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An analysis of the value creation and the value earned in Leverage Buyouts

The case study of Applus+

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Abstract

The purpose of this paper is to provide an insightful analysis of the value creation in leveraged buyouts from two different lenses: value creation and value earned. To do so, this paper has been structured in three parts. In part one, the main value creation levers in LBOs are identified from an extensive literature review based on the current state of research in the topic. These value creation levers have been classified according to the stakeholders accountable for the value created through each of the levers, namely, the Private Equity fund, the Management team and the debt holders.

In part two, various propositions to calculate the value earned by the different stakeholders of the LBO are described, including the value earned by the target company as an additional stakeholder.

Last but not least, part three consists on the case study of Applus+, a Spanish company leader in the TIC industry. In this case study, the different value creation levers described in part one are analysed, as well as the value earned by the different stakeholders. The result of the case study is that value was essentially created through a combination of multiple acquisitions and a high leverage, backed by disciplined cash-flow management. Furthermore, the analysis of the value earned by the different stakeholders shows an uneven distribution of the value earned.

Table of Contents

Part I. Value creation levers in Leveraged Buyouts	4
Value creation at the Private Equity fund level	4
Deal sourcing, selection skills and market timing	4
Negotiation skills & asymmetric information	5
Corporate governance improvements	6
Exit strategies	7
Agency theory. Aligning the interests of Managers and Shareholders	8
Management incentives and ownership	8
Debt discipline	9
Management action. Improving the performance of the target company	10
Improving EBITDA: Operating performance improvements	10
Creating a sustainable competitive advantage: Strategic improvements	11
Improving the cash-flows. Capex and Working Capital management	12
Leverage & Capital Structure	13
The rationale of high leverage for the Private Equity fund	13
Does the company benefit from debt arbitrage?	14
The credit market, typical LBO debt instruments and the WACC	14
Tax deductibility of interests	18
Agency theory. Debt providers and financial covenants	18
Externalities of LBOs	20
Employment	20
Innovation	20
Corporate Social Responsibility	21
Value creation levers and their KPIs	23
Part II. Measuring value earned by the different stakeholders	24
Quantifying the value earned by the shareholders	24
Internal Rate of Return, Multiple on Invested Cash and Profitability Index	24
Disaggregation of the Internal Rate of Return	26
Method 1. Academic Approach	26
Method 2. Practitioner approach	27
Quantifying the value earned by the target company	28
Return on Equity	28
Return on Capital Employed or Return on Invested Capital	29
Economic Value Added and Market Value Added	30
Quantifying the value earned by the Managers	31
Quantifying the value earned by the debt providers	31
Part III. Case Study: Applus+	33
The Company: Applus+ in 2007	33
The Industry: Testing, Inspection and certification (TIC)	35
The Deal	37
The structure of the deal	38
The shareholders: The Carlyle Group and a consortium of local institutional investors	39
The sources of funds. Debt structure and equity invested	40
The uses of funds. Equity valuation, net debt and transaction fees	41
The implied cost of capital	43
Governance and the Management of the company	44
Analysis of the LBO. Value creation between 2007 and 2013	46

The skill-set of the Private Equity firm. Valuation of the company at entry	46
Peer Multiple Analysis	46
DCF analysis	47
Management action. Improving the performance of the target company	50
Operational performance improvements. EBITDA and cost structure	50
Strategic Improvements. Organic revenue growth and buy-and-build strategy	54
Cash-flow management. CAPEX and Working Capital	55
The performance of the debt structure	58
Exit. The IPO.....	60
Analysis of the value earned by the different stakeholders.....	64
Quantification of the value earned by shareholders.....	64
Quantification of the value earned by the company.....	67
Quantification of the value earned by the management team.....	68
Quantification of the value earned by the debt holders.....	69
Conclusions	71
Bibliography.....	73

Part I. Value creation levers in Leveraged Buyouts

Value creation at the Private Equity fund level

Deal sourcing, selection skills and market timing

Private equity firms are widely known to be secretive in almost any aspect of its activities. One of the areas of secrecy, where there is not much academic research either, is the actual practices and skills that private equity managers use and to find investment opportunities.

Private equity fund managers have to show investment skills, both in buying and selling. Goold and Barbet (Goold & Barber, 2007) consider that one of the questions when assessing the ability of firms to undertake private equity deals is *“Can you spot and correctly value businesses with improvement opportunities?”*

On average, private equity firms close 3.6% of the deals they consider as potential opportunities (Gompers, Kaplan, & Mukharlyamo, 2016). Indeed, private equity firms seem to dedicate extensive efforts to this stage of the value chain. According to Gompers, Kaplan & Mukharlyamo (Gompers, Kaplan, & Mukharlyamo, 2016), private equity firms consider that around half of the deals they go through are self-sourced, as opposed to generated by investment banks, deal-brokers or other private equity firms. Furthermore, some research suggests that proprietary deals perform better than those sourced externally (Loos, 2005). These findings highlight the importance of the extensive professional networks and connections of the private equity fund managers as sources of potentially successful deals.

Private equity firms trust their analysts' skills in projecting cash-flow generation ability of the target and detecting improvement opportunities. This is consistent with the findings of Gompers, Kaplan & Mukharlyamo (Gompers, Kaplan, & Mukharlyamo, 2016) after interviewing 76 private equity firms: the most important aspect for private equity firms when deciding upon investing in a company is its business model and the forecasts provided by the management of the target. Strong LBO backed target business models usually enjoy strong market positioning, stable cash-flows and low CAPEX, (Private Equity Investment Criteria, 2015). Private equity managers will discount the forecasts provided by the target management if they are deemed too optimistic, and then will use the resulting business plan as a base to value the target company.

Management team and value-addition possibilities by the private equity firm come later in importance. Surprisingly enough, according to Gompers, Kaplan and Mukharlyamo, the industry is not as relevant for the interviewed private equity firms. Further research seems to support the non-significance of the industry where target firms operate (Loos, 2005).

One could infer from the previous paragraph that due diligence is a crucial step in the decision of investing in a potential target. However, in most academic research, due diligence is not really considered as value-adding upon private equity manager's views.

A usual way to evaluate the investment skills of fund managers is by differentiating between asset allocation, security selection and market timing. In this case, asset allocation is constrained to LBO-backed private equity investments. However, it is not usual to distinguish between security selection and market timing when assessing the skills of private equity fund managers. Business plan analysis and cash-flow forecasting can be considered as part of security selection skillset in private equity. On the other side, Schmidt, Nowak and Knigge concluded that for private equity funds, "fund performance is not driven by market timing but rather significantly related to the experience of the individual fund manager" (Schmidt, Nowak, & Knigge, 2004).

Nevertheless, Kaplan and Strömberg found evidence that private equity fund managers "take advantage of market timing and market mispricing between equity markets and debt markets" to improve their returns (Kaplan & Strömberg, 2008). As it will be developed in a section dedicated to leverage, these trends result in a strong correlation between the state of debt markets and the state of the private equity industry. Rather than underestimating security selection for private equity investments, these findings underline the importance of finding optimal capital structures for the targets as one of the skillsets of private equity managers.

All in all, deal sourcing capacity, business model analysis and cash-flow forecasting can be inferred from this section as potential value creation levers in LBOs by the private equity funds.

Negotiation skills & asymmetric information

Private equity fund managers have a strong interest in pushing down initial valuations to acquire targets at lower prices and improve future returns.

There is evidence in the fact that private equity firms tend to pay less for comparable targets than strategic buyers do. Intuitively, this makes sense as strategic buyers' investment scope is more reduced than that of private equity firms and will therefore be willing to pay a premium for a one-shot opportunity of creating synergies. On the other side, private equity firms screen multiple options before seriously considering an investment opportunity.

Butler also suggests that private equity managers are tough negotiators and tend to drive acquisition prices down from initially agreed prices as a consequence of finding company inefficiencies or hidden liabilities while they run due diligences on their targets (Butler, 2001).

One extensive practice in the negotiation of acquisition prices in LBOs is the use of Earn-out clauses. Earn-outs are aimed at closing the gap between the price that acquirers are willing to pay and the price at which sellers are willing to sell the target company. By using earn-outs, sellers will earn extra payments in the future, based on the achievement of some key post-LBO performance milestones by the company such as minimum EBITDA, sales...etc.

Beyond the industry expertise that private equity managers acquire by going through numerous deals, some critics suggest that they also benefit from asymmetric information during the negotiation process. Incumbent management would be the source of this insider information as their business plans and forecasts are the basis for the acquisition negotiations. Management is supposed to be better informed on the performance and potential of the company than the shareholders. Therefore, this theory suggests that managers could be incentivized by attractive economic benefits and the belief that the company will be better off under the close monitoring of a private equity firm. Hence, they could cook performance forecasts to push down the valuation of the company.

However, researchers agree in finding arguments against this potential conflict of interests during the acquisition of the company. An argument shared by Kaplan & Strömberg (Kaplan & Strömberg, 2008), as well as by Loos (Loos, 2005) is that in most of the deals, pre-transaction management changes before its completion.

Additionally, according to Loos (Loos, 2005), the more usual participation of external counsellors and independent advisors, as well as the use of limited open auctions in acquisition processes should also reduce the effects of potential agency problem. This is the result of more informed investors in increasingly efficient markets, as well as the existing precedents of court decisions in addressing agency conflicts.

In any case, strong negotiation skills can be considered within the toolbox of value creation levers for LBOs required at the private equity fund level.

Corporate governance improvements

From an agency theory point of view, the interests of private equity fund are by definition aligned with those of the actual owners of an LBO participated company, i.e., the investors in the private equity fund, a.k.a., the Limited Partners (LPs). The source of this alignment is the typical 2-20 business model of the private equity fund. Besides a 1-2% management fee over assets under management, private equity fund managers earn usually 20% of the gains of the investment.

Private equity managers, or analogously, the General Partners (GPs) of the funds, take controlling positions on the board of the companies they participate in and behave as active investors. This means that they aim at defending LP's interests by controlling their acquisitions thanks to holding considerable presence on their boards.

Not only do GPs monitor management performance, but they can also exert their influence in the board to impose their views on the strategic decisions that the company should take, to the point that it must be difficult to differentiate if the origin of managerial action is on the GPs or the managers of the company.

For some practitioners, this is one of the most important value adding levers in private equity deals (Beroutsos, Freeman, & Kehoe, 2007). Smaller boards than those of comparable public firms facilitate board's involvement on the activities of the company.

Loss (Loos, 2005) found evidence of positive effects in value creation for LBOs due to changes in corporate governance, by comparing the change in performance in companies with lower participation by shareholders before an LBO transaction.

Corporate governance improvement through the activism of the private equity funds in their acquired targets can be considered as one of the main value creation levers in LBOs.

Exit strategies

Private equity funds typically plan an exit strategy for the target at the moment of the acquisition to prepare for an exit both upon achieving the expected performance of the investment or not.

In order to have full control on the potential exit of the investment, private equity funds aim at achieving control over the board of the target company. Additionally, they negotiate the inclusion of control clauses in the by-laws of the target company, such as registration rights, redemption rights, and drag-along or tag-along rights (La Lande, 2011).

The role of management is key in the value creation in LBOs. Besides the usual incentive plans for managers, private equity funds might also elaborate incentive plans for management teams to stay in the company after potential exits, as they are conscious that this might have a strong effect on the valuation of the company at exit (La Lande, 2011).

Negotiation skills and proprietary professional networks of private equity managers are also important when sourcing potential acquirers after an LBO. There are four typical exits from LBO investments: Initial Public Offering, Strategic Sale, Secondary LBO (SBO) and Dividend Recapitalization.

In an IPO, the private equity fund sells part of its participation to the public markets. While usually high valuations are achieved through IPOs, they do not allow a complete exit by the fund for two principal reasons to avoid detrimental signalling and excess supply of shares. While none-complete exits are usually against the limited time commitment of private equity funds, gradual sales of stakes through IPOs might let investors achieve higher returns by timing their exit.

Private equity funds can exit their investments through strategic sales by selling the participated company to a buyer that would expect to achieve synergies from this acquisition. For this reason, strategic buyers are usually willing to pay a control premium.

In secondary LBOs, the private equity fund sells the company to another financial sponsor without synergetic goals, which usually acquires the company with a mix of debt and equity. Usually exit valuations will be lower as these secondary investors look for undervalued companies and are used to negotiating acquisition prices.

Last but not least, in a leveraged dividend recapitalization, investors receive an extra dividend that is financed by rising new debt in the target company. Dividends are used as well in certain circumstances to refinance bridge loans. This way, investors get protected from any downside while still keeping control of the company. Private equity funds that use leveraged dividend recapitalizations usually receive bad press.

According to Loos, “IPOs yield the highest return, even though in Europe, strategic sales are becoming increasingly attractive” (Loos, 2005). Furthermore, he also observed that deals with the longest holding periods tend to perform worse in terms of returns.

However, Sudarsanam did not find any statistically significant relationship between returns and the exit mode when comparing 104 UK deals that were exited through IPO, strategic sale or SBO (Sudarsanam, 2005).

In any case, a successful exit strategy is key for investors to maximize the value earned from their private equity investments.

Agency theory. Aligning the interests of Managers and Shareholders

There are essentially two ways through which interests of management are especially aligned with those of the shareholders in a LBO: Management ownership of the equity of the acquired company and the discipline introduced by the high leverage of the company.

Management incentives and ownership

Private equity managers design thoughtful incentive plans for the managers of the participated companies to make sure they work hard towards achieving the pressing performance objectives established in the acquisition business plan.

These plans are usually composed of base salary, bonus opportunities linked to KPIs and co-investment opportunities or long term equity grants based on performance (Beroutsos, Freeman, & Kehoe, 2007). Additionally, the private equity acquirer usually expects the managers to invest into the acquired company along, so that managers take part especially of the downsides of the investment. Historically, the amount of money required to be invested by managers was usually referred to as the *hurt money*, meaning that it was supposed to represent a significant amount relative to the managers' individual wealth (Gilligan & Wright, 2014).

Typically, performance based management compensation is linked to achieving annual EBITDA targets, making scheduled debt repayments on time or realizing a particular level of IRR or MOIC at exit (Rimmer & SanAndres, 2012). Another way to compensate management upon exit is through a *ratchet*, a mechanism through which the equity stake held by management varies depending on the performance of the management (Gilligan & Wright, 2014). Last but not least, Loos (Loos, 2005) found statistical

arguments to proof higher performance in LBOs where management was granted with 10 to 20% of the target's equity at the beginning of the transaction.

On the other side, private equity funds do not hesitate to change the management team if deemed necessary to preserve the interests of the shareholders, especially during the initial phases of the LBO. Some researchers report that 52% of CEOs of participated companies were replaced out of a sample of 88 UK deals (Cornelli & Oguzhan, 2015). In another sample of 110 deals, Acharya, Hahn and Kehoe found that 2 out of 3 top-performing deals had its CEO replaced at some point during the LBO (Acharya, Hahn, & Kehoe, 2009). This fact might raise the question of whether private equity managers are effective in aligning pre-LBO company managers' interests with their own, or on the other side this effect comes only after new management teams are on-boarded by private equity managers.

MBOs (Management Buy-Outs) are transactions through which the management of a company acquires the company they manage, or a significant stake of it. They can be considered as an extreme instance of management involvement in the governance of the firms. Mitto and Ng (Mitto & Ng, 2013) found differences in the incentives and market environment that trigger private-equity-backed LBOs, compared to MBOs, which suggests that, indeed, private equity investors and target managers have different views on the potential of the companies.

No research has been found to argue that MBOs perform better or worse than LBOs. This is an argument in favour of the fact that the rationale of management incentives and downside sharing in LBOs is to align management of the firm going forward from the acquisition, rather than to take advantage of asymmetric information prior to closing the deal as the level of asymmetric information allegedly owned by managers does not seem to imply higher returns.

It seems reasonable to conclude that the alignment of managers' interests through economic incentives and downside sharing is a key value creation lever in LBO deals.

Debt discipline

Letting aside the effect that debt has on boosting investor returns or the potential reductions in cost of capital, which will be elaborated in further detail in a dedicated section about leverage, high leverage is a two-edged sword in LBO-backed companies. While it induces obvious default risk into the company, it is said to have a positive effect on the decision-making of managers: debt discipline.

Debt discipline refers to the fact that typical tight debt repayment schedules and tight financial covenants in LBO-backed companies encourage managers to be more cautious in spending the companies' cash and work towards improving free cash flows. Financial covenants in LBOs will be studied in more detail in the section dedicated entirely to leverage as a way to align managers and shareholders' interests with those of the debt providers.

Vernimmen, Quiry, Dalloccio and Salvi (Vernimmen, Quiry, Dalloccio , & Salvi, 2005) define the combination of management incentives and ownership, and debt discipline as a “carrot & stick” approach to ensure that management of the company is focused on achieving the value creation objectives of the private equity fund. The “carrot” would represent the possibility of upside sharing at exit, while the “stick” would refer to the pressure of complying with debt repayments and financial covenants.

All in all, the combination of management incentives and ownership with the discipline effect of debt can be considered as a lever to achieve value creation in LBOs through the actions of the management.

Nevertheless, it is very difficult to quantify the amount of value created through specific management incentive and debt discipline schemes, or even to identify an optimal level of these incentives. Instead, it can be considered that managers add value in LBOs by improving the performance of the company, as elaborated below, and these incentives are the mechanisms put in place by the private equity fund managers to ensure that value is created through managerial action.

Management action. Improving the performance of the target company

Improvements in the operating performance of participated companies are probably the most evident value addition lever to measure for companies that go through LBO transactions.

Company outperformance in LBOs comes essentially from three sources: operations engineering, strategic improvements and cash-flow improvements. These do not include financial engineering optimization through leverage as it will be entirely discussed in a dedicated section.

Improving EBITDA: Operating performance improvements

Improvements in the operations of the company have become a crucial source of value creation according to several authors, especially as the competition in the private equity industry has increased and debt markets have become more difficult to tap into than in early times before the credit crisis (Heel & Kehoe, 2005). It is usual nowadays that private equity investors involve an in-house operations team within their participated companies focused on achieving operational excellence (Hemphill & Hoflack, 2009).

Operating performance improvements are meant to have a direct impact on the operating margin or EBITDA by essentially improving the efficiency of the day-to-day activities of the company. Already in 1989, Bull found evidence that LBOs created value through operational improvements (Bull, 1989). While the strategic focus of the company is not changed, operational improvements might imply redistribution of the resources of the company (Berg & Gottschalg , 2003). These improvements refer

essentially to cost-efficiency and productivity-increasing efforts and affect therefore the cost side of the EBITDA calculation:

$$EBITDA = \text{Operating Revenues} - COGS - SG\&A - \text{Other Operating Expenses}$$

Equation 1. EBITDA calculation

EBITDA is often used as a proxy of the free cash flows of a company.

While improvements in productivity can certainly influence the increase of revenues, for simplicity this paper will consider that revenue growth comes from strategic actions as this is usually the origin of revenue expansion.

However, according to Mullin and Panas, LBO-backed company managers focus nowadays on revenue expanding activities, as cost reduction efforts are considered by many as a “commodity skill” (Mullin & Panas, 2014).

In any case, it is clear that operating performance improvements have to be accounted for as a value creation lever in LBO deals.

Creating a sustainable competitive advantage: Strategic improvements

Strategic improvements are meant to create or boost sustainable competitive advantages for the business. Those usually have to do with strategic decisions such as what products to develop or what markets to compete in and how to improve the competitiveness of the business. Strategic improvements can be evaluated through a wide range of non-accounting KPIs, depending on the nature of the target company, and are meant to have a direct effect on revenue growth.

The Ansoff matrix synthesises growth opportunities that companies can undertake at any stage of their life. It can be a good tool to assess growth opportunities in LBO-backed companies.

		Products	
		Existing	New
Markets	Existing	Market Penetration	Product Development
	New	Market Development	Diversification

Figure 1. Ansoff Matrix

According to Rogers, Holland and Haas, private equity investments that include strategic developments and growth opportunities in their investment thesis are more likely to be successful (Rogers, Holland , & Haas, 2002).

An additional strategic development usually found in private equity backed companies has to do with corporate refocusing. Peripheral activities or those that do not create a clear competitive advantage are dismissed in order to redirect and focus the company

towards its core business (Berg & Gottschalg , 2003). Corporate refocusing is not conflictive with finding new areas of growth through new markets or products, as long as there is a clear strategic alignment with the core competences of the company across.

Nevertheless, in order to secure strong valuations at exit, private equity funds need to make sure that their participated companies have a convincing growth story. After studying 839 LBO deals in France, Boucly, Srarier and Thesmar found out that LBO-backed companies show faster growth than their comparable peers, not only in sales, but also in employment and, surprisingly, in CAPEX (Boucly, Sraer, & Thesmar, 2010). These findings are consistent with nowadays high valuations and the fact that operating improvements are considered by the markets as a given.

LBO-backed companies do not only achieve growth organically. A widely-known strategy to achieve growth in LBO deals is the so-called “buy-and- build” strategy. In this case, a target company in a very particular segment or niche market is acquired with the goal to reach a dominant position in that segment and achieve economies of scale through subsequent acquisitions (Berg & Gottschalg , 2003).

Last but not least, Baker and Montgomery found that private equity funds do not usually foster horizontal synergies across companies participated by the same fund (Baker & Montgomery, 1994). Achieving cross company synergies definitively looks like a value creation scope that private equity funds should care more about.

More and more should private equity managers care about strategic improvements and growth opportunities in order to create value in LBOs.

Improving the cash-flows. Capex and Working Capital management

Improvements in cash-flows are essential to effectively meet debt repayment schedules and to be able to invest in growth opportunities. In LBO-backed companies and beyond EBIDTDA improvements, cash-flows are essentially increased through improvements in CAPEX, managing working capital more efficiently and sometimes through asset disposals.

Target company managers impose strict CAPEX regimes, which is translated into cutting unclear investments. Some improvements in CAPEX might come in hand with operational improvements, for instance, those that have to do with maintenance expenditures of obsolete or misused assets.

Working capital management improvement is essential to manage the timing of available cash. LBO-backed companies usually show lower levels of working capital than their peers (Scavolo, 2016).

Asset disposals refer to the fact that private-equity backed companies might be willing to sell underperforming assets in order to improve their cash-flow availability. Strict CAPEX management policies and asset disposals are often accused of being value-destructive in LBO-backed companies and to only produce short term advantages

(Scavolo, 2016). In applying these initiatives, managers should be careful not to compromise competitive advantage and future growth opportunities.

Cash-flow improvements are an essential value creation lever in LBOs as they allow for a healthier company that can deal with debt repayments and invest in growth projects.

Leverage & Capital Structure

The rationale of high leverage for the Private Equity fund

The most controversial characteristic of LBO deals is the typical highly leveraged capital structure. The amount of debt used in an LBO deal varies extensively across deals, it is highly dependent on the credit markets conditions (Kaplan & Strömberg, 2008) and it can range between 50 and 90% of the target's purchase price (Talmor & Vasvari, 2011).

From a sample of 501 LBO deals in the US, Liu found evidence of higher industry-adjusted returns in deals with larger quantity of debt (Liu, 2013). It can be therefore argued that high leverage is a value creation lever for shareholders in LBO deals.

Besides the discipline effect of debt mentioned earlier in this paper, the motivations for private equity funds to use these large amounts of leverage in LBO deals can be summarized into the two following: Boost the return on the equity invested through the repayment of debt and reduce risk exposure by distributing risk throughout debt providers.

The following chart reflects in a simplified way the boosting effect of leverage on the equity value of the target company. Assuming a constant enterprise value, debt repayment between entry and exit will improve the value of the equity of the company.

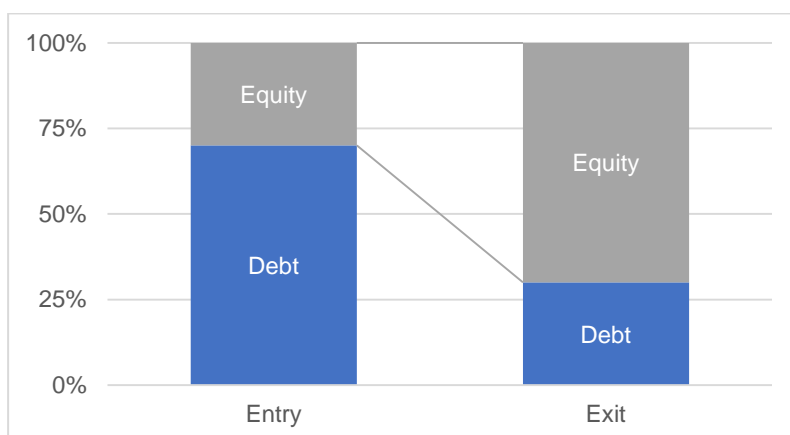


Figure 2. Boosting equity value through debt repayment. Source: Own analysis

The immediate effect is an improvement of IRR and capital gains or Multiple On Invested capital (MOIC).

Debt also allows for a distribution of the business risk of the target throughout the debt providers and across different levels of risk preferences. In case of default by a participated company, the potential downside assumed by the private equity fund is limited to its equity contribution. Additionally, the exposure of one company of the overall fund to one single company or industry is diminished by reducing the required investment and allowing further investments by the fund in other companies.

In any case, high leverage can be considered a value creation lever for the shareholders that tap into the credit markets both to boost returns and to spread risk. Next section will elaborate further on the effect of debt on the capital structure of the company.

Does the company benefit from debt arbitrage?

The credit market, typical LBO debt instruments and the WACC

Private equity funds use their financial expertise to optimize the capital structure of the companies they acquire and tap into their networks within the financial industry (Kaplan & Strömberg, 2008) and even create competition among financing banks or investors (Loos, 2005), in order to achieve the most attractive credit conditions available.

Numerous researchers have demonstrated the cyclicity of the private equity industry due to its tight dependence on the credit market and define it as a “boom and bust” industry (Kaplan & Strömberg, 2008) (Acharya, Franks, & Servaes, 2007). Credit markets affect private equity deals in three main ways: number of deals, target valuations and prices (Axelson, Jenkinson, Strömberg, & Weisbach, 2007) and the amount of leverage used to acquire the target. Low interest rates and favourable credit markets in general generate an increase in the number of deals, increase in company valuations and increase in the leverage used to finance the deals.

The following chart from 2016 Bain & Company's Global Private Equity clearly shows the cyclical nature of the buyout activity both in deal value and deal count (Bain & Company, 2016).

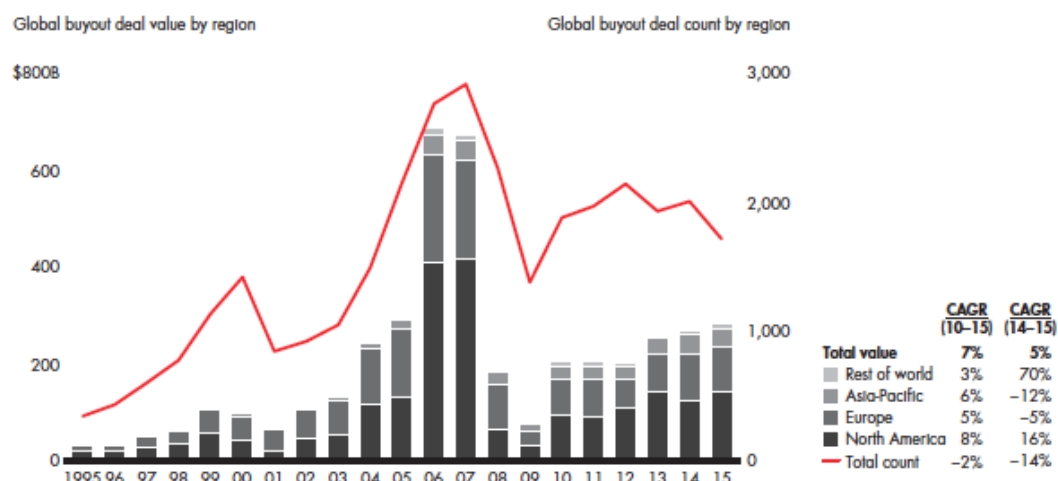


Figure 3. 1995 - 2015 Global Buyout activity. Source: (Bain & Company, 2016)

It clearly shows how private equity activity increased substantially due to the high liquidity of the credit market in the years prior to the credit crisis of 2008, and fell substantially right afterwards. Recent favourable credit conditions in the past years have resulted again in an increase in buyout activity, even though not so exaggerated as before the crisis. These results support the hypothesis that private equity funds tap into arbitrage opportunities between debt and equity markets to finance their deals (Kaplan & Strömberg, 2008).

Debt providers in LBO transactions include traditional banks and institutional investors such as hedge funds, pension funds, collateralized debt obligation investors and specialized credit funds. The issuance of debt through such a complex structure often requires the participation of an investment bank and syndication of lenders (Vernimmen, Quiry, Dallochio , & Salvi, 2005), (Talmor & Vasvari, 2011).

The typical debt structure in an LBO deal involves different tranches of seniority, i.e., different levels of priority to receive the cash-flows of the company when repaying debt. The most characteristic types of debt are, by order of seniority, the followings: Senior Term Debt, which can be further divided into different seniorities (A, B, C, D...); Junior or Subordinated debt, a.k.a. high yield debt; and Mezzanine. Moreover, LBO-backed companies have also access to revolving credit. Finally, some LBOs also include shareholder loans.

The following table summarizes the most relevant characteristics of the different debt instruments from most to least senior.

Type	Term and repayment	Interest ^{1, 2}	Main Characteristics
Revolving Credit	3 to 7 years Ongoing facility	EURIBOR/ LIBOR + 100 - 175 bps Cash Interest on drawn- down quantity	<ul style="list-style-type: none"> - Credit spread function of current assets, financial performance and risk measures - Used to finance Working Capital, CAPEX and temporal cash deficits - Usually secured by inventory and A/R.
Senior Term Debt	7 to 9 years Senior Loan A: Amortized over loan life. Senior Loan B: Bullet payment at maturity	Senior A: EURIBOR/ LIBOR + 175-225 bps Senior B: Senior A + 25-50 bps	<ul style="list-style-type: none"> - Credit spread function of fair market and liquidation value of assets - Usually involves constraints such as early repayment in case of excess cash; no dividends to shareholders... - Secured by assets
Junior Subordinated Debt (High Yield)	8 to 10 years, maturity after Senior debt Yearly payment of interest and Principal repaid at maturity	EURIBOR/ LIBOR + 800 - 1200 bps Cash or PIK interests	<ul style="list-style-type: none"> - Credit spreads function of cash-flows - Not secured - Usually rated as non-investing/high yield debt
Mezzanine	8 to 10 years, maturity after Senior debt Accrued PIK interest portion and principal paid at maturity	EURIBOR/ LIBOR + 1000 - 1200 bps Usually half cash and half PIK	<ul style="list-style-type: none"> - Credit spreads function of cash-flows - Not secured - Includes upside participation through convertibility option or participation pay-out, so to reach higher returns (target: 14%-18% p.a.) - Mezzanine investors usually ask for participation in the board
Shareholders loan	Equity-like	Cumulative fixed rate coupon	<ul style="list-style-type: none"> - Increases tax-shield and reduces tax on capital gains - Implies increase in share of Management equity

Figure 4. Different debt instruments in LBOs and their main characteristics. Sources: Own analysis, (Talmor & Vasvari, 2011) (Vernimmen, Quiry, Dallochio, & Salvi, 2005)

¹ Illustrative values, to represent the difference across different debt instruments. Real interest level depends on the state of the credit market

² Interests are marketed as floating rates but lenders will usually ask the company to swap to fixed rates to hedge against credit risk

The following chart represents the typical debt structure in an LBO-backed company.

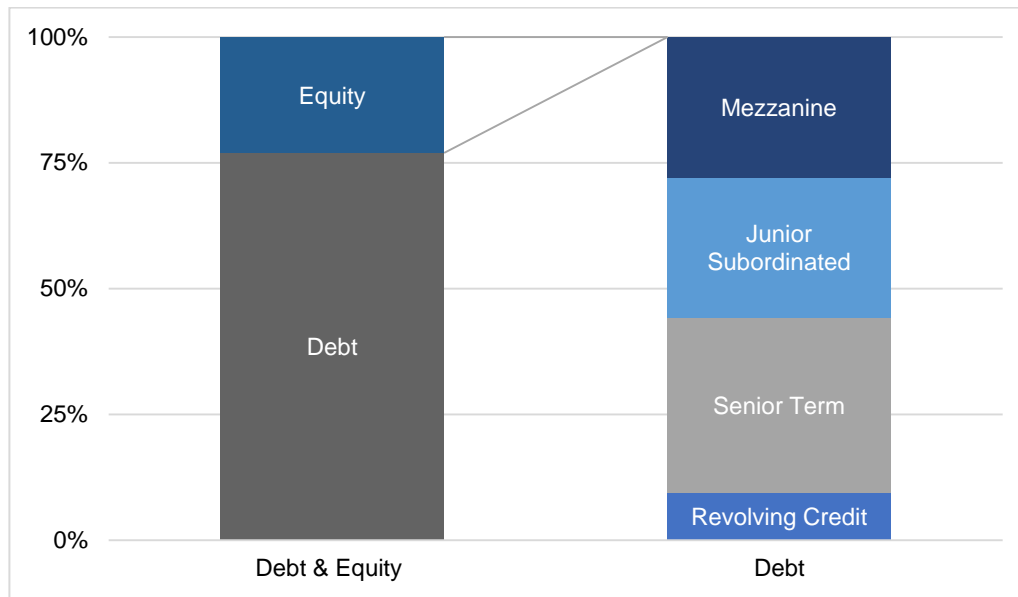


Figure 5. Typical debt structure in an LBO-Backed company. Source: Own analysis

The expertise by private equity funds in the use of credit instruments is supposed to reduce the cost of capital of the target companies as defined by the calculation of the WACC (Weighted Average Cost of Capital):

$$WACC = r_D \cdot (1 - t) \cdot \frac{D}{D + E} + r_E \cdot \frac{D}{D + E}$$

Equation 2. Weighted Average Cost of Capital

Indeed, increasing the use of debt (D) should lower the WACC as the cost of debt (r_D) is by definition lower than the cost of equity (r_E), to compensate for different level of risk. Furthermore, as explained in next section, the tax deductibility of interests should also drive WACC down in LBOs.

Nevertheless, while practitioners seem convinced that private equity funds are able to optimize the capital structure of their targets through the use of debt (Berg & Gottschalg, 2003), this result challenges the Modigliani Miller theory. Indeed, the high use of leverage in LBOs implies an increased risk of financial distress, which is reflected in a higher cost of debt compared to peers (Berg & Gottschalg, 2003). However, the fact that the existing debt of the company is usually refinanced upon acquisition is an argument in favour of the fund being able to reduce the cost of capital for the company through the LBO. On the other side though, financial distress costs can affect the competitiveness of the company in the long term as it limits its access to future financing.

All in all, it is difficult to reach a consensus about whether the financing practices in LBOs benefit the target company besides being highly beneficial for the private equity fund. Most likely conclusions need to be taken on a case by case basis.

Tax deductibility of interests

In most countries, interest expenses are tax deductible. This creates per force a positive effect in the bottom line of the target company by creating a tax shield that reduces the taxes paid. Some researchers argue that the tax benefits in LBOs have accounted historically for between 10% and 20% of the firm's value, but have decreased in the recent years due to lower corporate taxes and use of leverage (Kaplan & Strömberg, 2008).

While tax deductibility of interests is supposed to have a direct positive effect on the cost of capital of the target companies, some researchers suggest that it does not depend on leverage since the higher cost of riskier debt counterweights the effect of tax shield benefits (Loos, 2005).

Furthermore, besides the potential positive impact in the bottom line of the company, some researchers suggest that tax shield effects are already reflected in the price paid for the target company as the LBO debt levels are defined pre-acquisition and therefore do not create additional value for the private equity funds (Knauer, Lahmann, & Schwetzler, 2014).

In some jurisdictions, LBO-backed companies might also benefit from *tax loss carry forwards*, which allow companies to deduct future tax payments if they declare financial losses.

Another important aspect in some jurisdictions is the possibility of fiscal integration. For instance, in the case of France, if more than 95% of a target company is acquired, taxes are only payable at the holding company level. In the case of an LBO, interest expenses at the level of the holding company become then tax deductible.

Finally, further tax benefits in LBO deals might have to do with the legal structure of the deal.

Agency theory. Debt providers and financial covenants

In this section, the assumption will be made that the interests of shareholders and managers are aligned versus the interests of the debtholders, therefore creating a potential agency conflict between shareholders and debtholders. In reality, financial covenants are a key piece in the alignment of interests between shareholders and managers through the discipline effect of debt. However, managers share part of shareholders' upside, while they do not necessarily take part on the decisions about the leverage of the LBO deal. Therefore, it is reasonable to consider that they will be aligned with shareholders' interests in a potential conflict of interests against the debt providers.

Private equity investors have an incentive to maximize the leverage of target companies in order to boost their IRR and share default risk. Finally, limited liability also protects shareholders through the legal structure of the LBO deal in case of

default as the debt is mainly secured by the assets and cash-flows of the target company.

These findings are consistent with the view that private equity shareholders will aim at borrowing as much as possible. Hence, some researchers suggest that it corresponds to credit markets and debt providers to provide discipline to LBO companies by limiting the amount of debt to be lent (Axelson , Jenkinson, Strömberg, & Weisbach, 2007) and monitoring the companies through debt covenants (Tappeiner, 2010).

Debt covenants are clauses written in the debt contracts that limit potential opportunistic actions of shareholders and managers that could decrease the value of debt (Tappeiner, 2010). While the existence of covenants might theoretically limit value creation opportunities for the company and shareholders, research suggests that private equity investments have higher returns with tighter debt covenants (Liu, 2013).

More conspicuously, there are mainly two kinds of debt covenants: action-restricting covenants and financial covenants (Tappeiner, 2010). Action restricting covenants aim at limiting managerial actions such rising more senior debt than the current outstanding debt or limit the scope of projects managers can invest available cash in. On the other side, financial covenants are aimed at controlling the performance of the company through ratios that relate the debt burden of the company with operating performance (Tappeiner, 2010). Breaching a financial covenant implies that the company is technically in default and gives control rights to the debtholders. The following table summarizes the most typical financial covenants in LBOs.

Financial Covenant	Formula	Typical Covenant Values
Leveraged Ratio	$\frac{Debt}{EBITDA}$	3x-6x
Debt Service Cover Ratio (DSCR)	$\frac{EBIT}{Debt\ Service}^3$	1.1x-1.2x
Interest Coverage Ratio	$\frac{EBITDA}{Interests}$	3x-4x

Figure 6. Typical financial covenants in LBOs. Source: (Tappeiner, 2010) and own analysis.

Some researchers already suggested before the financial crisis that increased involvement of institutional debt investors in LBO deals in detriment of banks, as well as the increasing trend of debt syndication was causing less restrictive borrower monitoring, which could result in excessive lending, higher risk of default and lower recovery rates (Acharya, Franks, & Servaes, 2007).

In summary, the resolution of the agent-principal problem between shareholders and debt providers by using debt covenants is key to enable the use of debt for LBO deals. Furthermore, as discussed in previous sections, they are key on inducing a debt discipline effect on managers.

³ *Debt Service = Principal Payments + Interest Payments + Lease payments*

Externalities of LBOs

The main claims against LBO deals have to do with short-termism and drastic cost-cutting by private equity funds on target companies. This section aims at exploring the state of literature regarding externalities of LBOs in three different areas that do not necessarily align with the interests of private equity shareholders: Employment, Innovation and Corporate Social Responsibility.

Employment

It is easy to understand why company employees usually fear LBO investors. One of the most sounded cost-cutting buckets to be considered when undergoing cost restructuring in a company is usually human capital.

Nevertheless, several researchers seem to contradict this intuition. Boucly, Sraer and Thesmar found evidence across 839 LBO deals in France of strong employment growth in target companies after an LBO, particularly of 18% in the four years after the deal (Boucly, Sraer, & Thesmar, 2010).

Capizzi and Giovannini also find statistical correlation between job-creation and the presence of a private equity investor across 2,450 deals occurred between 2002 and 2011, especially in those firms that are more profitable (Capizzi, Giovannini, & Pesic).

Ames and Wright, not only do not find evidence of job destruction in LBO-backed companies, but also warn that “in terms of employment, LBO might be considered a more favourable corporate restructuring transaction compared with takeovers” (Amess & Wright, Leveraged buyouts, private equity and jobs, 2010).

All in all, it looks like statistically LBOs not only do not destroy jobs, but create them. In any case, the affectation of an LBO deal on the workers of the target company would need to be assessed on a case by case basis.

Innovation

Given the long term and difficult-to-realize nature of R&D and innovation related expenditures, it is a widely spread believe that the relatively short-term investment horizon and cost-cutting efforts negatively affect innovation within participated companies.

First, private equity funds do not usually invest in highly-tech, innovation-focused businesses as these are usually risky business that require long-term investments and are not suitable for debt financing (Torres, 2015).

One should bear in mind that private equity funds' goals are to invest in companies to increase their value. However, as stated earlier, cost-cutting is more and more not enough to create substantial value for LBO-companies and instead. On the other side, revenue prospects and growth opportunities are priced at exit valuations. Therefore, it

looks like private equity funds should not aim at irrationally cutting expenses in key areas that can involve future growth prospects for the company, such as R&D.

Some researchers found evidence that private equity investors do not jeopardize innovation across their participated companies. In their study on a sample of 89 manufacturing companies from France, Le Nadant and Perdreau differentiate between different types of innovation: product, process, organizational, marketing and patents and other protecting mechanisms (Le Nadant & Pedreau, 2012). While they found no evident differences in innovation expenditures between LBO companies and peers, they find substantial service and marketing-related innovations. Those innovation efforts seem driven by the ambition to increase revenue streams fostered by improvements in corporate governance as they built upon existing capabilities instead of introducing new skills.

On the other side, after studying 407 LBO deals in the UK, Amess, Stiebale and Wright concluded that LBOs have a positive causal effect on the production of innovation as their results indicate a “6% increase in quality-adjusted patent stock three years after the deal”. They argue that access to external sources of financing through the involvement of private equity funds allows financially constrained companies to invest in innovative projects (Amess, Stiebale, & Wright, The impact of private equity on firms' innovation activity, 2015).

In summary, private equity backed companies should not be accused of being innovation destructive. On one side, business needs push managers to innovate in business practices. On the other side, private equity investors know that destroying sources of potential future growth will impact negatively future valuations of the company.

Corporate Social Responsibility

The European Commission defined CSR as “The responsibility of enterprises for their impacts in Society” (European Commission, 2011). CSR practices involve the integration of “social, environmental, ethical, human rights and consumer concerns into the business operations and core strategy” of any company (European Commission, 2011) .

Nowadays it seems unthinkable that private equity investors might compromise any CSR practice from target companies in the name of cost-cutting. In today's interconnected world, it is very easy to earn a reputation for CSR bad practices and very difficult to correct it. Moreover, investors are every time more sustainability-conscious and require investment funds to watch out for CSR compliance. This is practice is named as Socially Responsible Investment and implies that investors consider social and environmental consequences of their investments at the same level of financial analysis (Social Investment Forum, 2003).

Private equity funds take CSR seriously, despite the private nature of their investments, particularly when an IPO is considered as a potential exit strategy. Some research suggests that private equity funds actually undertake CSR actions to the

extent that it helps increase the value of the company, either via shareholder engagement or via actual improvements on the bottom line of the company (Forget, 2012).

Value creation levers and their KPIs

The following table aims at providing an answer to the question: What are the levers at the reach of every stake holder to create value through an LBO, and how can it be measured? It summarizes the value creation levers that have been identified for each stakeholder, along with some relevant KPIs that will be utilized during the case study to evaluate how the private equity fund is tapping into each of the levers.

Source	Lever	KPIs ⁴
Private Equity Fund	Selection & Market timing	$\Delta \frac{EV}{EBITDA} \Big _{Entry, Exit}$; $\nabla \frac{EV}{EBITDA} \Big _{Entry, Peers}$
	Negotiation Skills	$\nabla \frac{EV}{EBITDA} \Big _{IM, Closing}$
	Corporate Governance	Qualitative indicators. Change in governance practices.
	Exit	$\nabla \frac{EV}{EBITDA} \Big _{Exit, Peers}$
Management & Company Performance ⁵	Operational Improvements	$\Delta \frac{EBITDA}{Sales}$; $\frac{Sales}{Employees}$ Other performance ratios, specific to the target
	Cash flows	$\frac{Free\ Cash\ flows}{Current\ Liab.}$; $\frac{WC}{Sales}$; $\frac{CAPEX}{Sales}$
	Strategic Improvements	$\Delta Revenues _{segment}$; % Market Share Organic and inorganic revenue growth Other performance ratios, specific to the target
Debt providers. Leverage	Amount of debt	$\frac{Debt}{Equity}$; $\frac{Debt}{EBITDA}$
	Cost of capital	$WACC, K_d$
	Tax shield	$Effective\ Tax\ rate$
	Debt discipline	$\frac{Debt}{EBITDA}$; $\frac{EBIT}{Debt\ Service}$; $\frac{EBITDA}{Interests}$ ⁶
Externalities	Employment	$\# Employees$
	Innovation	$\frac{R\&D\ Expenses}{Sales}$
	CSR	$CSR\ score$

Figure 7. Value creation levers by each stakeholder and their KPIs. Source: Own analysis

⁴ As important as finding the proper KPI is to find proper benchmarks such as comparable companies, comparable deals, historic values and forecasts. Industry adjustment is necessary.

⁵ It can be assumed that managers create value through improving the company's performance

⁶ Refers to the levels set by the debtholders of the main covenants, to evaluate how restrictive they are compared to other deals

Part II. Measuring value earned by the different stakeholders

Quantifying the value earned by the shareholders

Internal Rate of Return, Multiple on Invested Cash and Profitability Index

The value earned throughout an LBO for shareholders can be defined as the cash-flows they earn from their investment. It is quantified as the difference in equity value owned by them between acquisition and exit. More conspicuously, it is defined by the following equation:

$$\text{Shareholder value created} = \text{Equity Value}_{Exit} - \text{Equity Value}_{Entry}$$

Equation 3. Shareholder value created

Where Equity Value is calculated using a multiple-based approach:

$$\text{Equity Value} = \left(\frac{\text{Enterprise Value}}{\text{EBITDA}} \right) \times \text{EBITDA} - \text{Net Debt}$$

Equation 4. Equity Value calculation

And where the multiple $\left(\frac{\text{Enterprise Value}}{\text{EBITDA}} \right)$ is based on market valuation and negotiation by the private equity fund.

There are two main metrics that private equity investors use to refer to value creation through their investments: The Internal Rate of Return (IRR) and the Multiple on Invested Capital (MoIC).

The IRR calculates the return on the investment, considering the time-value of money: As a result, the IRR equals to the annualized rate of return, no matter the length of the investment. It is mathematically defined as the rate of return that will make the NPV of the investment equal to zero:

$$0 = \sum_{t_{Entry}}^{t_{Exit}} \frac{\text{Cash} - \text{flows}_t}{(1 + \text{IRR})^t}$$

Equation 5. IRR calculation

Where the term *Cash-flows* takes into account any cash proceeds from and to the investors, i.e., the equity invested at entry, potential reinvestments during the life of the LBO, equity proceeds at exit and dividend pay-outs, if any. For private equity investments, where usually neither dividend proceeds nor equity reinvestments are planned ex-ante, the IRR can be directly calculated as follows:

$$\text{IRR} = \left[\frac{\text{Equity Value}_{Exit}}{\text{Equity Value}_{Entry}} \right]^{\frac{1}{t}} - 1$$

Equation 6. Typical IRR calculation for private equity investments

Where t represents the holding period. This formula is equivalent to the CAGR calculation of equity and will be useful to decompose the IRR into different value creation parameters.

On the other side, MoIC is calculated as the ratio of the exit proceeds to the entry investment.

$$MoIC = \frac{\sum_{t_{Entry}}^{t_{Exit}} Paid - out Capital}{\sum_{t_{Entry}}^{t_{Exit}} Paid - in Capital}$$

Equation 7. MoIC calculation

The MoIC is also known as the Cash-on-Cash (CoC) multiple and it does not take into account the time value of money. It is widely used to get a quick glimpse of the performance of the investment. However, its use is not advisable as a standalone indicator as it can deliver misleading interpretations. A very graphic example is as follows: in two investments with the same IRR, but different MoIC, the one with a higher MoIC will necessarily be an investment with a longer investment period. However, this later investment would not include the illiquidity premium to compensate the investor for a longer holding period. Assuming that there is a cost of opportunity that incentivizes investors to prefer shorter term investments, a rational investor would choose the investment with the lowest MoIC. It can be extracted from here that IRR allows investors to compare between investments with different time horizons.

However, IRR does have some drawbacks as an indicator of value creation for shareholders. First of all, due to its mathematical definition, the calculation of the IRR can deliver contradicting results to the simple examination of the NPV in the case of investments that combine positive and negative cash-flows. Second, the calculation of IRR assumes a constant discount rate along the investment period, which is not necessarily true for sophisticated investors. Finally, the IRR standalone does not consider the cost of capital for shareholders. For that matter, IRR has to be used in comparison to a benchmark. In the case of LBOs, usually funds set a target IRR they expect to achieve throughout an investment.

To solve these issues of IRR, Gottschalg, Loos and Zollo propose an alternative ratio: the profitability Index (Gottschalg, Zollo, & Loos, 2004). The profitability index is calculated as the ratio between the NPV of an investment and the amount of money invested.

$$Profitability Index = \frac{NPV (Investment)}{Investment}$$

Equation 8. Profitability Index calculation

The calculation of the profitability index allows the investor to use the discount rate that suits best his or her risk profile and compare it with a default alternative investment. A PI greater than one will mean that the investment is attractive.

For simplicity, the GPs and the LPs will be considered within the same group of shareholders, even though in reality the GP earns fees out of the return from the LPs.

Disaggregation of the Internal Rate of Return

Method 1: Academic Approach

Loos proposed a method to decompose the IRR into the main factors of the equity value calculation: The Multiple, the EBITDA and the Net Debt. EBITDA can actually be decomposed further into the revenue effect and the margin effect:

$$Equity\ Value = \left(\frac{Enterprise\ Value}{EBITDA} \right) \times Margin \times Revenues - Net\ Debt$$

Equation 9. Equity value equation

The method proposed by Loos is based on the calculation of the IRR as the CAGR of the equity value between exit and entry⁷. It uses the Dupont formula on the calculation of RoE to deduct the different components in the calculation of the equity CAGR.

$$RoE = \frac{Net\ Income}{Revenues} \times \frac{Revenues}{Assets} \times \frac{Assets}{Equity\ Value}$$

Equation 10. Dupond RoE decomposition in 3 steps

Assets can be substituted by the Enterprise Value:

$$Assets = Total\ Debt + Market\ Value\ of\ Equity = Enterprise\ Value$$

And the following equation can be obtained:

$$RoE = \frac{Net\ Income}{Revenues} \times \frac{Revenues}{Enterprise\ Value} \times \frac{Enterprise\ Value}{Equity\ Value}$$

Let's now eliminate the net income from the equation and incorporate EBITDA:

$$Equity = Revenues \times \frac{EBITDA}{Revenues} \times \frac{Enterprise\ Value}{EBITDA} \times \frac{Equity\ Value}{Enterprise\ Value}$$

And apply the calculation of the CAGR to account for the growth of the different factors, where $1 + CAGR(Equity)$ equals to $1 + IRR(Equity)$:

$$1 + CAGR(EqV) = [1 + CAGR(Rev)] \times \left[1 + CAGR\left(\frac{EBITDA}{Rev}\right) \right] \times \left[1 + CAGR\left(\frac{EV}{EBITDA}\right) \right] \times \left[1 + CAGR\left(\frac{EqV}{EV}\right) \right]^8$$

The natural logarithm can be applied to transform the multiplication into a sum. Additionally, let's move all the factors to the left so that the sum adds up to 1.

$$1 = \frac{\ln[1 + CAGR(Rev)]}{\ln[1 + CAGR(EqV)]} + \frac{\ln\left[1 + CAGR\left(\frac{EBITDA}{Rev}\right)\right]}{\ln[1 + CAGR(EqV)]} + \frac{\ln\left[1 + CAGR\left(\frac{EV}{EBITDA}\right)\right]}{\ln[1 + CAGR(EqV)]} + \frac{\ln\left[1 + CAGR\left(\frac{EqV}{EV}\right)\right]}{\ln[1 + CAGR(EqV)]}$$

In the previous equation, the four effects have already been differentiated, as follows:

⁷ Therefore assumes no dividends or reinvestments, i.e., the only cash-flows for investors are equity invested at entry and equity perceived at exit.

⁸ EqV = Equity Value; Rev = Revenues; EV = Enterprise Value

- Revenue Effect

$$\frac{\ln[1 + CAGR(Rev)]}{\ln[1 + CAGR(EqV)]}$$

- EBITDA Margin Effect

$$\frac{\ln\left[1 + CAGR\left(\frac{EBITDA}{Rev}\right)\right]}{\ln[1 + CAGR(EqV)]}$$

- Multiple Expansion Effect

$$\frac{\ln\left[1 + CAGR\left(\frac{EV}{EBITDA}\right)\right]}{\ln[1 + CAGR(EqV)]}$$

- Leverage Effect

$$\frac{\ln\left[1 + CAGR\left(\frac{EqV}{EV}\right)\right]}{\ln[1 + CAGR(EqV)]}$$

The following equation represents how the four effects are going to relatively add up to the entire IRR:

$$IRR = IRR \times \frac{\ln[1 + CAGR(Rev)]}{\ln[1 + CAGR(EqV)]} + IRR \times \frac{\ln\left[1 + CAGR\left(\frac{EBITDA}{Rev}\right)\right]}{\ln[1 + CAGR(EqV)]} + IRR \times \frac{\ln\left[1 + CAGR\left(\frac{EV}{EBITDA}\right)\right]}{\ln[1 + CAGR(EqV)]} + IRR \times \frac{\ln\left[1 + CAGR\left(\frac{EqV}{EV}\right)\right]}{\ln[1 + CAGR(EqV)]}$$

Equation 11. IRR decomposition into the four effects: Revenue, EBITDA margin, Multiple expansion and Leverage

Indeed, this method will allow for an attribution of the value created represented by the IRR to the four different effects. The main drawback of this method is that it can only be utilised when the only cash-flows in the investment are the equity investment at entry and the equity proceeds at exit, as it could happen in the case of an IPO.

Method 2: Practitioner approach

Practitioners use a simpler and more intuitive approach to disaggregate the IRR into different factors. One example of such approach is described by Goedhart, Levy, and Morgan (Goedhart, Levy, & Morgan, 2015). From the example illustrated in this article, one can subtract a general method, which would be as follows:

First of all, it is necessary to differentiate between the unlevered IRR and the levered IRR. The unlevered IRR accounts for the cash-flows that the investors would earn if the deal was carried out at 100% equity, i.e., thanks to the improved cash-flow generation by the company.

$$0 = \sum_{t_{Entry}}^{t_{Exit}} \frac{Unlevered\ Cash - flows_t}{(1 + IRR^u)^t}$$

Equation 12. Unlevered IRR

The levered cash-flows represent the actual cash-flows along the holding period.

$$0 = \sum_{t_{Entry}}^{t_{Exit}} \frac{Levered\ Cash - flows_t}{(1 + IRR^l)^t}$$

Equation 13. Levered IRR

Then, the unlevered IRR can be decomposed into the following different contribution factors and gains. Each factor's gain is calculated as follows:

- Capital gains due to improved business performance, i.e., EBITDA

$$Capital\ gains_{Improvement} = (EBITDA_{Exit} - EBITDA_{Entry}) \times \left(\frac{Enterprise\ Value}{EBITDA} \right)_{Entry}$$

- Capital gains due to multiple expansion

$$Capital\ gains_{Multiple} = (EBITDA_{Exit}) \times \left[\left(\frac{Enterprise\ Value}{EBITDA} \right)_{Exit} - \left(\frac{Enterprise\ Value}{EBITDA} \right)_{Entry} \right]$$

The unlevered return, expressed in cash gains, can be calculated as the sum of the present value of the previous factors. Therefore, one can calculate the attribution of each factor to the unlevered IRR by calculating the fraction of each factor compared to the total unlevered return.

$$Unlevered\ Return = Capital\ gains_{EBITDA} + Capital\ gains_{Multiple}$$

Equation 14. Unlevered Return

Finally, the leverage effect is the difference between the unlevered IRR and the levered IRR:

$$Leverage\ effect = IRR^l - IRR^u$$

Equation 15. Leverage effect

It is interesting to note that this methodology is very useful as it can allow further breakdown of the different factors, depending on the needs of study, as will happen in the case study at the end of this paper. For instance, business performance improvement can be broken down into the effects of organic growth, margin increase or cost reductions.

Quantifying the value earned by the target company

Return on Equity

RoE can be interpreted as the performance, from the company point of view, in transforming equity into profits compared to the cost of equity. In other words, RoE is an accounting ratio aimed at assessing the profitability of the company. It is calculated as follows:

$$RoE = \frac{Net\ Profit}{Equity}$$

Equation 16. Return on Equity

Even though many investors focus on RoE to assess the returns on their investments, RoE should be kept as a company profitability measure only for the various reasons. First of all, company's net profits do not necessarily translate into shareholder. Secondly, RoE is a periodic measure and short term ratio, i.e., it measures the profitability of the company during one particular period, normally one year. However, over the course of an LBO investment, profits over a good year can be jeopardized by losses in bad years or wrongful investment policies of retained earnings. Loos refers to RoE as the "static" return on equity, as opposed to the "dynamic equity appreciation between entry and exit" (Loos, 2005), which does reflect the interests of shareholders. In a third place, RoE is calculated after accounting for the cost of debt, but before taking into account the cost of equity. Therefore, it has to be used in comparison with a benchmark that reflects the cost of equity for the company. Another issue with RoE is that it can be artificially inflated by increasing the gearing of the company:

$$RoE = RoCE + (RoCE - i) * \frac{D}{E}$$

Equation 17. Return on Equity as function of leverage

Indeed, as far as interests after taxes are lower than the Return on Capital Employed (Return of Economic Assets), a higher leverage ($\frac{D}{E}$) artificially improves RoE. This can be considered a strong argument against the use of RoE in evaluating value creation for the company in LBOs due to the usual high leverage in such deals. This is the reason why some academics argue that the persecution of an ever-higher RoE can lead to value destruction (de Wet & du Toit, 2006).

Return on Capital Employed or Return on Invested Capital

Return on Capital Employed (RoCE) and Return on Invested capital (RoIC) are two accounting profitability ratios that can be said to be two sides of the same coin. On one side, RoCE measures the efficiency capital is used in the company with, by comparing the operating income of a company after tax with the capital employed. On the other side, RoIC uses capital investment. They are calculated as follows:

$$RoCE = \frac{EBIT \times (1 - t)}{Capital\ Employed}$$

Equation 18. Return on Capital Employed

$$Capital\ Employed = Net\ Operating\ Assets = Fixed\ Assets + Working\ Capital$$

Equation 19. Capital Employed

$$RoIC = \frac{EBIT \times (1 - t)}{Capital\ Invested}$$

Equation 20. Return on Capital Invested

$$Capital\ Invested = Shareholders\ Equity + Net\ Debt$$

Equation 21. Capital Invested

Through direct inspection of the balance sheet of a company, it is easy to infer that:

$$\text{Capital Employed} = \text{Capital Invested}$$

Equation 22. Identity between Capital Employed and Capital Invested

Therefore, RoIC should be equal to RoCE.

The main advantage of calculating RoCE over the RoE of a company is that it takes into account the debt used to finance the operations of the company. Hence, it reflects more neatly the ability of the company to transform capital into profits. RoCE is directly comparable with the Cost of Capital of the company, or WACC. Indeed, WACC is properly used as a benchmark against RoCE, by calculating the spread $\text{RoCE} - \text{WACC}$ to assess the ability of a company to create value beyond its cost of capital.

RoCE can be easily decomposed as follows:

$$\text{RoCE} = \frac{\text{EBIT} \times (1 - t)}{\text{Capital Employed}} = \frac{\text{EBIT} \times (1 - t)}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Capital Employed}}$$

Equation 23. RoCE decomposition

Where:

$$\text{Operating margin after tax} = \frac{\text{EBIT} \times (1 - t)}{\text{Revenues}}$$

Equation 24. Operating margin after tax

$$\text{CE Turnover} = \frac{\text{Revenues}}{\text{Capital Employed}}$$

Equation 25. Capital Employed Turnover

Economic Value Added and Market Value Added

Economic Value Added (EVA) is a performance measure developed by Stern Stewart & Co that claims to calculate the true economic profit of a company by comparing the profitability of the company with its cost of capital. It can essentially be calculated as the multiplying the spread between a profitability ratio (RoCE, RoIC...) and the company's cost of capital by the economic asset this profitability refers to:

$$\begin{aligned} \text{EVA} &= (\text{RoCE} - \text{WACC}) \times \text{Capital Employed} \\ \text{EVA} &= (\text{RoIC} - \text{WACC}) \times \text{Capital Invested} \end{aligned}$$

Equation 26. Economic Value Added

Alternatively, EVA can be calculated as follows:

$$\text{EVA} = \text{EBIT} \times (1 - t) - \text{WACC} \times \text{Capital Employed}$$

Equation 27. Economic Value Added alternative calculation

Some detractors of EVA argue that it is still a short-term measure, as it only focuses on the results over one period, as well as any other accounting ratio. This could lead to the rejection of projects with negative EVA in early periods (de Wet & du Toit, 2006).

Alternatively, the calculation of the Market Value Added reflects the value created by a company over a period, as the difference between the market value of the company

prospectively achieved and the capital invested. It can be calculated as the present value of the expected EVA:

$$MVA = \sum_{t_{Entry}}^{t_{Exit}} \frac{EVA_t}{(1+r)^t}$$

Equation 28. Market Value Added

Where r can be the discount rate selected by investors to evaluate the investment based on their risk profile.

Quantifying the value earned by the Managers

It is very difficult to evaluate the value earned by the management team during the LBO. First of all, the value that the management team can take out from the deal can be based on many more dimensions than just the economic one. For the sake of simplicity, this thesis is only going to focus on the economic value.

As elaborated in the previous section about management incentives in LBOs, the economic value earned by managers throughout an LBO is going to depend on the particular conditions of each deal and can be split into three main components: the base salary, the variable salary linked to company performance and the participation of the management into the equity of the target company, both through their own capital or through compensation schemes.

Quantifying the value earned by the debt providers

The value created for debt investors can be evaluated as the IRR for every debt tranche in the LBO deal.

The calculation of the IRR of debt will depend on the characteristics of every tranche. If the cash interests are paid periodically, as it is common for senior term debt, the IRR of the debt tranche i can be calculated as follows:

$$0 = \sum_{t_{Entry}}^{t_{Exit}} \frac{Cash - flows_t}{(1 + IRR_i^D)^t}$$

Equation 29. Internal Rate of Return of Debt with periodic interest payments

Where the term *Cash-flows* includes interest payments and the repayment of the principal both at maturity and during the investment period if the debt is amortized.

For tranches that do not require periodic cash interests, as it is typical in mezzanine, the IRR of the debt can be calculated at maturity as follows:

$$IRR_i^D = \left[\frac{Debt\ Value_{i,Exit}}{Debt\ Value_{i,Entry}} \right]^{\frac{1}{t}} - 1$$

Equation 30. Internal Rate of Return of Debt without periodic interest payments

The value of debt at exit includes the accrued interest paid in kind, as well as any other capital gains by the debt investors earned through participation clauses such as convertibility options or participation pay-out (Silbernagel & Vaitkunas). In any case, provided that the company does not fail to fulfil its debt obligations, the IRR earned by the debtholders should be equal to the annual interest for each tranche of debt.

As a benchmark, the calculation of the cost of debt is required for every different debt investor. Ideally, every tranche should be rated to be compared with the yield of similarly rated tranches in comparable companies.

Part III. Case Study: Applus+

The Company: Applus+ in 2007

In July 2007, The Carlyle Group (Carlyle) published a press release where it described Applus+, the company they had just acquired as “The leader in inspection, certification, testing and technological services in Spain” (The Carlyle Group, 2007). Nowadays, Applus+ is “a world leader TIC⁹ Company that provides its services for the energy, industrial, infrastructure and automotive sectors” (Applus+, 2014). Applus+ is headquartered in Barcelona, Spain.

Applus+ has its origins in the creation of AgBar Automotive business in 1996, by The AgBar Group (“Agua de Barcelona”), the provider of water distribution services and treatment in Barcelona. Agbar Automotive was the result of the separation of the Statutory Vehicle Inspection business (ITV, “Inspección Técnica de Vehículos”, in Spanish) from the core business of the group. By the end of 1996, Agbar automotive had already acquired eight ITV concessions in Spain and aimed at becoming a leader in the vehicle inspection following the privatization of the sector in Spain. In 1997, it already owned concessions in other countries such as Portugal, Argentina and Costa Rica (Nueva Economía, 2000).

In 1999, Agbar Automotive Group acquired 80% of IDIADA, a spin-off from the Polytechnic University of Catalonia. IDIADA owned several first-level laboratories, facilities and more than 300 engineers and experts in the field of vehicle testing and engineering.

In 2002, the company’s strategy was redefined and globalized, and the company was rebranded as Applus+.

In 2003, Applus+ entered a long-term contract with the Catalan government to manage the LGAI (“*Laboratori General d’Assaigs i Investigacions*”), a set of, at that time, seven laboratories aimed at providing technological support to industrial enterprises through testing, calibration and R&D. This acquisition was key to underpin the basis for further technological expansion in the business of testing and certification. In 2012, the LGAI was rebranded as Applus+ Laboratories.

In the subsequent years, Applus+ demonstrated an impressive growth, both organically and through acquisitions. In 2004, it achieved €213 in revenues, 30% of which coming from international business. That same year, Applus+ acquired Soluziona Calidad y Medioambiente, the business of quality and environment previously owned by Soluziona, to become the biggest provider of industrial and environmental inspection and technical assistance in Spain.

⁹ TIC: Testing, Inspection and Certification

In 2005, Applus+ acquired Bilsyn, a Danish public provider of vehicle inspection and in 2006; it acquired K1, the second biggest Finish operator of vehicle inspections.

Also in 2006, Applus+ acquired Röntgen Technische Dienst (RTD), the leader of non-destructive tests in the oil and gas industry, consequently becoming a leader in the industry. By the end of 2006, Applus+ had revenues of €537m and business in over 40 countries worldwide.

In 2007 Carlyle led the €1.48bn Leveraged Buyout of Applus+ which is the subject of this case study. At the time of acquisition, Applus+ employed more than 8,500 employees and its activities were divided into four differentiated business lines:

Statutory Vehicle Inspections

Applus+ was the second largest company in the vehicle inspections sector in Europe. Through this line, Applus+ provided technical inspection of safety and emissions in vehicles to comply with regulatory standards in jurisdictions where such periodic inspections are mandatory. This line represented 50% of Applus+'s revenues, 80% of which came from public concession agreements.

Engineering, testing and certification

Applus+ provided testing services, analysis and homologation, and certifications such as ISO both to oil and gas and industrial companies through its LGAI labs, as well as to automotive manufacturers through IDIADA.

Inspection and technical assistance

Through this business line, dominated by the acquisition of Soluziona Calidad y Medioambiente, Applus+ provided a broad range of supervision, technical assistance, inspection and testing services, as well as project management and consulting services, related to electricity and telecommunications networks, industrial facilities and civil infrastructure sectors.

Non-destructive testing

Through its recently acquired subsidiary RTD, Applus+ provided non-destructive tests (NDT) services to companies in the oil and gas industry. NDT allow the testing of assets and materials without affecting their functionality.

The following figure summarizes the structure of the company right before the LBO, which does not reflect the ownership and legal structures.

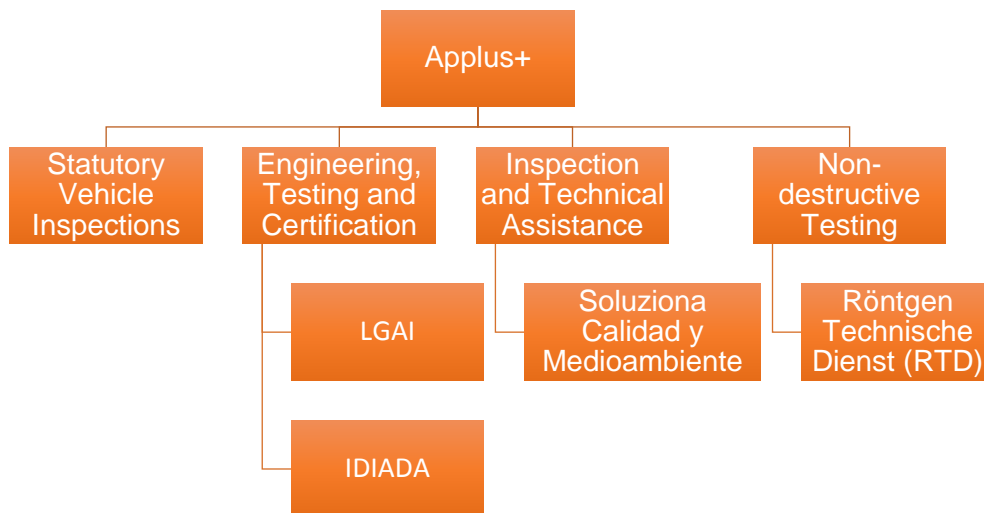


Figure 8. Organizational structure of Applus+ in 2006. Source: Own analysis

The Industry: Testing, Inspection and certification (TIC)

The TIC industry comprises a wide range of services such as advisory, inspection, testing, verification, certification and audit that aim at addressing the performance and conformity of products, industrial assets or systems so that clients are sure to meet specific quality, health, safety and environmental (QHSE) requirements. These TIC services can be basically driven by three factors: regulatory requirements, industry specific or internationally recognised standards and proprietary requirements, i.e., based on the demand of the client.

According to various reports, the worldwide TIC market had a size of more than €100bn in 2013 and is expected to grow 5% annually until 2022 (Market Research Future, 2017).

TIC services are provided either in-house (60% of the market) or by external TIC services companies, such as Applus+, which consist of a very fragmented 40% of the market. The following chart provides a further segmentation of the TIC market, where services to industries clearly dominate the market with 53% of share compared to only 9% of consumer testing.

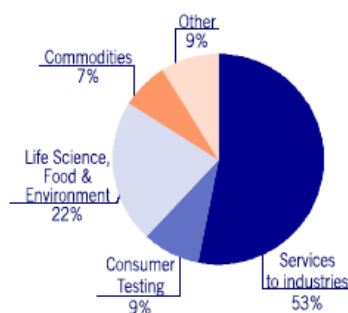


Figure 9. TIC market segments. Source: (Banco Português de Investimento, 2014)

The TIC market can be described as a fragmented market with high barriers of entry. The market is mainly represented by small companies that offer very specific TIC services with a local scope. There are four companies that can be considered as international players in this market, from which they control c. 13% of the total market share altogether (Banco Português de Investimento, 2014). These international players are SGS, Bureau Veritas, Intertek and Applus+.

SGS

SGS, formerly Société Générale de Surveillance, was founded in 1878 in Rouen, in France. It defines itself as “the world leading inspection, verification, testing and Certification Company”. SGS is headquartered in Geneva, Switzerland, went public on the SIX Swiss Exchange in 1981 and is part of the Swiss Market Index since 1985. It counts on more than 90,000 employees and a network of more than 2,000 offices. It ranked Forbes 200 in 2015 and 2016. In 2013, it had a 4.7% market share.

Bureau Veritas

Bureau Veritas was founded in 1828 in Antwerp, Belgium. It defines itself as “a global leader in Testing, Inspection and Certification (TIC) (...) to help clients meet the challenges of QHSE and social responsibility”. Bureau Veritas is headquartered in Paris and went public on the Paris Bourse in October 2007. From 1996 to 2013, under the leadership of Frank Piedelièvre, Bureau Veritas multiplied its number of employees by 7, from 8,000 to 59,000, its revenues by 8, from €455m to €3,902m and expanded the business to over 140 countries. In 2013, it had a 3.9% of market share.

Intertek

Intertek was founded in 1996 after Inchape Testing Services was acquired by Charterhouse development Capital, even though its origins can be traced back to the 1890s. It defines itself as a company that goes “beyond testing, inspecting and certifying products (...), a Total Quality Assurance provider to industries worldwide”. Intertek is headquartered in London, UK, and is listed in the London Stock Exchange since 2002. In 2013, it had a 2.6% of market share. It currently employs 42,000 people in over 1,000 offices and 100 countries.

This highly fragmented market has allowed the big players to grow through the acquisitions of the local players. Indeed, only Applus+ made more than 20 acquisitions during the LBO period. Furthermore, this market structure has created high barriers of entry, which make the positions of the big players more stable. The following table summarizes the four main barriers of entry.

Authorizations and accreditations	To operate as a TIC services provider across numerous authorizations and accreditations are compulsory, depending on the different jurisdictions. For instance, only Applus+ RTD has more than 100 authorizations issued by different institutions
Reputation	QHSE requirements are usually critical for the clients, which makes trust a key element of success in this market, therefore limiting the entrance to new players
Global capabilities and local presence	International large clients require the ability from TIC services providers to supply robust services across wide geographic localizations and to be able to serve global contracts
Technical expertise	High technical expertise is a clear competitive advantage in this market and would require an enormous economic investment for a new entrant

Figure 10. Main barriers of entry for the TIC market. Source: Applus+ IPO Prospectus and own analysis

The market of TIC grew overall between a 5 and 6% CAGR between year 2000 and 2014 (Banco Português de Investimento, 2014). The main players of the industry also showed strong growth, both organically and through intense M&A activity, consistently outperforming GDP growth. However, the market is expected to keep on growing at a similar pace in the years to come. The following table summarizes the three main drivers of growth for the TIC market.

Regulations, standards and sustainability concerns	The increase in the QHSE-related regulation and industry standards widened the range of necessary TIC services. Furthermore, the increase in public QHSE awareness and the proactivity of companies is also favourable to this trend
Outsourcing	Companies have tended to get rid of non-core activities and rely on the expertise of third parties when it comes down to verification and certification
Sophistication of products and assets	Innovation and appearance of new technologies, as well as shorter life-cycles of products has increased the necessity of TIC services. On the other side, ageing assets in industrial companies require higher use of TIC services

Figure 11. Main drivers of growth for the TIC market. Source: Applus+ IPO Prospectus and own analysis

All in all, the TIC market provided a very attractive environment for a private equity investment in an established company due to its structural growth and its high barriers of entry.

The Deal

On the 23rd of July, 2007, Carlyle announced the acquisition of Applus+ for an enterprise value of €1,480 million, one of the biggest private equity deals in Spain at that time.

The structure of the deal

In July 2007, as a result of the LBO, the entity Applus Services SA was incorporated in Spain. This company would englobe the former company under which Applus+ was registered, Applus Servicios Tecnológicos SA with the goal of becoming the ultimate umbrella company for all the subsidiaries of Applus+.

At the same time, a company called Azul Holding SCA was incorporated in Luxembourg. This entity became the holding company of the deal and consequently the sole owner of Applus Services SA as a consequence of the LBO. This company served as the investment vehicle through which the investors invested their equity into the deal. Additionally, Azul Holding SCA fully owned Azul Finance SARL, a company through which Applus Services SA received a participating loan from its investors.

The debt raised during the deal was recognised at the level of Applus Services SA. The following figure summarizes the structure of the deal:

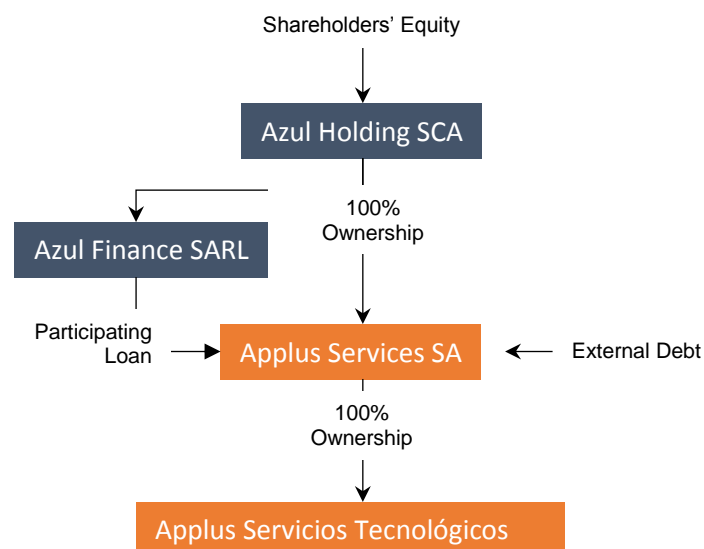


Figure 12. Deal Structure. Source: Sabi (Bureau Van Dijk) and own analysis

The shareholders: The Carlyle Group and a consortium of local institutional investors

Upon the acquisition, The Carlyle Group owned 69.05%¹⁰ of Azul Holding SCA through two different funds, CEP II and III Participations SARL SICAR. In second place, a consortium of Spanish Banks and other local institutional investors owned 22.82% of the company. This group of investors was represented in the deal through Volja Plus SA, a company that was established in Spain on November 2007. Volja Plus SA was led by the extinguished bank Caixa Catalunya¹¹, which controlled a total of 7.76% of Azul Holding SCA. The other institutional investors at the time were Caixa Sabadell¹², Caixa Manresa¹³ and Caixa de Girona¹⁴. Other local shareholders in Volja Plus SA were the Sanhauja and Costafreda families and GTD Invest SARL, owned by GTD, the aeronautical engineering company, which aimed at establishing some synergies with Applus+ (El Pais, 2007). The presence of local investors was a requirement by the Catalan Government as it owned a stake in IDIADA (20%) and LGAI (5%), both subsidiaries of Applus+ (El Mundo, 2007). Finally, the remaining stake was left as reserves aimed, among others, at management compensations (El Pais, 2007).

This chart summarizes the ownership of the holding company Azul Holding SCA, i.e., the shareholders in the deal upon closing the deal:

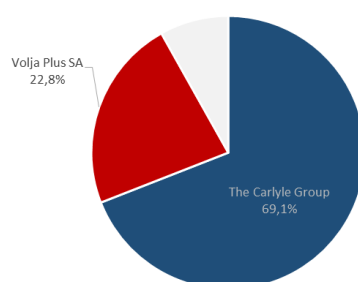


Figure 13. Ownership of Azul Holding SCA. Source: Sabi

¹⁰ The actual amount differs depending on the sources, especially in journalistic articles. This number is based on data from Sabi, the database from Bureau Van Dijk.

¹¹ In 2010, Caixa Catalunya became CatalunyaCaixa, legally Catalunya Banc SA. In 2016 it was merged into Banco Bilbao Vizcaya Argentaria (BBVA)

¹² Caixa Sabadell was merged into Unim in 2010 and was acquired by BBVA in 2010

¹³ Caixa Manresa was merged into CatalunyaCaixa in 2010

¹⁴ Caixa de Girona was merged into CaixaBank (La Caixa) in 2010

The sources of funds. Debt structure and equity invested

The deal was financed through a combination of around 61% debt and 39% equity. The following table summarizes the debt package used through this deal, which totalled €1,085m, including the CAPEX line of €150m and the revolving credit facility of €75m. The term loans were raised through a syndication of the banks listed in the table, which was led by Société Générale as principal agent. There was one Term B 1st lien secured of €610m and a Term 2L secured of €100m. On the other side, the mezzanine facilities were arranged by the Intermediate Capital Group PLC (ICG PLC) both directly and through their fund Intermediate Finance II PLC. Finally, also in 2007, the shareholders extended a participation loan of €369,375k¹⁵.

Type	Principal (€k)	Agent	Lenders	Cash Spread (bps)	PIK (bps)	Amortization	Maturity	Refinanced
Term B 1L Sr. Secd	610 000	Société Générale	Barclays Capital Bayerische Hypo-und Vereinsbank AG, London Branch Catalunya Caixa Caixa Bank Bankia Calyon, Sucursal en España Commerzbank Aktiengesellschaft Landsbanki Islands h.f. Mizuho Corporate Bank, Ltd	250	-	Yes. €156,000th drawn down by 31/12/2013	27/05/2016	13/05/2014
Term 2L Secd	100 000			500	-	Bullet	20/01/2017	13/05/2014
Term CAPEX 1L Sr. Secd	150 000			225	-	-	10/01/2014	21/11/2012
Revolver 1L Sr. Secd	75 000			225	-	-	10/01/2014	21/11/2012
PIK Term MEZZ Unsecd T1	100 000	ICG PLC Société Générale	Intermediate Capital Group PLC	300	500	Bullet	20/07/2017	13/05/2014
PIK Term MEZZ Unsecd T2	50 000	ICG PLC Société Générale	Intermediate Capital Group PLC	300	500	Bullet	20/07/2017	13/05/2014
Participating Loan	369 375	Azul Finance SARL	Azul Holding SCA	-	-	-	27/11/2019	

Figure 14. LBO debt package. Source: Bloomberg

The CAPEX line and the revolving credit facility were 95% and 85% refinanced respectively on November 2012, and their original maturities extended to 2016. In any case, all the debt resulting from the deal was refinanced in 2014 as a result of the IPO.

The cash interests were referred to the 3-month EURIBOR, while the PIK interests were based on a fixed rate. The 3-month EURIBOR on the first day of July 2007 was 4.176%. All in all, this debt structure was supposed to generate a cost of 7.615%¹⁶, including the cash interests and the PIK interests scheduled and summarized in the previous table.

¹⁵ Interest scheme of the participating loan: 70% of non-consolidated operating and non-operating profit every year until maturity and 5% annual fixed interest. Total Interest payable capped at an annual 16% of outstanding debt

¹⁶ Calculated as the weighted average interest, including PIK interest

The following table summarizes the different sources of funds used to finance the deal, compared to the total sources of funds and the EBITDA of the company in 2016.

Sources	Amount	%	X/Ebitda
€k			
Debt			
Term B 1L Sr. Secd	610 000	43,2%	8,2x
Term 2L Secd	100 000	7,1%	1,3x
PIK Term MEZZ Unsecd	100 000	7,1%	1,3x
PIK Term MEZZ Unsecd 2	50 000	3,5%	0,7x
Term CAPEX 1L Sr. Secd	-	-	-
Revolver 1L Sr. Secd	-	-	-
Total Debt	860 000	61%	11,5x
Equity			
Azul Holding SCA Equity	552 516	39,1%	7,4x
Equity Issue at Applus Services	123 125	8,7%	
Participation Loan at Applus Services	369 375	26,2%	5,0x
Total Sources of Funds	1 412 516	100%	

Figure 15. Sources of funds. Sources: Bloomberg, Sabi and Applus+ IPO Prospectus

The equity invested totalled €552,516k¹⁶, as recorded in the balance sheet of Azul Holdings SCA at inception. According to the Applus+ IPO prospectus, €369,375k of this equity was invested through a participation loan, through Azul Finance SARL, wholly owned by Azul Holding SCA. Also according to the IPO prospectus, Applus Services SA was established with a capital of €123,125k.

The uses of funds. Equity valuation, net debt and transaction fees

Upon acquisition, Applus+ was valued at an Enterprise Value of €1,480m.

The equity value Applus+ was acquired at by Azul Holding SCA has been calculated using three different methods, as summarized in the following table.

Equity Valuation at Entry

€k					
Method 1 - Equity Bridge		Method 2 - Asset Fair Value		Method 3 - Former Shareholder Proceeds	
2006 Applus Net Debt	513 724	2006 Applus Equity Value	415 344	2006 AgBar Stake in Applus	53,1%
Deferred Tax Liability	153 709	2007 Intangible Assets generated at acquisition	550 245	2006 AgBar Proceeds from sale of stake	541 600
		2007 Goodwill recognized	444 210		
Total Equity Value	966 276	Total Equity Value	965 589	Total Equity Value	1 019 962
Average EQV				965 933	

Figure 16. Calculation of the Equity Value of Applus+ at acquisition. Sources: Sabi (BvD), Applus+ IPO prospectus, Eleconomista.es and own analysis

The first two methods are based on values from the financial statements of the Applus Servicios Tecnológicos in 2006¹⁷ and from the Applus+ IPO prospectus. The third method is based on journalistic information. Finally, the total estimated value of the

¹⁷ Sourced from Sabi Database, Bureau Van Dijk

equity of Applus+ in 2006 has been calculated as an average of the first two methods, as their results are very similar to the one obtained with the third method. Moreover, the sources of the first two methods ought to be more accurate than the source of the data used in the third method.

The first method consists on the classic equity bridge formula, which deduces the Net Debt of the target, along with other debt-like items (such as deferred tax liabilities) from the enterprise value of €1,480,000k. The Net Debt of €513,724k is obtained from the balance sheet of Applus Servicios Tecnológicos in 2006. The result is an equity value of €966,276k.

The second method is based on the calculation of the Goodwill and other Intangible Assets generated at acquisition, which are detailed in the Applus+ IPO prospectus. These intangibles generated at acquisition summed a total of €550,245k, which added to the book value of equity of Applus Servicios Tecnológicos in 2006, totals an equity value of €965,589k.

In theory, these two methods should provide the same result. The differences are probably due to the lack of granularity in the data downloaded from Sabi that does not allow detecting potential adjustment items that should be included in the calculation of the equity bridge or the asset fair value.

Last but not least, the third method is based on a journalistic article that sized the proceeds of the LBO for the former shareholder AgBar, which owned 53.1% of Applus+ in 2006, in €541,600k (Eleconomista.es, 2007).

All in all, the uses of funds are summarized in the following table.

Uses of funds	Amount
	€k
Purchase of Equity	965 933
Net Debt Refinancing	386 568
<i>Implied % Net Debt Refinanced</i>	<i>75,25%</i>
Transaction fees and other adjustments	60 016
<i>Implied % of fees and other adjustments</i>	<i>4,06%</i>
Total Uses of Funds	1 412 516

Figure 17. Uses of Funds. Source: Own analysis

The transaction fees and other adjustments have been calculated as the difference between the equity recognized in 2007 at the level of Azul Holding SCA and the participating loan; and the value of the shares subscribed at the level of Applus Services SA (see figure 9, sources of funds). A level of fees of around 4% of the Enterprise Value seems reasonable compared to the standards.

All in all, the following figure summarizes the consolidated balance sheet at acquisition.

Consolidated Balance Sheet

Assets		Equity & Liabilities	
Enterprise Value	1 480 000	Equity Value	492 500
EBITDA x	19,9x	EBITDA x	6,6x
		Deal Debt	860 000
		EBITDA x	11,5x
		Remaining Debt	127 157

Figure 18. Consolidated Balance Sheet at acquisition. Source: Own analysis

Where the impact of the transaction fees is already deducted from the equity value.

The implied cost of capital

As seen in the section about the sources of funds, the implied annual cost of debt from the deal debt structure is 7.615%.

The CAPM model is useful to calculate the implied cost of equity in this transaction. As a reminder, the CAPM formula calculates the return an investor should expect from investing in a company, given its exposure to the entire market.

The result is that the required return for an investor investing in Applus+ in July 2007 was 6.97%.

The yield of the 10-year German bond in July 2007 has been used as a benchmark for the risk free rate in Europe at the time of the deal. In 2007, the 10-year German bond was yielding an annual 4.5%.

The market premium at the time was 5.10%, as estimated by JP Morgan¹⁸ (JP Morgan, 2008).

The beta of Applus+ in July 2007 has been calculated by re-levering the average unlevered beta from its peers SGS and Intertek in 2007, using the implied equity value and target net debt resulting from the deal. The unlevered betas of the peers can be found in the following table.

	Unlevered Beta
SGS	1,007
Bureau Veritas	n.d
Intertek	0,4464
Average	0,7267

Figure 19. Peers Unlevered Beta in July 2007. Source: Bloomberg

The result is an implied beta for Applus+ in July 2007 of 0.485.

Last but not least, the weighted average cost of capital (WACC), has been calculated from the costs of debt and equity just obtained, and using the effective tax rate that Applus Servicios Tecnológicos had to face in 2006. The WACC obtained is 5.96%. The following table summarizes the calculations.

¹⁸ This Market Premium has been calculated as the average of the three methods proposed by JP Morgan in the referenced report

Cost of Capital

Cost of Debt

Weighted Average Cash Sprea	2.75%
Weighted Average PIK Interest	0.69%
3-month Euribor 07/2007	4.18%

Kd **7.61%**

Cost of Equity

Beta	0.485
Risk-free Rate	4.50%
Market Premium 2007	5.10%

Ke **6.97%**

Weighted Average Cost of Capital

Target Debt upon Acquisition	987,157
Equity Value upon Acquisition	965,933
Effective Tax Rate	34.7%

WACC **5.96%**

Figure 20. Calculation of the Weighted Average Cost of Capital. Source: Own analysis

It is interesting to observe that at that time, the cost of equity was lower than the cost of debt before taxes. This is surprising given the fact that usually equity investments bear more risk than debt investments, especially in LBOs. This result might rise up some eyebrows on the suitability of the CAPM as a model to calculate the required cost of equity in a LBO. However, for sake of simplicity, this thesis is going to stick to this result.

Governance and the Management of the company

Upon the LBO, the board of directors of Applus+ was made up of 10 members, consisting of the Charmain, the CEO of the company, 3 independents, 4 representatives of Azul Holding S.C.A. and one Secretary Non-director, which did not participate on the decisions of the board. Among the representatives of Azul Holding S.C.A., one of them represented Caixa Catalunya and the other 3 represented Carlyle. All in all, Carlyle controlled 33.33% of the votes of the board.

In 2014, right before the IPO, the company was in the process of appointing a new non-executive independent Charmain for the Board of Directors, in substitution of Mr. Joaquín Coello Brufau. Mr. Coello was appointed CEO of Applus+ in December 2006, some months before the LBO by Carlyle. He stayed in office until the end of 2010, when he became the Charmain of the Board of Directors. His substitute as CEO, Mr. Fernando Basabé Armijo, was hired from one of the main competitors, SGS, where he exercised as Chief Operating Officer for the Western Europe division.

As of the time of the IPO, only 4 members had not been in the board since 2007, including the CEO, Mr. Basabé. In particular, in 2009, Carlyle brought in Richard Nelson as one of the new independent members of the board of directors. Mr. Nelson had been CEO of Intertek and had more than 30 years of experience in the sector.

The senior management team of Applus+ at the time of the IPO was made up of 12 members, including the CEO, the CFO and VPs of other functions and main business units. The CFO, Joan Amigó, was brought in by Carlyle in 2007, together with a Corporate Development Officer. More than 75% of top and mid management was replaced throughout the LBO period.

While at the time of the IPO, no member of the Senior Management team held shares from Applus Services SA, some members of the Senior Management team and other employees had been granted shares from Azul Holding SCA, and therefore indirectly owned shares of Applus Services SA. At the time of the IPO, 1.61% of Azul Holding SCA was owned by member of the Senior Management team and other employees.

Analysis of the LBO. Value creation between 2007 and 2013

The skill-set of the Private Equity firm. Valuation of the company at entry

The €1,480 million Enterprise Value that Applus+ was valued at upon acquisition in July 2007 represent an EV/EBITDA multiple of 19.9x over the EBITDA of 2006.

EV/EBITDA at Entry	
	€k
Enterprise Value at Entry	1 480 000
2006 Applus EBITDA	74 542
Implied EV/EBITDA at Entry	19,9x

Figure 21. Applus+ EV/EBITDA at Entry. Source: Sabi and Own analysis

It is worth noting that this calculation is based on the numbers observed in the consolidated financial statements of Applus Servicios Tecnológicos in 2006 obtained from Sabi. Other sources, such as Industrial Capital Strategies, report an EV/EBITDA multiple over Fiscal Year 2006 EBITDA of 19.2x (Industrial Capital Strategies, 2012).

In this section, a peer multiple analysis and a DCF analysis have been performed to conclude whether Carlyle overpaid or not for the acquisition of Applus+.

Peer Multiple Analysis

Transaction multiples

The TIC Industry is a very M&A-active industry, characterized by the presence of a few big global players that are continuously fuelling their growth through the acquisitions of smaller and more regional players. However, in the past years, there has been a notable increase in private equity backed deals of bigger companies in the TIC industry. As of 2012, almost half of the top 25 TIC companies had majority or minority stakes by private equity firms (Industrial Capital Strategies, 2012).

The following table represents the EV/EBITDA multiples that have been paid in some of the numerous acquisitions that took place in the industry between 2007 and 2011.

Target	Date	EV/EBITDA
Moody International	Mar-11	12.8x
LGC	May-10	12.9x
Inspectorate (Inspicio)	Sep-10	10.9x
Stork Materials Technology BV	Dec-10	10.2x
Amdel	May-08	8.6x
Socotec	Jul-08	10.8x
Inspecta	Jun-07	13.5x
Inspicio	Dec-07	13.8x
	Average	11.69x

Figure 22: Acquisitions in the TIC Industry prior to 2012. Source: (Industrial Capital Strategies, 2012), (ABN AMRO, 2014)

These are considerably big deals, of at least €100m of EV. ABN-AMRO finds a high dependence between transaction multiple and the size of the company in the TIC industry (ABN AMRO, 2014).

From this table, the acquisitions of LGC, Stork Materials Technology BV, Socotec and Inspicio were carried out by private equity firms. Moody international was acquired by Intertek, while Amdel and Inspectorate (a subsidiary of Inspicio) were acquired by Bureau Veritas. It is difficult to derive trends from this sample of deals, given its reduced size and the cyclicity of the M&A industry in general. Contrary to expected, it does not look like strategic acquirers payed any premium for the acquisition of the companies. However, it seems that companies acquired in 2007, right before the credit crisis, had higher valuations than those acquired between 2010 and 2012. The overall EV/EBITDA average of the sample is a multiple of 11.69x, while the average for the acquisitions that took place in 2007 is 13.65x.

Trading Multiples

The following table summarizes the EV/EBITDA that the listed peers of Applus+ were trading at in July 2007.

	EV/EBITDA
SGS	13.86x
Bureau Veritas	n.d.
Intertek	13.08x
Average	13.47x

Figure 23. Trading multiples of Applus+'s peers in July 2007. Source: Bloomberg

While at the time Bureau Veritas was not yet public, SGS and Intertek traded at very similar EV/EBITDA multiples of 13.86x and 13.08x, in the SIX Swiss and London stock exchanges respectively, which means an average of 13.47x.

While apparently, the transaction and trading multiple analyses provide similar results for 2007, it is important to bear in mind that they are not directly comparable as the trading multiples do not include the control premium usually paid in M&A transactions for acquirers that expect to benefit from synergies or operational improvements on the targets. This is a sign indicates that, either these listed companies were overvalued at that time or that the targets from the described transactions were undervalued.

DCF analysis

A DCF analysis as of end of 2006 has been carried out in order to come up with a valuation for Applus+, based on its business plan and a potential forecast between 2006 and 2013 that could have been elaborated in 2006 based on the financial statements of Applus Servicios Tecnológicos and reasonable assumptions.

First of all, the WACC of 5.96% that has been used in this DCF analysis has been calculated in a previous section, based on the target capital structure of Applus+ upon acquisition. The perpetual growth of 2% for years 2014 and beyond has been calculated as a proxy of the potential growth of the global GDP.

Regarding the assumptions of the business plan, the revenue growth for the transitionary state between 2006 and 2013 has been set at 5%, based on various reports that suggest that the TIC industry grew between 5 and 6 % in the years between 2000 and 2014 (Banco Português de Investimento, 2014). The investors might have had access to reports suggesting a similar growth in 2007, right before the financial crisis took place.

EBITDA margin, depreciation as % of sales, the effective tax rate and change in working capital and CAPEX as % of sales were set constant at the levels of Applus+ in 2006 to make the analysis more conservative.

The result of this DCF analysis is an Enterprise Value of €1,372,760k, which implies an EV/EBITDA multiple of 18.4x over the EBITDA of 2006. Nevertheless, it is worth noting that this model is quite sensitive to some assumptions as it can be deduced from the sensitivity analysis. In particular, a reduction of the forecasted WACC to 5% would almost double the valuation up to a multiple of 29.6x, keeping everything else constant. On the other side, Changes in the sales growth rate assumed for the period between 2006 and 2013 do not seem to alter excessively the final valuation (the multiple increases or decreases by around 5% for each 1% change in sales growth), as it is logical given the weight of the terminal value in the final result. Finally, a change in other assumptions such as the CAPEX % out of sales of 1% causes a change of around 10% in the valuation.

The entire DCF model is displayed in the following figure.

WACC	5,96%
Perpetual Growth	2%

	th EUR	31/12/2013 th EUR	31/12/2012 th EUR	31/12/2011 th EUR	31/12/2010 th EUR	31/12/2009 th EUR	31/12/2008 th EUR	31/12/2007 th EUR	31/12/2006 th EUR
Revenues		756.433	720.413	686.107	653.435	622.320	592.685	564.462	537.583
<i>Growth</i>		5%	5%	5%	5%	5%	5%	5%	5%
EBITDA		104.888	99.893	95.137	90.606	86.292	82.183	78.269	74.542
<i>EBITDA Margin</i>		14%	14%	14%	14%	14%	14%	14%	14%
D&A		43.222	41.164	39.204	37.337	35.559	33.865	32.253	30.717
<i>% of Revenues</i>		6%	6%	6%	6%	6%	6%	6%	6%
EBIT		61.666	58.730	55.933	53.270	50.733	48.317	46.016	43.825
<i>EBIT Margin</i>		8%	8%	8%	8%	8%	8%	8%	8%
<i>Tax Rate</i>		34,7%	34,7%	34,7%	34,7%	34,7%	34,7%	34,7%	34,7%
NOPAT		40.247	38.330	36.505	34.766	33.111	31.534	30.033	28.602
D&A		43.222	41.164	39.204	37.337	35.559	33.865	32.253	30.717
CAPEX		15.129	14.408	13.722	13.069	12.446	11.854	11.289	10.752
<i>% of Revenues</i>		2%	2%	2%	2%	2%	2%	2%	2%
<i>Change in WC</i>		2.991	2.849	2.713	2.584	2.461	2.344	2.232	2.126
<i>% of Revenues</i>		0,4%	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%
Free Cash Flows		65.348	62.236	59.273	56.450	53.762	51.202	48.764	46.442
Terminal Value	1.683.185								
<i>Year</i>	8	7	6	5	4	3	2	1	0
<i>Discount Factor</i>	0,6	0,7	0,7	0,7	0,8	0,8	0,9	0,9	
Discounted Free Cash Flows		43.575	43.974	44.376	44.781	45.191	45.604	46.021	
Discounted Terminal Value	1.059.239								
Sum of Discounted Cash Flows	313.522								
Implied EV	1.372.760								
Implied EV/EBITDA 2006	18,4x								

EV/ EBITDA Sensitivities		Sales Growth Rate					
		18,4x	2%	3%	4%	5%	6%
WACC	4%		30,7x	32,8x	34,9x	37,2x	39,6x
	5%		24,5x	26,1x	27,8x	29,6x	31,5x
	6%		15,2x	16,2x	17,2x	18,2x	19,3x
	7%		12,1x	12,9x	13,6x	14,5x	15,3x
	8%		10,1x	10,7x	11,3x	12,0x	12,7x

WACC		CAPEX as % of Sales					
		18,4x	1%	2%	3%	4%	5%
WACC	4%		41,5x	37,2x	32,9x	28,6x	24,3x
	5%		33,0x	29,6x	26,2x	22,7x	19,3x
	6%		20,3x	18,2x	16,1x	14,0x	11,9x
	7%		16,1x	14,5x	12,8x	11,1x	9,4x
	8%		13,3x	12,0x	10,6x	9,2x	7,8x

Figure 24. DCF Valuation of Applus+ as of 2006. Source: Own analysis

The 19.9x EV/EBITDA multiple paid by the investors at acquisition represents a premium of 47.7% compared to the two transactions that took place in 2007 and a 45.8% premium compared to the trading multiples of SGS and Intertek in July 2007. On the other side, the transaction represents a premium of only 8% compared to the result obtained in the DCF.

Therefore, it looks like the investors relied heavily on the potential of Applus+, the potential of the TIC industry as a growing industry and the ability of the management team to drive this company across a successful evolution. This confidence from the investors on their own models and forecasts, fuelled by the economic growth experienced in the years before the 2008 crisis, would explain the high prices paid for Applus+ in comparison to the transaction and trading multiples.

In a nutshell, the shareholders of Azul Holding SCA paid a considerable premium compared to the valuation of the peers of Applus. However, the DCF valuation shows

that the valuation of Applus+ was not far from its fair value inferred from the growth projections of the industry.

Management action. Improving the performance of the target company

In this section, the performance of the company is going to be analysed during the years of the LBO, between 2007 and 2013, i.e., while Azul Holding was a majority shareholder of Applus Services SA. The results described in this section are mainly based on the analysis of the consolidated financial statements of Applus Services SA that have been obtained from Sabi, the database from Bureau Van Dijk that contains comprehensive information about companies from Spain and Portugal.

Applus Services SA as a company was established in 2007 as a consequence of the LBO. As described in previous sections, before this date the company operated under the society named as Applus Servicios Tecnológicos SA. From this company, only the consolidated statements from 2006 and 2007 were found. Therefore, only a comparison with 2006 will be possible in this case study as to compare with the pre-LBO period. The results of 2007 correspond to the consolidated accounts of Applus Servicios Tecnológicos SA, as Applus Services SA only operated for 6 months in 2007.

It is worth noting that the group went through numerous acquisitions during the LBO period, as it will be analysed further. In particular, on December 2012, Applus+ acquired a controlling stake of The Velosi Group, whose accounts were consolidated with those of Applus Services SA at the end of December of 2012 and incorporated as a subsidiary under the name of Applus+ Velosi. Therefore, the results of Velosi only impacted the financial statements of 2013 that are not going to be directly comparable to those of previous years due to the strong impact of this acquisition.

Operational performance improvements. EBITDA and cost structure

The following chart displays the evolution of the EBITDA of the Applus+ between 2006 and 2013 for Applus+. It is important to note that the figures have been corrected to exclude the impact of the deterioration of fixed assets, which was particularly high in 2013, in order to reflect only the operational performance of the company. In 2013, the contribution of Velosi is highlighted in a different pattern.

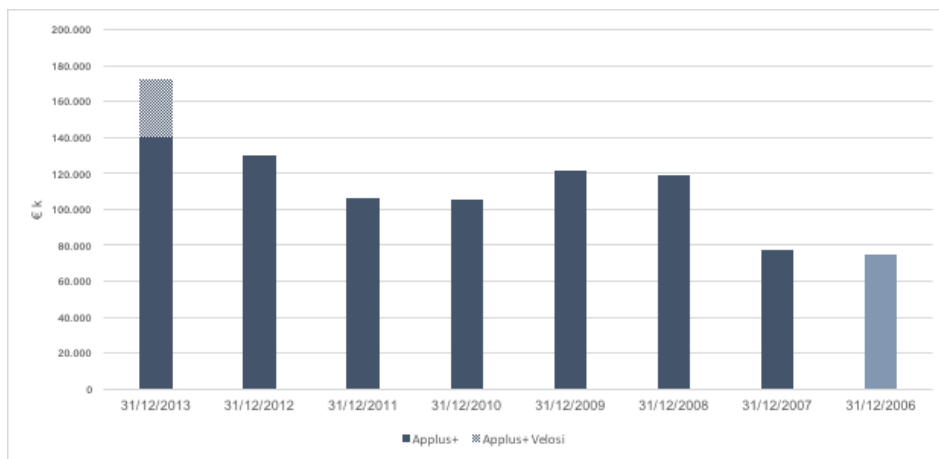


Figure 25. EBITDA evolution between 2006 and 2013. Source: Sabi and own analysis

At first glance, one can realize that the group's adjusted EBITDA had increased significantly by the end of 2008, from €77,146k in 2007 to €119,388k in 2008. While 2009 was still a good year, the company's performance suffered a downturn between 2010 and 2011, to rise up again in 2012 above 2009 levels. In 2013, Applus+ showed a considerably stronger EBITDA growth, mostly due to the acquisition and consolidation of Velosi, which accounted for the 18.9% of the EBITDA of 2013.

In terms of CAGR, Applus+'s EBITDA grew 11% annually from 2007 to 2012, and a 14.34% from 2007 and 2013. As it is showed in the following table, Applus+ fell down to the third place in EBITDA CAGR only beating SGS, in both periods 2007 to 2012 and 2007 to 2013. Only after 2013, Applus+ got closer to the leaders Bureau Veritas and Intertek.

EBITDA CAGR	2007-2013	2007-2012
Applus+	14,3%	11,0%
SGS	8,7%	7,5%
Bureau Veritas	14,4%	14,9%
Intertek	14,5%	12,9%
Peer Average	12,6%	11,8%

Figure 26. EBITDA CAGR across peers. Source: Own analysis

In any case, this first analysis suggests a substantial improvement of the operational performance of the company, which could broadly be driven either by an increase in revenues, an improvement in the cost structure or both.

Let's now focus on the evolution of the cost structure and leave the evolution of the revenues for the section about strategic improvements.

The following chart represents the evolution of the EBITDA margin of Applus+ compared to its peers.

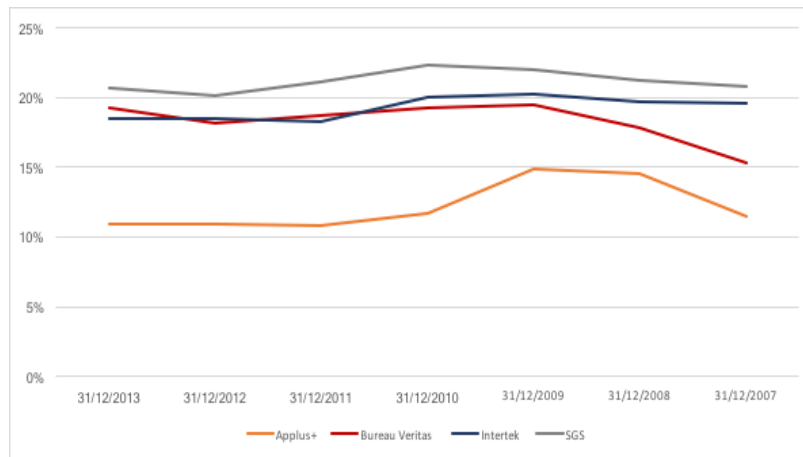


Figure 27. EBITDA margin evolution between 2007 and 2013 across peers. Source: Sabi, Orbis, and own analysis

After an increase in EBITDA margin from 11.5% in 2007 to 14.9% in 2009, Applus+ EBITDA margin fell down to 10.8% in 2010 to get stabilized at 10.9% in 2012 and 2013. Applus+ was by far the peer with the lowest EBITDA margin between 2007 and 2013. It is therefore easy to conclude that there was no major improvement in the EBITDA margin of Applus+ between 2007 and 2013.

Let's look deeper into the detail of the cost structure of Applus+. The following figures display the disaggregation of the operational expenses of Applus+ into material costs, cost of employees and other operational expenses, as reported in its financial statements and the evolution of each of these costs as % of sales.

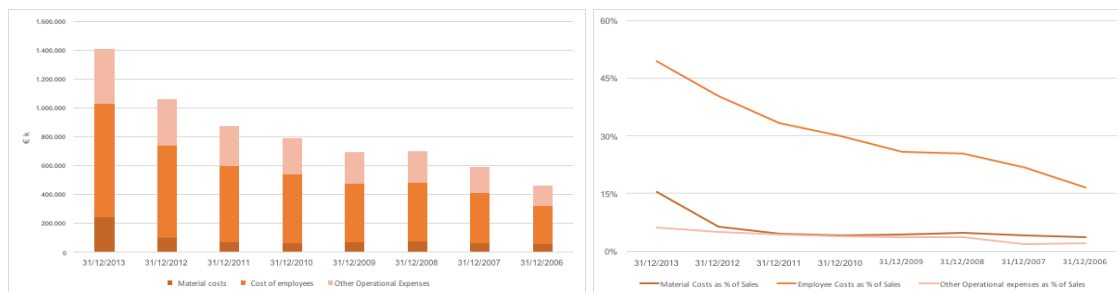


Figure 28. Disaggregation of operating costs and evolution as % of sales. Source: Sabi and own analysis

The most relevant costs are employee costs, that increased from a level of 21.7% of sales in 2007 up to 49.4% of sales in 2013. Materials costs were kept almost stable between 4% and 4.5% until 2011, but then increased up to 15.4% in 2013. Very likely, the acquisition of Velosi had something to do in such an increase in materials costs in 2013.

Let's digg deeper into these employee costs. The following figure shows, on the left chart, the evolution of the number of employees from 2007 to 2013, while the chart on the right shows the evolution of the costs per employee.

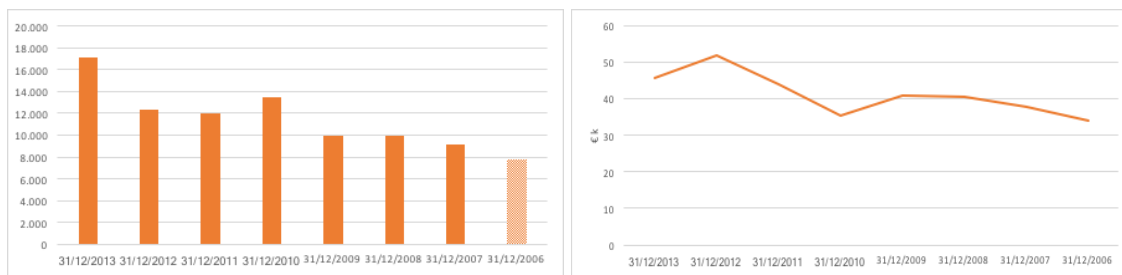


Figure 29. Evolution of headcount and costs of employees per employee. Source: Sabi and own analysis

The number of employees increased by almost 60% between 2007 and 2012, from 7,741 in 2007 to 12,334 in 2012 and 17,163 in 2013 (Velosi). There is a slowdown in the increase of the number of employees after 2010, which is consistent in time with the worse years of the recession in Spain and subsequent law reforms that facilitated the dismissal of employees.

On the other side, as reflected in the right chart, the costs of employees per employee, or salaries seem to increase consistently between 2007 and 2013, except for two punctual downturns in 2010 and in 2013.

Last but not least, the chart below shows the staff turnover between 2007 and 2013, i.e., the evolution of the sales per employee of Applus+. This chart is aimed to be a benchmark of the evolution of the productivity of the employees.

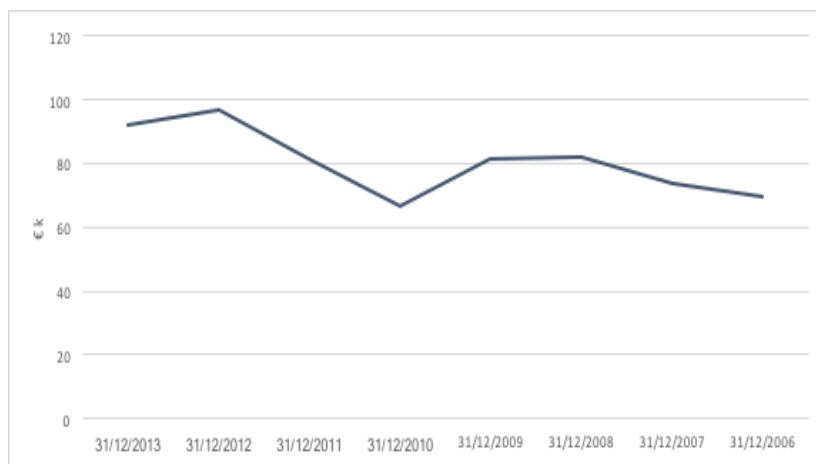


Figure 30. Evolution of staff turnover. Source: Sabi and own analysis

It turns out that staff turnover increased from €69,400 in 2006 to €81,670 in 2009. 2010 was the year with the highest increase of employees, and also the year with the lowest staff turnover at €66,380, which translated into a reduction of the number of employees in 2011 and subsequent increase in staff turnover for the following years, up to €96,700 in 2012.

All in all, it seems that while the costs of employees increased substantially relatively to the sales of the company, this was due to a consistent increase in the number of employees. This increase in the number of employees was accompanied with an overall increase in staff turnover. All this leads to the conclusion that, overall, while the management team was not able to improve the EBITDA margins during the time of the LBO; it did a good job in improving the efficiency of the employees.

Strategic Improvements. Organic revenue growth and buy-and-build strategy

On the side of the revenues, Applus+ performed really well since its LBO, fuelled both by organic growth and build-up acquisitions. The figure bellow represents the evolution of the revenues of the group between 2006 and 2013. In 2013, the contribution of Velosi is highlighted in a different pattern.

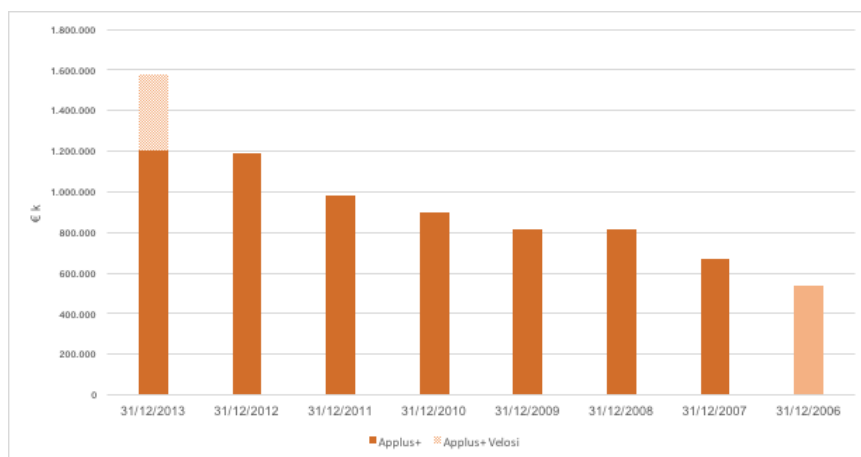


Figure 31. Applus+ revenue evolution between 2006 and 2013. Source: Sabi and own analysis

Similarly to the EBITDA, the revenues followed an upward trend since the LBO. Especially good years were 2008, with a 24.5% revenue growth, 2012, with a 21.6% growth and again, 2013, with a 32.5% growth mainly driven by the acquisition and consolidation of Velosi.

The following table shows a comparison of the revenue CAGR by Applus+ and its peers for the periods 2007-12 and 2007-13.

Sales CAGR	2007-2013	2007-2012
Applus+	15,4%	12,2%
SGS	9,4%	7,0%
Bureau Veritas	10,1%	11,1%
Intertek	15,8%	14,9%
Peer Average	11,8%	11,0%

Figure 32. Revenue CAGR across peers. Source: Sabi, Orbis and own analysis

This growth represented a CAGR of 12.2% between 2007 and 2012; and of 15.4% if 2013 is included.

In both periods, Applus+ enjoyed a higher revenue growth than the average of its peers and was the second among them that grew the most.

The impact of acquisitions. The acquisition of The Velosi Group

Like its peers, Applus+ fuelled its growth through numerous acquisitions. Only in 2013, organic growth represented 11.5% and 23.6% growth was due to the acquisition of Velosi.

The chart below describes the M&A activity of Applus+ between 2008 and 2013, both in terms of number of acquisitions and value of the acquisitions at the time of announcement.

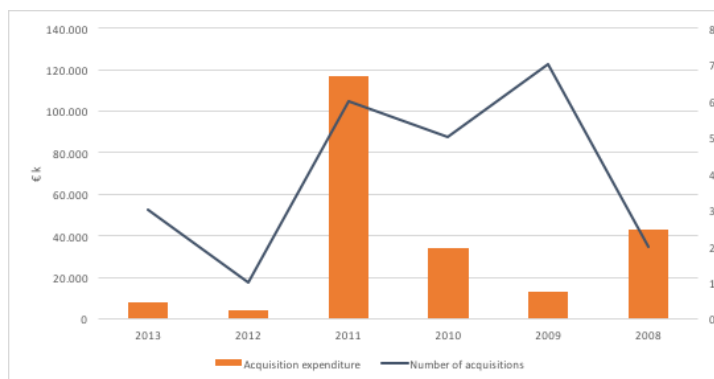


Figure 33. Number and expenditure in acquisitions. Source: Applus+ and own analysis

While 2009 was the most active year in number of acquisitions, the M&A activity at Applus+ was disrupted in 2011 with the announcement of the acquisition of The Velosi Group.

Velosi is a multinational provider of vendor surveillance, site inspection and specialized services in the oil and gas industry. It was founded in 1982 in Malaysia, but operated globally from its five headquarters in USA, UK, South Africa, UAE and Malaysia. In January 24th, 2011, Applus+ acquired 53% of the issued share Capital of Velosi, delisting it from the Alternative Investment Market of London. Applus+ paid 165 pence per Velosi share, valuing it approximately at €105m, a 60.3% premium over the average closing price between November 8th and December 8th, 2010.

This controlling stake of Velosi was acquired through a subsidiary of Azul Holding SCA called Azul Holding 2 SARL. In late December 2012, the entire issued capital of Velosi was contributed to the group, and its accounts were consolidated. In 2013, Velosi contributed with €372,568k of revenues and €32,589k in EBITDA, representing, as stated before, 23.6% of Applus+'s 2013 revenues.

The acquisition of The Velosi Group is the most notorious example of the “buy-and-build” strategy that Applus+ followed to grow during the LBO.

The impact of acquisitions does not only show as an increase of the bottom line of the company, but also as the expansion of the international presence of Applus+, from being present in more than 40 countries around the globe in 2007, up to more than 60 countries in 2013.

In a nutshell, Applus+ showed a substantial growth on revenues during the LBO period, mostly backed by acquisitions.

Cash-flow management. CAPEX and Working Capital

The next chart summarizes the cash-flow situation in Applus+ between 2008 and 2013. It is necessary to note that the cash-flow analysis does not include years 2007 and earlier because no data has been found regarding these years. It is worth remembering

that Applus Services SA was incorporated in late 2007 as a result of the LBO, and this analysis is using the consolidated statements of Applus Servicios Tecnológicos SA, the precedent parent company, for the years 2006 and 2007. Before the reform of the accounting norms in Spain in 2007, it was not mandatory for Spanish companies to elaborate and present their cash-flow statements (Plan Contable 2007, 2007).

The following chart represents a complete snapshot of the evolution of the cash-flows at Applus Services SA between 2008 and 2013, where the dark line represents the total cash-flows and the orange line represents the free cash-flows of the company. In this representation, the cash-flows have been disaggregated into cash flows from operations (CFO), cash flows from investment activities (CFI) and cash flows from financing activities (CFF).

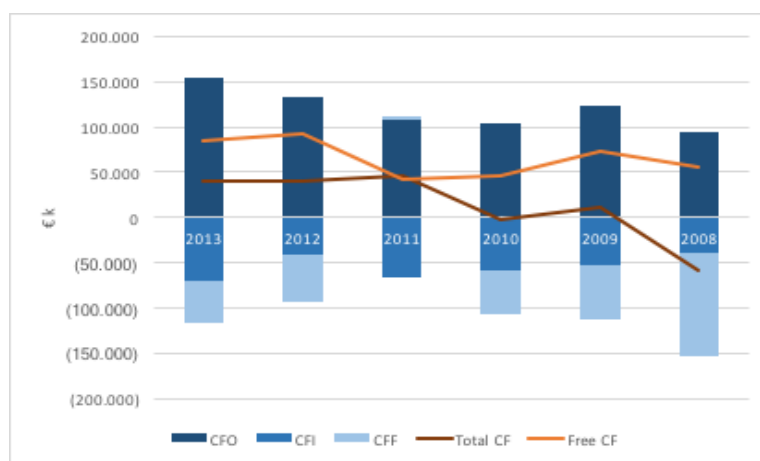


Figure 34. Cash-flow disaggregation and evolution. Source: Sabi and own analysis

The free-cash flows were maintained on a healthy level between 2008 and 2013, rising from €56,005k in 2008 to €92,594k in 2013, after a slight decrease in 2010 and 2011. In any case, the company was able to satisfactorily cover the cash-flows spent in financing activities with its free cash-flows almost every year except 2008 and 2010, where Applus+ had to face important debt repayments, that were in both cases covered with cash reserves.

In any case the evolution of the cash-flow management was positive as it reached stable values through 2011 and 2013 at around €40,000k. There are two key elements of cash-flow evolution that need to be observed in more details: The evolution of the working capital and the evolution of CAPEX.

The next figure facilitates the analysis of the evolution of the working capital. The chart on the left represents the working capital as a percentage of sales held by Applus+ as compared to the trading peers between 2007 and 2013. The chart on the right shows the disaggregation of the working capital at Applus+ into inventories, receivables and payables as % of sales.

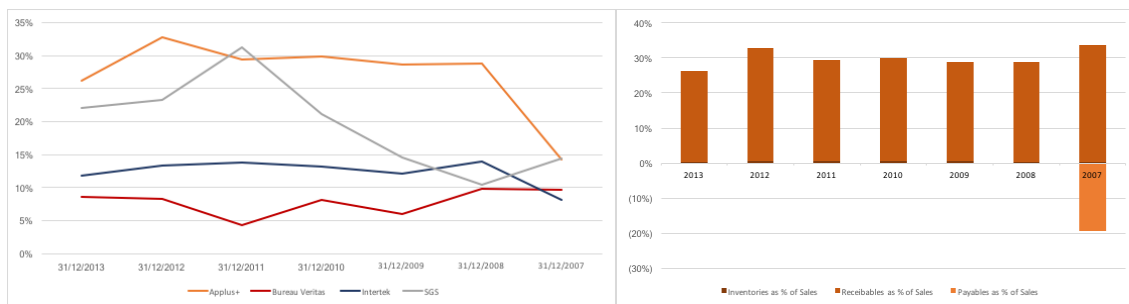


Figure 35. Working Capital as % of sales across peers and disaggregation of the working capital of Applus+. Source: Sabi, Orbis and own analysis

There was a notable increase in the current working capital of Applus+ between 2007 and the following years, from 14.30% in 2007 to 28.82% in 2008, which was kept at around 30% of sales until 2013. The chart on the left clearly shows that Applus+ working capital was proportionally the highest across its peers, that had an average working capital as % of sales around 14% throughout the same period. This analysis shows that Applus+ established disciplined working capital management policies during the LBO. Indeed, the chart on the right shows that, after 2008, accounts payable were kept at 0, while accounts receivables, which made up most of the working capital, were maintained at similar levels all through the period, therefore increasing the working capital to the levels before mentioned. While this situation left room for Applus+ to finance its operations through its suppliers, the fact that it could maintain such a high level of working capital shows that Applus+ enjoyed healthy levels of cash all through the period.

Let's now look at the evolution of the CAPEX between 2008 and 2013. The following charts display the evolution of the CAPEX of Applus+ compared to that of its peers as % of sales and as % of depreciation.



Figure 36. CAPEX as % of sales and as % of depreciation across peers. Source: Sabi, Orbis and own analysis

CAPEX at the Applus+ level was the lowest among its peers both in terms of % of sales and in terms of % of depreciation. As % of sales, it was kept below 5% throughout the period, even though it almost doubled, from 2.5% in 2008 to 4.9% in 2013. Throughout this period, the average CAPEX as % of sales of the peers was 10.9%, with considerable spikes of Bureau Veritas and Intertek in 2010 and 2010 respectively. If analysed deeper into detail, Applus+'s CAPEX was characterized by a stable level of investments between 2008 and 2013, with only considerable divestments in 2008, at €74,975k.

With regards to CAPEX as % of depreciation, Applus+ had the lowest levels compared to its peers as well, with an average of 78.3%, compared to 265% of its peers. The fact that Applus+ was the only one to have CAPEX levels below its depreciation might rise some red flags about whether it was able to leverage its own assets to grow as they were getting obsolete faster than it took for Applus+ to renovate them.

All in all, Applus+ enjoyed healthy levels of cash-flows throughout its LBO, mostly driven by the cash obtained from its operations, disciplined working capital management and lower CAPEX than its peers, in another sign that Applus+ was not betting for organic growth.

The performance of the debt structure

The following chart represents the evolution of the actual cost of debt for Applus+ between 2008 and 2013. As a benchmark, the 5-year credit default swap spread of the three peers has been used, adding the 5-year German government bond as the risk-free return. It is important to bear in mind that the three peers were listed companies with less risky debt profiles given due to the less levered capital structure. Also, the maturities of the debt at the Applus+ level were larger than just 5 years, which increases the implied risk of the debt.

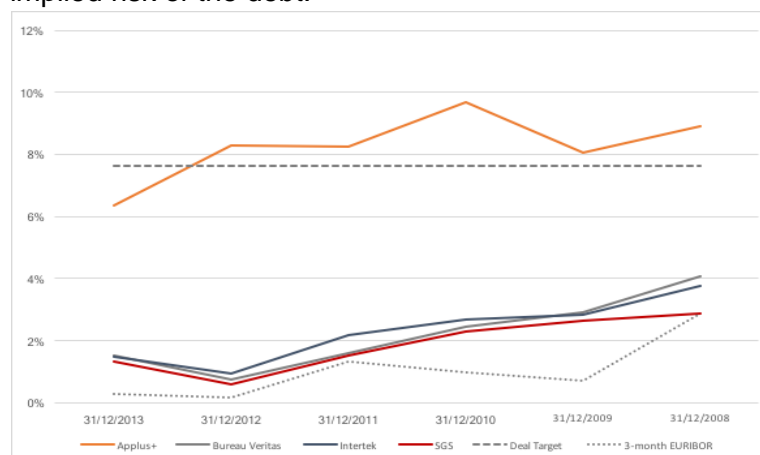


Figure 37. Evolution of the cost of debt across peers. Source: Sabi, Bloomberg and own analysis

Applus+ kept a cost of debt slightly above the targeted cost of debt at the time of the deal, which was 7.61%. One of the components of this higher cost of debt is the interests derived from the participating loan, which were not considered in the original calculation. The participating loan had a complex interest scheme: 70% of non-consolidated operating and non-operating profit every year plus a 5% annual fixed interest, with cap for the total annual interest payable at 16% of the outstanding debt.

As expected, the cost of debt of Applus+ stayed at considerably higher levels compared to that of its peers. For the four companies, the cost of debt evolved to lower levels as the time goes by, following the EURIBOR, in an indication that Applus+, as well as its peers, borrowed money against floating interest rates.

The following chart represents the evolution of the long term and short term debt at the level of Applus+ between 2006 and 2013.

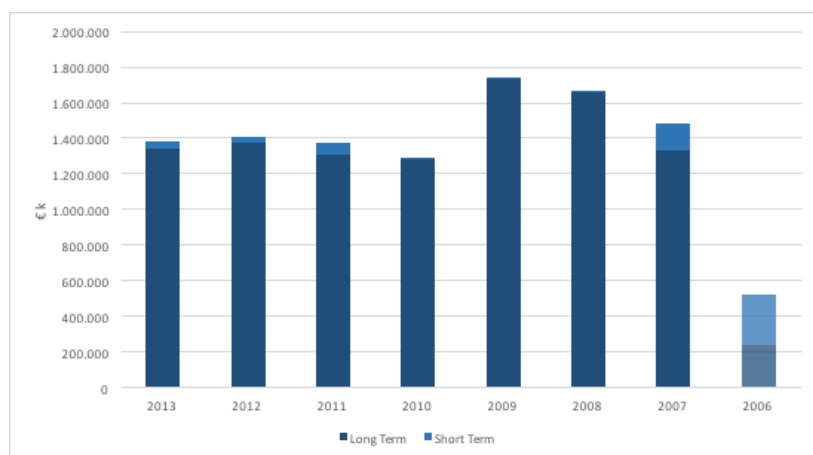


Figure 38. Evolution of long term and short term debt. Source: Sabi and own analysis

Overall, Applus+ kept a low level of short-term debt, compared to its long-term debt. It is easy to see the increase in debt due to the syndicated and the participating loans in the early years of the LBO, compared to the debt levels of Applus+ in 2006. During the time of the LBO, only the Term B 1st lien loan was partially amortized among the all the debt tranches of the deal syndicated loan. On November 2012, the CAPEX and Revolver facilities were renegotiated up to 85% and 95% respectively, and its maturity was extended to 2016.

The participating loan and the corresponding accrued interests were periodically converted to equity at fair value until 2013, when the entire outstanding participating loan was converted. Finally, as it will be covered further on, the outstanding debt at the time of the IPO, in 2014, was fully refinanced.

The following charts represent the evolution of three typical debt covenants in LBOs.

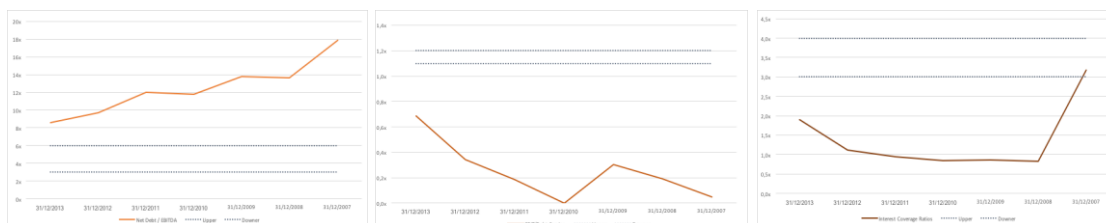


Figure 39. Financial Covenants: Net Debt/EBITDA, EBIT/Debt Service and Interest Coverage. Source: Sabi and own analysis

The Net Debt to EBITDA ratio, which includes both long term and short term debt, as well as the participating loan, evolved from a level of 17.9x at the time of the deal, down to a healthier 8.6x in 2013, in any case way above the recommended range of 4x to 6x considered as stable. EBIT/Debt service, which compares the company's EBIT to the debt and interest payments of one period, evolved from 0.1x in 2007 to 0.7x in 2013, still below the range of 1.1-1.2x. Last but not least, the interest coverage ratio, that compares EBITDA with the interests paid over the period evolved dangerously below 1x, and far below the recommended range of 3x to 4x.

All in all, these ratios show an extremely high leverage for Applus+ and a considerably high cost of debt. However, Applus+ was always able to face its debt obligations thanks to its strong level of cash-flows.

Exit. The IPO

At the time of the IPO, the group's subsidiaries had been reorganized into 3 main business lines: Energy & industry, Statutory Vehicle Inspections and Automotive Engineering & Testing, as summarized by the following chart.

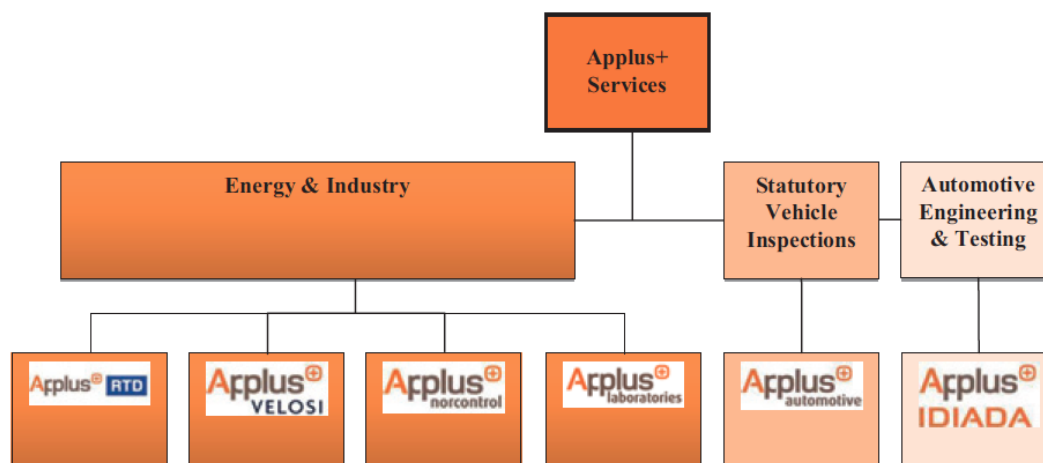


Figure 40. Organizational Structure of Applus+ at the time of the IPO. Source: Applus+ IPO prospectus

Not only the company had been reorganized, but also there had been a shift in the weight of the different business units: while in 2007 the Statutory Vehicle Inspections Division represented 50% of Applus+'s revenues, in 2014 Applus+ Automotive only represented 17%. On the other side, in 2014, Applus+ RTD, the NDT division focused in oil and gas, represented 35% of the revenues and Applus+ Velosi, 24%.

On May 8th, 2014, Applus+ went public in the Spanish Stock Exchanges at a price of €14.5 per share and under the ticker *APPS*. Morgan Stanley and UBS were the leading underwriters, among which there were also Citigroup, J.P. Morgan, Joh Berenberg, Gossler & Co and Banco Santander.

The following table summarizes the proceeds of the IPO.

IPO Proceeds

<u>Initial Offering</u>	# Shares	Share Price	Total Capital (€)
<i>New Shares</i>			
High Point Offering Price	18 461 538	16,25	
Low Point Offering Price	22 641 509	13,25	
<i>Public Offering of existing shares</i>			
High Point Offering Price	49 230 769	16,25	
Low Point Offering Price	60 377 358	13,25	
<i>Directed Offering of existing shares</i>			
High Point Offering Price	356 923	16,25	
Low Point Offering Price	437 736	13,25	
<u>Actual offering</u>			
New Shares	20 899 854	14,50	303 047 889
Existing Shares	55 732 946	14,50	808 127 716
Directed offering	400 000	14,50	5 800 000
Total Shares	76 632 800	14,50	1 111 175 605
Capital Rised			
<u>Greenshoe</u>			
Total Shares	7 586 207	15,21	115 357 760
<i>Applus did not receive any of the proceeds</i>			
<u>Final Capitalization</u>			
Shares pre-IPO	109 327 100		
Shares post-IPO	130 226 954	15,15	1 972 938 359
<i>As of 21/05/2014</i>			
Enterprise Value			2 600 000

Figure 41. IPO Proceeds. Source: Applus+ IPO prospectus, Bloomberg and own analysis

The final IPO price of €14.50 was slightly below the mid-point between 13.25 and 16.25, forecasted for the offering. The offering was structured into the issuance of new shares to raise capital for the company and the selling of part of the shares owned by the shareholders through Azul Holding SCA. Additionally, an over-allotment option, or greenshoe, was scheduled for the underwriters with a maximum of 10% of the total shares issued. The greenshoe was fully exercised during the 8 days after the IPO and the underwriters earned the entire proceeds from it. All in all, the IPO translated into a market capitalization of Applus+ of €1,972m, and valued the company at an enterprise value of around €2,600m, i.e., an EV/EBITDA of 15.1x. The following chart represents the split of the share ownership of Applus+ after the IPO.

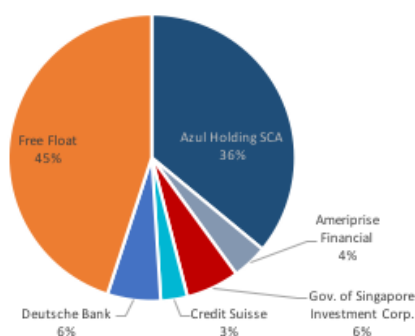


Figure 42. Ownership structure post IPO. Source: CMNV and own analysis

The ownership structure of Azul Holding SCA was not modified after the IPO, therefore the ownership of each shareholder was kept proportional to their original participation. Azul Holding SCA kept 36% of ownership, 19% was acquired by qualified institutional investors while free float stood at 45%.

The IPO successfully allowed the shareholders to partially cash-out and earn €808m for 50.97% of the shares they owned through the public offering. Additionally, the shareholders raised €5.8m in a directed offering to the CEO and the CFO of the Applus+.

On the other side, Applus+ was able to rise €303m from issuing new shares, from which €36.2m need to be subtracted as transaction fees. Therefore the net capital raised from the IPO by Applus+ was around €266.8m. Along with the proceeds from the new shares issued at the IPO, Applus+ was able to negotiate a new term loan facility of €700m that will be described in detail below. With these proceeds, Applus+ planned to fully repay the existing syndicated loan facilities from the LBO, which at that time amounted to €1,047m including accrued interests, as well as to make an aggregate payment of €20m to some key employees as part of a management incentive plan. The table below summarizes the uses of the proceeds of the IPO for the different stakeholders.

<u>IPO Proceeds for the different Stakeholders</u>	
<u>Shareholders</u>	Total Capital (€)
Public Offering	808 127 716
Directed Offering	5 800 000
Total Proceeds for Shareholders	813 927 716
<u>Applus+</u>	
Public Offering	303 047 889
<i>IPO Fees</i>	<i>(36 200 000)</i>
New Term Loan Facilities	700 000 000
Total Proceeds for Applus+	966 847 889
<u>Underwriters</u>	
Greenshoe	115 357 760
Total Proceeds for the Underwriters	115 357 760

Figure 43. IPO Proceeds to the different stakeholders. Source: Applus+ IPO prospectus

Finally, the following table describes the terms of the new term loan facility.

Type	Principal (Ck)	Agent	Lenders	Cash Spread (bps)	PIK (bps)
Term A 1L Sr. Secd	700.000	Société Générale	Banco Santander Bank of Tokyo - Mitsubishi Ltd BNP Paribas CaixaBank Citigroup Credit Agricole JP Morgan Ltd Mizuho International PLC RBC Capital Partners Société Générale Sumitomo Mitsui Ltd UBS Ltd	165	-
Revolver 1L Sr. Secd	150.000			165	35

Figure 44. New term loan facility. Source: Bloomberg

This new term loan facility included the fulfilling of a financial covenant, namely, to reduce the ratio Net Debt to EBITDA to 4.5x before end of 2015 and to keep it below 4x thereafter.

Last but not least, following the IPO, Applus+ committed to pay an annual dividend of approximately 20% of its adjusted net income.

The following chart represents the evolution of the share price of Applus+ from its IPO to April 2017.



Figure 45. Evolution of the share price prior to IPO. Source: Bloomberg

On the first day of trading, the shares of Applus+ closed 3.4% higher than their initial offering price, at €15 per share. The month after the IPO was still quite positive, letting the underwriters close the greenshoe quickly and at higher prices than the initial offer. Nevertheless, it took about two months for Applus+ to register an important fall in its share price. By the end of July 2014, Applus+ announced expected revenue growth for the second half of 2014 to be slower than expected, which brought its share price down 13% on the day to €12.20 per share, a threshold that has not been able to overcome up to today. The Carlyle Group and the other investors completed their exit on June 9th, 2016, a news that the market appreciated very well, as it can be seen as an increase of the share price right afterwards.

Analysis of the value earned by the different stakeholders

Quantification of the value earned by shareholders

As mentioned before, the ownership structure of Azul Holding SCA did not change upon the IPO, therefore keeping the ownership held by the different shareholders proportional. The assumption has been made that the ownership structure of Azul Holding SCA was also kept proportional during the progressive sales of stake after the IPO, therefore treating Azul Holding SCA as a unique shareholder.

The following chart represents the evolution of the ownership of the holding until it completely sold out its stake in Applus Services SA in June 2016. Upon the IPO, the shareholders had a lock-up period of 180 days, during which they were not allowed to sell their shares. The chart does not take into account the effect of potential RSUs that could have vested in May 2015. It is worth remembering that this stake was acquired both as equity issue and through a participation loan that was afterwards capitalized into equity.

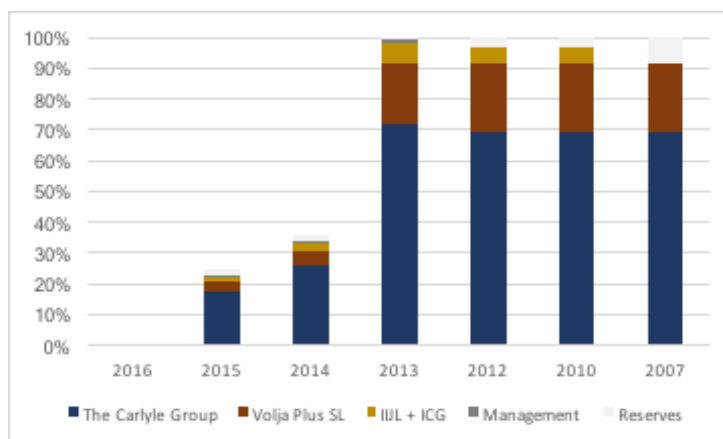


Figure 46. Evolution of Applus Services SA ownership. Source. Sabi

It is worth noting how the initial reserves change to ownership by the mezzanine investors Investment Intermediate Jersey Limited and ICG European Fund 2006, as well as to equity owned by the managers and other employees. Their returns are going to be evaluated later on. At the time of the IPO, the mezzanine investors held an ownership of 6.34%, while the management owned 1.61%. There was only a slight change of ownership in 2013, where Carlyle became the owner of 71.93% of Azul Holding SCA and Volja Plus SL got its ownership diluted to 19.60%.

As for the progressive exit of Azul Holding SCA, the shareholders sold 11.83% of their stake the 14th of April of 2015 at a share price of €10.804 per share. On the 1st of April of 2015, they sold around 10% of their remaining stake at €7.741 per share. Finally, they sold their remaining 13.97% on the 9th of June of 2016, at a price of €7.895 per share¹⁹.

The following table summarizes the capital invested and earned by the original investors of Azul Holding SCA, excluding the ownership of the mezzanine investors

¹⁹ These numbers are based on the ownership data from Sabi

and the management team, from its initial investment in 2007, to its final divestment in 2016. The holding did not earn any dividends during the period of the LBO, but Applus+ did distribute dividends after the IPO. The capital proceeds are the result of selling shares of Applus Services SA. The assumption has been made that the dividends earned by the shareholders are proportional to the average ownership throughout the period.

€ k	2016	2015	2014	...	2007
Capital Invested	-	-	-	-	(552 516)
Dividends	2 886	5 051	2 921		
Capital Proceeds	223 760	152 364	739 760		
IRR	9,95%				
Moic	2,0x				
PI	0,2x				

Figure 47. Distribution to shareholders, IRR and MoIC. Source: Own analysis

According to this table, the original shareholders, such as The Carlyle Group, earned a total IRR of 9.95%, or a MoIC of 2.0x across nine years. The PI of only 0.2x has been calculated using the cost of equity at the time of the deal, of 6.97%. This low value shows an unattractive investment mainly due to its long duration and low performance post-IPO.

Digging deeper into the value created for shareholders, the following chart represents the disaggregation of the achieved IRR into the main value creation levers for LBOs: organic²⁰ revenue effect, organic²⁰ EBITDA margin effect, the acquisition of Velosi, the EV/EBITDA multiple effect and the leverage effect. Additionally, a stock market effect has been added to account for the change in value earned by the shareholders due to the progressive sales of shares in the public market.

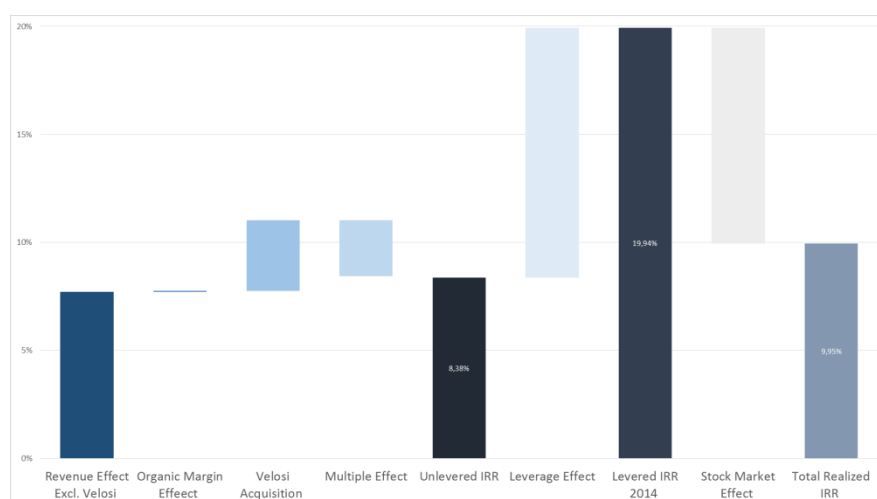


Figure 48. Disaggregation of the realized IRR into the value creation levers. Source: Own analysis

In order to calculate the value created through the different levers, the differentiation has been made between three IRR calculations: The unlevered IRR, the levered IRR in

²⁰ Organic effect refers to revenue and margin growth without taking into account the acquisition of The Velosi Group. No further discrimination can be made with other acquisitions due to lack of information

2014 and the realized IRR. The unlevered and levered IRR in 2014 have been calculated as if the shareholders had exited all at once at the time of the IPO and they represent the value created as of 2014. The difference between the levered and the unlevered IRRs is the leverage effect, which accounts for a 57.96% of the value created as of 2014. The second most important lever is the revenue growth, excluding the effect of the acquisition of Velosi, with 38.65% of the levered IRR in 2014. The acquisition of Velosi accounts for 28.28%. Last but not least, there is value destruction due to the multiple effect as the exit multiple of 15.1x was lower than the entry multiple, of 19.9x.

Finally, the realized IRR was reduced from a 19.94% achieved in 2014 to a 9.95% throughout the progressive exit of the shareholders. This value destruction was due to the reduced valuation of Applus+ in the public markets, as elaborated on before. This reduction in almost 10% of the IRR represents a loss of €1,771k²¹ for the shareholders, calculated as the present value in 2014. Indeed, Applus+ lost 45.51% of Market Capitalization between the IPO and the last sale of stake by the LBO shareholders.

All in all, the shareholders were able to earn a positive economic return from their investment in this LBO. Nevertheless, was this the return they were expecting to achieve, as to compensate the risks undertaken throughout the LBO? While the achieved IRR in 2016 is higher than the cost of equity calculated by CAPM as of 2007, the latest does not reflect the risk of the LBO.

The following charts represent the average returns achieved by global private equity funds as of end of 2015.

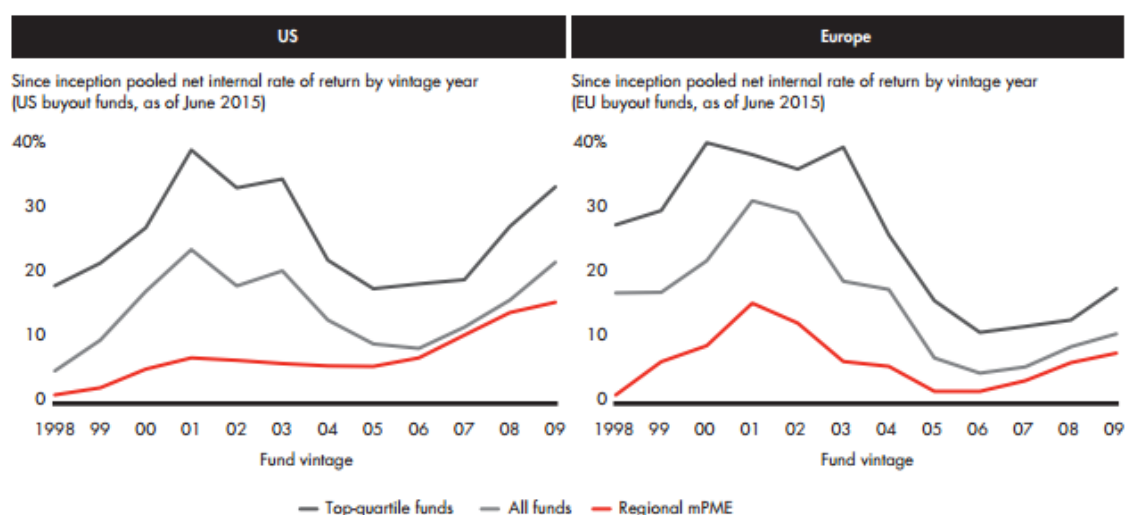


Figure 49. Global private equity fund IRR as of end 2015. Source: (Bain & Company, 2016)

The chart shows that, funds started in 2007 in Europe, achieved on average around 8% IRR, while top-quartile performers achieved slightly more than 10%. This result could indeed be used as an ex-post benchmark for the shareholders of Applus+ during the LBO: Besides the reduction of IRR achieved due to the stock market effect

²¹ Calculated as the difference between the proceeds as if earned in 2014 and the market capitalization in 2014, using the cost of capital of the deal, i.e., 6.97%.

between 2014 and 2016, the shareholders were able to achieve an IRR in line with the average of the funds started in the same year in Europe.

Quantification of the earned by the company

The following charts represent the evolution of the WACC of the company, compared to the evolution of its RoCE and the disaggregation of the evolution of the RoCE into Capital employed turnover and after tax EBIT. For the calculation of the WACC, the cost of equity has been kept constant at the level of 2007, i.e., 6.97%. The cost of debt has been calculated as the ratio between financial interest expenses and the total debt of the company every year. The equity value has been kept at the entry level of 2007. Finally, the tax rate has also been kept constant at the level of 2007, i.e., 34.2%, to avoid accounting for the effect of the fluctuation in the effective tax rate.

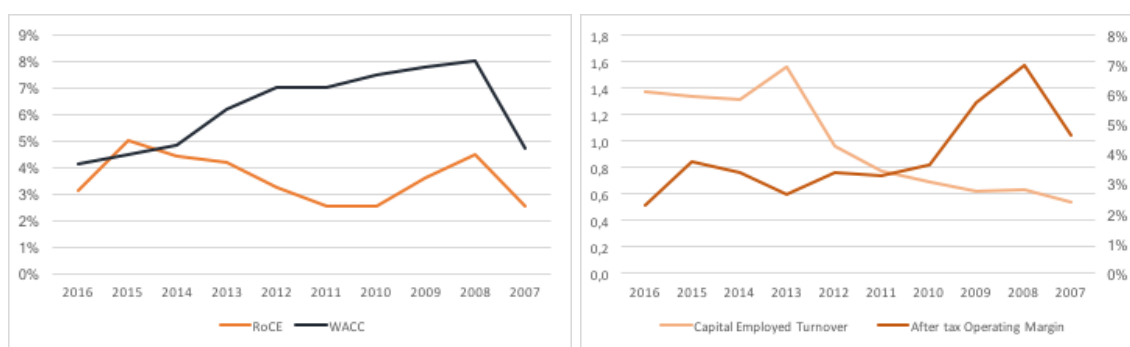


Figure 50. Comparison of the RoCE and the WACC of the company and disaggregation of the RoCE.
Source: Sabi and own analysis

The charts above reflect economic value destruction for the company, with RoCE increasing between 2007 and 2008, from 2.5% to 4.5%, but then all the way down again to 2.5% in 2010 and 2011. RoCE was up to 4.2% in 2013, and only overcame the WACC of the company in 2015, at 5%. One of the causes of the lower WACC after 2014 is very likely the refinancing of the debt after the IPO.

The evolution of the RoCE was driven by an after tax EBIT margin that, after increasing up to 7% in 2008, decreased every LBO year until its minimum in 2013 at 2.7%. The declining trend of the decreasing EBITDA margin is worsened by ever increasing depreciation expenses. On the other side, the capital employed turnover just followed an ever increasing trend, showing efficiency improvement already detected in previous sections, from 0.5 in 2007 up to 1.6 in 2013.

The chart below represents the value destruction at the company level calculated as the evolution of the EVA, as well as the MVA both in 2014 and in 2016. The MVA is calculated as the present values of the EVA in each period, using the WACC of the company in 2014 and 2016 respectively.

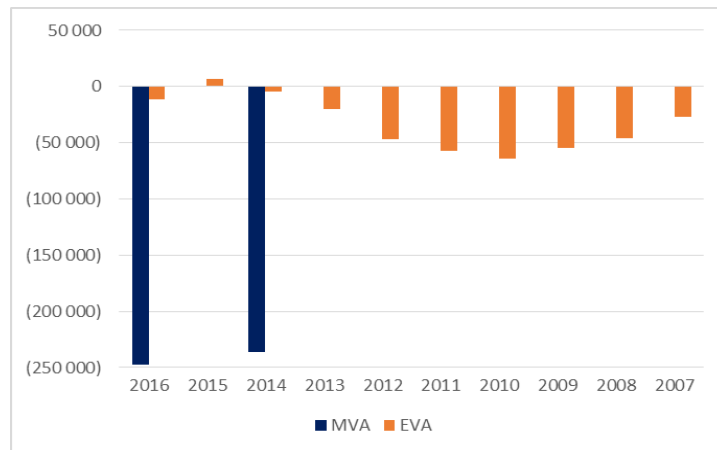


Figure 51. Economic Value Added and Market Value Added. Source: Sabi and own analysis

Indeed the value destruction is represented by an ever more negative EVA from 2007 to 2013, even though the trend reverts after 2010, when the EVA becomes less negative period after period, and becomes positive for the first time in 2015, after the IPO.

The total market value added is €-236,295k and €-247,405 in 2014 and 2016 respectively.

In a nutshell, economic value was destroyed at the company level, as the Return on the Capital Employed did not overcome the Cost of Capital of the company.

Quantification of the value earned by the management team

It is difficult to quantify the actual value earned by the management team of the company through the LBO, due to the lack information thereof. As argued earlier in this thesis, the economic value earned by the management team can be understood as the mix between their fixed salary, their variable salary or bonus and the value of the equity earned as part of the management incentive package.

In the case of Applus+, no information is available on the evolution of the salary of the managers during the LBO period. However, the assumption can be made that it is in line with the standards of the labour market in Spain for such positions, and therefore no additional value was earned by them due to the LBO.

What can be learnt from the IPO prospectus is that 9 members of the management team and 37 other employees, that do not include the CEO, owned 1.61% of the company's shares at the time of the IPO due to incentive plans. The company also estimated that 18 employees could receive a cash payment upon admission of €1,250k.

Furthermore, due to a cash and share based management incentive plan, 10 senior managers received approximately €20m in cash payments after the IPO, out of what Mr. Basabé, the CEO, received €9,95m. Additionally, they also received 2,762,869 RSUs that entitled for one share each at the offering price, out of which, Mr. Basabé received 1,215,213 RSUs. The RSUs had a vesting period of three years in three equal instalments, i.e., , they could be converted into shares every 9th of May beyond 2014.

Last but not least, at the time of the IPO, Mr. Basabé and Mr. Amigó, the CEO and CFO, obtained a loan of €5 million and €800k respectively, to purchase shares of Applus+ at the offering price of €14.50. The maturity of these loans was 3 years at an annual fixed interest rate of 4% and with a lock-up period of 360 days.

The following table summarizes the economic value earned by Mr. Basabé.

Value earned through CEO's incentive plan			
RSUs	# RSUs	Share Price	Total Capital (€)
Value at IPO. 09/05/2014	1 215 213	14,50	17 620 593
1st Vesting. 09/05/2015	405 071	10,95	4 435 529
2nd Vesting. 09/05/2016	405 071	7,70	3 119 047
3rd Vesting. 09/05/2017(*)	405 071	11,10	4 496 289
(*) valued at share price of 10/04/2017			
Direct offering value earned			(5 569 728)
Fixed Cash Payment			9 950 000
Direct Offering			
Value at IPO	344 828	14,50	5 000 000
Loan Interests (4% p.a.)			(600 000)
Value as of 10/04/2017	344 828	11,10	3 827 586
Direct offering value earned			(1 772 414)
Original incentive plan value			31 970 593
Total Value Earned			2 607 859 8,16%

Figure 52. Value earned through CEO's incentive plan. Source: Applus+ IPO prospectus and own analysis

Only the RSUs were initially valued at more than €17.62m. However, assuming a vesting value for May 9th, 2017 at €11.10 per share, the last value observed during the elaboration of this paper, the overall value of this RSUs has become negative at more than €-5.69m. On the other side, Mr. Basabé has so far lost money in his investment in shares of the company at the time of the IPO, concretely more than €1.77m. All in all, Mr. Basabé's incentive plan final value is only €2.61m, which represents only 8.16% of the originally expected value of the incentive plan. If it were not thanks to the cash payment upon the IPO of €9.95m, Mr. Basabé would have lost money on the deal.

Quantification of the value earned by the debt holders

There were essentially two types of debt holders in this deal and through the syndicated loan: the term debt holders, led by Société Générale and the mezzanine investors, funds owned in last instance by Intermediate Capital Group PLC.

The entire syndicated loan was refinanced at the time of the IPO through the new debt facility.

Regarding the term debt holders, as the company did not default until the IPO, their annual returns are equivalent to the cash interest that the company paid during the

LBO period. This interest was floating and linked to the evolution of the 3-month EURIBOR, as described in the chart below.

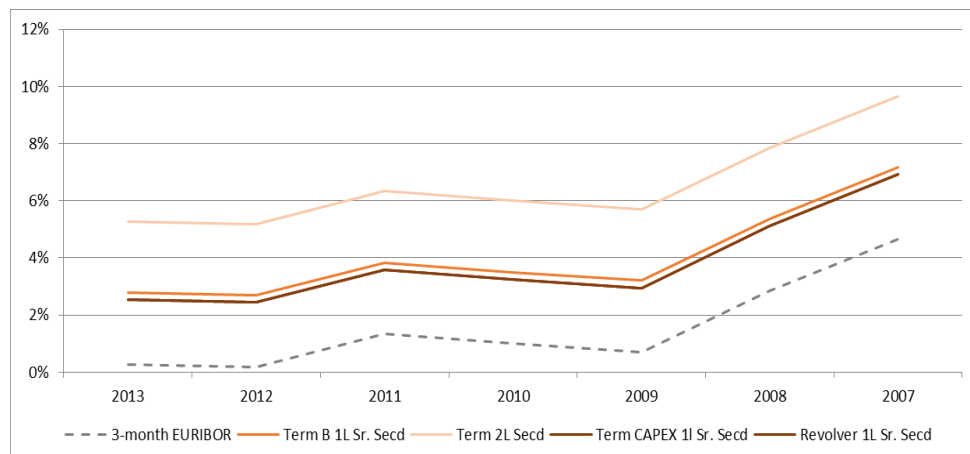


Figure 53. Annual term debt returns for the debtholders. Source: own analysis

Between 2007 and 2013, the Term B 1st lien yielded an average 4.1% interest, the Term 2nd lien yielded 6.6% and the CAPEX and Revolver facilities yielded 3.8% over the drawn down quantities. With a 3-month EURIBOR of 4.7% in July 2007, the Term B 1st lien was expected to yield an interest of 7.2%, the Term 2nd lien was expected to yield a 9.7% and the CAPEX and Revolving facilities, a 6.95%. The interests earned by the term debt holders were obviously negatively affected by the declining trend of the reference rates such as the EURIBOR.

Regarding the mezzanine investors, their value earned can be divided into the cash interests earned and the value of the equity earned through the conversion of the PIK interests. As mentioned before, at the time of the IPO, the mezzanine investors IPG PLC owned 6.34% of the share capital of Azul Holding SCA. The following table summarizes the proceeds for the mezzanine investors.

€ k	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Mezzanine investment and repayment	-	-	150 000	-	-	-	-	-	-	(150 000)
Cash Interests	-	-	-	4 926	4 782	6 515	6 002	5 550	8 789	11 498
Dividends	182	319	185	-	-	-	-	-	-	-
Capital Proceeds	0	44 639	124 690	-	-	-	-	-	-	-
IRR	14,03%									
MoIC	2,4x									
PI	0,9x									

Figure 54. Proceeds to mezzanine investors. Source: Own analysis

The cash interests are based on a floating rate related to the EURIBOR, the dividend proceeds are calculated upon the average ownership throughout the period and the capital interests come from the progressive sale of shares of Azul Holding SCA.

The mezzanine investors achieved an IRR of 14.02%, a MoIC of 1.1x and a PI of 0.9x. Again with a 3-month EURIBOR at 4.7% in July 2007, the mezzanine investors should have expected a return of 12.7%. Despite the fall in interest rates, the mezzanine investors were able to achieve higher returns than expected, over performing the equity holders.

Conclusions

The results of the case study are not necessarily consistent with the conclusions reached by researchers, such as the ones mentioned in the literature review of this thesis. While working with large data samples allows researchers to extract statistically significant conclusions, the results obtained in this thesis are a clear example that there is no such thing as the average LBO.

As a target company in 2007, Applus+ was a good fit given its healthy performance and the fact that it operated in an industry with very high barriers of entry and a forecasted annual growth of 5% for the years to come. This is why The Carlyle Group and the other shareholders paid a considerably high price for Applus+, as reflected by a valuation of 19.9x EV/EBITDA at acquisition, compared to the 13.65x obtained from 2007 comparable transactions, 13.47x from trading peers and 18.4x from the DCF analysis.

Substantial performance improvements were achieved as a result of Management action. This was reflected by an overall EBITDA CAGR of 14.3% from 2007 to 2013, considerably above the peer average of 12.6% for the same period. This improvement in EBITDA was essentially driven by a boost of the revenues of the company that grew at CAGR of 15.4%. This growth in revenues was fuelled by an intense M&A activity, as reflected by the acquisition of more than 20 companies during the LBO period. In particular, the activities of The Velosi Group represented 23.6% of the revenues of Applus+ in 2013.

Another important value creation lever tapped by the Management team was the imposition of a disciplined management of the company's cash-flows, by keeping CAPEX at the lowest level compared to its peers, below 5% of sales and at an average of 78% of depreciation expenses; and maintaining a high level of working capital, at around 30%. This policy was key in coping with a highly leveraged capital structure of 17.9x Net Debt/EBITDA at the time of the acquisition, taking into account the debt of the deal and the debt that was not refinanced. At the time of the IPO, Net Debt/EBITDA ratio was down to a healthier 8.6x.

The results of the value earned analysis show important differences across stakeholders. The shareholders achieved an IRR of only 9.95% in 2016, once they exited completely their investment in Applus+. While the average of the IRR achieved by the end of 2015 in private equity investments entered in 2007 was around 8%, this result is quite disappointing given the fact that the unrealized IRR at the time of the IPO was 19.94%. Applus+ lost 45.51% of Market Capitalization between the IPO and the last sale of stake by the LBO shareholders. This result is not consistent with the findings of Loos described in the first part of this paper, where it was stated that on average IPO exits provided higher returns to shareholders compared to strategic sales (Loos, 2005). Indeed, if Applus+ had been completely exited in 2014 through a direct sale (be it strategic or to a financial sponsor), it is very likely that the shareholders would have obtained higher returns, given the valuation of the company at the time of the IPO.

This depreciation in the share value of Applus+ after the IPO affected very negatively the value earned by the Managers. In particular, Mr. Basabé earned only 8.16% of the

value he was expected to earn through its incentive plans. While Management action was key in the value creation throughout the deal, the managers saw their value earned substantially reduced compared to their expectations.

The value earning analysis for the Target Company suggests that economic value was destructed for Applus+, as the company was not able to achieve a RoCE higher than its WACC. This is reflected by a negative EVA for almost every period between 2007 and 2013, following a negative trend that was reverted in 2015 as the company achieved a higher RoCE than its WACC. At the same time, however, Applus+ share price was falling in the stock exchange. This is just a further example of the fact that value earned at the company level does not correspond with value earned by the shareholders.

Last but not least, the value earned by the debt holders differed across different risk profiles. Term debt holders' returns decreased due to the use of floating rates. However, the mezzanine investors achieved an IRR of 14.02% thanks to the conversion of accrued PIK interests into equity. This is a higher return compared to their initial expectations of around 12.7%. All in all, mezzanine investors achieved the highest return compared to the shareholders, which is not consistent with the classical risk-return trade-off theory.

The results obtained from this case study were subject to various limitations. In particular, the lack of detail in information related to the company during the time of the LBO jeopardized the elaboration of complete conclusions. One example is the missing further information about the acquisitions undergone that would have allowed for more precise calculation of their real impact. Another example is the lack of granularity in the data acquired from its financial statements, which limited the scope of the analysis.

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