In this way Scott S.r.l. owned 100% of Technogym S.p.A. Later Technogym S.p.A. merged with Scott S.r.l. and was denominated Technogym S.p.A.. During this operation Salhouse and Wellness Holding stipulated a shareholders' agreement about governance of the firm and about disinvestment of Salhouse.

This shareholders' agreement says that it is possible for Salhouse to require the IPO of Technogym, notwithstanding an eventual agreement with Wellness Holding. Moreover both Wellness Holding and Salhouse have to make possible that:

- Technogym S.p.A. becomes public in no more than two months from Salhouse demand for IPO

- It is done the nomination of necessary consultants for the admission in the public stock exchange
- Board of Directors votes for the IPO
- The management collaborates for the organization and the execution of the due diligence, the prospectus and other documentation required for the IPO and for the progress of the road show
- The management collaborates with the authority to make the IPO possible.

5.3. PE role in the IPO

It is widely known that the initial public offering of Technogym was organized to allow Salhouse to divest its participation, after its investment in 2008. This operation was already decided in the shareholders agreement that was established between Arle Capital and Wellness Holding in 2008.

Anyway, it is clear that it was already an agreement in timing of Salhouse divestment, but the way of divestment was not so sure. It was previously explained in this thesis that there are several ways for a Private Equity to divest its participation into a firm. The choice of the most profitable method varies according to many factors.

First of all, as Jenkinson & Sousa (2015) pointed out, firm characteristics have a strong impact in exit strategy. Technogym has many characteristics that make it suitable to go public. First of all the high growth rate of last years make it an appealing investment in the public market: not only there was a continuous growth in turnover, but also EBITDA and Net Income has grown at an even higher level, overcoming the slowdown in growth of 2013.

Exhibit 13 Technogym: Grow rates

	TECHNOGYM			
Growth rates	**2013**	**2014**	**2015**	***CAGR 13-15***
Revenues	0%	13%	10%	*11%*
EBITDA	-35%	72%	35%	*23%*
EBITA	-63%	137%	83%	*27%*

Ratios also report an higher profitability than competitors:

Exhibit 14 Technogym: Comparables' ROE and ROIC

	TECHNOGYM			AMER SPORT			NAUTILUS			BRUNSWICK		
Profitability	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**
ROE	40%	85%	106%	12%	7%	14%	71%	19%	22%	138%	22%	20%
ROIC	12%	17%	42%	9%	6%	8%	1106%	157%	28%	87%	20%	22%

A firm facing such a positive period of growth and expansion perfectly fits the public market, so this is promising that the firm will not suffer any reduction in value.

Also from a financing point of view the conditions are all supporting the IPO of Technogym: debt is present but it was reduced a lot in the last years, and now it is considered sustainable at all, as all the ratio about leverage demonstrates.

Exhibit 15 Technogym: Comparables' ratio about leverage

	TECHNOGYM			AMER SPORT			NAUTILUS			BRUNSWICK		
Financ Struct	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**
NFP/Equity	24,0	6,1	0,8	0,6	0,5	0,5	(0,7)	(0,6)	0,2	0,1	(0,1)	(0,1)
NFP/EBITA	6,3	1,9	0,6	3,1	4,0	2,4	(4,1)	(2,3)	0,6	0,4	(0,2)	(0,5)
NFP/EBITDA	2,6	1,1	0,5	2,5	2,9	1,9	(3,4)	(2,0)	0,5	0,3	(0,2)	(0,4)

Moreover another factor to be considered in the analysis of firm characteristics is Technogym's positioning in the industry against competitors. Technogym from many years is working one step head competitors in technological application and in development of machines that meet the needs of new trends in wellness, positioning its products in the upper/luxury segment of the market. This is demonstrated by the fact that the firm is the official partner of Olympic Games from many years and is working together with many top global sportive teams. Technogym has developed a strong competitive advantage in the market that ensures a constant profitability and growth, and so it can be considered an appealing investment in the market.

The second factor pointed out by Jenkinson & Sousa (2015) are the market conditions. Market conditions seem not to favor an IPO. Cost of debt was very low in time of the IPO and in the period before: this situation supports more a secondary leverage buyout or an acquisition than an IPO, because the acquirer can use debt to finance the operation at a very low rate.

In addition Lowry & Schwert (2002) found out that it is more likely to have an IPO during a IPO window: in this period returns for the firm are higher because of the information learned by the market from previous IPO during the window. It seems that at the beginning of 2016

equity market was “cold”, with just four IPOs done in the Milan stock exchange before the one of Technogym during the same year.

Third factor for Jenkinson & Sousa (2015) is represented by the PE characteristics. To understand in detail which are the characteristics of Salhouse, the vehicle firm of Arle Capital that has invested in Technogym, let’s try to understand how it was created and which is its step in lifecycle.

Arle Capital Partner Limited is a private equity firm specialized in medium sized firms through activities of investments, expansion, growth capital and buyouts. It typically invests in industrial and services companies which operate around the energy and natural resources sector with a focus on oil and gas, metals mining, nuclear power, alternative energy, water, testing, inspection, and certification, business information, safety and security, waste water treatment, offshore equipment and services, engineering and advanced technical services, automation and process control, energy efficiency and infrastructure solutions. It is focused mainly in firms headquartered in Western Europe. Usually it invests between $14.15 million and $666.2 million in companies with enterprise values between €500 million ($666.2 million) and €1 billion ($1332.41 million). It usually takes a controlling stakes in its portfolio companies or it can co-invest for larger equity commitments along with limited partners (Bloomberg, 2016).

According to Chassany & Menon (2010) Arle Capital Partners Limited was formed from some Candover Partners’s executive, and Candover Partners sold them the buyout unit. The scope of this operation was to create an independent unit focused on the divestment phase, to realize the maximum value of the portfolio. The new firm has also the mandate to raise new funds, but this is still not planned. All these actions were reasoned by the turbulence of the end of 2008, which created the major challenges that Candover had to face since its foundation in 1980. Candover faced a drop in the value of its assets and a deep run out of liquidity.

So this private equity has a very long past history, but faced deep problems in the recent period and, due to the global crisis, it was forced to put in place very big changes to survive and to make its business profitable. After this critical period it is fundamental to build again a reputation of a winning firm, that is able to divest in a very profitable way. Moreover now it is in a life stage where the funds are close to the end, in fact the primary scope now is to divest in a remunerative way current shareholding to pay back investors. After this phase is likely that many partners will try to raise new funds to stay in the business, even if the senior partner

stated that after this mandate he will retire. Taking into consideration this future developments it is even more important to build up a new reputation, which was weakened in previous years of tensions. The better way to build up reputation is through an IPO as Bock & Schmidt (2015) demonstrated: making a firm public in such a cold IPO period ensures market attention, and the positive results of the IPO and the profitability of the firm itself made the public offering a success. This will help the private equity to build the trustworthiness of the firm.

Since secondary LBOs are the most used exit strategy at the moment it is important now to understand in detail why this method was not used in this case, considering also that market conditions are very favorable at the moment for debt, and so for a LBO. First of all, as Wang (2012) pointed out, one of the main advantages of secondary LBOs is the speed of divestment compared to an IPO, where usually the private equity, as any other big shareholder that wants to divest, has to keep majority of its shares for a lock up period. This is aimed at not giving a wrong signal to the market and avoiding share price to drop. From this point of view a sale to another private equity was not that convenient for Arle Capital, because the process of divesting from the portfolio companies is just at the beginning: Arle still has to organize the divestment from majority of portfolio firms, so there is no point to organize a quick divestment from one of them, and so realize a surplus of liquidity long before the moment of repaying the investors. If speed of divestment is not important in this moment for Arle Capital, one of the main advantages of secondary LBOs disappears.

Another fundamental point to consider is that LBOs usually involves majority or totality of shares of the firm, while the shareholding that Arle Capital has had in Technogym is a minority shareholding, with the majority owned by the entrepreneur. This kind of shareholding is really unusual to be acquired and kept by a private equity, which typically wants the majority to bring new efficiencies and innovative strategies inside the portfolio firm without the need to discuss and convince a majority owner. It can be potentially difficult to sell this kind of shareholding to another private equity, because the lack of control rights is against the typical way of operating of private equity firms, so it is very likely that a market for Salhouse stake was missing.

Moreover, the shareholders agreement specify the following: Salhouse has the right to require to Wellness Holding to transfer to a third part, willing to acquire the whole shares of the firm, its shares only in the case of death of the entrepreneur Nerio Alessandri (Documento di registratione, par 18.4). This case has not happened, so Salhouse does not have this right. So a

secondary LBO can happen only with brothers Alessandri's consensus. But this situation is really not probable, considering their willingness to not lose decisional control in the firm.

Let's consider more in detail the position of brothers Alessandri and their power: their clear willingness to maintain the control over the firm in all the fundamental decisions, could have excluded not only the possibility of a secondary LBO, but also other kind of bargainings with subjects interest in buying also entrepreneurs' stake such as the trade sale to a bigger corporation, limiting Alessandri's control over the firm. In fact in January and February 2016 rumors about bargains with the two private equity firms Eqt (from Sweden) and Temasek (from Singapore) were strong, but nothing came out from this possibility. The major critical point was the size of the shareholding, and so of the investments that has to be done, and the lack of control, that had to remain in the hand of Wellness Holding (Filippetti, 2016). Entrepreneur willingness of maintain the control is also evident from the commitment of Salhouse in not selling any of its shares in Technogym to market competitors(Nota Informativa, par 3.4). This excludes a priori the possibility of a trade sale to a competitor, which, according to Poulsen & Stegemoller (2008), in certain conditions could have represented a profitable exit way.

In conclusion, even if market conditions were encouraging a secondary buyout or a trade sale of Arle Capital shareholding, because equity market was cold and debt conditions were favorable, firms characteristics and private equity features were more prone to an IPO. Moreover the shareholders agreement were bonding in excluding the trade sale to a competitor, and limited the possibility of Arle Capital to impose a LBO without consensus of brothers Alessandri.

5.4. IPO benefits for Technogym

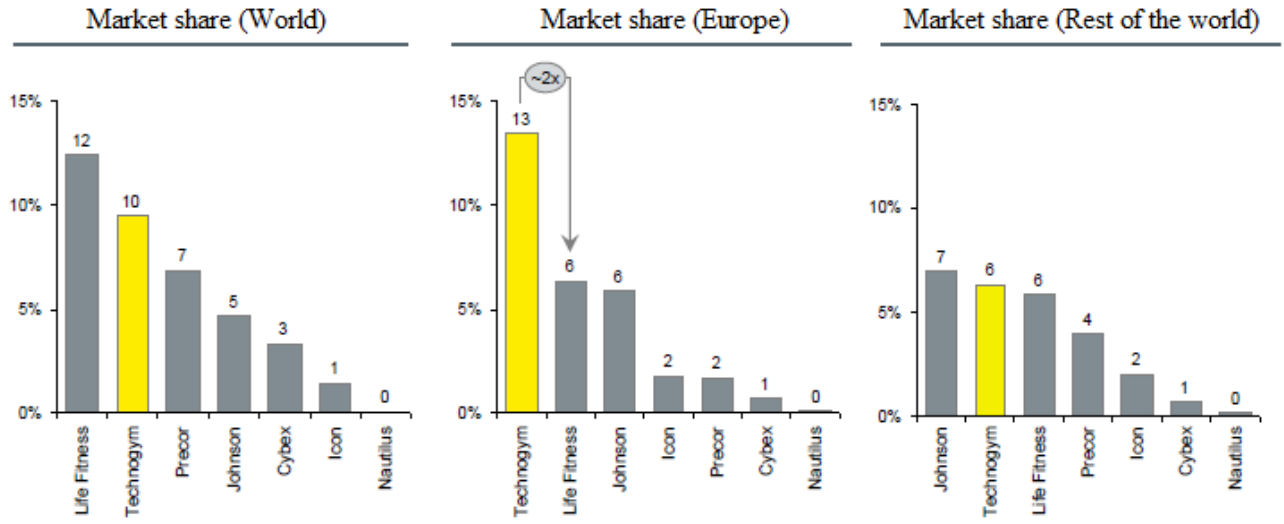
Main reason of the IPO was surely linked with the shareholders agreement and the need of Salhouse to divest and return cash to shareholders. What is more interesting is that the IPO was considered the best way of divestment since the beginning of the relation between Candover and brothers Alessandri, and also in the shareholders agreement is cited as primary way of divestment. Surely the IPO assures the maintenance of decisional control over the firm for brothers Alessandri, and also was the more suitable way for Arle Capital. Anyway there are other advantages than the ones for the shareholders that can be exerted from being a publicly traded company instead of a private one.

One of the major benefits of the IPO is the possibility of raising capital to finance projects of growth. Many times literature analyzed this kind of situation, pointing out that is the first

benefit deriving from the IPO. For Technogym this aspect has secondary importance at least in the short run, since any new capital was raised with the IPO. In the long run anyway it is still open the possibility of a quick raising of capital.

A great advantage is the possibility of increasing firm knowledge and visibility. This is particularly important for Technogym , in this particular phase of its life. Analyzing market penetration, Technogym results well positioned in Europe, where it is the first player in term of market share, which is the double compared to the second, but it still scarce outside Europe, where it is the second player and has a market share of only 6%. This represent a great possibility of growth, but it requires an higher reputation and visibility those countries.

Exhibit 16 Technogym: market share



Source: Prospetto Informativo Technogym

The going public process surely has augmented firm awareness in the market and this could have strategic positive consequences. Anyway since the filing and the IPO happened less than one year ago, it is impossible to prove this using financials.

Another fundamental point is the enhanced possibility of attracting, remunerating and retaining a valuable work force offered by the fact of being a publicly traded firm, compared to a privately held firm. Nerio Alessandri already declared his intention of slowly converting the firm from an entrepreneurial to a managerial one: a firm with such level of complexity must have the most skilled people sitting in the top management team. To attract the most skilled people the firm has to appoint an appropriate compensation plan, which not only appeals the most skilled managers, but also align their interest with the interest of the firm itself and of its shareholders. To do this compensation plan should be linked with stock performance and methods like stock options can be used.

What emerges is that the IPO was a natural step in the growth of the firm: not because new capital was collected, but because this was the occasion to create an internal informational structure in the firm that will help in increasing firm knowledge in the market, so will allow to better appeal customers and suppliers, and also to put in place appropriate compensation plans to better attract and retain most skilled workforce.

5.5. Reaction on competitor prices

In this part of the chapter the reaction of competitors to the IPO of Technogym will be analyzed. The thesis of Hsu et al. (2010) will be applied to see if publicly traded competitors face a reduction in performance. Hsu et al. (2010) tested several hypothesis: they checked if the IPO has negative impact in stock price of competitors analyzing CAR (cumulative abnormal returns) of stocks, then they checked the impact of IPO in competitors operating performance. Since operating performance can be analyzed only in few years after the IPO, this hypothesis cannot be tested in Technogym case, because the firm went public just few months before this thesis. So it will be tested only the hypothesis concerning CAR in stock market.

The competitors used in this analysis will be the following: Amer Sport, Brunswick, Johnson Health Tech and Nautilus.

The test aims at analyzing whether in the days around the IPO there is a drop in cumulative abnormal returns. For the four competitors were picked the closing prices for the periods decided, around the IPO event, which was on May 3rd 2016.

Hsu et al. (2010) in their sample found that in the period between 10 days before and 1 day after the IPO amounts to a -0,40% cumulative abnormal returns and is significant at the 5% level.

Here the cumulative abnormal returns (CAR) are calculated following the first method proposed by Santos & Victorio (2013) who start from definition of abnormal returns as the difference from actual returns and normal returns. Normal returns are the ones calculated through the Capital Asset Pricing Model as follows:

$$E(R_{it}) = \alpha_i + \beta_i R_{Mt}$$

So, Abnormal Returns (AR) are the difference between the daily stock return and the daily market index return, which can be approximated by the S&P500 index at time t.

$$AR_{it} = R_{it} - [\alpha_i + \beta_i R_{Mt}]$$

In this equation α is the intercept and β is the slope of the characteristic line from the CAPM. This method is called Market Adjusted Returns. The second method presented by Santos & Victorio (2013) is not used since is considered, according to the authors, analogous and able to bring to the same result.

To study the AR in the Technogym case, for each of the five competitors chosen it was applied the Market Adjusted Returns method. So for each of them, a sample of more than 200 days was taken. For each days was registered the price at close of the stock and of the reference index. The index taken was chosen for its significance as a proxy of the market returns. For example of US firms the index chosen was the S&P500, for Amer Sport, which is listed on the Helsinki stock exchange, the OMX Helsinki GI was chosen, and for Johnson Health Tech, which is listed in the Taiwanese stock exchange, the index of reference was chosen. Those data were used to calculate α and β with a OLS model. Once these two numbers were calculated, they were used to calculate the AR for each firm, in a interval around the day of the event, which is considered to be May 3rd, the day of the listing of Technogym in the Milan Stock Exchange. For each competitor it can be displayed a significative negative tendency during the decided interval of time. Next step was calculating, for each day, the Average Abnormal Returns (AAR) in the following way:

$$AAR_t = \frac{1}{n}\sum_{i=1}^{n} AR_{it}$$

The significance on the AAR for each day is also tested with t-statistics in the following way:

$$t_{AR} = \frac{AAR_t}{\sigma_{AR}/\sqrt{n}}$$

Finally the cumulative abnormal returns (CAR) for the specific firm and the cumulative average abnormal returns (CAAR) for all the firms together are calculated as follows:

$$CAR_t = CAR_{t-1}AR_t$$

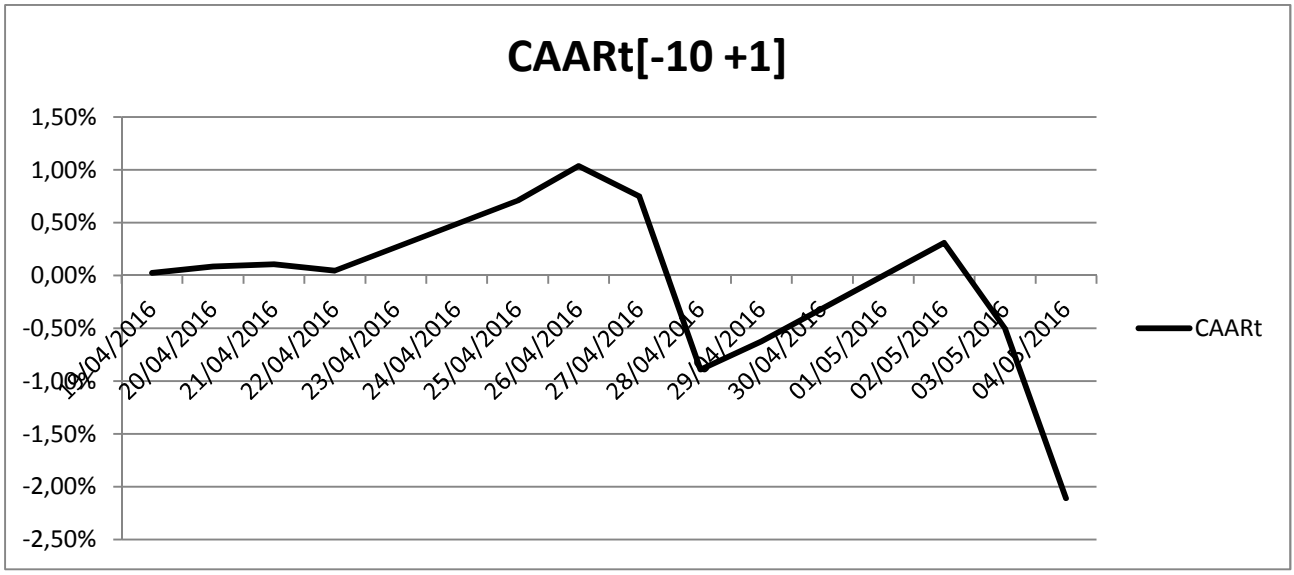
$$CAAR_t = CAAR_{t-1} + AAR_t$$

And tested with the t-statistic:

$$t_{CAR} = \frac{CAAR_t}{\sigma_{CAR}/\sqrt{n}}$$

A strongly negative tendency was displayed around the IPO event.

Exhibit 17 Technogym: CAAR



Numerical results at the end of the interval are the following:

Exhibit 18 Technogym: Cumulative Average Abnormal Returns

Date	CAR Brunswick	CAR Nautilus	CAR Amer	CAR Johnson	AAR_t	$CAAR_t$	test t	p value
04/05/2016	0,89%	-5,73%	-1,24%	-2,37%	-1,53%	-2,11%	-11,31	2,13E-07

Cumulative average abnormal returns are widely negative, and the test shows a strong significance.

Hsu et al. (2010) analyzed also a longer period of time, taking the prices between 10 days before at 10 days after the IPO. This interval was also analyzed in Technogym case, but results here are less clear. While for Brunswick and Amer Sport there is a significative negative relation, for Nautilus and Johnson Health Tech relation becomes positive. Going more deeply, for Nautilus there is a positive, exceptional peek on May 10th. It was due to the announcement of the approval by the Board of Directors of a 10 million dollars share repurchasing program. This is a exceptionally important news, that put a strong upward pressure on share price, since it is a very strong way of remunerating investors. The peak in stock price surely depends on the announcement and cover the effect of Technogym's IPO. Speaking about Johnson Health Tech, there is a slightly positive tendency during the IPO event. Since there are no particular news or announcements on these days, it is reasonable to think that the market reacted to the IPO of the competitor in a positive way after few days. This ambiguous situation emerges also from the results of Average Abnormal Returns at the end of the interval, which are slightly negative but not significant:

Exhibit 19: Average abnormal returns

Date	Brunswick	Nautilus	Amer	Johnson	AAR_t	t stat	p-value
17/05/2016	-0,52%	0,78%	-1,31%	0,20%	-0,21%	-0,67195	0,509300993

This interval was shown to be too big: it seems that after ten days from the IPO the market override the news of Technogym IPO. This seems plausible, since the competitors used here are very big global players, not only with their own market, but also highly diversified: it is reasonable to see a negative reaction around the event which remains just for few days. This is confirmed using a smaller interval: between ten days before and four days after the IPO event, CAAR remains negative:

Exhibit 20 Cumulative Average Abnormal Returns

Date	CAR Brunswick	CAR Nautilus	CAR Amer	CAR Johnson	AAR_t	$CAAR_t$	test t	p-value
09/05/2016	-1,26%	-4,25%	-0,89%	-0,81%	0,99%	-1,80%	-7,79	1,863E-06

In conclusion, the thesis of Hsu et al. (2010) is confirmed in this case: it is possible to notice a drop in competitors CAAR around the IPO event. This drop is particularly evident in the interval between 1o days before and 1 day after the IPO event, while, taking a ampler interval of time the tendency remains significantly negative. We were not able to confirm the thesis using the most ample interval used by Hsu et al. (2010) , were ARR were not significative. These results support the hypothesis that competitors suffer stock price drops around the completion of an IPO in their industry.

5.6. Technogym's Porter analysis

Before proceeding with firm valuation we will try to access its competitive positioning using the five forces' Porter analysis. This will be really helpful in accessing the risks and the sustainability of firm's performance.

Bargaining power of buyers

Technogym operates using three retail channel and a wholesale channel. Wholesale channel is formed by foreign distributors who intermediates with final users and professional operators. The retail channel are the following:

- field sales: Technogym's sale agents
- inside sales: online sales
- retail: point of sales directly owned and managed by Technogym

Turnover is generated by these four channels in the following proportion:

Exhibit 21 Technogym's turnover segmental analysis

	2015	2014	2013
Field sales	69%	70%	69,6%
Wholesale	22%	21,7%	22,6%
Inside sales	7,2%	6,3%	6%
Retail	1,8%	1,9%	1,9%

Sales agents not controlled by Technogym produce less than one fourth of revenues. This is a consistent percentage but still allows firm to maintain some bargaining power with them.

What has more significance is the important of key account clients, who are typically fitness center chains, hotel and wellness chains, medical centers and other multinational chains. The relationship with them is directly managed by Technogym with the dedicated key account managers, since those clients produce a great volume of turnover. In 2015 key account clients part of the "Club" segment produced 25,5% of Technogym's revenues. It is clear that they have an high bargaining power, because a possible missed renewal of contracts with them would consistently reduce firm's turnover.

Bargaining power of suppliers

Technogym products require different kind of raw materials, which include iron, plastic, steel and electronic components. Those materials account for almost 40% of operating result. So suppliers play a major role in firm profitability. Firm suppliers are widely diversified, and the 10 bigger suppliers accounted for 33% of raw materials in 2015, so the concentration does not look worrying. Some problems could still arise from a breaking of the commercial relation with them, that could be harmful, but not in an alarming way.

Rivalry among existing firms

Technogym operates in the market of fitness equipment and is one of the leader at the global level of this sector. This sector is characterized by an high level of competitiveness and by the presence of some major international competitors. In 2014 the seven biggest players accounted for 38% of market share, anyway the market is characterized by the presence of many small competitors operating and the local level or specialized in a more restricted segment. Taking into account this industry composition the rivalry is considered medium high

Threat of new entrants

The absence of strong legal barriers and the vivacity of consumer markets makes easy for new players to enter in the market. Anyway the possibility to such firms to grow and break through the business sector is unlikely, so threat is considered medium low.

Threat of substitute products

Overall the threat of products of services that could serve to customers for the athletic preparation and the physical rehabilitation is present and of medium significance. It is of extreme importance for Technogym to maintain high the level of interest in these products by the market.

The analysis is done also graphically with the following scale:

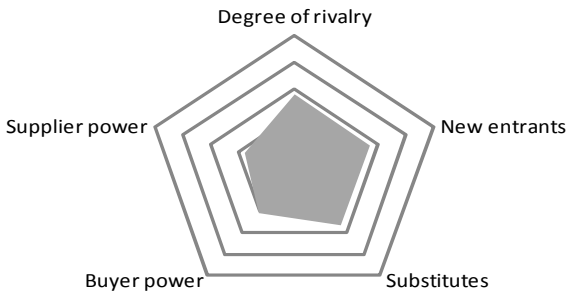
Exhibit 22: five forces impact

Score from	Score to	Meaning
0	1	Very Weak
1,1	2	Weak
2,1	2,4	Low medium
2,5	2,5	Medium
2,6	3	High medium
3,1	4	Strong
4,1	5	Very strong

The results of the five forces is the following:

Exhibit 23 Technogym: five forces analysis

Five forces	
Degree of rivalry	2,8
New entrants	2,7
Substitutes	2,7
Buyer power	2,1
Supplier power	1,8
Avg	2,4
FF impact	Low medium



The industry structure seems favorable, with only the threat of substitute product being lower than 2.5 .

5.7. Assessment of firm performance and sustainability through peer group analysis

Next step in firm valuation is the analysis of firm performance using a comparable firm. To find a suitable group of comparable firms we looked at major world competitors operating in the same industry sector: the production and distribution of training equipment. Inside this group we just picked up listed firms. This choice firstly depends on the availability of information: stock exchanges require to publish some information about the firm to reduce investors' information asymmetry. Secondly the choice depends on the homogeneity of listed firms in terms of possibility to raise capital and financing projects of growth. Moreover analysts coverage and auditing control is always present and ensures a level of trustfulness and homogeneity of information.

The peer group was formed taking into account industry composition: going more in detail it results that the industry is dominated by 5 major players that share the market globally. They are: Brunswick Inc, Nautilus Inc, Johnson Health Tech, Amer Sport and Technogym.

Brunswick Inc was founded in 1845 in Ohio. It is traded in the New York and Chicago stock exchanges and operates with 12600 employees all around the world. It operates in three segments of activity: Engine, Boat at Fitness, which contributes respectively to 50%, 31% and 19% of the turnover. The fitness segments produced 795 millions $ revenues in 2015. This category is comprehensive of cardio, strength, rehabilitation equipment together with the billiards tables and the game rooms products, of which Brunswick is the major producer in the US. In the fitness segment Brunswick operates with the following brands: Life *Fitness, Hammer Stregth, Cybex, SCIFIT, InMovement,* and *Brunswick Billiards*. Life Fitness, which today is the brand with the greater market share globally (12% of total sales), was founded 1977.

Nautilus sells cardio and strength equipment for home use through the brands *Bowflex, Nautilus, Schwinn* and *Universal*. It is particularly strong is selling directly to consumers through a strong brand identity built with strong marketing campaigns.Revenues in 2015 were $ 335 million.

Johnson Health Tech is a Taiwanese firm founded in 1975 and it is specialized in fitness equipment production (treadmills, exercise bikes, elliptical machines, rowing machines, step machines, massage armchairs and weight training machines). It is the major player in Asia. It operates with the brands *Johnson, Matrix, Vision, Horizon* and *Tempo*.

Amer Sport operates in the field of sporting goods, selling both to trade customers and directly to final users, balancing the presence in sporting goods chains and brand stores, factory outles and e-commerce. In 2015 sales were € 2,5 billion, distributed between the various brands: *Salomon, Wilson, Atomic, Arc'teryx, Mavic, Suunto, Precor, DeMarini, Louisville Slugger, ENVE Composites,*distributed between Outdoor, Ball Sports and Fitness. Outdoor segment in 2015 created turnover for € 1,5 billion, and entails fottwearn apparel, winter sports equipment, cycling and sports instruments. Ball Sports produced turnover for €647 million shared between individual ball sports and team sports. Fitness segment instead produced €357 million turnover.

To calculate the following ratios it was necessary to do a reclassification of the balance sheet and income statement of Technogym and of comparable firms. The details of the reclassification are presented in Appendix 1 and 2.

First step is looking at Technogym profitability compared to peer group: profitability followed a growing path in the last year, and it is much higher than competitors.

Exhibit 24 Technogym: profitability ratios

	TECHNOGYM			AMER SPORT			NAUTILUS			BRUNSWICK		
Profitability	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**
ROE	40%	85%	106%	12%	7%	14%	71%	19%	22%	138%	22%	20%
ROIC	12%	17%	42%	9%	6%	8%	1106%	157%	28%	87%	20%	22%
Premium over book capital	102%	102%	101%	130%	129%	132%	290%	125%	149%	142%	132%	135%
ROIC without goodwill	13%	17%	42%	11%	8%	11%	3208%	197%	42%	124%	26%	29%
Pretax ROIC	15%	41%	82%	16%	11%	20%	1053%	292%	63%	47%	37%	40%
Operating margin (ROS)	3%	7%	12%	7%	5%	8%	7%	11%	12%	8%	9%	8%
Revenues/invested capital	447%	570%	693%	222%	223%	246%	14649%	2660%	527%	555%	421%	478%
Net working capital/revenues	-1%	-1%	0%	24%	25%	22%	-9%	-4%	3%	3%	5%	6%
Operating fixed assets/revenues	21%	17%	15%	17%	17%	17%	10%	8%	16%	14%	13%	11%

Technogym's perspectives are also encouraging if we look at grow rates. Again Technogym performance is encouraging, with a compound annual grow rate of 11% in revenues and 23% in EBITDA. What is even more encouraging is that this growth in revenues is accompanied by a reduction in invested capital. More in detail, there is an increase in trade working capital, which is due to the increase in revenues, but a decrease in operating fixed capital: so also with a reduction of fixed capital revenues are increasing.

Exhibit 25 Technogym: growth rates

	TECHNOGYM				AMER SPORT				NAUTILUS				BRUNSWICK			
Growth rates	**2013**	**2014**	**2015**	***CAGR 13-15***	**2013**	**2014**	**2015**	***CAGR 13-15***	**2013**	**2014**	**2015**	***CAGR 13-15***	**2013**	**2014**	**2015**	***CAGR 13-15***
Revenues	0%	13%	10%	*11%*	4%	4%	14%	*11%*	13%	25%	22%	*32%*	5%	-1%	7%	*5%*
EBITDA	-35%	72%	35%	*23%*	10%	-19%	61%	*19%*	38%	80%	28%	*78%*	9%	4%	5%	*9%*
EBITA	-63%	137%	83%	*27%*	12%	-26%	79%	*21%*	49%	92%	34%	*95%*	12%	2%	3%	*9%*
NOPAT	-60%	18%	125%	*2%*	17%	-27%	37%	*8%*	346%	-58%	31%	*58%*	247%	-73%	6%	*0%*
IC	1%	-24%	8%	*-9%*	2%	5%	5%	*6%*	-82%	1760%	575%	*375%*	84%	-12%	6%	*30%*
IC excl goodwill	1%	-23%	8%	*-8%*	4%	4%	2%	*5%*	-132%	1654%	378%	***#####***	144%	-17%	7%	*48%*
Trade work cap	2%	28%	13%	*22%*	-1%	10%	7%	*8%*	-95%	152%	366%	*-25%*	9%	11%	3%	*12%*
Oper fixed capital	-6%	-14%	7%	*-7%*	0%	1%	29%	*14%*	1%	-4%	346%	*108%*	4%	-29%	12%	*-9%*

Management of working capital can be improved even if it is not worring. Nautilus seems more efficient in managing inventories and receivables, while Amer has a worse position in this these ratios.

Exhibit 26 Technogym: working capital ratios

	TECHNOGYM			AMER SPORT			NAUTILUS			BRUNSWICK		
Working Capital Management	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**
Working Cash	4	4	4	4	4	4	4	4	4	4	4	4
Receivables	65	59	60	88	89	81	26	35	49	34	37	35
Inventories	48	49	43	61	68	69	12	33	46	56	62	61
Suppliers	83	73	67	37	39	40	(62)	(63)	(67)	(30)	(30)	(30)
Trade working cap	34	39	40	115	121	115	(20)	8	32	65	72	70

Concerning the financial structure, comparables firms resulted to have some excess cash that made the net financial position negative, so of an extreme low level. Notwithstanding this benchmark, Technogym position appears good: in the last years there was a strong improvement in leverage, due to a reduction of net financial position.

Exhibit 27 Technogym: Financial structure

	TECHNOGYM			AMER SPORT			NAUTILUS			BRUNSWICK		
Financial Struct	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**
NFP/Equity	24,0	6,1	0,8	0,6	0,5	0,5	(0,7)	(0,6)	0,2	0,1	(0,1)	(0,1)
NFP/EBITA	6,3	1,9	0,6	3,1	4,0	2,4	(4,1)	(2,3)	0,6	0,4	(0,2)	(0,5)
NFP/EBITDA	2,6	1,1	0,5	2,5	2,9	1,9	(3,4)	(2,0)	0,5	0,3	(0,2)	(0,4)

The debt coverage improved a lot in the last year, surpassing most of the competitors, and the ratio concerning FCF from operation over NFP is particularly good. This makes evident that not only debt position improved a lot, but also ability to repay debt is very good, with an excellent ability to pay debt cost and at the same time remunerating investors. This can be shown from EBIT/interest ratio: the margin remained after having paid all operating costs and

having considered also the cost of replacement of operating assets allow to cover the interest on debt 47,1 times.

Exhibit 28 Technogym: coverage ratios

	TECHNOGYM			AMER SPORT			NAUTILUS			BRUNSWICK		
Coverage	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**
EBIT/interest	3	9	47	5	3	5	437	1206	1831	4	12	13
EBITA/interest	5	10	49	5	3	5	437	1206	1831	4	12	14
EBITDA/interest	11	19	64	7	4	7	529	1367	1986	5	14	17
Cash for inv/NFP	10%	43%	60%	15%	7%	4%	-34%	-9%	-359%	13%	106%	160%
FCFO/NFP	11%	55%	63%	9%	1%	-2%	-84%	4%	-508%	15%	7%	4%

In conclusion of this analysis we can assert that firm profitability is encouraging, both in term of return on invest capital and also in term of return on equity. Grow rates are increasing and well positioned compared to competitors. Working capital management is efficient, even in there is space for improvements. Considering financial structure, it is hard to make a comparison with competitors, because many of them has excess cash, anyway debt appears sustainable, also because there was a debt reduction in the last period. Taking this into consideration the debt coverage does not present any kind of problem.

5.8. IPO valuation through multiples

In this part of the chapter we will try to investigate firm value using multiple analysis. The case analysis of multiples start with the use of the traditional ratios widely applied in the market, so P/E and M/B ratios (price and exchange rate at August 5th 2016).

Exhibit 29 Technogym: P/E and P/BV ratios

Company Name	Price Last close	P/BV last available	P/E 15	P/E 16
Brunswick	44,8	3,5	14,3	12,5
Amer Sport	26,7	3,3	20,4	17,5
Johnson Healt Tech	1,4	1,6	11,8	10,0
Nautilus	18,9	5,1	18,3	15,6
Avg		**3,38x**	**16,20x**	**13,88x**
Avg Adj		**3,40x**	**16,28x**	**14,03x**
Median		**3,40x**	**16,28x**	**14,03x**

It actually results that variability across peer group is lower using earnings estimates, as Koller et al (2015) mentioned. Using P/E ratio to value Technogym leads to the following result:

Exhibit 30 Technogym: valuation using P/E ratio

€ million	2015	2016
Earnings	28.168,0	48.709,5
PE multiple*	16,3x	14,0x
Equity Value	**458.685,6**	**683.240,1**
Number of share outstanding (million)	200.000,0	200.000,0
Value per share (€)	**2,29**	**3,42**

*Median of comparable companies

This result is influenced by the financial position of competitors, which varies a lot between the firms.

Exhibit 31 Technogym: valuation using P/E multiple for each competitor

Company Name	NFP last available	P/E 15	Value per share	P/E 16	Value per share
Brunswick	-172,38	14,27	2,01	12,48	3,04
Amer Sport	585,00	20,44	2,88	17,49	4,26
Johnson Healt Tech	86,81	11,79	1,66	9,99	2,43
Nautilus	19,85	18,29	2,58	15,57	3,79

Let's go further in the analysis using a measure that eliminates distorting effect of different capital structure.

Exhibit 32 Technogym: valuation using EV/S multiple

€ million	2015	2016
Sales	511.102,0	542.305,9
EV/S multiple*	1,28x	1,19x
Value of operations	**655.277,9**	**642.843,1**
Non-operating assets	6.193,0	6.193,0
Enterprise Value	**661.470,9**	**649.036,1**
Net financial position and debt equivalents	39.884,0	36.186,0
Minority interest	433,0	400,0
Equity Value	**621.153,9**	**612.450,1**
Number of share outstanding (million)	200.000,0	200.000,0
Value per share (€)	**3,11**	**3,06**

*Average of comparable companies (restricted sample)

The use of enterprise value instead of price avoid the influence of the different capital structure of firms in the peer group, so the valuation is improved. At the same time the use of sales, even if it is a good approximation of the ability of the firm of producing cash flow for

investors, doesn't account for the operating costs, neither the investments in operating capital. It is better to look for a more representative measure.

Exhibit 33 Technogym: valuation using EBITDA multiple

€ million	2015	2016
EBITDA	80.029,0	91.447,6
EBITDA multiple*	10,6x	9,4x
Value of operations	**848.156,2**	**861.764,8**
Non-operating assets	6.193,0	6.193,0
Enterprise Value	**854.349,2**	**867.957,8**
Net financial position and debt equivalents	39.884,0	36.186,0
Minority interest	433,0	400,0
Equity Value	**814.032,2**	**831.371,8**
Number of share outstanding (million)	200.000,0	200.000,0
Value per share (€)	**4,07**	**4,16**

*Average of comparable companies (restricted sample)

Exhibit 34 Technogym: valuation using EBIT multiple

€ million	2015	2016
EBIT	57.430,0	63.746,1
EBIT multiple*	13,6x	11,6x
Value of operations	**778.750,0**	**741.162,3**
Non-operating assets	6.193,0	6.193,0
Enterprise Value	**784.943,0**	**747.355,3**
Net financial position and debt equivalents	39.884,0	36.186,0
Minority interest	433,0	400,0
Equity Value	**744.625,9**	**710.769,2**
Number of share outstanding (million)	200.000,0	200.000,0
Value per share (€)	**3,72**	**3,55**

*Average of comparable companies (restricted sample)

As already explained in the previous chapter, EBITDA doesn't account for the investments in operating assets, while EBIT could contain some double counting for investments in customers lists and brand knowledge. A more precise measure could be the use of the OLS regression to estimate the multiple instead of using the average from the peer group.

Exhibit 35 Technogym: valuation using EV/Sales muliple calculated through regression

€ million	**2015**
Sales	511.102,0
EV/S multiple*	1,77x
Value of operations	**904.725,3**
Non-operating assets	6.193,0
Enterprise Value	**910.918,3**
Net financial position and debt equivalents	39.884,0
Minority interest	433,0
Equity Value	**870.601,3**
Number of share outstanding (million)	200.000,0
Value per share (€)	**4,4**

*Calculated through regression

Exhibit 36 Technogym: valuation using EBITDA multiple calculated through regression

€ million	**2015**
EBITDA	80.029,0
EBITDA multiple*	9,4x
Value of operations	**753.484,5**
Non-operating assets	6.193,0
Enterprise Value	**759.677,5**
Net financial position and debt equivalents	39.884,0
Minority interest	433,0
Equity Value	**719.360,5**
Number of share outstanding (million)	200.000,0
Value per share (euros)	**3,6**

*Calculated through regression

For a more accurate valuation we will try to estimate EV/NOPLAT and EV/EBITA ratio. Since to determine NOPLAT some calculation is needed, starting from the financial review, we have to exclude Johnson Health Tech from the calculation, because its balance sheet is publicly available only in Mandarin language.

Exhibit 37 Technogym: valuation using EV/NOPLAT multiple

€ million	**2015**
NOPLAT	50.098,1
EV/NOPLAT	28,0x
Value of operations	**1.400.774,3**
Non-operating assets	6.193,0
Enterprise Value	**1.406.967,3**
Net financial position and debt equivalents	39.884,0
Minority interest	433,0
Equity Value	**1.366.650,3**
Number of share outstanding (million)	200.000,0
Value per share (euros)	**6,8**

*Average of comparable companies (restricted sample)

Exhibit 38 Technogym: valuation using EV/EBITA multiple

€ million	**2015**
EBITA	60.722,0
EV/EBITA	17,4x
Value of operations	**1.056.771,9**
Non-operating assets	6.193,0
Enterprise Value	**1.062.964,9**
Net financial position and debt equivalents	39.884,0
Minority interest	433,0
Equity Value	**1.022.647,9**
Number of share outstanding (million)	200.000,0
Value per share (euros)	**5,1**

*Average of comparable companies (restricted sample)

What emerges from valuation through multiples is a great variability in the range of value per share. Moreover in this case the usefulness of peer group is limited: many firms operating in the same market of Technogym are widely diversified, and produce also other kind of sports related equipment like sportive shoes and clothing, tennis equipment, billiards tables, boats engines. This changes a lot the market dynamics of these firms and the risk factors, considering that they are more diversified. For what concerns the two other comparable firms which operate only in the sport equipment sector, Nautilus and Johnson Health Tech.

5.9. DCF and economic profit methods

In this part of the chapter the Discounted Cash Flow method and the Economic Profit method will be used to estimate more precisely value per share.

The valuation started with revenues estimation, which was done taking into consideration the possibility of growth for the next five years. This growth was calculated considering the market positioning of Technogym product, threat's from competitors and firm's strengths.

Exhibit 39 Technogym: assumption on Revenues in percentages

	2013	2014	2015	2016	2017	2018	2019	2020	CAGR 15-20
Assumption on revenues									
Italy	0,00%	12,0%	1,3%	2,3%	2,2%	2,1%	2,1%	2,1%	2,2%
EU	0,00%	11,7%	17,6%	12,5%	13,0%	12,0%	10,0%	9,0%	11,3%
Extra EU	-0,33%	15,6%	2,4%	5,0%	5,2%	5,4%	5,6%	6,0%	5,4%
Total revenues	-0,13%	13,22%	9,97%	8,8%	9,3%	8,9%	8,0%	7,5%	**8,5%**

Exhibit 40 Technogym: assumptions on Revenues in € million

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Assumption on revenues										
Italy	46,1	39,9	39,9	44,6	45,2	46,3	47,3	48,3	49,3	50,3
EU	189,4	210,2	210,2	234,8	276,1	310,6	351,0	393,1	432,4	471,3
Extra EU	154,7	161,5	160,9	186,0	190,5	200,0	210,4	221,8	234,2	248,2
Total revenues	**390,1**	**411,6**	**411,0**	**465,4**	**511,8**	**556,9**	**608,7**	**663,1**	**715,9**	**769,9**

Personnel costs and other operating costs were estimated with OLS regression starting from their percentage on sales.

Exhibit 41 Technogym: assumptions on Personnel Costs

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Assumptions on personnel costs										
Personnel expens	-81,2	-85,5	-84,4	-91,6	-104,0	-109,9	-118,3	-126,8	-134,6	-142,4
% on sales	20,8%	20,8%	20,5%	19,7%	20,3%	19,7%	19,4%	19,1%	18,8%	18,5%
Pendence					(0,00)					
Intercept					0,23					
RQ					39,9%					

Exhibit 42 Technogym: regression of Personnel Costs

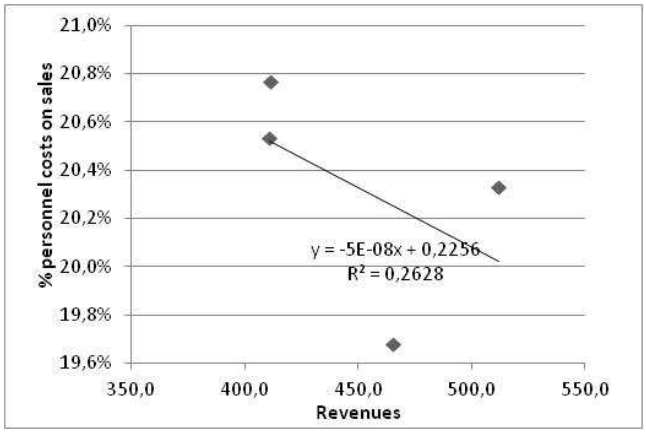
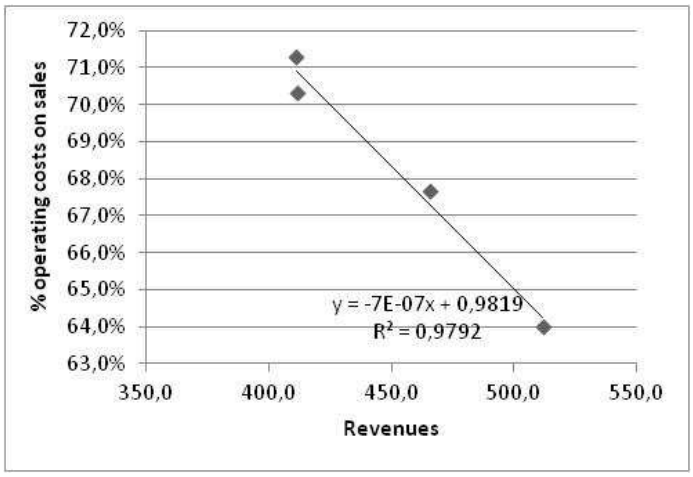


Exhibit 43 Technogym: assumptions of Operating Costs

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Operating cost (personnel and D&A excluded)										
Operating cost	-265,5	-289,4	-293,1	-315,0	-327,7	-349,9	-368,0	-384,4	-397,7	-408,7
% on sales	68,0%	70,3%	71,3%	67,7%	64,0%	62,8%	60,5%	58,0%	55,6%	53,1%
Pendence					(0,000)					
Intercept					0,883					
RQ					65,4%					

Exhibit 44 Technogym: regression of Operating Costs



Depreciation and amortization were considered as a portion of fixed capital.

Exhibit 45 Technogym: assumptions on Depreciation and Amortization

Assumptions on Deprec & Amortiz	2012	2013	2014	2015	2016	2017	2018	2019	2020
D&A of operating fixed capital	15,3	20,6	26,3	19,3	20,3	23,0	25,9	27,8	30,0
Operating fixed capital (Jan 1st)	73,1	90,6	84,8	72,6	77,9	88,3	95,8	103,1	111,0
Depreciation on operating fixed capital	20,9%	22,8%	31,0%	26,6%	26,0%	26,0%	27,0%	27,0%	27,0%
Depreciation on sales	3,7%	5,0%	5,6%	3,77%	3,64%	3,77%	3,90%	3,89%	3,89%

Trade working capital was estimated starting from ratios of previous years, with some adaptation:

Exhibit 46 Technogym: assumptions on Trade Working Capital

Assumptions on Trade Working	2012	2013	2014	2015	2016	2017	2018	2019	2020
Working cash	4,1	4,1	4,7	5,1	5,6	6,1	6,6	7,2	7,7
Working cash on sales	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%	1,0%
Trade receivables	61,5	73,0	75,5	84,1	91,5	101,7	110,8	119,6	130,8
Days in revenues	55	65	59	60	60	61	61	61	62
Inventories	60,6	54,5	62,2	60,4	65,6	71,7	78,1	82,4	88,6
Days in revenues	54	48	49	43	43	43	43	42	42
Trade payable	-88,6	-93,1	-93,2	-93,9	-102,3	-111,8	-123,5	-133,4	-143,4
Days in revenues	79	83	73	67	67	67	68	68	68
Trade working capital	37,6	38,5	49,2	55,7	60,4	67,7	72,0	75,8	83,6
Trade work capital on sales	9,1%	9,4%	10,6%	10,9%	10,8%	11,1%	10,9%	10,6%	10,9%

Those estimations were used to calculate forecast the balance sheet and the income statement.

Exhibit 47 Technogym: forecasted balance sheet

€ million	2015	2016	2017	2018	2019	2020
Working cash*	5,1	5,6	6,1	6,6	7,2	7,7
Trade receivables	84,1	91,5	101,7	110,8	119,6	130,8
Inventories	60,4	65,6	71,7	78,1	82,4	88,6
Trade payable	-93,9	-102,3	-111,8	-123,5	-133,4	-143,4
Trade working capital	**55,7**	**60,4**	**67,7**	**72,0**	**75,8**	**83,6**
Other current assets and liabilities	-50,6	-50,6	-50,7	-50,7	-50,7	-50,7
Net working capital	**5,1**	**9,8**	**17,0**	**21,3**	**25,1**	**32,9**
Total operating fixed capital	**77,9**	**88,3**	**95,8**	**103,1**	**111,0**	**119,5**
Total other non-current operating assets and liabilities	**-6,4**	**2,5**	**2,5**	**2,5**	**2,5**	**2,5**
Invested capital excluding goodwill and similar intangil	**76,6**	**100,6**	**115,2**	**126,9**	**138,6**	**155,0**
Goodwill and other similar intangibles	0,5	0,3	0,1	0,0	-0,2	-0,4
Invested capital including goodwill and similar intangil	**77,1**	**100,9**	**115,4**	**126,9**	**138,4**	**154,6**
Non-operating assets	6,2	6,2	6,2	6,2	6,2	6,2
Total funds invested	**83,3**	**107,1**	**121,6**	**133,0**	**144,6**	**160,8**
Net financial position	**36,8**	**38,1**	**-12,9**	**-87,8**	**-187,9**	**-307,5**
Debt equivalents	**3,1**	**3,1**	**3,1**	**3,1**	**3,1**	**3,1**
Net financial position and debt equivalents	**39,9**	**41,2**	**-9,8**	**-84,7**	**-184,8**	**-304,4**
Minority interests	**0,4**	**0,4**	**0,4**	**0,5**	**0,5**	**0,5**
Shareholders' equity	**43,0**	**65,5**	**131,0**	**217,2**	**328,9**	**464,7**
Total source of financing	**83,3**	**107,1**	**121,6**	**133,0**	**144,6**	**160,8**

The income statement is presented in a format that distinguish between funds invested and source of financing. This allows to make evident the Invested Capital, which is the starting point of calculation for DCF and EP.

Exhibit 48 Technogym: forecasted income statement

€ million	2015	2016	2017	2018	2019	2020
Revenues	**511,1**	**556,9**	**608,7**	**663,1**	**715,9**	**769,9**
Other income	0,7	1,0	1,1	1,2	1,2	1,3
Change in inventories	0,0	0,0	0,0	0,0	0,0	0,0
Raw materials, consumables and goods	-183,4	-195,8	-205,9	-215,1	-222,5	-228,7
Other operating costs	-4,9	-5,2	-5,5	-5,7	-5,9	-6,1
Service and disposal of assets	-139,5	-148,9	-156,6	-163,6	-169,3	-173,9
Operating costs	**-327,7**	**-349,9**	**-368,0**	**-384,4**	**-397,7**	**-408,7**
Personnel expenses	-104,0	-109,9	-118,3	-126,8	-134,6	-142,4
EBITDA	**80,0**	**98,1**	**123,4**	**153,1**	**184,7**	**220,1**
Depreciation	-10,6	-11,2	-12,6	-14,2	-15,3	-16,5
Amortization of operating intangibles	-8,7	-9,1	-10,3	-11,6	-12,5	-13,5
Total D&A	-19,3	-20,3	-23,0	-25,9	-27,8	-30,0
EBITA	**60,7**	**77,8**	**100,5**	**127,3**	**156,9**	**190,1**
Amortization of assets similar to goodwill	-0,2	-0,2	-0,2	-0,2	-0,2	-0,2
Receivables write-offs	0,0	-0,5	100,3	127,1	156,7	189,9
Impairments of assets	-0,5	0,0	0,0	0,0	0,0	0,0
Provision costs for contingencies and charg	-2,6	-6,0	-6,0	-6,0	-6,0	-6,0
EBIT	**57,4**	**71,1**	**194,7**	**248,2**	**307,4**	**373,9**
Share of joint venture result	1,0	1,8	1,8	1,9	1,9	1,9
Interest income (expense) from investments	-0,9	-1,0	-1,0	-1,3	-1,3	-1,5
Exchange rate (losses) gains	-1,3	-1,0	-0,9	-0,9	-0,9	-1,1
Financial (expense) income	-1,2	-1,1	-0,4	0,5	1,4	1,9
Net financial result	*-2,6*	-2,1	-1,3	-0,4	0,5	0,8
EBT	**55,0**	**69,8**	**194,2**	**248,4**	**308,5**	**375,1**
Taxes	-26,6	-24,4	-62,1	-74,5	-83,3	-101,3
Group Net Income	**28,4**	**45,3**	**132,0**	**173,9**	**225,2**	**273,8**
Minority result	-0,2	-0,3	-1,1	-1,4	-1,8	-2,2
Net Income	**28,17**	**45,0**	**131,0**	**172,5**	**223,4**	**271,6**

Income statement makes evident the various margins. This format is very useful because it makes possible to calculate the NOPLAT (Net Operating Profit Less Adjusted Taxes). The starting point to calculate it is the EBITA (Earnings Before Interest, Taxes, Amortization). This is used instead of EBITDA to take into account the use of operating assets to produce the revenues, moreover EBITA is preferable to EBIT because it avoid some double counting ofdepreciation of intangible assets such as brands, which are expensed and not capitalized.

To calculate NOPLAT the operating taxes are subtracted to EBITA. Operating taxes differ from taxes in the income statement because they do not suffer the effect of non operating and extraordinary items.

Exhibit 49 Technogym: operating taxes calculation

	2015	2016	2017	2018	2019	2020
EBT	55,0	69,8	194,2	248,4	308,5	375,1
Income taxes	-26,6	-24,4	-62,1	-74,5	-83,3	-101,3
Actual (blended global) tax rate	**48,4%**	**35,0%**	**32,0%**	**30,0%**	**27,0%**	**27,0%**
Adjustments:						
Amortization of assets similar to goodwill	-0,2	-0,2	-0,2	-0,2	-0,2	-0,2
Estimated tax rate	31,4%	31,4%	31,4%	31,4%	31,4%	31,4%
Taxes	0,1	0,1	0,1	0,1	0,1	0,1
Receivables write-offs	0,0	-0,5	100,3	127,1	156,7	189,9
Estimated tax rate	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Taxes	0,0	0,0	0,0	0,0	0,0	0,0
Impairments of assets	(544,0)	0,0	0,0	0,0	0,0	0,0
Estimated tax rate	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Taxes	0,0	0,0	0,0	0,0	0,0	0,0
Provision costs for contingencies and charges	-2,6	-6,0	-6,0	-6,0	-6,0	-6,0
Estimated tax rate	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Taxes	0,0	0,0	0,0	0,0	0,0	0,0
Share of joint venture result	1,0	1,8	1,8	1,9	1,9	1,9
Estimated tax rate	31,4%	31,4%	31,4%	31,4%	31,4%	31,4%
Taxes	-0,3	-0,5	-0,6	-0,6	-0,6	-0,6
Interest income (expense) from investments	-0,9	-1,0	-1,0	-1,3	-1,3	-1,5
Estimated tax rate	31,4%	31,4%	31,4%	31,4%	31,4%	31,4%
Taxes	0,3	0,3	0,3	0,4	0,4	0,5
Net financial result	-2,6	-2,1	-1,3	-0,4	0,5	0,8
Estimated tax rate	27,5%	27,5%	27,5%	27,5%	27,5%	27,5%
Taxes	0,7	0,6	0,4	0,1	-0,1	-0,2
Estimated taxes on EBITA	-27,3	-24,8	-62,3	-74,5	-83,0	-101,0
EBITA	60,7	77,8	100,5	127,3	156,9	190,1
Estimated tax rate on EBITA	**45,0%**	**31,9%**	**62,0%**	**58,5%**	**52,9%**	**53,1%**
Taxes on EBITA	(27.343)	(24.818)	(62.290)	(74.501)	(83.022)	(100.978)
Adjustments on taxes	724	401	153	(11)	(267)	(287)
Taxes on EBT	(26.619)	(24.416)	(62.137)	(74.511)	(83.289)	(101.264)

Exhibit 50 Technogym: NOPLAT calculation

€ million	2015	2016	2017	2018	2019	2020
EBITA	**60,7**	**77,8**	**100,5**	**127,3**	**156,9**	**190,1**
Operating taxes	-27,3	-24,8	-62,3	-74,5	-83,0	-101,0
NOPLAT	**33,4**	**53,0**	**38,2**	**52,8**	**73,8**	**89,1**

NOPLAT is the starting point to calculate Free Cash Flow from operations.

Exhibit 51 Technogym: Free Cash Flow from operations calculation

€ million	2015	2016	2017	2018	2019	2020
NOPLAT	**33,4**	**53,0**	**38,2**	**52,8**	**73,8**	**89,1**
Amortization of operating intangibles	8,7	9,1	10,3	11,6	12,5	13,5
Depreciation	10,6	11,2	12,6	14,2	15,3	16,5
Gross cash flow	**52,7**	**73,2**	**61,2**	**78,6**	**101,7**	**119,1**
Change in operating working capital	-9,0	-4,7	-7,2	-4,3	-3,8	-7,8
Net capital expenditures	-24,6	-30,6	-30,4	-33,2	-35,8	-38,5
Change in other operating assets and liabilities	8,6	-8,9	0,0	0,0	0,0	0,0
Gross investment	**-25,0**	**-44,2**	**-37,6**	**-37,5**	**-39,6**	**-46,3**
Free cash flow before goodwill and similar	**27,7**	**29,0**	**23,5**	**41,1**	**62,1**	**72,8**
Investments in goodwill and other intangibles	0,0	0,0	0,0	0,0	0,0	0,0
Free cash flow after goodwill and similar	**27,7**	**29,0**	**23,5**	**41,1**	**62,1**	**72,8**

To triangulate results also cash available to investors is calculated, which, together with the net financial result, change in minority interest and in shareholder's equity, determines the change in net financial position for the year.

Exhibit 52 Technogym: change in NFP

€ million	2015	2016	2017	2018	2019	2020
Investments in non-operating assets	-1,2	0,0	0,0	0,0	0,0	0,0
Receivables write-offs	0,0	-0,5	100,3	127,1	156,7	189,9
Impairments of assets	-0,5	0,0	0,0	0,0	0,0	0,0
Provision costs for contingencies and charges	-2,6	-6,0	-6,0	-6,0	-6,0	-6,0
Share of joint venture result	1,0	1,8	1,8	1,9	1,9	1,9
Interest income (expense) from investments	-0,9	-1,0	-1,0	-1,3	-1,3	-1,5
Non-operating taxes	0,7	0,4	0,2	0,0	-0,3	-0,3
Change in debt equivalents	-0,2	0,0	0,0	0,0	0,0	0,0
Non-operating cash flow	**-3,7**	**-5,3**	**95,3**	**121,6**	**151,0**	**184,1**
Cash available to investors	**24,0**	**23,7**	**118,8**	**162,8**	**213,1**	**256,8**
Net financial result	-2,6	-2,1	-1,3	-0,4	0,5	0,8
Change in minority interests	0,0	-0,4	-1,1	-1,3	-1,8	-2,2
Change in shareholders' equity	4,8	-22,5	-65,5	-86,2	-111,7	-135,8
Change in net financial position	**26,2**	**-1,3**	**51,0**	**74,9**	**100,1**	**119,6**
Beginning net financial position	**63,0**	**36,8**	**38,1**	**-12,9**	**-87,8**	**-187,9**
Ending net financial position	36,8	38,1	-12,9	-87,8	-187,9	-307,5

Next step is the calculation of Weighted Average Cost of Capital (WACC), which is the weighted average cost of capital and average after tax cost of debt:

$$WACC = \frac{D}{EV} k_d (1 - T_m) + \frac{E}{EV} k_e$$

Value of debt (D) correspond to the last net financial position available (€39,9 million), while value of equity is calculated as market price*number of shares outstanding. This was calculated at May 7th: 200000*€3,8=€760 million.

Cost of debt (k_D) was calculated estimating debt rating first. Debt rating depends on leverage and coverage of the firm, synthesized by the following ratios:

Exhibit 53 Technogym: leverage and coverage ratios

Financial Structure	2012	2013	2014	2015
NFP/Equity	17,5	24,0	6,1	0,8
NFP/EBITA	2,3	6,3	1,9	0,6
NFP/EBITDA	1,7	2,6	1,1	0,5

Coverage	2012	2013	2014	2015
EBIT/interest	12,8	2,5	8,8	47,1
EBITA/interest	15,4	4,5	10,4	48,9
EBITDA/interest	21,7	11,2	18,6	64,4
Cash available for investors/NFP	-13%	10%	43%	60%
FCF from operation/NFP	-8%	11%	55%	63%

These ratios are indicative of the financial stability of the firm and of the sustainability of the debt. Since rating is an approximation of risk it is also the starting point for the cost of debt.

Three ratios were weighted to calculate a synthetic rating.

Exhibit 54 Technogym: key financial ratios and rating

Debt/EBITDA			EBITA/Interest expense			FCF/Debt		
from	to	Rating	from	to	Rating	from	to	Rating
0,0	0,4	AAA	12,5	100,0	AAA	154,6%	1000,0%	AAA
0,4	1,0	AA	9,5	12,5	AA	42,5%	154,6%	AA
1,0	1,5	A	4,5	9,5	A	30,9%	42,5%	A
1,5	2,3	BBB	4,0	4,5	BBB	14,1%	30,9%	BBB
2,3	3,0	BB	3,0	4,0	BB	7,8%	14,1%	BB
3,0	5,4	B	2,0	3,0	B	2,1%	7,8%	B
5,4	100,0	C-CCC	0,0	2,0	C-CCC	0,0%	2,1%	C-CCC
Technogym case:								
2015	0,5	AA		48,9	AAA		62,3%	AA
Score		0,75			0,25			0,75
Weight		33%			33%			33%
Weighted score		0,58						
Rating		AA						

Score			Synthetic
from	to	Rating	score
0,0	0,5	AAA	0,25
0,5	1,0	AA	0,75
1,0	1,5	A	1,25
1,5	2,5	BBB	2,00
2,5	3,5	BB	3,00
3,5	4,5	B	4,00
4,5	5,0	C-CCC	4,75

Rating	Spread	Beta Debt
AAA	0,65%	0,05
AA	1,15%	0,07
A	1,40%	0,10
BBB	2,50%	0,14
BB	4,25%	0,28
B	5,50%	0,40
C-CCC	8,75%	0,80

Source: Damodaran (2014)

Using Damodaran (2014) conversion table, to the rating were associated a specific rating

spread. Cost of debt is the sum of the risk free rate and of the debt spread. As risk-free rate proxy was used the return of theIRS in a length of 10 years, which was 0,57% on May.

Exhibit 55 Technogym: cost of debt calculation

Debt rating	AA
Debt spread***	1,15%
Risk free rate*	0,57%
Cost of debt (K_d)	**1,72%**

Once the calculation of cost of debt is completed, it is time to calculate cost of equity. Using the CAPM it is calculated as follows:

$$E[R_i] = r_f + \beta_i(E[R_m] - r_f)$$

Risk free rate used remains the same explained before. Anyway it was added the country risk premium to take into consideration the risk of the different countries where the firm is operating. Damoradan last updated estimation of country risk premium was used, and this was weighted for the sales of Technogym in the various part of the globle, as follows.

Exhibit 56 Technogym: Country risk premium calculation

	CRP	SALES 2015 %	CRP*SALES
Europe (Italy excluded)	1,49%	53,90%	0,80%
APAC (Asia and Pacific)	3,70%	13,50%	0,50%
North America (Usa, Canada)	0,00%	10,60%	0,00%
Italy	2,93%	8,80%	0,26%
MEIA (Middle East, India, Afr	5,13%	9,70%	0,50%
LATAM Latin America	5,74%	3,40%	0,20%
Group (Total)		**100%**	**1,56%**

The total country risk premium was 1,56%. To calculate market risk premium ($E[R_m] - r_f$) Damodaran last updated calculation was used, and it was 6,25%. Finally the beta was calculated. Since to calculate beta using OLS regression was not accurate in this case, because observations available were of a short period of time (Technogym went public just few months ago), the beta of comparable firms were used. More precisely, from beta equity of comparables, the unlevered beta was calculated. Since the level of debt is low, I assumed that beta debt is zero, to simplify calculation. Then the mean of competitors were used as proxy of industry unlevered beta. This was then used to calculated Technogym's beta equity.

Exhibit 57 Technogym: Unlevered beta calculation through comparables

	beta equity	D/E	1+ D/E	beta unlevered
Brunswick	1,89	-0,15	0,85	2,22
Nautilus	2,01	0,17	1,17	1,71
Johnson Health	1,51	0,32	1,32	1,14
Amer Sport	0,67	0,62	1,62	0,41
Mean				1,37
Mean Adj				1,43
Median				1,43

$\beta_e = \beta_u \left(1 + \frac{D}{E}\right)$= 1,37*(1+5%)=1,44

The calculation led to the following cost of debt:

k_e= 0,57%+1,60%+(6,25%x1,44)=11,20%

Debt tax rate used was 27,5%. So the WACC in the end was the following:

$WACC = \frac{D}{EV} k_d(1 - T_m) + \frac{E}{EV} k_e$ = [5% ∗1,72%*(1-27,5%)]+[95%*11,20%]=10,77%

Now all the data need to calculate Economic Profit are available. Firstly we calculate ROIC as $NOPLAT_t$/Invested $Capital_{t-1}$. Then we calculated the spread between ROIC and WACC. The economic profit is Invested $Capital_t$ x Spread.

Exhibit 58 Technogym: Economic Profit calculation

€ million	2015	2016	2017	2018	2019	2020
Before goodwill						
ROIC		69,1%	38,0%	45,8%	58,2%	64,3%
WACC		10,7%	10,7%	10,7%	10,7%	10,7%
Spread		58,4%	27,3%	35,1%	47,5%	53,6%
Invested capital	76,6	100,6	115,2	126,9	138,6	155,0
Economic profit		44,8	27,4	40,4	60,3	74,3
NOPLAT	**33,4**	**53,0**	**38,2**	**52,8**	**73,8**	**89,1**
Capital charge		-8,2	-10,8	-12,3	-13,6	-14,8
Economic profit		**44,8**	**27,4**	**40,4**	**60,3**	**74,3**
After goodwill						
ROIC		68,7%	37,9%	45,7%	58,2%	64,4%
WACC		10,7%	10,7%	10,7%	10,7%	10,7%
Spread		58,0%	27,2%	35,0%	47,5%	53,7%
Invested capital	77,1	100,9	115,4	126,9	138,4	154,6
Economic profit		44,7	27,4	40,4	60,3	74,3
NOPLAT	**33,4**	**53,0**	**38,2**	**52,8**	**73,8**	**89,1**
Capital charge		-8,2	-10,8	-12,3	-13,6	-14,8
Economic profit		**44,7**	**27,4**	**40,4**	**60,3**	**74,3**

Enterprise value is then calculated:

Exhibit 59 Technogym: Enterprise Value calculation using EP method

€ million	2015	2016	2017	2018	2019	2020	Base for CV
Economic profit		44,8	27,4	40,4	60,3	74,3	74,3
WACC		10,7%	10,7%	10,7%	10,7%	10,7%	
Discount Factor		0,90	0,82	0,74	0,67	0,60	
Present value of EP		40,5	22,4	29,8	40,1	44,7	
Present value of EP2014-2018	177,5						
Continuing value of EP	513,9					854,4	
Total economic value added	691,4						
Invested capital	76,6						
Value of operations	768,1						

Now also the calculation through Discounted Cash Flow is also possible.

Exhibit 60 Technogym: Enterprise Value calculation using DCF

€ million	2015	2016	2017	2018	2019	2020	Base for CV
NOPLAT		53,0	38,2	52,8	73,8	89,1	90,9
Change in invested capital		-24,0	-14,7	-11,6	-11,7	-16,3	-3,1
Free cash flow		29,0	23,5	41,1	62,1	72,8	87,8
WACC		10,7%	10,7%	10,7%	10,7%	10,7%	
Discount Factor		0,90	0,82	0,74	0,67	0,60	
Present value of FCF		26,2	19,2	30,3	41,4	43,8	
Present value of $FCF_{2014-2018}$	160,9						
Continuing value	607,2					1009,3	
Value of operations	768,1						

Exhibit 61 Technogym: equity valuation

€ million	2015
Value of operations	768,1
Non-operating assets	6,2
Enterprise Value	774,3
Net financial position and debt €	39,9
Minority interest	0,4
Equity Value	**733,9**
Number of share outstanding (n	200.000
Value per share (euros)	**3,7**
BIT:BRE	
Price per share (2016.05.11)	3,75
Price per share (max 2016)	3,95
Price per share (min 2016)	3,51

DCF and Economic Profit methods lead to a valuation of €3,7 per share. This valuation is widely influenced by the estimation of WACC and long term grow rate: a change in one of these two factors would change consistently the final value per share, as it is shown in the following table.

Exhibit 62 Technogym: sensitivity analysis on shares' value

Sensitivity Analysis on Value per share (€)							
		WACC					
	3,7	9,7%	10,2%	10,7%	11,2%	11,7%	12,2%
	0,0%	3,6	3,3	3,1	3,0	2,8	2,7
	0,5%	3,7	3,5	3,3	3,1	2,9	2,7
	1,0%	3,9	3,6	3,4	3,2	3,0	2,8
	1,5%	4,0	3,8	3,5	3,3	3,1	2,9
g	2,0%	4,2	3,9	**3,7**	3,4	3,2	3,0
	2,5%	4,5	4,1	3,8	3,6	3,3	3,1
	3,0%	4,8	4,4	4,0	3,7	3,5	3,3
	3,5%	5,1	4,6	4,3	3,9	3,7	3,4

The value estimation through DCF and Economic Profit seems coherent with the one done with multiples:

Exhibit 63 Technogym: valuation synthesis

Multiples*							
EV/Sales (Row)	EV/Sales (Regr)	EV/EBITDA (Row)	EV/EBITDA (Regr)	EV/EBIT	P/E	EV/NOPLAT	EV/EBITA
3,1	**4,35**	**4,07**	**3,85**	**3,72**	**2,29**	**4,50**	**5,11**

DCF/EP					
		RONIC**		58,7%	
		WACC		10,7%	
	market	g	1,0%	**2,0%**	3,0%
Value per share as of 2015.05.11	**3,75**		**3,4**	**3,7**	**4,0**

5.10. From share valuation to pricing – market evidences

On April 20th 2016 started the period of institutional placement. In this period the offer was addressed exclusively to institutional investors and involved a maximum of 50 million shares, corresponding to 25% of Technogym's share capital, all of which was offered for sale by the shareholder Salhouse Holding. Salhouse Holding also granted the Joint Global Coordinators a greenshoe option to purchase, at the offer price, a maximum of 7,5 million additional shares, that should have been exercised within 30 days after the start of the trading in the stock exchange.

Exhibit 64Technogym: change in shareholders' composition

Shareholders	Shares before the start of the trading		Shares to be sold with the trading	Share after the IPO		Greenshoe option	Share after IPO in case on total exercise of greenshoe option	
Wellness Holding	120 mil	60%	-	120 mil	60%	-	120 mil	60%
Salhouse Holding	80 mil	40%	50 mil	30 mil	15%	7,5 mil	22,5 mil	11,25%
Market	-	-	-	50 mil	25%	-	57,5 mil	28,75%
Total	200 mil	100%	50 mil	200 mil	100%	7,5 mil	200 mil	100%

This offer period was set up for the purpose of enabling expressions of interest by Institutional Investors. The Global Coordinators established a valuation range of the Company's share capital between approximately €600 million and approximately €750 million, corresponding to a minimum price of €3.00 per share and a maximum price of €3.75 per share.

This price range implies a certain price discount decided during the phase before bookbuilding period, to encourage investors to bid and express their demand for firm’s shares and their valuation about the firm itself.

The offer period ended on April 28th 2016 at final offer price was established at €3,25 per share: at this price book was covered four times, so this price ensured that there was a market of firm’s shares and avoided stagnation in transaction.

With this price the discount on share value was only partially recouped, and the investor selling its shares (Salhouse Holding) left on the table a great deal of money. This can be noticed by the price run up of the first days:

Exhibit 65 Technogym: stock price between May 3rd and Mau 14th

Source: http://www.4-traders.com/

From the graph is possible to notice that during the first day of trading price ran up from €3,25 to €3,63: with a level of underpricing of 11% in the first day which is considered a normal and optimal level of underpricing by literature (Derrien & Womack, 2003).

Such a first day percentage return is line also with the findings of Levis (2011): PE backed firms have first day returns consistently lower that Venture Capital backed firms or non backed firm. Levis (2011) pointed out that this could be due to a combination of lower risk, more aggressive pricing and PE group certification. This results seem applicable also in Technogym, with the first day return of 11%, which is an high return but not surprisingly high: the level of risk is low, and this is proven also by the debt rating analysis conducted to find the cost of debt and the beta calculation in relation to the industry; the PE certification was present even if we cannot affirm that the pricing strategy was aggressive. In Technogym case anyway the thesis of Meles et al. (2014) cannot be confirmed since the level of debt is consistently lower than the average level of debt usually found on PE backed firms that go public.

Moreover comparing first day trading price with multiples evaluation it could result that firm was actually undervalued.

Exhibit 66 Technogym: valuation through multiples

Multiples*							
EV/Sales (Row)	EV/Sales (Regr)	EV/EBITDA (Row)	EV/EBITDA (Regr)	EV/EBIT	P/E	EV/NOPLAT	EV/EBITA
3,1	**4,35**	**4,07**	**3,85**	**3,72**	**2,29**	**4,50**	**5,11**

P/E ratio will not be considered in this case because of the big differences in term of leverage in the peer group. Using as reference the ratio of EV/Sales, EV/EBITDA, EV/EBIT based on average of peer group of comparable firms, and as reference price for Technogym the one of August 26th 2016, a fair market price should range between 3,1and 4,07 so a price of 4,10 is positioned above the range the overvaluation is just of 0,1%. Using as reference the ratio obtained with the regression method, which should be more accurate, for EV/sales and EV/EBITDA, a fair market price should range between 3,85 and 4,35. Using such ratios Technogym seems fairly priced. Using EV/NOPLAT or EV/EBITA Technogym seems actually undervalued.

Purnanandam and Swaminathan (2004) stated that IPO firms in median are overvalued between 14% to 50% compared to industry peers. But there is a valuable model to understand whether Technogym's IPO was overvalued or undervalued. For each Technogym and for its comparable firms was compared the P/S, P/EBITDA, P/E ratios at the date of the IPO, as follows:

$$\left(\frac{P}{S}\right) = \frac{price \times number\ of\ shares\ outstanding}{prior\ fiscal\ year\ sales}$$

$$\left(\frac{P}{EBITDA}\right) = \frac{price \times number\ of\ shares\ outstanding}{prior\ fiscal\ year\ EBITDA}$$

$$\left(\frac{P}{E}\right) = \frac{price \times number\ of\ shares\ outstanding}{prior\ fiscal\ year\ earnings}$$

The price considered for Technogym was offer price, while for competitors was the price at close of the date of the Initial Public Offering. To understand whether Technogym could have been overvalued or undervalued for each ratio was computed the resulting P/V ratio, which compare the price value of the firm (P) with its intrinsic value calculated with firm's

comparable. The idea behind this ratio is comparing a simple ratio based on price over a measure of firm profit calculated on the IPO firm with the one of a peer to see whether there is a significant difference.

$$\left(\frac{P}{V}\right)_{sales} = \frac{(P/S)_{IPO}}{(P/S)_{comparable}}; \left(\frac{P}{V}\right)_{EBITDA} = \frac{(P/EBITDA)_{IPO}}{(P/EBITDA)_{comparable}}; \left(\frac{P}{V}\right)_{earnings} = \frac{(P/E)_{IPO}}{(P/E)_{comparable}}$$

For each ratio I also calculated the mean and the median. The results of the calculation were the following:

Exhibit 67 Technogym: P/V ratios' calculation

	Technogym	Amer	Nautilus	Brunswick	Johnson	Mean	Median
P/S	1,27	1,19	1,66	1,07	0,88	1,20	1,13
P/EBITDA	8,12	11,50	11,14	8,53	14,91	11,52	11,32
P/E	23,08	24,80	20,95	18,22	26,49	22,61	22,87
P/V sales		1,07	0,77	1,19	1,45	1,06	1,12
P/V ebitda		0,71	0,73	0,95	0,54	0,70	0,72
P/V earnings		0,93	1,10	1,27	0,87	1,02	1,01

A value of 1 in the P/V ratios means that there is no significant overvaluation or undervaluation of the IPO firm compared to the comparable company(Purnanandam and Swaminathan, 2004). Here it results no overvaluation in reference to peer group of comparable firms for Technogym, with values of the P/V ratios close to one. In addition for P/V calculated on EBITDA it seems that Technogym was actually undervalued, but we attribute this result more to the high skewness of the distribution of this ratio which was observed by Purnanandam and Swaminathan (2004) than to a particularly strong undervaluation of the firm. Such tendency to undervaluation is quite unusual in IPO, because, as literature pointed out many times, usually IPO firms tend to be overvalued, and the main reasons for this overvaluation can be the overoptimistic expectation about growth in profitability of the firm in the future (Purnanandam and Swaminathan, 2004). In Technogym case instead a reasonable explanation could be that, considering the fact that with this operation new capital to finance future growth was not raised, market investors and analysts did not capitalized high grow expectations for the firm, so the offer price set after the bookbuilding period remained fairly in line with competitors actual price and no high overvaluation was done.

Concerning the aftermarket valuation of an IPO, many authors assert that IPO shares are priced at an higher level than their actual value by the market, for many reasons: because

investors systematically misestimating the probability of finding a big winner (Loughran & Ritter,1995) or because there is the underwriter's price support (Aggarwal, 2003). But this makes IPO perform badly in the long-run.

In particular Friesen & Swift (2009) took evidence that IPOs typically have strongly positive returns in the first six months after the IPO, but in the long-run returns become negative. Also in Technogym, analyzing the data available (just for 3 months), we can say that returns are widely positive:

Exhibit 68 Technogym: stock price between May 3rd and August 26th

Source: http://www.4-traders.com/

Technogym stock price followed an upward trend, and prices went down at a lower level than May 3rd just on June 27th, so in a period of big market turmoil at global level, because of the announcement of the vote in UK. This strongly positive trend which was persistent in the first three months after the IPO seems due to an overvaluation by the market on the firm, due to several factors. First of all the high growth of the past two year presents a strongly positive trend that will continue in the future, so it is highly probable that market investors overestimate such positive trend and overestimate future growth. It is particularly interesting to see how price augmented in August, after the release of the quarterly results, which states an increase in revenues in the US of 25% compared to the same semester in 2015. This is a

very important result since the breakthrough in the US, one of the most competitive market at the global level, is considered by many investors a milestone to understand the possibilities of growth and the strategic advantages of the firm. Secondly the presence of the private equity was helpful in reducing the information asymmetry between entrepreneur and market investors: the private equity, which usually helps in improving operating performance, in bringing efficiencies and in undertaking profitable strategies, works as a certification of firm quality. Moreover the private equity's retention of a large stake of its shares for a long lock up period increased the power of the signal to investors (Ritter & Welch, 2002).

In conclusion, taking into consideration DCF and EP valuation result, together with multiples methodology valuation, it resulted that Technogym stocks were offer at a discount price in the market. This could have been done for several reasons, such as avoiding stagnation in the trading activities and providing a positive signal to the market. The market conditions of the first months of 2016, with an high volatility in the stock market, contributed to the uncertainty in the pricing. The level of discount anyway is not of a great magnitude, it results fairly in line with market praxis and it is a result of the bookbuilding procedure. The presence of the Private Equity as certification helped in this side.

The market reacted positively to the IPO, in fact there was an underpricing of 11% in the first day, and positive trend continued for the period under analysis. This highly positive trend seems due to the perspectives of high growth for the future years which are confirmed by the quarterly results presented in August. Literature anyway suggests to use caution in this situation: many times IPO firms have an extraordinary performance for the first semester after the IPO, then starting from the second semester investors become more careful, and in the long run they faces an underperformance. This could be due to the capitalization of temporary improvements Purnanandam and Swaminathan (2004) or the over-expectations from who invests in the earliest aftermarket (Miller, 1977).

In Technogym case, until now the first period in the market was characterized by positive returns, anyway a first important step will be when the lock up period for Salhouse will end, 180 days after the IPO. It will be interesting to see whether Arle Capital Partners will prefer to keep Technogym stocks again in its portfolio or divest them immediately. It will be also of great importance to notice market reaction to these new shares available for trading: if market will discount these new availability or not. After this important step, also analyzing medium-long run performance of stocks will be fundamental. It will be more clear if these positive

returns were actually due to an undervaluation of the firm in the bookbuilding period or if aftermarket capitalized in an overoptimistic way short term improvements.

5.11. Arle Capital's return on the investment in Technogym

The aim of this last part of the chapter is analyzing the return on investment obtained by the Private Equity fund, Arle Capital. The Registration Document affirms that Salhouse invested in Technogym € 330 million in 2008, and in 2014 the net value of the participation was € 220 million. The cash flow from the investment for Salhouse was the following:

Exhibit 69 Salhouse: cash flow from the IPO

	# shares	price	cash flow
Shares sold in the IPO	50 mil	€ 3,25	€ 162,50 mil
Shares sold with the greenshoe option	7,5 mil	€ 3,25	€ 24,38 mil
Residual shares to be sold after lock up period	22,5 mil	€ 4,20	€ 94,50 mil
TOTAL	80 mil		€ 281,38 mil

For the price of the residual shares it was used an estimate close to the present market value of Technogym shares, because they will be sold at the end of the lock up period of 180 days from the IPO. Considering this total cash flow of €281,38 million and the initial investment of €330 million, it results that the Internal Rate of Return for the Private Equity is negative, and it is -15%, anyway this way of reasoning is too simplistic: it is fundamental to consider again the history of the Private Equity fund which has invested in Technogym. It was previously mentioned that Candover was the original investor through the vehicle Salhouse, but in 201, because of some tensions deriving from the financial crisis, it sold its stake to Arle Capital Partners at a nominal consideration. Without more precise information about the consideration transferred, it is plausible that the amount transferred is close to the actual value of the shareholding, which is written for €220 million in Salhouse balance sheet. Considering this, it results that IRR for Arle Capital was about 28%. This explains why Arle Capital accepted to start the IPO in a period of difficulties in the equity market, even when the offer price was set at a much lower value than the valuation range resulting from multiples and DCF calculation. It is possible to affirm that the Private Equity could have gained more from the IPO, because offer price was set at discount in respect to the valuation range proposed using multiples and DCF. The market seems to confirm this idea, since the stock performance was positive since the beginning, and shares' price keeps on raising. Surely the negative mood that market was experiencing in the first months of 2016 had a strong influence on the setting of the offer price, also the fact that Arle Capital acquired the participation at a lower price strongly influenced its incentive for asking at higher return.

6. CONCLUSIONS

This thesis was aimed at valuing the Initial Public Offering of a firm, making a particular emphasis on the case in which a private equity fund owns a stake in the firm before the IPO.

The benefits and costs of the IPO were firstly illustrated, to understand in detail which implications this particular operation has on the firm and on its equity holders. Secondly the motivations and the implications of the private equity for this operation were presented, and later the process of pricing and valuation of the issuing firms were illustrated. Finally these issues were analyzed through the exposure of the Technogym case.

Concerning the benefits deriving from the Initial Public Offering, the most important benefit pointed out by literature and by managers is the possibility to raise new capital (Ritter and Welch, 2002). This process has a drawback: it rises a problem of asymmetric information with equity holders. Lucas and McDonald (1990) stated that the firm is conscious of this, and it will prefer to go public, or to raise new capital, when the market overvalues the firm, so it will be able to raise more funds compared to when market undervalues it. The IPO is not just an occasion to raise new capital: Zingales (1995) pointed out that it is an optimal way for firm's initial owners to maintain the control over the firm but at the same time divest part of their ownership by transferring the rights of firm's cash flow to other subjects. What was extremely important of Zingales's research was the highlight on the fact that cash flow rights and benefits of control are bargained in different negotiations. Pagano et al. (1998) pointed out that with an IPO the firm's stock becomes liquid, and this allows investors to better diversify their funds, reducing their overall risk.

The convenience of going public was examined many times by literature, with different results. Chemmanur & Fulghieri (1999) pointed out that in a firm's lifecycle there are different moments, and depending on these moments it could be more or less convenient to be publicly traded according to the cost of informing investors: for example in the early stage of a firm's life a large investor will minimize the cost of producing information. Anyway an undiversified participation is risky and suboptimal, so as soon as the cost of production for information decreases it is better to go public. That is why many times a venture capitalist divests its participation in a portfolio firm through an IPO. Also Maksimovic & Pichler (2001) pointed out that the investors perception and the costs associated with disclosing private information influences significantly the benefits of going public.

Pagano et al. (1998) analyzed other benefits of the IPOs, for example the possibility of overcoming borrowing constraints more than a private firm: being publicly traded makes it possible to reduce bargaining power of banks, by having the possibility of raising debt capital directly in the market. Added advantages are firstly an additional instrument of monitoring behavior of managers, thanks to information embodied in stock price and secondly the possibility to have an indirect advertising of firm's quality and firm stability.

Literature pointed out that the IPO is an effective way to gain market share and disadvantage competitors, this was said by Schultz and Zaman (2001) in their analysis of technology firms, that go public extremely early in their life. They said that those firms were operating in an industry where gaining market share against competitors was fundamental so they decided to go public early in their life. Hsu et al. (2010) also confirmed that this is true, stating that competitors' stock prices react negatively to the IPO, because the market anticipates the negative impact on firm's profitability and ability to produce future cash flow, due to the fact that a competitor is going public.

Nevertheless the IPO entails many costs, some of them are associated with the IPO process and some others are related to remaining a publicly traded company. The costs of the IPO process include the fees that have to be paid to consultants, advisors, to the stock exchange and are related also to the road show. There are also start up costs, due to the fact that the firm has to build up some informational structures for market investors that were not present before the IPO, for example additional auditing and accounting abilities to comply with stock exchange regulation. This process moreover can be very distracting and time-consuming, and can divert attention from strategic and operational issues.

The expenses associated with the fact of being public are also significant. These costs are associated with different issues: firstly with the need to prepare and report timely specific financial information. Secondly with the need to add new employees to respond to new exigencies in the areas of audit, taxation team, financial planning (budgeting and forecasting), risk management, technology support, board of director, internal staff assessment, and human resources. Moreover the firm will need to engage also external resources such as consultants to meet the new regulatory requirements, implementing the new financial reporting, implementing disclosure standards, and to maintain investors relations. Also governance structure will be changed and increased to meet new regulatory requirements, and audit fees will increase for the same reason.

An extensive cost faced by the firm going public is the underpricing phenomenon, meaning that they do not collect some funds because the prices rose in the days immediately following the IPO. This fact is present basically in all the IPOs, and it seems due to the fact that some firms want to solve an information asymmetry with market investors: high quality firms will consider that discounting at the moment of IPO is a good signaling method, then they will recoup this sacrifice in later activities of issuing stocks (Ritter & Welch, 2002). Loughran & Ritter (1995) highlighted that this underpricing phenomenon depends also on the fact that market over weights short term improvement thinking that those are long term tendencies. When the transitory nature of the operating performance becomes apparent, the stocks underperform. But this underperformance does not start immediately after issuing. Also Friesen & Swift (2009) analyzed overreaction of investors and found out that usually returns remain positive until six months after the IPO. Aggarwal (2003) instead said that this positive returns in the first days and consequent underpricing are due to the stabilization activities of underwriters, that give price support to weak offerings and try to avoid flipping activity.

Flipping activity is the phenomenon of the immediate aftermarket of reselling IPO stock immediately after the allocation to earn from the price difference. What happens usually is that a small portion of shares are flipped many times, resulting in very high volume. Of course underwriters and issuing firm prefer that institutional investors keep the stocks for a certain period instead of flipping them, because this is a signal of their interest in the firm itself, and of confidence in firm ability to produce future positive returns. So underwriters try to avoid this flipping by imposing some penalties to institutional investors Aggarwal (2003).

Derrien & Womack (2003) discovered that underpricing is also a feature of the bookbuilding selling mechanism. They discovered that auction procedure actually reduces underpricing, so it would be optimal from the issuing firm point of view, but bookbuilding process is preferred globally because it allows underwriters to reveal their quality to investors. It seems that issuing firm suffers an agency conflict, since controlling underpricing is not the only interest of underwriters.

Lately in the thesis it was discussed the presence of a Private Equity inside the firm, and its influence on the IPO decision. The IPO in fact is one of the exit way that could be used by the Private Equity, together with a secondary LBO and a trade sale to another firm. There are other exit ways, but those three are the most commonly used. It emerged that market conditions, firm conditions and private equity characteristics influence the decision (Jenkinson & Sousa, 2015). In fact a very favorable debt market with low rates make a

secondary LBO extremely profitable. Instead a very hot equity market favors an IPO. Also private equity characteristics are fundamental: when the PE is near the end of contractual life it has more pressure to realize the investments. In this situation it could happen that the portfolio firm is not ready yet for a public offering, but a secondary sale could be an attractive way to divest quickly. Moreover, in IPOs, PE is usually obliged to remain part of the shares for a lock up period, to not give a negative signal to the market (Jenkinson & Sousa, 2015). Bock & Schmidt (2015) also discovered that when it has to build reputation to incentivize future fundraising PEs tend to realize an IPO, because the IPO gives more visibility to portfolio firm success, and so PE ability to invest in high quality firms. Last factor to consider is related to firm's characteristics: in particular the ability to operate with high level of debt favors more a secondary LBO, while high profitability and high grow rates make an IPO more profitable.

Poulsen & Stegemoller (2008) pointed out that contracting costs could be much lower in case of a trade sale to a competitor. Moreover this way could be much more valuable when in the industry there is a big competitor, and economies of scale are fundamental. Nevertheless they also pointed out that this exit choice would reduce flexibility in firm policies so it is not valuable for firms with high growth potential. Moreover a trade sale could not be a possible exit way if it is present an entrepreneur with a strong position inside the firm. If she is interested in maintaining the decisional control over the firm it would be fundamental that the firm itself remains a standalone entity (Poulsen & Stegemoller, 2008). In this case is possible that a conflict of interests arises, with the PE preferring a trade sale, and the entrepreneur preferring the IPO.

An interesting topic related to the IPO of a private equity backed firm is the performance of the firm itself in the IPO. Levis (2011) analyzed this issue and found out that the presence of the private equity reduces significantly the underpricing phenomenon after the IPO, cutting significantly the money left on the table by previous owner. Meles et al. (2014) found out that this phenomenon is mainly due to the presence of an high level of debt in private equity backed IPO firms. Barry & Mihov (2005) explained that this is due to the fact that banks prefer to finance firms that make the lending relatively safe, so with predictable cash flows, less volatility and easier to value. These characteristics make the firm easier to value by the market to underpricing is lower.

Later the valuation techniques most used in the market were presented: the multiples methodology, the Discounted Cash Flow and Economic Profit methods. Multiples and DCF models resulted to be the most used and the less biased techniques (Roosenboom, 2012).

Concerning multiples valuation, Kim & Ritter (1999)pointed out that is fundamental to choose the right group of peer group firms: using SIC code is a good starting point, but sometimes this classification could be too rigid, so it is important to go further this classification to find the most fitting peer group. Koller et al. (2015) pointed out that the use of P/E ratio alone could lead to a misevaluation of the firm, since P/E ratio is influenced by the capital structure of the firm. Other ratios free from the influence of capital structure and of non operating or non recurring items lead to a better valuation, and are: EV/EBITA and EV/NOPLAT.

Once that the major issues regarding fair value valuation were presented, the step of the pricing process were discussed, passing from the first pitch with the intermediaries of the listing, through the due diligence of the investment bank, then the pre marketing phase and the bookbuilding process, until the definition of the offer price (Borsa Italiana, 2014). A fair pricing could be more profitable in the long run, especially because overvalued IPO firms tend to suffer a deep underperformance in the long run (Purnanandam and Swaminathan, 2004).

Last chapter of the thesis concentrated in the Technogym case. From the analysis done we can say that in Technogym the IPO was mainly determined by the interest of the two investors in the firm: Arle Capital Partners from one side (using Salhouse vehicle), and brothers Alessandri (through the vehicle Wellness Holding) from the other side. The IPO was started to allow Arle Capital Partners to divest, but many other options were available, and maybe, taking into consideration debt and stock market conditions, some of them could have been valuable alternatives. So what was determinant in the choice of the IPO was the presence of the other investors, brother Alessandri through Wellness Holding and their willingness to maintain the absolute control of the firm. This motivation does not surprise since they are the founders of the firm and from the beginning they had the total control and decided the course of the company. Moreover this motivation was so strong that the IPO was indicated as a way of exit even in the shareholders agreement signed between Arle Capital Partners and Wellness Holding before the entry of Arle Capital Partners in Technogym. This was done because only the IPO is a way that totally ensure the maintenance of the control on the firm, differently from a secondary LBO or the trade sale of the participation to another investor. In fact the

possibility to change the beneficiaries of the cash flow rights from the firm without losing the power of control is one of the main advantages of the IPO pointed out by Zingales (1995). It is known that for some time the a dual track was followed, so Technogym negotiated also the sale of Salhouse participation with other private investors, but in the end the decision of going public was taken. This course of action was favorable also not only for the entrepreneur, but also for the private equity, since it was more in line with its conditions.

The IPO also improved entrepreneur position in few ways. Firstly, selling in the market PE shareholding, a strong counterparty, owning a great stake of the company had disappeared: its stockholding has been bought by many shareholders and it is more fragmented. In this way the incentive to monitor and intervene actively inside the firm, maybe in contrast with the entrepreneur, is lower if not absent. It is possible to conclude that with the IPO the entrepreneur power over the firm has augmented. Moreover this operation creates the possibility for Wellness Holding to buy firm's shares in the future and increase its shareholding if they will see a good return from this action, or to reduce its investment in Technogym, if on contrary it prefers to diversify its wealth.

The IPO was an excellent way to re affirm PE's reputation in investing in excellent firms and in being able to divest successfully. An IPO gives more advertisement and notoriety to this fact, since the portfolio firm remains quoted, its performance is public and can be checked by investors at any moment, which is not the case if the firm is sold in a trade sale or through a secondary LBO. Arle Capital Partner in fact was facing a strong need to build up its reputation after the turmoil faced because of the global crisis, which made Candover separate part of its investment in Arle Capital Partners. If the PE want to obtain new funds in the future for new investments a necessary condition will be have re built its reputation. Moreover since the PE has just started to divest from its portfolio firms, still a long time has to pass before it will repay investors, so a quick way of divestment is not needed (in IPO the investor selling stock usually have to keep part of the shares for a lock up period to avoid to send a negative signal to the market about firm's ability to produce positive cash flow to investors in the future).

The Initial Public Offering produced some benefits and advantages also for Technogym itself. First of all it increased firm knowledge and visibility, which is very important for Technogym in this particular moment: the firm is well positioned in Europe, but in the rest of the world is the second player. To break through competition and enter profitably in those markets such as Asia and US having a great visibility and good reputation also in financial

terms is really important, particularly when it is dealing with customers of big dimensions, that are interested also in the financial stability of its suppliers.

This operation was also a milestone in the firm organization because being public allows to attract, remunerate and retain a more valuable workforce than being private. In fact a public firm can set up an attractive compensation plan for managers linked to firm's performance, using stock options or distributing shares, which have very high returns. At the same time these compensation methods give the possibility to align managers' interests with the ones of owners. On the contrary, one of the major benefit of an IPO does not seem applicable in this case: the possibility to enhance managers' monitoring thanks to market. The entrepreneur is inside the firm and is actively involved in everyday operations, so he already has a privileged position to monitor managers way of operating.

The going public process will open the possibility to raise new funds in the future in several ways: first on all increasing share capital, secondly collecting debt funds in several manners. The fact of being a public firm will allow Technogym to issue bonds directly in the market or to go to banks, but with a stronger bargaining power in debt negotiation, thanks to the possibility of direct issuing giving by the market.

In addition it is possible to state that market perceive the IPO as a way to improve competitive positioning of the firm, since there was a negative reaction in stock price of competitors around the IPO event. Strongly negative cumulative abnormal returns on competitors' stock around the IPO suggest that the market considered Technogym's IPO as an event with a negative influence for them, that could lead also to a reduction in performance in the long run. Conversely, this enhances firm's competitive advantage in the marketplace.

Last part on the thesis was aimed at producing a valuation of firm's fair value and comparing it with the market price established by issuing banks, to see whether firm's stocks were undervalued or overvalued, and finally try to access IPO success.

First of all Technogym was valued in comparison to a peer group of competitors. The major firms operating in the field were picked up: Brunswick Inc, Nautilus Inc, Johnson Health Tech, Amer Sport. The major issue to take into consideration is that Brunswick and Amer operates also in other fields of activity and are widely diversified, while Nautilus and Johnson Health Tech are more focused in the training machines sector. Technogym profitability was discovered not only to be perfectly in line with competitors, but also to be higher. Also looking at grow rates Technogym was not underperforming rivals: grow rates were absolutely

higher than Brunswick, and in line with the ones of Amer, even if Nautilus appeared to have had an high level of growth in the past years.

Concerning working capital management, Technogym have an efficient organization, even if days on receivables can be improved. Financial structure, compared to peer group, appears solid, even if competitors' one is better. This is due to excess cash that was present in Nautilus in the past years and by Brunswick even now.

Next step was calculating Technogym's value using multiples calculated on competitors. Firstly P/E ratio was used, but this was influenced by net financial position of competitors, which was highly different from Technogym's one. Secondly EV/Sales multiple was calculated, but this appeared too much influenced by the different fields of activity of some competitors: sales don't take into account the different operating costs that is required by different products that widely diversified corporations such as Brunswick and Amer produce. So EV/EBITDA, EV/EBIT, EV/EBITA and EV/NOPLAT were calculated. The valuation was refined using not only the average of competitors, but also using regression to calculated multiples. The range of values obtained were reported in Exhibit 64, and are reported again here.

Multiples*							
EV/Sales (Row)	EV/Sales (Regr)	EV/EBITDA (Row)	EV/EBITDA (Regr)	EV/EBIT	P/E	EV/NOPLAT	EV/EBITA
3,1	**4,35**	**4,07**	**3,60**	**3,72**	**2,29**	**6,83**	**5,11**

Lately in the chapter discounted cash flow and economic profit method were used and the result of this valuation were compared to the one done with multiples. The starting point for DCF and EP were the calculation of: free cash flow for the following five years, weighted average cost of capital and invested capital. To calculate the future free cash flow some estimation was done. In particular an estimation of future revenues were done: it was considered that Technogym will have a strong growth in the following years in Europe (around 12%), while outside Europe it will take more time to get close to this growth. These estimations of growth anyway are fairly prudent if compared with the grow rate of 2014 and 2015, which were respectively of 13,22% and 9,97%. The estimated grow rate for 2016 is instead 6%, and the CAGR is 8,5% in the 5 years period.

The resulting value per share from DCF and EP valuation was €3,7 per share. This value is in line with the range of values produced using the multiples valuation, anyway is sensible to the estimation of WACC and long term grow rate used, as the sensitivity analysis produced pointed out.

Once that fair value analysis was completed the next step was analyzing the pricing process and the market valuation of the firm stock. In the period before the IPO the firm performed a roadshow to understand market demand for Technogym shares. The price range proposed for the roadshow was between €3,00 and €3,75 and at the end the offer price was fixed at €3,25, the book was completed four times for this pricing level, which implies an high demand for the firm's shares. Such price range implies a strong discount, which, according to Roosenboom (2012) was done to induce investors to disclose information about their actual demand of share and to compensate them for the risk taken in investing into a firm actually unknown by the market.

The fact that offer price was fixed at €3,25 confirms Roosenboom (2012) thesis for which discount is only partially recouped. This was proved also by the subsequent underpricing: the price ran up to €3,63 in the first day of trading, and in the following day price grew even more to €3,94, which are respectively and increase of 11% and of 21% in stock price. It is plausible that such an high discount resulted also from the negative period that the equity market was facing in those months, and with the pre-marketing activities underwriters were not able to obtain higher reactions from investors.

In the last part of the thesis the return from the operation for Arle Capital was analyzed, and it was found that this return was almost 28%. This return is extremely high, and it outperforms consistently the return of the market, which is about 8,5%. Notwithstanding that shares were sold at a discounted price and that equity market conditions were not the most favorable for an IPO because of the high volatility of the period, it is possible to conclude that the investment on Technogym was extremely profitable for Arle Capital. This is extremely interesting to notice, because the presence of the entrepreneur with a majority position had limited the divestment ways available for the private equity fund. Anyway if we consider the initial investment of Candover of €330 million, the internal rater of return of the investment was highly negative. So it is possible to conclude that Candover overpaid for such a shareholding in Technogym, but we can find two major causes of this. Firstly some years of no growth for the firm, such as 2013, which negatively influenced on free cash flow. Secondly the weak position in some markets such us USA also has negative consequences in

investors valuation of future possibilities of growth in revenues in this market. Lastly the negative mood that the market was facing in the first period of 2016, which influenced a lot the road show and led to a highly discounted offer price.

It is reasonable that the IPO will produce benefits also for the other major investor, the entrepreneur, that will strengthen his decisional control, since the second most powerful investor in the firm, the private equity, will disinvest completely in few months, and market investors usually have more fragmented positions. Moreover the IPO will allow the entrepreneur to change the degree of its investment in the firm, increasing or reducing it according to his needs.

The fact that market competitors discounted negatively the IPO, as the analysis of the cumulated average abnormal return demonstrated, and the evidences that equity investors are extremely positive in valuation of Technogym's stocks confirm that also the firm itself will have positive drawbacks associated with this operation: an high contractual power with debt financers, an improved internal control system, a more impartial system to control managers' behavior and an improved system to incentivize managers. The IPO will make also easier to raise new capital in the future, if new projects of growth will require it. In conclusion, the Initial Public Offering was an operation that benefited all the major interests involved in the firm: the private equity, which were able to divest profitably, the entrepreneur, who maintained and strengthened his control, and the firm itself, which enhanced its possibility of growth.

7. APPENDIXES

Appendix 1: Technogym balance sheet and income statement reclassification

Balance sheet and income statement as reported

INCOME STATEMENT AS REPORTED					
TOTAL REVENUES					
Revenues	390,1	411,6	411,0	465,4	511,1
Other income	19,1	16,5	1,1	0,7	0,7
Total revenues	**409,2**	**428,0**	**412,1**	**466,1**	**511,8**
OPERATING COSTS					
Change in inventories	-2,6	-1,2	-6,1	8,4	
Raw materials, consumables and goods	-142,3	-142,1	-152,8	-183,6	-183,4
Services and disposal of assets	-116,9	-142,3	-129,8	-133,5	-139,5
Personnel expenses	-81,2	-85,5	-84,4	-91,6	-104,0
Depreciations, amortizations and impairments	-15,7	-16,6	-23,4	-27,0	-20,0
Provision costs for contingencies and charges	-7,7	-5,1	-3,4	-5,9	-2,6
Other operating costs	-3,7	-3,7	-4,4	-6,3	-4,9
Joint venture result share	0,0	0,0	0,0	1,7	1,0
Total operating costs	**-370,0**	**-396,6**	**-404,3**	**-437,9**	**-453,3**
NET OPERATING INCOME	**39,3**	**31,4**	**7,8**	**28,2**	**58,4**
FINANCIAL GAINS/LOSSES					
Financial gains	0,6	0,7	0,4	0,4	0,5
Financial expenses	-4,3	-3,1	-3,5	-3,6	-1,7
Gain/losses from exchange	1,3	-1,6	-2,9	-0,8	-1,3
Total financial gain/losses	**-2,5**	**-4,1**	**-6,0**	**-3,9**	**-2,6**
GAINS/LOSSES FROM INVESTMENTS					
Other gains/losses from investments	0,3	0,1	0,2	0,2	-0,9
Total gain/losses from investments	**0,3**	**0,1**	**0,2**	**0,2**	**-0,9**
RESULT BEFORE TAXES	**37,1**	**27,4**	**2,1**	**24,4**	**55,0**
TAXES					
Annual taxes	-11,0	-7,0	-0,4	-19,3	-26,4
Previoius year taxes	-0,5	0,0	-0,1	0,5	-0,2
Total taxes	**-11,5**	**-7,0**	**-0,5**	**-18,8**	**-26,6**
RESULT BEFORE MINORITY INTERESTS	**25,6**	**20,4**	**1,6**	**5,6**	**28,4**
Minority interests	-0,4	-0,8	-0,3	-0,1	-0,2
GROUP NET RESULT	**25,2**	**19,6**	**1,2**	**5,5**	**28,2**
Earnings per share	2,52	1,96	0,12	**0,55**	**2,82**

TOTAL ASSETS	2011	2012	2013	2014	2015
A. NON-CURRENT ASSETS					
A.I Property, plant, equipment	42,6	57,6	54,2	50,0	56,9
A.II Goodwill	0,0	0,0	0,0	0,0	0,0
A.III Other intangible assets	30,7	35,6	32,5	23,2	21,5
A.IV. Equity investments	0,4	1,5	0,1	4,7	3,8
A.V. Other financial assets	14,2	9,9	4,5	6,2	9,5
A.VI. Anticipated taxes	17,4	20,2	22,3	16,0	15,7
A. Total non-current asset	**105,2**	**124,7**	**113,7**	**100,0**	**107,4**
B. CURRENT ASSETS					
B.I Inventories	50,2	60,6	54,5	62,2	60,4
B.II Trade receivables	68,1	61,5	73,0	75,5	84,1
B.III Tax receivables	0,0	1,7	3,0	1,7	0,0
B.IV Current financial receivables	0,0	0,0	3,9	3,6	0,1
B.V Cash and cash equivalents	40,9	26,7	40,4	41,1	68,0
B.VI Other current assets	23,0	12,1	14,1	14,9	31,8
B.VII Other financial current assets	0,0	0,0	0,2	0,4	0,2
B. Total current asset	**182,2**	**162,6**	**189,1**	**199,4**	**244,6**
TOTAL ASSETS	**287,5**	**287,4**	**302,8**	**299,4**	**352,1**

TOTAL EQUITY AND LIABILITIES	2011	2012	2013	2014	2015
C. GROUP EQUITY					
C.I Share capital	10,0	10,0	10,0	10,0	10,0
C.II Shares overpricing reserve	382,6	382,6	382,6	0,0	0,0
C.III Revaluation reserve	0,0	0,0	0,0	0,0	0,0
C.IV. Conversion reserve	0,6	1,0	1,3	2,7	0,0
C.V Other reserves	-430,1	-430,6	-433,2	-25,6	-8,2
C.VI Retained earnings/(losses)	-3,8	21,4	41,0	17,4	13,0
C.VII Profit/(loss) for the year	25,2	19,6	1,2	5,5	28,2
C. Total group equity and reserves	**-15,5**	**4,0**	**2,9**	**10,0**	**43,0**
C.VIII Minority share capital	0,1	0,3	0,4	0,2	0,2
C.IX Minority's profit/(loss) for the year	0,4	0,8	0,3	0,1	0,2
C. Total minority interests	**0,5**	**1,0**	**0,7**	**0,2**	**0,4**
C. TOTAL GROUP EQUITY	**-15,0**	**5,0**	**3,7**	**10,3**	**43,4**
D. NON-CURRENT LIABILITIES					
D.I Loans	70,0	40,0	0,1	0,0	42,1
D.II Financial debt	13,1	8,6	3,1	5,0	6,3
D.III Provisions for employees benefits	1,9	2,1	3,1	3,3	3,1
D.IV Provisions for contingecies and charges	6,3	6,9	6,4	7,6	8,6
D.V Other non-current liabilities	0,0	0,1	5,8	5,9	13,5
D.VI Deferred tax liabilities	9,3	10,6	1,2	1,0	0,7
D. Total non-current liabilities	**100,5**	**68,2**	**19,7**	**22,7**	**74,4**
E. CURRENT LIABILITIES					
E.I Current debt	39,3	71,1	124,8	99,4	57,6
E.II Other financial debt	0,0	0,0	3,9	3,6	0,0
E.III Trade payables	98,1	88,6	93,1	93,2	93,9
E.IV Tax payables	5,1	4,0	0,9	6,6	14,0
E.V Current provisions for contingecies and charges	7,9	7,7	6,4	8,3	18,4
E.VI Other current liabilities	51,6	42,6	50,3	54,7	50,0
E.VII Other financial current liabilities	0,0	0,0	0,0	0,6	0,4
E. Total current liabilities	**202,0**	**214,1**	**279,4**	**266,4**	**234,3**
TOTAL EQUITY AND LIABILITIES	**287,5**	**287,4**	**302,8**	**299,4**	**352,1**

Details on the income statement and balance sheet

	2011	2012	2013	2014	2015
A.I Property, plant, equipment and other equipment	42,6	57,6	54,2	50,0	56,9
Land and buildings	6,7	7,3	24,9	22,7	28,0
impianti e macchinari	6,6	6,0	6,5	6,2	6,6
Industrial and commercial equipment	7,4	6,0	14,2	11,1	10,3
Other equipments	6,1	4,9	5,3	5,2	5,0
Improvements on third party equipment	10,6	21,0	1,5	1,5	4,2
Assets in course of construction and payments on account	5,2	12,4	1,7	3,2	2,7
Total	**42,6**	**57,6**	**54,2**	**50,0**	**56,9**
A.III Other intangible assets	30,7	35,6	32,5	23,2	21,5
Development costs	21,7	25,8	21,3	13,1	11,8
Industrial patents	2,2	3,2	5,0	3,8	4,3
Licences, trademarksand similar assets	3,9	3,7	0,4	0,3	0,5
Assets in course of development and payments on account	2,7	0,2	3,9	5,4	4,5
Other intangible assets	0,1	2,5	1,9	0,6	0,5
Total	**30,7**	**35,6**	**32,5**	**23,2**	**21,5**
Assets similar to goodwill	0,1	2,5	1,9	0,6	0,5
Operating intangibles	30,5	33,0	30,6	22,6	21,0
Total	**30,7**	**35,6**	**32,5**	**23,2**	**21,5**
A.V. Other financial assets	14,2	9,9	4,5	6,2	9,5
Financial credits	13,3	8,9	3,4	5,0	7,6
Security deposits	0,9	1,0	0,7	0,8	0,8
Investments in other companies	0,0	0,0	0,4	0,4	1,1
Total	**14,2**	**9,9**	**4,5**	**6,2**	**9,5**
Operating other financial assets	0,9	1,0	0,7	0,8	0,8
Non-operating other financial assets	13,3	8,9	3,8	5,4	8,8
Total	**14,2**	**9,9**	**4,5**	**6,2**	**9,5**
B.I Inventories	50,2	60,6	54,5	62,2	60,4
Raw materials , supplies and consumables	13,3	11,8	12,4	16,5	13,9
Goods in progress and semifinished goods	2,0	1,9	1,4	1,2	1,8
Finished products and goods	34,9	47,0	40,7	44,5	44,6
Total	**50,2**	**60,6**	**54,5**	**62,2**	**60,4**
B.V Cash and cash equivalents	40,9	26,7	40,4	41,1	68,0
Bank accounts	40,6	26,4	39,6	40,5	66,6
Checks	0,3	0,2	0,8	0,6	0,1
Cash on hand	0,1	0,1	0,0	0,0	1,3
Total	**40,9**	**26,7**	**40,4**	**41,1**	**68,0**
B.VI Other current assets	23,0	12,1	14,1	14,9	31,8
VAT receivables from state authorities	18,4	7,8	8,6	9,4	23,6
Advances to suppliers	1,3	1,0	1,2	1,3	1,7
Employees receivables	0,1	0,1	0,1	0,1	0,1
Other receivables	0,5	0,8	1,3	0,9	2,3
Accruals (ratei attivi)	0,8	0,3	0,9	0,3	0,2
Checking (risconti attivi)	2,0	2,0	2,0	2,9	3,9
Total	**23,0**	**12,1**	**14,1**	**14,9**	**31,8**

	2011	2012	2013	2014	2015
D.IV Provisions for contingecies and charges	6,3	6,9	6,4	7,6	8,6
Products warranties funds	0,0	0,9	4,5	4,6	4,1
Supplementary indemnity fund for clientele	0,6	1,1	1,0	0,9	0,9
Non-competition agreement fund	1,9	1,4	0,6	0,8	0,9
Litigations fund	0,4	0,1	0,0	0,0	0,5
Funds for other contingencies and charges	3,3	3,4	0,3	1,3	2,3
Total	**6,3**	**6,9**	**6,4**	**7,6**	**8,6**
E.I Current debt	39,3	71,1	124,8	99,4	57,6
Short term quota of long term debt	30,0	30,0	40,0	10,0	17,9
Other short term bank financing	9,3	41,1	84,8	89,4	39,6
Total	**39,3**	**71,1**	**124,8**	**99,4**	**57,6**
E.V Current provisions for contingecies and charges	7,9	7,7	6,4	8,3	18,4
Products warranties funds	7,9	7,7	3,7	4,6	5,0
Provision for investment losses	0,0	0,0	0,0	0,0	0,0
Free Product Fund	0,0	0,0	2,1	3,1	3,4
Other short term provisions for contingencies	0,0	0,0	0,6	0,7	10,0
Total	**7,9**	**7,7**	**6,4**	**8,3**	**18,4**
E.VI Other current liabilities	51,6	42,6	50,3	54,7	50,0
Liabitilities toward employees	5,3	6,7	6,6	10,8	8,1
Debts towards social security and safety	3,2	3,1	3,4	4,3	3,7
Customers advances	7,1	8,7	14,9	12,1	11,2
Liabilities for VAT	15,7	5,0	8,1	7,5	6,0
Other liabilities	3,9	2,0	4,5	3,2	3,5
Prepaid expenses	1,5	1,0	0,9	2,1	3,5
Deferred charges	14,8	15,9	11,8	14,6	14,1
Total	**51,6**	**42,6**	**50,3**	**54,7**	**50,0**

	2011	2012	2013	2014	2015
Revenues	390,1	411,6	411,0	465,4	511,1
Revenues from sales of product, spare parts, hardware and softw	345,6	370,5	368,5	417,8	452,3
Revenues from transportation, installation and post-sale assistar	44,6	41,1	42,5	47,5	58,8
Total	**390,1**	**411,6**	**411,0**	**465,4**	**511,1**
Personnel expenses	-81,2	-85,5	-84,4	-91,6	-104,0
Wages	-63,6	-65,9	-65,5	-72,0	-80,8
Social charges	-14,6	-17,2	-17,8	-18,1	-20,5
Retirement costs , plans to predetermined performance	-0,1	-0,1	-0,1	-0,1	-2,1
Retirement costs , plans to predetermined contribution	-1,9	-1,8	-1,8	-1,8	0,0
Other costs	-0,9	-0,5	0,8	0,5	-0,7
Total	**-81,2**	**-85,5**	**-84,4**	**-91,6**	**-104,0**
Operating personnel expenses	-79,2	-83,5	-82,5	-89,7	-102,0
Pension gains and losses	-2,0	-2,0	-1,9	-1,9	-2,1
Total	**-81,2**	**-85,5**	**-84,4**	**-91,6**	**-104,0**
Depreciations, amortizations and impairments	-15,7	-16,6	-23,4	-27,0	-20,0
Amortizations of non tangible assets	-6,0	-7,5	-11,8	-9,5	-8,8
Depreciation of tangible assets	-7,0	-8,8	-9,4	-10,4	-10,6
Other depreciations of assets	-0,3	0,0	-0,4	-6,5	0,0
Receivables write-offs	-2,4	-0,4	-1,7	-0,6	0,0
Impairments of assets	0,0	0,0	0,0	0,0	-0,5
Total	**-15,7**	**-16,6**	**-23,4**	**-27,0**	**-20,0**
Amortizations of non tangible assets	-6,0	-7,5	-11,8	-9,5	-8,8
Development costs	-4,2	-5,5	-9,1	-7,5	-6,5
Industrial patents	-0,5	-0,5	-1,6	-1,8	-2,1
Licences, trademarksand similar assets	-0,4	-0,5	-0,1	-0,1	-0,2
Assets in course of development and payments on account	0,0	0,0	0,0	0,0	0,0
Other intangible assets	-0,9	-1,0	-0,9	-0,2	-0,2
Total	**-6,0**	**-7,5**	**-11,7**	**-9,5**	**-8,8**
Goodwill and similar assets	-0,9	-1,0	-0,9	-0,2	-0,2
Operating intangibles	-5,0	-6,5	-10,8	-9,3	-8,7
Total	**-6,0**	**-7,5**	**-11,7**	**-9,5**	**-8,8**
Depreciation of tangible assets	-7,0	-8,8	-9,4	-10,4	-10,6
Land and buildings	-0,1	-0,4	-2,5	-2,7	-2,7
impianti e macchinari	-1,5	-1,5	-1,4	-1,4	-1,4
Industrial and commercial equipment	-3,7	-3,3	-4,1	-4,8	-4,8
Other equipments	-1,3	-1,4	-1,4	-1,5	-1,8
Improvements on third party equipment	-0,4	-2,1	0,0	0,0	0,0
Assets in course of construction and payments on account	0,0	0,0	0,0	0,0	0,0
Total	**-7,0**	**-8,8**	**-9,4**	**-10,4**	**-10,6**
Provision costs for contingencies and charges	-7,7	-5,1	-3,4	-5,9	-2,6
Provisions for products warranties	-4,5	-3,5	-2,0	-4,2	
Provisions for agents bonuses	0,0	-0,1	-0,1	-0,2	
Provisions for other risks	-3,2	-1,5	-1,3	-1,6	
Total	**-7,7**	**-5,1**	**-3,4**	**-5,9**	**0,0**
Other operating costs	-3,7	-3,7	-4,4	-6,3	-4,9
License fees and other income taxes	-1,5	-1,8	-2,7	-2,3	-2,1
Non deductible VAT	-0,2	-0,1	-0,2	-0,2	0,0
Other costs (brasilian taxes e customs duties)	-2,0	-1,8	-1,5	-3,8	-2,8
Total	**-3,7**	**-3,7**	**-4,4**	**-6,3**	**-4,9**
Financial gains	0,6	0,7	0,4	0,4	0,5
positive bank interests	0,3	0,7	0,2	0,1	0,3
other financial gains	0,3	0,0	0,3	0,2	0,1
Total	**0,6**	**0,7**	**0,4**	**0,4**	**0,5**
Financial expenses	-4,3	-3,1	-3,5	-3,6	-1,7

Reclassification of balance sheet and income statement

Reorganized Balance-Sheet (Invested Capital)

	2011	2012	2013	2014	2015
Working cash*	3,9	4,1	4,1	4,7	5,1
Trade receivables	68,1	61,5	73,0	75,5	84,1
Inventories	50,2	60,6	54,5	62,2	60,4
Trade payables	-98,1	-88,6	-93,1	-93,2	-93,9
Trade working capital	**24,0**	**37,6**	**38,5**	**49,2**	**55,7**
Other operating current assets	23,1	13,7	17,1	16,5	31,8
Other operating current liabilities	-64,6	-54,3	-57,5	-69,6	-82,4
Other current assets and liabilities	**-41,5**	**-40,6**	**-40,4**	**-53,1**	**-50,6**
Net working capital	**-17,5**	**-3,0**	**-2,0**	**-3,9**	**5,1**
Tangible assets	42,6	57,6	54,2	50,0	56,9
Operating intangibles	30,5	33,0	30,6	22,6	21,0
Total operating fixed capital	**73,1**	**90,6**	**84,8**	**72,6**	**77,9**
Operating receivables and other non-current assets	0,9	1,0	0,7	0,8	0,8
Operating deferred-tax assets/(liabilities)	8,2	9,7	21,1	14,9	15,0
Operating non-current liabilities	0,0	-0,1	-5,8	-5,9	-13,5
Operating provisions	-6,3	-6,9	-6,4	-7,6	-8,6
Total other non-current operating assets and liabilities	**2,8**	**3,7**	**9,6**	**2,2**	**-6,4**
Invested capital excluding goodwill and similar intangibles	**58,4**	**91,3**	**92,5**	**70,9**	**76,6**
Goodwill and similar intangibles	0,1	2,5	1,9	0,6	0,5
Deferred tax asset/(liabilities) on similar intangibles	0,0	0,0	0,0	0,0	0,0
Goodwill and other similar intangibles	**0,1**	**2,5**	**1,9**	**0,6**	**0,5**
Invested capital including goodwill and similar intangibles	**58,6**	**93,9**	**94,4**	**71,6**	**77,1**
Non-operating current assets	0,0	0,0	4,1	4,1	0,3
Other non-operating current liabilities	0,0	0,0	-3,9	-4,2	-0,4
Non-operating non-current assets	13,7	10,4	3,9	10,0	12,6
Non-operating deferred-tax assets/(liabilities)	0,0	0,0	0,0	0,0	0,0
Non-operating non-current liabilities	-13,1	-8,6	-3,1	-5,0	-6,3
Non-operating assets	**0,6**	**1,8**	**1,0**	**5,0**	**6,2**
Total funds invested	**59,2**	**95,6**	**95,4**	**76,5**	**83,3**

Reorganized Income Statement

	2011	2012	2013	2014	2015
Revenues	**390,1**	**411,6**	**411,0**	**465,4**	**511,1**
Other income	19,1	16,5	1,1	0,7	0,7
Change in inventories	-2,6	-1,2	-6,1	8,4	0,0
Raw materials, consumables and goods	-142,3	-142,1	-152,8	-183,6	-183,4
Other operating costs	-3,7	-3,7	-4,4	-6,3	-4,9
Service and disposal of assets	-116,9	-142,3	-129,8	-133,5	-139,5
Operating cost (personnel and D&A excluded)	**-265,5**	**-289,4**	**-293,1**	**-315,0**	**-327,7**
Personnel expenses	-81,2	-85,5	-84,4	-91,6	-104,0
EBITDA	**62,6**	**53,1**	**34,6**	**59,5**	**80,0**
Depreciation	-7,3	-8,8	-9,8	-16,9	-10,6
Amortization of operating intangibles	-5,0	-6,5	-10,8	-9,3	-8,7
Total D&A	*-12,4*	*-15,3*	*-20,6*	*-26,3*	*-19,3*
EBITA	**50,2**	**37,9**	**14,0**	**33,2**	**60,7**
Amortization of assets similar to goodwill	-0,9	-1,0	-0,9	-0,2	-0,2
Receivables write-offs	-2,4	-0,4	-1,7	-0,6	0,0
Impairments of assets	0,0	0,0	0,0	0,0	-0,5
Provision costs for contingencies and charges	-7,7	-5,1	-3,4	-5,9	-2,6
EBIT	**39,3**	**31,4**	**8,0**	**26,5**	**57,4**
Share of joint venture result	0,0	0,0	0,0	1,7	1,0
Interest income (expense) from investments	0,3	0,1	0,2	0,2	-0,9
Exchange rate (losses) gains	1,3	-1,6	-2,9	-0,8	-1,3
Financial (expense) income	-3,8	-2,5	-3,1	-3,2	-1,2
Net financial result	*-2,5*	*-4,1*	*-6,0*	*-3,9*	*-2,6*
EBT	**37,1**	**27,4**	**2,2**	**24,4**	**55,0**
Taxes	-11,5	-7,0	-0,5	-18,8	-26,6
Group Net Income	**25,6**	**20,4**	**1,7**	**5,6**	**28,4**
Minority result	-0,4	-0,8	-0,3	-0,1	-0,2
Net Income	**25,2**	**19,6**	**1,4**	**5,5**	**28,2**

NOPLAT calculation

NOPLAT calculation

€ million	2011	2012	2013	2014	2015
EBITA	**50,2**	**37,9**	**14,0**	**33,2**	**60,7**
Operating taxes*	-12,4	-8,4	-2,3	-19,5	-27,3
NOPLAT	**37,9**	**29,4**	**11,6**	**13,7**	**33,4**

Operating taxes calculation

	2011	2012	2013	2014	2015
EBT	37,1	27,4	2,2	24,4	55,0
Income taxes	-11,5	-7,0	-0,5	-18,8	-26,6
Actual (blended global) tax rate	**31%**	**26%**	**22%**	**77%**	**48%**
Adjustments:					
Amortization of assets similar to goodwill	-0,9	-1,0	-0,9	-0,2	-0,2
Estimated tax rate	31%	31%	31%	31%	31%
Taxes	0,3	0,3	0,3	0,1	0,1
Receivables write-offs	-2,4	-0,4	-1,7	-0,6	0,0
Estimated tax rate	0%	0%	0%	0%	0,0
Taxes	0,0	0,0	0,0	0,0	0,0
Provision costs for contingencies and charges	-7,7	-5,1	-3,4	-5,9	-2,6
Estimated tax rate	0%	0%	0%	0%	0%
Taxes	0,0	0,0	0,0	0,0	0,0
Share of joint venture result	0,0	0,0	0,0	1,7	1,0
Estimated tax rate	28%	28%	28%	28%	28%
Taxes	0,0	0,0	0,0	-0,5	-0,3
Interest income (expense) from investments	0,3	0,1	0,2	0,2	-0,9
Estimated tax rate	28%	28%	28%	28%	28%
Taxes	-0,1	0,0	-0,1	-0,1	0,2
Net financial result	-2,5	-4,1	-6,0	-3,9	-2,6
Estimated tax rate	28%	28%	28%	28%	28%
Taxes	0,7	1,1	1,7	1,1	0,7
Estimated taxes on EBITA	-12,4	-8,4	-2,3	-19,5	-27,3
EBITA	50,2	37,9	14,0	33,2	60,7
Estimated tax rate on EBITA	**25%**	**22%**	**17%**	**59%**	**45%**
Taxes on EBITA	-12,4	-8,4	-2,3	-19,5	-27,3
Adjustments on taxes	0,9	1,4	1,9	0,6	0,7
Taxes on EBT	-11,5	-7,0	-0,5	-18,8	-26,6

Reconciliation of NOPLAT to net profit

	2011	2012	2013	2014	2015
NOPLAT	**37,9**	**29,4**	**11,6**	**13,7**	**33,4**
Amortization of goodwill and other similar intangibles	-0,9	-1,0	-0,9	-0,2	-0,2
Impairments of assets	0,0	0,0	0,0	0,0	-0,5
Receivables write offs	-2,4	-0,4	-1,7	-0,6	0,0
Provision costs for contingencies and charges	-7,7	-5,1	-3,4	-5,9	-2,6
Share of joint venture result	0,0	0,0	0,0	1,7	1,0
Interest income (expense) from investments	0,3	0,1	0,2	0,2	-0,9
Net financial result	-2,5	-4,1	-6,0	-3,9	-2,6
Non-operating taxes	0,9	1,4	1,9	0,6	0,7
Minority result	-0,4	-0,8	-0,3	-0,1	-0,2
Net Income	**25,2**	**19,6**	**1,4**	**5,5**	**28,2**

Free cash flow calculation

Free Cash Flow Calculation

€ million	2012	2013	2014	2015
NOPLAT	**29,4**	**11,6**	**13,7**	**33,4**
Amortization of operating intangibles	6,5	10,8	9,3	8,7
Depreciation	8,8	9,8	16,9	10,6
Gross cash flow	**44,7**	**32,3**	**40,0**	**52,7**
Change in operating working capital	-14,5	-1,0	1,9	-9,0
Net capital expenditures	-32,7	-14,8	-14,1	-24,6
Change in other operating assets and liabilities	-0,9	-5,9	7,4	8,6
Gross investment	**-48,2**	**-21,7**	**-4,7**	**-25,0**
Free cash flow before goodwill and similar intangibles	**-3,5**	**10,5**	**35,2**	**27,7**
Investments in goodwill and other intangibles	-3,4	-0,3	1,1	0,0
Free cash flow after goodwill and similar intangibles	**-6,8**	**10,3**	**36,4**	**27,7**
Investments in non-operating assets	-1,2	0,7	-3,9	-1,2
Impairments of assets	0,0	0,0	0,0	-0,5
Receivables write-offs	-0,4	-1,7	-0,6	0,0
Provision costs for contingencies and charges	-5,1	-3,4	-5,9	-2,6
Share of joint venture result	0,0	0,0	1,7	1,0
Interest income (expense) from investments	0,1	0,2	0,2	-0,9
Non-operating taxes	1,4	1,9	0,6	0,7
Change in debt equivalents	0,2	1,0	0,2	-0,2
Non-operating cash flow	**-5,1**	**-1,3**	**-7,8**	**-3,7**
Cash available to investors	**-11,9**	**9,0**	**28,6**	**24,0**
Net financial result	-4,1	-6,0	-3,9	-2,6
Change in minority interests	-0,2	-0,6	-0,6	0,0
Change in shareholders' equity	0,0	-2,4	1,6	4,8
Decrease (increase) in net financial position	**-16,2**	**-0,1**	**25,6**	**26,2**
Beginning net financial position	**72,3**	**88,5**	**88,6**	**63,0**
Ending net financial position	**88,5**	**88,6**	**63,0**	**36,8**

Appendix 2: Comparables reclassification of balance sheet and income statement and comparison with Technogym

Comparison with Nautilus

Comparison with Nautilus Sport Income Statement								
milion €	Technogym				Nautilus			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Revenues	**411,6**	**411,0**	**465,4**	**511,1**	**193,9**	**218,8**	**274,4**	**335,8**
YoY % increase		*0%*	*13%*	*10%*		*13%*	*25%*	*22%*
Other income	16,5	1,1	0,7	0,7	0,0	0,0	0,0	0,0
Total operating cost (personnel and D&A excluded)	-289,4	-293,1	-315,0	-327,7	-180,1	-199,8	-240,3	-292,1
Personnel expenses	-85,5	-84,4	-91,6	-104,0	0,0	0,0	0,0	0,0
EBITDA	**53,1**	**34,6**	**59,5**	**80,0**	**13,8**	**19,0**	**34,2**	**43,7**
EBITDA margin	*13%*	*8%*	*13%*	*16%*	*7%*	*9%*	*12%*	*13%*
Total D&A	-15,3	-20,6	-26,3	-19,3	-3,2	-3,3	-4,0	-3,4
EBITA	**37,9**	**14,0**	**33,2**	**60,7**	**10,6**	**15,7**	**30,2**	**40,3**
Amortization of goodwill and other similar intangibles	-1,0	-0,9	-0,2	-0,2	0,0	0,0	0,0	0,0
Receivables write-offs	-0,4	-1,7	-0,6	0,0	0,0	0,0	0,0	0,0
Provision costs for contingencies and charges	-5,1	-3,4	-5,9	-2,6	0,0	0,0	0,0	0,0
EBIT	**31,4**	**8,0**	**26,5**	**58,0**	**10,6**	**15,7**	**30,2**	**40,3**
EBIT margin	*8%*	*2%*	*6%*	*11%*	*5%*	*7%*	*11%*	*12%*
Share of joint venture result	0,0	0,0	1,7	1,0	0,0	0,0	0,0	0,0
Interest income (expense) from investments	0,1	0,2	0,2	-0,9	0,0	0,0	0,0	0,0
Net financial result	-4,1	-6,0	-3,9	-2,6	-0,2	0,3	0,1	-0,2
EBT	**27,4**	**2,2**	**24,4**	**55,5**	**10,4**	**16,0**	**30,2**	**40,0**
Taxes	-7,0	-0,5	-18,8	-26,6	0,2	32,1	-9,8	-13,2
Income (loss) from discontinued operations	0,0	0,0	0,0	0,0	6,2	-0,2	-1,6	-0,2
Group Net Income	**20,4**	**1,7**	**5,6**	**28,9**	**16,9**	**48,0**	**18,8**	**26,6**
Minority result	-0,8	-0,3	-0,1	-0,2	0,0	0,0	0,0	0,0
Net Income	**19,6**	**1,4**	**5,5**	**28,7**	**16,9**	**48,0**	**18,8**	**26,6**

Comparison with Nautilus Reorganized Balance-Sheet (Invested Capital Calculation)

milion €	Technogym				Nautilus			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Working cash*	4,1	4,1	4,7	5,1	1,9	2,2	2,7	3,4
Trade receivables	61,5	73,0	75,5	84,1	18,8	15,8	26,3	45,2
Inventories	60,6	54,5	62,2	60,4	5,8	6,9	24,9	42,7
Trade payables	-88,6	-93,1	-93,2	-93,9	-32,8	-37,2	-47,6	-61,7
Trade working capital	**37,6**	**38,5**	**49,2**	**55,7**	**-6,3**	**-12,3**	**6,3**	**29,5**
Other current assets	13,7	17,1	16,5	31,8	0,1	0,1	7,0	6,9
Other current liabilities	-54,3	-57,5	-69,6	-82,4	-10,4	-10,7	-12,1	-17,8
Other current assets and liabilities	-40,6	-40,4	-53,1	-50,6	**-10,3**	**-10,7**	**-5,1**	**-10,9**
Net working capital	**-3,0**	**-2,0**	**-3,9**	**5,1**	**-16,6**	**-22,9**	**1,2**	**18,6**
Tangible assets	57,6	54,2	50,0	56,9	6,1	8,5	9,6	16,8
Operating intangibles	33,0	30,6	22,6	21,0	14,7	12,6	10,6	73,4
Total operating fixed capital	**90,6**	**84,8**	**72,6**	**77,9**	**20,8**	**21,1**	**20,2**	**90,1**
Operating receivables and other non-current assets	1,0	0,7	0,8	0,8	0,4	0,4	0,6	0,4
Operating deferred-tax assets/(liabilities)	9,7	21,1	14,9	15,0	0,0	0,0	0,0	0,0
Operating non-current liabilities	-0,1	-5,8	-5,9	-13,5	-0,2	0,0	0,0	-3,8
Operating provisions	-6,9	-6,4	-7,6	-8,6	0,0	0,0	0,0	0,0
Total other non-current operating assets and liabi	**3,7**	**9,6**	**2,2**	**-6,4**	**0,2**	**0,4**	**0,6**	**-3,4**
Invested capital excluding goodwill and similar in	**91,3**	**92,5**	**70,9**	**76,6**	**4,4**	**-1,4**	**22,1**	**105,4**
Goodwill and similar intangibles	2,5	1,9	0,6	0,5	2,9	2,7	2,5	60,5
Deferred tax asset/(liabilities) on similar intangibles	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Goodwill and other similar intangibles	**2,5**	**1,9**	**0,6**	**0,5**	**2,9**	**2,7**	**2,5**	**60,5**
Invested capital including goodwill and similar int	**93,9**	**94,4**	**71,6**	**77,1**	**7,3**	**1,3**	**24,6**	**165,8**
Non-operating current assets	0,0	4,1	4,1	0,3	0,3	4,4	12,4	9,3
Other non-operating current liabilities	0,0	-3,9	-4,2	-0,4	-2,8	-2,6	-3,7	-4,1
Non-operating non-current assets	10,4	3,9	10,0	12,6	0,0	0,0	0,0	0,0
Non-operating deferred-tax assets/(liabilities)	0,0	0,0	0,0	0,0	-1,2	25,7	9,5	-18,4
Non-operating non-current liabilities	-8,6	-3,1	-5,0	-6,3	-2,0	-1,5	-1,2	-3,1
Non-operating assets	**1,8**	**1,0**	**5,0**	**6,2**	**-5,8**	**26,1**	**17,1**	**-16,3**
Total funds invested	**95,6**	**95,4**	**76,5**	**83,3**	**1,6**	**27,4**	**41,6**	**149,5**

Comparison with Nautilus Reorganized Balance-Sheet (Net financial position calculation)

milion €	Technogym				Nautilus			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Excess cash	-22,6	-36,3	-36,5	-62,9	-43,0	-64,1	-69,4	-57,4
Long-term borrowings	40,0	0,1	0,0	42,1	1,3	0,0	0,0	16,0
Adjustment on short term borrowings	71,1	124,8	99,4	57,6	0,0	0,0	0,0	64,0
Net financial position	**88,5**	**88,6**	**63,0**	**36,8**	**-41,8**	**-64,1**	**-69,4**	**22,5**
Provision for employee benefit	2,1	3,1	3,3	3,1	0,0	0,0	0,0	0,0
Debt equivalents	**2,1**	**3,1**	**3,3**	**3,1**	**0,0**	**0,0**	**0,0**	**0,0**
Net financial position and debt equivalents	**90,6**	**91,7**	**66,2**	**39,9**	**-41,8**	**-64,1**	**-69,4**	**22,5**
Minority interests	**1,0**	**0,7**	**0,2**	**0,4**	**0,0**	**0,0**	**0,0**	**0,0**
Shareholders' equity	**4,0**	**2,9**	**10,0**	**43,0**	**43,3**	**91,6**	**111,1**	**127,0**
Total source of financing	**95,6**	**95,4**	**76,5**	**83,3**	**1,6**	**27,4**	**41,6**	**149,5**

Comparison with Amer Sport

Comparison with Amer Sport Income Statement

milion €	Technogym				Amer			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Revenues	**411,6**	**411,0**	**465,4**	**511,1**	**2064,0**	**2136,5**	**2228,7**	**2534,4**
YoY % increase		*0%*	*13%*	*10%*		*4%*	*4%*	*14%*
Other income	16,5	1,1	0,7	0,7	13,5	10,9	11,7	12,1
Total operating cost (personnel and D&A excluded)	-289,4	-293,1	-315,0	-327,7	-1500,6	-1534,1	-1652,3	-1862,1
Personnel expenses	-85,5	-84,4	-91,6	-104,0	-398,0	-416,2	-429,2	-429,2
EBITDA	**53,1**	**34,6**	**59,5**	**80,0**	**178,9**	**197,1**	**158,9**	**255,2**
EBITDA margin	*13%*	*8%*	*13%*	*16%*	*9%*	*9%*	*7%*	*10%*
Total D&A	-15,3	-20,6	-26,3	-19,3	-40,2	-42,2	-44,8	-51,1
EBITA	**37,9**	**14,0**	**33,2**	**60,7**	**138,7**	**154,9**	**114,1**	**204,1**
Amortization of goodwill and other similar intangibles	-1,0	-0,9	-0,2	-0,2	0,0	0,0	0,0	0,0
Receivables write-offs	-0,4	-1,7	-0,6	0,0	0,0	0,0	0,0	0,0
Provision costs for contingencies and charges	-5,1	-3,4	-5,9	-2,6	0,0	0,0	0,0	0,0
EBIT	**31,4**	**8,0**	**26,5**	**58,0**	**138,7**	**154,9**	**114,1**	**204,1**
EBIT margin	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*
Share of joint venture result	0,0	0,0	1,7	1,0	-24,8	0,0	0,0	0,0
Interest income (expense) from investments	0,1	0,2	0,2	-0,9	0,0	0,0	0,0	0,0
Net financial result	-4,1	-6,0	-3,9	-2,6	-31,5	-28,6	-37,1	-36,1
EBT	**27,4**	**2,2**	**24,4**	**55,5**	**82,4**	**126,3**	**77,0**	**168,0**
Taxes	-7,0	-0,5	-18,8	-26,6	-24,5	-36,0	-21,6	-46,4
Group Net Income	**20,4**	**1,7**	**5,6**	**28,9**	**57,9**	**90,3**	**55,4**	**121,6**
Minority result	-0,8	-0,3	-0,1	-0,2	0,0	0,0	0,0	0,0
Net Income	**19,6**	**1,4**	**5,5**	**28,7**	**57,9**	**90,3**	**55,4**	**121,6**

Comparison with Amer Sport Reorganized Balance-Sheet (Invested Capital Calculation)

milion €	Technogym				Amer			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Working cash*	4,1	4,1	4,7	5,1	20,6	21,4	22,3	25,3
Trade receivables	61,5	73,0	75,5	84,1	516,8	514,2	543,3	563,9
Inventories	60,6	54,5	62,2	60,4	336,7	355,1	413,2	482,0
Trade payables	-88,6	-93,1	-93,2	-93,9	-192,9	-219,2	-237,8	-275,7
Trade working capital	**37,6**	**38,5**	**49,2**	**55,7**	**681,2**	**671,5**	**741,0**	**795,5**
Other current assets	13,7	17,1	16,5	31,8	68,7	117,0	101,4	91,2
Other current liabilities	-54,3	-57,5	-69,6	-82,4	-260,2	-254,6	-277,4	-333,9
Other current assets and liabilities	-40,6	-40,4	-53,1	-50,6	**-191,5**	**-137,6**	**-176,0**	**-242,7**
Net working capital	**-3,0**	**-2,0**	**-3,9**	**5,1**	**489,7**	**533,9**	**565,0**	**552,8**
Tangible assets	57,6	54,2	50,0	56,9	162,9	168,3	174,0	206,7
Operating intangibles	33,0	30,6	22,6	21,0	211,4	205,0	204,7	282,1
Total operating fixed capital	**90,6**	**84,8**	**72,6**	**77,9**	**374,3**	**373,3**	**378,7**	**488,8**
Operating receivables and other non-current assets	1,0	0,7	0,8	0,8	1,2	4,3	21,5	11,6
Operating deferred-tax assets/(liabilities)	9,7	21,1	14,9	15,0	105,1	89,0	81,5	15,9
Operating non-current liabilities	-0,1	-5,8	-5,9	-13,5	-21,4	-18,6	-21,9	-25,9
Operating provisions	-6,9	-6,4	-7,6	-8,6	-4,6	-1,5	-2,1	-2,5
Total other non-current operating assets and liabi	**3,7**	**9,6**	**2,2**	**-6,4**	**80,3**	**73,2**	**79,0**	**-0,9**
Invested capital excluding goodwill and similar in	**91,3**	**92,5**	**70,9**	**76,6**	**944,3**	**980,4**	**1022,7**	**1040,7**
Goodwill and similar intangibles	2,5	1,9	0,6	0,5	289,1	281,2	305,0	346,2
Deferred tax asset/(liabilities) on similar intangibles	0,0	0,0	0,0	0,0	0,0	0,0	0,0	4,2
Goodwill and other similar intangibles	**2,5**	**1,9**	**0,6**	**0,5**	**289,1**	**281,2**	**305,0**	**350,4**
Invested capital including goodwill and similar in	**93,9**	**94,4**	**71,6**	**77,1**	**1233,4**	**1261,6**	**1327,7**	**1391,1**
Non-operating current assets	0,0	4,1	4,1	0,3	22,3	51,5	84,0	124,0
Other non-operating current liabilities	0,0	-3,9	-4,2	-0,4	-24,2	-32,5	-52,3	-75,6
Non-operating non-current assets	10,4	3,9	10,0	12,6	0,6	0,3	0,3	0,4
Non-operating deferred-tax assets/(liabilities)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	55,5
Non-operating non-current liabilities	-8,6	-3,1	-5,0	-6,3	0,0	0,0	0,0	0,0
Non-operating assets	**1,8**	**1,0**	**5,0**	**6,2**	**-1,3**	**19,3**	**32,0**	**104,3**
Total funds invested	**95,6**	**95,4**	**76,5**	**83,3**	**1232,1**	**1280,9**	**1359,7**	**1495,4**

Comparison with Amer Sport Reorganized Balance-Sheet (Net financial position calculation)

milion €	Technogym				Amer			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Excess cash	-22,6	-36,3	-36,5	-62,9	-121,9	-215,0	-202,4	-306,1
Long-term borrowings	40,0	0,1	0,0	42,1	369,6	515,0	390,3	634,5
Adjustment on short term borrowings	71,1	124,8	99,4	57,6	198,6	183,8	269,0	157,2
Net financial position	**88,5**	**88,6**	**63,0**	**36,8**	**446,3**	**483,8**	**456,9**	**485,6**
Provision for employee benefit	2,1	3,1	3,3	3,1	54,0	35,8	60,0	60,2
Debt equivalents	**2,1**	**3,1**	**3,3**	**3,1**	**54,0**	**35,8**	**60,0**	**60,2**
Net financial position and debt equivalents	**90,6**	**91,7**	**66,2**	**39,9**	**500,3**	**519,6**	**516,9**	**545,8**
Minority interests	**1,0**	**0,7**	**0,2**	**0,4**	**0,0**	**0,0**	**0,0**	**0,0**
Shareholders' equity	**4,0**	**2,9**	**10,0**	**43,0**	**731,8**	**761,3**	**842,8**	**949,6**
Total source of financing	**95,6**	**95,4**	**76,5**	**83,3**	**1232,1**	**1280,9**	**1359,7**	**1495,4**

Comparison with Brunswick

Comparison with Escalade Sport Income Statement								
milion €	Technogym				Brunswick			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Revenues	**411,6**	**411,0**	**465,4**	**511,1**	**3717,6**	**3887,5**	**3838,7**	**4105,7**
YoY % increase		*0%*	*13%*	*10%*		*5%*	*-1%*	*7%*
Other income	16,5	1,1	0,7	0,7	0	0	0	0
Total operating cost (personnel and D&A excluded)	-289,4	-293,1	-315,0	-327,7	-3354,8	-3490,5	-3424,8	-3672,7
Personnel expenses	-85,5	-84,4	-91,6	-104,0	0	0	0	0
EBITDA	**53,1**	**34,6**	**59,5**	**80,0**	**362,8**	**397**	**413,9**	**433**
EBITDA margin	*13%*	*8%*	*13%*	*16%*	*10%*	*10%*	*11%*	*11%*
Total D&A	-15,3	-20,6	-26,3	-19,3	-68,8	-68,7	-78,3	-85,9
EBITA	**37,9**	**14,0**	**33,2**	**60,7**	**294**	**328,3**	**335,6**	**347,1**
Amortization of goodwill and other similar intangibles	-1,0	-0,9	-0,2	-0,2	-4,1	-2,7	-2,9	-3
Receivables write-offs	-0,4	-1,7	-0,6	0,0	0	0	0	0
Provision costs for contingencies and charges	-5,1	-3,4	-5,9	-2,6	0	0	0	0
EBIT	**31,4**	**8,0**	**26,5**	**58,0**	**289,9**	**325,6**	**332,7**	**344,1**
EBIT margin	*8%*	*2%*	*6%*	*11%*	*8%*	*8%*	*9%*	*8%*
Share of joint venture result	0,0	0,0	1,7	1,0	2,2	2,5	6,5	5,4
Interest income (expense) from investments	0,1	0,2	0,2	-0,9	-25,8	-21,4	-24,4	-12,4
Goodwill and intangible assets impairment	0,0	0,0	0,0	0,0	0	0	0	0
Equity method investment impairment	0,0	0,0	0,0	0,0	-3,8	-1,9	1,8	3,7
Net financial result	-4,1	-6,0	-3,9	-2,6	-81,5	-75,2	-28,7	-25,6
EBT	**27,4**	**2,2**	**24,4**	**55,5**	**181**	**229,6**	**287,9**	**315,2**
Taxes	-7,0	-0,5	-18,8	-26,6	-33,6	545,6	-93	-87,8
Income (loss) from discontinued operations	0,0	0,0	0,0	0,0	-97,4	-6	50,8	14
Group Net Income	**20,4**	**1,7**	**5,6**	**28,9**	**50**	**769,2**	**245,7**	**241,4**
Minority result	-0,8	-0,3	-0,1	-0,2	0	0	0	0
Net Income	**19,6**	**1,4**	**5,5**	**28,7**	**50**	**769,2**	**245,7**	**241,4**

Comparison with Escalade Reorganized Balance-Sheet (Invested Capital Calculation)

milion €	Technogym				Brunswick			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Working cash*	4,1	4,1	4,7	5,1	37,176	38,875	38,387	41,057
Trade receivables	61,5	73,0	75,5	84,1	349,2	364,6	386,5	398,1
Inventories	60,6	54,5	62,2	60,4	575,8	599,2	652,3	685
Trade payables	-88,6	-93,1	-93,2	-93,9	-334,3	-315,6	-317,4	-339,1
Trade working capital	**37,6**	**38,5**	**49,2**	**55,7**	**627,88**	**687,08**	**759,79**	**785,06**
Other current assets	13,7	17,1	16,5	31,8	26,7	31,4	39,5	39,8
Other current liabilities	-54,3	-57,5	-69,6	-82,4	-576,2	-561,1	-561,5	-563
Other current assets and liabilities	-40,6	-40,4	-53,1	-50,6	**-549,5**	**-529,7**	**-522**	**-523,2**
Net working capital	**-3,0**	**-2,0**	**-3,9**	**5,1**	**78,376**	**157,38**	**237,79**	**261,86**
Tangible assets	57,6	54,2	50,0	56,9	510,9	537,1	362,3	401,4
Operating intangibles	33,0	30,6	22,6	21,0	38,1	35,4	45,5	55,1
Total operating fixed capital	**90,6**	**84,8**	**72,6**	**77,9**	**549**	**572,5**	**407,8**	**456,5**
Operating receivables and other non-current assets	1,0	0,7	0,8	0,8	70,5	80,7	98	103,8
Operating deferred-tax assets/(liabilities)	9,7	21,1	14,9	15,0	-92,7	377	287,7	227,4
Operating non-current liabilities	-0,1	-5,8	-5,9	-13,5	-197,5	-193,6	-203	-160,8
Operating provisions	-6,9	-6,4	-7,6	-8,6	0	0	0	0
Total other non-current oper. assets and liab.	**3,7**	**9,6**	**2,2**	**-6,4**	**-219,7**	**264,1**	**182,7**	**170,4**
Invested capital excluding goodwill	**91,3**	**92,5**	**70,9**	**76,6**	**407,68**	**993,98**	**828,29**	**888,76**
Goodwill and similar intangibles	2,5	1,9	0,6	0,5	291,7	291,7	296,9	298,7
Deferred tax asset/(liabilities) on similar intangibles	0,0	0,0	0,0	0,0	0	0	0	0
Goodwill and other similar intangibles	**2,5**	**1,9**	**0,6**	**0,5**	**291,7**	**291,7**	**296,9**	**298,7**
Invested capital including goodwill	**93,9**	**94,4**	**71,6**	**77,1**	**699,38**	**1285,7**	**1125,2**	**1187,5**
Non-operating current assets	0,0	4,1	4,1	0,3	92,3	12,7	113,2	11,5
Other non-operating current liabilities	0,0	-3,9	-4,2	-0,4	-18,4	0	-15,7	0
Non-operating non-current assets	10,4	3,9	10,0	12,6	152,8	85,4	69,1	68,9
Non-operating deferred-tax assets/(liabilities)	0,0	0,0	0,0	0,0	18,8	137,6	208	180,5
Non-operating non-current liabilities	-8,6	-3,1	-5,0	-6,3	0	0	0	0
Non-operating assets	**1,8**	**1,0**	**5,0**	**6,2**	**245,5**	**235,7**	**374,6**	**260,9**
Total funds invested	**95,6**	**95,4**	**76,5**	**83,3**	**944,88**	**1521,4**	**1499,8**	**1448,4**

Comparison with Amer Sport Reorganized Balance-Sheet (Net financial position calculation)

milion €	Technogym				Brunswick			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Excess cash	-22,6	-36,3	-36,5	-62,9	-260,124	-324,125	-529,913	-628,943
Long-term borrowings	40,0	0,1	0,0	42,1	566,5	453,4	454,5	442,5
Adjustment on short term borrowings	71,1	124,8	99,4	57,6	8,2	6,4	5,5	6
Net financial position	**88,5**	**88,6**	**63,0**	**36,8**	**314,58**	**135,68**	**-69,913**	**-180,44**
Provision for employee benefit	2,1	3,1	3,3	3,1	552,6	347,3	398,2	347,5
Debt equivalents	**2,1**	**3,1**	**3,3**	**3,1**	**552,6**	**347,3**	**398,2**	**347,5**
Net financial position and debt equivalents	**90,6**	**91,7**	**66,2**	**39,9**	**867,18**	**482,98**	**328,29**	**167,06**
Minority interests	**1,0**	**0,7**	**0,2**	**0,4**	**0**	**0**	**0**	**0**
Shareholders' equity	**4,0**	**2,9**	**10,0**	**43,0**	**77,7**	**1038,4**	**1171,5**	**1281,3**
Total source of financing	**95,6**	**95,4**	**76,5**	**83,3**	**944,88**	**1521,4**	**1499,8**	**1448,4**

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