A Work Project, presented as part of the requirements for the Award of a Master's degree in Finance from the Nova School of Business and Economics.

Leveraged buyout of Verallia S.A.

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Abstract:

This work project discusses the hypothetical acquisition of Verallia S.A., a leading French container glass manufacturer. A leveraged buyout financial model was used to project Verallia's performance in the next 5-7 years in an investment case, bank case, and pessimistic case. This includes various operational improvements, the required capital structure to finance the acquisition, and an add-on acquisition. Using inputs about the company's market, competitors, and strategic development during the assumed 5-year holding period, an internal rate of return of 23.6% and a money-on-money multiple of 2.9x was achieved for the PE sponsor, demonstrating the soundness of the investment.

Keywords:

Private Equity

Leveraged Buyout

Glass industry

Investment decision

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1. Introduction

A leveraged buyout (LBO) refers to a situation in which a company is acquired by a specialized investment firm by using a relatively small portion of equity investment and a larger portion of external debt financing. In LBOs, Private Equity (PE) firms use performance-based compensation for managers, highly leveraged capital structures, and active governance to increase the value of the acquired company (Kaplan und Strömberg 2009). LBOs first emerged in the 1980s in the United States and have since won an importance. After sector slowdown due to debt market crashes in the 1990s, the LBO sector recovered in the early 2000s. It was around that time that PE continued to gain importance also in Europe, with UK-based PE fund managers for the first time raising more capital than capital raised during IPOs on the London Stock Exchange in the same period (11.2bn vs. 10.4bn GBP) (Dewar 2007). In 2021, European PE transactions reached a new record level with a total of 3,146 transactions and a corresponding deal value of 217.4bn EUR. Looking at a five-year comparison, an almost doubling of both transaction volume and value is observable. (Roberts 2022).

The PE sector has also become increasingly relevant as an employment opportunity. This work project "Leveraged buyout of Verallia S.A." provided the opportunity of simulating the work that is done at PE firms to a team of four students. Within the scope of this work project, the hypothetical acquisition of the French glass producer Verallia S.A. (hereinafter "Verallia", or "target") will be investigated. This includes a general analysis of the company and the glass market from a global and regional perspective, the development of the investment thesis, the creation of a comprehensive business plan, as well as the financial modeling of the LBO. This analysis continues with thoughts on exit opportunities and due diligence considerations. It is concluded that Verallia is an interesting investment opportunity that will provide attractive returns to the sponsor, even in the light of the upcoming economic downturn.

2. Group Part

This part will provide a summary of the investment committee paper that was prepared by the group in the course of this private equity work project.

2.1. Company overview

Verallia is the leading European and world's third largest glass packaging manufacturer for consumables, with a focus on the food and beverage sector. It is headquartered in Courbevoie, France, and employs c.10,000 people globally. In 2021, Verallia manufactured 16 billion glass bottles and jars in its 32 glass plants with 58 (59 as of 12/2022) furnaces in eleven countries. It serves around 10,000 national and international customers and thereby generated revenues of 2.7bn EUR with a corresponding adjusted EBITDA margin of 25% in FY2021 (Verallia S.A. 2022).

2.1.1. Company history

Verallia emerged from a glass plant in France that started operating 1827. Around 1918, the Saint-Gobain group, already well-established in construction glass, acquired various smaller glass manufacturers to form its packaging glass division, officially establishing it in 1972. In 1980, the division was expanded through several acquisitions in Germany as well as the U.S. The Verallia trademark was established in 2010. In 2015, the PE firm Apollo acquired a majority stake in Verallia Europe from Saint-Gobain, while the U.S. operations were sold to the Ardagh Group in 2014. This work project will focus solely on the company that was formed through the acquisition by Apollo, excluding former U.S. activities (Verallia S.A. 2022).

2.1.2. Geographic footprint and regional market positioning

Verallia operates globally and divides its operations into three regional divisions:

Northern and Eastern Europe (NEE): consisting of activities in Germany, Poland, Ukraine, and Russia. With six production plants, one decoration plant, and two cullet processing centers, this region accounted for 20% of FY2021 revenues. Here, Verallia is second in wine, food

and non-alcoholic-beverages (NAB). This region registers growth especially in the beer segment.

Verallia has limited exposure in Ukraine and Russia, with activities accounting for c.1% and c.3.5% of net group revenue respectively. After the Russian invasion of Ukraine in February 2022, Verallia stopped operations at its plant in Western Ukraine to protect employees. Due to its location, the plant so far remained unaffected, and it restarted to operate at reduced capacity in May 2022 per request of customers. Operations and investments in Russia continue as usual as activities are considered essential to the food chain.

Southern and Western Europe (SWE): consisting of activities in France, Spain, Portugal, and Italy. In this region, Verallia operates 20 production plants, two decoration plants, and seven cullet processing centers. The revenue contribution of this region was 68% in FY2021. It has the leading market share for wine as well as in the growing spirits market, with all segments showing above average growth in this region.

Latin America (LATAM): region consists of Argentina, Brazil, and Chile. With three production plants, it accounted for 12% of FY2021 revenues. In this region, Verallia has a high share in the wine market. While alcoholic beverages have a high growth in the region in general, for Verallia beer is an especially high growing market.

2.1.3. Product portfolio and customer structure

Verallia's product portfolio is divided by the six end-applications of products: still wine (36% of FY2021 revenues), sparkling wine (12%), spirits (12%), beer (13%), soft drinks (11%), and food (16%). With over 1,460 different products available, Verallia's product portfolio is the largest in Europe. Verallia offers to its customers a large range of specific features including different colors, engravings, and decorations. It recently introduced the "Selective Line", a premium product category that offers ultra-customizable development.

Verallia's customer structure is well diversified and a mix of smaller and larger customers,

with the top ten customers accounting for only 16% of sales (top one only 4%). Customer relationships are shaped by mutual dependency. First, there is a high brand association with characteristic bottle shapes, creating a barrier for customers to switch suppliers. On the other hand, glass plants tend to be located near customers, so both parties have burdens to ending the relationship. In general, Verallia includes cost clauses in its customer contracts enabling a pass-through of all cost increases and decreases, the basis for Verallia to be spread-positive. Flagship customers include Coca Cola, Gerolsteiner, Heineken, Heinz, Hipp, and Nestlé.

2.1.4. Verallia in the glass packaging value chain

The value chain in the glass packaging sector consists of six stages: raw materials, glass producers, supply to bottlers, bottling, distribution, and end consumers. Verallia's main activities focus on glass producing. In addition, it operates cullet processing centers, where glass packaging is recycled to cullet that can be used as a raw material. Verallia has minor activities in other stages of the value chain: distribution, or integrated distribution to Italian retailers (Verallia S.A. 2022).

2.1.5. Management team

Verallia's key management team consists of four people: Patrice Lucas (Group CEO), Romain Barral (Vice President of Operations), Nathalie Delbreuve (Group CFO), and Wendy Kool-Foulon (Group CSR and General Counsel) and was gradually renewed since 2020 to reflect changes in company strategy. The team has on average 25+ years of experience in industrial operations, with backgrounds in automotive, materials, and operational excellence. They also have expertise in multiple geographies, namely South America and Europe (Verallia S.A. 2022).

2.1.6. Sustainability at Verallia

Verallia's overarching sustainability goal is to be net zero by 2050. Its strategy is based on two objectives: (1) enhancing the circularity of glass packaging, and (2) decarbonizing operations. Verallia works towards the first objective by increasing cullet usage rates in raw materials up to

the maximum, by interacting with regional associations like FEVE (Federation of European manufacturers of glass containers) to improve recycling processes, and by encouraging customers to use lighter glass products to reduce weight and thereby emissions. For the second objective, Verallia aims to reduce emissions directly at the production sites by e.g., replacing fossil energies with renewables and increasing energy efficiency by upgrading furnace technologies.

2.1.7. Analysis of historical financials

This paragraph will provide a summary of the most important aspects of Verallia's historic financials. The detailed historical financials can be found in the Historical Financials tab in the excel file as well as in the slide deck on slides 14 and 15.

In FY2021, Verallia's revenue was 2.7bn EUR, an increase of 5% compared to 2.5bn in FY2020. Revenue previously decreased by 2% between FY2019-20, before that it grew by 7% from FY2018-19, suggesting that the market and Verallia's share has been robust in times of economic downturns like Covid-19. An analysis of the price-mix-volume effects shows that this growth in revenues is driven by price/mix (price increases in FY2020 and FY2021) and volume effects, while exchange rate effects, mainly related to (hyper-) inflation in parts of the NEE (Ukraine) and LATAM regions (especially Argentina), diminished growth especially in FY2020.

Verallia's main cost positions are raw material costs (20% of total COGS and 15% of revenues in FY2021), energy costs (18% and 14% respectively), transportation costs (13% and 10% respectively), and personnel expenses (COGS related share 21% of COGS, all personnel expenses were 20% of revenue). Verallia engages in a strict hedging policy for energy and CO_2 certificate costs (see slide deck page 67), which historically prevented sharp cost increases. In FY2021, Verallia generated an adjusted EBITDA of 678mn EUR, with D&A being 10% of revenues. Adjustments to EBITDA included restructuring costs, hyperinflation in Argentina, as well as management share ownership plan associated costs. Over the years, the group increased its

EBITDA margin from 20% in FY2016 to 25% in FY2021. While the LATAM region has the highest profitability (36% margin), the other regions improved and are at least at 22% (NEE).

Regarding the target's balance sheet, it is noticeable that Verallia has large PPE positions in line with the capital-intensive nature of the business. Over the last years, Verallia improved its net working capital management and reduced it to close to zero (5mn EUR) in FY2021 from 189mn EUR in FY2018. This was driven by the reduction and optimization of inventory and payment terms, with DPO increasing from 85 to 103. Historically, Verallia invested c.10% of its revenues into capital expenditures – c.8% on maintenance capex and further 2% as expansion capex. This disciplined policy guarantees operational functionality and efficiency of production. In FY2021, Verallia's cash flow (EBITDA minus capex) was equal to 464mn EUR, with a cash conversion of 68% (63% in FY2018), enabling deleveraging from 3.1x (FY2018) to 1.9x (FY2021).

2.2. Market overview

The global glass market is segmented into flat glass (50%), container glass (43%), fiber glass and other glass (7%) (GlassGlobal 2022). Verallia is active in the container glass segment, which is expected to grow from 59bn USD in 2020 to 78bn USD in 2026, implying a CAGR of 5%. Within this segment, Europe and the Americas are the largest regional markets (41% and 22% respectively), and food and beverages are the dominant application (93%). The second main application is pharma and cosmetics (GlassGlobal 2022). Growth in this market is driven by increased spending on food and beverages as well as sustainability awareness (Degenhard 2021).

2.2.1. Market trends

There are three key trends that drive growth of the container glass market: sustainability, premiumization, and increased application in other areas. Glass is regarded as more sustainable compared to other packaging alternatives due to its superior recyclability. Simultaneously, it is also seen as a safer mode of packaging due to its innate properties. These shifts in consumer preferences

reverts the shift away from glass packaging that previously dominated (Lingqvist, et al. 2020). Glass is increasingly perceived as a premium product. During the Covid-19 pandemic, consumer tended to spend more on high-quality food and beverage products, with premium products having glass packaging due to image reasons (COO Europe Ardagh Group, 2022). In addition, the market for premium glass products – e.g., products like Verallia's Selective Line – is growing. Lastly, industries such as pharma and cosmetics are starting to adapt glass packaging on a larger scale. This is again driven by the distinctive features of glass.

2.2.2. Regional market deep dive – Europe

The European market has been growing steadily since 2014, with a five-year CAGR of 1%, from 34mn metric tons in 2016 to 36mn metric tons in 2020 (Garside 2021). Container glass, the largest market segment in Europe, has increased slightly over the last years, with 2021 setting a record volume (FEVE 2022). However, production volume remains below the demand for container glass in Europe (22.3 vs 22.5mn metric tons in 2020), with the surplus growing larger between 2020 and 2024 (23.9 vs. 24.4mn metric tons in 2024). In Europe, glass packaging is used for 100% of spirits, 90% of wine, and 69% of cider/beer (Verallia S.A. 2022). Relevant trends include market consolidation (the market share of the top 5 players increased from <50% in 2002 to c.70% in 2022), sustainability, and rising energy prices, endangering the future of glass producers without adequate size and hedging policies.

2.2.3. Regional market deep dive – Latin America

In Argentina, Brazil, and Chile, the purchasing power decreased between 2012 and 2021 (Numbeo 2022). However, the market volume of glass bottles and containers remained stable and is even projected to increase from 5.2bn USD in 2020 to 6.7bn USD in 2026 (Garside 2021). The market in Latin America mainly consists of alcoholic beverages – more than two thirds of the end-use products are alcoholic. The growing demand for alcoholic beverages is driving growth in the

region, together with sustainability as well as adaption of glass packaging in the cosmetics industry.

2.2.4. Competitive landscape

Verallia's most relevant competitors in Europe are Owens-Illinois ("OI", origin: USA), Ardagh Group (Luxembourg), BA Glass (the Netherlands), Vidrala (Spain), and Vetropack (Switzerland). A detailed overview of these competitors can be found in Appendix 1.1. For an overview of the entire competitive landscape, please see slide deck slides 20-21 and 57-58. Verallia has an especially strong positioning in Spain, France, and Italy, that overlaps with that of OI. In the North and East of Europe, Ardagh and Vetropack have a larger footprint than Verallia.

In Europe, Verallia has the second most plants (27 vs. OI with 35) as well as the second most furnaces (52 vs. OI with 55). With an average of 1.9 furnaces per plant, this is slightly below the industry average of 2.0 (GlassGlobal 2022). In terms of sales per furnace, Verallia is c.15% above the industry average – 47.4mn vs 41.8mn EUR. This is in line with Verallia having the highest revenue in Europe, slightly above that of OI (2.4bn vs. 2.3bn EUR, for both revenue in Europe only) (S&P Capital IQ 2022). Regarding competitive dynamics (revenue CAGR L3Y in % and average EBIT margin L4Y in %, see Appendix 1.2), Verallia is positioned well in the middle field, slightly better than OI but inferior to Vidrala and BA Glass due to its lower EBIT margin. It can be concluded that Verallia's market position is strong, having a significant size in the market and performing financially better than its large competitors. In Latin America, Verallia competes with the same companies in Europe or smaller players. It can be said that also here its market positioning is strong, especially due to the relationships with large customers.

2.2.5. Anti-cyclicality – Glass market in economic downturns

The container glass market is strongly related to the general F&B market, which makes it resilient to economic downturns. When European GDP growth took hits in 2009 and 2020 (Clark 2022), the glass production volume decreased less than proportionally. More than half of the end-

use of Verallia's products is related to alcohol consumption. Taking Germany as an example, one can see that consumption of alcoholic beverages has not decreased during the 2008/2009 crisis (Koptyug, Consumption of wine in Germany from 2000 to 2021 2022) and neither has spending (Koptyug, Private household consumer spending on alcoholic beverages in Germany from 1991 to 2021 2022), with production also not decreasing (Jan 2022) (Sadik-Nata and Niklas 2021). This suggests that also in the expected economic downturn, sales of Verallia will not be affected.

2.3. Investment thesis

The deal rationale to acquire Verallia is based on four main pillars. First, Verallia historically has proven its strong financial position, especially given the stable and high adj. EBITDA margin of c.25% in FY2021 paired with high cash conversion. Even though Verallia operates in an asset-intensive industry, capex needs are mostly recurring and predictable. Further, the company has a leverageable balance sheet with a net debt/EBITDA ratio of only 1.9x in FY2021. Supporting this, the company has a valuable fixed asset base, which can further serve as collateral for lenders. Besides its strong financial position, as elaborated previously, Verallia operates in an attractive market, which has proven to be resilient to crisis and economic downturns. Historically, Verallia has been able to pass-through price increases directly or indirectly to its customers, which is crucial in the light of the current energy crisis and inflationary environment. Verallia mitigates negative effects of energy and other price increases through its proven hedging policy. Within its market, Verallia has a strong and defendable position, due to high market entry barriers for (i) existing competitors due to high investment costs for new production capacities (c. 80mn for a new furnace) and long construction times for new capacities, and (ii) for new competitors due to same reasons and significant technological know-how requirements. Competitive pressure is further limited as there usually are limited geographical distances between customer and glass manufacturers, due to uneconomical transportation for empty glass containers for distances longer than 300km and

difficulties for customers to switch suppliers due to high brand association, resulting in customer-lock-in advantages. Further growth opportunities in the glass packaging market steam from an existing and growing demand surplus for glass containers in Europe and Latin America. Gradual changes in Verallia's management team have been supporting the above-mentioned operational strategies. The current management team has on average +25 years of experience relevant for the specific positions and growth targets within the holding period.

Verallia's strong operational performance and growth strategy can be enforced during the investment period. The first strategy to create further value is based on increasing the company's organic revenue by expanding its production capacity. Given Verallia's strong cash generation, the company can undertake greenfield and brownfield projects (i.e., building new plants or new furnaces on existing plants), using its own funds. The rationale behind this is the demand surplus for glass containers in all relevant markets, thus giving certainty to sell additional output produced. Secondly, there will be a focus on further operational improvements, to increase profitability. In recent years, Verallia already engaged in several operational improvement strategies, aiming at increasing the use of cullet to reduce other raw materials, optimizing energy sources, implementing AI software to reduce energy consumption, and improving working capital management. Those initiatives will be continued and expanded throughout the holding period. Lastly, Verallia will engage in value creating acquisitions to either expand horizontally into new product categories and geographies, or vertically into new activities. The German glass producer Heinz Glas has been identified as an attractive target, that can be acquired at lower multiple.

2.4. Business plan

The main finding of the market research is that there is a demand surplus in the market for container glass in both Europe and Brazil. As new furnaces and plants take a minimum of two years from planning to realization, capacity expansions for both markets until 2024 are known and

indicate that the demand surplus will persist. The model therefore takes the approach that Verallia can grow by increasing production volumes and selling all additional output. On the cost side, efficiency improvements coming from multiple sources are considered. Three business cases are constructed to reflect different assumption scenarios. In addition, in accordance with Strategy C, the acquisition of Heinz Glas is reflected in the financial model. For a detailed description of the financial modeling and business plan building, please see Chapter 3.1. Financial modeling. The following will refer to numbers in the investment case without the add-on acquisition.

Top-line: it is projected that revenue will go from 3.3bn in FY2022 to 5.1bn in FY2027 without the add-on acquisition, and to 5.5bn EUR with the acquisition. Of this 50% increase, most will come from price increases (953mn), and capacity expansion (704mn). Higher utilization of existing furnaces and mix-effects will contribute 114 and 36mn EUR respectively.

Cost base development and profitability: by increasing the percentage of cullet in inputs, changing the energy mix used in the furnaces, and more, the EBITDA margin grow organically from 25% in FY2022 to 27% in FY2027. In addition, the Heinz acquisition will add 81mn EUR to EBITDA in FY2027 alone. Heinz margin will be improved through the normalization on energy costs and raw material prices. COGS will decrease from 69% of revenue in FY2022 to 66% of revenue in FY2027, and SG&A will remain stable at 7% of revenues.

Capex forecast: in line with Verallia's disciplined investment policy, maintenance capex is projected to stay constant at 8% of revenue. The expansion capex will reflect the additional investments in furnaces and plants, with greenfield furnace investment amounting to 80mn EUR and 10mn EUR for cullet recycling per year. As a result, capex is higher than the historic 10% per year, with a maximum of 14% of revenues in FY2023 and stabilizing at 12% in FY2027, which corresponds to an absolute investment of 620mn EUR in FY2027.

Working capital forecast: it is projected that DSO will stay constant at 16 days between

FY2021 and FY2027, while DIO improves from 80 to 74 days, and DPO improves from 110 to 96 days. This will cause trade working capital to stay at around 0.5-1% of revenue. Other working capital will decrease between FY2022-27, driven by the increase of current liabilities. Total NWC will thus decrease and amount to -139mn EUR in FY2027, thereby improving the liquidity position.

2.5. LBO

It is assumed that the LBO of Verallia will take place in late 2022, based on FY2022 financials. The assumed exit year will be FY2027. All numbers, if not stated otherwise, will refer to the investment case scenario without the add-on acquisition.

2.5.1. Valuation

Applying the three major valuation methodologies (CCA, CTA, and DCF) yields enterprise values ranging from EUR 2.4bn to 13.2bn. However, more weight was placed on trading multiples (i.e., CCA), as those metrics present the more current values and incorporate Verallia's direct competitors and the current market environment. The trading comparables have a mean of 7.7x LTM EBITDA. Regarding CTA, special attention was placed towards the sale of Verallia to Apollo in 2015 at a purchase price of 6.2x EBITDA, as well as on the sale of Verallia's North American business at 6.4x EBITDA. DCF valuation, regression analysis and long-term trading multiples were used to verify results implied by both CCA and CTA.

Given the results from the applied methodologies, Verallia was valued at 7.7x FY2022 EBITDA, yielding an enterprise value of 6.4bn EUR at entry. This valuation multiple is in line with CTA multiples and reflects a reasonable premium compared to the 2015 sale.

2.5.2. Sources and uses

With assumed transaction fees of 193mn EUR (3% of enterprise value), the total uses of this transaction amount to 6.6bn EUR. This transaction will be financed by external debt, sponsor, and management team equity investments (see part 3.3 Capital structure).

The debt capital structure consists of a TLA (1.5x EBITDA, i.e., 1.3bn EUR) and Sustainability-Linked Bond (2.0x EBITDA, i.e., 1.7bn EUR). The equity investment consists of a pay-in-kind loan from both the sponsor and the management (SHL), as well as common equity (CE) from both parties. The SHL has an interest rate of 8% with accumulating interest. The initial equity investments from a sponsor perspective are 2.9bn in the SHL and 97mn EUR in CE. The management team is assumed to invest 50mn via the SHL and 3mn EUR in CE (Envy ratio of 3.6x). The total equity contribution is equal to 45% of the transaction volume.

2.5.3. Add-on acquisition: Heinz Glas

For its inorganic growth strategy, Verallia will purchase Heinz Glass in FY2024 for an EV/EBITDA multiple of 6.2x, thus a total EV of 259mn EUR. Heinz is a German family-owned container glass producer and decorator, focusing on glass flacons for perfumes and cosmetics. Heinz is active in 12 countries and owns five glass production plants and decoration plants. Purchasing this company will allow Verallia to diversify its product base and enter the flacon glass market (8-year CAGR of 4.2%) and instill its operational excellence onto Heinz' energy and raw materials cost management, which has been a problem for the firm historically, especially in recent market environments (Fortune Business Insights 2020). The Heinz acquisition adds 384mn EUR in revenue FY2027 and 81mn EUR alone to EBITDA in FY2027.

2.6. Returns

Considering the investment case, the Verallia investment is expected to generate sponsor returns of 2.9x money with an IRR of 23.6% without M&A activity after a 5-year holding period (i.e., considering FY27 as exit year). This return increases to 3.0x money and an IRR of 25%, when M&A is included. Compared to that, the more conservative bank case is expected to generate 2.1x MoM and 16.3% IRR (2.2x MoM and 18% IRR with M&A), and the pessimistic will deliver 1.2x MoM and 3% IRR. As no multiple arbitrage is assumed (i.e., entry multiple of 7.7x will also apply

at exit), all value creation will come from EBITDA improvements and deleveraging over the holding period. For more detailed information, please refer to section 3.4 Return analysis.

2.7. Due diligence

A regular due diligence will be performed to obtain a better understanding of the target itself, the market, and other affecting factors. The due diligence should cover the following areas:

Commercial: for this topic, the expected market growth, consolidation, and competitive dynamics should be investigated further, especially with regards to verifying the persistence of the demand surplus for the following years. Further, the influence of the current economic downturn on the container glass market should be analyzed. Lastly, customer relationships and relationship management should be investigated, with a focus on assessing loyalty and positioning.

Financial: a financial and tax due diligence should be performed to verify effectiveness of cost-pass-through clauses in the future, confirm Verallia's existing accounting and planning practices, and to obtain a better understanding of relationships with existing banks and other debt investors, and whether they are willing to participate in the debt financing of the acquisition.

Operational: the operational due diligence should verify the general operational capabilities of Verallia, analyze the robustness of the value chain, and the operational excellence transformation. The operational due diligence should verify that Verallia has the required knowledge and resources to carry out the extensive capacity expansion. In addition, it should be explored whether the projected furnace utilization increases are possible to implement. Lastly, some of the projected efficiency improvements require significantly more electric energy supply than is needed today. According to the COO Europe of the Ardagh Group, the electric grid is not able to support this increased demand in all regions due to grid capacity constraints (COO Europe Ardagh Group, 2022). Thus, it should be verified that this does not restraint the planned improvements.

Legal: within the legal due diligence, existing contracts with customers, supplier contracts,

environmental regulations, and existing hedging policies should be verified and reviewed to mitigate risks related to significant input cost increases.

Environment: if Verallia is unable to reach the planned share of cullet in its raw materials, this will cause higher emissions. In addition, Verallia's general compliance with environmental policies must be reviewed and the feasibility of its net-zero strategy verified. Lastly, Verallia's insurance coverage, especially with regards to natural disasters should be verified.

2.8. Exit

There are three common options to exiting a PE investment: a secondary sale, a strategic sale, or an initial public offering at a stock exchange. At time of the exit, the enterprise value of Verallia will be 10.8bn EUR. A secondary sale is regarded as a possible option as the previous Apollo transaction shows that Verallia and the packaging market in general has been interesting for PE firms. A secondary sale would imply a fast sales process with experienced parties and a full exit of the investment. However, given the size of the exit transaction, there are only few PE firms that will be eligible for the sale and likely a consortium would form for such a purchase, making the transaction more complex. For a strategic sale, the size of the transaction is also critical. Verallia is most attractive for a large player in the packaging industry, especially for those without a footprint in the container glass segment. Another option would be that a leading food and beverage company expands upstream by buying Verallia. A strategic sale would imply a higher purchase price due to synergy potentials. Potential buyers with sufficient market capitalization would be OI, Ball Corporation, Crown Group, or Anheuser-Busch InBev. Disadvantages of this type of exit include a likely slow and bureaucratic process and higher relevance of anti-trust regulation, likely in multiple geographies. The last exit option is that Verallia would go public by selling its shares in an IPO in one of its main operating regions, for example on Euronext. Advantages of this exit format include reaching a broader target audience, including employees of the company. Taking

the company public would also express belief in the positive future of the company. On the other hand, an IPO causes high transaction fees, the process is long and requires approval of regulators, the success of the sale is dependent on market conditions and not fully certain, and lastly, that a 100% sale will not immediately be possible. Nevertheless, due to the size of the transaction, an IPO is the preferred option for exiting the investment in Verallia.

2.9. Conclusion

After analyzing the LBO of Verallia in detail, it can be concluded that it is a solid investment opportunity in uncertain economic times. Verallia operates in a market that has historically proven to be resilient to downturns and that is expected to face a demand which is expected to remain for several years. Trends like sustainability, premiumization and recycling drive market growth globally. High barriers to entry as well as high customer loyalty driven by end-user brand-bottle association further make the industry attractive. Verallia has a solid competitive position – it is the leading European glass manufacturers and differentiates well from its competitors through its size and global footprint. No competitor of Verallia has a comparable profitability while also having global operations. Verallia's financial position is sound and well suited to take on high leverage due to available collateral. The current management team is well positioned and incentivized to establish multiple value-creation strategies, including operational improvements, organic and inorganic growth strategies. Financial modeling suggests a return of 2.9x MoM with an IRR of 23.6% without M&A, and 3.0x MoM with a corresponding 25% IRR with M&A. While the LBO of Verallia has a significant size, it provides a unique opportunity to invest in a sound industry that is undergoing significant structural change, both from a demand and supply perspective. In the eyes of the consumer, glass has never been more appealing. On the other hand, production and energy challenges have never been larger in this sector. Actively and well managed, this offers a significant value creation opportunity to a financial investor.

3. Individual parts

3.1. Financial modeling – Business plan building, case comparison, and Heinz acquisition (Greta Oltmer)

This section will cover the theoretical background behind financial modeling and include further insights into the projections of the model used to model this case. This will include a comparison of the structure and assumptions in the different operating cases. In the investment and bank/base case, M&A is considered, in the pessimistic case it is not.

3.1.1. Theoretical background

To conclude any form of valuation, project the future operations of a company, or make reasonable conclusions about its performance, a financial model is required. A financial model is a simplified representation of the firm that is generated by a set of assumptions about the company and its macroeconomic environments, and drivers, determined by the creator of the model (Focardi and Fabozzi 2004). The company's historical accounting information, statistical inputs about the market environment, and information about competitors and trends are all used to drive the model and generate outputs. Generally, the drivers of the model are the most important for its development, as they establish key values like the firm's revenue, costs, capital expenditures, or working capital. Therefore, these drivers are connected to various parts of the model and can bring about the most significant changes. Because sales or revenue is so critical for any firm, most financial models are sales driven, meaning that "as many as possible of the most important financial statement variables are assumed to be function of the sales level of the firm" (Benninga 2014). The challenge in financial modeling lays in determining which other financial statement elements can be linked to sales and how to project the sales position in the first place (Benninga 2014). Common practices in financial modeling include selecting either a top-down analysis based on current market size and how much of this market can be captured by the company, or a bottom-up analysis,

which is based on the product or service on offer and what is needed to produce and sell it, like the number or factories or employers (Maguire 2020). In this model, a bottom-up approach was taken, starting from production capacity needed to produce glass bottles and generate revenue. Additional modeling techniques include using historical averages of growth rates, or balance sheet related techniques including calculating the cash conversion cycle (CCC) to arrive at net working capital items.

3.1.2. The projected income statement

The income statement is a highly valuable part of any financial model, as it is most likely where most value drivers will be implemented, and the most important assumptions will need to be made. In the "Leveraged buyout of Verallia S.A.", it was first decided that top-line planning would be driven by the building of new furnaces. This is because building new furnaces allows for an increase in production capacity, which will in turn lead to more sales. This value driver relies on the assumption that the demand surplus for glass bottles and jars will persist and that Verallia will be able to sell these additional glass products in each region. A geographic breakdown was also initiated for the top-line planning, to create more flexibility in varying furnace building schedules in the different regions, as well as varying levels of demand. To make revenue modeling more in-tune with Verallia's operations, it was decided to calculate revenue per region based on the number of furnaces, the capacity per furnace, and the utilization rate of the furnaces. The number of furnaces was projected based on an assumed building rate in each region (in addition to the previously announced construction of two new furnaces in LATAM and one new furnace in SWE, as well as hybrid furnaces), the capacity was based on historical values, and the utilization was projected based on historical rates and planned improvements. With this information, the output in thousands of tons per region could be derived and multiplied by the revenue per ton, which was also based on historical values and treated with a price factor to account for inflation.

In the NEE investment case, a new furnace was planned every two years (every four years in the base case and no new furnaces in the pessimistic case), with a 1.5ppt improvement in utilization p.a. from the FY2018-21 average of 75% (1ppt p.a. in the base case and 0ppt in the pessimistic case). In the SWE investment case, a new furnace was planned every year (every two years in the base case and no new furnaces in the pessimistic case), with the historical maximum utilization (historical average in the base case and historical minimum in the pessimistic case). The same approach was applied for the LATAM region. The NEE region receives the slowest furnace growth in each case compared to SWE and LATAM to reflect the stronger market consolidation and slower market growth in that region. The price factor in each case and region is based on inflation expectations but is somewhat negligible because Verallia profits from a 100% cost pass-through rate. All in all, Verallia begins with 59 (Jacutinga finished in 12/22) furnaces and 3.3bn EUR in revenue in FY2022 and ends with 69 furnaces and 5.1bn EUR in revenue in the investment case in FY2027 (64 furnaces in the bank case and 63 in the pessimistic case).

Cost positions were modeled at a group level due to lack of information about a geographical cost split. LBO processes from PEs generally involve some sort of operational improvement of the company, where PE professionals work in union with company management (Kaplan and Strömberg 2009). For Verallia, the cost position contributing the largest portions of total cost were examined and modeled with operational improvements in line with the investment thesis and value creation strategy. Being an industrial company, Verallia requires significant amounts of raw materials to produce glass bottles, including cullet, soda ash, sand, and others. Price differences in these materials and recycling rates determine this cost position (making up 20% of COGS in FY2022). Verallia's sustainability strategy of increasing recycled materials not only reduces CO_2 emissions, but also affects its cost positions positively as cullet generally costs less than other materials, such as soda ash (Research Engineer 2022) (EuroStat 2021). Therefore,

this position was modeled using cullet use rate as a driver (increasing cullet use rate from 57% in FY2022 by 2ppt p.a.) and determining cost savings per additional ppt of cullet used by comparing the total cost differences in using more cullet in the raw materials mix versus the more expensive alternative raw materials. In the investment case, alternative raw materials are projected to increase in price by 1ppt p.a., meaning that using the increased amount of cullet generates 239mn EUR of cumulated cost savings until FY2027. In the bank case, alternative raw materials are projected to increase in price by only 0.5ppt p.a., meaning that the increased use of cullet generates less savings – a total of 118mn EUR cumulated cost savings until FY2027. In the pessimistic case, the use of cullet is assumed to have no effect on costs. In the investment case, total raw materials costs drop as a percentage of revenue from 14.7% in FY2022 to 13.9% in FY2027 and fall to 18.3% of total COGS from 19.6%. In the bank case, total raw materials drop only to 14.6% of revenue and 18.8% of COGS, and 15.3% of revenue and 18.9% of COGS in the pessimistic case respectively.

The glass making process is extremely energy intensive, and energy costs for Verallia made up 14.7% of revenue and 19.7% of COGS in FY2022. Once again, cullet use can be used as a driver to model the development of energy costs, in addition to changes in energy mix and other operational improvements. In fact, increasing the cullet use rate by 10ppt lowers energy consumption by 2.5% and reduce the MWh of energy required per ton of glass produced, lowering costs (Verallia S.A. 2022). Energy mix improvements represent a shift towards renewable energy and help with lowering costs. As a part of its Performance Action Plan (PAP), Verallia also plans to incorporate augmented intelligence software in its furnaces (51% of furnace already have this software) (Verallia S.A. 2022). In the investment case, furnaces are upgraded with this new software, yielding an energy consumption gain of 2.0% (1.5% in the bank case and 1.0% in the pessimistic case). In the investment case, energy costs drop to 12.9% of revenue and 16.9% of COGS (12.9% of revenue and 16.5% of COGS in the bank case, and 12.8% of revenue and 15.8%

of COGS in the pessimistic case) in FY2027.

Other costs can be forecasted using some historical level of percentage of revenue, like using the FY2022 level for the investment case, the historical average for the bank case, and the historical maximum for the pessimistic case. For example, transportation costs range from 9.9-10.8% of revenue in the cases and COGS related personnel expenses range from 16.0-17.5%. Depreciation and amortization levels naturally rise with furnace construction and investment in intangible assets from 8% to 10% of revenue. To model all D&A positions, asset schedules were used to keep track of yearly non-cash costs. All in all, these operational improvements generate significant EBITDA margin improvements. In the investment case, the EBITDA margin rises from 25.3% in FY2022 to 27.4% in FY2027, with total EBITDA rising from 838mn EUR to 1.4bn EUR. In the bank case, the margin develops to 23.9% and an EBITDA of 1.1bn EUR. In the pessimistic case, the margin drops to 17.8% and a total EBITDA of 787mn EUR.

To complete the modeling of the income statement, assumptions drawn from the financing of the acquisition were used to generate a debt schedule and to incorporate relevant interest payments. Finally, the appropriate income tax rate of 28% for France was used to calculate taxes, and various adjustments for non-taxable items and payouts to associates were applied to arrive at net income (KPMG 2022).

3.1.3. The projected balance sheet

In most financial modeling scenarios, income statement position drive and establish many missing positions on the balance sheet (Benninga 2014). However, building additional asset and liability schedules, calculating the cash conversion cycle, and making assumptions about equity positions is required to complete this financial statement. One method of forecasting and modeling working capital items like inventory, accounts receivable, accounts payable (making up trade working capital) is through the calculation of the cash conversion cycle (CCC). The CCC is a

measure of time (in days) that shows how long a company needs to covert its resources into cash. Therefore, a general rule of thumb is that a lower CCC is better as it implies that less cash is caught up in running operations (Hayes and James 2022). The CCC is composed of three separate metrics, including days payable outstanding (DPO), days sales outstanding (DSO), and days inventory outstanding (DIO). The formula for DPO is the firm's average accounts payable divided by its COGS and multiplied by 365 and shows how many days the company needs to pay back its creditors. For this measure, a larger number of days is preferred to offer the company more flexibility in its payment (Kothari 2004). This measure is calculated historically, and assumption are made about how DPO will behave in the future. Once COGS and DPO have been projected, the model back-solves for accounts payable. In Verallia's case, an average DPO of 85 days before FY2021 increases to 110 days in FY2022, mainly due to the abnormally high gas prices and the corresponding adjustment of contracts. In the model, this value is modeled to normalize to below 110 days, but still increase compared to its historical values to 96 days in FY2027. DSO is calculated and projected in a similar way with accounts receivable, but revenue is used in the place of COGS, and a lower value is preferred to show that the company is receiving payments from customers quicker and has more beneficial contracts (Kothari 2004). In the model, the historical DSO value from FY2016-21 of 16 days was used as Verallia is already leading the market in this aspect. Finally, DIO is calculated using inventory and COGS, with a lower value being optimal to show efficient inventory management (Kothari 2004). Verallia's DIO is set to decrease from 80 to 74 days until FY2027 representing inventory management improvements like new scheduling processes and leaner supply chains. Other working capital positions are projected at historical percentages of revenue. These cash conversion cycle improvements allow enable optimization of working capital, and with it becoming increasingly more negative, from -65mn EUR in FY2022 to -139mn EUR in FY2027 (-109mn EUR in the bank case and -102mn EUR in the pessimistic case).

Another key balance sheet item to project is property, plant, and equipment (PP&E). This can be modeled using asset schedules that reflect investments made to drive revenue in the income statement and using specific depreciation schedules for all relevant items. A similar approach can be taken with amortization and investments to project intangible asset positions. To model goodwill, an analysis is performed to compare the acquisition price and the company's existing equity. In an acquisition model, any additional purchase price value beyond the company's equity value representing a premium paid must be incorporated as goodwill (Hargrave and James 2022). In Verallia's case, goodwill naturally rises from 530mn EUR in FY2022 to 4,199mn EUR in FY2023 to account for the acquisition.

Liabilities that require special attention in a financial model include additional debt taken on to finance the acquisition which is always the case in an LBO. As will be discussed in section 3.2, financing decisions are reflected in all the company's modeled financial statements. In the balance sheet, the total debt taken on is reflected in the non-current financial liabilities and derivatives position and totals 2.8bn EUR in FY2023 (when the TLA 1 and SLB bond financing case is selected). This position follows the debt schedule, where each respective loan can be amortized if this is part of its conditions. Therefore, this position decreases over time as Verallia pays back the debt it took on with its operating cash flows, as is standard in an LBO (Kaplan and Strömberg 2009).

When it comes to equity in an LBO model, various previously established and modeled positions also flow into each other. Most simply, retained earnings are modeled using net income of the year if no dividends are paid out. Other positions may require a more technical approach. In Verallia's case, share capital must increase to account for the shareholder loan issued to finance the acquisition (which increases over time to account for its PIK component) and to account for the equity component of the acquisition, which stem from the sponsor and from the management

incentive plan. Overall, this type of financial modeling is extremely dependent on the complexity of the transaction and the various financing devices.

3.1.4. The projected cash flow statement

The decision to fully model a cash flow statement is dependent on the company and the positions that are included in the statement. In many cases, it is more useful to construct a new cash flow statement with some historical positions and adjusted for the effects of the acquisition. In this model, cash flow from operations was simplified to a NWC and cash-tax adjusted EBITDA. Cash flow from investing activities includes all capex positions as well as the M&A activity conducted by Verallia (M&A costs will be discussed in the next session). Capex is of course directly linked to Verallia's top line planning. Historically, Verallia managed its maintenance capex (furnace refurbishments) at a constant 8% of revenue level with additional 2% in additional expansion capex. Going forward, investment cash flow will be derived from the number of furnaces built, with each furnace requiring 80mn in capex distributed over the years of construction, and additional 10mn EUR per year for building cullet recycling centers. Maintenance capex will remain at 8% of revenues. The ambitious organic growth strategy driven by furnace construction in the investment case leads to an increase in total capex, from 11% of revenue and 355mn EUR in FY2022, to 12% of revenue and 620mn EUR in FY2027 (11% of revenue and 501mn EUR in the bank case, and 8% of revenue and 363mn EUR in the pessimistic case). Cash flow from financing activities must reflect the previously discussed cost of financial debt and debt repayments which are linked to the debt schedule built for the construction of the balance sheet. These positions allow for the calculation of free cash flow (FCF), and finally, cash at the end of the period, which then feeds back into the balance sheet. FCF rises from 369mn EUR in FY2022 to 443mn EUR in FY2027 in the investment case, driven by the increasing EBITDA, net working capital improvements, and deleveraging (302mn EUR in the bank case and 170mn EUR in the pessimistic case).

3.1.5. Modeling an acquisition – Heinz Glas

Finally, a financial model of an LBO scenario may include modeling acquisitions if a buy and build or strategic acquisition is considered as an option. This involves the incorporation of a merger model, where two companies are brought together, and their corresponding financial statements must also be combined (Benninga 2014). Such a model also includes careful consideration of the financing of the acquisition. In Verallia's situation, the decision to acquire Heinz Glas as part of its investment thesis was made to further diversify Verallia's product portfolio and boost its top line. Heinz Glas is active in the flacon glass market for perfumes and cosmetics and will give Verallia a first entry point into this steadily growing and resilient market. Furthermore, Heinz Glas's operations showed significant operational inefficiencies and mismanagement, especially with regards to energy costs hedging and raw materials management, giving Verallia an opportunity to install its own operational excellence onto a struggling company. With this, it aims to make improvements to improve Heinz' margins and boost its profitability.

Heinz is purchased at the end of FY2023, and its financial statements and the merger effects are modeled into the Verallia statements from FY2024 onwards. The entry EBITDA of 42mn EUR was multiplied by an EV/EBITDA multiple of 6.2x (1.5x lower than the multiple paid for Verallia, given Heinz' significantly smaller size), yielding an EV of 259mn EUR and finally, purchase equity of 27mn EUR (this is due to Heinz' high net debt level of 232mn EUR). The acquisition was financed by an additional TLA and a cash injection from Verallia. The effects of the acquisition can be seen in Verallia's cash flow statement in FY2024, where the total acquisition price is modeled into cash flow from investing activities and the debt issuance of the TLA can be found under cash flow from financing activities. Heinz' operations must also be modeled, and a revenue-driven approach was chosen. Revenue was treated with a steady growth rate based on the company's historical average of 3.1%, bringing the top line from 340mn EUR pre-acquisition

(FY2023) to 384mn EUR in FY2027. Cost positions were also based on percentage of revenue calculations and were estimated as follows: raw materials costs which include energy expenses (20% of total) were modeled to decrease to 33% of revenue in FY2027 compared to 42% in FY2023 to reflect improved cost efficiency and better purchasing conditions. Personnel expenses were modeled to decrease to 30% and stay steady from FY2025 onwards, compared to 37% in FY2023, to reflect synergies between the two companies that allow elimination of double functions. Other operating expenses and income were modeled based on historical percentage of revenue figures. These operational improvements allow for a significant improvement of Heinz' EBITDA margin, from 6% in FY2023 to 21% in FY2027, and even to 24% in FY2030 if it is decided to increase the asset holding period. Therefore, the acquisition contributes 81mn EUR to EBITDA in FY2027 alone. From a balance sheet perspective, a similar approach to Verallia was taken in modeling positions including a DSO improvement from 70 to 53 days, a DIO improvement from 194 to 147 days, and a steady DPO of 76 days, signifying Verallia's better operational management of Heinz.

3.1.6. Conclusion

Overall, a financial model is a useful tool to analyze a company in a compressed way. Projecting Verallia's and its acquisitions target's financial statements and making assumptions about how positions will change in the three operating cases provides a simple overview of how the companies' operations develop in different macroeconomic contexts. The model can be consulted to help make decisions about the acquisition and the way the company can be operated in the future. Nevertheless, it is important to state that despite the complexity of the model, it is still an approximation and does not incorporate all details of what it takes to manage a firm of Verallia's scale. It can be used as a tool to consider and manage the acquisition, but should be used in conjunction with sensitivity analyses, and the expertise of the management and the sponsor.

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5. Appendix

5.1. Appendix – Group part

Appendix 1.1: Characteristics of main competitors

Competitor	Revenue (in mn EUR)	EBIT (in mn EUR)	# plants	# furnaces	Sales CAGR L3Y (in %)	Avg. EBIT margin L4Y (in%)
Ardagh Group(1)	1,509	97	20	41	4.2%	7.1%
BA Glass	1,035	159	12	29	6.4%	20.9%
Owens-Illinois(1)	2,273	314	35	55	2.5%	12.7%
Vidrala	1,085	180	8	20	4.3%	17.3%
Vetropack	763	76	9	19	8.1%	11.2%

In general, these are the latest available financial figure for the companies. Remarks:

(1) Correspond to glass packaging revenues of Ardagh Group, for EBIT: packaging revenues in Europe times group EBIT margin

(2) Corresponds to local IO sales in Europe

Sources: (GlassGlobal 2022), (S&P Capital IQ 2022), (Verallia S.A. 2022), (Bundesanzeiger 2022)

Appendix 1.2: Competitive dynamics in Europe – Sales CAGR and ø EBIT margin 2018-21