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Group part:

M&A in a Consolidating Market – Bayer's Acquisition of Monsanto

Individual part:

The Deal from a Private Equity Investor's Perspective

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Abstract:

This case examines the Bayer-Monsanto merger, evaluating its implications and complexities. The paper investigates the merging of Monsanto's seed and trait expertise with Bayer's crop protection goods, which resulted in the formation of the world's largest agrochemical participant. It delves into Bayer's difficulties in skirting antitrust restrictions, as well as the subsequent court disputes over Monsanto's flagship product. It also scrutinizes the attractiveness of Monsanto Company as an investment opportunity from a private equity investor's perspective.

Keywords: Mergers & Acquisitions, Bayer AG, Monsanto Company, Corporate Finance, Private Equity

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1.0 Introduction to the Megamerger between Bayer AG and Monsanto

"In combining Bayer and Monsanto, we will create a global leader in the agriculture industry. Together we will help to deliver integrated solutions and prepare the industry for the next generation of farming." - Werner Baumann, CEO Bayer AG

Just 11 days after being elected as the CEO of the German Pharmaceutical multinational Bayer AG, Werner Baumann, already made an unsolicited offer in May 2016 to acquire the American agricultural leader Monsanto at $122 a share. The final deal was signed by the 57-year-old Bauman and the 58-year-old Scottish Hugh Grant, chairman and CEO of Monsanto, on the 14th of September in 2016 after a long period of negotiations under terms similar to a bidding war with several companies showing interest in the acquisition of Monsanto. The combined firm wanted to create the world's largest pesticide and seed company by market share (**Exhibit 1**) by uniting Bayer's pesticide portfolio with Monsanto's seed and genetically modified crop business in the world's biggest merger in history after the AT&T and Time Warner Deal. While it was not only one of the largest deals seen in the sphere of consolidations, the transaction was additionally the largest deal, which has ever been fully paid in cash (Dewey, 2019; Varinsky, 2018; Roumeliotis & Burger, 2016; Dostert, 2019; Bayer, 2023a).

While the scarcity of resources imposes to be humanity´s biggest challenge, the two companies aimed to tackle this challenge by doubling the world's food production by 2050. Due to the constraints of limited agricultural land, even decreasing agricultural land per capita, and climate change drawbacks, farm productivity would need to rise drastically by at least 60%, to feed the constantly growing global population (Atkins, 2019; Bayer, 2017a). Grant and Baumann´s vision to meet this demand by advancing agricultural input factors such as seeds and crop protection was powered by research and innovation, allowing for more efficiency through combined products, regional coverage, expertise, and knowledge. In fact, the two companies combined with Bayer´s expertise in herbicides and Monsanto's strengths in seeds would then

make up for more than a quarter of the world's seeds and pesticides market, representing a great danger to the other market players (Kumar, 2019).

As the global demand for agricultural products was climbing, Bayer's acquisition of Monsanto appeared to be a great opportunity for the multinational to secure its position in the fast-growing agricultural chemicals market, to further strengthen its position as a leader in the market, and enter the competitive North American market, in which Monsanto was dominating to complement Bayer´s geographical focus of Europe and Asia (KPMG, 2016). Yet, aiming to build the world´s largest supplier of crop seeds and chemicals would lead to further consolidation in the market, which brought upon the hurdle of the requirement of 30 regulators across different countries to approve the deal (Varinsky, 2018). But, while the merger of these two giants is anticipated to change the agricultural industry drastically, the question remains if Bayer made the right choice to acquire Monsanto and whether adequate synergies were made, especially with Monsanto´s repeated controversies of participating in unethical business operations (Roumeliotis & Burger, 2016).

2.0 Bayer AG

Founded in Leverkusen in 1863, the life science company Bayer is considered one of the most prestigious companies in the world, according to various accolades. Bayer is renowned for its continuous commitment to R&D, which has led to world-famous products such as the pain reliever Aspirin. (Bayer, n.d.). The German multinational is divided into four core business divisions: Pharmaceuticals, Consumer Health, Crop Science, and Animal Health. Bayer's sales in 2015 were distributed among the four divisions as follows: Pharmaceuticals 46%, Consumer Health 18%, Crop Science 31%, and Animal Health 5%. While the first two divisions focus on prescription and non-prescription products respectively, their crop science division is a later expansion from the pharmaceutical business, growing into a leading agricultural firm focusing on seeds, crop protection, and pest management. Bayer´s core competencies are namely health

care and agriculture, leading to their strategic mission of improving people´s quality of life and advancing supply chain operations and the production of high-quality food. Ever since the launch of the insecticide, Systox in 1951, Bayer has had its roots in agriculture from the early start of the company´s history onwards. To further enhance its expertise in this field, Bayer was always on the lookout for potential acquisitions, with examples such as the acquisition of the company Aventis Crop Science in 2001 for €7.25 bn (Wall Street Journal, 2001). To direct its main capital investments toward strengthening its pharmaceutical division, Bayer divested Covestro in 2015 through an IPO to raise equity due to their high debt level (Alessi, 2015). As of 2018, Bayer Group consisted of 420 consolidated companies, operating in 90 countries, while employing 117,000 people (Bayer, 2018b; Zacks, 2018).

3.0 Monsanto

The American, agricultural firm, **Monsanto** was founded in 1901 and is a globally operating Fortune 500 company with over 20,000 employees in 69 countries. Monsanto offers products such as seeds, herbicides, crop protection, and biotechnological products to farmers that allow for more sustainable, productive, and cost-efficient farming and harvesting (Kumar, 2019; Statista, 2023; Whipp, 2015). Monsanto is the world leader in seeds and crop genes and a pioneer in using biotechnology, which is the business of changing plants, animals, and microbes' DNA through artificial mixing and matching in agriculture (Schneider, 2019; Zacks, 2018). Their seeds business accounts for 70% of their sales in 2015 and the company's most known product is the glyphosate weedkiller "Roundup", which was effectively killing weed by its root (Pierson, 2022; Whipp, 2015; Bayer, 2017a).

4.0 The Stakeholders and Main Protagonists

Werner Baumann, CEO of Bayer, and Werner Wenning, Chairman of the Supervisory Board had a significant influence on the merger from Bayer's side. Baumann, who was promoted as the CEO of the firm on May 1st, 2016, spent his entire professional career for 28 years at Bayer.

He started in 1988 in the corporate finance department and later worked in various departments and locations while experiencing the company from the ground up (Bayer, 2023a). The short period of time between Baumann being appointed as CEO and Bayer's first attempt to acquire Monsanto, heightened the pressure on the new CEO to prove himself in this new role with a successful transaction. Werner Wenning held the position of Chairman of the Supervisory Board at Bayer, while he also spent his entire professional career at Bayer, starting in 1966. From 2002 to 2010, Wenning served as Chairman of the Board of Management, and from 2012 onwards, he became Chairman of the Supervisory Board (Bayer, 2023b). Opposing the previous CEO's opinion Marjin Dekkers, Baumann and Wenning agreed that in the wake of other ongoing mergers in the agrichemical industry, it is inevitable to engage in inorganic growth to ensure Bayer's current market position in the long run. Both were publicly promoting that the merger would mark the starting point of a combined agriculture giant and repeatedly tried to convince Bayer's investors at annual shareholder meetings (Winter & Loh, 2019). On Monsanto's side, the merger was significantly influenced by longtime CEO, Hugh Grant. Grant was appointed CEO in 2003 and has held the position ever since. He also attempted to purchase Sygenta during the consolidation wave in the agricultural sector but lost to a bid by ChemChina (Cision, 2022)

5.0 The Consolidating Agrochemical Industry

The agrochemicals market was expected to reach $308.92bn in size by 2025, due to continuing growth in the demand for crop protection. A decrease in arable land, accompanied by a growing population and industrialization, led additionally to the need for plant growth and fertilizing products. Simultaneously to the growing demand and market growth, the market also shifted towards an oligopoly, with fewer and larger corporations due to many consolidations over the past three decades. This resulted in the creation of the "Big Six" Seed and Agrochemical companies: Monsanto, Bayer, BASF, Syngenta, Dow, and DuPont. These six companies accounted for over 70% of the global market value, which caused concerns for farmers,

policymakers, and the greater public due to their market dominance, who worried about the effect on prices, innovation, and product offerings. Except for BASF, all these companies were engaged in the production of crop protection chemicals and held significant positions in the seed and biotechnology industries (Deconinck, 2019; Businesswire, 2017). Hence, the agricultural industry was following a trend of rapid consolidations, on which Werner Baumann did not want to miss out (Atkins, 2019). On December 2015, the crop protection, and seed businesses DuPont and Dow Chemical announced the companies will merge in a $130 bn deal, and in February 2016, the Chinese state-owned company ChemChina bid $43 bn USD for the seeds and pesticides firm Syngenta, which was at that time following Bayer, the second biggest crop chemicals firm (Divac, 2016; KPMG, 2016). Initially, Syngenta bid for DuPont, and failed, and DuPont then announced to merge with Dow. Then ChemChina outbid BASF in acquiring Syngenta with a great cash offer leaving BASF, Bayer, and Monsanto struggling for a deal. The Monsanto/Bayer deal would then be the third blockbuster agrichemical and seeds transaction in six months following DuPont/Dow and ChemChina/Syngenta, turning the initial "Big Six" into the "Big Four". Especially due to falling crop prices leading to decreasing SPs, the agricultural companies face even greater pressure on consolidations to compete for market share (**Exhibit 16**). The consolidations particularly allowed for a balanced product portfolio for the industry players. For example, Chem China´s, Dow´s, and Bayer´s CropScience unit's strength lay in crop protection chemicals which were complemented with the acquisitions of Syngenta, DuPont, and Monsanto acquisitions, which focused on seeds and GM traits, respectively (Divac, 2016; Terazono & Massoudi, 2016). To emphasize the market concentration and a new spark of concern for the pricing power of the multinationals, 80% of US corn-seed sales and 70% of the global pesticide market were predicted to be generated by just three companies (Bunge, 2016b).

6.0 Timeline of the Merger

6.1 The Negotiation Phase Until Deal Announcement

The first contact between Monsanto and Bayer took place in March 2016, when it was Monsanto who approached Bayer for a potential acquisition of their crop science branch. Two months later, in May, BASF and Bayer both made bids for Monsanto (WSJ Staff, 2016). Bayer´s bid was made on May 13th, whereas they published the details about the private proposal on the 23rd of May, including the Share Price (SP) offered of $122, making up for an Enterprise Value (EV) of $62 bn. The all-cash deal was supposed to be financed with a mix of debt and equity, with the equity portion equaling 25% of the EV. (Bayer, 2016a). Monsanto yet rejected the proposal on May 24th, as they described it as financially inadequate and incomplete due to its ignorance towards financing or regulatory risks. Yet, Monsanto stated to be open to a reassessment of their SP (Crowe, 2016). Bayer then answered Monsanto with a letter, expressing that the financing of the deal has already been organized and regulatory hurdles are not being seen as an obstacle, in order to attract Monsanto to the negotiation table. The rigid negotiations continued when Bayer asked for access to more detailed information as part of a due diligence, which was rejected once again by Monsanto until Bayer would raise their bid (Bunge & Henning, 2016a). In late June, Monsanto released, that they are also considering other incoming bids during a conference call about the company´s quarterly results, whereas Grant also emphasized the advantage of acquiring Monsanto in the consolidating industry. On the other hand, Monsanto´s third-quarter earnings decreased, due to falling crop prices and the waiting time for the EU consent on a new soybean variety. Simultaneous to Monsanto waiting on approval, the authorization for glyphosate was extended, raising criticism and controversies with the WHO (World Health Organization) as it was accused of causing cancer. For the quarter ending on the 31st of May, a decrease in profit of $717 million was reported compared to $2.39 bn a year ago (Bunge, 2016a). On July 1st, Bayer published their reconsidered deal proposal of

$125 per share with a 40% premium to Monsanto's SP and an additional $1.5 bn reverse-breakup fee should the deal be stopped due to antitrust regulations. Bayer financially and regulatory committed itself to a deal, which would restructure the firm by shifting half of the overall sales to the agricultural arm, causing investors to become nervous since they have classified the company rather as a pharmaceutical company (Henning, Bunge & Alessi, 2016). As the negotiations continue, Monsanto once again rejects Bayer's bid on the 18th of July, stating that they think, that the biotech seed leader is still undervalued. Despite the opposition from significant shareholders, such as Henderson Global Investors, Bayer announced to continue pursuing the deal (Bunge & Henning, 2016b; Cruise, 2016). Monsanto proved itself to be a difficult counterpart in the negotiation, forcing Bayer to increase the bid price by 2% for a third time to $127,50 a share, valuing Monsanto at over $65 bn on the 6th of September. Monsanto, by then has finally agreed to grant access to their books for Bayer´s anticipated due diligence. There was increased pressure for Monsanto to accept the deal, as otherwise Bayer could initiate a hostile take-over at a lower consideration or look for other acquisition targets. Monsanto confirmed their engagement in effective negotiations with Bayer but also emphasized the uncertainty of any deal taking place due to other bidders. As Bayer´s SP was continuously decreasing, with the negotiations advancing, Bayer also faced pressure and criticism from their shareholders standing up against the deal (Reuters, 2016). From a regulatory point of view, Bayer´s shareholders' approval was yet not required for the deal approval, since Bayer did not choose a high portion of equity but instead financed most of the deal with debt. Bayer thereby avoided a further potential risk to the deal closure since certain shareholders voiced their concern about the deal from the beginning onwards. On the contrary, on Monsanto´s side, the shareholders needed to submit their votes in favor of the merger proposal for it to go through (S.E.C., 2016b; Trentmann, 2016).

6.2 The Deal Announcement

On the 14th of September, both parties officially announce a signed definitive merger agreement, committing Bayer to an all-cash acquisition of $128/share representing a 44% premium paid (Bayer, 2016b). In an attempt to appease their shareholder´s concerns and to further embellish the deal, the pharmaceutical giant advocates the transaction to its shareholders with various points, such as the intention to tap into unmet scientific needs and to create an industry leader in integrated offering of Seeds & Traits, Crop Protection, Digital farming, and Biologics. According to Bayer, this transaction additionally promised further geographic prominence in the US/Pacific and a stronger position in Europe for Bayer. Bayer is moreover well known for the successful deleveraging of their acquired firms to accomplish an "A" credit rating and maintaining investment grade status (Bayer, 2016a, Aktan, 2019). Synergies valued at $1.5 bn (**Exhibit 12**) were also anticipated after year three, with $1.2 bn being cost synergies, due to planned layoffs of employees, combined R&D strengths, and the optimization of product supply chains, marketing & sales, and R&D departments. The other $300 m account for revenue synergies due to the combined patent portfolio, sophisticated combinations of the product portfolio (**Exhibit 18**), and integrated solutions covering larger geographic areas (Bayer, 2018a). In addition to the motive of significant long-term value creation, an increase in Earnings per Share (EPS) in the first three years after the deal closing was also communicated (Bayer, 2016b). The development and obtention of a new herbicide approval takes 10 years, which additionally motivated the deal, as the patents and products Monsanto can add to Bayer´s product portfolio. According to Bayer, Monsanto's partnerships and joint ventures would help strengthen Bayer´s degree of innovation for its in-house produced products and thus would lead to a reduction in revenue-sharing partnerships. On the contrary, this argument was discarded by the CLSA analyst Connelly, who claims that the merger will lead to Bayer preferring moderate

in-house production instead of innovative partnerships to avoid profit sharing with partners (Varinsky, 2018).

6.3 From the Deal Announcement to the Deal Closure

Even though Monsanto's seed business and Bayer's pesticide agricultural brand didn't have a significant overlap, the union of the two industry's top suppliers was expected to create tension among farmers and politicians. A day after the announcement, Baumann was obliged to soothe investors, whilst most shareholders were against the merger, by ensuring encouraging feedback on the regulatory front, even though both companies had notable overlapping businesses, namely their seeds division. With the regulatory filings beginning, the potential of divestitures was being discussed in businesses that both companies compete in (Bunge, 2016b). On the 12th of October, Bayer successfully syndicated $56.9 bn in an acquisition facility, underwritten by BofA Merrill Lynch, Credit Suisse, Goldman Sachs, HSBC, and JP Morgan, and with more than 20 banks joining the facility, the syndication was oversubscribed by 40%. The oversubscription was interpreted as support and great trust in the transaction as Bayer´s CFO, Johannes Dietsch pointed out (S.E.C., 2016a). The equity component of the deal's financing is announced to be $19 bn, raised through rights issues with subscription rights and the issuance of mandatory convertible notes, of which $4 bn were approved to be raised on the 15th of November by Bayer´s Board. The notes would then mature on the 22nd of November 2019 (S.E.C, 2016b & Bayer, 2016c).

On the 13th of December 2016 the voting on the deal's approval for Monsanto´s shareholders took place with a clear majority of 99% voting in favor of the acquisition, allowing for the next steps to take place in the deal closure process (DW, 2016). Two months later after Trump´s election in November 2016, he started spotlighting companies, which from his point of view did not sufficiently contribute to the US market with the aim to strengthen the US business climate. Followed by that, Bayer promised as a start to the next year, in January 2017 to create

several thousands of new jobs through the merger by keeping 9.000 of the existing Monsanto job positions and adding at least 3.000 new tech positions to gain Trump's sympathy for the regulatory approval on the US front (Bunge & Alessi, 2017). *"What is so fantastic about this combination is that it is not about costs and cutting out significant overlap,[…] it is all about the growth and innovation of two organizations that are highly complementary in terms of product portfolios and regional coverage*" says Bayer´s CEO (Chazan, 2016). Even though Baumann denies cost-cutting as a motive for the merger, he confirms that some overlaps in employee positions will yet lead to layoffs. Also, overlaps in similar products, such as both firms offering a weedkiller, could ring the regulator´s alarm bells.

To prove to regulators that innovation will not suffer under the combined firm´s increased market share and dominance, Bayer predicts an overall sum of $16 bn to be spent in R&D over the upcoming 6 years, which amounts to an annual sum of $2.7 bn. The $ 2.7 bn is nevertheless not far from their current spending, with Monsanto having spent $1.5 bn over the last two years and Bayer having spent $1.17 bn in 2015. These announcements arguably aimed to avoid criticism and get the sympathy and approval of regulatory bodies, even though antitrust lawyers thought that these pledges do not account for the deal review (Bunge & Alessi, 2017). Due to the high scrutiny from diverse antitrust regulators, Bayer agreed in May 2017 to divest its glyphosate herbicide and herbicide-resistant genes to gain among others, South Africa´s regulatory approval.

Now, while Baumann planned to close the deal by the end of 2017, the European Commission stated in August 2017, that they would need until January to finish their work in the completion of the deal. In the same month, their in-depth investigation of the deal started, when in fact the scrutiny resulted from the fear that farmers, who were already pressured by low margins, could get further pressured by higher prices on agricultural products, as confirmed by the EU antitrust chief Margarethe Vestager saying, "They need to ensure effective competition". The greater

public also showed an unusually strong negative reaction to the Bayer/Monsanto merger and expressed their concern about further consolidation in the seeds market, by sending millions of petitions, emails, and tweets to the Director of Competition Department of the European Commission (Deconinck, 2019). Baumann and Grant pitched the deal as a way to enable more innovation for new chemicals and seed genes to discard the opposing anxiety of narrowed options for farmers. Meanwhile, the Dow/DuPont and ChemChina/Syngenta merger were approved by various antitrust bodies, by making significant divestitures in 2017 (Drozdiak & Bunge, 2017).

In an effort to please authorities further, Bayer officially agreed in October 2017 to sell parts of its crop-science division for $5.7 bn and transfer 1,800 employees to its competitor BASF. The net proceeds from this divestiture were planned to be used to finance a part of the acquisition price of Monsanto (Shevlin & Drozdiak, 2017). Bayer´s efforts seem to have paid off, as proven in December 2017, when the Committee on Foreign Investment in the US (CFIUS) completed its review and concluded, that there is no national security concern for the proposed merger (Bayer, 2017a). In early 2018, Bayer then clarified their intent of wanting to sell even more assets for complete antitrust approval (Turner & Droszdiak, 2018).

On the 21st of March 2018, conditional approval of the European Commission marked a milestone in the completion of the merger. By then, more than half of the approximately 30 required approvals of regulatory bodies were granted (Bayer, 2018a). A month later, the US Justice Department also eventually decided to permit the deal after further divestiture pledges amounting to $9bn in assets. The sum of $9 bn represents the largest amount in divestitures for a US merger approval in history and proves how great the fear of declining competition and thus fewer choices but higher prices in the industry, was estimated. The to-be-divested assets generated €2.2 bn in sales in 2017, while the divestitures played a more important role to authorities than any other post-merger promises. The US approval was interpreted positively

by the market and led moreover to an increase in Monsanto´s SP of 6%. Bayer was ultimately required to sell its competing product to Monsanto´s herbicide "Roundup", Liberty, its cotton, canola, soybean, and vegetable seed business, and also its digital data-driven farming advice agricultural business (Kendall & Bunge, 2018; Kendall, 2018). At this point, the chief executives aimed to close the deal by the end of the second quarter of 2018, while Grant and numerous other Monsanto Executives publicized to leave upon deal completion (Reuters, 2018).

Monsanto's stock stopped being traded on the New York stock exchange on the 7th of June 2018, when Bayer successfully closed the deal and became the sole owner of the company. With Bayer´s intention to double the size of the agricultural business, the integration of Monsanto was anticipated to take place in a time frame of only two months later, upon fulfillment of the divestments (Bayer 2018b; Bayer, 2018c). The deal´s refinancing and, thus the repayment of the syndicated credit facility was then also ultimately fulfilled with the issuance of bonds, worth € 20 billion on the Luxembourg Stock Exchange on the 19th of June. The demand for these bonds with a four times high oversubscription confirmed once again Bayer´s highly reputable position on the capital markets (Bayer, 2018d; Bayer, 2018e). The deal was the largest all-cash takeover bid on record. Considering all the risks, which were anticipated in terms of regulatory hurdles due to the strictly regulated industry, the payment decision left shareholders wondering why Bayer ended up picking a pure cash transaction as the preferred payment method (Reuter, 2016).

7.0 Monsanto´s Bestselling Product: "Roundup"

In a historic dispute over whether two of Monsanto´s strong weed killers: "RangerPro" and "Roundup" caused cancer, a jury decided against Monsanto´s favor on the 10th of August 2018. In the court case, Mr. Johnson was granted $ 289.2 million of compensation for his cancer diagnosis, which has been associated with Roundup. Monsanto, now part of Bayer was found

to be guilty, as the jury claims that the firm should have known about the substantial danger, their products presented. Even though Monsanto decided to appeal against the conviction, the case gaining increasing public attention revealed internal communication between Monsanto´s employees confirming their awareness about the dangerous properties of the products. Further suspicion revolves around insufficient testing of glyphosate and "ghostwriting" of favorable scientific reports. Monsanto´s Vice President, Scott Partridge defends their position with previous studies and US authorities' results, showing that glyphosate as the main ingredient in the weedkillers which were seen as safe to use for the past 40 years are not cancer-causing. This lawsuit brings forward the already in 2015 voiced determination by the WHO of the cancer-causing capabilities of the products. Even though Glyphosate was previously listed by the US Environmental Protection Agency in 1985 as possibly human carcinogenic, it was in some way later than reclassified in 1991 (Armental, 2018; Liu, 2019). Mr. Johnson seems to be not the only plaintiff filing a suit and if glyphosate is officially declared as carcinogenic, then Monsanto´s agricultural division can be at risk, making up 5% of the combined firm´s profit. Nevertheless, Bayer argues that around 800 studies proved that the chemical is safe, and specifically the results of a study by the National Cancer Institute with approximately 45,000 glyphosate pesticides, showed no correlation between the alleged toxin and cancer. This result was once again confirmed by an assessment by the Environmental Protection Agency, conducted in 2017, which Bayer uses in their defense (Wilmot, 2018; Bender & Allen, 2018). Nevertheless, their defense was harmed when the so-called "Monsanto Papers" were leaked in 2017, which shed light on the steps Monsanto has taken to preserve the reputation of popular products like Roundup as a secure weedkiller at any cost. Among other things, the papers include email traffic from Monsanto from 2003, where one executive wrote "You cannot say that Roundup is not a carcinogen (...) we have not done the necessary testing on the formulation to make that statement". In another mail, the chief toxicologist expresses her concerns and

writes: "What we have long feared has now come to pass. Glyphosate is now under investigation by the International Agency for Research on Cancer (IARC)" (Hakim, 2017). Monsanto's chief executive at the time, called the IARC´s work publicly "junk science". Even before that, Monsanto had repeatedly attempted to discredit researchers who tried to establish a link between Monsanto's products and cancer (Bethge, 2017).

9.0 Conclusion

Even though Bayer was able to acquire Monsanto and receive approval from all regulatory agencies, to become the world's largest pesticide and seed company, it is still unclear whether the merger will successfully create value for Bayer's shareholders and whether they made the right decision. Especially with Monsanto´s reputation, repeated controversies of participating in unethical business operations, and even being named one of the most hated companies according to a US study in 2016, it seems as if Bayer knowingly intended to absorb a damaged brand and thus risked to face public relation, financial and restructuring challenges (Roumeliotis & Burger, 2016; Reid, 2016). Bayer still has to overcome numerous hurdles to justify the purchase price and ensure successful post-merger integration. If they fail to do so, the bad reputation of Monsanto and potentially significant costs arising from the lawsuits related to glyphosate could significantly impact the future viability of the traditional German company.

References - Case Study

Alessi, Christopher (2015). "Bayer Separates Material Science Business Covestro". Retrieved 09.05.2023 from https://www.wsj.com/articles/bayer-separates-material-science-business-covestro-1441121859

Aktan, Bora (2019). "The impact of credit ratings on Capital Structure". ISRA International Journal of Islamic Finance. Retrieved 09.04.2023 from https://www.emerald.com/insight/content/doi/10.1108/IJIF-03-2018-0028/full/html.

Armental, Maria (2018). "Monsanto Hit by $289 Million Verdict in Cancer Case". Retrieved 25.04.2023 from https://www.wsj.com/articles/monsanto-hit-by-289-million-verdict-in-cancer-case-1533949524.

Atkins, Ralph (2019). "Lex In Depth: Bayer's €50bn Blunder". Retrieved 25.02.2023 from https://www.ft.com/content/a139ef68-b07c-11e9-bec9-fdcab53d6959.

Bender, Par Ruth & **Allen**, Nathalie (2018). "Bayer Tallies Up More Weedkiller Lawsuits." Retrieved 23.04.2023 from https://www.lopinion.fr/economie/bayer-tallies-up-more-weedkiller-lawsuits.

Bethge, Philip (2017). "Monsanto Faces Blowback Over Cancer Cover-Up."Retrieved 24.04.2023 from https://www.spiegel.de/international/world/monsanto-papers-reveal-company-covered-up-cancer-concerns-a-1174233.html.

Bayer (2018a). "Monsanto Acquisition Update." Retrieved 09.04.2023 from https://www.bayer.com/sites/default/files/Bayer_Investor_Presentation_Monsanto_Acquisition_Update_June_2018_final.pdf.

Bayer (2018b). "Annual Report 2018." Retrieved 26.04.2023 from https://www.bayer.com/sites/default/files/bayer_ar18_entire.pdf.

Bayer (2016a). "Bayer Offers to Acquire Monsanto for USD 122 per Share in Cash to Create a Global Leader in Agriculture." Retrieved 23.02.2023 from https://www.bayer.com/sites/default/files/2020-11/Ad-hoc_2016-05-23_e.pdf.

Bayer (2016b). "Bayer and Monsanto to Create a Global Leader in Agriculture." Retrieved 16.04.2023 from https://www.bayer.com/sites/default/files/2020-11/Ad-hoc_2016-09-14_e.pdf.

Bayer (2016c). "Bayer to issue mandatory convertible notes." Retrieved 20.04.2023 from https://www.bayer.com/sites/default/files/2020-11/Ad-hoc_2016-11-15_e.pdf.

Bayer (2016d). "Investor presentation – Crop Science." Retrieved 14.04.2023 from https://www.slideshare.net/BayerAG/bayer-ag-meet-management-2016-investor-handout.

Bayer (2017a). "CFIUS completes review of proposed merger of Bayer and Monsanto." Retrieved 23.04.2023 from https://www.bayer.com/en/id/cfius-completes-review-of-proposed-merger-of-bayer-and-monsanto.

Bayer (2018a). "European Commission conditionally approves Bayer's proposed acquisition of Monsanto." Retrieved 23.04.2023 from https://www.bayer.com/media/en-us/european-commission-conditionally-approves-bayers-proposed-acquisition-of-monsanto/.

Bayer (2018b). "Bayer plans closing of Monsanto acquisition on June 7." Retrieved 23.04.2023 from https://www.bayer.com/media/en-us/bayer-plans-closing-of-monsanto-acquisition-on-june-7/.

Bayer (2018c). "Bayer closes Monsanto acquisition." Retrieved 23.04.2023 from https://www.bayer.com/media/en-us/bayer-closes-monsanto-acquisition/#:~:text=Leverkusen%2C%20June%207%2C%202018%20%2D,sole%20owner%20of%20Monsanto%20Company.

Bayer (2018d). "Bayer concludes refinancing of the Monsanto acquisition by placing bonds with a volume of 5 billion euros." Retrieved 25.04.2023 from

https://www.bayer.com/media/en-us/bayer-concludes-refinancing-of-the-monsanto-acquisition-by-placing-bonds-with-a-volume-of-5-billion-euros/.

Bayer (2018e). "Bayer issues new bonds with a volume of 15 billion U.S. dollars." Retrieved 25.04.2023 from https://www.bayer.com/media/en-us/bayer-issues-new-bonds-with-a-volume-of-15-billion-us-dollars/.

Bayer (2018f). "Monsanto Acquisition Update." Retrieved 25.04.2023 from https://www.bayer.com/sites/default/files/Bayer_Investor_Presentation_Monsanto_Acquisition_Update_June_2018_final.pdf.

Bayer (2023). "Werner Baumann." Retrieved 13.05.2023 from https://www.bayer.com/de/vorstand/werner-baumann.

Bayer (n.d.). "Reputation & Impact." Retrieved 20.03.2023 from https://www.bayer.com/en/us/career/reputationandimpact.

Bunge, Jacob (2016a). "Monsanto Mum on Bayer Deal as Profit, Sales Slip." Retrieved 10.04.2023 from https://www.wsj.com/articles/monsanto-mum-on-bayer-deal-as-profit-sales-slip-1467205138?mod=wsjde_finanzen_wsj_barron_tickers.

Bunge, Jacob (2016b). "Bayer-Monsanto Deal Faces Heavy Regulatory Scrutiny." Retrieved 18.04.2023 from https://www.wsj.com/articles/bayer-monsanto-deal-faces-heavy-regulatory-scrutiny-1473855922.

Bunge, Jacob & **Henning**, Eyk (2016a). "Monsanto Turns Back Bayer Again." Retrieved 10.04.2023 from https://www.wsj.com/articles/monsanto-rebuffs-new-approach-from-bayer-1465582518.

Bunge, Jacob & **Henning**, Eyk (2016b). "Monsanto Rejects Bayer's Sweetened Merger Offer." Retrieved 10.04.2023 from https://www.wsj.com/articles/monsanto-rebuffs-bayers-sweetened-merger-offer-1468930702.

Burger, Ludwig & **Prodhan**, Georgina (2016). "Bayer defies critics with $62 billion Monsanto offer." Retrieved 17.05.2023 from https://www.reuters.com/article/us-monsanto-m-a-bayer-idUSKCN0YE0DZ.

Businesswire (2017). "Global Agrochemicals Market Analysis 2014-2025 By Product (Fertilizers, Crop Protection Chemicals, Plant Growth Regulators) & Application (Cereals & Grains, Oilseeds & Pulses, Fruits & Vegetables) - Research and Markets". Retrieved 16.05.2023 from https://www.businesswire.com/news/home/20170717005537/en/Global-Agrochemicals-Market-Analysis-2014-2025-By-Product-Fertilizers-Crop-Protection-Chemicals-Plant-Growth-Regulators-Application-Cereals-Grains-Oilseeds-Pulses-Fruits-Vegetables---Research-and-Markets.

Crowe, Portia (2016). "Monsanto has rejected a $62 billion takeover offer". Retrieved 09.04.2023 from https://www.businessinsider.com/monsanto-rejects-bayer-offer-2016-5.

Chazan, Guy (2016). "Bayer targets one-stop shop with Monsanto." Retrieved 09.04.2023 from https://www.ft.com/content/3d972e64-7a5e-11e6-ae24-f193b105145e.

Cruise, Sinead (2016). "Henderson calls for investor vote on Bayer's takeover of Monsanto." Retrieved 09.04.2023 from https://www.reuters.com/article/us-bayer-monsanto-henderson-group-m-a-idUSKCN0ZZ0LU.

Deconinck, Koen (2019). "From Big Six to Big Four." Retrieved 17.04.2023 from https://www.seedworld.com/from-big-six-to-big-four/#:~:text=Over%20the%20past%20three%20decades,positions%20in%20seed%20and%20biotechnology.

Dewey, Caitlin (2018). "Why 'Monsanto' Is No More." Retrieved 17.05.2023 from https://www.washingtonpost.com/news/wonk/wp/2018/06/04/why-monsanto-is-no-more/.

Divac, Natascha (2016). "Bayer Shares Lifted by Reported Monsanto Interest." Retrieved 29.03.2023 from https://www.wsj.com/articles/bayer-shares-lifted-by-reported-monsanto-interest-1458566413.

Dostert, Elisabeth (2019). "Die Chronik eines Desasters." Retrieved 26.02.2023 from https://www.sueddeutsche.de/wirtschaft/bayer-monsanto-zusammenfassung-1.4419987#:~:text=Monsanto%2D%C3%9CbernahmeDie%20Chronik%20eines%20Desasters&text=Die%20Geschichte%20eines%20Wertverfalls.&text=63%20Milliarden%20Dollar%20hat%20der,deutscher%20Konzern%20je%20geleistet%20hat.

Drozdiak, Natalia & **Bunge**, Jacob (2018). "Bayer's Big Move Triggers 'Doubts'." Retrieved 23.04.2023 from https://www.foxbusiness.com/features/bayers-big-move-triggers-doubts-wsj.

DW (2016). "Monsanto shareholders OK Bayer merger." Retrieved 20.04.2023 from https://www.dw.com/en/monsanto-shareholders-approve-merger-with-bayer/a-36754523#:~:text=The%20proposed%20merger%20between%20Monsanto,by%20the%20end%20of%202017.

Hakim, Danny (2017). "Monsanto Emails Raise Issue of Influencing Research on Roundup Weed Killer." Retrieved 24.04.2023 from https://www.nytimes.com/2017/08/01/business/monsantos-sway-over-research-is-seen-in-disclosed-emails.html.

Henning, Eyk; **Bunge**, Jacob & **Alessi**, Christopher (2016). "Bayer Makes New Offer for Monsanto." Retrieved 11.04.2023 from https://www.wsj.com/articles/bayer-makes-new-offer-for-monsanto-1468512577.

Kendall, Brent & **Bunge**, Jacob (2018). "U.S. to Allow Bayer's Monsanto Takeover." Retrieved 24.04.2023 from https://www.wsj.com/articles/justice-department-to-allow-bayers-acquisition-of-monsanto-after-company-concessions-1523297010.

Kendall, Brent (2018). "Bayer to Sell $9 Billion in Assets to Get Green Light for Monsanto Deal." Retrieved 24.04.2023 from https://www.wsj.com/articles/justice-department-approves-bayer-monsanto-deal-but-requires-asset-sales-1527611108.

Kuchler, Hannah & **Storbeck**, Olaf (2023). "Activist investor ramps up pressure on incoming Bayer boss." Retrieved 24.04.2023 from https://www.ft.com/content/164c83e2-270c-4433-b30b-fcbd1b1d2057.

Kumar, B. Rajesh (2019). "Wealth Creation in the World's Largest Mergers and Acquisitions: Integrated Case Studies." Springer. DOI: 10.1007/978-3-030-02363-8_33.

KPMG (2016). "Eight key trends driving M&A in Agribusiness." Retrieved on 23.02.2023 from https://assets.kpmg.com/content/dam/kpmg/sg/pdf/2017/01/Eight-key-trends-driving-MA-in-Agribusiness.pdf.

Liu, Angus (2019). "Worst deal ever? Bayer's market cap now close to the total cost it paid for Monsanto." Retrieved 23.04.2023 from https://www.fiercepharma.com/pharma/worst-deal-ever-bayer-s-market-cap-now-close-to-total-cost-it-paid-for-monsanto**.**

Pierson, Brendon (2022). "Revival of Roundup weedkiller cancer case to be examined by full appeals court." Retrieved 26.02.2022 from https://www.reuters.com/legal/litigation/revival-Roundup-weedkiller-cancer-case-be-examined-by-full-appeals-court-2022-12-20/.

Reuters (2013). "Monsanto, DuPont strike $1.75 billion licensing deal, end lawsuits." Retrieved 23.02.2023 from https://www.reuters.com/article/us-monsanto-dupont-gmo-idUSBRE92P0IK20130326.

Reuters (2016). "RPT-UPDATE 4-Bayer sweetens Monsanto bid as talks enter final stretch." Retrieved 15.04.2023 from https://www.reuters.com/article/monsanto-ma-bayer-idINL1N1BH14P.

Reuters (2018). "BRIEF-Monsanto CEO Announces Intent to Leave Co Upon Closing of Bayer Acquisition." Retrieved 24.04.2023 from https://www.reuters.com/article/brief-monsanto-ceo-announces-intent-to-l-idINASC0A02T.

Roumeliotis, Greg & **Burger**, Ludwig (2016). "Bayer clinches Monsanto with improved $66 billion bid." Retrieved 24.03.2022 from https://www.reuters.comarticle/us-monsanto-m-a-bayer-deal-idUSKCN11K128.

Schneider, Keith (1990). "Betting the farm on biotech." Retrieved 24.03.2023 from https://www.nytimes.com/1990/06/10/magazine/betting-the-farm-on-biotech.html.

S.E.C. (2016a). "Bayer successfully closed syndication of USD 56.9 billion acquisition facilities." Retrieved 18.04.2023 from https://www.sec.gov/Archives/edgar/data/1110783/000110465916149809/a16-12008_44ex99d1.htm.

S.E.C. (2016b). "Monsanto Company." Retrieved 20.04.2023 from https://www.sec.gov/Archives/edgar/data/1110783/000119312516712356/d243622ddefa14a.htm.

Shevlin, Anthony & **Drozdiak**, Natalia (2017). "Bayer to Sell Assets to BASF for $7 Billion Amid Scrutiny of Monsanto Megadeal." Retrieved 23.04.2023 from https://www.wsj.com/articles/bayer-to-sell-assets-to-basf-for-7-billion-subject-to-monsanto-acquisition-1507877275.

Statista (2023). "Monsanto - statistics & facts." Retrieved on 25.02.2023 from https://www.statista.com/topics/2046/monsanto/.

Storbeck, Olaf (2023). "New Bayer chief says all options on table after investors push for break-up." Retrieved 27.04.2023 from https://www.ft.com/content/47b62eec-c87f-47de-9243-de7470a98358.

Temple-West, Patrick & **Mundy,** Simon (2023). "Activist Jeff Ubben discovers a 'jewel' at Bayer." Retrieved 24.04.2023 from https://www.ft.com/content/030a6812-199b-4f44-bb27-03ca4ef2c8e6.

Terazono, Emiko & **Massoudi**, Arash (2016). "Bayer-Monsanto would be latest deal to shake up agribusiness." Retrieved 17.04.2023 from https://www.ft.com/content/e5095826-1856-11e6-bb7d-ee563a5a1ccl.

Thomas, Patrick (2022). "Bayer Hits Courtroom Winning Streak as It Battles Remaining Roundup Lawsuits." Retrieved 26.04.2023 from https://www.wsj.com/articles/bayer-hits-courtroom-winning-streak-as-it-battles-remaining-Roundup-lawsuits-11664875982.

Turner, Zeke & **Drozdiak**, Natalia (2018, March 1). "Bayer to Sell More Assets to Win Approval for Monsanto Deal." Retrieved 24.04.2023 from https://www.wsj.com/articles/bayer-to-sell-more-assets-to-win-approval-for-monsanto-deal-1519821347.

Varinsky, Dana (2018). "The $66 billion Bayer-Monsanto merger just got a major green light—But farmers are terrified." Retrieved on 26.03.2023 from https://www.businessinsider.com/bayer-monsanto-merger-has-farmers-worried-2018-4.

Wall Street Journal (2001). "Aventis, Schering Confirm Talks with Bayer Over Crop Science Sale." Retrieved 28.03.2023 from https://www.wsj.com/articles/SB994744101990151635.

Whipp, Lindsay (2015). "Third time unlucky for Monsanto's Hugh Grant." Retrieved 16.04.2023 from https://www.ft.com/content/fbb4de60-4d8b-11e5-9b5d-89a026fda5c9.

Wilmot, Stephen (2018). "Monsanto Gives Investors a New Reason to Avoid Bayer." Retrieved 29.03.2023 from https://www.wsj.com/articles/monsanto-gives-investors-a-new-reason-to-avoid-bayer-1534179293.

WSJ Staff (2016). "Monsanto Shares Soar After Reports of Potential Bids by Rivals; Bayer and BASF exploring bids for seeds and pesticide maker, according to reports." Retrieved 29.03.2023 from https://www.wsj.com/articles/monsanto-shares-soar-after-reports-of-potential-bids-by-rivals-1463062376.

Zacks (2018). "A Quick Overview of the Bayer-Monsanto Merger After DOJ Approval." Retrieved 13.04.2023 from https://www.nasdaq.com/articles/quick-overview-bayer-monsanto-merger-after-doj-approval-2018-05-30.

Appendix

Exhibit 1 - Monsanto balance sheet

Balance Sheet (in $m)	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Assets					
Non-current assets					
Long-term investments	175.0	89.0	91.0	204.0	246.0
Goodwill	3,435.0	3,520.0	4,319.0	4,061.0	4,020.0
Other intangibles	1,237.0	1,226.0	1,554.0	1,332.0	1,125.0
Accounts receivable long-term	376.0	237.0	11.0	36.0	32.0
Deferred tax assets, lt	551.0	454.0	450.0	277.0	613.0
Other long-term assets	427.0	407.0	736.0	412.0	312.0
Gross property, plant & equipment	8,835.0	9,491.0	10,357.0	10,428.0	11,116.0
Accumulated depreciation	(4,470.0)	(4,837.0)	(5,275.0)	(5,455.0)	(5,885.0)
Net property, plant & equipment	**4,365.0**	**4,654.0**	**5,082.0**	**4,973.0**	**5,231.0**
Total non-current assets	**10,566.0**	**10,587.0**	**12,243.0**	**11,295.0**	**11,579.0**
Current assets					
Inventory	2,839.0	2,947.0	3,597.0	3,496.0	3,241.0
Deferred tax assets, curr.	534.0	579.0	635.0	743.0	-
Restricted cash	120.0	140.0	118.0	112.0	122.0
Other current assets	201.0	175.0	227.0	199.0	499.0
Accounts receivable	1,897.0	1,715.0	2,014.0	1,636.0	1,926.0
Other receivables	602.0	739.0	795.0	801.0	755.0
Total receivables	**2,499.0**	**2,454.0**	**2,809.0**	**2,437.0**	**2,681.0**
Cash and equivalents	3,163.0	3,528.0	2,249.0	3,589.0	1,554.0
Short term investments	302.0	254.0	40.0	47.0	60.0
Trading asset securities		-	-	2.0	-
Total cash & st investments	**3,465.0**	**3,782.0**	**2,289.0**	**3,638.0**	**1,614.0**
Total current assets	9,658.0	10,077.0	9,675.0	10,625.0	8,157.0
Total assets	**20,224.0**	**20,664.0**	**21,918.0**	**21,920.0**	**19,736.0**
Liabilities					
Non current liabilities					
Long-term debt	2,038.0	2,061.0	7,465.0	8,429.0	7,453.0
Unearned revenue, non-current	245.0	138.0	47.0	47.0	35.0
Pension & other post-retire. benefits	543.0	357.0	345.0	336.0	371.0
Def. tax liability, non-curr.	313.0	469.0	509.0	340.0	68.0
Other non-current liabilities	828.0	575.0	526.0	586.0	535.0
Total non-current liabilities	**3,967.0**	**3,600.0**	**8,892.0**	**9,738.0**	**8,462.0**
Current liabilities					
Accounts payable	794.0	995.0	1,111.0	836.0	1,006.0
Accrued exp.	2,685.0	2,430.0	2,888.0	2,579.0	2,873.0
Short-term borrowings	32.0	40.0	221.0	307.0	572.0
Current portion of long-term debt	4.0	11.0	12.0	308.0	1,056.0
Curr. income taxes payable	75.0	91.0	99.0	234.0	41.0
Unearned revenue, current	396.0	517.0	438.0	370.0	568.0
Other current liabilities	235.0	252.0	343.0	543.0	613.0
Total current liabilities	**4,221.0**	**4,336.0**	**5,112.0**	**5,177.0**	**6,729.0**
Total liabilities	**8,188.0**	**7,936.0**	**14,004.0**	**14,915.0**	**15,191.0**
Equity					
Common stock	6.0	6.0	6.0	6.0	6.0
Additional paid in capital	10,371.0	10,783.0	10,003.0	11,464.0	11,626.0
Retained earnings	5,537.0	7,188.0	9,012.0	10,374.0	10,763.0
Treasury stock	(3,045.0)	(4,140.0)	(10,032.0)	(12,053.0)	(15,053.0)
Comprehensive inc. and other	(1,036.0)	(1,278.0)	(1,114.0)	(2,801.0)	(2,808.0)
Total common equity	**11,833.0**	**12,559.0**	**7,875.0**	**6,990.0**	**4,534.0**
Minority interest	203.0	169.0	39.0	15.0	11.0
Total equity	**12,036.0**	**12,728.0**	**7,914.0**	**7,005.0**	**4,545.0**
Total liabilities and equity	**20,224.0**	**20,664.0**	**21,918.0**	**21,920.0**	**19,736.0**

Source: Adapted from S&P Capital IQ, accessed 18.02.2023

Exhibit 2 – Monsanto income statement

Income statement (in $m)	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Net sales	**13,504.0**	**14,861.0**	**15,855.0**	**15,001.0**	**13,502.0**
Cost of goods sold	6,453.0	7,208.0	7,251.0	6,719.0	6,418.0
Gross profit	**7,051.0**	**7,653.0**	**8,604.0**	**8,282.0**	**7,084.0**
Selling general & admin exp.	1,746.0	1,934.0	2,060.0	1,970.0	1,826.0
R & D exp.	1,454.0	1,533.0	1,716.0	1,580.0	1,512.0
EBITDA	**3,851.0**	**4,186.0**	**4,828.0**	**4,732.0**	**3,746.0**
Depreciation & amort.	622.0	615.0	691.0	716.0	727.0
EBIT	**3,229.0**	**3,571.0**	**4,137.0**	**4,016.0**	**3,019.0**
Interest:					
Interest expense	(191.0)	(172.0)	(248.0)	(433.0)	(436.0)
Interest and invest. income	77.0	92.0	102.0	105.0	74.0
Others:					
Income/(loss) from affiliates	10.0	15.0	(8.0)	(13.0)	(12.0)
Currency exchange gains (loss)	(21.0)	41.0	(1.0)	(73.0)	(217.0)
Other non-operating inc. (exp.)	(35.0)	(117.0)	(93.0)	52.0	52.0
Restructuring charges		-	-	(493.0)	(364.0)
Merger & related restruct. charges	(1.0)	(1.0)	(18.0)	-	-
Gain (loss) on sale of invest.		-	-	-	(2.0)
Gain (loss) on sale of assets		-	-	-	157.0
Asset writedown	(80.0)	-	(44.0)	-	-
Legal settlements	-	-	-	-	(280.0)
EBT	**2,988.0**	**3,429.0**	**3,827.0**	**3,161.0**	**1,991.0**
Income tax expense	901.0	915.0	1,078.0	864.0	695.0
Earnings from cont. ops.	**2,087.0**	**2,514.0**	**2,749.0**	**2,297.0**	**1,296.0**
Earnings of discontinued ops.	6.0	11.0	13.0	28.0	17.0
Net income	**2,093.0**	**2,525.0**	**2,762.0**	**2,325.0**	**1,313.0**
Minority int. in earnings	(48.0)	(43.0)	(22.0)	(11.0)	23.0
Net income attributable to monsanto company	**2,045.0**	**2,482.0**	**2,740.0**	**2,314.0**	**1,336.0**

Source: Adapted from S&P Capital IQ, accessed 18.02.2023

Exhibit 3 - Monsanto Cash flow statement

Income statement (in $m)	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Net income	**2,045.0**	**2,482.0**	**2,740.0**	**2,314.0**	**1,336.0**
Depreciation & amort.	498.0	504.0	555.0	573.0	611.0
Amort. of goodwill and intangibles	124.0	111.0	136.0	143.0	116.0
Depreciation & amort., total	**622.0**	**615.0**	**691.0**	**716.0**	**727.0**
(Gain) loss from sale of assets	6.0	-	11.0	43.0	(154.0)
Asset writedown & restructuring costs	-	-	-	276.0	147.0
(Income) loss on equity invest.	(19.0)	(17.0)	4.0	7.0	15.0
Stock-based compensation	128.0	100.0	120.0	111.0	111.0
Tax benefit from stock options	(50.0)	(79.0)	(72.0)	(44.0)	(16.0)
Provision & write-off of bad debts	3.0	27.0	41.0	45.0	152.0
Net cash from discontinued ops.	(10.0)	(17.0)	(22.0)	(45.0)	(27.0)
Other operating activities	303.0	142.0	173.0	(142.0)	255.0
Change in acc. receivable	170.0	222.0	(172.0)	68.0	(498.0)
Change in inventories	(427.0)	(192.0)	(650.0)	(425.0)	181.0
Change in acc. payable	439.0	(104.0)	709.0	235.0	176.0
Change in unearned rev.	(39.0)	50.0	(163.0)	32.0	189.0
Change in other net operating assets	(120.0)	(489.0)	(356.0)	(83.0)	(6.0)
Cash from ops.	**3,051.0**	**2,740.0**	**3,054.0**	**3,108.0**	**2,588.0**
Capital expenditure	(646.0)	(741.0)	(1,005.0)	(967.0)	(923.0)
Cash acquisitions	(322.0)	(165.0)	(922.0)	(8.0)	(2.0)
Divestitures	-	-	-	-	-
Sale (purchase) of intangible assets	(77.0)	(88.0)	(403.0)	(48.0)	(69.0)
Invest. in marketable & equity securt.	11.0	217.0	235.0	4.0	130.0
Net (inc.) dec. in loans originated/sold	-	-	-	-	-
Other investing activities	-	-	-	-	-
Cash from investing	**(1,034.0)**	**(777.0)**	**(2,095.0)**	**(1,019.0)**	**(864.0)**
Short term debt issued	30.0	126.0	88.0	102.0	725.0
Long-term debt issued	499.0	32.0	5,479.0	1,279.0	9.0
Total debt issued	**529.0**	**158.0**	**5,567.0**	**1,381.0**	**734.0**
Short term debt repaid	(158.0)	(29.0)	(24.0)	(36.0)	(272.0)
Long-term debt repaid	(629.0)	(2.0)	(7.0)	(107.0)	(306.0)
Total debt repaid	**(787.0)**	**(31.0)**	**(31.0)**	**(143.0)**	**(578.0)**
Issuance of common stock	117.0	257.0	248.0	137.0	81.0
Repurchase of common stock	(451.0)	(1,105.0)	(7,091.0)	(871.0)	(3,025.0)
Common dividends paid	(642.0)	(802.0)	(904.0)	(938.0)	(964.0)
Total dividends paid	**(642.0)**	**(802.0)**	**(904.0)**	**(938.0)**	**(964.0)**
Special dividend paid	-	-	-	-	-
Other financing activities	69.0	38.0	(48.0)	4.0	10.0
Cash from financing	**(1,165.0)**	**(1,485.0)**	**(2,259.0)**	**(430.0)**	**(3,742.0)**
Foreign exchange rate adj.	(141.0)	(93.0)	(1.0)	(325.0)	(7.0)
Net change in cash	**711.0**	**385.0**	**(1,301.0)**	**1,334.0**	**(2,025.0)**

Source: Adapted from S&P Capital IQ, accessed 18.02.2023

Exhibit 4 - Current market rates, August 31, 2016

Us treasury yields		**German government bunds**	
Maturity	**Yield**	**Maturity**	**Yield**
6 month	0.47%	6 month	-0.55%
1 year	0.61%	1 year	-0.61%
2 years	0.80%	2 years	-0.62%
3 years	0.92%	3 years	-0.62%
5 years	1.19%	5 years	-0.55%
10 years	1.58%	10 years	-0.12%
30 years	2.23%	30 years	0.53%

Source: Bloomberg; Federal Reserve, selected Interest Rates (Daily)-H.15;German Govt BUNDs BVAL Yield Curve

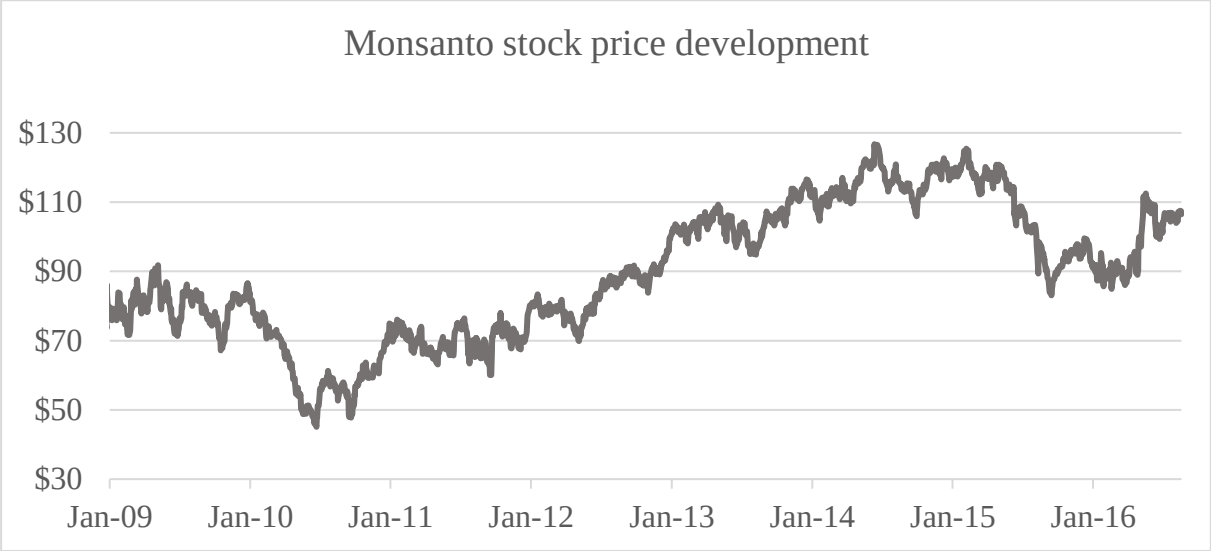
Exhibit 5 - Market portfolio

01.01.2009 - 31.08.2016	Annualized return	Beta
Monsanto	4.81%	1.00
S&P 500	11.05%	0.88
DAX	5.95%	0.40
EURO STOXX Health Care Index	5.69%	0.38

Source: Bloomberg, accessed 18.02.2023

Exhibit 6 - Stock data

As of 31.08.2016:	Market capitalization (in $m)	Share price (in $)	Shares outstanding (in $m)	Cost of debt (in%)
Monsanto	46,645.1	106.5	438.0	2.52%
Bayer	87,296.1	105.6	826.9	2.44%



Source: Bloomberg and S&P CapIQ, accessed 18.02.2023

Exhibit 7 - Global seed market size, shares, and CAGR (in 2013)

Company	**Market share (in %)**	**Market share (in mn $)**
Monsanto	**26.0%**	**10,340.0**
DuPont (Pioneer)	21.0%	8,351.5
Syngenta	8.0%	3,181.5
Limagrain	5.0%	1,988.5
DowAgroSciences	4.0%	1,590.8
KWS	4.0%	1,590.8
Bayer CropScience	3.0%	1,193.1
All others	29.0%	11,533.1
Total	100.0%	39,769.2
CAGR	**6.2%**	

Sources: ETC Report 2015, Vantage Market Research, Fortune Business Insights

Exhibit 8 - Global pesticide market size, shares and CAGR (in 2013)

Company	**Market share (in %)**	**Market share (in mn $)**
Syngenta	20.0%	11,302.5
Bayer CropScience	18.0%	10,172.3
BASF	13.0%	7,346.6
Dow AgroSciences	10.0%	5,651.3
Monsanto	**8.0%**	**4,521.0**
DuPont	6.0%	3,390.8
All others	25.0%	14,128.1
Total	100.0%	56,512.5
CAGR	**2.6%**	

Sources: ETC Report 2015, Vantage Market Research, Fortune Business Insights

Exhibit 9 - Key Stats

For the fiscal period ending	12 months Aug-31-2012A	12 months Aug-31-2013A	12 months Aug-31-2014A	12 months Aug-31-2015A	12 months Aug-31-2016A
Currency	*USD*	*USD*	*USD*	*USD*	*USD*
Total revenue	**13,504.0**	**14,861.0**	**15,855.0**	**15,001.0**	**13,502.0**
Growth over Pprior year	*14.2%*	*10.0%*	*6.7%*	*(5.4%)*	*(10.0%)*
Gross profit	**7,051.0**	**7,653.0**	**8,604.0**	**8,282.0**	**7,084.0**
Margin %	*52.2%*	*51.5%*	*54.3%*	*55.2%*	*52.5%*
EBITDA	**3,851.0**	**4,186.0**	**4,828.0**	**4,732.0**	**3,746.0**
Margin %	*28.5%*	*28.2%*	*30.5%*	*31.5%*	*27.7%*
EBIT	**3,229.0**	**3,571.0**	**4,137.0**	**4,016.0**	**3,019.0**
Margin %	*23.9%*	*24.0%*	*26.1%*	*26.8%*	*22.4%*
Earnings from cont. ops.	**2,087.0**	**2,514.0**	**2,749.0**	**2,297.0**	**1,296.0**
Margin %	*15.5%*	*16.9%*	*17.3%*	*15.3%*	*9.6%*
Net income	**2,045.0**	**2,482.0**	**2,740.0**	**2,314.0**	**1,336.0**
Margin %	*15.1%*	*16.7%*	*17.3%*	*15.4%*	*9.9%*
Diluted EPS excl. extra items[3]	**3.78**	**4.58**	**5.19**	**4.75**	**2.95**
Growth Over Prior Year	*27.7%*	*21.2%*	*13.3%*	*(8.5%)*	*(37.9%)*

Source: Adapted from Capital IQ, accessed 18.02.2023

Exhibit 10 - Segments

For the fiscal period ending	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Currency	*USD*	*USD*	*USD*	*USD*	*USD*
Revenues					
Seeds and genomics - corn seed and traits	5,814.0	6,596.0	6,401.0	5,953.0	5,825.0
Seeds and genomics - soybean seed and traits	1,771.0	1,653.0	2,102.0	2,276.0	2,162.0
Seeds and genomics - cotton seed and traits	779.0	695.0	665.0	523.0	440.0
Seeds and genomics - vegetable seeds	851.0	821.0	867.0	816.0	801.0
Seeds and genomics - all other crops seeds and trai	574.0	575.0	705.0	675.0	760.0
Agricultural productivity	3,715.0	4,521.0	5,115.0	4,758.0	3,514.0
Total revenues	**13,504.0**	**14,861.0**	**15,855.0**	**15,001.0**	**13,502.0**
Gross profit before tax					
Seeds and genomics - corn seed and traits	3,589.0	3,929.0	3,932.0	3,557.0	3,450.0
Seeds and genomics - soybean seed and traits	1,160.0	948.0	1,364.0	1,510.0	1,399.0
Seeds and genomics - cotton seed and traits	585.0	519.0	461.0	408.0	282.0
Seeds and genomics - vegetable seeds	419.0	337.0	401.0	372.0	401.0
Seeds and genomics - all other crops seeds and trai	306.0	350.0	438.0	430.0	542.0
Agricultural productivity	986.0	1,570.0	1,978.0	1,905.0	943.0
Total gross profit before tax	**7,045.0**	**7,653.0**	**8,574.0**	**8,182.0**	**7,017.0**
Operating profit before tax					
Agricultural productivity	477.0	1,048.0	1,323.0	1,249.0	89.0
Seeds and genomics	2,570.0	2,412.0	2,607.0	2,206.0	2,292.0
Total operating profit before tax	**3,047.0**	**3,460.0**	**3,930.0**	**3,455.0**	**2,381.0**
Assets					
Agricultural productivity	4,280.0	4,416.0	4,370.0	4,590.0	3,964.0
Seeds and genomics	15,944.0	16,235.0	17,548.0	17,330.0	15,772.0
Total assets	**20,224.0**	**20,651.0**	**21,918.0**	**21,920.0**	**19,736.0**
Depreciation & amortization					
Agricultural productivity	112.0	120.0	123.0	130.0	134.0
Seeds and genomics	510.0	495.0	568.0	586.0	593.0
Total depreciation & amortization	**622.0**	**615.0**	**691.0**	**716.0**	**727.0**
Capital expenditure					
Agricultural productivity	(153.0)	(122.0)	(174.0)	(205.0)	(196.0)
Seeds and genomics	(493.0)	(619.0)	(831.0)	(762.0)	(727.0)
Total capital expenditure	**(646.0)**	**(741.0)**	**(1,005.0)**	**(967.0)**	**(923.0)**

Source: Adapted from Capital IQ, accessed 18.02.2023

Exhibit 11 - Legal settlements costs Bayer AG (in $m)

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Reported legal settlements costs in conjunction with glyphosate law suits	-	-	285.5	214.2	13,145.8	3,964.1	121.2	-	-	-	-

Source: Bayer AG Annual report 2018-2022, Special Items Crop Science, Litigations/Legal risks

Exhibit 12 - Anticipated synergies and discount rates, 20th September 2016 ($mn)

Synergy breakdown (net EBITDA impact)	1,200.0
Total cost synergies (to be realized within 3 years after 2016, the sum is distributed over the 3 years)	300.0
Total sales synergies (to be realized within 3 years after 2016)	1,500.0
Long term synergies through integrated solutions (to be realized between 2020 and 2026)	1,000.0
"~1.5bn total annual synergies after year three confirmed in due diligence, plus additional synergies from integrated solutions in future years"	
Discount rates	
WACC Bayer (Reported end of year 2015)	7.60%
Riskfree rate (Germany, 30y Bunds yield)	0.53%
Risk premium growth and long term synergies (Case writer assumption due to greater uncertainty of cash flows)	2.00%

Source: Bayer AG Management Handout p. 17 & p.18, Investor Presentation - Crop Science September 20th, 2016

Exhibit 13 - Comparable transactions

Completed date	Target company	Country	Currency	Bidder company	Business description of target company	Revenue LTM	EBITDA LTM	EBIT LTM	Enterprise Value
09.06.2016	Viterra Ltd	Netherlands	EUR	British Columbia Investment	Canadian agribusiness company that specializes in the production and distribution of grain, oilseed, and pulse crops.	21,186	672	480	5,500
04.12.2015	Dümmen Orange	Netherlands	EUR	BC Partners LLP	Dutch horticulture company producing and breeding ornamental plants, cut flowers, and potted plants.	165	45		503
10.11.2015	Pharmaq AS	Norway	EUR	Zoetis Inc.	Norwegian pharmaceutical company producing vaccines and health products for aquaculture.	63	15	13	695
18.02.2015	New Britain Palm Oil Limited	Papua New Guinea	EUR	Sime Darby Berhad	Malaysian palm oil company producing sustainable palm oil and related products.	406	109	59	1,565
13.02.2015	Arysta LifeScience Corporation	Japan	EUR	Element Solutions Inc	Japanese crop protection and life science company producing pesticides, fungicides, and other crop protection products.	1,096		100	2,749
14.10.2014	Nidera B.V.	Netherlands	EUR	COFCO Corporation	Dutch agribusiness company producing and trading agricultural commodities, including grains, oilseeds, and sugar.	12,911	101	89	2,884
19.01.2013	Pronova BioPharma ASA	Norway	EUR	BASF SE	Norwegian biotech company producing omega-3 fatty acids for the pharmaceutical and nutritional industries.	216	91	41	698
13.05.2011	Danisco A/S	Denmark	EUR	E. I. du Pont de Nemours and	Danish biotech company producing food ingredients, enzymes, and bio-based solutions for various industries.	1,842	328	227	4,873
10.12.2010	Cognis GmbH	Germany	EUR	BASF SE	German specialty chemicals company producing ingredients for food, nutrition, and personal care products.	2,584	322	195	2,408
05.11.2009	Noble Group Holdings Limited	China	EUR	China Investment Corporation	Hong Kong-based commodities trading company producing and trading agricultural commodities, metals, and energy products.	25,832	699	621	5,402
01.10.2009	Morton Salt, Inc.	USA	EUR	K+S Aktiengesellschaft	American salt manufacturer producing salt products for food, water treatment, and industrial applications.	873	193	158	1,264
01.09.2009	Rohm and Haas Company Ltd	USA	USD	Dow Chemical Company	American specialty materials and chemicals company producing electronic materials, adhesives, and coatings.	8,900	1,300	864	18,800
14.06.2009	Schering AG	Germany	EUR	Bayer AG	German pharmaceutical company producing pharmaceuticals for human and animal health.	5,308	1,276	928	15,637
01.10.2008	Saskferco Products Inc	Canada	EUR	Yara International ASA	Canadian agribusiness company producing and distributing fertilizer and other agricultural products	319	128	n/a	996
13.06.2008	De Ruiter Seeds Group B.V.	Netherlands	EUR	Monsanto Company	Dutch seed company producing vegetable and fruit seeds for professional growers.	111	18	21	546
05.12.2007	Perusahaan Perkebunan London	Indonesia	EUR	Indofood Agri Resources Ltd.	Indonesian agribusiness company producing palm oil, rubber, tea, and cocoa.	181	46	38	834
02.07.2000	American Home Products (Cyanamid	USA	USD	BASF SE	American pharmaceutical and consumer goods company that formerly produced agricultural chemicals, including pesticides and herbicides.	2,800	850	624	4,800
15.12.1999	Hoechst GmbH	Germany	EUR	Aventis SA	Former German chemical and pharmaceutical company that was acquired by Sanofi in 1999.	22,346	2,789	1,621	8,126
14.06.1999	Pioneer Hi-Bred International, Inc.	USA	USD	E.I. du Pont de Nemours and	American seed company producing corn, soybean, and other crop seeds for professional growers.	1,837	414	305	7,700

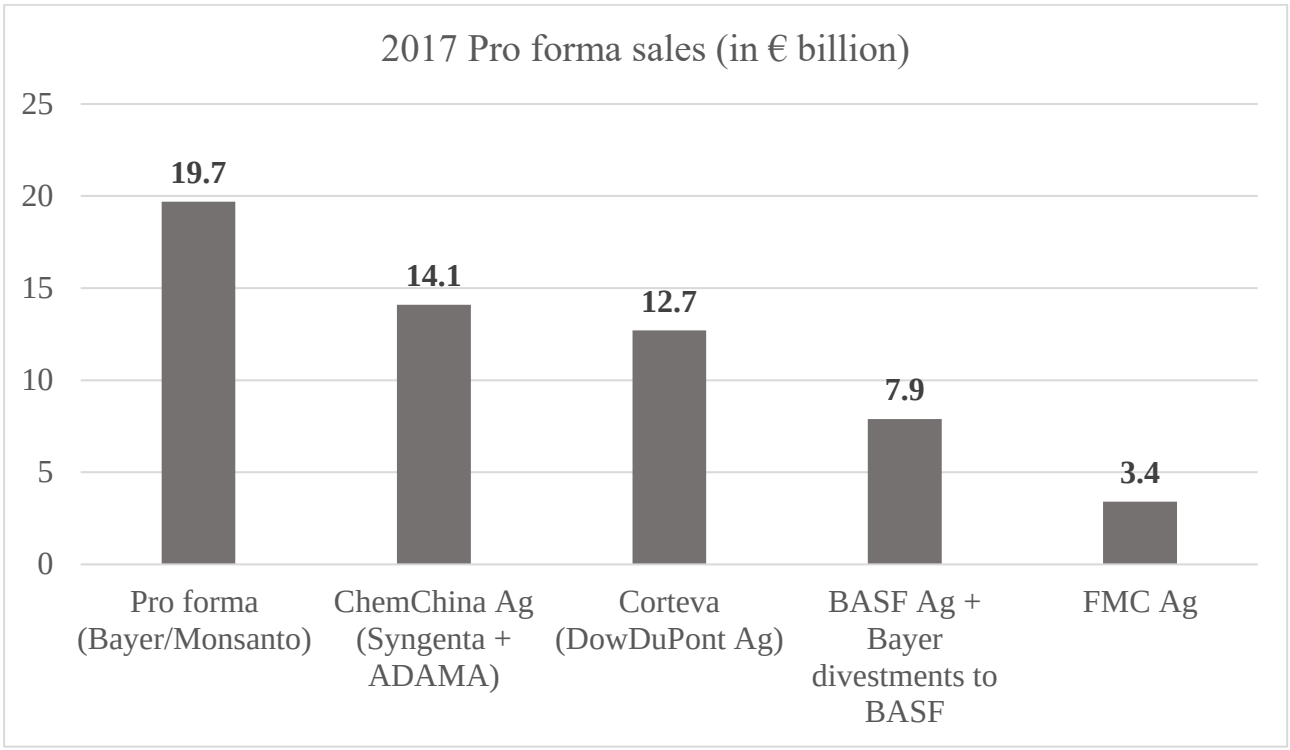
Source: Adapted from S&P Capital IQ, accessed 18.02.2023

Exhibit 14 - Comparable companies

Company name	Ticker	Currency	Company description	LTM Total Revenue	LTM EBITDA	LTM EBIT	LTM Net Income	Market Capitalization Latest	Total Enterprise Value Latest
Bayer Aktiengesellschaft	(XTRA:BAYN)	USD	German pharmaceutical and life sciences company producing pharmaceuticals, consumer health, and crop science products.	43,623	10,164	7,200	4,892	86,226	106,930
Sumitomo Chemical Company, Limited	(TSE:4005)	USD	Japanese chemical company producing petrochemicals, plastics, and agrochemicals.	15,058	2,050	1,178	449	5,827	13,264
Trimble Inc.	(NasdaqGS:TRMB)	USD	American technology company that provides advanced positioning, modeling and connectivity solutions for various industries such as the agriculture industry.	2,315	370	171	117	6,827	7,320
Givaudan SA	(SWX:GIVN)	USD	Swiss flavor and fragrance producer for food, beverage, consumer goods, and personal care products.	4,981	1,068	881	713	20,536	21,615
Akzo Nobel N.V.	(ENXTAM:AKZA)	USD	Dutch paints and coatings manufacturer for the aerospace, automotive, and construction industries.	15,711	2,410	1,741	1,130	16,560	18,825
Solvay SA	(ENXTBR:SOLB)	USD	Belgian chemical company producing advanced materials, chemicals, and specialty polymers for various industries.	10,335	1,924	868	371	11,095	16,740
Syngenta AG	Private	USD	Swiss agrochemical company specializing in seeds, crop protection products, and digital tools for agriculture.	13,411	2,740	2,229	1,339	36,464	49,590
Dow Inc.	(NYSE:DOW)	USD	American materials science company producing plastics, chemicals, and advanced materials for various industries.	37,101	4,922	4,699	6,427	-	-
DuPont de Nemours, Inc.	(NYSE:DD)	USD	American diversified materials and biotech company producing materials, chemicals, and biosciences products.	46,153	8,668	6,210	8,449	60,443	79,896
BASF SE	(XTRA:BAS)	USD	German chemical company producing chemicals, plastics, performance products, and crop protection products.	65,184	11,008	6,421	4,375	72,748	88,693
Nutrien Ltd.	(TSX:NTR)	USD	Canadian producer and supplier of fertilizers and other agricultural products.	4,658	1,635	960	679	-	-
KWS SAAT SE & Co. KGaA	(XTRA:KWS)	USD	German seed producer focused on plant breeding and biotechnology.	1,126	143	93	93	2,058	2,251
FMC Corporation	(NYSE:FMC)	USD	American chemical company producing crop protection and specialty chemicals for agricultural and industrial markets	2,952	480	415	(93)	6,281	8,274
Archer-Daniels-Midland Company	(NYSE:ADM)	USD	American Company that procures, transports, stores, processes, and merchandises agricultural commodities, products, and ingredients	63,023	2,378	1,485	1,484	25,458	31,682
CF Industries Holdings, Inc.	(NYSE:CF)	USD	American nitrogen fertilizer producer and distributor.	4,181	1,549	961	190	6,061	12,774
The Scotts Miracle-Gro Company	(NYSE:SMG)	USD	American company producing lawn and garden care products, hydroponic growing systems, and consumer gardening products.	2,809	484	418	318	5,018	6,482
The Andersons, Inc.	(NasdaqGS:ANDE)	USD	American agribusiness company specializing in grain, ethanol, plant nutrient, and railcar leasing businesses.	4,045	100	-	(49)	1,038	1,678
Calyxt, Inc.	(NasdaqCM:CLXT)	USD	American biotech company focused on plant-based gene editing and crop breeding technologies.	1	(6)	(6)	(6)	-	-
Corteva, Inc.	(NYSE:CTVA)	USD	American agricultural chemical and seed company producing crop protection and genetic products.	-	-	-	-	-	-

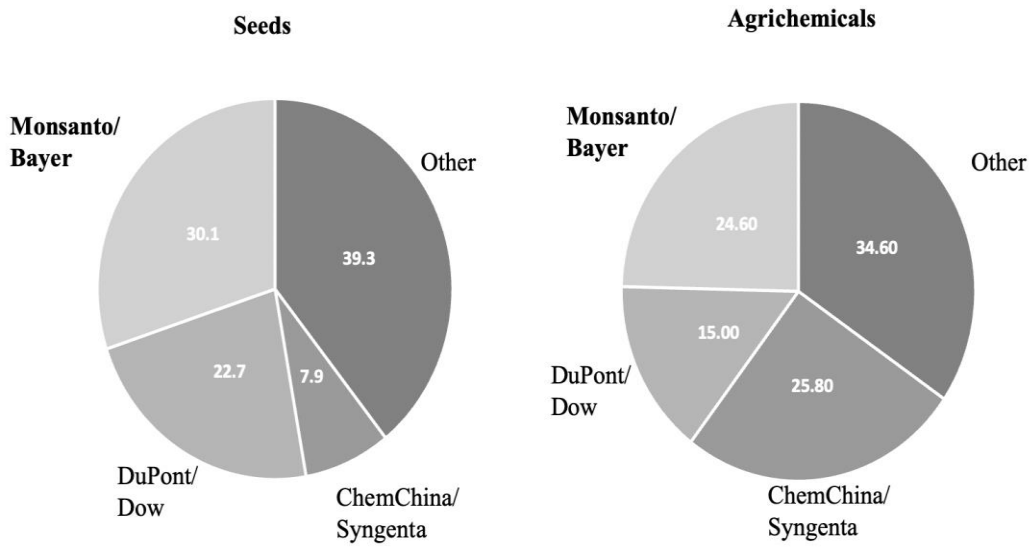
Source: Adapted from S&P Capital IQ, accessed 18.02.2023

Exhibit 15 - Creating a Global Leader Committed to Transforming Agriculture



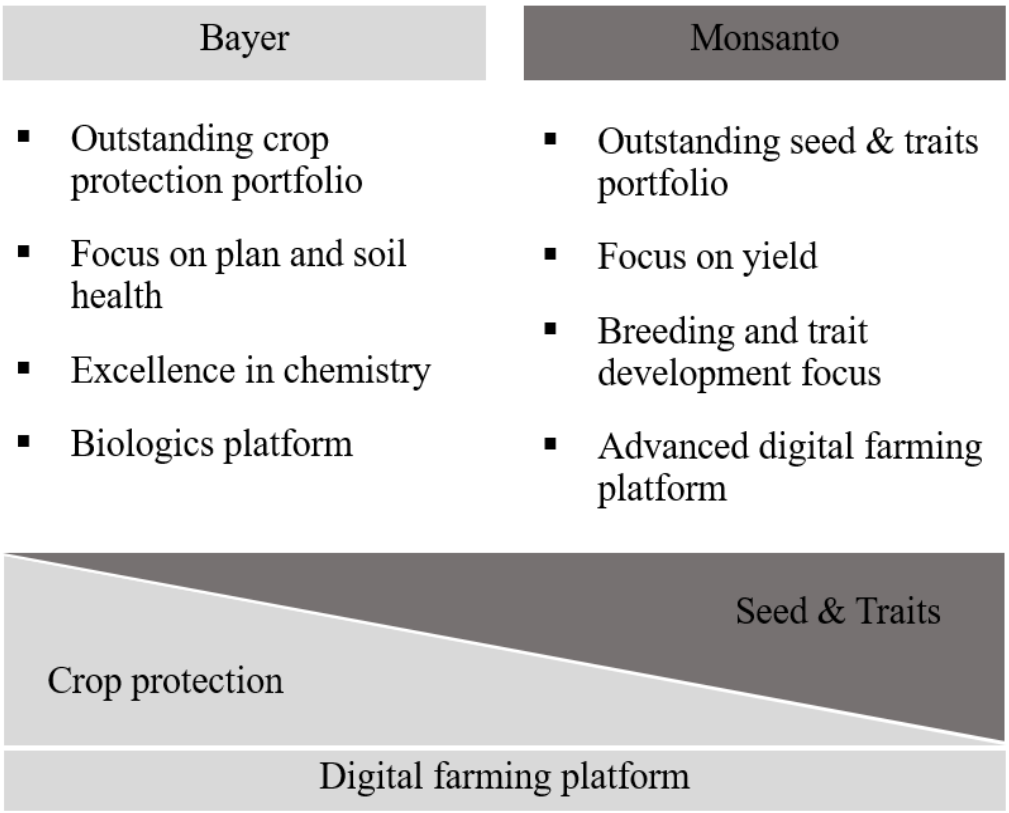
Source: Bayer AG Investor presentation, June 2018 (Bayer 2018f)

Exhibit 16 – Agribusiness Shake-up, Market Share by Sales, 2015 (%)



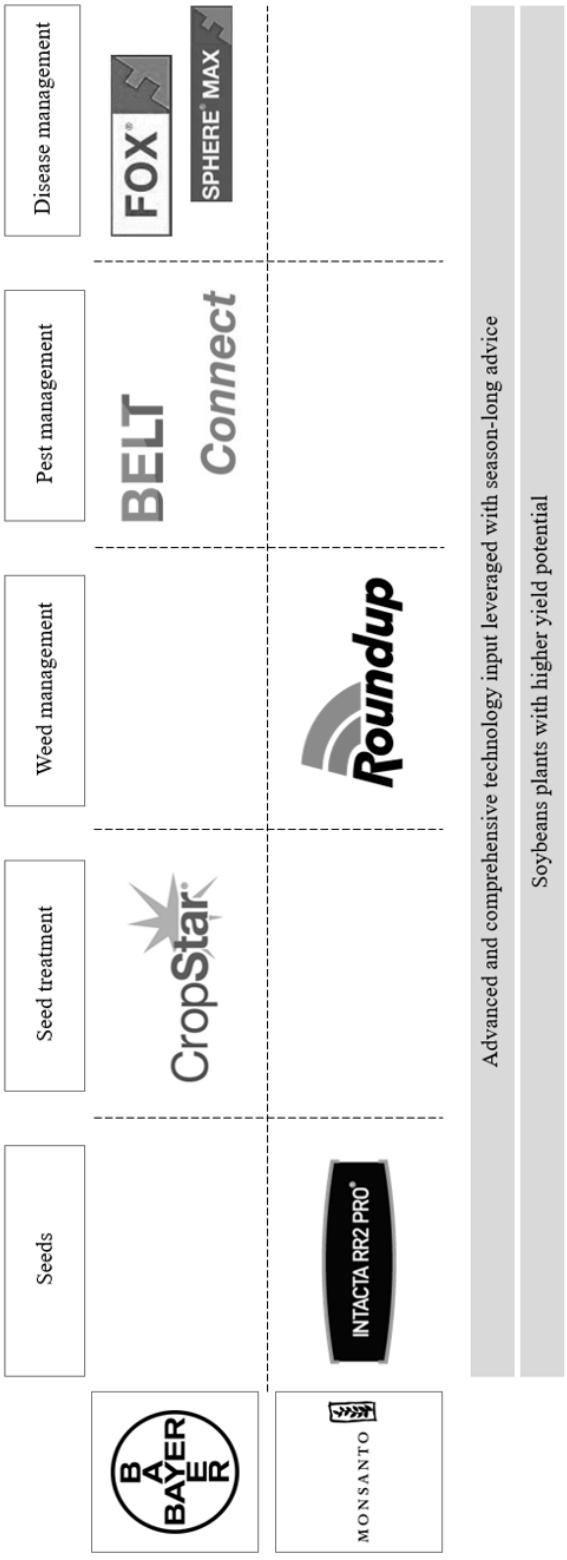
Source: Terazono & Massoudi "Bayer-Monsanto would be latest deal to shake up agribusiness" (Terazono & Massoudi, 2016)

Exhibit 17 - Bayer Monsanto crop & seed



Source: Bayer AG Investor presentation, June 2018 (Bayer 2018f)

Exhibit 18 - Soybean brazil example



Source: Bayer AG Investor presentation, September 2016 (Bayer 2016d)

M&A in a Consolidating Market – Bayer's Acquisition of Monsanto

Teaching Note

Synopsis

This case analyzes Bayer´s acquisition of Monsanto in September 2016. The $66 bn acquisition was Bayer´s strategic move to compete for market share in the quickly consolidating industry and to complement their pharmaceutical division with more expertise and access to new patents and products for their agricultural section. The acquisition would create the largest seed and pesticide company in the world and has been met with both excitement and skepticism from various stakeholders. The deal faced regulatory hurdles from various countries, including the European Union and the United States Department of Justice, which both required significant divestitures to approve the merger. The deal was completed in June 2018, 2 years after the announcement. Not only did the deal take a long time until closure, but to make matters worse, Bayer faced high litigation costs for Monsanto´s bestselling product Roundup, which brought many lawsuits. Bayer was additionally hurt by the loss of shareholder confidence and an almost 50% decrease in SP by the beginning of 2023 compared to the SP at announcement. This case study will explore the strategic rationale behind the Bayer-Monsanto deal, answer the question if Bayer bought Monsanto at a reasonable price, and explore the risks involved, and challenges faced during the merger process. Furthermore, the case will focus on the payment method of choice and post-merger integration. Exhibit TN 14 shows a timeline of the transaction and the assignment of each section, as well as a breakdown into different teaching sessions.

Pedagogical Objectives

This case is supposed to be solved by students in the Master of Finance. It would be appropriate for courses on the topics of mergers and acquisitions (M&A) or corporate valuation. To work on the case, students should have prior knowledge in the areas of corporate finance, financial statement analysis, and M&A.

The teaching note is divided into six sections: The first section provides students with insights into an industry-standard valuation process that occurs in advance of a deal. To familiarize themselves with the case, students are asked to examine the motives that led to the purchase of Monsanto. Then evaluate Monsanto with an intrinsic valuation method (DCF), relative valuation methods, and in addition, analyze the value created by the merger of the two companies by evaluating synergies that arise post-merger. The second section of the case focuses on the importance of thorough due diligence and the impact of the legal settlement costs, which occurred after the deal's closing. The third section gives the student the opportunity to get a better overview of the market Bayer and Monsanto are operating in. It points out the peculiarities and challenges that must be overcome when merging in an oligopoly. Section four, allows students to analyze the possible payment methods that Bayer could have used and compare them based on their advantages and disadvantages. Further, the section sheds light on the question of why the deal was done as an all-cash transaction. The fifth section deals with divestiture processes that were also discussed in the merger between Bayer and Monsanto to limit the risk of the deal. The students are introduced to the topic and get an overview of the different possibilities. In section seven risks before, during, and after the deal and their mitigation strategies are explored. The case instructor can find an overview of the questions and their key takeaways in Exhibit TN 15, to familiarize with the teaching note.

As preparation for the case instructor to get a better overview of the deal, there are a number of podcasts, videos, and newspaper articles that address the Merger. Podcasts: The Wall Street Journal episode, "The Botched Bet to Buy Monsanto," posted Sept. 12, 2019. Videos: CEO Werner Baumann's interview with CNN Business after Bayer submitted the first bid on May 23, 2016 - YouTube. Werner Baumann CEO of Bayer and Hugh Grant CEO of Monsanto press release after Monsanto accepted Bayer's offer on September 14, 2016 – YouTube. Newspaper articles: The two Financial Times articles "Bayer targets one-stop store with Monsanto"

published on September 14, 2016, shortly before the signing of the Merger agreement, and "Monsanto name to disappear as Bayer closes $63bn deal" from June 4, 2018, published shortly before closing of the deal provides an overview of the deal timeline, the industry and Bayer's motivation on the deal.

Suggested Questions

Valuation

Section one is to be answered from Bayer's point of view as of 31st of August, 2016.

Section 1A: Discuss the Motives of the Merger.

Section 1B: Elaborate on the "Bad Motives of the Merger"/ Due to which Motives did the Merger fail or destroy Value?

Section 1C: Complete a Valuation on Monsanto using the Financial Data from the accompanying Case Study Worksheets. Please use DCF, CCA, and CCT Analysis as Valuation Methodologies.

Section 1D: Illustrate if Synergies emerged. Quantify and discuss potential Synergies as well as the period over which they would be realized.

Section 1E: Consider the Standalone Valuation and Valuation of Synergies to determine whether Bayer paid a Fair Price for Monsanto.

Legal Risk Assessment and Challenges

Assume that Bayer was fully aware of all litigation costs that would be incurred in the years after 2016.

Section 2A: Calculate and Discuss how legal Fees have affected the Valuation of Monsanto.

Section 2B: Critically assess Bayer´s Due Diligence Effectiveness and thus the Risks of the initiating Signs of Glyphosate Litigations.

M&A in Oligopolistic Markets in the Example of the Agrichemical Industry

Section 3A: Describe the agrochemical market in which Bayer and Monsanto operate and its consolidation dynamics.

Section 3B: Elaborate on the Regulatory and Legal Consequences faced by Bayer in acquiring Monsanto.

Payment Methods

Section 4A: What are the different Payment methods available in an M&A Transaction and how do they differ?

Section 4B: What was the Reasoning behind Bayer's Decision to opt for an All-Cash Transaction?

Section 4C: What were the potential Risks involved in Bayer´s Choice of Payment?

Section 4D: How would a Stock Deal work in the case of the Bayer/Monsanto merger? Describe the Special Characteristics.

Section 4E: What should be the exchange ratio based on your valuation, if Bayer initiated a stock-for-stock swap? What does this imply about the synergies shared with the target?

Section 4F: Considering the previous Results, would a Stock Deal for Bayer have made sense?

Divestiture Possibilities for Shareholder Risk Mitigation

Section 5A: What are the most common types of divestitures and what are the main differences among them?

Section 5B: What is the motive behind some stockholders' requests for Bayer to be split up?

Section 5C: Discuss what form of divestiture would have been appropriate in Bayer's case and why.

Risk Management

Section 6A: Identify the principal risk of the transaction and the stage at which the risk occurred.

Section 6B: What were the different risk mitigation strategies that Bayer and Monsanto could have implemented before, during, and after the deal?

Case Analysis

Section 1:

This section is intended to be answered by students from the perspective of Monsanto's annual reporting date on 31st of August, 2016, 14 days before Bayer's submission of the final bid price.

Section 1A: Discuss the Motives of the Merger.

The motives for mergers are 1. Synergies, 2. Diversification, 3. Undervaluation, and 4. Control. In the case of this merger, synergies, and diversification are strong motives, whereas undervaluation can be mentioned, and control is not a potential motive. Each motive will be analyzed thoroughly in subsequent sections. It is important to mention that Bayer is a strategic acquirer and thus the deal represents a strategic combination of both firms.

The first motive to be mentioned is: **1. Synergies**, which are in place when the combined value of the acquirer and target is greater than the combined value of the two enterprises operating separately (V(A+B) > V(A)+V(B)) (Feldman & Hernandez, 2020). Cost and Growth/Revenue Synergies of $1.5 bn were quantified and anticipated as published in the investor presentation (Bayer, 2016a) on September 20th, 2016, six days after Monsanto accepted the $128 bid. By combining the two companies, Bayer aims to create a global leader in agriculture with a market share and an overall value of the combined firm far greater than that of competitors such as ChemChina Ag Syngenta or DuPont Dow (Bayer AG, 2016a). The different types to be differentiated are growth, financial and cost synergies (Loukianova et al., 2017).

Growth Synergies/ Operating Synergies:

- **Broader Product Portfolio and strengthened Geographical Coverage:** Bayer and Monsanto´s product ranges are mainly complementary with just some exceptionally overlapping products in their herbicide and seeds division (for example Bayer and Monsanto offer a weedkiller), which ultimately also facilitated negotiations with regulators. Their products are also well matched, whereas Bayer concentrates on crop protection, while Monsanto specializes in seeds. This way of complementing each other

with their respective strengths allows for a "one-stop shop" to be created. Bayer´s initial sales proportion of their agricultural division of 30% was also planned to be increased to an equal split of revenue of 50/50 between their pharmaceutical and agricultural business line. Cross-selling potential emerges, which allows for an increase in operating income (Damodaran, 2005; Chazan, 2016). The companies additionally complement each other geographically. Monsanto generates most of its sales in the North American market and Latin America, while Bayer's Crop Science has a relatively strong presence in Europe, and Asia Pacific (Bayer, 2016a).

- **Integrated Solutions/ Combined Business Intelligence:** The new integrated platform, resulting out of the business intelligence platform and insights of both firms unites the business segments of seeds & traits crop protection and digital farming. Farmers benefit from a product and service mix that covers the entire value chain from seeds to seed treatment, weed management, pest management, and disease management. Complementary to this, the digital farming offering provides the possibility to collect and evaluate cultivation data and, for example, allows for precise predictions about the right choice of seeds, the right protection, or the appropriate level of nutrients. Commercially, the platform opens opportunities for Bayer to achieve cross-selling effects and increase sales (Bayer, 2016a).
- **Innovation Efforts/Combined R&D:** Among the largest Pharma and Agriculture companies, commonly, about 10% of sales are budgeted for Research & Development. As a combined firm, Bayer Monsanto then has about $0.9bn additional budget available than the next largest competitor Dow/DuPont. In the long term, this budget can enable decisive technological progress and improve as well as defend the market position resulting in revenue improvements (Bayer, 2016a).

- **Increased Market Share/Increased Sales:** Before the Bayer/Monsanto merger, Syngenta and ChemChina were leading in terms of market share. According to **Exhibit 15**, the student can argue that the merger led to an outperformance of the combined entities with an increased market share of approximately 10% in comparison to ChemChina/Syngenta.

Further points, which can be mentioned in terms of operating synergies are the possibility for economies of scale, due to increased volumes leading to lower average fixed costs, cost of production, and operating expense, as well as enriched R&D capabilities. These effects could also lead to higher bargaining power with suppliers, higher operating income, higher ROC, and eventually a higher growth rate.

Cost Synergies

- **Sales, General & Administrative Expenses**

  Through the combination and integration of country platforms, a shared IT landscape and overlapping marketing & sales functions, Bayer expects cost savings above Monsanto's independently announced restructuring program. Further, COGS synergies from e.g., overlaps in supply function and procurement are expected to materialize. In total, 70% of Synergies are attributable to SG&A savings.

The student should not mention **Financial Synergies,** which occur when a lower cost of capital is reached through an improved credit rating, or when a higher and more stable cash flow is achieved (Damodoran, 2005). Bayer was downgraded by Fitch Ratings from A to A- on the 5th of June, 2018, 2 days before deal closure. Thus, the student could mention the negative effect on the financial synergies that the acquisition caused.

The second motive to be mentioned is **2) Diversification.** Diversification takes place when the buyer is enabled to expand its products and services by acquiring a firm beyond their line of business. Whilst Monsanto has its roots in the North American Market, Bayer has had a strong

presence in the European and Asian markets. The diversification of sales by region is advantageous for Bayer for two reasons:

1) The Bayer brand gains international significance (global footprint)

2) It reduces the dependence on individual markets, which can lead to lower cyclicality and a lower beta for the combined entity.

The opportunities for growth and diversification can be exemplified by the Product-Market Matrix (Zentes et al.,2013). Here Bayer can offer products beyond their line of business and in new markets. This would lead to a decreased risk for shareholders through improved performance and profitability (Stiroh & Rumble, 2006).

The third motive is **3) Undervaluation.** A firm is undervalued when its intrinsic value exceeds its market value, which allows the acquirer to exploit this disparity. An undervaluation of the company in principle is indicated by a low Price to Earnings ratio or a low Price to Sales ratio. The EV/EBITDA Comparable Company Analysis (CCA) and Comparable Transaction Analysis (CTA) as of the 31st of August 2016 suggest a valuation above the undisturbed trading price of $89.3 two weeks before Bayer's first bid. Hence, it could be argued that undervaluation was a motive for the acquisition, where the expectation of performance exceeds the SP. The answer of the student depends on the result of their own valuation and should take all valuation methods for a final judgment into account (Section 1E). For the identification of undervaluation, students can apply the concept of Tobin's Q as well. The ratio states that firms with a Q-ratio greater than 1 (market value/replacement cost) are overvalued and firms with a Q-ratio less than 1 are undervalued.

$$Tobin's\ Q = \frac{Equity\ market\ value + liabilities\ market\ value}{Equity\ book\ value + Liabilities\ book\ value}$$

Often the assumption is made that the market value and the book value of liabilities are equivalent since the market value does not account for a firm's liability.

Therefore, the simplified ratio is calculated based on the assumption:

$$Tobin's\ Q = \frac{Equity\ market\ value}{Equity\ book\ value}$$

For Monsanto on the 31st of August 2016, this results in a ratio of:

$$Tobin's\ Q = \text{Monsanto} = \frac{46{,}645.1}{4545.0} = 10.26$$

The fourth motive of mergers is **4) Control**, which does not apply to this case.

Value through control usually arises when the target company is poorly managed, whose potential can be unlocked through adequate management. Monsanto´s management and CEO enabled the firm stable profits and created great shareholder value in the past.

Timing and Consolidation pressure (can be mentioned additionally to the 4 motives of a merger). The general consolidation pressure among the "Big 6" Pharma and Agriculture companies played a significant role. With the announcement of the Dow Chemical/DuPont acquisition end of 2015, followed by Syngenta/ChemChina announcement three months later, four agricultural giants were joining forces, pressuring Bayer, and BASF to act accordingly and fight for market share in a market, where prices were already decreasing (Case, page 6). To expand or at least maintain its market position in agrochemicals, Bayer inevitably had to expand inorganically through acquisitions. The company was then also struggling with declining figures in three consecutive quarters, including revised and lowered strategic targets for 2015, as well as their failed Syngenta takeover. Thus, there was a need for action for both companies and this in a timely manner (Back, 2020)

<u>Section 1B:</u> Elaborate on the "Bad Motives of the Merger"/ Due to which Motives did the Merger fail or destroy Value?

The prevailing "bad motives" which were among others the reason why the merger failed were:

1. Overconfidence/ Winner´s Curse: According to a study by Malmendier & Tate (2008), overconfident CEOs, who run a firm with enough internal resources are undeniably more prone to make poorer acquisitions. Overconfident CEOs tend to overestimate the value of a merger

and thus the firm´s stand-alone value, while acting as if the market is undervaluing the firm´s equity. As shown by Bauman´s active dedication, positive speeches in which he argued in favor of the deal, and especially as a newly elected CEO who wants to prove his position and capabilities, he seems to have overseen various red flags such as the negative public reaction, Monsanto´s bad public image, the potential cancer-causing properties of Roundup, which were already discussed before the first bid of Bayer and the regulatory hurdles due to the consolidating industry, which have not been sufficiently accounted for. Overconfidence was accompanied with over-optimism and was especially in place, when Baumann did not put enough weight on the public claims having been made before or during the deal negotiations. Baumann was also confident in his ability to change Monsanto´s bad image and cover it with Bayer´s positive image, as he overestimated the value of synergies and underestimated the risk. But judging by Bayer´s SP development, the bad image seems to have still had a negative consequence on the German conglomerate (**Exhibit 6**). The prevailing and rapid takeover activity by direct competitors in the industry could have also caused Baumann´s overconfidence and potentially also managerial envy. Managerial envy can be explained by the comparison with peer CEOs and their activities. With Baumann's intention of wanting to create the world´s biggest seed and pesticide firm, he wanted to outperform his peers, and it seems like envy could have been a potential source of this aim to increase the firm´s size and thus also his leadership power. The Winner´s curse occurs when the winning bidder fails to account for the uncertainty about the target value and thus overpays for the acquisition (Liu et al., 2021). The Winner´s curse is an additional phenomenon that could explain the eagerness to close the deal, next to Bauman´s overconfidence.

2. Managerialism: Managerialism can lead to conflicts of interest between managers and shareholders, as managers may be more focused on empire-building and their reputation than on maximizing shareholder value (Song & Pettit, 2000). Since Baumann was a newly elected

CEO at the time of the merger and initial bids, the pressure on him to perform and go through with the deal was heightened, which is why students could also argue for Managerialism having taken place.

<u>Section 1C:</u> Complete a Valuation on Monsanto using the Financial Data from the accompanying Case Study Worksheets. Please use DCF, CCA, and CCT Analysis as Valuation Methodologies.

The bid price paid by Bayer can be broken down into two components: the valuation of Monsanto as a standalone entity, and the anticipated value of synergies resulting from the merger (as computed in 1C). The resulting value (the detailed derivation of the price is elucidated in subsequent sections) represents the estimated worth of Monsanto from Bayer´s perspective (standalone + synergies). Both the intrinsic valuation and the relative valuation are built in a very comprehensive manner for this case study. The case instructors can decide for themselves which teaching moment they would like to focus on and which they would like to simplify. Depending on the focus, fractions such as reformulation, revenue forecast, or multiple valuations can be provided to the students as support. The Exhibits for the simplifications can be found under Exhibits Support (**Exhibits SP 1-4**).

1. Intrinsic Valuation

By conducting a discounted cash flow (DCF) analysis based on Monsanto's financial statements as of 31st of August, 2016, which were released just before Bayer's final bid on the 14th of September 2016 of $128, a comprehensive understanding of the intrinsic valuation of Monsanto is given. To perform the analysis, the financial statements were restructured in a manner that separated Monsanto's operating, non-operating, and financial businesses. This allowed for a more accurate and reliable forecast of future cash flows. Through the Discounted Cash Flows analysis, Monsanto´s value is estimated by discounting its forecasted cash flows. In principle, each CF (Free Cash Flow = Net Operating Profit After Tax + Depreciation and Amortization

Expense - CAPEX - ΔNet Working Capital) is then discounted with the WACC, equaling the present value of the CFs. The PV of CFs in addition to the terminal value is then summed, resulting in the overall EV.

DCF: The calculation of the Free Cash Flows is based on the following assumptions:

All operating balance sheet items grow in subsequent years at the average percentage of sales from 2012 to 2016, except for goodwill, which is held constant; inventory, which is measured using the days inventory outstanding; accounts receivable, which is measured using the average days sales outstanding; and accounts payable, which is measured using the average days payable outstanding. Furthermore, net working capital is calculated as the difference between current operating assets and current operating liabilities (**Exhibit TN 13**).

Reformulation of the Financial Statements: To obtain a more complete understanding of Monsanto's Financial Statements, students can reformulate the company's balance sheet and income statement into three categories: core business, non-core business, and financial. If the case study presenter chooses to focus on this approach, this analysis offers students, the opportunity to gain insight into industry-standard valuation methods and provide a more in-depth understanding of Monsanto's financial performance (**Exhibits TN 1 - 3**).

Revenue Forecast: The revenue forecast plays a decisive role in the intrinsic valuation of a company. With **Exhibit 7** - Global seed market size, shares, and CAGR and **Exhibit 8 -** Global pesticide market size, shares, and CAGR, students can first calculate the total size of the two markets, and then let them grow at the given respective CAGR until 2026. Dividing the respective 2016 revenue indicated by the 2016 market size calculated, results in the respective market share. For the forecast period, it was assumed that the market share from 2016 remains constant. If the market share is multiplied by the forecasted market size in the last step, Monsanto's revenue for the respective year is obtained.

Risk-free Rate: For the computation of the risk-free interest rate, students are given a variety of bond interest rates for different periods in **Exhibit 4**. The student's task is to decide on an appropriate interest rate and apply it in the further steps of the evaluation. In doing so, students should decide upon the currency of the bond rate and the maturity. Since Monsanto is a U.S. company, the risk-free rate should be notated in U.S. dollars, and the U.S. government bond should be picked as a reference, while the German government bond from the Exhibit should not be considered. Given the aim to identify a low-risk investment alternative, both the 10-year and 30-year US treasury yields are viable options to choose for valuation purposes, as they offer a sufficiently long maturity. The other yields should, again be excluded.

Cost of debt: The cost of debt for Monsanto is provided to the student in **Exhibit 6**. A more detailed calculation of this can be found in the **Exhibit TN 4**. Here, the cost of debt was calculated based on Monsanto's 2016 credit rating (A-) and Moody's default rate and loan repayment data. On this basis, students can now calculate the debt beta.

$rd = rf + \beta d * MRP$ à $2.52\% = 1.58\% + \beta d * 8.36\%$ à $\beta d = 2.52\%$

Market Risk Premium: The market portfolio has to be an efficient, well-diversified portfolio that bears only the non-diversifiable risks of the market. Again, students choose from a variety of indices. Since Monsanto is an international company, the S&P 500 shall be used as the basis of the market portfolio. For the market risk premium, the risk-free interest rate is deducted from the market return (**Exhibits 5**).

Cost of Equity / WACC: After students have selected a market portfolio, the corresponding beta between the market portfolio and Monsanto´s stock is given in **Exhibit 5**. Being provided with this input, students can calculate the responding cost of equity with the CAPM (risk-free rate + beta * market risk premium), by using the S&P 500 as the Market Portfolio, which results in a cost of equity of 9.90%. To calculate the WACC, students must calculate the Debt-to-Equity ratio. Therefore, the following three items are needed: Cash, from the income statement; Market

Capitalization, from **Exhibit 6**; and Debt, consisting of long-term debt, short-term debt, and the current balance of long-term debt from the balance sheet. With these three items Monsanto's EV (Equity + Debt - Cash) as of the 31st of August 2016, can be calculated, and the resulting Debt-to-EV and Equity-to-EV ratios. Combined with the cost of debt of 2,52% and the statutory tax rate of 35% the WACC sums to 8.75% (**Exhibit TN 5**).

Tax Rate: Although the effective tax rate of Monsanto from 2012 to 2016 ranges from 26.8% to 33.6%, it is still appropriate to apply the statutory tax rate of 35% for US-based companies when valuing Monsanto.

Terminal Growth Rate: The terminal growth rate at which Monsanto's cash flows grow in perpetuity is 3.24%. The value was determined by multiplying the company's reinvestment rate by the return on invested capital (**Exhibit TN 6**).

As a proposed solution, the DCF analysis revealed that Monsanto had a standalone equity valuation of $36,556.5mn as of the 31st of August 2016, which corresponds to a SP of **$83.47**. It is important to note that the specific input factors and methodology that led to this valuation will be scrutinized in subsequent sections of this teaching note.

2. Relative Valuation

Complementary to the intrinsic DCF valuation, a relative valuation is to be performed. First, a **Comparable Company Analysis (CCA)** is being conducted. For this purpose, companies are used, which show comparability at the time of the deal. In **Exhibit 14**, the student finds a list of comparable companies, which roughly match the characteristics of Monsanto. The task is to reduce this list to a shortlist by filtering out unsuitable firms for comparison, so that the median multiple, which is ultimately used in the valuation is as comparable as possible to Monsanto. Filter criteria are the match of the product offers and the affiliation to the seed or chemical industry. From the resulting list of multiples additionally, the 25th and 75th percentiles can be excluded to detect outliers. Secondly, a **Comparable Transaction Analysis (CTA)** will be

conducted. In **Exhibit 13**, the list of comparable transactions can be found, which must be reduced to a narrower selection of chosen companies. Decisive filter criteria are the size of the company, the geographical location, as well as the industry affiliation of the target company. Furthermore, the time of the deal is relevant. If the transaction is too far in the past, comparability is no longer necessarily guaranteed. Again, outliers shall be excluded to obtain a more precise comparable multiple. The proposed filtering reduces the list from 19 given to 6 selected companies. The given 19 transactions are also reduced to the six most suitable through the suggested filtering. The case instructor can change, activate, or deactivate the selection criteria in the Excel worksheets "Trading Comps Analysis" and "Transaction Comps Analysis" at his discretion using the input fields and thus showing the variation of the SP by changing the filter criteria. For example, for company size, the lower bound can be reduced and the upper bound increased, resulting in more companies meeting the criterion. The period in which a transaction must take place to be considered as sufficiently comparable can also be changed. In principle, it is also possible for the instructor to predefine the quantity of criteria, which must be met for the comparable companies to be considered as suitable. By applying or omitting filter criteria, the output of comparable companies or transactions and finally the SP can vary significantly. Therefore, the classroom can firstly discuss which filters can be considered for the respective relative valuation and secondly experience how sensitive multiples are using the example of Monsanto even though the provided list is already prefiltered. As a proposed solution, the multiples shown in **Exhibit TN 7** and **Exhibit TN 8** display the multiples before and after the suggested filtering. All multiples were calculated using the LTM data from S&P CapIQ as of the 31st of August 2016. For the Comparable Company Analysis (CCA), the multiples Price/Earnings, EV/Revenue, EV/EBITDA, and EV/EBIT were calculated, and for the CTA EV/Revenue, EV/EBITDA, and EV/EBIT. Multiplying the proposed selection

multiples with the financial results of Monsanto in 2016, the SP for the CCA multiples ranges from **$34.1** to **$115.4,** and the CTA multiples from **$53.70** to **$93.9**.

Conclusion Standalone Valuation: To conclude the standalone valuation, students are expected to complete a football field analysis. The instructor is provided with a proposal of a football field for Monsanto in **Exhibit TN 9**.

***Section 1D:** Illustrate if Synergies emerged. Quantify and discuss potential Synergies as well as the period over which they would be realized.*

As mentioned in Section 1A, Bayer's management expected **Revenue Synergies** ($0.3bn) and **Cost Synergies** ($1.2bn) of $1.5bn due to the acquisition (Bayer, 2016a). Since, Bayer reports the synergies as cost synergies and EBITDA contribution and the cash flows only materialize in the future, some adjustments must be made to correctly record the net present value (NPV) of the synergies due to the concept of the time value of money. This way a valid assessment is conducted in section 1D, to analyze whether Bayer has paid a fair price.

1. Exact distribution of synergies in the future: An extract from Bayer´s due diligence report from 2016 (Bayer, 2016a) is shown in **Exhibit 12** – the anticipated synergies do not occur all at once but are distributed in the future.

2. Tax adjustment: As all synergies are stated as pre-tax, the statutory tax rate of 35% has to be applied and deducted for the post-tax synergies.

3. Discount rate: Since the synergies occur in the future, they must be discounted at an appropriate discount rate. As one of the fundamental corporate finance principles, the discount rate must match the risk of the underlying cash flow. In the case of Monsanto, Bayer expects synergies from **1. growth synergies**, **2. cost synergies, and 3. long-term synergies through integrated solutions**. Since the probability of occurrence of these synergies is different, the cash flows have to be discounted at different rates. In principle, the discount rate is based on the specific discount rate from where the cash flows originate. If it is unclear from where the

cash flows originate, the discount rate of the NewCo. is used. Furthermore, it is better to use a range of discount rates rather than one discount rate based on a presumption as a that can be inaccurate due to an analyst bias. Usually, it is also common to calculate the terminal value of the respective synergy. In the case of Bayer Monsanto, this does not apply, because 1. it is stated that cost and growth synergies will be fully materialized in the first 3 years and 2. a projection about future synergies that will materialize in the indefinite future is made (long term synergies through integrated solutions). Therefore, it is concluded that the terminal value of all synergies is thereby captured. **(**Bruner, 2004, p.332-333).

1. Revenue/Growth Synergies: According to **Exhibit 12**, Bayer expects $~0.3bn total revenue synergies to materialize in the first three years. As mentioned in section 1A, these effects are mainly due to the combination and integration of the product portfolios that are supposed to make Bayer a global leader in agriculture, offering both seed and chemical products. Additional reasons for the emerging synergies are namely the combination of complementary geographies and customers (Bayer, 2016a; Case, page 2). Since the exact risk of the cash flows from growth synergies is not known, a range of discount rates is applied, where the WACC of Bayer (NewCo.) is assumed as lower bound and the WACC of Bayer (NewCo.) + an assumed risk premium of 2% represents the upper bound. Dividing the anticipated sum of revenue synergies of $~0.3bn, by three years after 2016, deducting the taxes, and discounting this post-tax amount with the series of appropriate discount rates, results in the range of NPVs of growth synergies as shown in the following:

$mn	**Lower Bound**						**Upper bound**
Discount rate	7.60%	7.93%	8.27%	8.60%	8.93%	9.27%	9.60%
NPV growth synergies	168.7	167.7	166.7	165.7	164.7	163.8	162.8

The calculation of the NPV using the upper bound discount rate is shown as an example below:

	0 Aug-31-2016	1 Aug-31-2017	2 Aug-31-2018	3 Aug-31-2019	TV
Sales synergies		**100.0**	**100.0**	**100.0**	**0.0**
Taxes		35.0	35.0	35.0	
Value to be discounted		**65.0**	**65.0**	**65.0**	
Discount rate		0.91	0.83	0.76	
PV		**59.3**	**54.1**	**49.4**	**0.0**
NPV	**162.8**				

2. Cost Synergies: A majority of the anticipated synergies are attributable to cost synergies. According to the due diligence report, ~$1.2bn in EBITDA contributions are expected and thus distributed like the growth synergies. Cash flows related to cost synergies have a lower risk than those of the NewCo. and growth synergies. Therefore, it is common practice to assume a discount rate between the risk-free rate and the WACC of the originating company. Assuming the 30-year German bunds' yield of 0.53% as the lower bound and Bayer's in the 2015 annual report stated WACC of 7.60% as the upper bound results in the below-shown range of cost synergy NPVs. As mentioned in section 1A, most synergies are supposed to stem from SG&A savings, joint R&D, the combination of patents, supply chain efficiencies, and shared information technologies.

	Lower Bound						**Upper bound**
Discount rate	0.53%	1.71%	2.89%	4.07%	5.24%	6.42%	7.60%
NPV cost synergies	771.8	754.1	737.0	720.6	704.8	689.6	674.9

Again, the calculation of the NPV using the upper bound discount rate is shown as an example below:

	0 Aug-31-2016	1 Aug-31-2017	2 Aug-31-2018	3 Aug-31-2019	TV
(EBITDA contribution)		**400.0**	**400.0**	**400.0**	**0.0**
Taxes		140.0	140.0	140.0	
Value to be discounted		**260.0**	**260.0**	**260.0**	
Discount Rate		0.91	0.82	0.75	
PV		**235.8**	**213.9**	**194.0**	**0.0**
NPV	**643.7**				

3. Additional Synergies from Integrated Solutions in Future Years: As described above, there is a third source of synergies that Bayer refers to as "additional synergies from integrated solutions" and thus captures effects similar to growth and cost synergies in the far future. According to the due diligence report (Bayer, 2016a) with less certainty further ~$1bn of synergies are possible. With this information, the calculation of the terminal values of cost and growth synergies has been omitted. Since it is not specified exactly when these effects will occur, the synergies have been distributed over the next 10 years after the last occurrence of growth and cost synergies, namely between 2020 and 2026. Due to the uncertainty of the cash flows, the same discount rate range is assumed for growth synergies, resulting in synergies from integrated solutions ranging from $405.9 mn to $459.0 mn.

	Lower Bound						**Upper bound**
Discount rate	7.60%	7.93%	8.27%	8.60%	8.93%	9.27%	9.60%
NPV integrated solutions	459.0	449.6	440.4	431.5	422.7	414.2	405.9

Again, an exemplary calculation of the NPV applying the upper bound is shown below:

	0 Aug-31-2016	4 Aug-31-2020	5 Aug-31-2021	6 Aug-31-2022	7 Aug-31-2023	8 Aug-31-2024	9 Aug-31-2025	10 Aug-31-2026
(EBITDA contribution)		166.7	166.7	166.7	166.7	166.7	166.7	166.7
Taxes		58.3	58.3	58.3	58.3	58.3	58.3	58.3
Value to be discounted		**108.3**	**108.3**	**108.3**	**108.3**	**108.3**	**108.3**	**108.3**
Discount rate		0.69	0.63	0.58	0.53	0.48	0.44	0.40
PV		**75.1**	**68.5**	**62.5**	**57.0**	**52.0**	**47.5**	**43.3**
NPV	**405.9**							

Conclusion on Synergies: In total, the synergies generate a measurable NPV of approximately $1.2bn. The largest equity value contribution is attributable to cost synergies with 54.3% to 55.1%, while long-term synergies contribute 32.6% to 32.8% and growth/ synergies 12.1% to 13.1%, accounting for less than half of overall synergies.

	Lower bound		**Upper bound**	
Aug-31-2016	**$mn**	**%**	**$mn**	**%**
PV Growth synergies	162.8	13.1	168.7	12.1
PV Cost synergies	674.9	54.3	771.8	55.1
PV Additional synergies through integrated solutions	405.9	32.6	459.0	32.8
	1,243.9	**100.0**	**1,399.5**	**100.0**

<u>Section 1E:</u> Consider the Standalone Valuation and Valuation of Synergies to determine whether Bayer paid a Fair Price for Monsanto.

Proposed Solution for the Assessment of a Fair Value: To determine whether the $128 per share paid by Bayer, as agreed upon by both companies on September 14th, 2016, was a fair price, all value components must be taken into consideration. This includes the standalone valuation of Monsanto calculated in Section 1C and the present value of the synergies expected from the deal calculated in Section 1D.

	Lower bound		Upper bound	
Source of value	**Per share**	**%**	**Per share**	**%**
Monsanto standalone valuation	83.5	96.7	83.5	96.3
Value growth synergies	0.4	0.4	0.4	0.4
Value cost synergies	1.5	1.8	1.5	2.0
Long-term synergies through integrated solutions	0.9	1.1	0.9	1.2
Total value	**86.3**	**100.0**	**86.7**	**100.0**
Premium paid	**41.7**		**41.3**	
Bid Price 14.09.2022	**128.0**		**128.0**	

According to the DCF analysis, the value of Monsanto as a company to Bayer amounts $86.2 per share, which corresponds to an equity value of $37,751.5 million. This value is comprised of the value of Monsanto as a standalone company of $36,556.5 mn, or a value per share of $83.5. Additionally, Bayer's projected synergies of the two companies with a determined value ranging from $1,243.9 mn to $1,399.5 mn, resulting in an additional value between $2.84 and $3.20 per share. This value takes into account that synergies are uncertain and that they will only materialize in the future. This leaves a difference between the valuation (standalone + synergies) and the bid price of $41.7 or 47.3% in the lower bound scenario and $41.3 or 47.7% in the upper bound scenario which is not justified with the creation of synergies. Therefore, the meaningfulness of the deal must be critically questioned, as synergies were mentioned as one of the main motives for the merger but only account for a small amount of value compared with the standalone value of Monsanto. The average SP of CCA and CTA multiples proposes a similar picture. CCA multiples show an average SP of $66.1 per share. CTA multiples value Monsanto with an average SP of $71.3 per share. All these prices are in the range of Monsanto's stock prices prior to the announcement of the merger. On May 9th, 2016, two weeks before Bayer's initial offer for Monsanto on May 23rd, 2016, the closing price of Monsanto's stock was $89.03. And the weighted average stock price for the three months prior to Bayer's first offer was $89.71 which indicates that Monsanto's stock was fairly priced based on these valuations before the announcement and Bayer paid a considerable premium to get the deal through.

Since the premium cannot be explained by the expected synergies, other factors have to be taken into account, such as Bayer being in a bidding war with BASF or the consolidation pressure in the industry. Students should realize that Bayer won the bidding war but overpaid a substantial amount by paying an unjustified premium. In this context, the concept of the winner's curse could be mentioned due to the won bidding war. Another reason that can be mentioned as an explanation for the premium is the overconfidence of the bidding management to get more value out of the deal than what was realistic due to the before-mentioned red flags and risks.

Section 2:

To assess the impact of litigation costs on the value of Monsanto, this section assumes that Bayer was fully aware of the costs involved in 2016.

Section 2A: Calculate and Discuss how legal Fees have affected the Valuation of Monsanto.

Exhibit TN 12 provides an outline of the Roundup litigations and the wave of lawsuits that followed. To get a sense of the magnitude of those lawsuits on Monsanto's EV and subsequently the overpayment and value destruction for Bayer's shareholders, students should retrospectively include the costs incurred by Bayer related to the Monsanto glyphosate lawsuits in the valuation. An overview of the reported legal settlement costs can be found in **Exhibit 11**. In 2020, a settlement was reached covering 75% of the approximately 125,000 filed and unfiled claims. Bayer paid ~$10.9bn to nearly 100,000 claimants (Burger & Bellon, 2020). In total, Bayer accounted for $17.7bn in legal settlement costs over the years 2018 through 2022 (**Exhibit 11)**. To determine the net present value of the legal settlement costs (litigations), the costs from the future must be discounted with the WACC and then totaled, resulting in a net present value of ~$12.5bn. Consequently, the equity value from Monsanto's valuation should have been reduced by ~$12.5bn if Bayer´s management had accounted correctly for the risk associated with the glyphosate products in 2016. Accounting for legal costs but without synergies, the fair SP would have been **$55.0** on August 31st, 2016, according to the DCF

analysis. Compared to the final bid of $128, this increases the premium paid to 132.9%. When ultimately, including the synergies value from section 1D into the valuation, the actual value of Monsanto for Bayer is still far below the bid price, yet the premium paid decreases when accounting for synergies. Compared to the final bid of $128 the DCF implies a premium of 120.1% and 69.8$ per share assuming the lowest discount rate for synergies (**Exhibit TN 10b**).

Section 2B: ***Critically assess Bayer´s Due Diligence Effectiveness and thus the Risks of the Initiating Signs of Glyphosate Litigations.***

1. Bayer´s Risk Assessment: In the stockholder meeting in 2019, Baumann addressed the question of whether the risk of glyphosate has been thoroughly assessed and whether the board of management has acted conscientiously. Baumann stated that all risks and opportunities of the Monsanto acquisition had been fully assessed in detail before the signing in September 2016, including the glyphosate controversy. The assessment was based on an internal review of publicly available documents from regulatory authorities, an analysis of confidential Monsanto documents in the due diligence phase, and an independent expert opinion from a leading law firm on the legal risks related to glyphosate. Based on these evaluations, the board of management concluded that the liability risk associated with glyphosate was low and that they were convinced then, that glyphosate is a safe product, as confirmed by the science and extensive use by farmers over more than 40 years. In addition, regulatory authorities worldwide have approved glyphosate-based products and registered other products containing this herbicide, over several decades (Bayer AG, 2019).

2. Incipient Risks of Glyphosate: Monsanto initially based the safety of glyphosate on several scientific studies, which claim the safe application of Roundup. Critics further declared these studies were not objective or relevant enough. Given the controversy, the IARC (International Agency for Research on Cancer convened a working group of 17 experts from 11 countries to review the available scientific evidence to make an independent judgment. In March 2015, the

IARC concluded that glyphosate is "probably carcinogenic". The IARC is part of the World Health Organization. In addition to the IARC assessment, Bayer's position is countered by the so-called "Monsanto papers" leaked in 2017, which reveal the measures Monsanto has taken to maintain the reputation of top-selling products such as Roundup. Bayer´s **due diligence practices**, the **asymmetry of information**, the **underestimation** and **ignorance of the incipient signs of legal settlement costs,** and the **lack of transparency** are seen as red flags in Bayer's due diligence process. The due diligence process is supposed to be an extensive and critically assessed approach to unveil hidden risks and inconsistencies. The risks prevailing, in this case, could have been found to have prevented the loss in value of Bayer´s SP of 37% from the acquisition until 2023, which resulted in more value destruction than creation (Storbeck, 2023). Nevertheless, it seems that from Bayer's point of view, the advantages outweighed the disadvantages and therefore they took the risk of being liable for Monsanto's brand reputation and practices in the future.

Section 3A: ***Describe the agrochemical market in which Bayer and Monsanto operate and its consolidation dynamics.***

According to Macroeconomic theories, the relationship between product substitutability and innovation is an inverted U-shaped, meaning the return for investments in innovation initially rises for all firms, but then when competitor quantities decrease to a "winner-take-all" environment, this effect is declining (Goettler & Gordon, 2013). Not only can innovation be hampered by the small number of big players in the market, but also the price can be controlled and increased in oligopoly-like markets (Mazzeo, 2002). The so-called Big Six (BASF, Bayer, Dow, DuPont, Monsanto, and Syngenta) played a decisive role in the agrochemicals market. Together they controlled 75% of the global agrochemical market, 63% of the commercial seed market and were responsible for 75% of private sector research in seeds/traits. With the merger of Dow Inc. and DuPont in 2015 and the shortly followed merger of China´s National Chemical

Corporation (ChemChina) and Syngenta, the market quickly continued to consolidate which in turn led to an increasingly tight oligopoly with just a few suppliers controlling the majority of the market (ETC Report, 2015). In addition to consolidation, the market environment continues to tighten into an oligopoly because the big six use a multitude of inter-firm agreements to create barriers to entry and to strengthen their market position. Besides R&D alliances and cross-licensing agreements, the Big Six, and later onwards after the merger spree, the big four had their ways of dealing with patent infringements (ETC Report, 2015).

1. Reduction in Innovation: Critics see consolidations as a problem because it reduces the pressure to innovate due to fewer competitors in the market. Economists warn that, when four companies control more than 40% of the market, it causes anti-competitive behavior and a dampening effect on innovation. In fact, in the agrochemical industry, the number of R&D companies active in pesticides decreased from 35 to 18 between 1995 and 2012. Although R&D costs in the industry increased by 118% between 1995 and 2005, the largest share was spent on maintaining old chemical products whose patents were about to expire. A similar cause motivated the failed merger attempt from Monsanto to acquire Syngenta. Monsanto sales came 85% from flagship products whose patents are expiring or defunct. Instead of innovating, the company tried to gain access to the R&D arm of Syngenta through M&A (ETC Report, 2015). While consolidating to gain market share and access to technology is a normal motive for a company in an oligopolistic market, the wave of consolidation in the agrochemical industry is striking. Given the great challenge of the agrochemical industry to provide for a growing world population, these developments potentially hindering innovation are worrying. Statements such as Bayer's intention to form a leader in innovation after the takeover of Monsanto sound good at first glance, but they also entail great risk for the actual innovation output of the agrochemical sector (Massoudi, Fontanella-Khan & Chazan, 2016).

2. Increases in Prices/ Bargaining Power: The consolidation wave harbors further major risks from the customer's point of view apart from the decreasing degree of innovation of the offered products. With the reduction in competition, farmers fear an increase in prices for seeds and chemicals. This in turn could increase consumer prices for food (Chazan, 2016). These concerns are justified, as the agricultural seed and pesticide market is rapidly consolidating, leading to even fewer players in the market, and is protected by high entry barriers due to the expensive R&D costs required to develop products. The big four companies are in a position where they can charge any price for their products due to their strong market position and the dependence of farmers on their products (Smaller, 2016).

Section 3B: ***Elaborate on the Regulatory and Legal Consequences faced by Bayer in acquiring Monsanto.***

1. Approval from Legal Authorities: For the reasons stated in Section 3A, the Bayer-Monsanto deal was under special scrutiny by the cartel authorities. More than 30 authorities worldwide had to approve it (Massoudi, Fontanella-Khan & Chazan 2016). The European Commission alone assessed more than 2,000 different products and reviewed 2.7 mn internal documents, noting that the transaction as notified would significantly reduce competition for price and innovation (European Commission, 2018).

2. Divestiture: Other authorities have come to a similar conclusion, allowing the merger only if Bayer sells parts of their crop science business. Among others, all field crop seeds businesses, as well as respective research and development capabilities were sold to BASF for €7.6bn. The assets sold generated €2.2bn in annual sales for Bayer. The forced sale and the resulting lower base of growth synergies resulted in Bayer´s CFO Johannes Dietsch reducing the anticipated synergies (Section 1C) by $0.3bn from $1.5bn to $1.2bn after three years (Reuters, 2018). Following on from *Section 1A* and *Section 1D*, the forced divestment imposed by regulatory authorities exacerbates the picture, by eroding the key motives of synergies. The equity

contribution of synergies was already low before ranging from 3.3% to 3.6%. The further reduction of planned synergies diminishes the importance of synergies as a motive. Overall, it can be said that future mergers in industries, such as the agrochemical industry and the accompanying regulation are posing the additional risk that projected value creation e.g., through synergies may not materialize as planned because of the possible regulatory bans**. 3.**

***Section 4A:* What are the different Payment methods available in an M&A Transaction and how do they differ?**

When buying a company, the buyer has mainly three possible modes of payment to choose from: an all-cash transaction, purely in stocks (which is the most common form), or a mix of both methods. The choice of payment has an impact on factors such as the risk-sharing of the transaction, the value paid for the company to be acquired, and the allocation of synergies (Faccio & Masulis, 2005; Betton, Eckbo & Thorburn, 2008).

Responsibilities: By choosing to pay with cash, the responsibilities of both the seller and the buyer are clear and get transferred from seller to buyer. The seller is cashing out and the buyer must now maximize the value of the combined entity, while in a stock payment, both entities carry the responsibility for value creation. A cash deal also comes with a much simpler transfer of ownership, making the buying process easier, and leading to a faster deal closing. The roles of the involved parties are also unambiguous in an all-cash transaction, implying a simple transfer of ownership (Rappaport & Sirower, 1999).

Risk: In an all-cash deal, the entire risk is transferred to the buyer. The buyer then bears pre-closing market risk where the SP of the target may decrease and post-closing risk, where the buyer may not be able to create value. Another risk is that the acquirer can end up with less liquidity and if they borrowed money to finance the deal, they are also exposed to financing risks. On the other side, the target shareholders cannot benefit from the upside after the deal, if value is created in a cash transaction. The fast pace is mainly ensured, due to the buyer´s

shareholders not having to approve a cash deal, which is contrary to a stock deal. In a stock deal, on the other hand, the risk is split between the buyer and seller, and since both parties have a stake in the company, the interests, and incentives to improve the company's performance of the shareholders of both entities are aligned (Tseng & Chen, 2023).

Control: When the acquirer pays the target´s shareholders in the form of a cash payment and thus receives sole control of the target company, they can avoid potential future conflicts of interest in decision-making processes between the acquirers and the target´s old shareholders.

Value-Creation Incentives: As mentioned above, sellers in cash deals simply cash out and sell their responsibility in the firm. A stock deal on the other hand allows for shared responsibility of the buyer and the seller to make the combined firm excel. Stock deals typically incentivize the target's management to make value-enhancing decisions over a longer period, than a cash deal, as they participate in the shareholder value maximization processes (Rappaport & Sirower, 1999).

Synergy: An all-cash deal, exposes solely the buyer to a complete exposure to the synergy realization as well as the shareholder value added. The shareholder value added is the value of the synergies minus the acquisition premium paid (Rappaport & Sirower, 1999). On the other hand, in a stock deal, the synergy risk and potential value-creation benefits are split between the buyer and the seller. The seller can then benefit from the synergy creation if they incur above the premium paid. In a stock deal, the same premium is paid as in a cash deal, but the value creation from synergies has to be split, which is of disadvantage to the acquirers' initial shareholders, who will have reduced shareholder value added. Though, this can be limited by issuing fewer shares. When the buyer is unsure about the synergy value creation, he will often go for a stock consideration. Hence, a cash deal can also indicate strong confidence in the value creation from the buyer's side.

Transaction Size and Buyer Type: Stock deals are usually only used in large transactions. The reasons for this are first, issuing stock in private companies is more cumbersome as the valuation will not be market-based. Secondly, the companies acquired in a stock deal must be publicly listed, which is usually just the case for larger companies (Martin, 1996). Furthermore, large acquisitions by strategic investors are usually pursued through stock deals as opposed to private equity investors or hedge funds, which usually acquire companies with cash (Rappaport & Sirower, 1999).

Market Signalling: A cash deal can send a positive signal to the market, indicating that the buyer's management is highly confident in the risk mitigation, value creation, and success of the deal. Since with a stock deal, the fair value of the acquirer is not always clear, the buyer may avoid issuing stock if its stock is believed to be undervalued, to prevent further dilution of its shareholders. This way an overpayment of the target can be prevented by avoiding giving out more under-priced stocks. In contrast, if the buyer does agree to pay with stock, it could signal to the market that the management believes the stock is overvalued, which may lead to a drop in the SP. Nonetheless, it's important to note that stock issuance doesn't always indicate the management's belief about the mispricing of the stock (Shleifer and Vishny, 2002).

Financial slack and debt capacity: In a cash deal, the acquirer uses up financial slack, when choosing a cash payment form, as they deplete cash reserves and leverage their debt capacity. Stock deals are favored for companies, which do not have enough cash on the balance sheet or are satisfied with their current debt structure and do not want to issue more debt. Firms, which have too much debt can also rectify this, by issuing equity for the next acquisition to balance out the Debt-to-EV ratio. (Bowers et al., 2000).

Taxes: The method of payment for an acquisition, moreover, affects the tax payments of shareholders. When cash purchases are financed with debt, then the acquirer benefits from a tax shield. But this payment form also leads to capital gains taxes having to be paid by the target´s

shareholders, as they sell their shares in the transaction to the buyer. Stock-financed acquisitions allow the target´s shareholders to defer taxes until they sell the acquirer's stock (Saunders, 2019; Rappaport & Sirower, 1999).

***Section 4B:** What was the Reasoning behind Bayer's Decision to Opt for an All-Cash Transaction?*

At the time of the offer, the deal was the largest all-cash sale in history and many experts were surprised when Bayer decided for an all-cash offer, rather than a combination of shares and cash, due to the risk of regulatory and legal hurdles associated with the merger (Massoudi, Fontanella-Khan & Chazan 2016).

1. Certainty in the Success of the Merger: Bayer demonstrated significant determination to make the deal a success based on their tactics and continued negotiations during the acquisition process. The fact that Bayer raised their purchase price three times after Monsanto rejected the previous bids shows how convinced the decision-makers were about the success of the merger. Additionally, the high premium paid in their final bid ($128) of 44.0%, and the premium of 53.3% over the standalone valuation ($83.47) from Section 1C, further emphasizes Bayer's confidence in the value of Monsanto. In the offer submitted on the 14th of September 2016, Bayer also included a $2 bn safety payment to be made to Monsanto in case the necessary antitrust clearances were not obtained (Reverse Antitrust Break-Up Fee) (Bayer AG 2016b). This is further proof, that Bayer was very confident about the deal and wanted to demonstrate this to Monsanto and its shareholders. As described in section 4A under the heading of "Synergies," in a stock deal, the positive effects of expected synergies between existing and new shareholders are shared. Bayer´s confidence in value creation can further be justified by their expectation of synergy generation and a significant gain in market share. Thus, Bayer wanted to benefit from the expected benefits alone and not get diluted by a greater pool of shareholders (Sankar & Leepsa 2018; Bayer AG 2016b).

2. Speeding Up the Deal: Due to the complication of the transaction and the 30 legal jurisdictions required (Case, page 3), it was already expected at the time of the announcement, that it would take at least until the end of 2017 to close the deal (Massoudi, Fontanella-Khan & Chazan 2016). Given that the mergers between Syngenta and ChemChina, which began in February 2016, and Dow Chemical and DuPont, which began in December 2015, were still ongoing, Bayer was able to anticipate the hurdles it would have to overcome to gain approval for the deal. Since those hurdles were already expected to be time-consuming, additional complexity due to a stock deal was to be avoided. Bayer wanted to expedite the process by choosing a cash deal because of the much simpler structure compared to a stock deal, where an exchange ratio is needed. The risks and responsibilities are significantly lower for Monsanto shareholders in a cash deal. They get paid a premium on the current SP and no longer bear any risk concerning post-merger value creation. This ensures that the shareholders of Monsanto are more inclined to accept the deal quickly so that the purchase process can be carried out faster as well.

3. Financing Costs: In March 2016, the European Central Bank's benchmark interest rate for the Eurozone hit its all-time low of 0.00% (European Central Bank 2016a). Since 2007, in response to the banking and economic crisis, the interest rate has been continuously lowered to support businesses and governments in the Eurozone. The effects of this extremely low-interest rate environment can also be seen in the negative yields on German government bonds, as shown in **Exhibit 4**. With interest rates at significantly low levels, it was highly attractive for Bayer to take on debt to finance the acquisition (McCrum 2016). Also, the average pharmaceutical company had a book debt to value ratio of 84.77% in January 2017 (Alpha Insights, 2017) meanwhile, in December 2016, Bayer had a book debt to value ratio of 61.21% (Bayer, 2016c) which provided them with significant headroom to take on more debt. As Bayer's debt-to-value ratio is lower than its peers, obtaining bridge financing and issuing bonds

to raise the required cash for the acquisition instead of raising equity is further justified. Hence, Bayer was able to secure the necessary capital at favorable terms and take advantage of the tax benefits of debt financing, as described in *Section 3.1 Taxes*.

***Section 4C:* What were the potential Risks involved in Bayer´s Choice of Payment?**

By choosing an all-cash deal, the risk that the expected synergy value included in the acquisition premium will not materialize was entirely assigned to Bayer, as well as the participation in value creation after deal closure (Rappaport & Sirower, 1999). This has created an imbalance in the alignment of Monsanto's and Bayer's interests. Monsanto's management team, after accepting the deal, only had short-term interests that they pursued to close the deal. Whereas Bayer continued to be interested in the long-term success of both companies. This imbalance in interest creates the risk, that potential issues with Monsanto may be obscured to ensure the completion of the merger. In addition, by agreeing to the $2 bn reverse antitrust break fee, they also carried the risk of further incurring costs in the event of a regulatory ban. Moreover, Bayer used up their cash reserves with their choice of payment, carried the risk of debt default, and increased the risk of financial slack. Since the biggest share of the purchase price was financed by debt, Bayer was carrying the risk of the failure in value creation to repay their debt holders and distribute profits to their shareholders.

***Section 4D:* How would a Stock Deal work in the case of the Bayer/Monsanto merger? Describe the Special Characteristics.**

An alternative to Bayer's choice of an all-cash deal would have been a stock deal, in which Bayer would pay a portion or the entire purchase price to Monsanto´s shareholders in the form of its stock. However, this would result in a dilution of Bayer's shareholders, as new shares would be issued for the acquisition, and Monsanto shareholders would become Bayer shareholders. The ratio at which these shares would be issued is called the exchange ratio and determines how many shares each Monsanto shareholder will receive in the new combined

company. In a stock deal, further considerations are included in the decision, whether to pay with a fixed number of shares or a fixed value for the deal. In a fixed exchange ratio deal, even if it limits the ownership risk (the seller will know the quantity of the shares in the combined entity it will own), there is a value risk for the target shareholders, as the stock of the acquirer could plunge in the meantime, resulting in a lower price for the acquisition (Rappaport & Sirower, 1999). On the other hand, in a fixed-value deal, ownership risk appears, and the acquiring company bears all the value risk. In case the buyer's stock price drops before the deal, the buyer will have to issue more shares giving less exposure to the shareholder value added but the seller will be better hedged on his side. Usually, in terms of market signaling, fixed-value deals reflect the buyer management's confidence, as it shows their belief in an increase in the buyer's stock price.

***Section 4E:** What should be the exchange ratio based on your valuation, if Bayer initiated a stock-for-stock swap? What does this imply about the synergies shared with the target?*

One of the most difficult issues in a stock deal is the determination of the exchange ratio. This defines the share of the merged company, which goes to the shareholders of the target.

To illustrate that different exchange ratios at different points in time can differ immensely, **Exhibit TN 11** provides some possible scenarios. A distinction is made between the fixed exchange ratio deal and the fixed value deal. **1. Fixed exchange ratio deal:** In an exchange ratio share deal, the percentage of the new company that the target´s shareholders will receive is determined at the announcement of the deal. In **Exhibit TN 11** the exchange ratio is calculated for four different scenarios. The first three scenarios in **Exhibit TN 11**, refer to the 31st of August 2016 (the date to which Monsanto reported its annual report before the deal announcement) and take Bayer's SP of that day as a reference to calculate Bayer's market capitalization. To calculate the market capitalization of Monsanto, three different values were assumed. First, Bayer's final offer of $128, second the DCF standalone valuation from *Section*

1C ($83.50), and third the value of standalone plus synergies from *Section 1E* ($86.3). The exchange ratio fluctuates between 0.79 to 1.21, depending on Monsanto's SP. The final scenario uses the undisturbed SP of Monsanto and Bayer from the 9th of May, 2016, two weeks before Bayer made its initial offer. This results in an exchange ratio of 0.82. Depending on which scenario is considered, Monsanto's shareholders would receive 29.52% to 39.11% of Bayer's shares after the deal. This major difference is why it is particularly challenging in stock transactions for both parties to agree on an exchange ratio because the value of the target company and the value of the acquirer both need to be determined.

2. Fixed Value Deal: In a fixed value deal, both parties agree on a value that will be paid for Monsanto. The real date of the Merger closing, 07 June 2018, and the opening SP of Bayer on this date is considered in this analysis. Since Bayer's SP has developed slightly positive in the almost two years between the signing and closing of the deal, we see in the scenarios that compared to those in the fixed exchange ratio deal Bayer now gives a smaller part of its shares to Monsanto. The percentage that Monsanto shareholders will receive and the exchange ratio will be determined on the days before the closing. In **Exhibit TN 11**, three different scenarios with different evaluations of Monsanto are presented. First, the final bid of Bayer of $128 is used for the valuation of Monsanto, second, the DCF valuation of the stand-alone company from section 1 ($83.50) and third, the value of the stand-alone company plus synergies from section 1 ($ 86.2). This results in exchange ratios between 0.71 and 1.09.

***Section 4F:* Considering the previous Results, would a Stock Deal for Bayer have made sense?**

In the case of a stock deal, certain challenges would arise, such as the potential delay of the closing of the transaction and the dilution of Bayer's stockholders. In the scenarios in **Exhibit TN 11,** between 27.32% to 39.11% of new shares would have had to be issued. This means that a shareholder who held 1% of Bayer before the deal would have held only 0.60-0.70% of the

combined entity after the deal. Bayer would have diluted its shareholders so much that it is very likely that they would have opposed the merger even further. Additionally, the students are expected to mention that in this case, the expected synergies will not exclusively benefit Bayer shareholders, meaning that the synergies calculated in Section 1C would only be added to the standalone valuation of Monsanto at a certain percentage (1 minus the percentage of shares that Monsanto shareholders receive). Nevertheless, it could have been beneficial for Bayer to choose a stock payment, from a risk perspective, as then the interests of all shareholders would have been aligned equally, especially in a deal that entails as many risks as this one. The potential lawsuits, regulatory approvals, or the denial of providing due diligence information by Monsanto in Bayer´s first bids were risks, which Bayer could have shared with Monsanto. On the other hand, Bayer's confidence towards shareholders and the media when considering the merger indicated a tendency to strive for an all-cash deal.

Section 5A: What are the most common types of divestitures and what are the main differences among them?

Divestitures are an important option for firms to manage their corporate structure most efficiently, for example, break up conglomerates that are traded under a discount, responding to new regulatory requirements, and with the growing importance of the private equity market, selling parts of the company to a private firm. Divestiture is a way to sell a part of a business to a third party. The most common reasons behind divestitures are a change in the parent entity's focus, a separation from a cash-burning division, a failed acquisition, or an antitrust request to ensure competition in the market (Gaughan, 2010).

1. Spin-Off: In a spin-off a new company is created by separating a division or business unit from the parent company and making it a new independent, publicly traded company. In a spin-off, the parent company distributes shares of the newly created company to its existing shareholders on a pro-rata basis, which means that the shareholders receive a certain number of

shares in the new company for every share they hold in the parent company (Gaughan, 2010). The new company has its board of directors, management team, and shareholders separate from the parent company. For the parent company the spin-off does not lead to a cash inflow, the company is solely split away (Kastiel, 2015). Overall, a spin-off is a way for a parent company to unlock the value of a business unit or division that may not be fully appreciated by the market, while also providing the new company with the independence and financial flexibility to pursue its strategic objectives (Gaughan, 2010).

2. Equity Carve-Out: Carve-outs, also known as equity carve-outs, are a type of divestiture where a parent company sells a portion of its ownership in a subsidiary or division to outside investors, as opposed to selling it to existing shareholders, as is done in a spin-off (Gaughan, 2010). In contrast to spin-offs, carve-outs provide the parent company with cash proceeds from the sale, whereas the shares of the division are sold in a public offering and then to be distributed among the parent´s firms shareholders. (Schipper & Smith, 1986). The parent company may no longer have control over the divested unit, and a new entity is formed with a separate capitalization table. The decision to pursue an equity carve-out instead of a spin-off may depend on the parent company's access to capital markets, with companies with less access to the markets often choosing spin-offs (Gaughan, 2010).

3. Split-Up: In a company split-up, the parent company is divided into separate entities through a process similar to a spin-off or carve-out. However, unlike those methods, the parent company no longer exists after the split-up, and instead, separate companies are created from the division of the original entity. This means that investors in the newly created entities may differ from those who held shares in the parent company, as shareholders of the parent company must exchange their shares for shares in the new companies. The split-up can be a complex process, involving legal and financial considerations, as well as the restructuring of the original entity's assets and liabilities among the newly created companies (Gaughan, 2010).

4. Sell-Off: A sell-off involves the divestiture of a specific asset from the parent company, with the asset being sold for cash or securities to another company or entity. As a result, after the sale, there is no longer any connection between the company and the sold business unit. The proceeds from the sale are subject to taxation, and the parent company may use them for other corporate purposes or distribute them to its shareholders (Prezas & Simonyan, 2015).

***Section 5B:** What are the motives behind some stockholders' requests for Bayer to be split up?*

As mentioned in the case study on page 13, because of the high costs incurred by the glyphosate lawsuits, there have been voices calling for Bayer to split its two major businesses, pharmaceuticals and agriculture. There are several reasons for this:

1. Conglomerate Discount: The conglomerate discount, refers to the phenomenon of a firm comprised of multiple business units in different verticals being undervalued by the markets due to a perceived lack of focus. After the initial plaintiffs were granted the right in the glyphosate legal dispute, there were efforts to split Bayer into its Crop Science and Pharma businesses. The reasons behind this were that Bayer's Pharma sector is now being traded at a discount due to the transaction. Following the first glyphosate lawsuits, Bayer's shares were traded at an EV/EBITDA multiple of five, whereas comparable EU pharma companies were traded at an 11.0x multiple (Liu, 2018). As a result, it could become very expansive for Bayer to raise money to invest in the Pharma business in the future. Therefore, the split could also potentially enable Bayer to raise new funds and continue investing. The reason why conglomerates sometimes are traded at a discount is that investors can diversify their portfolio on their own by investing in different sectors individually, rather than relying on a conglomerate to do so (Zieminsky, 2012).

2. Bayer Reputational Risk: Even before the merger, there was a clear recognition of Monsanto's bad reputation and the potential impact this could have on Bayer. In 2016,

Monsanto was ranked as the fifth most disliked brand in America (Reid, 2016), primarily due to criticism of its products like the herbicide Roundup and a range of unethical business practices (Hakim, 2017). In contrast, prior to the merger, Bayer's name was associated with high quality and safety, which it had built through its pharmaceutical division (Dewey, 2018). Thus, separating the two business segments could safeguard the reputation of Bayer's original core business, and ensure the future success of the pharmaceuticals division.

3. Different Risk Tolerance between Pharmaceutical and Agricultural-Arm Investors: The merger will result in a shift in Bayer's corporate structure, with the agricultural business accounting for half of all sales instead of one-third, changing the company's focus from healthcare to agriculture (Case, page 8). This also changes the risk profile, with Monsanto's history of extensive litigation and unethical business practices making it a riskier investment than Bayer's pre-merger reputation (Hakim, 2017). Thus, investors in Bayer's stable business model have a different risk profile than those who invest in Monsanto. To clearly distinguish these different risk profiles, separating the two business arms might be a helpful solution.

***5C:** Discuss what form of divestiture would have been appropriate in Bayer's case and why.*

The students are expected to pick the most suitable divestiture type for the case, assuming that Bayer divests its agricultural arm combined with Monsanto business. In Bayer's position, only two alternatives from the four mentioned in 5A can be considered. As Bayer paid a high premium for Monsanto and the management believes in the success of the agriculture division, it is highly likely that Bayer would want to remain involved with the new formed company. Given Bayer's strong reputation as a brand, the company is not interested in a complete break-up of the company and giving up its name and identity as would be the case in a split-up. As such, Bayer has the option of a spin-off or carve-out to separate the two distinct parts of the company.

Spin-off: In a spin-off scenario, the agriculture division would become a separate company listed on the stock exchange, with its shares distributed to current Bayer's shareholders. This type of divestiture does not involve raising new capital, as no new shares are sold to outside investors. The investor structure would remain the same, meaning that Bayer shareholders would still face the drawbacks mentioned in 5B. Just that a spin-off would provide each shareholder with the flexibility to decide on their own whether, when, and how much they want to be invested in the Agriculture division.

This would be nothing new for Bayer, in September 2015 Bayer used a Spin-off to divest their former plastics division Covestro. With the justification that they wanted to concentrate on their core business in the healthcare sector and divest business areas that do not belong to this focus.

Carve-out: In a carve-out scenario, Bayer would separate the agriculture division and list it on the stock market as a newly created company, selling shares to new investors. Bayer would either retain a certain stake in the new company or sell all shares in the business to new shareholders. In other words, Bayer's current shareholders would either only hold passive stakes in the new company via the shares Bayer itself holds, or would no longer hold any shares in the Agriculture division at all. The big advantage of this method would be that Bayer receives cash from the sale, which they could either invest in the further development of their core business, the pharmaceutical sector, or alternatively distribute to their investors in the form of dividends. It should be noted that a carve-out also depends on the current sentiment of the capital markets. A successful IPO is only possible if enough investors participate in the transaction. Due to the influence of these external factors, Bayer is significantly less flexible concerning the timing of the transaction.

<u>Section 6A:</u> Identify the principal risk of the transaction and the stage at which the risk occurred.

1.0 Before Announcement, Risks for the Buyer: Prior to the merger, Bayer confronted the risk that Monsanto could be acquired by another firm in a bidding war. Thus, BASF's offer for Monsanto, which would have made BASF-Monsanto the world's largest agrochemical supplier if the deal had been realized, would have resulted in Bayer, missing out on this deal and potential leadership position. Changes in macroeconomic conditions may also pose a risk to the buyer for example in its buying power. Though, no significant event with economic impact was happening around the event and economic conditions were even favorable at the time of the deal due to the low-interest rates (European Central Bank, 2016b) and booming capital markets (Nasdaq, 2016) this risk was not relevant for the merger. A turnaround in economic conditions could not be ignored as a potential risk prior to the merger since the transaction was largely financed by debt. Therefore, rising interest rates would have made the financing terms of the transaction more expensive since Bayer syndicated a $56.9bn loan from more than 20 banks.

1.1 Before Announcement, Risks for the Target: The risk Monsanto was facing was, that their management could have been replaced by a different acquirer through a hostile-takeover, since they were a publicly listed firm or even by Bayer, whereas a hostile takeover would have not included a premium on the SP (Chatjuthamard, Ongsakul, Jiraporn, 2022). The risk of a hostile takeover is particularly high in the industry due to the significant consolidation pressure that weighed on the remaining market players following the two merger announcements of DuPont with Dow Chemical and ChemChina with Syngenta.

2.0 In the Time between Announcement and Closing, Risks for the Buyer: The risk for Bayer during the deal was the possibility of overpaying for the target company, due to an asymmetry of information and imperfect due diligence process, as it has been elaborated in Section 2B as well. The lack of success in Bayer´s due diligence was an imminent risk, which already became prominent when access to due diligence information was strictly only given out

by deal announcement (Wangerin, 2012). Bayer is also facing a financing risk due to their decision for an all-cash payment.

2.1 In the Time between Announcement and Closing, Risks for the Target: Monsanto faced the risk of potentially being undervalued or underpaid. At this stage, the deal may also be canceled, resulting in both the buyer and the seller forfeiting the resources spent on the merger (Sales, Zanini, 2017).

3.0 After closing the Deal, Risks for the Buyer: Incorporating the target company and subsequently creating value through the merger is the predominant risk for Bayer after the transaction is completed. Among others, underlying reasons for a failed integration could result in difficulties to execute strategies, cultural mismatches, or uncovering flaws in due diligence. Integration could further be hindered if a consensus between Bayer´s and Monsanto´s shareholders could not be reached. A consensus with both management teams is not relevant in this case, as the main board positions from Monsanto announced their termination upon deal closure. Another risk for the buyer would be as elaborated in Section 1D, that the anticipated EBITDA contributions stemming from synergies, which were uncertain, as they have an inherently higher risk than regular company cashflows could not materialize (Vertakova, Vselenskaya, Plotnikov, 2021). Another risk for Bayer would be when the deal does not generate expected returns.

3.1 After closing the Deal, Risks for the Target: Since this was an all-cash deal, there are no sources of potential risks, which Monsanto would face after the deal closure since the risk and responsibilities were fully transferred to Bayer.

Section 6B: ***What were the different risk mitigation strategies that Bayer and Monsanto could have implemented before, during, and after the deal?***

This section is meant for the student to build upon the previous M&A risk section. The student is expected to separate the different risk management mechanisms according to the stage of the deal.

Before Announcement: To reduce the risk of losing the bidding war against BASF, a lockup option would have been an effective mitigation strategy for Bayer and Monsanto. Here, the target company, for example, Monsanto, gives a preferred acquirer (white knight) the right to acquire a portion of the company's shares at a lower price. This improves the purchasing position compared to other bidders such as BASF (Burch, 2001). A toehold stake where Bayer acquires in secret, a maximum of 4.99% of shares of Monsanto could also mitigate the risk of Monsanto being acquired by another buyer since that would increase the share price that would have to be paid by a competing bidder such as BASF, who would have to purchase the 5% back at a premium (Ravid, Spiegel, 1999). Bayer can protect itself against the risk of having to exercise the deal in a changing macroeconomic environment and consequently higher interest rates and financing costs by means of a material adverse chance clause in the purchasing agreement. It allows a buyer to withdraw from the purchase agreement between signing and closing if micro- or macroeconomic changes would have changed the value of Monsanto. Such a mechanism would also have been conceivable for litigations that arose between signing and closing. (Denis, Macias, 2012). To protect itself against a hostile takeover, Monsanto could have drawn on a number of anti-takeover defenses such as poison pill, Pac-man defense, greenmail, or white knight (Stout, 2002).

In the Time between Announcement and Closing: To give both sides transaction security and to compensate the invested time in case of a termination, a breakup fee can be installed. In the Bayer-Monsanto case, a $2bn breakup fee was put in place for Bayer to protect Monsanto from a deal cancellation. In addition, the breakup fee also compensates Monsanto for the lost opportunities from turning down other offers if no deal was reached (Sneirson, 2008). Also,

Bayer could request implementing a topping fee which would be paid if another competitor acquires Monsanto, to still receive compensation for the lost deal or an exit clause, where under specific conditions the deal can be terminated without any fees having to be paid (Alexander, 2002). The most common risk management approach with respect to determining the fair value of the target during the deal is the due diligence phase. In order to avoid unexpected elements showing up after the merger, the buyer usually pursues legal, commercial, financial and, sometimes additional other due diligence areas undertaken by external experts. This allows the buyer to investigate further in depth the different aspects of the target and to reduce information asymmetry in order to avoid overpaying for the deal (Bhagwan, Bam & Grobbelaar, 2018). As discussed in 2B, inadequate due diligence or rather misjudging identified risks is one of the key reasons why Bayer overpaid for Monsanto.

After closing the deal: Escrow accounts can be used to decrease the risk of the buyer by only allowing the transfer of the funds to the sellers in case post-merger conditions are met. This allows the buyer to pursue post-merger due diligence and lowers the incentive of the seller to hide information that could harm the success of the merger. Usually, accompanying escrow accounts are supplementary audits. In case the buyer is unsure about the different assets of the seller, further audits can be pursued before transferring the funds (Borselli, 2022). Management incentives are equally important for post-merger integration. Earn-outs in the form of Bonuses, stock options, and other financial rewards can be used to maximize the target's management to successfully integrate into the parent company (Tuschke, 2003). In order to reduce the risk through a choice of payment form, usually a stock deal is then pursued. Similar to management incentives, stock deals incentivize the target and the buyer's management to make the merger a success for both firms. In cash deals, the responsibility and the pay out of the merger go to the buyer and thus, is a much riskier option (Rappaport & Sirower, 1999). Therefore, in the case of

Bayer and Monsanto, the question can be raised why Bayer decided on an all-cash deal, despite the great risks that the deal entails (Section 4B).

What happened? - Aftermath of the Deal: The first settlement agreement for the glyphosate case was not the only issue that Bayer faced after completing the transaction. The costs of the litigation had far-reaching consequences. The company paid a total of ~$17.7 billion to 141,000 plaintiffs between 2018 and 2022, significantly reducing the value of Monsanto, as seen in Section 2. Additionally, Bayer's stock price suffered greatly from the consequences of the deal, losing over 55% of its value from the closing on June 7th, 2018, to the beginning of 2023. Bayer's stock also faced immense headwinds as shareholders accused the company's management of underestimating the risks of the Monsanto acquisition. Christian Strenger, an individual Bayer shareholder, requested a special audit at the company's 2019 annual general meeting to investigate whether management had prudently managed the risks of the Monsanto litigation. Additionally, 55.5% of attending investors voted against the discharge of Baumann and his team. Even the Bayer board was affected by the revolt, with only 66% voting in favor of the board's discharge. This was an unprecedented event and had never occurred in a company listed on the German stock index (Bender, 2020). This represents the greatest possible protest that shareholders can make against management and highlights the great skepticism among investors about whether Bayer's management is up to the challenges posed by the glyphosate lawsuits (Chazan, 2019). In addition to the trial failures concerns, Bayer's debt from the takeover burdened investors, whilst Bayer's pharmaceutical pipeline was further challenged, since its best-selling medications, the blood thinner Xarelto and the eye medication Eylea, begin to lose their patent protection in 2023. Because of the Monsanto deal, the business lacked the funds necessary to complete any further significant pharmaceutical deals. In order to cope with the financial burden of the legal disputes and reassure investors, Bayer had to restructure the company. In 2020, Bayer sold its animal health division to Elanco Animal Health Incorporated

for $5.17 billion, as well as the Coppertone brand of sunscreens to Beiersdorf for $213 million and Dr. Scholl's foot care brand to Yellow Wood Partners for $585 million, both in 2019 (Liu, 2019). However, as the share was still unable to catch up in the following years grows doubts of investors if Bayer's management team is able to stabilize its SP and attracted activist funds to steer the company in a different direction. In 2023, an activist investor, called Jeff Ubben led Inclusive Capital Partners and Bluebell Capital Partners to build up holdings in Bayer and demanded Bauman's dismissal a year earlier than the end of his contract due to his apparent inability of detangling the Monsanto litigations (Kuchler & Storbeck 2023). Baumann was then declared to be replaced with the pharmaceutical executive, Bill Anderson in early 2023. Further demands of the investors, was a split of the company´s pharmaceutical and agricultural divisions into separate entities. The main motive for Ubben's split-up plans is that he sees significant profit opportunities in Bayer's crop science business due to the threat of food security posed by climate change. In his opinion, companies that solve these massive problems deserve a high multiple. As a standalone company, Ubben said, Bayer's crop science business could achieve valuation multiples similar to those of Corteva, which was Dow Chemical's agricultural business before the spinoff in 2019. Today, Corteva sells seeds, herbicides, and fertilizers. Its stock trades at 20 times earnings and the company's shares rose 30% in 2022, while much of the stock market declined. In contrast, Bayer's SP fell 1% in 2022 and traded on a much lower multiple during that time (Temple-West & Mundy 2023). Furthermore, Bluebell argues that there are no synergies between the two groups and estimates that a separation could bring in €15 to €30 bn (Kuchler & Storbeck 2023). Anderson stated after the announcement of his appointment to the Management Board in April 2023 and his appointment as CEO in June 2023, that the group faces unique challenges and he will consider all options, including a possible split, to solve Bayer's problems caused by the Monsanto merger (Kuchler & Storbeck 2023).

References - Teaching Note

Alpha Insights (2017). "Cost of Equity and Capital." Retrieved 15.04.2023 from https://alphabridge.co/featured/structuring-and-valuing-earn-outs-in-ma/.

Alexander, Frederick (2002). "Reining in Good Intentions: Common Law Protections of Voting Rights, Social Science Research Network." Retrieved 12.04.2023 from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=333060.

Back, Matthias (2020). "Update Bayer/Monsanto: The chronicle of a risky takeover. Process." Retrieved 12.04.2023 from https://www.process.vogel.de/update-bayermonsanto-die-chronik-einer-riskanten-uebernahme-a-967486/.

Bayer (2016a). "Investor presentation – Crop Science." Retrieved 14.04.2023 from https://www.slideshare.net/BayerAG/bayer-ag-meet-management-2016-investor-handout.

Bayer (2016b). "Bayer and Monsanto to Create a Global Leader in Agriculture." Retrieved 24.04.2023 from https://www.bayer.com/sites/default/files/2020-11/Ad-hoc_2016-09-14_e.pdf.

Bayer (2016c). "Annual Report 2016." Retrieved 24.04.2023 from https://www.bayer.com/sites/default/files/ar-2016.pdf.

Bayer (2016d). "Bayer Offers to Acquire Monsanto for USD 122 per Share in Cash to Create a Global Leader in Agriculture." Retrieved on 23.02.2023 from https://www.bayer.com/sites/default/files/2020-11/Ad-hoc_2016-05-23_e.pdf.

Bayer (2016e). "Bayer to issue mandatory convertible notes." Retrieved 20.04.2023 from https://www.bayer.com/sites/default/files/2020-11/Ad-hoc_2016-11-15_e.pdf.

Bayer (2018). "Monsanto Acquisition Update." Retrieved 24.04.2023 from https://www.bayer.com/sites/default/files/Bayer_Investor_Presentation_Monsanto_Acquisition_Update_June_2018_final.pdf.

Bayer AG (2019). "Werner Baumann speech at annual stockholder meeting." Retrieved 20.03.2023 from https://www.media.bayer.com/baynews/baynews.nsf/id/BBLB9P-Address-by-WernerBaumann?.

Bender, Ruth (2020). "Bayer Agrees to Audit on Due Diligence After Monsanto Deal." wall street journal. Retrieved 20.04.2023 from https://www.wsj.com/articles/bayer-agrees-to-new-review-of-monsanto-purchase-11582798483.

Benn, S. & **Abratt,** R. & **O'Leary,** B. **(2016). "**Defining and identifying stakeholders: Views from management and stakeholders." South African Journal of Business Management, 47 (2), 1-11. DOI: http://dx.doi.org/10.4102/sajbm.v47i2.55.

Betton, Sandra & **Eckbo,** Espen B. & **Thorburn,** Karin S. (2008). "Handbook of Empirical Corporate Finance." Retrieved 20.04.2023 from https://www.sciencedirect.com/science/article/abs/pii/B978044453265750007X.

Borselli, Angelo (2022). "Insurance in M&A Transactions." AIDA Europe Research Series on Insurance Law and Regulation, 6, DOI: https://doi.org/10.1007/978-3-030-85817-9_9

Boudreaux, Kenneth (1975). "Divestiture and SP." Retrieved 24.04.2023 from https://www.jstor.org/stable/2330610.

Bowers, Helen M. , **Moore,** Norman H. **& K.S.** Maurice Tse. "Signaling, Financial Slack and Corporate Acquisitions." Review of Quantitative Finance and Accounting, 15, 195–216, DOI: https://doi.org/10.1023/A:1008373205675.

Burch, Timothy R. (1999). "Locking out rival bidders: The use of lockup options in corporate mergers." Retrieved 20.04.2023 from http://moya.bus.miami.edu/~tburch/lockupjfe.pdf.

Burger, Ludwig & **Bellon**, Tina (2020). "Bayer to pay up to $10.9 bn to settle bulk of Roundup weedkiller cancer lawsuits." Retrieved 22.04.2023 from https://www.reuters.com/article/us-bayer-litigation-settlement-idUSKBN23V2NP.

Bruner, Robert F. (2004). "Applied Mergers and Acquisitions." University Edition. Hoboken: John Wiley & Sons.

Chatjuthamard, Pattanaporn & **Ongsakul**, Viput & **Jiraporn**, Pornsit (2022). "Do hostile takeover threats matter? Evidence from credit ratings." Retrieved 21.04.2023 from https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0260688.

Chazan, Guy (2016). "Bayer targets one-stop shop with Monsanto." Retrieved 26.04.2013 from https://www.ft.com/content/3d972e64-7a5e-11e6-ae24-f193b105145e.

Chazan, Guy (2019). "Bayer Execs Face Investor Heat after Rare No-Confidence Vote." Financial Times, Retrieved 26.04.2013 from https://www.ft.com/content/0a6cc01c-69a3-11e9-80c7-60ee53e6681d.

Denis, David & **Macias**, Antonio J. (2013). "Material Adverse Change Clauses And Acquisition Dynamics." Retrieved 19.04.2023 from https://www.jstor.org/stable/43303823.

Dewey, Caitlin (2018). "Why 'Monsanto' is no more." Retrieved 23.04.2023 from https://www.washingtonpost.com/news/wonk/wp/2018/06/04/why-monsanto-is-no-more/.

European Central Bank (2016a). "Monetary policy decisions." Retrieved 24.04.2023 from https://www.ecb.europa.eu/press/pr/date/2016/html/pr160310.en.html.

European Central Bank (2016b). "Euro area bank interest rate statistics: December 2016." Retrieved 21.04.2023 from https://www.ecb.europa.eu/press/pdf/mfi/mir1612.pdf.

Faccio, Mara **& Masulis,** Ronald W. (2005). "The Choice of Payment Method in European Mergers and Acquisitions." The Journal of Finance, 60 (3): 1345-1388. DOI: https://doi.org/10.1111/j.1540-6261.2005.00764.

Feldman, Emilie R. & **Hernandez**, Exequiel (2021). "Synergy in Mergers and Acquisitions: Typology, Lifecycles, and Value." Retrieved 26.04.2023 from

https://faculty.wharton.upenn.edu/wp-content/uploads/2016/11/Synergy-in-Mergers_FeldmanHernandez.pdf.

Fitch Ratings (2023). "Bayer AG." Retrieved 14.05.2023 from https://www.fitchratings.com/entity/bayer-ag-85884073

Gaughan, Patrick A. (2010). "Mergers, Acquisitions, and Corporate Restructurings." John Wiley & Sons

Goettler, R.L., **Gordon**, B.R (2013). "Competition and product innovation in dynamic oligopoly." Quant Mark Econ, 12, 1–42 (2014). DOI: https://doi.org/10.1007/s11129-013-9142-2

Kastiel, Kobi (2015). "Using Spin-offs to Raise Cash, Reduce Debt and Recapitalize." Retrieved 21.04.2023 from https://corpgov.law.harvard.edu/2015/01/03/using-spin-offs-to-raise-cash-reduce-debt-and-recapitalize/.

Kengelbach, Jens & **Roos**, Alexander & **Keienburg**, Georg (2014). "Maximizing Value: Choose the Right Exit Route." Retrieved 24.04.2023 from https://www.bcg.com/publications/2014/mergers-acquisitions-divestitures-maximizing-value.

Kuchler, Hannah & **Storbeck**, Olaf (2023). Activist investor ramps up pressure on incoming Bayer boss. Financial Times. Retrieved 24.04.2023 from https://www.ft.com/content/164c83e2-270c-4433-b30b-fcbd1b1d2057

Loukianova et al. (2017). "Valuing synergies in strategic mergers and acquisitions using the real options approach." Investment Management and Financial Innovations, 1(1), 236-247. DOI: 10.21511/imfi.14(1-1).2017.10

Liu, Angus (2018). "Next on the split-up agenda? Bayer, if it wants pharma growth, analyst says." Retrieved 20.04.2023 https://www.fiercepharma.com/pharma/bayer-should-consider-a-split-up-to-enable-pharma-growth-says-analyst.

Liu, Angus (2019). "Worst deal ever? Bayer's market cap now close to the total cost it paid for Monsanto." Retrieved 23.04.2023 from https://www.fiercepharma.com/pharma/worst-deal-ever-bayer-s-market-cap-now-close-to-total-cost-it-paid-for-monsanto**.**

Liu, Tingting, **Shu**, Tao & **Wang** Jasmine J. (2021). "Winner's Curse in Takeovers? Evidence from Investment Bank Valuation Disagreement." Social Science Research Network, DOI: https://dx.doi.org/10.2139/ssrn.3954130.

Malmendier, Ulrike & **Tate** Geoffrey. "Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction." Journal of Financial Economics, 89 (1): 20–43. DOI: https://doi.org/10.1016/j.jfineco.2007.07.002.

Martin, Kenneth (1996). "The Method of Payment in Corporate Acquisitions, Investment Opportunities, and Management Ownership." Retrieved 24.04.2023 from https://www.jstor.org/stable/232939.

Massoudi, Arash; **Fontanella-Khan,** James & **Chazan,** Guy (2016). "Bayer braced for tough scrutiny over $66bn Monsanto deal." Retrieved 24.04.2023 from https://www.ft.com/content/e02ef0d4-7a6e-11e6-ae24-f193b105145e.

Mazzeo, Michael J. (2002). "Competitive Outcomes in Product-Differentiated Oligopoly." The Review of Economics and Statistics, 8(4), 716–28. DOI: https://doi.org/10.1162/003465302760556521.

McCrum, Dan (2016). "Bayer Monsanto deal requires jumbo financing." Retrieved 24.04.2023 from https://www.ft.com/content/ad2be7f8-7a8e-11e6-b837-eb4b4333ee43.

Mills, Rich & **Riegler,** Daniel & **Murphy,** Paul (2021). "How to improve focus on capital and operations in a tax-free spin-off." Retrieved 23.04.23 from https://www.ey.com/en_us/divestitures/tax-free-spin-off-road-map.

Nasdaq (2016). "What happened to the S&P in 2016?" Retrieved 21.04.2023 from https://www.nasdaq.com/articles/what-happened-sp-500-2016-2016-12-11.

Padel, Hannah **& Davies,** Steven (2022). **"**Glyphosate, a Timeline of a Pesticide's Rise and Legal Cases." Retrieved 24.04.2023 from https://www.agri-pulse.com/articles/16445-glyphosate-a-timeline-of-a-pesticides-rise-and-legal-cases.

Prezas, Alexandros P. & **Simonyan**, Karen (2015). "Corporate Divestitures: Spin-Offs vs. Sell-Offs." Journal of Corporate Finance, 34, 83–107. DOI: https://doi.org/10.1016/j.jcorpfin.2015.07.017.

Rappaport, Alfred **& Sirower,** Mark (1999). "Stock or Cash?: The Trade-Offs for Buyers and Sellers in Mergers and Acquisitions." Retrieved 15.04.2023 from https://hbr.org/1999/11/stock-or-cash-the-trade-offs-for-buyers-and-sellers-in-mergers-and-acquisitions.

Ravid, Abraham S. & **Spiegel**, Matthew (1999). "Toehold strategies, takeover laws and rival bidders." Retrieved 23.04.2023 from https://www.sciencedirect.com/science/article/abs/pii/S0378426699000035.

Reid, David (2016). "Monsanto's bad reputation raises questions over Bayer bid." Retrieved 01.05.2023 from https://www.cnbc.com/2016/05/24/monsantos-bad-reputation-raises-questions-over-bayer-bid.html.

Reuters (2018). "Bayer CFO Sees Lower Monsanto Synergies after Divestments: Boersen-Zeitung." Retrieved 12.04.2018 from https://www.reuters.com/article/us-monsanto-m-a-bayer/bayer-cfo-sees-lower-monsanto-synergies-after-divestments-boersen-zeitung-idUSKCN1ID0E5.

Sales, Augusto & **Zanini** Marco (2017). "Investigating the deal-making failure in M&A: deal makers' perspective in Brazil." Retrieved 21.04.2023 from https://www.sciencedirect.com/science/article/pii/S0080210717301875.

Sankar, B. P. Bijay, & **Leepsa** , N. M. (2018). "Payment methods in mergers and acquisitions: A theoretical framework.", International Journal of Accounting and Financial Reporting, 8 (1): p. 170.

Saunders, Laura (2019). "How to Avoid a Big Tax Bill in the Year of M&A." Retrieved 15.04.2023 from https://www.wsj.com/articles/how-to-avoid-a-big-tax-bill-in-the-year-of-m-a-11562319005.

Schipper, Katherine & **Smith**, Abbie (1986). "A comparison of equity carve-outs and seasoned equity offerings: SP effects and corporate restructuring." Retrieved on 24.04.2023 from https://www.sciencedirect.com/science/article/abs/pii/0304405X8690053X.

Smaller, Carin (2016). "Bayer Tightens Control Over the World's Food Supply." Retrieved 15.04.2023 from https://www.iisd.org/articles/insight/bayer-tightens-control-over-worlds-food-supply.

Sneirson, Judd F. (2008). "Merger Agreements, Termination Fees, and the Contract-Corporate Tension." Retrieved 14.04.2023 from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1086824.

Shleifer, A. & **Vishny**, R. (2002). "Stock market driven acquisitions." Retrieved 15.04.2023 from https://scholar.harvard.edu/files/shleifer/files/stockmarketdrivenacquisitionsf.pdf.

Stiroh, Kevin, J. & **Rumble**, Adrienne (2006). "The dark side of diversification: The case of US financial holding companies." Journal of Banking and Finance, 30(8), 2131-2161. DOI: https://doi.org/10.1016/j.jue.2006.01.005.

Storbeck, Olaf (2023). "New Bayer chief says all options on table after investors push for break-up." Retrieved 27.04.2023 from https://www.ft.com/content/47b62eec-c87f-47de-9243-de7470a98358.

Stout, Lynn A. (2002). "Do Antitakeover Defenses Decrease Shareholder Wealth? The Ex Post/Ex Ante Valuation Problem." Retrieved 19.04.2023 from https://scholarship.law.cornell.edu/cgi/viewcontent.cgi?article=2317&context=facpub.

Trentmann, Nina (2016). "Bayer Financed Monsanto Deal with Debt To Avoid Shareholder Vote, Analysts Say." Retrieved 18.04.2023 from https://www.wsj.com/articles/BL-CFOB-10968?mod=trending_now_video_3.

Tseng, Chiung-Hui, and **Chen** Shih-Fen S (2023). "The Choice of Stock Over Cash Payments in Mergers and Acquisitions: A Market-Failure Account and Empirical Evidence." Canadian Journal of Administrative Sciences. DOI: https://doi.org/10.1002/cjas.1710.

Tuschke, Anja (2003). "The Impact of Executive Compensation on the Post-Merger Integration of U.S. and German Firms." Schmalenbach Business Review, 55 (1), 60–78. DOI: https://doi.org/10.1007/bf03396666.

Vertakova, Julia & **Vselenskaya**, Inga & **Plotnikov**, Vladimir (2021). "Mergers and Acquisitions Risk Modeling." Retrieved 19.04.2023 from https://www.mdpi.com/1911-8074/14/9/451.

Wangerin, Daniel (2012). "The Consequences of M&A Due Diligence for Post-Acquisition Performance and Financial Reporting." Retrieved 21.04.2023 from https://www.researchgate.net/publication/256028772_The_Consequences_of_MA_Due_Diligence_for_Post-Acquisition_Performance_and_Financial_Reporting.

Wharton (n.d.). "Shareholder Activism and Corporate Governance." Retrieved 24.04.2023 from https://executiveeducation.wharton.upenn.edu/for-individuals/all-programs/shareholder-activism-and-corporate-governance/.

Zieminski, Nick (2012). "Diversified companies shrink "conglomerate discount." Retrieved 20.04.2023 from https://www.reuters.com/article/us-conglomerates-idUSTRE81Q1R420120227.

Zentes et al. (2011). "Growth Strategies. In: Strategic Retail Management." Gabler Verlag. Retrieved 23.04.2022 from https://doi.org/10.1007/978-3-8349-6740-4_8.

Appendix

Exhibit TN 1 – Reformulated balance sheet

(in $m)	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Assets					
Non-current assets					
Long-term investments	175.0	89.0	91.0	204.0	246.0
Goodwill	3,435.0	3,520.0	4,319.0	4,061.0	4,020.0
Other intangibles	1,237.0	1,226.0	1,554.0	1,332.0	1,125.0
Accounts receivable long-term	376.0	237.0	11.0	36.0	32.0
Deferred tax assets, LT	551.0	454.0	450.0	277.0	613.0
Other long-term assets	427.0	407.0	736.0	412.0	312.0
Gross property, plant & equipment	8,835.0	9,491.0	10,357.0	10,428.0	11,116.0
Accumulated depreciation	(4,470.0)	(4,837.0)	(5,275.0)	(5,455.0)	(5,885.0)
Net property, plant & equipment	**4,365.0**	**4,654.0**	**5,082.0**	**4,973.0**	**5,231.0**
Total non-current assets	**10,566.0**	**10,587.0**	**12,243.0**	**11,295.0**	**11,579.0**
Current assets					
Inventory	2,839.0	2,947.0	3,597.0	3,496.0	3,241.0
Deferred tax assets, curr.	534.0	579.0	635.0	743.0	-
Restricted cash	120.0	140.0	118.0	112.0	122.0
Other current assets	201.0	175.0	227.0	199.0	499.0
Accounts receivable	1,897.0	1,715.0	2,014.0	1,636.0	1,926.0
Other receivables	602.0	739.0	795.0	801.0	755.0
Total receivables	**2,499.0**	**2,454.0**	**2,809.0**	**2,437.0**	**2,681.0**
Cash And equivalents	3,163.0	3,528.0	2,249.0	3,589.0	1,554.0
Short Term investments	302.0	254.0	40.0	47.0	60.0
Trading asset securities		-	-	2.0	-
Total cash & ST investments	**3,465.0**	**3,782.0**	**2,289.0**	**3,638.0**	**1,614.0**
Total current assets	9,658.0	10,077.0	9,675.0	10,625.0	8,157.0
Total assets	**20,224.0**	**20,664.0**	**21,918.0**	**21,920.0**	**19,736.0**
Liabilities					
Non current liabilities					
Long-term debt	2,038.0	2,061.0	7,465.0	8,429.0	7,453.0
Unearned revenue, Non-Current	245.0	138.0	47.0	47.0	35.0
Pension & other post-retire. benefits	543.0	357.0	345.0	336.0	371.0
Def. tax liability, Non-Curr.	313.0	469.0	509.0	340.0	68.0
Other non-current liabilities	828.0	575.0	526.0	586.0	535.0
Total non-current liabilities	**3,967.0**	**3,600.0**	**8,892.0**	**9,738.0**	**8,462.0**
Current liabilities					
Accounts payable	794.0	995.0	1,111.0	836.0	1,006.0
Accrued exp.	2,685.0	2,430.0	2,888.0	2,579.0	2,873.0
Short-term borrowings	32.0	40.0	221.0	307.0	572.0
Current portion of long-term debt	4.0	11.0	12.0	308.0	1,056.0
Curr. income taxes payable	75.0	91.0	99.0	234.0	41.0
Unearned revenue, current	396.0	517.0	438.0	370.0	568.0
Other current liabilities	235.0	252.0	343.0	543.0	613.0
Total current liabilities	**4,221.0**	**4,336.0**	**5,112.0**	**5,177.0**	**6,729.0**
Total liabilities	**8,188.0**	**7,936.0**	**14,004.0**	**14,915.0**	**15,191.0**
Equity					
Common stock	6.0	6.0	6.0	6.0	6.0
Additional paid in capital	10,371.0	10,783.0	10,003.0	11,464.0	11,626.0
Retained earnings	5,537.0	7,188.0	9,012.0	10,374.0	10,763.0
Treasury stock	(3,045.0)	(4,140.0)	(10,032.0)	(12,053.0)	(15,053.0)
Comprehensive Inc. and other	(1,036.0)	(1,278.0)	(1,114.0)	(2,801.0)	(2,808.0)
Total common equity	**11,833.0**	**12,559.0**	**7,875.0**	**6,990.0**	**4,534.0**
Minority interest	203.0	169.0	39.0	15.0	11.0
Total equity	**12,036.0**	**12,728.0**	**7,914.0**	**7,005.0**	**4,545.0**
Total liabilities and equity	**20,224.0**	**20,664.0**	**21,918.0**	**21,920.0**	**19,736.0**

Source: Casewriter analysis based on data in **Exhibits 1**

Exhibit TN 2 – Reformulated income statement

Reformulated income statement	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Operating					
Net sales	**13,504.0**	**14,861.0**	**15,855.0**	**15,001.0**	**13,502.0**
Cost of goods sold	6,453.0	7,208.0	7,251.0	6,719.0	6,418.0
Gross profit	**7,051.0**	**7,653.0**	**8,604.0**	**8,282.0**	**7,084.0**
Selling general & admin exp.	1,746.0	1,934.0	2,060.0	1,970.0	1,826.0
R & D exp.	1,454.0	1,533.0	1,716.0	1,580.0	1,512.0
EBITDA	**3,851.0**	**4,186.0**	**4,828.0**	**4,732.0**	**3,746.0**
Depreciation & Amort.	622.0	615.0	691.0	716.0	727.0
Operating result before taxes	**3,229.0**	**3,571.0**	**4,137.0**	**4,016.0**	**3,019.0**
Taxes	985.4	964.7	1,186.5	1,163.3	1,054.8
Operating result	**2,243.7**	**2,606.3**	**2,950.5**	**2,852.8**	**1,964.2**
Non-operating					
Interest and invest. income	77.0	92.0	102.0	105.0	74.0
Restructuring charges		-	-	(493.0)	(364.0)
Merger & related restruct. charges	(1.0)	(1.0)	(18.0)	-	-
Gain (Loss) on sale of invest.		-	-	-	(2.0)
Gain (Loss) on sale of assets		-	-	-	157.0
Asset writedown	(80.0)	-	(44.0)	-	-
Income/(Loss) from affiliates	10.0	15.0	(8.0)	(13.0)	(12.0)
Currency exchange gains (Loss)	(21.0)	41.0	(1.0)	(73.0)	(217.0)
Other non-operating inc. (Exp.)	(35.0)	(117.0)	(93.0)	52.0	52.0
Legal settlements	0	0	0	0	(280.0)
Non-operating result before taxes	**(50.0)**	**30.0**	**(62.0)**	**(422.0)**	**(592.0)**
Taxes	17.5	(10.5)	21.7	147.7	207.2
Earnings of discontinued ops.	6.0	11.0	13.0	28.0	17.0
Minority int. in earnings	(48.0)	(43.0)	(22.0)	(11.0)	23.0
Non-operating result	**(74.5)**	**(12.5)**	**(49.3)**	**(257.3)**	**(344.8)**
Financial					
Interest expense	(191.0)	(172.0)	(248.0)	(433.0)	(436.0)
Financial result before taxes	**(191.0)**	**(172.0)**	**(248.0)**	**(433.0)**	**(436.0)**
Taxes	66.9	60.2	86.8	151.6	152.6
Financial result	**(124.2)**	**(111.8)**	**(161.2)**	**(281.5)**	**(283.4)**

Tax Breakdown	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Statutory tax rate	35.0%	35.0%	35.0%	35.0%	35.0%
Effective tax rate (Operating activities)	30.5%	27.0%	28.7%	29.0%	34.9%
Operating result before taxes	3,229.0	3,571.0	4,137.0	4,016.0	3,019.0
Reported taxes	901.0	915.0	1,078.0	864.0	695.0
Taxes on operating activities	985.4	964.7	1,186.5	1,163.3	1,054.8
Taxes on non-operating activities	17.5	(10.5)	21.7	147.7	207.2
Tax shield	66.9	60.2	86.8	151.6	152.6

Source: Casewriter analysis based on data in **Exhibits 2**

Exhibit TN 3 – Reformulated Free Cash Flow

Free cash flow	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Operating					
EBIT	**3,229.0**	**3,571.0**	**4,137.0**	**4,016.0**	**3,019.0**
Taxes	985.4	964.7	1,186.5	1,163.3	1,054.8
NOPLAT	**2,243.7**	**2,606.3**	**2,950.5**	**2,852.8**	**1,964.2**
Depreciation & Amort.	622.0	615.0	691.0	716.0	727.0
Gross free cash flow	**2,865.7**	**3,221.3**	**3,641.5**	**3,568.8**	**2,691.2**
- Capital expenditures		904.0	1,119.0	607.0	985.0
- Change in NWC		24.3	601.8	116.8	- 433.0
- Change in other non-current operating assets		54.0	1,456.0	- 804.0	- 348.0
+ Change in other non-current operating liabilities		- 107.0	- 91.0	-	- 12.0
Operating free cash flow		**2,132.0**	**373.7**	**3,648.9**	**2,475.2**
Non-operating					
Non-operating result before taxes	- 50.0	30.0	- 62.0	- 422.0	- 592.0
Tax	17.5	- 10.5	21.7	147.7	207.2
Earnings of discontinued ops.	6.0	11.0	13.0	28.0	17.0
Minority int. in earnings	- 48.0	- 43.0	- 22.0	- 11.0	23.0
Non-operating result	**- 74.5**	**- 12.5**	**- 49.3**	**- 257.3**	**- 344.8**
- Change in non-current non-operating assets		- 322.0	- 228.0	- 35.0	374.0
+ Change in non-current non-operating liabilities		- 283.0	- 21.0	- 118.0	- 288.0
- Change in current non-operating assets		17.0	- 180.0	111.0	- 722.0
+ Change in current non-operating liabilities		33.0	99.0	335.0	- 123.0
Non-operating free cash flow		**42.5**	**436.7**	**- 116.3**	**- 407.8**
Unlevered free cash flow		**2,174.5**	**810.4**	**3,532.6**	**2,067.4**
Tax shield	66.9	60.2	86.8	151.6	152.6
Levered free cash flow		**2,234.7**	**897.2**	**3,684.2**	**2,220.0**
Financial					
Financial result before taxes	- 191.0	- 172.0	- 248.0	- 433.0	- 436.0
- Change in excess cash		310.7	- 1,318.8	1,374.2	- 1,975.0
+ Change in total equity		- 1,756.0	- 7,424.0	- 3,199.0	- 3,792.0
+ Change in financial liabilities		4.0	5,456.0	1,322.0	33.0
Financing free cash flow		- 2,174.5	- 810.4	- 3,532.6	- 2,067.4

Source: Casewriter analysis based on data in **Exhibits 1 & 2**

Exhibit TN 4 – Cost of debt

10y US Composite A- YTM	2.70%	Bloomberg
Rating	A-	Moody's
Default rate for 10y (A-)	2.62%	Moody's investment services: "Annual Default Study: Corporate Default and Recovery Rates"
Annual default rate (FIE)	0.26%	
Loan recovery	31.50%	Moody's investment services: "Annual Default Study: Corporate Default and Recovery Rates"
Cost of debt	2.52%	

Source: Casewriter analysis

Exhibit TN 5 – Valuation inputs

WACC Calculation		
Item	Amount	Source and Notes:
EV as of 31.08.2016		
Cash And Equivalents	1,554.00	Balance Sheet
Market Capitalization	4,6645.15	Exhibit 6
Debt	9,081.00	Balance Sheet: long-term debt ($7,453.00) +short-term debt ($572.00) +current balance of long-term debt ($1,056.00)
EV	54,172.15	
Capital structure		
Equity /EV	86.11%	
Net Debt/EV	13.89%	
Cost of Equity:		
β levered	0.88	Exhibit 5
Risk-free rate	1.58%	Exhibit 4
Market risk premium	9.47%	Exhibit 5
Cost of equity	9.90%	=1.58%+0.88*9.47%
Cost of Debt	2.52%	Exhibit 6
Tax rate	35.00%	US statutory tax rate
WACC	8.75%	=86.11%*9.90%+13.89%*(1-35%)*2.52%

Source: Casewriter analysis

Exhibit TN 6 – Terminal growth rate

Metric	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016	Aug-31-2017	Aug-31-2018	Aug-31-2019	Aug-31-2020	Aug-31-2021	Aug-31-2022	Aug-31-2023	Aug-31-2024	Aug-31-2025	Aug-31-2026
	Historical									Forecast Period					
Noplat	2,243.7	2,606.3	2,950.5	2,852.8	1,964.2	2,318.3	2,516.6	2,658.6	2,809.2	2,969.0	3,138.6	3,318.5	3,509.4	3,712.0	3,927.1
Change in noplat		362.7	344.2	(97.8)	(888.6)	354.1	198.2	142.0	150.6	159.8	169.5	179.9	190.9	202.6	215.1
Investments		474.3	2,576.8	(796.2)	(511.0)	(1,335.8)	340.3	356.3	373.2	390.8	409.2	428.5	448.7	469.8	491.9
Unlevered free cash flow		**2,132.0**	**373.7**	**3,648.9**	**2,475.2**	**3,654.2**	**2,176.3**	**2,302.3**	**2,436.1**	**2,578.3**	**2,729.4**	**2,890.0**	**3,060.7**	**3,242.2**	**3,435.1**
Total operating invested capital	11,668.2	12,035.4	14,521.2	13,725.0	13,202.1	11,933.9	12,279.7	12,641.8	13,021.0	13,418.3	13,834.3	14,270.1	14,726.4	15,204.4	15,704.9
New invested capital		367.3	2,485.8	(796.2)	(523.0)	(1,268.2)	345.7	362.1	379.3	397.2	416.0	435.7	456.4	477.9	500.5
"Old" invested capital		11,668.2	12,035.4	14,521.2	13,725.0	13,202.1	11,933.9	12,279.7	12,641.8	13,021.0	13,418.3	13,834.3	14,270.1	14,726.4	15,204.4
ROIC		**22.34%**	**24.52%**	**19.65%**	**14.31%**	**17.56%**	**21.09%**	**21.65%**	**22.22%**	**22.80%**	**23.39%**	**23.99%**	**24.59%**	**25.21%**	**25.83%**
RONIC			**93.72%**	**-3.93%**	**111.60%**	**-67.72%**	**-15.63%**	**41.08%**	**41.60%**	**42.13%**	**42.68%**	**43.24%**	**43.81%**	**44.40%**	**45.00%**
Reinvestment rate (2)		18.20%	87.33%	(27.91%)	(26.01%)	(57.62%)	13.52%	13.40%	13.28%	13.16%	13.04%	12.91%	12.79%	12.66%	12.53%
Reinvestment rate (2)		18.20%	87.33%	(27.91%)	(26.01%)	(57.62%)	13.52%	13.40%	13.28%	13.16%	13.04%	12.91%	12.79%	12.66%	12.53%
Growth rate ROIC		**4.06%**	**21.41%**	**(5.48%)**	**(3.72%)**	**(10.12%)**	**2.85%**	**2.90%**	**2.95%**	**3.00%**	**3.05%**	**3.10%**	**3.14%**	**3.19%**	**3.24%**
Growth rate RONIC		-	**81.84%**	**1.10%**	**(29.03%)**	**39.02%**	**(2.11%)**	**5.51%**	**5.53%**	**5.55%**	**5.56%**	**5.58%**	**5.60%**	**5.62%**	**5.64%**

Terminal growth rate 3.24%

Source: Casewriter analysis

Exhibit TN 7 – Trading multiples and SP Monsanto Company

Median	**P/E**	**EV/Revenue**	**EV/EBITDA**	**EV/EBIT**
All companies	17.6x	2.0x	13.3x	19.3x
Proposed selection	17.6x	2.0x	15.8x	20.6x
SP	$34.10	$41.90	$115.4	$72.9

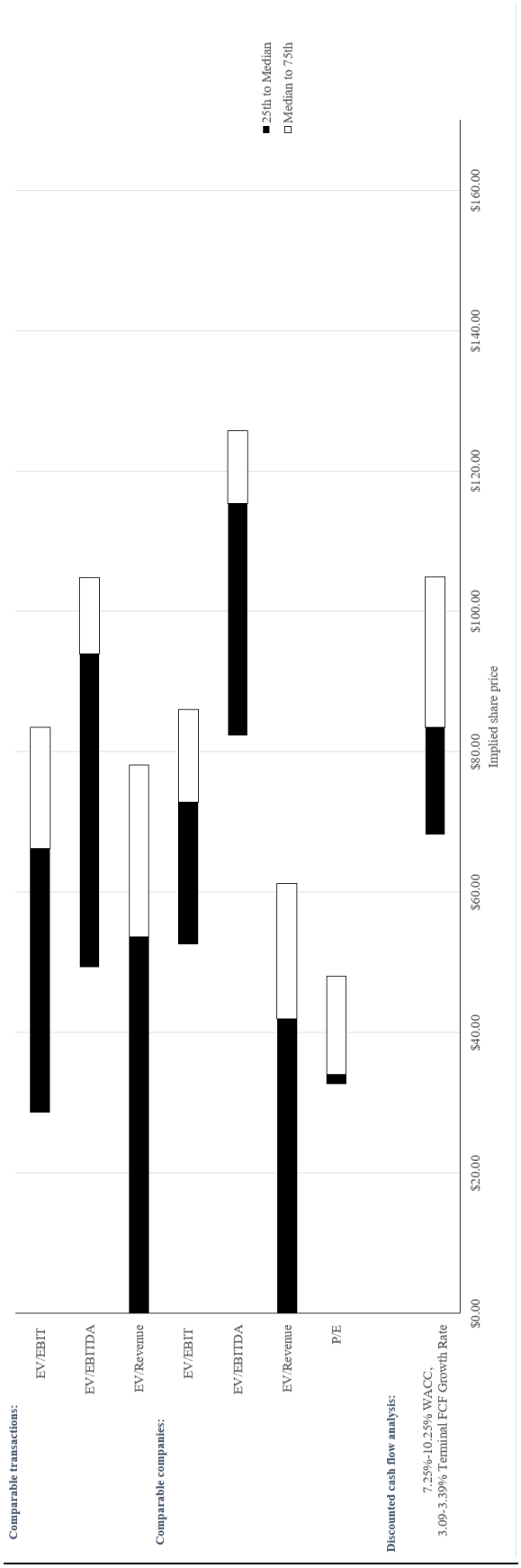
Source: Casewriter analysis based on data in **Exhibit 13**

Exhibit TN 8 – Transaction multiples and SP Monsanto Company

Median	**EV/Revenue**	**EV/EBITDA**	**EV/EBIT**
All companies	2.6x	11.7x	21.4x
Proposed selection	2.4x	13.3x	19.2x
SP	$53.70	$93.90	$66.20

Source: Casewriter analysis based on data in **Exhibits 14**

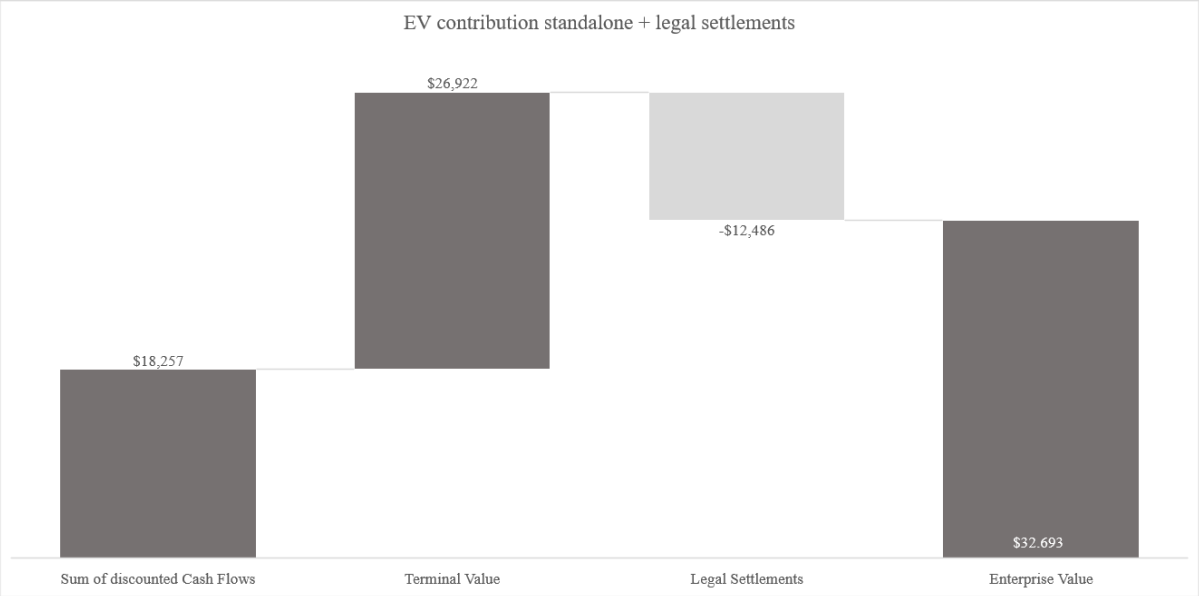
Exhibit TN 9 – Football field



Source: Casewriter analysis

Exhibit TN 10a – Valuation summary standalone + legal settlements

Sum of discounted cash flows	18,256.9
Terminal value	26,921.9
Legal settlements	*(12,485.9)*
EV	**32,692.6**
Non-operating EV	(555.0)
Value financial debt	(8,067.1)
Equity value	**24,070.5**
Total # of shares	438.0
Implied SP	**55.0**
Trading SP as of 09.05.2016	106.5
Implied SP premium	**62.5%**
Final bid price 14.09.2016	128.0
Implied SP premium	**132.9%**
1st Bid price 23.05.2016	122.0
Implied SP premium	**122.0%%**



Source: Casewriter analysis

Exhibit TN 10b – Valuation summary standalone + synergies + legal settlements (upper bound)

Sum of discounted cash flows	18,256.6
Terminal value	26,921.9
Value growth synergies	168.7
Value cost synergies	771.8
Long-term synergies through integrated solutions	459.0
Legal settlements	*(12,485.9)*
EV	**34,092.2**
Non-operating EV	-555.0
Value financial debt	-8,067.1
Equity value	**25,470.1**
Total # of shares	438.0
Implied SP	**57.8**
Trading SP as of 09.05.2016	89.3
Implied SP premium	**54.5%**
Final bid price 14.09.2016	128
Implied SP premium	**121.5%**
1st Bid price 23.05.2016	122
Implied SP premium	**111.1%**

Source: Casewriter analysis

Exhibit TN 11 – Exchange ratios

Fixed Shares

Excepted offer ($128)	Market Capitalization (in $m)	Share Price (in $	Shares Outstanding (in m)
Monsanto	56,061.77	128.00	437.98
Bayer	87,296.11	105.56	826.95
Sum	143,357.88		
F/Dilution	39.11%		
F	531.07		
X	1.21		

DCF valuation stand alone	Market Capitalization (in $m)	Share Price (in $	Shares Outstanding (in m)
Monsanto	36,556.47	83.47	437.98
Bayer	87,296.11	105.56	826.95
Sum	123,852.59		
F/Dilution	29.52%		
F	346.30		
X	0.79		

DCF valuation plus synergies	Market Capitalization (in $m)	Share Price (in $	Shares Outstanding (in m)
Monsanto	37,800.11	86.31	437.98
Bayer	87,296.11	105.56	826.95
Sum	125,096.22		
F/Dilution	30.22%		
F	358.08		
X	0.82		

May 9, 2016, the day before the first written offer from Bayer	Market Capitalization (in $m)	Share Price (in $	Shares Outstanding (in m)
Monsanto	39,269.52	89.66	437.98
Bayer	90,510.16	109.45	826.95
Sum	129,779.68		
F/Dilution	30.26%		
F	358.79		
X	0.82		

Fixed Value (07 June 2018)

Excepted offer ($128)	Market Capitalization (in $m)	Share Price (in $	Shares Outstanding (in m)
Monsanto	56,061.77	128.00	437.98
Bayer	97,240.36	117.59	826.95
Sum	153,302.14		
F/Dilution	36.57%		
F	476.76		
X	1.09		

DCF valuation stand alone	Market Capitalization (in $m)	Share Price (in $	Shares Outstanding (in m)
Monsanto	36,556.47	83.47	437.98
Bayer	97,240.36	117.59	826.95
Sum	133,796.84		
F/Dilution	27.32%		
F	310.88		
X	0.71		

DCF valuation plus synergies	Market Capitalization (in $m)	Share Price (in $	Shares Outstanding (in m)
Monsanto	37,800.11	86.31	437.98
Bayer	97,240.36	117.59	826.95
Sum	135,040.48		
F/Dilution	27.99%		
F	321.46		
X	0.73		

Source: Bloomberg, Casewriter analysis

Exhibit TN 12 – Roundup history timeline

Date	Event
1901	Founding year of Monsanto.
1933	Name change to Monsanto Chemical Co. During WW2, the company produced styrene, a rubber component essential for the war.
1961	Glyphosate patent filed in the US by Stauffer Chemical Co. Product was first used for cleaning out calcium and other mineral deposits in hot water systems.
1970	Monsanto scientist John Franz discovered glyphosate could be used as an herbicide and patented the discovery.
1974	Monsanto brought glyphosate to market under the trade name Roundup.
1985	The Environmental Protection Agency classified glyphosate as a Group C Carcinogen, meaning it has "suggestive evidence of carcinogenic potential".
1991	EPA changed the carcinogenic classification to Group E, meaning "evidence of non-carcinogenicity for humans.
1996	Asgrow introduced Roundup Ready soybeans to the market, which have been genetically modified to resist the effects of Roundup.
1997	Monsanto buys Asgrow from Empresas La Moderna SA and Calgene, the first company in the US to commercialize a GMO.
1997	Roundup Ready cotton commercialized.
1997	Roundup Ready Canola first commercialized in Canada.
1998	Monsanto acquires DEKALB for $2.3b and Cargill's seed business. Monsanto is now the world's 3rd largest seed company and 4th pesticide company.
1998	Through multiple acquisitions of biotechnology companies, Monsanto also acquired the rights to recently developed seed technologies.

1998	Roundup Ready corn introduced to the market.
2000	Monsanto's glyphosate went off patent in 2000. Several product variants entered the market.
2004	Monsanto established American Seeds, Inc. to support seed businesses with capital investments. The first venture involved acquiring Channel Bio Corp.
2005	Roundup Ready alfalfa commercialized.
2005	Roundup Ready sugar beets commercialized.
2016, January	San Francisco groundskeeper Dewayne "Lee" Johnson filed a lawsuit in California state court against Monsanto alleging his exposure to Monsanto's Roundup weed killer and its active ingredient, glyphosate, caused him to develop Non-Hodgkin lymphoma, with which Johnson was first diagnosed in August 2014.
2016, September	Bayer and Monsanto announce a definitive merger agreement under which Bayer will acquire Monsanto.
2018, June	Bayer completed the acquisition of Monsanto for $63 bn.

Johnson - Monsanto Lawsuit

2018, July	Johnson v. Monsanto trial begins.
2018, August	Jury determines that Monsanto failed to adequately warn Johnson of the dangers of Roundup and awards him about $289 mn ($39.2 mn in compensatory damages and $250 mn in punitive damages). Monsanto appeals the verdict.
2018, October	Judge upholds the jury's verdict but reduced the punitive damages award, bringing the total award to $78.5 mn.
2019, April	Monsanto filed its second appeal.

2019, May	Johnson cross-appeals.
2020, June	The California Court of Appeal First Appellate District begins hearing for Johnson v. Monsanto.
2020, July	Monsanto/Bayer AG loses appeal in Johnson v. Monsanto. Award is reduced to $20.5 mn.

Edwin Hardeman - Monsanto Lawsuit

2015, February	Edwin Hardeman, Sonoma County, California resident, was diagnosed with non-Hodgkin's Lymphoma.
2016, February	Hardeman files lawsuit against Monsanto.
2019, February	Edwin Hardeman v. Monsanto jury trial begins.
2019, March	Jury finds Hardeman's exposure to Roundup was a "substantial factor" in causing his Non-Hodgkin lymphoma
2019, March	The jury returned a verdict of approximately $80 mn, including punitive damages of $75 mn. U.S. District Judge Vince Chhabria reduced the punitive damages awarded to Hardeman to $20 mn.
2021, May	In a major victory for plaintiff Hardeman, the 9th U.S. Circuit Court of Appeals upheld the lower court verdict that found Roundup was a "substantial factor" in causing his NHL and the Federal Insecticide, Fungicide, and Rodenticide Act does not preempt state law claims.
2021, August	Monsanto petitions Supreme Court for review of 9th Circuit decision upholding $25m award to Hardeman. Bayer argues federal pesticide law overrides state-law claims, who accused Monsanto of failing to warn consumers about cancer risk from Roundup. Ninth Circuit ruled in Hardeman's favor in May.
2021, December	Supreme Court seeks views of Solicitor General of U.S. before deciding whether to grant petition.
2022, May	Solicitor General Elizabeth Prelogar concludes FIFRA does not preempt state law claims, suggests Supreme Court does not need to hear arguments in the case.

2022, May	Ag groups ask Biden administration to withdraw Prelogar's brief, calling it a "stunning" and "dangerous" shift in U.S. policy toward pesticide labelling.
2022, June	Supreme Court denies the petition.

Pilliod - Monsanto Lawsuit

2017, June	Alva and Alberta Pilliod sue Monsanto over Roundup in Alameda County Superior Court stating it caused both of their non-Hodgkin lymphomas. Alberta Pilliod was diagnosed with Non-Hodgkin lymphoma brain cancer in 2015 and Alva Pilliod was diagnosed in 2011.
2019, March	Pilliod v. Monsanto state court trial begins.
2019, April	Chhabria asks Monsanto and its new owner Bayer AG to begin mediation with lawyers for cancer victims who have sued Monsanto alleging Roundup and other glyphosate-based herbicides cause Non-Hodgkin lymphoma.
2019, April	Chhabria issues a formal order of mediation to seek a settlement between Bayer AG and lawyers representing thousands of cancer victims
2019, May	Jury sides with Pilliods and orders Monsanto to pay slightly over $2 bn ($1 bn to each) in punitive and a combined $55 mn in compensatory damages.
2019, July	Alameda County Superior Court Judge Winifred Smith reduced the punitive damages to $70 mn and also reduced the compensatory award to $17 mn.
2021, August	California appellate court rejects Monsanto appeal of decision.
2021, November	California Supreme Court decides not to review appellate court decision.
2022, March	Monsanto files petition in Supreme Court.
2022, June	Supreme Court denies petition.

Stevick - Monsanto Lawsuit

2014, December	Elaine Stevick of Petaluma, California, was diagnosed at the age of 63 with multiple brain tumours due to a type of Non-Hodgkin lymphoma called central nervous system lymphoma.
2016, April	Stevick sues Monsanto.
2019, May	Stevick was supposed to be the next trial in line to take on Monsanto. But with Chhabria's order of mediation to Bayer, he also vacated Stevick's May 20 trial date.
2020, June	Bayer announced a settlement between $8.8b and $9.6b to address close to 100k existing claims that exposure to Roundup caused their Non-Hodgkin lymphoma. Another $1.25b was set aside to address claims by potential future plaintiffs, which would have included a maximum of $150mm in fees.
2021, May	Chhabria rejects Monsanto/Bayer's proposal to deal with future cases.
2021, July	Bayer announces it will remove glyphosate from the U.S. residential lawn and garden marketplace, effective January 2023.
2021, October	Monsanto wins case after jury concludes the herbicide was not a "substantial factor" in the cancer of 10-year-old Ezra Clark.
2021, December	California jury rules for Monsanto in case brought by Donetta Stephens claiming exposure to Roundup caused her NHL.
2022, June	Jury in state court in Missouri finds for Monsanto in a complaint brought by Allan Shelton, who claimed exposure to Roundup caused his NHL.
2022, June	Bayer wins case in state court in Oregon (Johnson v. Monsanto).

Source: Padel & Davies 2022, **"**Glyphosate, a Timeline of a Pesticide's Rise and Legal Cases."

Exhibit TN 13 – DCF

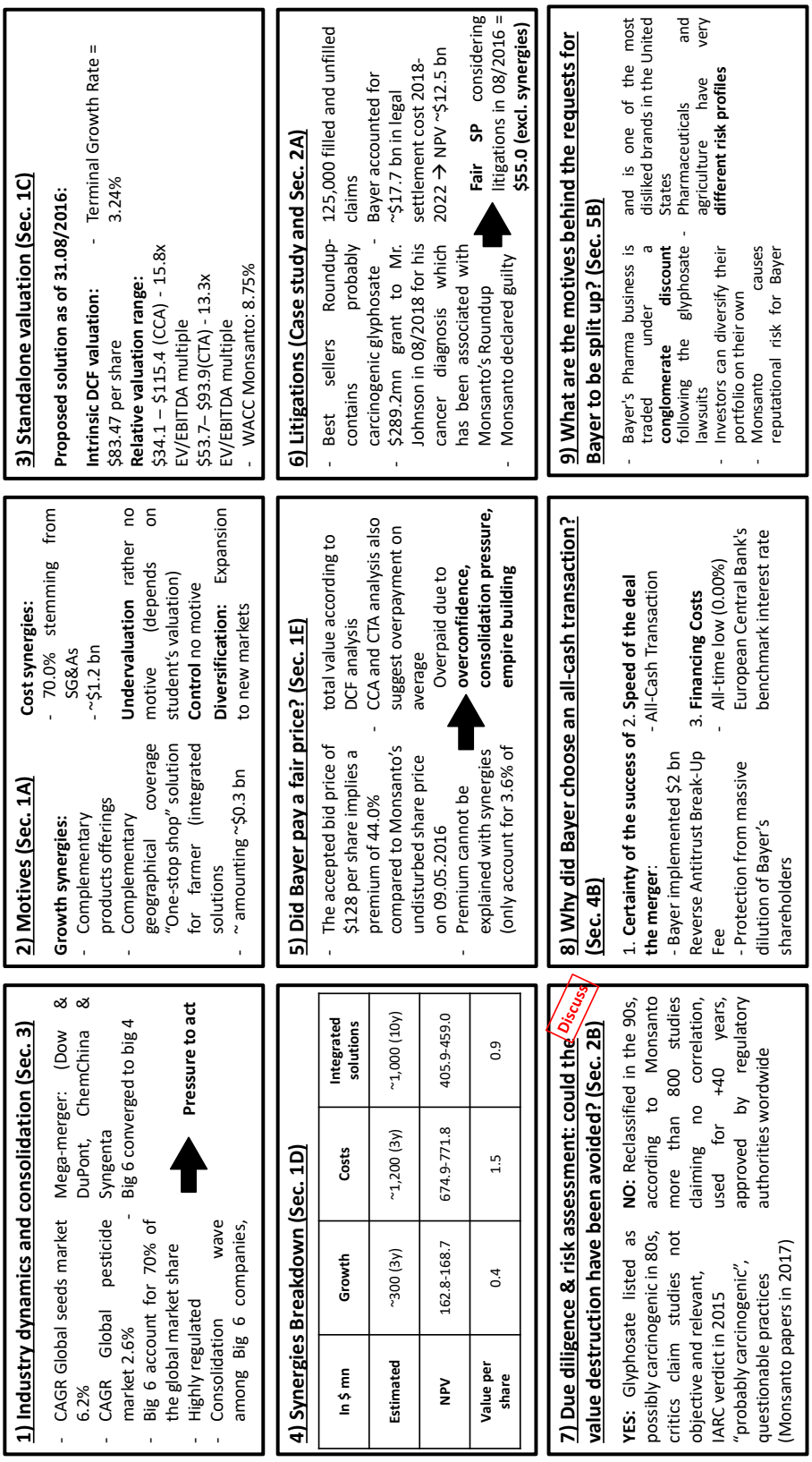
	Aug-31-2017	Aug-31-2018	Aug-31-2019	Aug-31-2020	Aug-31-2021	Aug-31-2022	Aug-31-2023	Aug-31-2024	Aug-31-2025	Aug-31-2026
(in $mn)					Forecast Period					
Net sales	**14,216.3**	**14,971.8**	**15,771.1**	**16,616.9**	**17,511.8**	**18,459.0**	**19,461.6**	**20,522.9**	**21,646.6**	**22,836.3**
Cost of goods sold	6,663.0	7,017.2	7,391.8	7,788.2	8,207.7	8,651.6	9,121.5	9,618.9	10,145.6	10,703.2
Gross profit	**7,553.2**	**7,954.6**	**8,379.3**	**8,828.7**	**9,304.2**	**9,807.4**	**10,340.1**	**10,904.0**	**11,501.0**	**12,133.1**
Selling general & admin exp.	1,922.6	2,024.8	2,132.9	2,247.3	2,368.3	2,496.4	2,632.0	2,775.5	2,927.5	3,088.4
R & D exp.	1,563.8	1,646.9	1,734.8	1,827.9	1,926.3	2,030.5	2,140.8	2,257.5	2,381.1	2,512.0
EBITDA	**4,066.8**	**4,283.0**	**4,511.6**	**4,753.6**	**5,009.6**	**5,280.6**	**5,567.4**	**5,871.0**	**6,192.4**	**6,532.8**
Depreciation & Amort.	753.8	686.7	712.4	739.1	766.7	795.4	825.1	855.9	887.8	920.8
Operating result before taxes	**3,313.0**	**3,596.3**	**3,799.2**	**4,014.5**	**4,242.9**	**4,485.2**	**4,742.3**	**5,015.1**	**5,304.6**	**5,612.0**
Taxes	994.7	1,079.7	1,140.6	1,205.3	1,273.8	1,346.6	1,423.8	1,505.7	1,592.6	1,684.9
NOPLAT	**2,318.3**	**2,516.6**	**2,658.6**	**2,809.2**	**2,969.0**	**3,138.6**	**3,318.5**	**3,509.4**	**3,712.0**	**3,927.1**
Depreciation & Amort.	753.8	686.7	712.4	739.1	766.7	795.4	825.1	855.9	887.8	920.8
Gross free cash flow	**3,072.2**	**3,203.3**	**3,371.0**	**3,548.3**	**3,735.8**	**3,934.0**	**4,143.6**	**4,365.3**	**4,599.8**	**4,847.9**
- Capital expenditures	287.8	865.1	897.4	931.0	965.7	1,001.6	1,038.8	1,077.2	1,116.8	1,157.8
- Change in NWC	(1,071.7)	76.7	81.1	85.8	90.8	96.1	101.7	107.7	114.0	120.7
- Change in other non-current operating assets	269.6	90.7	96.0	101.5	107.4	113.7	120.4	127.4	134.9	142.8
+ Change in other non-current operating liabilities	67.7	5.5	5.8	6.1	6.5	6.8	7.2	7.7	8.1	8.6
Operating free cash flow	**3,654.2**	**2,176.3**	**2,302.3**	**2,436.1**	**2,578.3**	**2,729.4**	**2,890.0**	**3,060.7**	**3,242.2**	**3,435.1**
Discount rate	0.92	0.85	0.78	0.71	0.66	0.60	0.56	0.51	0.47	0.43
Present value	**3,360.15**	**1,840.16**	**1,790.03**	**1,741.68**	**1,695.02**	**1,649.98**	**1,606.50**	**1,564.49**	**1,523.91**	**1,484.69**

Source: Casewriter analysis

Exhibit TN 14 - Breakdown of the Key Merger Events - Suggested Teaching Plan

Date of the Event	Event	Teaching Session	Content to Cover
12.05.2016	Bayer officially approaches Monsanto.	Session 1	Section 1A Section 1C Section 3A
23.05.2016	Offer from Bayer for $122 per share and the $1.5bn synergies estimated – rejected.		
09.07.2016	Offer from Bayer for $125 per share with communication of regulatory and financial assurance – rejected.		
06.09.2016	BASF expresses interest in Bayer divestitures if required by regulators.		
06.09.2016	Offer from Bayer for $127.5 - rejected but open for negotiations.		
14.09.2016	Agreement found at $128 per share and shared financing plan.	Session 2	Section 2B
12.10.2016	Financing facility is syndicated.		Section 4A Section 4B Section 4C Section 4D Section 4E Section 4F
15.11.2016	$4bn of $19bn of equity issued.		
13.12.2016	Monsanto shareholders vote in favour of deal.	Session 3	Section 6A
29.05.2017	Justice department agrees under the condition that Bayer divests assets.		Section 5A Section 5B Section 5C
14.10.2017	Bayer agrees to sell parts of its crop-science business to BASF for $7bn to facilitate discussions with regulators.		
21.03.2018	EU approves deal for $62.5bn.		
26.04.2018	Bayer signs agreement to sell more Crop Science business to BASF for up to €1.7bn.		
07.06.2018	Deal closed for $128 per share.	Session 4	Section 1B Section 1D Section 1E Section 2A Section 3B Section 7A Section 7B

Exhibit TN 15 – Gameplan



Source: Casewriter analysis

Exhibit Support:

Exhibit SP-1 Free cash flow projection

	Aug-31-2017	**Aug-31-2018**	**Aug-31-2019**
Operating result before taxes	3,313.0	3,596.3	3,799.2
Depreciation & Amort.	753.8	686.7	712.4
Capital expenditures	287.8	865.1	897.4
Change in NWC	(1,071.7)	76.7	81.1
Change in other non-current operating assets	269.6	90.7	96.0
Change in other non-current operating liabilities	67.7	5.5	5.8

	Aug-31-2020	**Aug-31-2021**	**Aug-31-2022**
Operating result before taxes	4,014.5	4,242.9	4,485.2
Depreciation & Amort.	739.1	766.7	795.4
Capital expenditures	931.0	965.7	1,001.6
Change in NWC	85.8	90.8	96.1
Change in other non-current operating assets	101.5	107.4	113.7
Change in other non-current operating liabilities	6.1	6.5	6.8

	Aug-31-2023	**Aug-31-2024**	**Aug-31-2025**
Operating result before taxes	4,742.3	5,015.1	5,304.6
Depreciation & Amort.	825.1	855.9	887.8
Capital expenditures	1,038.8	1,077.2	1,116.8
Change in NWC	101.7	107.7	114.0
Change in other non-current operating assets	120.4	127.4	134.9
Change in other non-current operating liabilities	7.2	7.7	8.1

	Aug-31-2026
Operating Result before Taxes	5,612.0
Depreciation & Amort.	920.8
Capital Expenditures	1,157.8
Change in NWC	120.7
Change in other non-current operating assets	142.8
Change in other non-current operating liabilities	8.6

Exhibit SP-2 Revenue projection

Revenues in $ mn	**2017**	**2018**	**2019**	**2020**	**2021**
Total seeds and genomics	10,612	11,275	11,979	12,727	13,522
Total agricultural productivity	3,604	3,697	3,792	3,890	3,990
Total	14,216	14,972	15,771	16,617	17,512

Revenues in $ mn	**2022**	**2023**	**2024**	**2025**	**2026**
Total seeds and genomics	14,366	15,263	16,216	17,229	18,305
Total agricultural productivity	4,093	4,198	4,307	4,417	4,531
Total	18,459	19,462	20,523	21,647	22,836

Exhibit SP-3 Discount rate

Risk free rate	1.58%
Market risk premium	9.47%
Cost of debt	2.52%
Statutory tax rate	35.00%
Cost of equity	9.90%
β equity levered	0.88
β debt	0.10
Perpetual Growth	2.00%
E/EV	87.51%
D/EV	12.49%
WACC	8.87%

Exhibit SP-4 Reformulation

Line Item	Allocation	Comment
Income statement		
Net sales	Core	Monsanto's core activities include the development, production, distribution and sales of agricultural products.
Cost Of goods sold	Core	Core activity related to sale of agricultural products.
Selling general & admin Exp.	Core	SG&A are assumed to be core for the functioning of the commercial entity.
R & D exp.	Core	R&D activities assumed to be core for commercial activities of the chemicals business.
Depreciation & Amort.	Core	Assets assumed core for the commercial activity of the company. Therefore, their depreciation is assumed core.
Interest expense	Financial	Interest expense is linked to the financing structure of the assets, therefore allocated to financial.
Interest and invest. income	Non-Core	The core activity being agricultural products development, production, distribution and sales, income from lending assumed non-core.
Income/(Loss) from Affiliates	Non-Core	Monsanto has equity participations in distributors. Considered as non-core as investment activities in other companies are not considered a core activity of the entity.
Currency exchange gains (loss)	Non-Core	Forex activities are not considered an activity related to Monsanto's core business.
Other non-operating inc. (exp.)	Non-Core	Non-operating income assumed non-core.
Restructuring charges	Non-Core	Restructuring activities assumed to be excluded from core activities of Monsanto.
Merger & related restruct. charges	Non-Core	M&A activities assumed to be excluded from core activities of Monsanto.
Gain (loss) on sale of invest.	Non-Core	Profits and losses on asset sales not assumed to be part of the core activities.
Gain (loss) On sale of assets	Non-Core	Profits and losses on asset sales not assumed to be part of the core activities.
Asset writedown	Non-Core	Asset write-downs not assumed to be part of the core activities.

Legal settlements	Non-Core	Legal settlements not assumed to be part of the core activities.
Income tax expense	Non-Core	Tax expenses not assumed to be part of the core activities for comparison purposes across peers located on other tax jurisdictions.
Earnings of discontinued ops.	Non-Core	Discontinued operations not assumed to be part of the core activities.
Minority int. in earnings	Non-Core	Joint-venture activities not assumed to be part of the core activities.
Balance sheet		
Long-term investments	Non-Core	Investment activities considered not related to the core activities of the business.
Goodwill	Core	Goodwill considered core as brand image considered to be a core strength of the business.
Other intangibles	Core	Reputation, brand, workforce skills considered as strengths essential for the performance of the core operations.
Accounts receivable long-term	Non-Core	60 days or less of collection period is considered usual practice. This item are receivables not expected to be collected in the current year and therefore, non-core.
Deferred tax assets, LT	Non-Core	Tax-related activities considered to be non-core for comparison purposes with peers in other tax jurisdictions.
Other long-term assets	Core	Mostly consists of long-term hedging contracts considered core for procurement purposes.
Gross property, plant & equipment	Core	PP&E considered assets essential to the core activities of the business.
Accumulated depreciation	Core	Assets assumed core for the commercial activity of the company. Therefore, their depreciation is assumed core.
Inventory	Core	Inventory considered core for the commercial activity of the company.
Deferred tax assets, curr.	Non-Core	Tax-related activities considered to be non-core for comparison purposes with peers in other tax jurisdictions.
Restricted cash	Non-Core	Restricted cash is usually tied to specific financial transactions, such as collateral for a loan, therefore not considered core.

Other current assets	Core	Short-term hedging contracts considered core for procurement purposes.
Accounts receivable	Core	Directly linked to the commercial activity of the company.
Other receivables	Core	Mostly long-term hedging contracts considered core for procurement purposes.
Cash and equivalents	Core	Cash considered essential for the commercial activity of the company.
Short term investments	Non-Core	Assets that a company holds for the purpose of generating short-term gains or for liquidity management, rather than as part of its core business operations.
Trading asset securities	Non-Core	Investment and speculation activities not considered part of the core activities of the company.
Long-term debt	Financial	Financing choices not considered core activity of the company.
Unearned revenue, non-current	Core	Revenue considered to be part of the core commercial activity of the company
Pension & other post-retire. benefits	Non-Core	Pension and other benefits not considered to be part of the core commercial activity of the company.
Def. tax liability, non-curr.	Non-Core	Deferred Tax Liability, non-curr. is a non-core item because it represents a long-term obligation that is not directly related to the company's core operations.
Other non-current liabilities	Non-Core	Postretirement liabilities, unrecognized tax benefits, environmental liabilities not considered to be part of the core commercial activity of the company.
Accounts payable	Core	Considered to be part of the core commercial activity of the company.
Accrued exp.	Core	Operating expenses and operating accrued expenses considered to be part of the core commercial activity of the company.
Short-term borrowings	Financial	Financing choices not considered core activity of the company.
Current portion of long-term debt	Financial	Financing choices not considered core activity of the company.
Curr. income taxes payable	Non-Core	Tax-related activities considered to be non-core for comparison purposes with peers in other tax jurisdictions.

Unearned revenue, current	Core	Considered to be part of the core commercial activity of the company.
Other current liabilities	Non-Core	Environmental liabilities and Pension benefits
Common stock	Financial	Financing choices not considered core activity of the company.
Additional paid in capital	Financial	Financing choices not considered core activity of the company.
Retained earnings	Financial	Financing choices not considered core activity of the company.
Treasury stock	Financial	Financing choices not considered core activity of the company.
Comprehensive inc. and other	Financial	Financing choices not considered core activity of the company.
Minority interest	Financial	Financing choices not considered core activity of the company.

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.

The Deal from a Private Equity Investor's Perspective

Individual Part

Robert Gereon Leyhausen – 49528

Work project carried out under the supervision of:

Pranav Desai

30/05/2023

Private Equity in the Agrochemical industry

Long before the mega-mergers in the 2010s driven by the Big 6, companies in the agrochemical industry were repeatedly popular targets for private equity buyout funds as they were generating high returns due to high cash generation and margins. One example is the acquisition of Brenntag, a Germany-based company engaged in providing industrial and specialty chemical solutions by BC Partners in September 2006. The €3.25bn deal brought the fund a 3.0x return after its exit in 2012 (Javed, 2012). Despite such attractive returns, private equity investors have never approached an acquisition of a Big 6 agrichemical giant in the past, even if they theoretically had the financial means at their disposal. The financial strength of the private equity industries becomes apparent considering the $45bn Texas company TXU Corp mega buyout by KKR, TPG, and other private equity firms in 2007 (Chon, 2013). Instead of acquiring a Big 6 company, large private equity investors face strategic investors and consolidators such as Monsanto, Bayer, and Dow Inc. in auction processes, bidding for smaller agrichemical companies. The failed acquisition of the plant protection and fine chemicals company Cheminova by a blue-chip fund syndicate of EQT and CVC in 2014, which was lost to the American agrochemical company FMC Corporation – a Monsanto Company competitor –, has shown that financial investors can technically raise the necessary funds to compete with strategic investors, yet encounter competitive bids from their counterparts in auction processes (Jacobsen, 2014). While the Big 6 repeatedly attempted to take over one another, mainly in the hope of achieving synergies and a more diversified product portfolio, common takeover situations for private equity firms are the acquisition of carved-out business units of large agrichemical companies that either recalibrate their core business's focus, need liquidity for another takeover or, as in the case of Bayer Monsanto had to divest parts of their businesses for antitrust reasons (Bayer, 2017).

Synopsis

As the second largest deal in the agrochemical industry with a deal value of $66 bn, Bayer's acquisition of Monsanto was polarizing. The merger was expected to permanently change the market environment, as both companies together would form the largest supplier of seeds and crop protection products. Although private equity firms have repeatedly shown interest in agrochemical companies, there has been no reporting on possible private equity participation in the mega-deal. In this part of the case study, students can take the position of a private equity investor and elaborate on why there was no private equity involvement.

Pedagogical Objectives

As a continuation of the main part, the case is suitable for Master of Finance students with prior experience in corporate finance, financial statement analysis, M&A, and private equity. In addition to contrasting the motives of financial and strategic investors, students are asked to assess the financial attractiveness of Monsanto by performing an LBO valuation to determine whether Monsanto represents an investment case for a private equity investor.

Suggested Questions

Section 1: Given the example of the Monsanto acquisition, explain the motives for an acquisition of a strategic buyer and a private equity firm and elaborate on how they differ. How do strategic buyers and private equity investors take value from deals?

Section 2: Validate Monsanto's fair value from a private equity investor's perspective with a leverage buyout model valuation. Simulate multiple scenarios to account for other developments.

Section 3A: Summarizing from Section 1 and Section 2, would Monsanto have been an attractive target for one or a syndicate of private equity investors?

Section 3B: Could a private equity investor have made a competitive offer compared to Bayer and eventually won the process? Justify your answer with the output from the LBO valuation.

Section 3C: Summarizing the results of the group case study and section 3B, what can be the

reasons for the bid price difference between a private equity investor and Bayer?

<u>Section 1:</u> Given the example of the Monsanto acquisition, contrast motives for an acquisition of a strategic buyer compared to a private equity firm and elaborate on how they differ. How do strategic buyers and private equity investors take value from deals?

As extensively explained in section 1A of the main teaching note, synergies, diversification, undervaluation of the target or control can be motives for a strategic buyer to engage in mergers and acquisitions. In the case of the Monsanto acquisition, synergies and diversification were the main motives for Bayer to complete the acquisition. Strategic buyers look at how two companies can complement each other and create value for their shareholders. It is crucial how well the target company can be integrated into the acquiring company. Since two companies merge in a strategic acquisition, there is no investment horizon. Hence, it is referred to as a buy-and-hold strategy (Vild & Zeisberg, 2014). On the other hand, financial investors and private equity funds view companies exclusively as standalone entities and therefore do not focus on value creation through synergies or diversification. Instead, the motives of undervaluation and control are of great importance. Private equity companies create value through undervaluation by sourcing deals proprietarily, i.e., identifying companies that are worth more than they are traded for in the case of listed companies. According to a Harvard Business School survey conducted by Gompers, Kaplan & Mukharlyamov (2015) that was answered by 79 leading private equity firms with combined assets under management of $750 bn, 35.6% of closed deals were proactively self-generated. (Gompers, Kaplan & Mukharlyamov, 2015). In the case of private companies, undervaluation as a motive becomes more important because private markets are inefficient, and a high degree of information asymmetry is prevalent, which can be exploited by professional investors. According to the lemons problem, in a market with asymmetric information, buyers are only willing to pay an average price even though an asset has above-average characteristics because they lack the information to make a comprehensive valuation. In the long run, this leads

to a market collapse, as sellers know the true value of their assets and are not willing to sell at the average price (Akerlof, 1970). In a price negotiation, where the seller is not aware of the true value of its company due to, e.g., the complexity of company valuation methods or general financial illiteracy, an investor can exploit this principle and buy an above-average company for an average price on the condition that he was able to make an accurate assessment based on the available information. In the case of Monsanto, a private equity investor cannot derive value through this principle as Monsanto is listed and thus required to disclosure information to facilitate symmetric information among market participants and the company. Furthermore, Monsanto also proved to be a tough negotiator with Bayer and finally obtained a share premium of ~44% (Roumeliotis & Flaherty, 2016). A similarly entrenched position of Monsanto towards a private equity investor would also have been expected, which is why no gain from undervaluation can be assumed from a private equity perspective. Nevertheless, students should understand that especially in small cap transactions with EVs <$25mn of privately held firms, which account for 11.8% of all private equity transactions, private equity investors may generate value from the abovementioned way. In awareness of this, investment banks act as financial advisors of companies to prevent such a development. In addition to the company valuation, the advisory service includes the execution of a structured and professional auction process, including price negotiations with several bidders in order to sell at a fair price. Through that, the knowledge advantage in corporate valuation of professional private equity investors over company owners that can result in undervaluation is balanced. According to the Harvard business school survey, 33.3% of all closed deals were sourced from an investment bank (Gompers, Kaplan & Mukharlyamov, 2015). In the Bayer Monsanto deal Monsanto was advised by bulge bracket bank Morgan Stanley. In practice, undervaluation is reflected in the payment of a lower than market EV/EBITDA multiple. Private equity practitioners refer to this type of value creation as multiple arbitrage, as the company is bought at a lower multiple than it is sold. However,

multiple arbitrage can also result from favorable timing in the valuation cycle (Moris, 2014).

The second major source of value for financial investors, or rather private equity investors, is control, i.e., the active guidance and supervision of the company's operations. Therefore, private equity companies usually take a board seat in the company's management after the takeover of a target company. Ultimately, the value creation associated with control leads to an increase in revenue and/or EBITDA, which in a leverage buyout is commonly the basis for valuation. Private equities rely on a number of operational value levers that are in theory available to every company but are often not applied in practice. Private equity firms, on the other hand, have great expertise in identifying and ultimately realizing application opportunities. To increase revenues, private equity firms reconsider sales channels or the marketing & pricing of their portfolio companies, identify cross-selling potentials, increase market penetration by strategic expansions through buy & build measures or by entering new markets during their holding period. The expansion of the product portfolio or the further development of the business model can also increase sales growth. In addition to the pure increase in sales, private equity backed companies create value by improving their operating profit margin. This includes process optimization of production processes, but also slimming down of sales, general & administrative costs through outsourcing, for example. In the context of a buy & build strategy with effective acquisition integration, redundancies can be eliminated, and costs can be saved. (Zeisberger, Prahl, White, 2017, p.162-163). Generally, large cap companies with an EV > €1,000 bn like Monsanto show the greatest potential for EBITDA improvements through margin changes compared to small and mid cap companies. (Perembetov & Herger, 2014). In the wake of that, Monsanto has independently initiated a major restructuring program prior to the Bayer acquisition to save costs and increase profitability by laying off 2,600 employees. (Gillam, 2015). Another crucial value-creation lever is the usage of debt to finance the transaction. On the one hand, the debt reduces the portion of equity required to finance the deal. On the other hand, it increases the return on equity since part

of the debt is repaid over the holding period. If the enterprise value remains unchanged over the holding period, the proportion of equity increases. Usually, the portfolio companies' capital structure consists of 50%-75% debt in a leveraged buyout. Operationally, the use of debt disciplines management as debt servicing requirements reduces the cash flow available for capital investments, and management must prioritize high net present value projects (Zeisberger, Prahl, White, 2017, p.162-163). A comparable effect is also conceivable in the case of Monsanto. While leverage was the largest source of value in the 1980s with 50%, operational improvement or rather EBITDA growth is the predominant source in the 2010s with over 50%. Value through multiple arbitrage remained stable at around 30% (Meerkatt et al., 2008).

Section 2: ***Validate Monsanto's fair value from a private equity investor's perspective with a leverage buyout model valuation. Simulate multiple scenarios to account for other developments.***

Students are asked to perform an LBO valuation. It is sufficient to make simple assumptions in the operating model. For the revenue forecast, the top-down approach from the group case study in section 1 can be reused. Further line items in the operating model can be grown as an average percentage of past years. The teaching moment lies in the interaction with a leverage buyout model (LBO), the structuring of a deal, and the understanding that private equity firms base investment decisions on return expectations. Depending on the return expectations, private equity investors can base their offer on a higher or lower entry multiple. Following the proposed selection from the group teaching note (**Exhibit 9 -** Trading Comps), an entry multiple of 15.8x is assumed. Since multiple artbitrage is considered the most uncertain form of value creation, the exit multiple is set at 15.8x as well.

Scenario analysis

In an LBO valuation, different scenarios are simulated to account for different developments. In addition to a base case, which simulates management expectations, there is a bullish upside case

and a bank case, which illustrates an adverse development. The litigation case includes the costs incurred by Bayer in connection with the Roundup lawsuits and is intended to show only how the returns have changed in hindsight. An overview of the different returns depending on the case can be found in **Exhibit TN- 1** Scenario return analysis.

Leverage model

The leverage model is used to determine the maximum debt level and ultimately the capital structure of Monsanto after a potential acquisition. It is crucial that the financial covenants in the forecast are not breached. For that, the cash cover is the most relevant ratio. A ratio below 1 equals a covenant breach and thus represents the upper limit for the debt level. The cash interest depends on the firm's creditworthiness, the market environment, and the 5-year swap rate. Students are provided with simplified assumptions for the loans' interest rates in **Exhibit 12**. According to the cost of debt calculation in the group case study, Monsanto's cost of debt is 2.52% (**Group Case Study Exhibit 6**). The case writer's assumption was made that 2.52% corresponds to the margin for the term loan A calculation. The interest rate is composed of the margin and the 5-year swap rate. For term loan B and term loan C, a notional risk premium was assumed as a case writer assumption, as junior debt has a higher inherent risk than secured senior debt. In practice, there would be intensive negotiations with leveraged finance teams, private debt funds, and other lenders to determine the appropriate interest rate for each tranche.

$$Cash\ Cover = \frac{Cash\ Flow\ generated\ over\ LTM}{Debt\ Service\ (Cash\ Interest + Debt\ Repayment)}$$

The maximum leverage is determined on the basis of the bank case. 95.3% of private equity firms choose a capital structure depending on current interest rates and how much the company can pay (Gompers, Kaplan & Mukharlyamov, 2015, p.53). The residual capital needs are replenished with equity in the form of ordinary shares and a subordinated loan.

Envy ratio, sweet equity, and management incentivization

To align the management with the interests of the private equity fund, it is common for the

management to participate in the company with an amount of 1-2 times the annual total compensation. This is referred to as sweet equity because the management acquires shares at a lower share price than the private equity fund. The envy ratio indicates the multiple at which the management is favored compared to the fund.

$$Envy\ ratio = \frac{\frac{Institutional\ Investor\ Equity}{Institutional\ Stake}}{\frac{Sweet\ Equity\ Investment}{Sweet\ Equity\ Stake}}$$

The five Monsanto executives together received ~$29mn total compensation in 2016. With an envy ratio of 3.35x, management receives ~0.5% of the company for ~$59mn.

***Section 3A**: Summarizing from Section 1 and Section 2, would Monsanto have been an attractive target for one or a syndicate of private equity investors?*

Pro: Monsanto company is the market leader in the global seed and genomics market and has a defendable market position thanks to numerous patents. Market conditions and growth trends are favorable given the need to feed the growing population and indicate sustainable growth prospects. Furthermore, the distribution of seeds and pesticides is a business model that has been proven over decades and is easily scalable if needed.

Contra: Operational value creation potentials, such as Monsanto's restructuring program, which could be materialized under the control motive, are implemented by the Monsanto itself and no professional investor is needed to unveil these hidden values. Furthermore, synergies and multiple arbitrage in the context of a buy & build strategy are also difficult to realize in the light of the already highly consolidated market. Having said that, the value creation opportunity and thus the attractiveness of the company from a private equity point of view is reduced. On average, private equity investors aim for a money multiple of 2.85x over a holding period of 5 years which translates to an IRR of ~20.0%. Including the assumptions described above, the LBO suggests a money multiple of 2.05x for the base case after a holding period of 5 years. Thus, the return is significantly below the return expectations of a private equity investor (Gompers, Kaplan &

Mukharlyamov, 2015, p.5, p.17).

Cash generation	Revenue growth	EBITDA - % improvement	Multiple Arbitrage	**Total**
0.48x	0.70x	0.87x	0.00x	**2.05x**
23.5%	34.2%	42.3%	0.0%	**100.0%**

In view of the 15.8x multiple, the resulting financing requirements (uses), and the debt financing being capped by the covenants at 3.52x EBITDA, the proportion of debt is unusually low with 21.7% for an LBO, which pushes down the money multiple. Therefore, the return could be leveraged by paying a lower entry and exit multiple. Usually, private equity firms target a debt-to-enterprise value ratio of 60% (Gompers, Kaplan & Mukharlyamov, 2015, p. 19).

This is particularly striking because large-cap transactions with an EV > $500mn have historically realized the most value through leverage. In contrast, value from EBITDA growth or multiple arbitrage are predominant sources of value in small and midcap transactions (Perembetov & Herger, 2014). Aside from disadvantages in the deal structuring, Monsanto does not offer particularly attractive EBITDA YoY growth rates, given the assumptions made in the operating model. For the forecast period, the adjusted EBITDA growth rate ranges between 5.3% and 5.4%. Also, the already in 2015 known legal risk in connection with Monsanto's Roundup speaks against the acquisition by a private equity investor. Unlike Bayer, private equity investors are not under any consolidation pressure or urgency to act and therefore would have most likely turned down the deal during the red flag due diligence.

Conclusion: Generally, considering the required equity ticket of ~$39bn, the deal would only be executed as a club deal. Because of the insufficient returns, complexity of the deal as well as the high risk due to possible litigations associated with an equity investment, Monsanto is not regarded as a trophy asset. How the legal settlements may have eroded an investor's return is visible in **Exhibit TN 1**. Yet it is questionable whether a PE could have made a competitive offer compared to Bayer, which did not further compromise a fund's return.

***Section 3B*: Could a private equity investor have made a competitive offer compared to Bayer and eventually won the process? Justify your answer with the output from the LBO valuation.**

As explained in Section 3A, the base case assumptions and an entry and exit multiple result in a money multiple of 2.05x. The 15.8x entry multiple results in a share price of €92.7, which is 27.6% below Bayer's final bid price of $128 per share. **Exhibit TN 2** gives an overview of the different entry multiples and shows how the money multiples change depending on the initial company valuation. Moreover, the entry multiple changes the share price that a private equity investor is willing to pay. To compete with Bayer's bid price of $128.0, a private equity investor would have to pay a 20.8x entry multiple resulting in a share price of $127.9. **In this case, the money multiple would be reduced to 1.5x after 5 years of holding**. Given the high bid of Bayer, which represents a premium of 44% compared to the share price of Monsanto one day before the announcement, an acquisition of Monsanto by a private equity investor is even more unlikely, as a bid price of ~$128.0 would further erode a private equity investor's return.

***Section 3C*: Summarizing the results of the group case study and section 3B, what can be the reasons for the bid price difference between a private equity investor and Bayer?**

As described in section 3B, the return a private equity investor can obtain from an investment is linked to the entry multiple and, thus, the bid price. As shown in **Exhibit TN 2**, the investment in Monsanto would only be relevant for a private equity investor at an entry multiple of about 12.8x, holding everything else constant. **This corresponds to a bid price of $71.6**. Furthermore, the difference can be explained by a difference in managerial ownership between private equity investors and strategic buyers. While the interests of a general partner are closely linked to those of a limited partner in a fund structure, an alignment of interests between managers and shareholders is not automatically given. The more the interests of the managers are aligned with those of the shareholders, the more the bid prices from strategic and financial buyers converge (Bargeron, 2007).

References

Akerlof, George A. (1970) "The Market for "Lemons": Quality Uncertainty and the Market Mechanism." Quarterly Journal of Economics 84 (3): 488-500.

Bayer AG (2017)." Bayer signs agreement to sell selected Crop Science businesses to BASF for EUR 5.9 billion." Bayer Global Media, Retrieved on 08.05.2023 from https://www.bayer.com/en/id/bayer-signs-agreement-to-sell-selected-crop-science-businesses-to-basf-for-eur-59-billion.

Bargeron, Leonce, **Schlingemann,** Frederik P., **Stulz** René M. & **Zutter,** Chad J. (2007). "Why Do Private Acquirers Pay so Little Compared to Public Acquirers?" Social Science Research Network, May. https://doi.org/10.2139/ssrn.980066.

Burger, Ludwig & **Knolle,** Kirsti (2022). "Bayer to sell pest control unit for $2.6 bln to Cinven." Nasdaq, Retrieved on 09.05.2023 from https://www.nasdaq.com/articles/bayer-to-sell-pest-control-unit-for-$2.6-bln-to-cinven.

Chon, Gina (2013). "Largest-ever leveraged buyout will also be a "spectacular" failure." Quartz, Retrieved on 08.05.2023 from https://qz.com/71926/the-largest-leveraged-buyout-in-history-will-also-be-a-huge-spectacular-failure.

Gompers, Paul A., **Kaplan,** Steven N. & **Mukharlyamov,** Vladimir. 2015. "What Do Private Equity Firms Say They Do?" Social Science Research Network, April. https://doi.org/10.2139/ssrn.2600524.

Javed, Ayesha (2012)." BC Partners Makes Three Times on Brenntag." Private Equity News, Retrieved on 08.05.2023 from https://www.penews.com/articles/bc-partners-brenntag-bain-goldman-sachs-20120706.

Jacobsen, Stine (2014)." Denmark's Auriga sells crop unit Cheminova to FMC Corp for $1.8 billion." Reuters, Retrieved on 08.05.2023 from https://www.reuters.com/article/us-auriga-indust-divestiture-idUSKBN0H30GQ20140908.

Meikle, Brad (2001).”Cognis price drops." Buyouts, Retrieved on 08.05.2023 from https://www.buyoutsinsider.com/cognis-price-drops/.

Morris, Peter. (2014). "Approach Private Equity's 'Value Bridge' with Caution." October 15, 2014. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2563532.

Meerkatt, Heino, **Rose,** John, **Brigl,** Michael, **Liechtenstein,** Heinrich, **Prats,** M. Julia & **Herrera,** Alejandro (2008).” How the Best Private-Equity Firms "Beat the Fade. The Advantage of Persistence."

Vild, Jan & **Zeisberger,** Claudia. (2014). "Strategic Buyers vs. Private Equity Buyers in an Investment Process." *Social Science Research Network, May. https://doi.org/10.2139/ssrn.2439589*.

Perembetov, Kairat & **Herger** Ivan (2014). "Value Creation in Private Equity." Joint research findings from Capital Dynamics and the Technische Unversität München.

Roumeliotis, Greg & **Flaherty,** Michael (2016).” Exclusive: Monsanto in talks with Bayer over confidentiality pact – source”. Reuters, Retrieved on 16.05.2023 from https://www.reuters.com/article/cbusiness-us-monsanto-m-a-bayer-idCAKCN0ZY2D0.

Zeisberger, Claudia, **Prahl** Michael & **White,** Bowen (2017). "Mastering Private Equity. Transformation via Venture Capital, Minority Investments & Buyouts. "West Sussex: WILEY

Teaching Note Appendix

Exhibit TN 1 – Return Scenario Analysis

Return sensitivity analysis - Base case - Exit after 5y in 2021

Entry EV/EBITDA \ Exit EV/EBITDA	12.8x	13.8x	14.8x	**15.8x**	16.8x	17.8x	18.8x
18.8x	1.34x	1.45x	1.55x	1.66x	1.76x	1.87x	1.97x
17.8x	1.43x	1.54x	1.66x	1.77x	1.88x	2.00x	2.11x
16.8x	1.54x	1.66x	1.78x	1.90x	2.02x	2.14x	2.26x
15.8x	1.66x	1.79x	1.92x	2.05x	2.18x	2.31x	2.44x
14.8x	1.80x	1.94x	2.08x	2.22x	2.36x	2.51x	2.65x
13.8x	1.96x	2.12x	2.28x	2.43x	2.59x	2.74x	2.90x
12.8x	2.17x	2.34x	2.51x	2.68x	2.85x	3.02x	3.19x

Return sensitivity analysis - Upside case - Exit after 5y in 2021

Entry EV/EBITDA \ Exit EV/EBITDA	12.8x	13.8x	14.8x	**15.8x**	16.8x	17.8x	18.8x
18.8x	1.49x	1.61x	1.72x	1.84x	1.96x	2.07x	2.19x
17.8x	1.59x	1.72x	1.84x	1.96x	2.09x	2.21x	2.34x
16.8x	1.71x	1.84x	1.97x	2.11x	2.24x	2.37x	2.51x
15.8x	1.84x	1.99x	2.13x	2.27x	2.42x	2.56x	2.70x
14.8x	2.00x	2.15x	2.31x	2.47x	2.62x	2.78x	2.94x
13.8x	2.19x	2.36x	2.53x	2.70x	2.87x	3.04x	3.21x
12.8x	2.41x	2.60x	2.79x	2.98x	3.16x	3.35x	3.54x

Return sensitivity analysis - Bank case - Exit after 5y in 2021

Entry EV/EBITDA \ Exit EV/EBITDA	12.8x	13.8x	14.8x	**15.8x**	16.8x	17.8x	18.8x
18.8x	1.19x	1.29x	1.38x	1.48x	1.57x	1.67x	1.76x
17.8x	1.27x	1.37x	1.47x	1.58x	1.68x	1.78x	1.88x
16.8x	1.36x	1.47x	1.58x	1.69x	1.80x	1.91x	2.02x
15.8x	1.47x	1.59x	1.71x	1.82x	1.94x	2.06x	2.18x
14.8x	1.60x	1.72x	1.85x	1.98x	2.11x	2.23x	2.36x
13.8x	1.74x	1.88x	2.02x	2.16x	2.30x	2.44x	2.58x
12.8x	1.92x	2.08x	2.23x	2.39x	2.54x	2.69x	2.85x

Return sensitivity analysis - Litigation case - Exit after 5y in 2021

Entry EV/EBITDA \ Exit EV/EBITDA	12.8x	13.8x	14.8x	**15.8x**	16.8x	17.8x	18.8x
18.8x	-0.18x	-0.16x	-0.15x	-0.14x	-0.12x	-0.11x	-0.10x
17.8x	-0.19x	-0.18x	-0.16x	-0.15x	-0.13x	-0.12x	-0.10x
16.8x	-0.21x	-0.19x	-0.17x	-0.16x	-0.14x	-0.13x	-0.11x
15.8x	-0.22x	-0.21x	-0.19x	-0.17x	-0.16x	-0.14x	-0.12x
14.8x	-0.24x	-0.22x	-0.21x	-0.19x	-0.17x	-0.15x	-0.13x
13.8x	-0.27x	-0.25x	-0.23x	-0.21x	-0.19x	-0.17x	-0.15x
12.8x	-0.29x	-0.27x	-0.25x	-0.23x	-0.21x	-0.18x	-0.16x

Exhibit TN 2 – Bid price, entry multiple and return analysis after 5y

		Entry multiple												
		8.8x	9.8x	10.8x	11.8x	12.8x	13.8x	14.8x	**15.8x**	16.8x	17.8x	18.8x	19.8x	20.8x	21.8x
Exit multiple	**15.8x**	4.6x	3.9x	3.4x	3.0x	2.7x	2.4x	2.2x	**2.0x**	1.9x	1.8x	1.7x	1.6x	**1.5x**	1.4x
Bid Price PE	$	43.5	50.5	57.5	64.6	71.6	78.6	85.7	**92.7**	99.7	106.8	113.8	120.8	**127.9**	134.9
Difference Bayer Bid	%	(66.0%)	(60.5%)	(55.1%)	(49.6%)	(44.1%)	(38.6%)	(33.1%)	(27.6%)	(22.1%)	(16.6%)	(11.1%)	(5.6%)	(0.1%)	5.4%

Case Study Appendix

Exhibit 1 - Monsanto balance sheet

Balance Sheet (in $m)	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Assets					
Non-current assets					
Long-term investments	175.0	89.0	91.0	204.0	246.0
Goodwill	3,435.0	3,520.0	4,319.0	4,061.0	4,020.0
Other intangibles	1,237.0	1,226.0	1,554.0	1,332.0	1,125.0
Accounts receivable long-term	376.0	237.0	11.0	36.0	32.0
Deferred tax assets, lt	551.0	454.0	450.0	277.0	613.0
Other long-term assets	427.0	407.0	736.0	412.0	312.0
Gross property, plant & equipment	8,835.0	9,491.0	10,357.0	10,428.0	11,116.0
Accumulated depreciation	(4,470.0)	(4,837.0)	(5,275.0)	(5,455.0)	(5,885.0)
Net property, plant & equipment	**4,365.0**	**4,654.0**	**5,082.0**	**4,973.0**	**5,231.0**
Total non-current assets	**10,566.0**	**10,587.0**	**12,243.0**	**11,295.0**	**11,579.0**
Current assets					
Inventory	2,839.0	2,947.0	3,597.0	3,496.0	3,241.0
Deferred tax assets, curr.	534.0	579.0	635.0	743.0	-
Restricted cash	120.0	140.0	118.0	112.0	122.0
Other current assets	201.0	175.0	227.0	199.0	499.0
Accounts receivable	1,897.0	1,715.0	2,014.0	1,636.0	1,926.0
Other receivables	602.0	739.0	795.0	801.0	755.0
Total receivables	**2,499.0**	**2,454.0**	**2,809.0**	**2,437.0**	**2,681.0**
Cash and equivalents	3,163.0	3,528.0	2,249.0	3,589.0	1,554.0
Short term investments	302.0	254.0	40.0	47.0	60.0
Trading asset securities		-	-	2.0	-
Total cash & st investments	**3,465.0**	**3,782.0**	**2,289.0**	**3,638.0**	**1,614.0**
Total current assets	9,658.0	10,077.0	9,675.0	10,625.0	8,157.0
Total assets	**20,224.0**	**20,664.0**	**21,918.0**	**21,920.0**	**19,736.0**
Liabilities					
Non current liabilities					
Long-term debt	2,038.0	2,061.0	7,465.0	8,429.0	7,453.0
Unearned revenue, non-current	245.0	138.0	47.0	47.0	35.0
Pension & other post-retire. benefits	543.0	357.0	345.0	336.0	371.0
Def. tax liability, non-curr.	313.0	469.0	509.0	340.0	68.0
Other non-current liabilities	828.0	575.0	526.0	586.0	535.0
Total non-current liabilities	**3,967.0**	**3,600.0**	**8,892.0**	**9,738.0**	**8,462.0**
Current liabilities					
Accounts payable	794.0	995.0	1,111.0	836.0	1,006.0
Accrued exp.	2,685.0	2,430.0	2,888.0	2,579.0	2,873.0
Short-term borrowings	32.0	40.0	221.0	307.0	572.0
Current portion of long-term debt	4.0	11.0	12.0	308.0	1,056.0
Curr. income taxes payable	75.0	91.0	99.0	234.0	41.0
Unearned revenue, current	396.0	517.0	438.0	370.0	568.0
Other current liabilities	235.0	252.0	343.0	543.0	613.0
Total current liabilities	**4,221.0**	**4,336.0**	**5,112.0**	**5,177.0**	**6,729.0**
Total liabilities	**8,188.0**	**7,936.0**	**14,004.0**	**14,915.0**	**15,191.0**
Equity					
Common stock	6.0	6.0	6.0	6.0	6.0
Additional paid in capital	10,371.0	10,783.0	10,003.0	11,464.0	11,626.0
Retained earnings	5,537.0	7,188.0	9,012.0	10,374.0	10,763.0
Treasury stock	(3,045.0)	(4,140.0)	(10,032.0)	(12,053.0)	(15,053.0)
Comprehensive inc. and other	(1,036.0)	(1,278.0)	(1,114.0)	(2,801.0)	(2,808.0)
Total common equity	**11,833.0**	**12,559.0**	**7,875.0**	**6,990.0**	**4,534.0**
Minority interest	203.0	169.0	39.0	15.0	11.0
Total equity	**12,036.0**	**12,728.0**	**7,914.0**	**7,005.0**	**4,545.0**
Total liabilities and equity	**20,224.0**	**20,664.0**	**21,918.0**	**21,920.0**	**19,736.0**

Source: Adapted from S&P Capital IQ, accessed 18.02.2023

Exhibit 2 – Monsanto income statement

Income statement (in $m)	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Net sales	**13,504.0**	**14,861.0**	**15,855.0**	**15,001.0**	**13,502.0**
Cost of goods sold	6,453.0	7,208.0	7,251.0	6,719.0	6,418.0
Gross profit	**7,051.0**	**7,653.0**	**8,604.0**	**8,282.0**	**7,084.0**
Selling general & admin exp.	1,746.0	1,934.0	2,060.0	1,970.0	1,826.0
R & D exp.	1,454.0	1,533.0	1,716.0	1,580.0	1,512.0
EBITDA	**3,851.0**	**4,186.0**	**4,828.0**	**4,732.0**	**3,746.0**
Depreciation & amort.	622.0	615.0	691.0	716.0	727.0
EBIT	**3,229.0**	**3,571.0**	**4,137.0**	**4,016.0**	**3,019.0**
Interest:					
Interest expense	(191.0)	(172.0)	(248.0)	(433.0)	(436.0)
Interest and invest. income	77.0	92.0	102.0	105.0	74.0
Others:					
Income/(loss) from affiliates	10.0	15.0	(8.0)	(13.0)	(12.0)
Currency exchange gains (loss)	(21.0)	41.0	(1.0)	(73.0)	(217.0)
Other non-operating inc. (exp.)	(35.0)	(117.0)	(93.0)	52.0	52.0
Restructuring charges		-	-	(493.0)	(364.0)
Merger & related restruct. charges	(1.0)	(1.0)	(18.0)	-	-
Gain (loss) on sale of invest.		-	-	-	(2.0)
Gain (loss) on sale of assets		-	-	-	157.0
Asset writedown	(80.0)	-	(44.0)	-	-
Legal settlements	-	-	-	-	(280.0)
EBT	**2,988.0**	**3,429.0**	**3,827.0**	**3,161.0**	**1,991.0**
Income tax expense	901.0	915.0	1,078.0	864.0	695.0
Earnings from cont. ops.	**2,087.0**	**2,514.0**	**2,749.0**	**2,297.0**	**1,296.0**
Earnings of discontinued ops.	6.0	11.0	13.0	28.0	17.0
Net income	**2,093.0**	**2,525.0**	**2,762.0**	**2,325.0**	**1,313.0**
Minority int. in earnings	(48.0)	(43.0)	(22.0)	(11.0)	23.0
Net income attributable to monsanto company	**2,045.0**	**2,482.0**	**2,740.0**	**2,314.0**	**1,336.0**

Source: Adapted from S&P Capital IQ, accessed 18.02.2023

Exhibit 3 – Cash flow statement

Income statement (in $m)	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Net income	**2,045.0**	**2,482.0**	**2,740.0**	**2,314.0**	**1,336.0**
Depreciation & amort.	498.0	504.0	555.0	573.0	611.0
Amort. of goodwill and intangibles	124.0	111.0	136.0	143.0	116.0
Depreciation & amort., total	**622.0**	**615.0**	**691.0**	**716.0**	**727.0**
(Gain) loss from sale of assets	6.0	-	11.0	43.0	(154.0)
Asset writedown & restructuring costs	-	-	-	276.0	147.0
(Income) loss on equity invest.	(19.0)	(17.0)	4.0	7.0	15.0
Stock-based compensation	128.0	100.0	120.0	111.0	111.0
Tax benefit from stock options	(50.0)	(79.0)	(72.0)	(44.0)	(16.0)
Provision & write-off of bad debts	3.0	27.0	41.0	45.0	152.0
Net cash from discontinued ops.	(10.0)	(17.0)	(22.0)	(45.0)	(27.0)
Other operating activities	303.0	142.0	173.0	(142.0)	255.0
Change in acc. receivable	170.0	222.0	(172.0)	68.0	(498.0)
Change in inventories	(427.0)	(192.0)	(650.0)	(425.0)	181.0
Change in acc. payable	439.0	(104.0)	709.0	235.0	176.0
Change in unearned rev.	(39.0)	50.0	(163.0)	32.0	189.0
Change in other net operating assets	(120.0)	(489.0)	(356.0)	(83.0)	(6.0)
Cash from ops.	**3,051.0**	**2,740.0**	**3,054.0**	**3,108.0**	**2,588.0**
Capital expenditure	(646.0)	(741.0)	(1,005.0)	(967.0)	(923.0)
Cash acquisitions	(322.0)	(165.0)	(922.0)	(8.0)	(2.0)
Divestitures	-	-	-	-	-
Sale (purchase) of intangible assets	(77.0)	(88.0)	(403.0)	(48.0)	(69.0)
Invest. in marketable & equity securt.	11.0	217.0	235.0	4.0	130.0
Net (inc.) dec. in loans originated/sold	-	-	-	-	-
Other investing activities	-	-	-	-	-
Cash from investing	**(1,034.0)**	**(777.0)**	**(2,095.0)**	**(1,019.0)**	**(864.0)**
Short term debt issued	30.0	126.0	88.0	102.0	725.0
Long-term debt issued	499.0	32.0	5,479.0	1,279.0	9.0
Total debt issued	**529.0**	**158.0**	**5,567.0**	**1,381.0**	**734.0**
Short term debt repaid	(158.0)	(29.0)	(24.0)	(36.0)	(272.0)
Long-term debt repaid	(629.0)	(2.0)	(7.0)	(107.0)	(306.0)
Total debt repaid	**(787.0)**	**(31.0)**	**(31.0)**	**(143.0)**	**(578.0)**
Issuance of common stock	117.0	257.0	248.0	137.0	81.0
Repurchase of common stock	(451.0)	(1,105.0)	(7,091.0)	(871.0)	(3,025.0)
Common dividends paid	(642.0)	(802.0)	(904.0)	(938.0)	(964.0)
Total dividends paid	**(642.0)**	**(802.0)**	**(904.0)**	**(938.0)**	**(964.0)**
Special dividend paid	-	-	-	-	-
Other financing activities	69.0	38.0	(48.0)	4.0	10.0
Cash from financing	**(1,165.0)**	**(1,485.0)**	**(2,259.0)**	**(430.0)**	**(3,742.0)**
Foreign exchange rate adj.	(141.0)	(93.0)	(1.0)	(325.0)	(7.0)
Net change in cash	**711.0**	**385.0**	**(1,301.0)**	**1,334.0**	**(2,025.0)**

Source: Adapted from S&P Capital IQ, accessed 18.02.2023

Exhibit 4 – Global seed market size, shares, and CAGR (in 2013)

Company	**Market share (in %)**	**Market share (in mn $)**
Monsanto	**26.0%**	**10,340.0**
DuPont (Pioneer)	21.0%	8,351.5
Syngenta	8.0%	3,181.5
Limagrain	5.0%	1,988.5
DowAgroSciences	4.0%	1,590.8
KWS	4.0%	1,590.8
Bayer CropScience	3.0%	1,193.1
All others	29.0%	11,533.1
Total	100.0%	39,769.2
CAGR	**6.2%**	

Sources: ETC Report 2015, Vantage Market Research, Fortune Business Insights

Exhibit 5 - Global pesticide market size, shares and CAGR (in 2013)

Company	**Market share (in %)**	**Market share (in mn $)**
Syngenta	20.0%	11,302.5
Bayer CropScience	18.0%	10,172.3
BASF	13.0%	7,346.6
Dow AgroSciences	10.0%	5,651.3
Monsanto	**8.0%**	**4,521.0**
DuPont	6.0%	3,390.8
All others	25.0%	14,128.1
Total	100.0%	56,512.5
CAGR	**2.6%**	

Sources: ETC Report 2015, Vantage Market Research, Fortune Business Insights

Exhibit 6 - Key Stats

For the fiscal period ending	12 months Aug-31-2012A	12 months Aug-31-2013A	12 months Aug-31-2014A	12 months Aug-31-2015A	12 months Aug-31-2016A
Currency	*USD*	*USD*	*USD*	*USD*	*USD*
Total revenue	**13,504.0**	**14,861.0**	**15,855.0**	**15,001.0**	**13,502.0**
Growth over Pprior year	*14.2%*	*10.0%*	*6.7%*	*(5.4%)*	*(10.0%)*
Gross profit	**7,051.0**	**7,653.0**	**8,604.0**	**8,282.0**	**7,084.0**
Margin %	*52.2%*	*51.5%*	*54.3%*	*55.2%*	*52.5%*
EBITDA	**3,851.0**	**4,186.0**	**4,828.0**	**4,732.0**	**3,746.0**
Margin %	*28.5%*	*28.2%*	*30.5%*	*31.5%*	*27.7%*
EBIT	**3,229.0**	**3,571.0**	**4,137.0**	**4,016.0**	**3,019.0**
Margin %	*23.9%*	*24.0%*	*26.1%*	*26.8%*	*22.4%*
Earnings from cont. ops.	**2,087.0**	**2,514.0**	**2,749.0**	**2,297.0**	**1,296.0**
Margin %	*15.5%*	*16.9%*	*17.3%*	*15.3%*	*9.6%*
Net income	**2,045.0**	**2,482.0**	**2,740.0**	**2,314.0**	**1,336.0**
Margin %	*15.1%*	*16.7%*	*17.3%*	*15.4%*	*9.9%*
Diluted EPS excl. extra items[3]	**3.78**	**4.58**	**5.19**	**4.75**	**2.95**
Growth Over Prior Year	*27.7%*	*21.2%*	*13.3%*	*(8.5%)*	*(37.9%)*

Source: Adapted from Capital IQ, accessed 18.02.2023

Exhibit 7 - Segments

For the fiscal period ending	Aug-31-2012	Aug-31-2013	Aug-31-2014	Aug-31-2015	Aug-31-2016
Currency	*USD*	*USD*	*USD*	*USD*	*USD*
Revenues					
Seeds and genomics - corn seed and traits	5,814.0	6,596.0	6,401.0	5,953.0	5,825.0
Seeds and genomics - soybean seed and traits	1,771.0	1,653.0	2,102.0	2,276.0	2,162.0
Seeds and genomics - cotton seed and traits	779.0	695.0	665.0	523.0	440.0
Seeds and genomics - vegetable seeds	851.0	821.0	867.0	816.0	801.0
Seeds and genomics - all other crops seeds and trai	574.0	575.0	705.0	675.0	760.0
Agricultural productivity	3,715.0	4,521.0	5,115.0	4,758.0	3,514.0
Total revenues	**13,504.0**	**14,861.0**	**15,855.0**	**15,001.0**	**13,502.0**
Gross profit before tax					
Seeds and genomics - corn seed and traits	3,589.0	3,929.0	3,932.0	3,557.0	3,450.0
Seeds and genomics - soybean seed and traits	1,160.0	948.0	1,364.0	1,510.0	1,399.0
Seeds and genomics - cotton seed and traits	585.0	519.0	461.0	408.0	282.0
Seeds and genomics - vegetable seeds	419.0	337.0	401.0	372.0	401.0
Seeds and genomics - all other crops seeds and trai	306.0	350.0	438.0	430.0	542.0
Agricultural productivity	986.0	1,570.0	1,978.0	1,905.0	943.0
Total gross profit before tax	**7,045.0**	**7,653.0**	**8,574.0**	**8,182.0**	**7,017.0**
Operating profit before tax					
Agricultural productivity	477.0	1,048.0	1,323.0	1,249.0	89.0
Seeds and genomics	2,570.0	2,412.0	2,607.0	2,206.0	2,292.0
Total operating profit before tax	**3,047.0**	**3,460.0**	**3,930.0**	**3,455.0**	**2,381.0**
Assets					
Agricultural productivity	4,280.0	4,416.0	4,370.0	4,590.0	3,964.0
Seeds and genomics	15,944.0	16,235.0	17,548.0	17,330.0	15,772.0
Total assets	**20,224.0**	**20,651.0**	**21,918.0**	**21,920.0**	**19,736.0**
Depreciation & amortization					
Agricultural productivity	112.0	120.0	123.0	130.0	134.0
Seeds and genomics	510.0	495.0	568.0	586.0	593.0
Total depreciation & amortization	**622.0**	**615.0**	**691.0**	**716.0**	**727.0**
Capital expenditure					
Agricultural productivity	(153.0)	(122.0)	(174.0)	(205.0)	(196.0)
Seeds and genomics	(493.0)	(619.0)	(831.0)	(762.0)	(727.0)
Total capital expenditure	**(646.0)**	**(741.0)**	**(1,005.0)**	**(967.0)**	**(923.0)**

Source: Adapted from Capital IQ, accessed 18.02.2023

Exhibit 8 - Legal settlements costs Bayer AG (in $m)

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Reported legal settlements costs in conjunction with glyphosate law suits	-	-	285.5	214.2	13,145.8	3,964.1	121.2	-	-	-	-

Source: Bayer AG Annual report 2018-2022, Special Items Crop Science, Litigations/Legal risks

Exhibit 9 – Transaction multiples and SP Monsanto Company

Median	**EV/Revenue**	**EV/EBITDA**	**EV/EBIT**
All companies	2.6x	11.7x	21.4x
Proposed selection	2.4x	13.3x	19.2x
SP	$53.70	$93.90	$66.20

Source: Case writer analysis

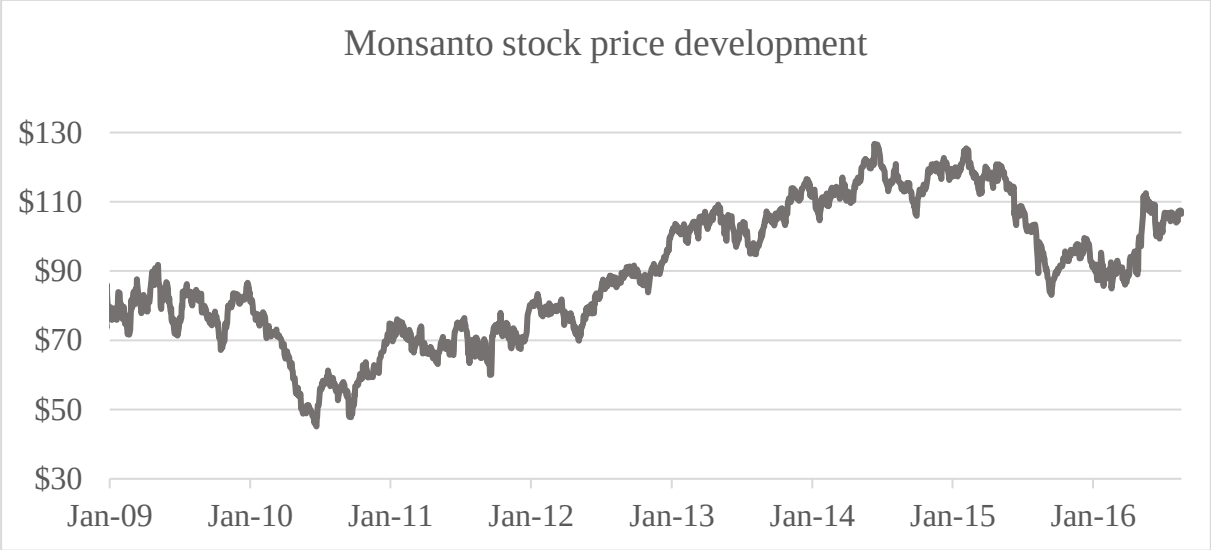
Exhibit 10 - Net debt

Long-term debt	7,453.0
Short-term borrowings	572.0
Current portion of long-term debt	1,056.0
Excess cash	1,013.9
Net debt	8,067.1

Source: Case writer analysis

Exhibit 11 - Stock data

As of 31.08.2016:	Market capitalization (in $m)	Share price (in $)	Shares outstanding (in $m)	Cost of debt (in%)
Monsanto	46,645.1	106.5	438.0	2.52%
Bayer	87,296.1	105.6	826.9	2.44%



Source: Bloomberg and S&P CapIQ, accessed 18.02.2023

Exhibit 12 - Interest rates 2016

5-year interest swap rate	0.77%
Interest Term Loan A (Cost of debt Monsanto)	2.52%
Interest Term Loan B	2.80%
Interest Term Loan C	3.00%
Subordinated loan interest	8-12%
Common targeted Debt/EBITDA ratio	4.0x

Source: Bloomberg, Case writer analysis

Exhibit 13 - Executive Compensation

Name and Principal Position	Total (mn $)
Hugh Grant Chairman and Chief Executive Officer	11.84
Pierre C. Courduroux, Senior Vice President and Chief Financial Officer	2.90
Brett D. Begemann, President and Chief Operating Officer	5.66
Michael J. Frank, Senior Vice President, and Chief Commercial Officer	3.69
Steven C. Mizell, Executive Vice President, and Chief Human Resources Officer	5.22

Source: Monsanto SEC filling 2016
DEF 14A (sec.gov)

Exhibit 14 - Executive Compensation

Bank	0.5%
DD	0.5%
Arrangement Fee	0.5%
Banking Fees	0.5%

Case writer assumption