



# Bayer and Monsanto

## Seeding the future?

Charlotte Isabel Nacke

Dissertation written under the supervision of Patrícia Machado

Dissertation submitted in partial fulfilment of requirements for the MSc in  
International Management, at the Universidade Católica Portuguesa,  
14/12/2018

## **Abstract**

**Dissertation Title:** Bayer and Monsanto – Seeding the future?

**Author:** Charlotte Isabel Nacke

**Keywords:** Dynamic Capabilities, Motivation for M&A, Strategic Change, Asset Divestiture

Building upon established theories, the Dynamic Capabilities view emerged as an attempt to extend existing theories on how companies can address rapidly changing environments. Defined by Teece et al. (1997) as a firm's ability to integrate, build and reconfigure internal and external competencies, Barreto (2000) suggests a new conceptualization of Dynamic Capabilities, presenting them as a four dimension construct.

In this dissertation, I have chosen to develop a teaching case which aims to illustrate the fundamentals of the Dynamic Capabilities theory and its real-life implications. The company I have selected for this matter is Germany-based Bayer, who acquired American-based Monsanto in June 2018.

In literature, acquisitions are often classified as a strategic action, executed by a company to modify its distinctive competencies in order to keep up with changing environments. The case intends to assess the underlying reasons of Bayer's decision to acquire the seed manufacturer and which opportunities and threats had been tied to the union. It further paints a picture of the future of the Agricultural sector and how the profound consolidation, in the years between 2015-2018 had significantly influenced the sector.

## Resumo

**Título da dissertação:** Bayer and Monsanto – Seeding the future?

**Autor:** Charlotte Isabel Nacke

**Palavras-chave:** Dynamic Capabilities, Motivações para Fusões e Aquisições, Mudança Estratégica, Alienação de Ativos

Com base em teorias existentes, o conceito das *Dynamic Capabilities* surgiu como uma tentativa de abordar a forma como as empresas podem lidar com ambientes em rápida mudança. Definidas por Teece et al. (1997) como a capacidade de uma empresa integrar, construir e reorganizar as suas competências internas e externas, Barreto (2010) sugere um novo conceito de *Dynamic Capabilities*, apresentando-as como um framework com quatro dimensões.

Nesta dissertação, decidi desenvolver um caso que tem como objetivo ilustrar as dimensões da teoria das *Dynamic Capabilities* e as suas implicações na vida real. Escolhi a empresa alemã Bayer, que, em Junho de 2018, adquiriu a empresa americana Monsanto, para realizar este estudo.

Na literatura existente, as aquisições são normalmente definidas como uma ação estratégica, usada pelas empresas com o intuito de modificar as suas competências, para que consigam acompanhar o ambiente em mudança. O caso em questão, pretende avaliar as razões subjacentes à decisão da Bayer de adquirir o fabricante de sementes e analisar quais as oportunidades e ameaças que estavam associadas a esta fusão. Além disso, avalia o futuro do setor Agrícola e a forma como a consolidação profunda, ocorrida entre 2015-2018, influenciou significativamente o setor.

## **Acknowledgements**

First and foremost, I would like to express my gratitude towards my dissertation supervisor Patrícia Machado, not only for her outstanding encouragement throughout the entire writing process, but also for her constant capability to motivate and inspire me in such a gracious manner and for her insightful remarks, which immensely helped me to improve my work. Her great knowledge of the theoretical background and the capability to immediately link this to my topic was highly supportive for the elaboration of my thesis.

Moreover, I would like to thank the Católica Lisbon School of Business and Economics, all of my Professors and the entire supporting staff to help me outgrow myself not only on an academic but also on a personal level throughout the past 1.5 years.

I would like to thank my family, my parents and my sister, for their inspiration, their love and their endless support throughout my entire academic career. Thank you for encouraging and enabling me to pursue this Master's Degree and extend my academic knowledge in such a great manner. Above all, I would like to thank them for always making me believe in myself and in greater things.

Lastly, I want to say thank you to my friends here in Lisbon and all over the world, for their encouragement, support and love - I probably could have done it without you, but the journey would not have been half as worthwhile. Thank you for making me grow into a person who will always be curious and hungry for all the beautiful things in this world.

# Table of Contents

<b>ABSTRACT .....</b>	<b>2</b>
<b>RESUMO .....</b>	<b>3</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>4</b>
<b>TABLE OF CONTENTS .....</b>	<b>5</b>
<b>ABBREVIATIONS .....</b>	<b>6</b>
<b>1. INTRODUCTION.....</b>	<b>7</b>
<b>2. LITERATURE REVIEW .....</b>	<b>9</b>
2.1) MOTIVATIONS FOR MERGERS AND ACQUISITIONS .....	9
2.2.) DYNAMIC CAPABILITIES .....	11
2.2.1) Definition of Dynamic Capabilities.....	11
2.2.2) Fundamentals of Dynamic Capabilities .....	12
2.2.3) Fostering and Sustaining Dynamic Capabilities.....	13
2.2.4) Reconfiguring Resources and Asset Divestiture .....	14
<b>3. TEACHING CASE.....</b>	<b>16</b>
3.1) DIRECTION NEAR-MONOPOLY?.....	16
3.2) ONE GIANT ACQUIRES THE OTHER .....	17
3.3) AGRICULTURE AS PART OF THE NEW INDUSTRIAL REVOLUTION .....	19
3.4.) THE FACEBOOK OF FARMING?.....	20
3.5) FIGHTING MARKET REGULATIONS .....	22
3.6) WHY SELLING TO THE COMPETITOR? .....	24
3.7) MEETING THE CHALLENGES OF TOMORROW .....	26
<b>4. EXHIBITS.....</b>	<b>29</b>
<b>5. TEACHING NOTES.....</b>	<b>33</b>
A. SYNOPSIS.....	33
B. TEACHING OBJECTIVES .....	34
C. INTENDED CONTRIBUTION .....	35
D. PEDAGOGICAL OVERVIEW .....	35
E. ASSIGNMENT QUESTIONS .....	36
F. BOARD PLAN.....	40
<b>DISCUSSION .....</b>	<b>41</b>
<b>CONCLUSION .....</b>	<b>44</b>
<b>BIBLIOGRAPHY .....</b>	<b>45</b>
<b>ENDNOTES .....</b>	<b>48</b>

## **Abbreviations**

**bn:** Billion

**DC:** Dynamic Capabilities

**DoJ:** Department of Justice

**GM:** genetically modified

**M&A:** Mergers and acquisitions

**m:** Million

# 1. Introduction

In 2010, Makri, Hitt and Lane have classified acquisitions as strategic actions which allow firms to modify their distinctive competencies in order to keep up with the pace of changes in their environment. In their view, acquiring resources, which are difficult to imitate and change, serve as a core driver for the engagement in Mergers & Acquisitions. It therefore extends earlier research by Perry and Porter (1985) who claimed that a horizontal acquisition's key motive is to create a new, larger organization with more market share, while given the opportunity to reduce industry competition.

Defined as a firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments, Dynamic Capabilities can serve as an important asset for the successful execution of the acquisition of another firm. Since Teece, Pisano, and Shuen published their seminal article in 1997 on the fundamentals of Dynamic Capabilities, the topic has gained incremental importance within the managerial literature. The new approach arose from the need to complete the Resource-Based Theory for constantly changing markets, which was introduced by Barney in 1991. Barreto's publishing in 2010 greatly contributed to this framework by classifying Dynamic Capabilities into four dimensions, described as "the firm's potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base".

The identification of motives for the acquisition of another firm has been a central subject of interest for corporate management research in the last decades. Accordingly, the following dissertation carefully analyzes Bayer's motivations to take over American giant Monsanto, in the largest foreign takeover bid that has ever been completed by a German company, on the grounds of the existing theoretical perspectives on mergers and acquisitions. Hereby, it enhances several theoretical lenses in order to analyze the benefits and challenges that a highly profitable, but risky acquisition can yield. Further, a special emphasis is laid upon the synergies that could emerge from this transaction and how it may affect the already highly consolidated agricultural industry in the long-run. Additionally, the work was framed to analyze Bayer's Dynamic Capabilities and whether its ability to integrate, construct and reconfigure the given competencies had been able to address the firm's changing environment in an efficient and sustainable manner.

In the first part, incentives of the above-mentioned acquisition are evaluated, with a special focus laid upon the analysis of whether the controversial reputation of Monsanto could be compensated by the economically beneficial means and extensive knowledge acquisition of the deal. The second part assesses whether agriculture will play a major role in the new industrial revolution and how the combination of seeds, pesticides and data analytics is going to shape the market in the future. In the following, the development of the agricultural sector towards a highly consolidated and regulated market is illustrated, as the fusion had further monopolized the seeds and pesticides market. Further, it is evaluated whether the asset divestiture of selected Crop Science businesses to competitor BASF may yield evidence of acquisition failure. Lastly, in order to create an outlook for the future, the prospects of the unionized firm and its chances to meet the challenges of tomorrow are carefully assessed.



## **2. Literature Review**

The following section is split into three main topics; aimed to lay the grounds for the analysis of Bayer's acquisition of Monsanto, giving a detailed, critical outline on existing theories and frameworks which will further be taken into account to assess the above-mentioned matter.

Firstly, the review elaborates on the reasons to consider and execute a merger or acquisition and which motives serve as the core drivers for companies to practice such a complex decision. Secondly, the concept of Dynamic Capabilities is illustrated and which role it plays with respect to a takeover, as well as whether its existence is linked to the long-term success of an acquisition process. As one dimension of the Dynamic Capability's framework, the notion of reconfiguring a firm's resource base is assessed and how acquisitions provide means of reconfiguring an eternal structure of resources within firms.

### **2.1) Motivations for Mergers and Acquisitions**

Despite the current consensus that many M&A transactions are deemed to fail (Angwin, 2007) and research claims that in fact, less than 50% actually succeed, the engagement in such cooperation's is yet growing (Calipha, Tarba, and Brock, 2010). In an attempt to understand the motives of engaging in M&As, the following abstract gives a comprehensive summary of the main points presented in academic literature.

With the present tendency towards globalization, companies are in need of tightening their relations across borders, as for many firms there is no prospect of substantive growth and development when solely operating on local markets (Hagedoorn, Duysters, 2002; King, Slotegraaf, and Kesner, 2008).

According to literature, a merger is defined as a consolidation of two or more firms to create a new entity, whereby all but one of the enterprises are losing their legal and economic autonomy (Walsh, 1989). Acquisitions, however, are defined as the process of one firm taking over another. Whilst establishing itself as the new owner of the entity, the acquirer hereby purchases either assets or shares of the target firm (Jemison and Sitkin, 1986).

Acquisitions are often classified as strategic actions which allow firms to modify their distinctive competencies in order to keep up with the pace of changes in their environments whilst acquiring resources that are difficult to imitate and change (Makri, Hitt, and Lane 2010). The authors Makri et al. claim that especially acquisition-deals which are larger than \$500 million tend to be driven by motivations such as market power acquisition and economies of

scale, rather than knowledge exchange and accumulation. Strategically, it is common that small firms may choose to innovate above average if they have the option to sell out to larger firms, while sizable firms rather obtain access to new inventions through acquisitions instead of competing in an 'R&D race' (Phillips and Zhdanov, 2013).

Research shows that performing below aspirations increases enterprise's acquisition activity, whilst firms which perform above aspirations usually withdraw from such actions. Hence, engagement in acquisitions, defined as "resource-consuming investments which are made to improve a firm's competitive position", increase with slack and decrease with financial distress (Iyer and Miller, 2008).

Broadly, the goal of a horizontal acquisition is to create a new, larger organization with more market share and the opportunity to reduce industry competition (Perry and Porter, 1985). Yet, not only the consolidation of market share is a common motive; external growth, vertical integration, access to scarce resources, and diversification of risk are amongst the most frequent drivers (Calipha, Tarba and Brock, 2010).

Not only in high-technology industries, but also in a number of others, knowledge is perceived as profoundly essential for a long-term success (Hitt, Bierman, and Uhlenbruck, 2006). Related to this, Makri, Hitt, and Lane defended in 2010 the claim that complementary scientific, - and technological knowledge, both manage to increase performance through stimulation of higher quality and an enlarged amount of novel innovations. "Synergies are the present value of the net additional cash flow that is generated by a combination of two companies that could not have been generated by either company on its own" (Ficery, Herd and, Pursche, 2007).

Often executives use the existence of synergies to justify big premiums paid during the process of an acquisition. A promising motivation is introduced by Ficery et al. in 2007, who finds that successful acquirers tend to capture 70-75% of intended synergies within the first year of the acquisition, while only a small percentage of companies has to wait longer than three years to capture all synergistic benefits. The resulting value of such synergies can be differentiated in financial or operating values. Larsson and Finkelstein (1999) support that financial synergies are achieved through either the increase of cash flow or the decrease of cost of capital. In contrast to that, the greatest source for operating synergetic effects is facilitated through economies of scale, greater pricing power, the combination of functional strength as well as higher growth in new or existing markets.

However, given the usual complexity of M&A transactions and the difficulty in assessing their results, potential negative outcomes need to be anticipated. When two enterprises merge, they seek to minimize uncertainty to a given level of expected profit (Parrino and Harris, 2005).

M&A activities tend to be inherently risky, often caused by strong prevailing information asymmetries between target and acquirer firm. Hence, the lack of access to crucial data about the target firm profoundly increases the M&A's risk and its anticipated transformation into a long-term success (Angwin, 2001).

## **2.2.) Dynamic Capabilities**

### **2.2.1) Definition of Dynamic Capabilities**

With the definition of Dynamic Capabilities by Teece et al., describing them as “the firm’s ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments” (Teece, Pisano, and Shuen), the concept first gained academic relevance through researcher’s attention in 1997. It became apparent that the widely-known framework of Porter’s Five Forces (1980); which considers primarily the assessment of strategic positioning in a potential industry and how to be best protected from competition; has a number of weaknesses with respect to a firm’s changing environment. Based upon potential limitations of the framework, the notion of Dynamic Capabilities has considered new dimensions in the empirical research within the last two decades, complementing the premise of a more resource-based view of a firm, whilst considering tangible and intangible assets (Barney, Wright, and Ketchen, 2001). The grounds of the framework were further sustained by Zollo and Winter (2002), investigating the mechanisms which assist organizations to develop Dynamic Capabilities. The authors declare that such capabilities are achieved through routinized activities, which generate systematic operating procedures in order to improve performance.

Hereby, the role of a firm’s experience accumulation, knowledge articulation, and knowledge codification is considered, while their coevolution is being perceived as fundamental in the process of shaping Dynamic Capabilities. Helfat and Winter (2011) further laid the foundation of distinguishing Dynamic Capabilities from common operational capabilities, which are directly linked to a firm’s current operation. Helfat et al. differentiate the frameworks by defining Dynamic Capabilities as “the capacity of an organization to purposefully create, extend, or modify its resource base” (Helfat et al., 2007), actively pointing out that core competencies ought to be modified in order to achieve long-term competitive advantages.

### **2.2.2) Fundamentals of Dynamic Capabilities**

Although it had been previously cited, the seminal work of Teece, Pisano, and Shuen was the first to introduce and defend the Dynamic Capabilities theory as a form of potential source of sustainable competitive advantage (1997). In a later publication, it is illustrated that Dynamic Capabilities are fundamentally based on a firm's profoundness of corporate agility. It essentially comes down to 1.) the capability to sense and shape opportunities and threats, 2.) its ability to seize opportunities and 3.) maintaining competitiveness through enhancement, combination, and protection of enterprise's tangible and intangible assets, which support "superior long-run business performance" (Teece, 2007). Predominantly consistent with this approach is the definition of Barreto, who stated in 2010 that Dynamic Capabilities are a firm's potential "to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base." His perception of essential problem-solving capabilities is hereby connected to the ability to sense, shape and seize opportunities (Teece, 2007), as well as the importance of resource-based configuration, which was originally introduced by Eisenhardt and Martin in 2000. Hereby, research points out that the reconfiguration propensity only achieves high effects when it is combined with the propensity to make market-oriented decisions (Menguc & Auh, 2006).

In 1997 Teece, Pisano, and Shuen initially investigated the fundamental matter of how firms sustain relevant competitive advantage under the existence of innovation-based competition, performance rivalry and the creative destruction of existing competencies. Their work suggests that private wealth creation depends profoundly on the technological, organizational and managerial processes inside an enterprise, especially in environments of rapid technological change. The authors advocate that simultaneously detecting and embracing new opportunities is more crucial in the process of wealth creation than strategic shielding from competition.

Broadly seen, the theoretical and methodological complexities that are connected to drawing a framework around the routines and processes that are required to achieve Dynamic Capabilities, have led to conceptual discrepancies. Understanding the relevance and contribution of Dynamic Capabilities to competitive advantage, Teece's framework published in 2007 seeks to illustrate that they are "sources of enterprise-level competitive advantage over time and provide guidance to managers for avoiding the zero-profit condition". As this is often a result of homogeneous firms competing in perfectly competitive markets, Teece (2007) is ultimately linking Dynamic Capabilities to business performance.

### **2.2.3) Fostering and Sustaining Dynamic Capabilities**

Teece (2007) states that the deployment of a set of difficult-to-replicate enterprise capabilities (processes, activities, and competencies) is required to adapt to changing customer needs, technological innovation and increased competitiveness.

With respect to post-merger management, Zollo and Winter (2002) seek a linkage to Dynamic Capabilities, supporting that “the ability to plan and effectively execute post-acquisition integration processes is another example of a Dynamic Capability, as it involves the modification of operating routines in both, the acquired and the acquiring unit.” As they claim that Dynamic Capabilities arise from learning, it is important to note that an environment, transformed through a merger, requires an “explicit investment in retrospective sense-making” (Zollo and Winter, 2002), in order to ensure that the extension of specific capabilities addresses the altered context.

As Helfat et al. (2007) defend that the competency of purposefully creating, extending or modifying a firm’s resource base can be seen as the essence of Dynamic Capabilities, it follows that an acquisition can nurture its development through extension.

Ultimately, collaborations and partnerships can be seen as a source for new-fangled organizational learning as it helps firms to recognize dysfunctional routines and prevent strategic misconceptualization. Related to learning, theory states (Teece, 2007) that constructing strategic assets is another Dynamic Capability. Hence, alliance and acquisition routines can enable firms to bring new strategic assets into the firm from external sources and facilitate the improvement of existing Dynamic Capabilities, if properly implemented.

Ambrosini and Bowman argued in 2009 that the need for change varies among different industries. Generally seen, dynamic environments are often exposed to destabilizing forces, namely technological innovation and increasing global competition, which foster both, new opportunities and threats. In order to exploit new market possibilities, managers ought to effectively manage their organizations and strategies accordingly (Eisenhardt, Furr and Bingham, 2010). Hence, particularly fast-changing markets require the development of new capabilities and reconfiguration of existing resource bases, strongly relying on the ability to reconfigure a firm’s asset structure and accomplish a necessary internal and external transformation (Amit and Schoemaker, 1993).

#### **2.2.4) Reconfiguring Resources and Asset Divestiture**

Firms have multiple ways to attempt change. One is the interorganizational method involving an alliance or acquisition, requiring profound interaction with another organization (Capron, Mitchell, and Oxley, 1999). Consequently, acquisitions often provide means of reconfiguring the structure of resources within the firm. Capron, Mitchell, and Swaminathan defend the notion that hereby, asset divestiture is often a logical consequence of this reconfiguration process (2001).

“Business acquisition, resource redeployment, and asset divestiture are elements of a dynamic process in which firms change their businesses by recombining internal and external resources” (Capron, Mitchell, Swaminathan, 2001).

Ramaswamy published in 1997 an examination of strategic similarity, stating that a merger which is based on parallel strategic characteristics, leads to greater opportunities for scale efficiencies compared to those involving two dissimilar firms. While Ramaswamy focusses on positive prospects for increasing scale efficiencies, the authors Capron, Mitchell, and Swaminathan further defend the hypothesis that the disposition of resource redeployment and asset divestiture are often inevitable results of an acquisition (2001). This leads to the proposal that “consistent with scale economies rationales, we find that strategic similarity also leads to greater asset divestiture from the target firms.” (Capron, Mitchell, Swaminathan, 2001).

By contrast, Wernerfelt (1984) claims that enterprises evaluate potential target firms with respect to their capacity to function as accelerators for further expansion. Despite the dominant theories supporting that resource similarities are most common to create value, Wernerfelt declares that “acquirers tend to retain target resources that are distinct from the acquirer’s pre-acquisition resources”. Thus, he endorses that acquirers pursue incremental change by retaining resources that are dissimilar, in order to further develop core competencies, Dynamic Capabilities, or a more profound competitive advantage. Teece (1986) supports this approach, stating that complementary assets, important for an effective commercialization of new innovations, are often fostered by distinctive resources amongst the two partners.

This opens the discussion concerning the logical occurrence of asset divestiture. The economic rationale for acquisitions has been deliberately controversial over time, with many theoretical perspectives defending that asset divestiture serves as an evidence of acquisition failure (Capron, Mitchell, Swaminathan, 2001).

Originally, asset divestiture was outlined and pioneered by Ravenscraft and Scherer in 1987, defining it as the “partial or complete divestiture of physical and organizational assets, shut down of facilities, and reduction of workforces of target or acquirer businesses”.

Generally seen, there are different motives for the partial disposal of business elements. Under certain circumstances it may occur that either existing business units are regarded as being redundant after the acquisition of another firm, that the resale value of a firm increases with the disposal of a particular business unit, or that a court demands that in order to balance market competition, it is required to sale existing business units (Capron, Mitchell, Swaminathan, 2001). Notably, the existence of redundant assets is more common when both competitive environments between target and acquirer firm are much alike, which then often leads to immediate benefits through selling such overlapping assets (Anand and Singh, 1997). Considering it as a major part of a post-acquisition reconfiguration process, Capron et al. (2001) argue that the divestiture of unneeded assets naturally results from the resource redeployment between the target and acquirer firm. It contrasts the traditional view that the standalone phenomenon of a post-merger sell-off often tends to be connotated negatively (Ravenscraft and Scherer, 1987). The authors Capron et al. thus defend that together, asset divestiture and resource deployment represent elements of an “ecological process of business growth and development” (1999).

### 3. Teaching Case

#### 3.1) Direction Near-Monopoly?

*“Together, these two companies will influence farmers’ opinions and markets all over the world on a scale we’ve never seen before.”<sup>1</sup>*

– Evgeniy Kozarenko<sup>2</sup>

Creating one of the largest global agribusiness companies, the merger of the German, multinational pharmaceutical company Bayer and the American seed manufacturer Monsanto had brought together two diverse, but highly complementary businesses on the 7<sup>th</sup> of June 2018.<sup>3</sup> News all around the globe had reported about the megadeal of Bayer, the life science company with its core competencies in the fields of health and agriculture, had acquired Monsanto, who served as the world’s leading manufacturer of genetically modified seeds. Their shared aim had been to develop new ways to improve health with innovative products and design an integrated offering with better solutions for the agricultural sector.<sup>4</sup>

The deal, valued at \$66 billion<sup>5</sup>, had created one of the global leading agribusinesses in 2018, whilst serving as the largest-ever foreign takeover bid by a German company.<sup>6</sup> Despite the companies’ progressive aspirations of realizing their shared vision to innovatively solve scientific challenges and provide better solutions for farmers, there had been a strong global opposition regarding the union.

The merger had been subject of multiple controversial discussions before and after the execution, with a number of international environmentalists and politicians voicing their discontent regarding the takeover.<sup>7</sup> Additionally, it had been critically monitored due to the risk of competition concerns by the EU commission. The large all-cash buy-out had been in the works since May 2016 and had conclusively received its final approval by the European Union in early 2018, closely followed by the Department of Justice’s approval in March, that year.<sup>8</sup> After Bayer had pledged to sell off additional assets in order to secure the government’s antitrust approval, the Justice Department had decided to sign off the megadeal.<sup>9</sup> Nonetheless, environmentalists all across the globe had embraced the ‘near-monopoly’ in agriculture tentatively, as it had appeared to be another step towards the total consolidation of the global agricultural market (Exhibit 4.4).<sup>10</sup> Together with ChemChina’s \$44bn acquisition of Swiss Group Syngenta in 2016 and the all-American \$130bn formation of DowDuPont in late 2017<sup>11</sup>, Bayer’s acquisition had yielded to lay approximately two-thirds of the worldwide seed and chemical supply in the hands of only three ventures (Exhibit 4.5).<sup>12</sup>



As of August 2018, Monsanto had officially no longer been known under its 117-year-old name<sup>13</sup>, when Bayer started the formal integration as a subsidiary after becoming the legal owner of the U.S. seeds company.<sup>14</sup> Yet, the question had remained whether the acquisition of a firm such as Monsanto could flourish despite its public standing. The U.S. giant had been controversially highlighted in the past for their herbicide glyphosate and their genetically modified seeds, which were claimed to promote monocultures and hence cycles of dependence in the agricultural industry.<sup>15</sup>

*"Bayer's public image is better than Monsanto's,"* a Bayer critical had stated before the takeover, *"but both companies are carved from the same wood - and when two criminals work together, we cannot solve the crime."*<sup>16</sup> Whether Bayer had been able to sense given opportunities correctly, whilst cautiously taking into account potential threats and public headwind throughout the execution of the acquisition still needed to be discovered. Meanwhile, communities worldwide were debating whether the Bayer-Monsanto merger would use its new market position to progressively innovate the agricultural sector, or if the union would proceed to solely facilitate unprecedented access to farming data, eventually raising prices for seeds and pesticides, whilst creating dependencies for farmers all over the globe.<sup>17</sup>

### **3.2) One giant acquires the other**

*"Our combination will accelerate this journey of discovery and advance our purpose of science for a better life."*<sup>18</sup>

– Werner Baumann<sup>19</sup>

Up until the acquisition got signed off by the federal authorities, Germany based Bayer and St. Louis based Monsanto had long been competing against one another in the fields of seed and crop protection products.<sup>20</sup> Bayer, the international chemical and pharmaceutical enterprise, first set its sails in direction global player in the 1860s, when businessman Friedrich Bayer and dyer Johann Friedrich Weskott discovered through experimentation how to make dye fuchsine. The "Friedr. Bayer et. comp." company was founded in 1863, masked as a 19<sup>th</sup> century startup with a promising outlook. When the company started engaging in new fields of business between 1881 and 1914, Bayer gradually developed into an internationally operating chemical company.<sup>21</sup> The beginning of the 21<sup>st</sup> century marked Bayer's transformation into a 100,000-employee

company, widely prominent for their development of modern Aspirin and Alka Seltzer.<sup>22</sup> However, throughout Bayer's reformist past, the enterprise stumbled across a number of investigations, ranging from their involvement in the manufacturing of chemical weapons including chlorine gas, to the scandals around the revolutionary birth control pills Yaz and Yasmin.<sup>23</sup> Nonetheless, Bayer continued its international growth. In 2014, the German global player acquired Land Management assets of DuPont Crop Protection in no less than 5 countries, including the United States, Canada, Mexico, Australia, and New Zealand, allowing the subgroup to take a leading role in Industrial Vegetation Management.<sup>24</sup> In May 2016, Bayer AG welcomed his new CEO, Werner Baumann, who had been a member of the Board of Management for the past 6 years, being responsible for the Strategy and Portfolio Management. Soon after his placement, Bayer and Monsanto signed their binding merger agreement, constructing the legal framework for Monsanto's acquisition.<sup>25</sup>

Monsanto, on the other side, began their journey as an agricultural company after it got divested from Pharmacia Corporation in 2002, focusing on innovating yield enhancements in order to increase farmer's profitability.<sup>26</sup> In 2002, Monsanto moved from sole agricultural biotechnology towards advanced solutions for precision farming, realized by the acquisition of companies strategically focused on producing digital tools and data mining.<sup>27</sup> In the past, Monsanto had to face precarious public headwind due to its involvement with genetically modified seeds, which was said to promote monocultures and consequentially resulted in farmers involuntarily having an increased reliance on chemicals.<sup>28</sup> The association of Monsanto with chemicals such as Agent Orange, the destructive defoliant used during the Vietnam War<sup>29</sup>, and especially the pesticide Glyphosate, had steadily caused controversial discussions.

In the course of 2016, the board of Monsanto's directors had voted to approve the acquisition by Bayer CropScience AG, despite originally being opposed to a potential takeover. The firm had thought of itself rather as a buyer than as a target. However, negotiations with Syngenta and BASF had not flourished and after Bayer had increased its bid over months of negotiations<sup>30</sup>, additionally adding a break-up fee of \$3billion, Monsanto had settled for the offer.<sup>31</sup> Monsanto's shareholders ended up receiving \$128USD per share for the largest acquisition in the company's history (Exhibit 4.3).<sup>32</sup>

### 3.3) Agriculture as part of the new industrial revolution

*“There is no new dirt,” he said. “We need to get much smarter societally about how we farm.”*<sup>33</sup>

– Hugh Grant<sup>34</sup>

It had been both companies’ belief that overcoming the challenge the global world was facing would result in a new, reconfigured approach. It would be required to “*more systematically integrate expertise across Seeds, Traits and Crop Protection including Biologicals with a deep commitment to innovation and sustainable agriculture practices,*” as stated by the head of Crop Science Division, Liam Condon in an interview shortly after the acquisition.<sup>35</sup> The recently executed combination had brought together both companies’ leading innovation capabilities, as well as their R&D technology platforms with a substantial shared budget of approximately €2.5 billion.<sup>36</sup>

Meanwhile, the CEO of Monsanto had voiced his opinion regarding future ambitions, implicating that the two firms would aspire to use data about soil and weather to offer farmers a more precise and targeted advise about their choice of seeds and chemicals.<sup>37</sup> Grant had stated that with Agriculture being a part of the new industrial revolution, successful companies of the future had to overcome their focus of solely selling seeds and chemicals, but also required incorporating data as a part of the service (Exhibit 4.8). The transformation of the core agricultural business focus in those years had provided indicators why Monsanto had acquired the Climate Corporation (2013), why it had tried to buy Swiss chemical enterprise Syngenta (2015) and why Bayer had initially laid eyes on Monsanto (2016).<sup>38</sup> The Climate Corporation had been an enterprise which aimed to assist farmers around the world to protect and improve their farming operations with the help of uniquely powerful software and insurance products.<sup>39</sup>

Above all, the merger had been intimidating to the public due to the profound technological developments during those days. Most agricultural companies had recently increased their investments in R&D, as it had become apparent that their previous methods of yield enhancement through chemicals would no longer work in the foreseeable future. Farmers had begun to accept them less and less, resulting from the fact that they had led to species loss, water pollution and resistant pests in the past.<sup>40</sup>

As the restrictions of the usage of glyphosate had been tightened and neonicotinoids were expected to be banned, the corporations found themselves in need of new ideas for business growth. Hence, Monsanto, Bayer, and other players had intensively conducted

research within the fields of digitized precision farming, a segment, which had used sensors to reduce the usage of pesticides and fertilizers. As a result, Bayer and Monsanto had planned to invest in the fields of robot testing and development of new genetic engineering methods for plant breeding.<sup>41</sup> To support this field of innovation, Monsanto had acquired numerous start-ups in the years before the acquisition.<sup>42</sup>

Together, they had found themselves on the verge of constructing their position as the first mover of the new agricultural world.<sup>43</sup> The newly formed company had aspired to sell everything from one source in the future: seeds, agrochemistry, field data, and cultivation knowledge, tailored to each farmer and every square meter of his field (Exhibit 4.8). Their aim had been to make the current industrial farming system a little more sustainable and a lot more efficient, taking into account the public expectation that, above all, it should not drive farmers gradually into a higher dependency of solutions, products, and prices determined by large companies.<sup>44</sup>

### **3.4.) The Facebook of Farming?**

*“These companies want to make more money, they want to raise prices. No company in this industry needs these deals in order to innovate.”<sup>45</sup>*

– Mark Connelly<sup>46</sup>

According to the media and environmentalists, between 2015 and 2018 various mergers in the agricultural chemicals and seeds market had marked radical influence on farming and thus had reshaped the global food production entirely.<sup>47</sup>

Since its first announcement in 2016, discussions had been ongoing regarding underlying motives for the next large alliance in the agricultural sector. Publicly, it had been stated that Bayer’s main drivers for the acquisition had been to actively benefit from Monsanto’s leading position in the fields of seeds and plant traits. Monsanto’s expertise in Digital Agriculture through Climate Corporation had been an interesting asset to complement Bayer’s proficiencies.<sup>48</sup> Bayer’s main capabilities had been concentrated on Crop Protection product lines across a comprehensive range of indications and various crops across each key-geography. Aspiring to meet current and future needs of their customers, the idea had been to produce innovative solutions in the fields of seeds and traits, digital agriculture and crop

protection. Both giants had been convinced that efficiency gains, generated by innovative solutions in respective areas were to increase the returns for farmers.<sup>49</sup>

Brian Carroll, spokesman of Monsanto, who openly defended the movement towards the gradual alienation of an oligopoly market structure, pleaded that farmers would merely benefit from the mega-deal. In May 2018 he had stated that in current times farmers would “*need access to tools that support the decisions they make to maximize their return on every acre*”, which the new union would deliver.<sup>50</sup> Both, Bayer and Monsanto, had supported that together, they were going to be able to provide better solutions for farmers, whilst developing into a leading innovation driver for the next generation of agriculture.<sup>51</sup> While the public had remained skeptical, the Chief Technological Officer of Monsanto, Robb Fraley, had affirmed that the acquisition would help both partners to release resources to increase investments in R&D, which consequently would foster a positive effect on global agriculture.<sup>52</sup> Conclusively, executives of both firms had defended that the consolidation would solely allow for “*greater efficiency in serving farmers and consumers*”, and hence be essentially customer-oriented.<sup>53</sup>

As of 2019, Bayer would expect a positive contribution from Monsanto to the adjusted earnings per share, which would be anticipated to range in the double-digit percentage from 2021 onwards. From 2022, annual contributions to earnings before interest, taxes, depreciation, and amortization (EBITDA) resulting from the deal, had been planned.<sup>54</sup> Justifications for the acquisition price of \$66 billion had been the expected \$1.2 billion in cost savings, generated from the elimination of overlapping public company expenses, a better positioning while negotiating deals with suppliers and through eliminating redundancies (e.g. jobs).<sup>55</sup>

However, the time also marked a period for Bayer where the company had been exposed to several risks which had been resting on the company’s shoulder. Amongst others, the German company had to face a patent cliff from 2023/24 onwards, when a number of patent protections of important medicines would start to run out, nurturing the possibility that Bayer would have to face future aggressive competition.<sup>56</sup> This development had fostered Bayer’s consideration of whether the reconfiguration of its resource base would be strategically desirable. Nonetheless, the Leverkusen based group had become the undisputed market leader in agrochemicals with the acquisition of Monsanto (Exhibit 4.2). Figures of 2017 had stated that Bayer’s Division Crop Science managed a turnover of about €21 billion. Through the union, the Group would be able to offer the world’s largest supply of seeds and the largest volume of crop protection products (Exhibit 4.6).<sup>57</sup>

As of 2015, despite declining numbers, the world had yet been confronted with 10% of its population having to survive off less than \$1.90/day<sup>58</sup>, translating into 736m people living in extreme poverty. <sup>59</sup> These numbers had genuinely underlined Bayer's and Monsanto's vision to increase efficiency and productivity, depicting their union as a provider of the enormous amount of innovation necessary *"to double the world's food supply"* (Exhibit 4.7).<sup>60</sup>

*"Two major concerns we have are: How is this going to affect the prices of products, and how is it going to affect the availability of products."*, had reported the federation's legislative affairs director, Spencer Tuma.<sup>61</sup> Fears had been amplified as Monsanto had hinted that data had been one of the key reasons for the unification. It had promoted increasing concerns that progress in this field would eventually allow the agribusiness to exert unprecedented control over farmers. The possibility would allow companies to access farmer's data to sell them seeds and pesticides. *"The merger will create the biggest platform of its kind — and give Bayer-Monsanto a 'first mover' advantage similar to Facebook, in the way that it affects competitors,"* Mute Schimpf, spokeswoman of Friends of the Earth Europe had illustrated.<sup>62</sup> Monsanto's Climate Fieldview data platform, which the company had promoted as *"Key Growth Driver 2018"*, had already started to use tractors with sensors, GPS and data drones to monitor field conditions and advise farmers in real time. Public voices had argued that the combination of seed and data business would allow large corporations to *"create proprietary platforms that are inaccessible to competition"*.<sup>63</sup>

### **3.5) Fighting Market Regulations**

*"As Facebook's algorithms decide which newsfeeds we see, so 'Baysanto' will decide which pesticides are used, and which seeds are planted."*<sup>64</sup>

– Mute Schimpf<sup>65</sup>

Discussions preceding the acquisition had highlighted different perspectives on the influence on the dynamics across the agricultural market. The Guardian had voiced that the union could cause major consequences for the seed development, herbicide market, opening research and general development processes.<sup>66</sup> Bayer and Monsanto believed that hunger in developing and emerging countries could only be combated by expanding industrial agriculture. This is what the deal stood for, and this was what Monsanto had always been standing for.<sup>67</sup>

It had been recognized quickly that the integration of the two companies would be a real challenge. Player A, German Bayer AG, had owned a large portfolio of products, ranging from consumer goods like Berocca and Aspirin to pharmaceuticals, crop science and even animal health and additionally had enjoyed a genuinely positive reputation up until that point. The execution of the mega-deal had tilted Bayer's business model profoundly towards crops and agriculture, indicating an economic potential lying in genetically modified high-tech crops, which had originally been developed to feed a growing population.<sup>68</sup>

Player B, Monsanto, had been considered to be the best plant biotech company at the time. However, the firm had experienced a rather appalling image, repeatedly standing in the critics of environmentalists and agricultural activists due to its positioning as a pioneer of plant genetic engineering.<sup>69</sup> Remarkable about Monsanto's international success had been the fact that it was predominantly built upon one product, Roundup, a herbicide brand, which had been the firm's leading product. The herbicide had been controversially discussed as being part of the firm's own circle of dependency. In the past, the US company had sold large quantities of GM-seeds for corn, soybeans, cereals and cotton, together with the matching company-owned pesticides and herbicides.<sup>70</sup> Farmers who worked with Monsanto had usually spread the seeds on huge areas of land and nourished the fields with mineral fertilizers, spraying large quantities onto the soil.<sup>71</sup> The Roundup-Ready crops had been genetically engineered to permit a direct application of the Monsanto herbicide glyphosate. The herbicide destroyed all weeds while leaving the desired GM-crops unharmed.<sup>72</sup> Through this mechanism, Monsanto had ensured that farmers ultimately had to rely on their entire portfolio of products, causing a cycle of dependence in the long run.

In Europe, however, and especially in Germany, GM-seeds had been genuinely disapproved and in most EU countries cultivation had been prohibited, a matter that had to be considered for the unionized enterprise's shared endeavors.<sup>73</sup> The concerns that GM-seeds could gradually be introduced in Europe had grown after the deal became public. *"We do not want to take over Monsanto to establish GM plants in Europe,"* defended CEO Baumann in an interview in 2016. If the legislation would reject GM-seeds, Bayer would accept this and had not intended to find other ways to secretly push the implementation.<sup>74</sup> Public concerns and implications had been voiced regarding the acquisition, but had not been able to stop the union, despite its potentially far-reaching effects on price manipulation and market power.<sup>75</sup> Monsanto, who had started in the 1990s to buy up seed producers around the globe, had controlled over a quarter of the world's commercial seed market in 2015 (Exhibit 4.1).<sup>76</sup>

Similar to the pharmaceutical industry, the agrochemical sector had started to be increasingly regulated since the beginning of the 21<sup>st</sup> century, explaining why, during that time, only big vendors had been able to buy and take over more and more business. By way of comparison, in 1996 there were still around 600 larger independent seed companies.<sup>77</sup> It had been cultivated that it could cost billions and take years to get new products approved in the market, which only larger firms could compensate.<sup>78</sup> National governments and the EU had introduced very strict regulations on consumer and environmental protection, occupational health, chemical processes and transport of chemicals. This had nurtured the extreme difficulty to strike a balance between greater health protection and the cultivation of new innovation. The increasing regulations had a restraining effect on innovation activity. Consequentially, innovative products had increasingly required large R&D investments. Hence, smaller companies had relatively often been worse off since their R&D budgets were typically smaller. Subsequently, larger firms frequently had taken over smaller firms which resulted in a decreasing number of firms operating in the sector.<sup>79</sup>

Especially in the years around 2018, the cost of developing new products had significantly increased. Since manufacturers had to consider such regulations, it had caused a suspension in the introduction of new products in the market.<sup>80</sup> Fraley, CTO of Monsanto, had estimated that under the current system, it would take firms approximately a decade to develop and receive approval for a new herbicide.<sup>81</sup> Then, assuming the success of a product, it would take another ten years to create a seed trait which would respond to the new chemical, accordingly. Conferring to Fraley, this equation could have been altered through the combination of resources of Bayer and Monsanto, allowing them to develop paired products in tandem, eventually halving the time it would take to deliver new products to the farmers.<sup>82</sup>

### **3.6) Why selling to the competitor?**

*“No person . . . shall acquire, directly or indirectly, . . . where in any line of commerce or in any activity affecting commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly..”<sup>83</sup>*

May 2018 had manifested the landmark for the agricultural sector to face profound changes when Bayer had won the approval from the US Justice Department to buy the agricultural giant from America.<sup>84</sup> There had been a number of legitimate reasons for the authorities to monitor



such a substantial consolidation of corporate power, considering the elimination of direct competition between two of the biggest players in the ‘traited’ seed market,<sup>85</sup> a market which had been designed or engineered in order to meet certain qualities that enabled them to be more profitable.<sup>86</sup>

Since the turn of the millennium, around a quarter of the companies in the plant breeding sector had already disappeared, whether as a result of mergers, insolvencies or age-related tasks.<sup>87</sup> During the course of events from Bayer’s initial announcement of the merger until the actual execution, the launch of other two rival megadeals involving Dow Chemical, DuPont and Syngenta had reinforced the race to consolidation in the respective industry.<sup>88</sup> Although the two firms, Bayer and Monsanto, had not presented a large overlap in the portfolio of their products and customers, the antitrust regulators in Brussels and Washington had participated in profound investigations and increased the enforcement of competition rules.<sup>89</sup>

Throughout early 2018, it had become apparent that Bayer had to agree to divestiture certain business units as part of the planned acquisition of the American competitor. Opponent BASF had been deliberated to be the big beneficiary of the Bayer-Monsanto antitrust lawsuit, as all business units that Bayer had surrendered at the request of the competition guardian had gone to the Ludwigshafen Group. Bayer had contracted with BASF the sale of a package, covering the vegetable seed business, certain seed treatment products, trademarks for key row crops in select markets, the R&D platform for wheat hybrids and certain glyphosate-based weed killers (herbicides) in Europe.<sup>90</sup> Additionally, the transfer of research projects in the area of ‘total herbicides’ and digital farming had been added.<sup>91</sup>

*“This strategic move adds excellent assets to our strong agricultural solutions portfolio and enhances our innovation potential.”*, reported Chairman and CTO of BASF, Martin Brudermüller after the final execution of the deal in August 2018.<sup>92</sup> All in all, the purchase price for the assets with a sales volume of €2.2 billion had been €7.6 billion and had marked BASF’s largest takeover in the Group’s history.<sup>93</sup> Together with the delivery of these businesses, around 2,500 employees had been transferred from Bayer to BASF. Bayer had intended to use the proceeds to partially refinance the following \$66 billion following the acquisition of Monsanto.<sup>94</sup>

The question had remained to which extent the divestiture of the named business units had harmed Bayer’s standing in the global market, as the antitrust agents had caused to transform BASF into a strong competitor in agrochemicals. Up until that time, the group had no seeds in their portfolio, but only pesticides (Exhibit 4.1). The acquisition of the entire Bayer crop protection business profoundly changed not only BASF’s but also Bayer’s resource base, as

figures illustrated that BASF's agrochemicals would now have generated sales of €7.7 billion.<sup>95</sup> “Without the agreed-to divestitures, the proposed merger would likely result in higher prices, lower quality and fewer choices across a wide array of seed and crop protection products”, the Department of Justice (DoJ) had stated.<sup>96</sup> Decisively, the U.S. DoJ had accepted the step as sufficient to prevent Bayer-Monsanto from becoming too dominant in any of the markets of the merged entity.<sup>97</sup> However, despite the attempt to even out monopoly threats, the acquisition had caused the four major providers to dominate more than 70% of the agrochemical industry, ultimately competing with the same business model: the combination of seeds and crop protection to a complete package.<sup>98</sup>

### **3.7) Meeting the challenges of tomorrow**

*“Whoever secures genetic material through patents will control the seed sector and will influence agriculture, food production – and ultimately world food security.”<sup>99</sup>*

– Heinrich Böll Stiftung

Monday, the 13<sup>th</sup> of August 2018, had marked a turning point in the post-merger development of the recent acquisition: The share price of Bayer had dropped significantly. Earlier that day, the share chart had shown a drop of around eight percent in the share price of Bayer, shortly thereafter, it had fallen even further and at 9.45pm, it had noted a drop of 13% in total.<sup>100</sup>

The series of events had been the result of an US court sentencing the subsidiary Monsanto to \$290 million of compensation - to a single claimant. The awarded compensation went to a plaintiff who had alleged that his cancer had resulted from numerous years of using Roundup, Monsanto's popular herbicide.<sup>101</sup> From the point of view of the US jury, the agrarian group had failed to warn about the cancer risk of the herbicide glyphosate.<sup>102</sup> Regardless of knowing whether the accusations had been correct, it had been likely to weigh heavily on Bayer's stock price due to the uncertainty of the circumstances, analyst Michael Leacock had stated.<sup>103</sup> The effects on the share price had denoted that the long-planned acquisition had in fact, exposed the German group to significant legal and reputational risk.<sup>104</sup> Throughout the third quarter of 2018, e-mails had been made public suggesting that the company had been informed about the health hazards of their bestseller glyphosate and had knowingly covered them up. Thousands of cancer victims in the US had sued Monsanto, blaming glyphosate as the cause of their illness. Monsanto had done their utmost to deny a connection.<sup>105</sup>

Additionally, American farmers had started to claim compensation, blaming Monsanto's new products for crop losses. Monsanto had announced immediately to appeal against the verdict. The products have had "*a 40-year history of safe use*" and would continue to be an "*important, effective and secure tool*" for users, a spokesman of the company had stated in an interview.<sup>106</sup> Looking back into the American past, it hadn't been uncommon for penalties to be significantly reduced in the case of certain proceedings in their final instance or that sentences had been revoked altogether.<sup>107</sup>

Nevertheless, the Bayer share had crashed after the verdict, consequentially loosing up to €15 billion in market capitalization. Investors had feared gigantic demands from other glyphosate proceedings - after all, around 8,000 similar lawsuits had yet been pending. Some analysts had considered the risks for the Group and thus its shareholders as high, as the very first judgement in the corresponding process had served as a signal effect.<sup>108</sup>

But there had been other uncertainties and allegations that the recent union had to face during the course of late 2018, as the Leverkusen-based company suddenly found itself in the shooting point of the public. Bayer, who from a reputational point of view had enjoyed an overall positive standing, had to fight various accusations of exploitive and monopolistic aspirations in the already vastly concentrated market.<sup>109</sup> For many Bayer employees, the situation had been unfamiliar and irritating.<sup>110</sup>

Together, Bayer and Monsanto had represented the pinnacle of data-driven industrial agriculture, as they marked the significant culmination of a whole series of corporate mergers throughout those years.<sup>111</sup> Concerns had been publicly displayed regarding the fact that the merger had fostered a huge concentration of the market, focusing on the development- and sales of commonly used seeds, involving traited strains of canola, soybeans, and corn. Additionally, it had increased Monsanto's control over areas where it had already been a dominant player, including fertilizers, pesticides and farming technology.<sup>112</sup> Generally speaking, there was nothing wrong with that. However, critical opinions had voiced their concerns that if the union would proceed to bundle appointed products together, it would leave farmers with fewer alternative options, eventually pushing up prices. This would ultimately lead to the threat of the abundance of non-biotechnology choices, and hence gradually lowering the margins of the market.<sup>113</sup> Here is where especially small, family owned farms would be affected, as price increases would potentially force them into selling out to larger agribusiness operators who could bear greater expenses. Public voices had painted a dystopian picture of the post-

acquisition: one with bigger and fewer farms, livestock operations, grain, seed and pesticide companies; and one where farms would have a hard time to operate sustainably and profitably under the control of gigantic companies due to the limited choices of suppliers.<sup>114</sup> Despite Bayer's promise to not further engage in GM-development, environmentalists had prompted their apprehensions about the lowering impact on biodiversity, as the, now three large corporations, would prospectively further promote genetically modified seeds, as well as the pesticides and herbicides, which assist to make them more effective.<sup>115</sup>

These concerns had been backed up by studies from the Farmers Business Network, which had represented a positive correlation between a company's market share and its seed price. If the potential fears would find its way into reality, umpteen products such as gasoline, which hide corn and soybeans as ingredients, would be subject to price controls and potential increases as well.<sup>116</sup> Hence, in the long run, a change in the agricultural sector could directly affect price mechanisms across other industries, as various raw materials for industrial productions are sourced from agriculture.<sup>117</sup>

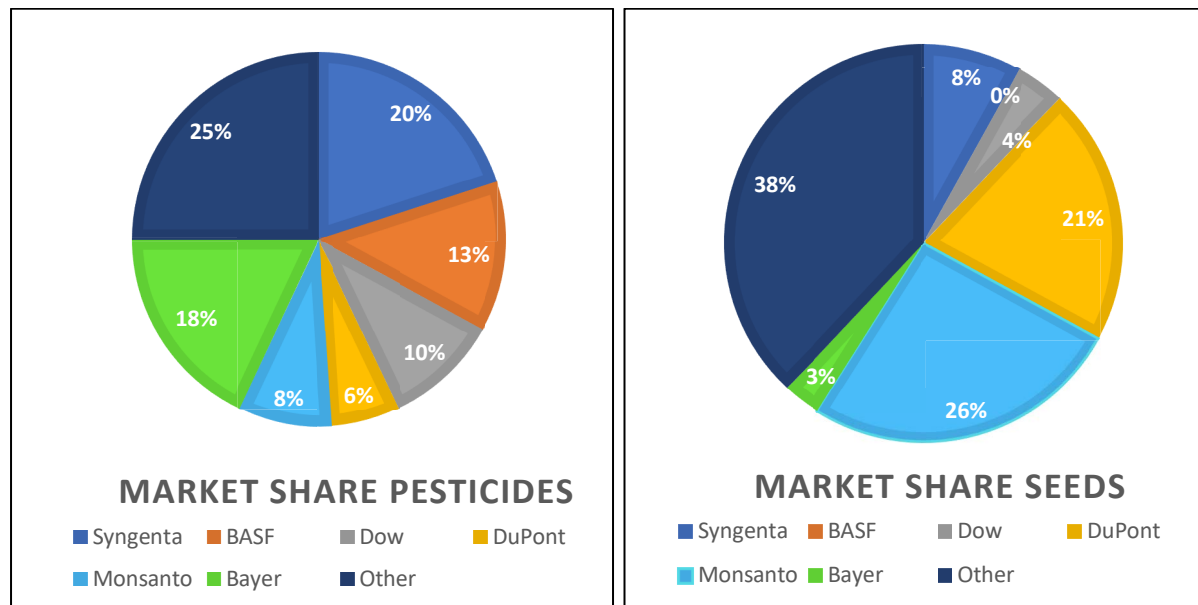
The 21<sup>st</sup> of August had marked "Day One", as it was called internally, the official starting signal for the integration of the US company. CEO Baumann had fertilized his speech with superlatives: together they would want to form the best and most innovative company in agriculture. At the same time, the Bayer CEO had urged his employees to take ethical responsibility, as Bayer's agribusiness had also aspired to become a leader in terms of sustainability and transparency.<sup>118</sup>

Nonetheless, the question had been lingering in the room: Had Bayer underestimated what had been purchased in terms of new legal risks from Monsanto? Was the acquisition really a good idea? Or had the Bayer management succumbed to its own longing for greatness and put the future of the traditional German company at risk for it?<sup>119</sup>

As the year of 2018 had come towards its end, the controversial discussions regarding the union had gradually moved in the background, yet without public voices coming to a clear positioning of support or fright. However, communities had agreed that through a reconfiguration of the agricultural sector, the entire world would successively be affected. The consolidation of the market had once again emphasized that agriculture forms the base of sustenance for any economy and that adversity in this market would have major implications on multiple other industries.<sup>120</sup>

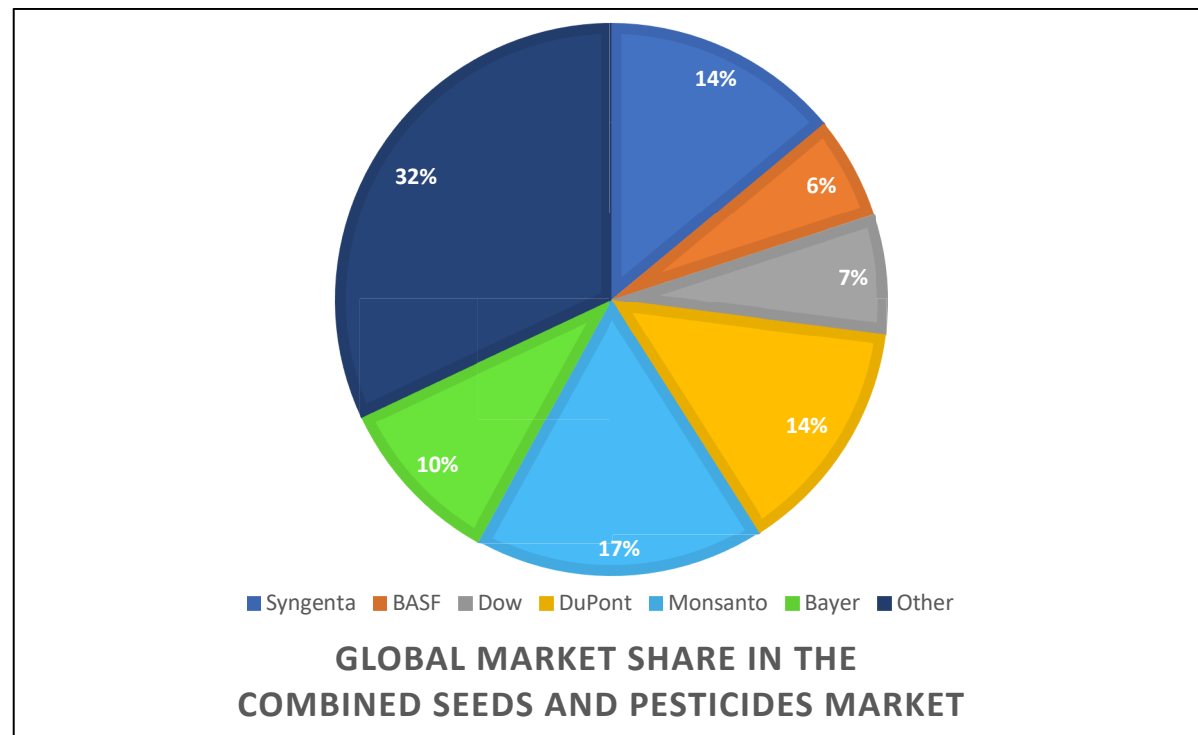
## 4. Exhibits

4.1. “Big 6” global market share of pesticides and seeds before the merger & acquisition marathon in 2015 (based on estimated sales for pesticides and seeds of \$51 billion and \$36 billion respectively)



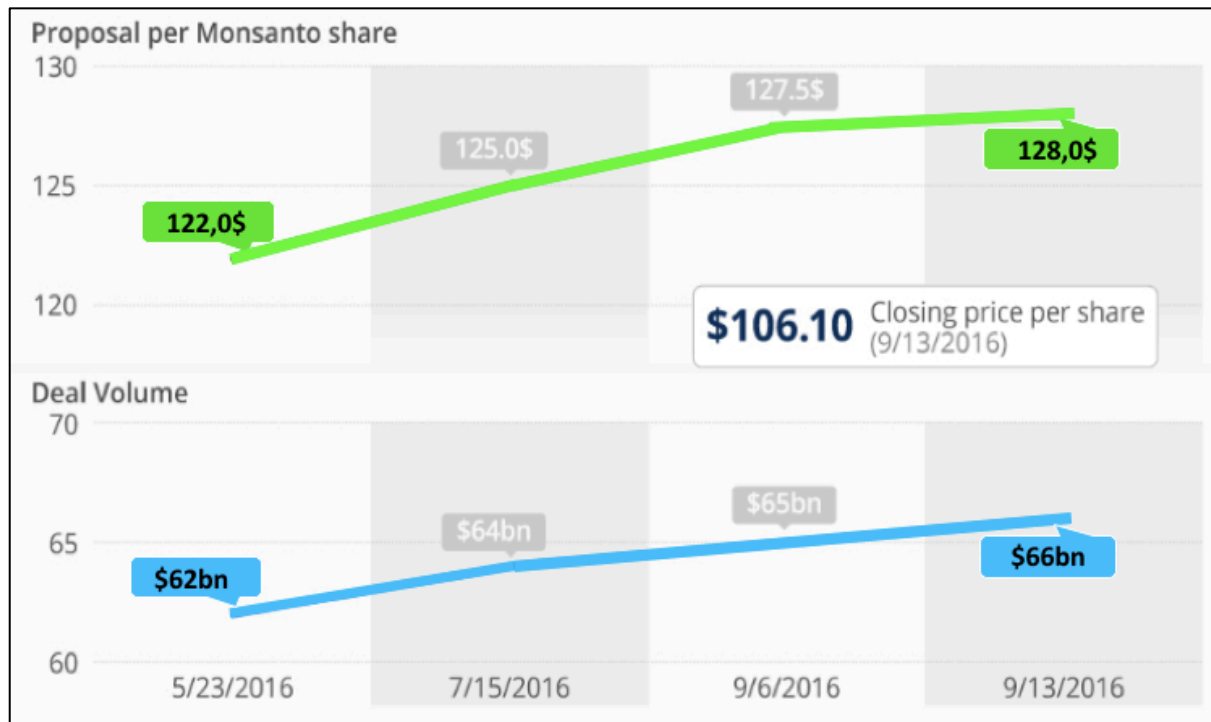
121

4.2 “Big 6” global market share in the combined seeds and pesticides market before the merger & acquisition marathon in 2015 (figure is based off of \$88 billion in global sales)



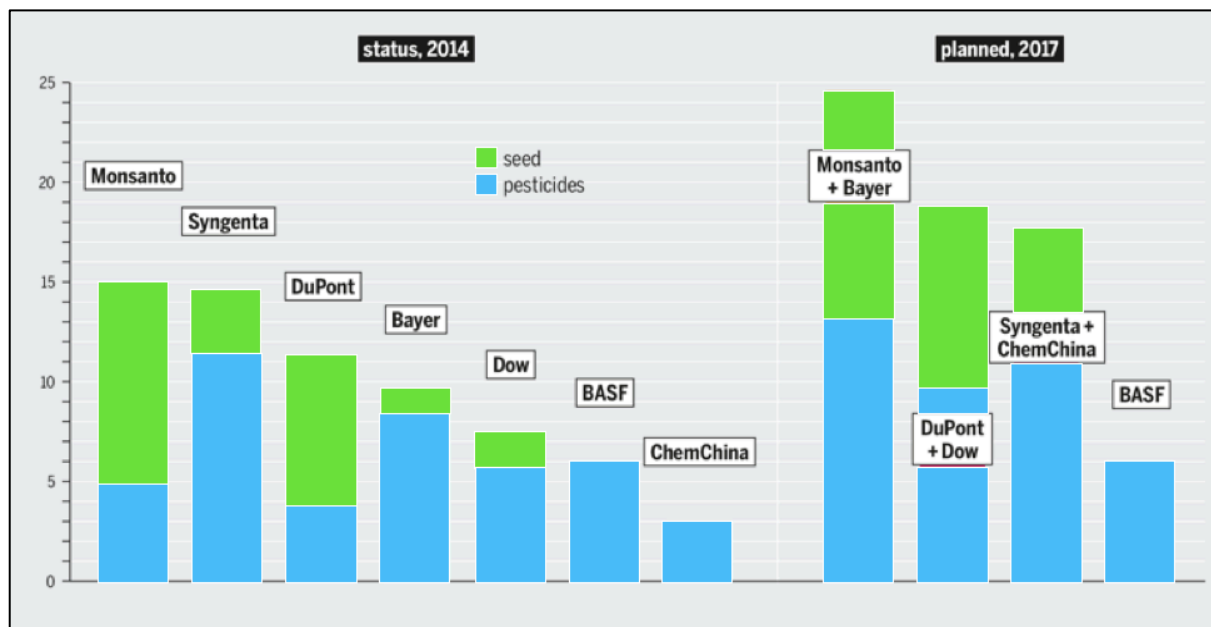
122

### 4.3 Upward development of proposals to Monsanto in 2016



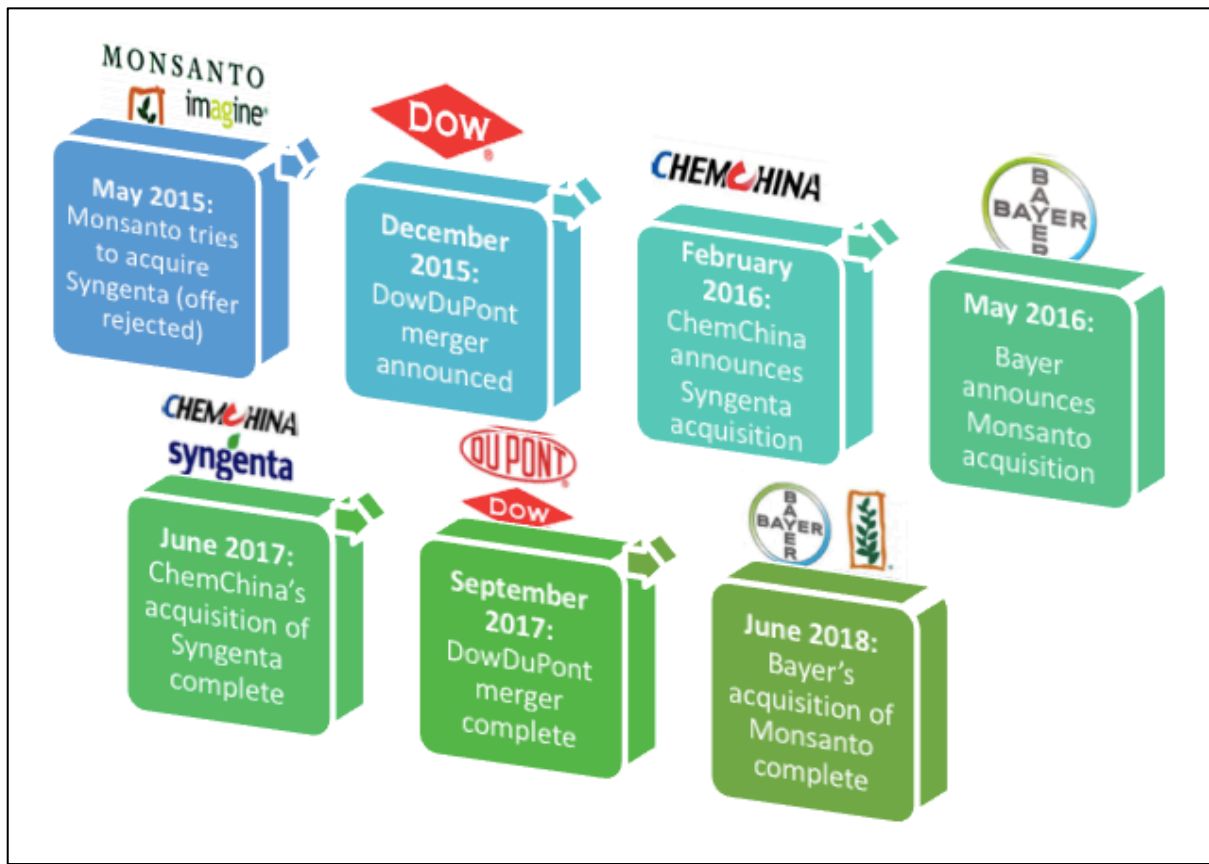
123

### 4.4 Pro Forma Sales for Combined Enterprises in Billion US dollars (2014 / 2017)



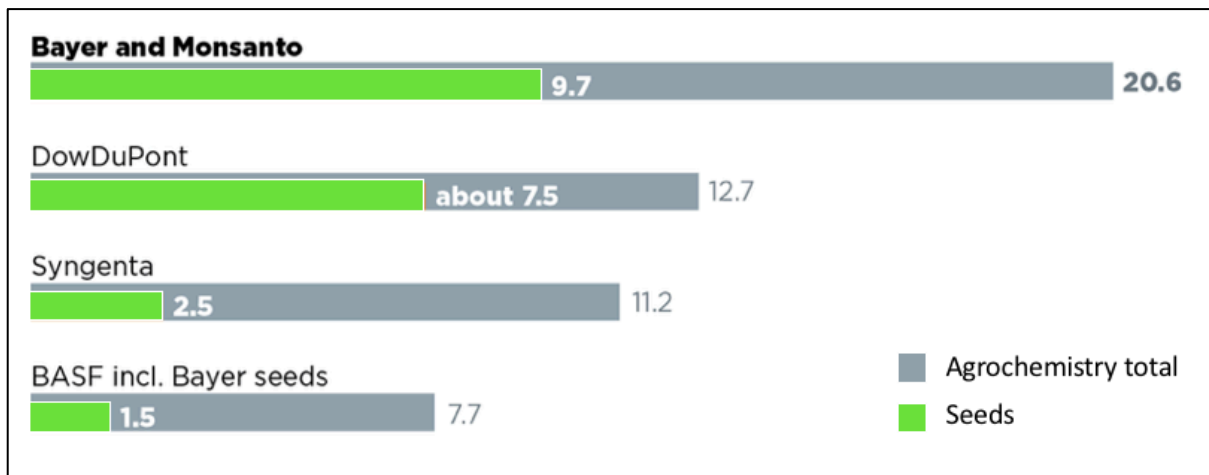
124

4.5 Timeline representing the gradual consolidation of the Agricultural Sector (2015-2018)



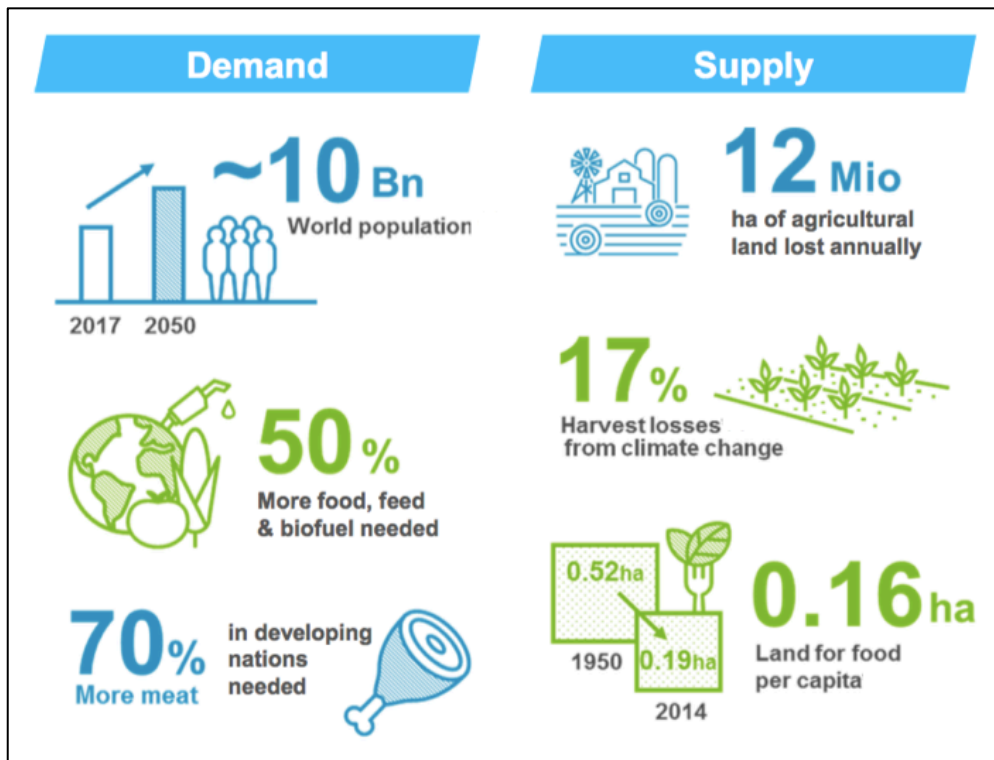
125

4.6 Pro Forma Revenue for Combined Enterprises in Billion € for 2017



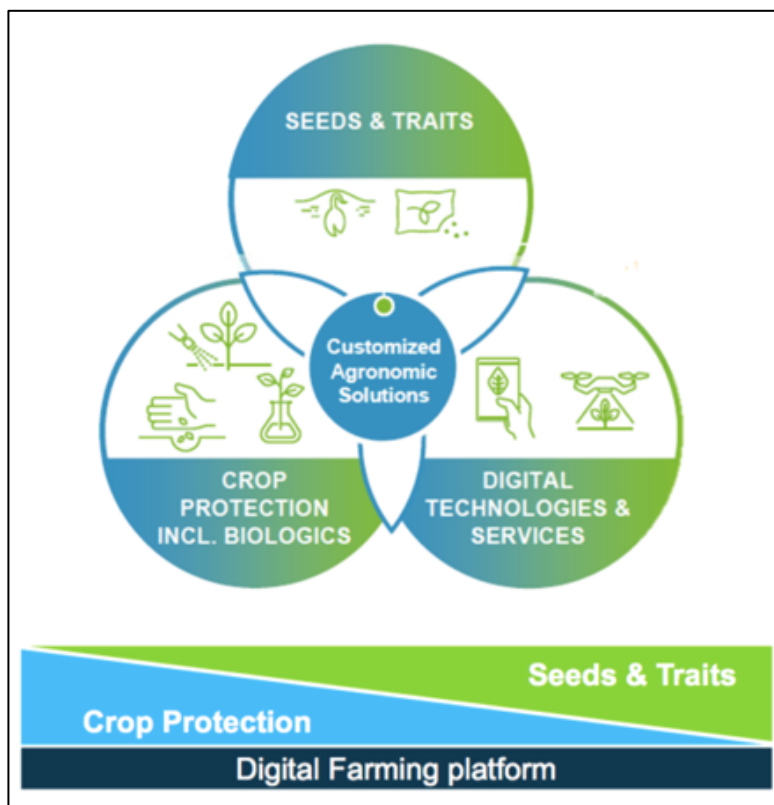
126

#### 4.7 Challenges in Agriculture driven by long-term Megatrends by 2050



127

#### 4.8 Bayer and Monsanto's Integrated Offering Overview



128



## 5. Teaching Notes

### A. Synopsis

This teaching case focusses on the motives for the acquisition of US-giant Monsanto by Germany-based Bayer in 2018. It demonstrates an example of a company's strategic change through the acquisition of a competitor, and how it can support a firm to manage the benefits and threats associated with changing environments. The case further paints a picture of whether the horizontal acquisition of Monsanto had provided means of reconfiguring the structure of Bayer's resource base and to which extent Bayer had been able to utilize its Dynamic Capabilities. The case allows the reader to clearly understand how the largest German acquisition had significantly intensified an already profoundly consolidated market. Lastly, it gives an outlook on which impact this may have on global society in general and on the agricultural sector in particular.

The introduction part of the case silhouettes the environment in which the acquisition had taken place and describes the journey from its initial announcement to the final execution of the deal. It is aiming to shape an outline of the legal aspects of the arrangement and how it was assessed by the public. It further illustrates how, together with the mergers of ChemChina and Syngenta and the unification of DowDuPont, Bayer's acquisition had caused to lay approximately 70% of the worldwide seed and chemical supply in the hands of only three enterprises. Lastly, it describes the challenges of the agricultural industry, based on the outlook of an increasing world population.

The following two parts introduce the partners, their history and journey towards operating as two large, competitive global players. It lays the focus on their products lines and main fields of expertise, but also on the challenges and scandals they had been facing in the past. It further paints a picture of the agricultural sector at the time and its propensity to be part of a new industrial revolution.

The fourth chapter of the case elaborates the underlying motives which served as main drivers for Bayer to practice such a complex decision and indicates how the new market leader in agrochemicals was aspiring to use its strong position in the market.

This is followed by the 5<sup>th</sup> chapter, which illustrates the market regulations which the agrochemical sector were exposed to at the time of the acquisition, and illustrates how increasing R&D power can serve as a great advantage in a highly regulated market.

This leads to a detailed description of the competition concerns, voiced by the Department of Justice, subsequently explaining why Bayer decided to agree to divestiture in certain business units to competitor BASF and which consequences this may have.

To conclude the case, a special focus is laid upon the analysis of whether the negative reputation of Monsanto can be compensated by the economically beneficial means of the acquisition. The final part highlights the effect that the development towards a quasi-monopoly may have on customers and society and whether the newly formed company will use its strength and market share to fight the challenge of an increasingly populated world with a steadily growing demand for food.

## **B. Teaching objectives**

This case was designed to be introduced to both, under- and post-graduate students in the fields of strategic management, particularly for classes on Corporate Strategies and Mergers & Acquisition. The teaching case focusses primarily on the analysis of motives for large acquisitions and how the consolidation of an industry can seriously affect its environment in the broader sense.

It may further be used to illustrate how the takeover of another firm requires the ability to change one's resource base in the process. With the help of the case, students should be able to conduct a thorough analysis of the past- and present standing of an enterprise in a certain market and which impact a horizontal acquisition can have on this. The case was framed to evaluate Bayer's Dynamic Capabilities and whether its ability to integrate, construct and reconfigure internal and external competencies would aid a successful acquisition process. Further, students should assess incentives for the acquisition from the perspective of both firms, with a special focus laid upon the analysis of whether the negative reputation of Monsanto could be compensated by the economically beneficial means and market share gains of the acquisition. With the assistance of several theoretical lenses, students may be able to evaluate the benefits and challenges that a highly profitable, but risky union can yield and assess Bayer's and Monsanto's motivations accordingly.

Above all, graduate students should be able to grasp the outcomes that can result from such a profound market consolidation, whilst the case should assist to foster their critical assessment of the motives of such a mega-deal and the impact it may have on our world.

### **C. Intended contribution**

This case intends to demonstrate the importance of strategic change for a company and how essentially, the acquisition of an opponent can serve as an effective tool to cope with changing environments. The case's focal contribution is to elaborate how Bayer's strategic decision to acquire competitor Monsanto had affected its own firm internally and externally, and how it further impacts the industry in the long-run. The Bayer- and Monsanto case intends to illustrate the topic of Dynamic Capabilities and, in particular, the importance of their correct application in the course of a successful acquisition process. It intends to draw a thorough picture of the course of events and the effects it had on all stakeholders involved in the deal. It was framed to further allow students to critically review the execution of a large horizontal acquisition with all its dimensions and how a firm's reconfiguration may impact an entire industry.

### **D. Pedagogical overview**

In order to effectively analyze and discuss the teaching case, lecturers and students should aim to invest in a thorough preparation in advance. Hereby, a graduate student's elementary knowledge concerning strategic management, strategic change, and the assessment of firm's performance is assumed. It is recommended that both, students and lecturer, have made themselves familiar with the concept of "*Dynamic Capabilities: Understanding Strategic Change in Organizations*" (2007) by Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece and Winter. This serves as an extension to the perspective on "*Dynamic Capabilities and Strategic Management*" published by Teece et. al (1997), which is amongst the recommended journals which strengthen the qualifications to fully apprehend the matters examined in the Literature Review. Lastly, as the framework is crucial for the given tasks, a certain level of familiarity with Barreto's "*Dynamic Capabilities: A Review of Past Research and an Agenda for the Future*" (2010), is recommended.

A general understanding of the agricultural sector, its past development, as well as its future prospects could be supportive in order to fully grasp the dimensions that the teaching case builds upon. However, it is not necessary for the instructor, or the students, to have acquired extensive knowledge regarding genetically modified seeds, pesticides and other wide-ranging information about crops, in advance. Instead, it is important for students to possess a general understanding of Mergers and Acquisitions and which motives serve as main drivers for such complex decisions. Additionally, they should be able to identify the potential impact that extensive market consolidation can have on a certain industry and how to identify threats and

benefits in a given environment. Especially for the final discussion, it is recommended for participants to have a broad understanding about the intentions of different stakeholders in the given environment and how the matters of market regulations and competition-elimination shape the long-term success of acquisitions.

### **E. Assignment questions**

**1a.) After carefully reading the case, please investigate to which extent Bayer possesses Dynamic Capabilities and in which way they are applied in the given acquisition-process?**

Students are asked to apply the framework of Barreto, focusing on his four dimensions of Dynamic Capabilities. They should further operate with the approach of Helfat et al., conceptualizing DC as “the capacity of an organization to purposefully create, extend, or modify its resource base”. With the given background, students should carefully investigate the case and analyze each DC propensity individually with respect to Bayer’s positioning.

#### **D1: Propensity to sense opportunities and threats**

- Bayer understood that Monsanto as a potential acquisition-target strikes with its profoundly complementary business positioning;
- Sensed the opportunity of Monsanto having their core competencies resituated in the fields of seed manufacturing, instead of healthcare and pesticides;
- Recognized the challenges the planet is facing with respect to an increasing world population, understood the need to increase efficiency amongst the food production in order to secure feeding of an additional 3 billion people;
- Recognized early the potential reputation-threats and hence, the abundance of Monsanto’s name to avoid probable damage;
- Sensed the extensive sector-transformation from 2015-2018 due to the gradual consolidation of the market – together with DowDuPont’s and ChemChina’s increased market share the two firms would have a radical influence on the future pathways.

#### **D2: Propensity to make timely decisions**

- Considering that negotiations of the acquisition-deal had started in 2016, Bayer realized early on that it was time to unionize with another large opponent;

- Realized that still, 10% of the world population was living in extreme poverty – sensing that the time was right to fight this with increasing R&D investments to generate innovations tackling the challenge;
- Understood that their previous methods of yield enhancement through chemicals would be unlikely to work in the foreseeable future, as farmers had embarked to accept them less and less.

### **D3: Propensity to make market-oriented decisions**

- Bayer carefully examined the development of the market for agricultural chemicals and understood that the market for seeds and pesticides was undergoing a profound change;
- Bayer eliminated one of its main competitors by acquiring Monsanto;
- Understood that the sector had been at the verge of combining conventional agricultural with soil– and weather data analysis;
- Managed to take advantage of Monsanto already having acquired weather company Climate Corporation for its aspirations to use data about soil and weather;
- Offered the world’s largest supply of seeds and volume of crop protection products;
- Grasped that the usage of glyphosate had been tightened and that hence, the corporations had been in the need of new ideas for business.

### **D4: Propensity to change the resource base**

- Acquired Monsanto to benefit from its expertise across Seeds, Traits and Crop Protection;
- Divested in assets of well-operating business unit to competitor BASF and offered of an additional break-up fee of \$3bn;
- Pledged to sell off additional assets to secure the government’s antitrust approval;
- Restructured internally, e.g. employees being sent to BASF, business model combination whilst protecting Bayer’s tangible and intangible assets;
- Showed willingness to tilt core business strategy towards more data focused business strategy;
- Incorporated Monsanto’s highly complementary expertise in the fields of high-tech, and GM crops and sensed the economic potential which resituates in this area.

**1b.) Rate each Dimension on a level from low – medium – high.**

The assessment of Bayer’s Dynamic Capabilities could be summed up in the following table:

Dynamic Capabilities Dimensions	Evaluation of DC
Propensity to sense opportunities and threats	Medium
Propensity to make timely decisions	High
Propensity to make market-oriented decisions	Medium - High
Propensity to change the resource base	High
Overall Possession of DC	Medium - High

**2.) Carefully examine the case to investigate Bayer’s motives for the acquisition of Monsanto and elaborate whether these were sufficient enough to execute the deal.**

The case was structured to paint a picture of the business environment in which Bayer had been resituated at the point of the acquisition. Students are supposed to carefully examine motives of the deal and further weigh out the benefits and threats which had been connected to the acquisition process. It seems to be evident that main drivers for the acquisition had predominantly been economically beneficial means and market share gains. The merger had made the two firms the undisputed market leader in agrochemicals, allowing Bayer to be the world’s leading supplier of seeds and offer the largest volume of crop protection products. Hence, a motive that can be clearly identified and also is amongst the common goals stated in literature, is that horizontal acquisitions are usually aimed to create a new, larger organization with more market share and the opportunity to reduce industry competition. This had evidently been the case in Bayer’s environment. The increasing competition in the agricultural sector had been nurtured through the consolidation of the market and had increased Bayer’s growing interest in market share acquisition. Additionally, a driver had been the opportunity to have an increased R&D budget for the upcoming years and hence, a stronger possibility to focus on innovations fostering to increase efficiency in the food production. Hand in hand with this motivation goes the strategic acquisition of capabilities to diversify the potential sources of sustainable competitive advantage for both firms. Bayer had sensed the opportunity to benefit

from Monsanto's expertise in the fields of Seeds, Traits, and Crop Protection. The German company had realized that there had been strong economic potentials resided in the fields of high-tech, - and genetically modified crops. Both firms had believed that agriculture would play a large role in the new industrial revolution and that a prosperous company would have to combine offering seeds, chemicals, and data analysis as part of a successful service. This is coherent with what is stated in literature, as complementary scientific, - and technological knowledge is supposed to increase performance through the stimulation of higher quality- and a larger number of novel innovations. Another motive that had spoken for acquiring Monsanto, is that the firm had already extended its expertise towards data- and weather analysis services, serving as interesting assets to complement Bayer's proficiencies. Considering that with one deal, Bayer had not only grasped the opportunity to compensate its missing assortment in the fields of seed manufacturing but also acquire valuable expertise with respect to data acquisition. The acquisition of these complementary properties would support approaching the anticipated fundamental pillars of agriculture in the future: a great portfolio of seed varieties, coupled with specific plant protection and tailored data analysis.

During the analysis, participants are required to consider that the success-rates for M&A's are highly ambivalent and that especially larger deals are inherently risky. Especially prevailing information asymmetries between target - and acquirer firm can cause a lack of access to crucial data. Another important determinant of M&As success is whether there is the right balance between autonomy and integration. In the given case, it is important to consider that Monsanto had generated controversial publicity in the past and that through a horizontal acquisition this may cause a negative impact on Bayer's reputation. Students may point out the external risks which could have altered acquisition-motives, such as Monsanto's damaged image due to the production of Agent Orange, the introduction of 'total herbicide' Roundup and the manufacturing of GM-seeds. Optionally, they can point out the upcoming threat of multiple pending law-suits resting on Bayer's shoulders. Students are required to note that the asset divestiture to opponent BASF could be considered as a trade-off with diminishing effects on the increased post-acquisition turnover. Monsanto had always seen itself rather as a buyer than as a target, thus it can be pointed out that another driver had been to ensure to acquire the large competitor before Monsanto could potentially merge with another opponent. Above all, the knowledge- and expertise acquisition seems to have served as the inherent driver, as in a highly consolidated- and regulated market such as the agrochemical one, increased R&D budget and faster product development would eventually halve the time to deliver new products to the farmers and increase the turnover accordingly.

**3.) Discuss whether you believe that the development towards a near-monopoly in the agricultural sector may introduce threats to the world or not.**

The case was purposely designed to activate an independent process of student’s weighing out potential benefits and threats of the described development in the years around 2018. It is important that students have the possibility and time granted to carefully form an opinion and position themselves in the debate. This should be based on facts they have taken away from the case, the additional research they have conducted and their knowledge of the theoretical background. Especially throughout the last chapter, the case elaborates potential pathways that the market consolidation might follow in future years and which outcomes this could trigger. The teaching case deliberately does not end in a call for action but rather in an open-ended question of how the described development might shape the future of the agricultural sector and its impact on other industries. However, students are asked to critically review the chain of causation mentioned in the case. Namely, that through the multiplier effect on other industries, food price inflation will eventually cause other commodity prices to increase, which will result in the agricultural sector affecting price mechanisms across various other industries. The discussion may be led in different directions, either focusing on the assessment of the Anti-Monopoly offices, on the future of genetically modified seeds or an increasingly data-driven agricultural market. Students are asked to put things into perspective and highlight the situation from different points of view, and further visualize a global outlook for the future.

**F. Board plan**

The table below suggests a potential schedule designed for a 90 minutes lecture. It shows the activities, the specific content it is based upon and the intended duration of each task:

Activity	Content	Time (Min.)
General discussion of case-preparation	Teaching Case & additional material	15
Question 1a.)	Dynamic Capabilities	25
Question 1b.)	Dynamic Capabilities Results	5
Question 2.)	Motives for Merger & Acquisitions	25
Question 3.)	Key takeaways & open debate about future development	20



## Discussion

My dissertation focusses primarily on the concept of Dynamic Capabilities and the strategic motives for the acquisition of another company, exemplified by a real-life case. For this study, I have chosen the case of Bayer and Monsanto, as an illustration of a horizontal acquisition, which has provided means of reconfiguring the structure of both enterprises. One main objective of the case is to emphasize the relevance and applicability of the Dynamic Capabilities view in a real-life context and how it has helped Bayer to successfully execute such a transition.

Ever since Teece, Pisano, and Shuen published their seminal article in 1997 on the fundamentals of Dynamic Capabilities, the topic gained incremental importance within the management literature. The authors define such as the firm's ability to integrate, build and reconfigure internal and external competencies to address quickly changing environments. In our global world, it has become apparent that the frequency of such changing business environments has increased through the significant impact of rapid technology- and societal changes. Hence, the given case was chosen to exemplify the importance for managers to carefully analyze the environment in which they are operating, especially before making the complex decision of pursuing an acquisition target. Also, the crucial importance of a cautiously conducted due diligence analysis is illustrated in the case and how public opinion should be considered carefully to anticipate potential opportunities and threats. The case demonstrates that Bayer had proved that its propensity to make market-oriented decisions had been satisfyingly high, as well as the precise timely manner in which the acquisition was executed, two dimensions which often are intertwined. However, Barreto (2010) and Teece et al. (1997) state the profound importance to sense and shape opportunities and threats correctly, in order to ensure a superior long run business performance. Hence, it remains debatable whether Bayer's propensity to carefully consider all potential threats would, in the long run, pose a risk to a stable and successful development of the recently unionized firm.

According to the authors Makri, Hitt, and Lane (2010) especially large acquisition-deals which are priced at over \$500 million tend to be driven by motives including market-power-acquisition and economies of scale, rather than knowledge exchange- and accumulation. In the particular case, however, it becomes apparent that at least the publicly stated motives had knowledge exchange as a core driver. Hence, the given case contradicts what has been identified as commonly acknowledged motives in existing literature.

The pursuit of complementary knowledge is supported by Hitt et. al.'s (2006) position that not only in high-technology industries but also in a number of others, knowledge is perceived as profoundly essential to secure long-term success. The given case is in line with this position, as the fact that the firm's assets were vastly complementary fostered the high economic potential which Bayer sensed in high-tech and GM crops. Further, through their distinctive knowledge and core businesses, as a union, they were able to offer the world's largest supply of seeds and volume of crop protection products. This strategic move is consistent with Makri, Hitt, and Lane's (2010) claim that complementary scientific, - and technological knowledge, both manage to increase the performance in terms of innovation-power through stimulation of higher quality and an enlarged amount of novel inventions.

Due to the fact that the market is highly regulated, the specific focus on knowledge-acquisition gains a special importance in the sector of agrochemicals and seeds, as well as Monsanto's expertise with respect to precision farming. Considering the regulatory constraints of the industry, the rising consolidation of the market becomes more plausible. Bayer and Monsanto's main aspiration to exchange and expand their accumulated knowledge thus increases in importance. The conclusion of the given motives for the acquisition are underlined by the findings of Philips and Zhdanov (2013). According to them, small firms are aiming to innovate above average if they have the option to sell out to larger firms, while sizable firms aim to obtain access to new inventions through acquisitions, instead of competing in an 'R&D race'. Hence, this seems coherent with Makri, Hitt and Lane's (2010) claim that acquisitions allow firms to modify their distinctive competencies in order to keep up with the pace of changes in their environments. Bayer, as a large competitor in the industry, had the market- and financial power to obtain appointed access to new inventions, and thus acquired resources that are difficult to imitate and change from Monsanto, instead of competing in the 'R&D race'. Although this is coherent with the findings in literature, it is important to note that despite the logical occurrence of the acquisition, the union of Monsanto and Bayer perfected a business model which might have the effect of driving globalized agriculture into a deeper circle of dependence, created by the appointed combination of power, knowledge, and resources.

Another interesting matter which is discussed in the thesis is the aspect of asset divestiture. The theoretical perspectives on this topic gauge whether the special case of asset divestiture yields evidence of acquisition failure. Bayer's agreement to sell selected Crop Science businesses for a total consideration of €7.6bn to competitor BASF had a unique underlying motive, as it was solely executed in order to obviate the potential regulatory concerns of the acquisition. The existence of redundant assets is more common when both competitive

environments between target and acquirer firm are much alike. According to literature, selling such overlapping assets to the competitor often leads to immediate benefits (Anand and Singh, 1997). In the given case, the significant business unit divestiture to competitor BASF does not seem to have carried such immediate benefits, besides serving as a sufficient antitrust remedy. Usually, literature states that as part of the post-acquisition reconfiguration process, the divestiture of unneeded assets naturally results from the resource redeployment between the target and acquirer firm. In this case, however, the business unit that was sold to BASF served as a profoundly strengthening asset to the competitor and can thus be evaluated as a harmful consequence, rather than a natural and beneficial occurrence to Bayer.

It is interesting to note that there has been hardly any academic research conducted with respect to the type of asset divestiture, which two merging partners feel obliged to agree to, in case a government authority objects to a deal on antitrust grounds. It is an emerging strategy to seek a compromise where one - or both merging parties agree to assemble and divest a package of assets to a third party, as a condition of proceeding with the transaction. Hereby, the government's objective with any negotiated divestitures is to reinstall the competition that would otherwise be eliminated by the transaction itself. It would be interesting to have an outlook on whether divestiture can actually serve as a viable antitrust remedy. It is supposed to alleviate the interest of the government and other involved companies, as consecutively the two partners would get clearance to merge or acquire one another while maintaining competition. To extent academic research on the benefits and threats to all the stakeholders involved in such a process could be a great advancement to the research of large M&A deals.

Ficery et al. introduced in 2007 the concept that successful acquirers tend to capture 70-75% of intended synergies within the first year of the acquisition, while only a small percentage of companies have to wait longer than three years to capture all synergistic benefits. Regarding the measurement of the intended capturing of such synergies, there are some limitations present due to potential changes, which often are not visible in the short-term. The full integration of an acquired target takes time and hence, many internal and external changes are often only assessable in the long-run. Linking the evaluation of synergy-capturing to the given occurrence of asset divestiture, the evaluation of how this will benefit or harm the market positioning of Bayer and competitor BASF can only be thoroughly determined in the long-run. To which extent and within which time frame the enterprise will be able to capture intended synergies and fully benefit from the deal is therefore dependent on a number of various variables.

## Conclusion

The concept of Dynamic Capabilities has received significant attention in recent years within the fields of strategic management, explaining how a company's ability to integrate, build and reconfigure competencies helps to address rapidly changing environments. Barreto's definition revealed the necessary coherence and aggregation to the initial theory posed by Teece, fostering a path for further theoretical and empirical investigations. Serving as one of the most relevant management theories developed in recent years, this dissertation applies the given concept on a real-life example. For my study '*Bayer and Monsanto – Seeding the future?*', I have chosen Bayer's large acquisition in 2018, as it focusses on a recent and important matter, while the size of two such large enterprises represents the profound impact their decision making has on an industry. Additionally, the thesis enhances several theoretical lenses in order to analyze the opportunities and challenges that a complex acquisition like this can yield and carefully assesses Bayer's motivation accordingly.

The Bayer and Monsanto case exemplifies how such a strategic decision requires to be carefully assessed on various dimensions, and to which extent the possession of sufficient Dynamic Capabilities was fundamental for the acquisition process. It further illustrates the special importance of Barreto's first dimension, as the case shows that Bayer's propensity to carefully sense potential opportunities and threats may pose a profound impact on the future success of the entity.

The thesis evaluates how the horizontal acquisition provided means of reconfiguring Bayer's resource structure and illustrates the company's successful ability to purposefully create, extend, or modify its resource base in the given process. It demonstrates that asset divestiture does not necessarily yield evidence of acquisition failure, but that it may substantially pose a threat to the long-term success of a new entity. However, the question of whether negative reputation of Monsanto will be compensated by the economically beneficial means and market share gains of the acquisition will only be assessable in the future.

From this work, I was able to deepen my knowledge about the Agrochemical market in general, and the underlying reasons for the increasing consolidation of the market in particular. I further established awareness of core motives for an acquisition and how Dynamic Capabilities can serve as a fundamental asset for the successful execution of the acquisition of another firm.

## Bibliography

**Ambrosini, V., Bowman, C.** (2009), What are dynamic capabilities and are they a useful construct in strategic management?, *International Journal of Management Reviews*, Volume 11, Issue 1, Pages 29-49.

**Amit, R., Schoemaker, P. J.** (1993), Strategic assets and organizational rent, *Strategic Management Journal*, Volume 14, Issue 1, Pages 33-46.

**Angwin, D.**, (2001), Mergers and acquisitions across European borders: National perspectives on preacquisition due diligence and the use of professional advisers, *Journal of World Business*, Volume 36, Issue 1, Pages 32-57.

**Anand, J., Singh, H.**, (1997), Asset Redeployment, Acquisitions and Corporate Strategy in Declining Industries, *Strategic Management Journal*, Volume 18, Issue S1, Pages 99-118.

**Angwin, D.**, (2007), Motive Archetypes in Mergers and Acquisitions (M&A): The Implications of a Configurational Approach to Performance, *Advances in Mergers and Acquisitions*, Volume 6, Pages 77 – 105.

**Barney, J. B.** (1991), Firm resources and sustained competitive advantage, *Journal of Management*, Volume 17, Issue 1, Pages 99-120.

**Barney, J. B., Wright, M., Ketchen Jr. D. J.**, (2001), The resource-based view of the firm: Ten years after 1991, *Journal of Management*, Volume 27, Issue 6, Pages 625-641

**Barreto, I.** (2010), Dynamic Capabilities: A Review of Past Research and an Agenda for the Future, *Journal of Management*, Volume 36, Issue 1, Pages 256-280.

**Calipha, R., Tarba, S., Brock, D.**, (2010) Mergers and acquisitions: A review of phases, motives, and success factors, *Advances in Mergers and Acquisitions*, Volume 9, Pages 1-24.

**Capron, L., Mitchell, W., Oxley, J.**, (1999), Four organizational modes of business change, *Financial Times "Mastering Strategy" series*.

**Capron, L., Mitchell, W., Swaminathan, A.**, (2001) Asset Divestiture Following Horizontal Acquisitions: A Dynamic View, *Strategic Management Journal*, Volume 22, Issue 9, Pages 817-844.

**Eisenhardt, K. M., and Martin, J. A.** (2000), Dynamic Capabilities: What are they?, *Strategic Management Journal*, Volume 22, Issue 10-11, Pages 1105-1121.

**Eisenhardt, K. M., Furr, N. R., Bingham, C. B.**, (2010) CROSSROADS—Microfoundations of Performance: Balancing Efficiency and Flexibility in Dynamic Environments, *Organizational Science*, Volume 21, Issue 6, Pages 1125-1279.

**Ficery, K., Herd, T. & Pursche, B.**, (2007), Where has all the synergy gone? The M&A puzzle, *Journal of Business Strategy*, Volume 28, Issue 5, Pages 29-35.

**Hagedoorn, J., Duysters, G.,** (2002), External Sources of Innovative Capabilities: The Preferences for Strategic Alliances or Mergers and Acquisitions, *Journal of Management Studies*, Volume 39, Issue 2, Pages 167-188.

**Helfat, C. E., Winter, S. G.,** (2011), Untangling Dynamic and Operational Capabilities: Strategy for the (N)ever-Changing World, *Strategic Management Journal*, Volume 32, Issue 11, Pages 1243-1250.

**Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., Teece, D. J., Winter, S. G.** (2007), *Dynamic capabilities: Understanding strategic change in organizations*.

**Hitt, M.A., Bierman L., Uhlenbruck K., Shimizu K.,** (2006), The importance of resources in the internationalization of professional service firms: the good, the bad, and the ugly, *Academy of Management Journal*, Volume 49, Issue 6, Pages 1137-1168.

**Iyer, D. N., Miller, K. D.,** (2008) Performance Feedback, Slack, and The Timing of Acquisitions, *Academy of Management Journal*, Volume 51, Issue 4.

**Jemison, D.B., Sitkin, S.B.,** (1986), Corporate Acquisitions: A Process Perspective, *Academy of Management Review*, Volume 11, Issue 1.

**King, D. R., Slotegraaf, R. J., Kesner, I.,** (2008), Performance Implications of Firm Resource Interactions in the Acquisition of R&D-Intensive Firms, *Organization Science*, Volume 19, Issue 2, Pages 187-379.

**Larsson, R., Finkelstein, S.,** (1999), Integrating Strategic, Organizational, and Human Resource Perspectives on Mergers and Acquisitions: A Case Survey of Synergy Realization, *Organization Science*, Volume 10, Issue 1, Pages 1-115.

**Makri, M., Hitt, M. A., Lane, P. J.,** (2010), Complementary technologies, knowledge relatedness, and invention outcomes in high technology mergers and acquisitions, *Strategic Management Journal*, Volume 31, Issue 6, Pages 602-628.

**Menguc, B., Seigyoung, A.,** (2006), Creating a Firm-Level Dynamic Capability through Capitalizing on Market Orientation and Innovativeness, *Journal of the Academy of Marketing Science*, Volume 34, Issue 1, Pages 63-73

**Parrino, J.D., Harris, R.S.,** (2005), Takeovers, Management Replacement, and Post-Acquisition Operating Performance: Some Evidence from the 1980s, *Journal of Applied Corporate Finance*, Volume 11, Issue 4, Pages 88-96.

**Perry, M. K., Porter, R. H.,** (1985), Oligopoly and the Incentive for Horizontal Merger, *The American Economic Review*, Vol. 75, No. 1, Pages 219-227.

**Phillips, G. M., Zhdanov, A.** (2013), R&D and the Incentives from Merger and Acquisition Activity, *The Review of Financial Studies*, Volume 26, Issue 1, Pages 34–78.

**Porter, R. H.,** (1980), Industry Structure and Competitive Strategy: Keys to Profitability, *Financial Analysts Journal*, Volume 36, Issue 4, Pages 30-41.

**Ramaswamy, K.**, (1997), The Performance Impact of Strategic Similarity in Horizontal Mergers: Evidence from the U.S. Banking Industry, *Academy of Management Journal*, Volume 40, Issue 3.

**Ravenscraft, D.J., Scherer F. M.**, (1987), Life after takeover, *The Journal of Industrial Economics*, Volume 36, Issue 2, Pages 147-156.

**Teece, D.J.** (1984), Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy, *Research Policy*, Volume 15, Issue 6, Pages 285-305.

**Teece, D.J.** (2007), Explicating dynamic capabilities: The nature and Microfoundations of (sustainable) enterprise performance, *Strategic Management Journal*, Volume 28, Issue 13, Pages 1319-1350.

**Teece, D.J., Pisano, G., and Shuen, A.** (1997), Dynamic Capabilities and Strategic Management, *Strategic Management Journal*, Volume 18, Issue 7, Pages 509-533.

**Walsh, J. P.**, (1989), Doing a deal: Merger and acquisition negotiations and their impact upon target company top management turnover, *Strategic Management Journal*, Volume 10, Issue 4, Pages 307-322.

**Wernerfelt, B.**, (1984), A resource-based view of the firm, *Strategic Management Journal*, Volume 5, Issue 2, Pages 171-180

**Winter, S.G.** (2003), Understanding dynamic capabilities, *Strategic Management Journal*, Volume 24, Issue 10, Pages 991-995.

**Zollo, M., and Winter, S. G.** (2002), Deliberate learning and the evolution of dynamic capabilities, *Organization Science*, Volume 13, Issue 3; Pages 339-351.

## Endnotes

---

- 1 **Nelsen, Arthur**, Monsanto And Bayer Are Set To Merge. Here's Why You Should Care., June 2018, *Huffingtonpost*.  
[https://www.huffingtonpost.com/entry/monsanto-bayer-merge\\_us\\_5afeef96e4b07309e0578b5e](https://www.huffingtonpost.com/entry/monsanto-bayer-merge_us_5afeef96e4b07309e0578b5e) (assessed on 21/09/2018).
- 2 Evgeniy Kozarenko is the CEO of NagriTech, Natural Agricultural Technologies.
- 3 **Brodwin, Erin**, After a \$66 billion merger, Monsanto is disappearing — sort of, June 2018, *Insider Inc.*,  
<https://www.businessinsider.com/monsanto-beyer-merge-drop-monsanto-name-2018-6> (assessed on 26/09/2018).
- 4 **Bayer Netherlands Homepage**, Bayer and Monsanto to Create a Global Leader in Agriculture, September 2016, *Bayer*.  
<https://www.bayer.nl/nl/media/nieuws/bayer-and-monsanto-to-create-a-global-leader-in-agriculture.php> (assessed on 04/10/2018).
- 5 **Kresge, Naomi**, Bayer Clinches Monsanto Deal for \$66 Billion With Fourth Bid, September 2016, *Bloomberg*.  
<https://www.bloomberg.com/news/articles/2016-09-14/bayer-clinches-monsanto-deal-with-fourth-offer-of-66-billion> (assessed on 27/09/2018).
- 6 **Khan-Fontanella, James; Massoudi Arash**, Bayer closes in on \$66bn deal with Monsanto, September 2018, *The Financial Times*.  
<https://www.ft.com/content/37691718-7a05-11e6-97ae-647294649b28> (assessed on 04/10/2018).
- 7 **Eisele, Ines**, Marriage of death: Protesters oppose Bayer-Monsanto merger, April 2017, *DW*.  
<https://www.dw.com/en/marriage-of-death-protesters-oppose-bayer-monsanto-merger/a-38631990> (assessed on 08/10/2018).
- 8 **Detrick, Hallie**, The Justice Department is going to let Bayer buy Monsanto. Here's why it matters. April 2018, *Fortune*.  
<http://fortune.com/2018/04/10/bayer-monsanto-deal-doj-approval/> (assessed on 08/10/2018).
- 9 **Kendall, Brent; Bunge, Jacob**, U.S. to Allow Bayer's Monsanto Takeover, April 2018, *The Wall Street Journal*.  
<https://www.wsj.com/articles/justice-department-to-allow-bayers-acquisition-of-monsanto-after-company-concessions-1523297010>  
(assessed on 27/09/2018).
- 10 Bayer-Monsanto Merger: A Dubious Marriage, 2017, *RiskWatch*.  
<http://riskwatch.sganalytics.com/bayer-monsanto-merger-a-dubious-marriage/> (assessed 19/10/2018).
- 11 **Reuters**, Chemical and DuPont have completed a \$130 Billion merger, September 2017, *Fortune*.  
<http://fortune.com/2017/09/01/dow-dupont-merger-complete/> (assessed 07/10/2018).
- 12 **Khan-Fontanella, James; Massoudi Arash**, Bayer closes in on \$66bn deal with Monsanto, September 2018, *The Financial Times*.  
<https://www.ft.com/content/37691718-7a05-11e6-97ae-647294649b28> (assessed on 04/10/2018).
- 13 **Brodwin, Erin**, After a \$66 billion merger, Monsanto is disappearing — sort of, June 2018, *Insider Inc.*,  
<https://www.businessinsider.com/monsanto-beyer-merge-drop-monsanto-name-2018-6> (assessed on 26/09/2018).
- 14 **Xinhua**, Bayer begins with Monsanto integration after finalizing merger, August 2016, *Xinhuanet*.  
[http://www.xinhuanet.com/english/2018-08/16/c\\_137396170.htm](http://www.xinhuanet.com/english/2018-08/16/c_137396170.htm) (assessed on 12/10/2018).
- 15 **Nelsen, Arthur**, Monsanto And Bayer Are Set To Merge. Here's Why You Should Care., June 2018, *Huffingtonpost*.  
[https://www.huffingtonpost.com/entry/monsanto-bayer-merge\\_us\\_5afeef96e4b07309e0578b5e](https://www.huffingtonpost.com/entry/monsanto-bayer-merge_us_5afeef96e4b07309e0578b5e) (assessed on 12/10/2018).
- 16 **Eisele, Ines**, Marriage of death: Protesters oppose Bayer-Monsanto merger, April 2017, *DW*.  
<https://www.dw.com/en/marriage-of-death-protesters-oppose-bayer-monsanto-merger/a-38631990> (assessed on 12/10/2018).
- 17 **Nelsen, Arthur**, Monsanto And Bayer Are Set To Merge. Here's Why You Should Care., June 2018, *Huffingtonpost*.  
[https://www.huffingtonpost.com/entry/monsanto-bayer-merge\\_us\\_5afeef96e4b07309e0578b5e](https://www.huffingtonpost.com/entry/monsanto-bayer-merge_us_5afeef96e4b07309e0578b5e) (assessed on 12/10/2018).
- 18 **Bayer Global Homepage**, Advancing Together as One, August 2018, *Bayer*.  
<https://www.bayer.com/en/advancing-together.aspx> (assessed on 18/10/2018).
- 19 Werner Baumann, CEO of Bayer since 1st of May, 2016
- 20 **Mangan, Dan**, US forces Germany's Bayer to shed \$9 billion in ag business in biggest ever antitrust sell-off, May 2018, *CNBC*.  
<https://www.cNBC.com/2018/05/29/bayer-will-sell-basf-9-billion-in-assets-to-allow-monsanto-purchase.html> (assessed on 18/10/2018).
- 21 **Bayer Global Homepage**, History, October 2018, *Bayer*.  
<https://www.bayer.com/en/history.aspx> (assessed on 18/10/2018).
- 22 **Harwell, Drew**, Bayer and Monsanto to merge in mega-deal that could reshape world's food supply, September 2016, *The Washington Post*.  
[https://www.washingtonpost.com/news/business/wp/2016/09/14/bayer-and-monsanto-merge-in-mega-deal-aimed-at-domi-worlds-food-supply/?utm\\_term=.3aaf85f1ccc8](https://www.washingtonpost.com/news/business/wp/2016/09/14/bayer-and-monsanto-merge-in-mega-deal-aimed-at-domi-worlds-food-supply/?utm_term=.3aaf85f1ccc8) (assessed on 02/10/2018).
- 23 **Bollinger, Ty**, Bayer-Monsanto: A "Marriage Made in Hell"?, September 2016, *TTAC*.  
<https://thetruthaboutcancer.com/bayer-monsanto/> (assessed on 21/10/2018).



- 
- 24 **Bayer Global Homepage**, History, October 2018, *Bayer*.  
<https://www.bayer.com/en/history.aspx> (assessed on 18/10/2018).
- 25 **Bayer Global Homepage**, History, October 2018, *Bayer*.  
<https://www.bayer.com/en/history.aspx> (assessed on 18/10/2018).
- 26 **Monsanto Homepage**, Monsanto History, 2018, *Monsanto*.  
<https://monsanto.com/company/history/> (assessed on 18/10/2018).
- 27 **Monsanto Homepage**, Monsanto History, 2018, *Monsanto*.  
<https://monsanto.com/company/history/> (assessed on 18/10/2018).
- 28 **Woginrich, Jenna**, Monsanto – the black stain on the biotech industry, August 2011, *The Guardian*.  
<https://www.theguardian.com/commentisfree/2011/aug/11/monsanto-biotech-industry-monoculture> (assessed on 18/10/2018).
- 29 **Kowitz, Beth**, Can Monsanto Save The Planet? June 2016, *Fortune*.  
<http://fortune.com/monsanto-fortune-500-gmo-foods/> (assessed on 21/10/2018).
- 30 **Harwell, Drew**, Bayer and Monsanto to merge in mega-deal that could reshape world’s food supply, September 2016, *The Washington Post*. [https://www.washingtonpost.com/news/business/wp/2016/09/14/bayer-and-monsanto-merge-in-mega-deal-aimed-at-domi-worlds-food-supply/?utm\\_term=.3aaf85f1ccc8](https://www.washingtonpost.com/news/business/wp/2016/09/14/bayer-and-monsanto-merge-in-mega-deal-aimed-at-domi-worlds-food-supply/?utm_term=.3aaf85f1ccc8) (assessed on 21/10/2018).
- 31 **Khan-Fontanella, James; Massoudi Arash**, Bayer closes in on \$66bn deal with Monsanto, September 2018, *The Financial Times*.  
<https://www.ft.com/content/37691718-7a05-11e6-97ae-647294649b28> (assessed on 22/10/2018).
- 32 **Monsanto Homepage**, Bayer Closes Monsanto Acquisition, June 2018, *Monsanto*.  
<https://monsanto.com/news-releases/bayer-closes-monsanto-acquisition/> (assessed on 18/10/2018).
- 33 **Murray, Alan**, Why Bayer Wants Monsanto, May 2016, *Fortune*.  
<http://fortune.com/2016/05/19/bayer-monsanto-merger-approach-brainstorm/> (assessed on 20/10/2018).
- 34 Hugh Grant, CEO of Monsanto since 2003.
- 35 **Upton, Luke**, Bayer bet big on high-tech crops with \$66bn Monsanto take-over., September 2015, *Biobasedworldnews*.  
<https://www.biobasedworldnews.com/bayer-bet-big-on-high-tech-crops-with-66bn-monsanto-take-over> (assessed on 07/10/2018).
- 36 **Upton, Luke**, Bayer bet big on high-tech crops with \$66bn Monsanto take-over., September 2015, *Biobasedworldnews*.  
<https://www.biobasedworldnews.com/bayer-bet-big-on-high-tech-crops-with-66bn-monsanto-take-over> (assessed on 07/10/2018).
- 37 **Murray, Alan**, Why Bayer Wants Monsanto, May 2016, *Fortune*.  
<http://fortune.com/2016/05/19/bayer-monsanto-merger-approach-brainstorm/> (assessed on 08/10/2018).
- 38 **Murray, Alan**, Why Bayer Wants Monsanto, May 2016, *Fortune*.  
<http://fortune.com/2016/05/19/bayer-monsanto-merger-approach-brainstorm/> (assessed on 08/10/2018).
- 39 **Monsanto Homepage**, Monsanto Completes Acquisition of The Climate Corporation, November 2013, *Monsanto*.  
<https://monsanto.com/news-releases/monsanto-completes-acquisition-of-the-climate-corporation/> (assessed on 10/10/2018).
- 40 **Grefe, Chistiane**, Monokulturen in den Köpfen, März 2018, *Zeit*. <https://www.zeit.de/wirtschaft/unternehmen/2018-03/bayer-monsanto-eu-demokratie-landwirtschaft-zusammenschluss-erlaubnis> (assessed on 11/10/2018).
- 41 **Grefe, Chistiane**, Monokulturen in den Köpfen, März 2018, *Zeit*. <https://www.zeit.de/wirtschaft/unternehmen/2018-03/bayer-monsanto-eu-demokratie-landwirtschaft-zusammenschluss-erlaubnis> (assessed on 11/10/2018).
- 42 **Fründhoff, Bert; Jahn, Thomas; Kort, Katharina**, Klagewellen und Imageschaden – Monsanto ist für Bayer ein Milliardenrisiko, August 2018, *Handelsblatt*. <https://www.handelsblatt.com/unternehmen/industrie/analyse-klagewellen-und-imageschaden-monsanto-ist-fuer-bayer-ein-milliardenrisiko/22945566.html?ticket=ST-4619510-RcZl729RwELEWlf5751z-ap6> (assessed on 16/10/2018).
- 43 **Grefe, Chistiane**, Monokulturen in den Köpfen, März 2018, *Zeit*. <https://www.zeit.de/wirtschaft/unternehmen/2018-03/bayer-monsanto-eu-demokratie-landwirtschaft-zusammenschluss-erlaubnis> (assessed on 16/10/2018).
- 44 **Grefe, Chistiane**, Monokulturen in den Köpfen, März 2018, *Zeit*. <https://www.zeit.de/wirtschaft/unternehmen/2018-03/bayer-monsanto-eu-demokratie-landwirtschaft-zusammenschluss-erlaubnis> (assessed on 16/10/2018).
- 45 **Detrick, Hallie**, The Justice Department is going to let Bayer buy Monsanto. Here’s why it matters. April 2018, *Fortune*.  
<http://fortune.com/2018/04/10/bayer-monsanto-deal-doj-approval/> (assessed on 18/10/2018).
- 46 Mark Connelly, Managing Director & Senior Agriculture Research Analyst
- 47 **Sullivan, Bartholomew**, Mega-mergers in agribusiness raise concerns about food costs, biodiversity, August 2017, *USA Today*.  
<https://eu.usatoday.com/story/news/politics/2017/08/29/mega-mergers-agribusiness-raise-concerns-food-costs-biodiversity/558980001/> (assessed on 19/10/2018).
- 48 **Monsanto Homepage**, Bayer and Monsanto to Create a Global Leader in Agriculture, September 2016, *Monsanto*.

- 
- <https://monsanto.com/news-releases/bayer-monsanto-create-global-leader-agriculture/> (assessed on 14/10/2018).
- 49 **Varinsky, Dana**, The \$66 billion Bayer-Monsanto merger just got a major green light – but farmers are terrified, May 2018, *Insider Inc.*  
<https://www.businessinsider.com/bayer-monsanto-merger-has-farmers-worried-2018-4> (assessed on 08/10/2018).
- 50 **Nelsen, Arthur**, Monsanto And Bayer Are Set To Merge. Here's Why You Should Care., June 2018, *Huffingtonpost*.  
[https://www.huffingtonpost.com/entry/monsanto-bayer-merge\\_us\\_5afeef96e4b07309e0578b5e](https://www.huffingtonpost.com/entry/monsanto-bayer-merge_us_5afeef96e4b07309e0578b5e) (assessed on 12/10/2018).
- 51 **Bayer Netherlands Homepage**, Bayer and Monsanto to Create a Global Leader in Agriculture, September 2016, *Bayer*.  
<https://www.bayer.nl/nl/media/nieuws/bayer-and-monsanto-to-create-a-global-leader-in-agriculture.php> (assessed on 21/10/2018).
- 52 **Purdy, Chase**, Six companies are about to merge into the biggest farm-business oligopoly in history, September 2016, *Quartz*.  
<https://qz.com/786382/monsanto-bayer-dupont-dow-chemical-and-syngenta-defend-their-coming-oligopoly-mon-dd-dow-syt/> (assessed on 21/10/2018).
- 53 **Purdy, Chase**, Six companies are about to merge into the biggest farm-business oligopoly in history, September 2016, *Quartz*.  
<https://qz.com/786382/monsanto-bayer-dupont-dow-chemical-and-syngenta-defend-their-coming-oligopoly-mon-dd-dow-syt/> (assessed on 21/10/2018).
- 54 Bayer beginnt mit Integration von Monsanto und will starker in Glyphosat-Streit eingreifen, August 2018, *Manager Magazin*.  
<http://www.manager-magazin.de/unternehmen/industrie/bayer-beginnt-integration-von-monsanto-und-greift-bei-glyphosatstreit-ein-a-1223521.html> (assessed on 19/10/2018).
- 55 **Sutherland, Brooke**, Bayer-Monsanto Mega-Merger Tries for Saintly, September 2016, *Bloomberg*.  
<https://www.bloombergquint.com/business/bayer-monsanto-mega-merger-tries-for-saintly#gs.N2TQtFQ> (assessed on 21/09/2018).
- 56 Bayer-Aktie: Zwischen Glyphosat-Risiken und Monsanto-Integration, September 2018, *Boerse Online*.  
<https://www.boerse-online.de/nachrichten/aktien/bayer-aktie-zwischen-glyphosat-risiken-und-monsanto-integration-was-anleger-wissen-muessen-1027553630> (assessed on 20/10/2018).
- 57 **Fröndhoff, Bert**, Diese 4 Unternehmen haben künftig die Macht auf dem Acker, May 2018, *Handelsblatt*.  
<https://www.handelsblatt.com/unternehmen/industrie/nach-bayer-monsanto-fusion-diese-4-unternehmen-haben-kuenftig-die-macht-auf-dem-acker/22611654.html?ticket=ST-2308376-yHB6v2NKfrsP9aJZuCUi-ap6> (assessed on 20/10/2018).
- 58 **Press Release**, Decline of Global Extreme Poverty Continues but Has Slowed: World Bank, September 2018, *Worldbank*.  
<https://www.worldbank.org/en/news/press-release/2018/09/19/decline-of-global-extreme-poverty-continues-but-has-slowed-world-bank> (assessed on 19/10/2018).
- 59 **Press Release**, Decline of Global Extreme Poverty Continues but Has Slowed: World Bank, September 2018, *Worldbank*.  
<https://www.worldbank.org/en/news/press-release/2018/09/19/decline-of-global-extreme-poverty-continues-but-has-slowed-world-bank> (assessed on 19/10/2018).
- 60 Quote by Robb Fraley, CTO of Monsanto since 2000.
- Varinsky, Dana**, The \$66 billion Bayer-Monsanto merger just got a major green light – but farmers are terrified, May 2018, *Insider Inc.*  
<https://www.businessinsider.com/bayer-monsanto-merger-has-farmers-worried-2018-4> (assessed on 20/10/2018).
- 61 **Nelsen, Arthur**, Monsanto And Bayer Are Set To Merge. Here's Why You Should Care., June 2018, *Huffingtonpost*.  
[https://www.huffingtonpost.com/entry/monsanto-bayer-merge\\_us\\_5afeef96e4b07309e0578b5e](https://www.huffingtonpost.com/entry/monsanto-bayer-merge_us_5afeef96e4b07309e0578b5e) (assessed on 20/10/2018).
- 62 **Nelsen, Arthur**, Monsanto And Bayer Are Set To Merge. Here's Why You Should Care., June 2018, *Huffingtonpost*.  
[https://www.huffingtonpost.com/entry/monsanto-bayer-merge\\_us\\_5afeef96e4b07309e0578b5e](https://www.huffingtonpost.com/entry/monsanto-bayer-merge_us_5afeef96e4b07309e0578b5e) (assessed on 20/10/2018).
- 63 **Nelsen, Arthur**, Monsanto und Bayer fusionieren – warum euch das alle etwas angeht, May 2018, *Huffingtonpost*.  
[https://www.huffingtonpost.de/entry/monsanto-und-bayer-fusionieren-warum-euch-euch-alle-das-etwas-angeht\\_de\\_5b0bddebe4b0568a880d3578](https://www.huffingtonpost.de/entry/monsanto-und-bayer-fusionieren-warum-euch-euch-alle-das-etwas-angeht_de_5b0bddebe4b0568a880d3578) (assessed on 21/10/2018).
- 64 **Nelsen, Arthur**, Monsanto And Bayer Are Set To Merge. Here's Why You Should Care., June 2018, *Huffingtonpost*.  
[https://www.huffingtonpost.com/entry/monsanto-bayer-merge\\_us\\_5afeef96e4b07309e0578b5e](https://www.huffingtonpost.com/entry/monsanto-bayer-merge_us_5afeef96e4b07309e0578b5e) (assessed on 20/10/2018).
- 65 Mute Schimpf, spokeswoman for Friends of the Earth Europe.
- 66 **Lownsbrough, Hannah**, This merger would threaten food supplies around the world. Who will stop it?, August 2017, *The Guardian*.  
<https://www.theguardian.com/commentisfree/2017/aug/23/bayer-monsanto-merger-agricultural-control-farming> (assessed on 17/10/2018).
- 67 **Dohmen, Frank**, Bayer will die Welt ernähren. Aber will die Welt das auch? September 2016, *Der Spiegel*.  
<http://www.spiegel.de/spiegel/print/d-146869864.html> (assessed on 17/10/2018).
- 68 **Upton, Luke**, Bayer bet big on high-tech crops with \$66bn Monsanto take-over., September 2015, *Biobasedworldnews*.  
<https://www.biobasedworldnews.com/bayer-bet-big-on-high-tech-crops-with-66bn-monsanto-take-over> (assessed on 14/10/2018).

- 
- 69 **Fröndhoff, Bert; Jahn, Thomas; Kort, Katharina**, Klagewellen und Imageschaden – Monsanto ist für Bayer ein Milliardenrisiko, August 2018, *Handelsblatt*. <https://www.handelsblatt.com/unternehmen/industrie/analyse-klagewellen-und-imageschaden-monsanto-ist-fuer-bayer-ein-milliardenrisiko/22945566.html?ticket=ST-4619510-RcZl729RwELEWlf5751z-ap6> (assessed on 14/10/2018).
- 70 **Dohmen, Frank**, Bayer will die Welt ernähren. Aber will die Welt das auch? September 2016, *Der Spiegel*. <http://www.spiegel.de/spiegel/print/d-146869864.html> (assessed on 19/10/2018).
- 71 **Dohmen, Frank**, Bayer will die Welt ernähren. Aber will die Welt das auch? September 2016, *Der Spiegel*. <http://www.spiegel.de/spiegel/print/d-146869864.html> (assessed on 21/10/2018).
- 72 **Neuman, William**; Pollack, Andrew, Farmers Cope With Roundup-Resistant Weeds, May 2010, *The New York Times*. <https://www.nytimes.com/2010/05/04/business/energy-environment/04weed.html> (assessed on 21/10/2018).
- 73 **Fröndhoff, Bert**, Genfood hat in Europa wohl weiter keine Chance, July 2918, *Handelsblatt*. <https://www.handelsblatt.com/technik/forschung-innovation/eugh-urteil-genfood-hat-in-europa-wohl-weiter-keine-chance/22841538.html?ticket=ST-5944185-feeerAFHCcbPerCdchHs-ap6> (assessed on 21/10/2018).
- 74 Bayer will keinen Genpflanzenzwang für Europa, October 2016, *Zeit Online*. <https://www.zeit.de/wirtschaft/unternehmen/2016-10/monsanto-bayer-genpflanzen-europa>
- 75 Bayer-Monsanto Merger: A Dubious Marriage, 2017, *RiskWatch*. <http://riskwatch.sganalytics.com/bayer-monsanto-merger-a-dubious-marriage/> (assessed 14/10/2018).
- 76 **Moldenhausner, Heike; Hirtz, Saskia, Monsanto** and Co: From seven to four– growing by shrinking, October 2017, *Heinrich Böll Stiftung*. <https://www.boell.de/en/2017/10/31/monsanto-and-co-from-seven-to-four-growing-by-shrinking> (assessed 21/10/2018).
- 77 **Strassheim, I., Lindegger, F.**, Bestimmt jetzt Monsanto-Bayer, was Sie essen? September 2016, *20 Minuten*. <https://www.20min.ch/finance/news/story/Bestimmt-jetzt-Monsanto-Bayer--was-Sie-essen--25027757> (assessed 15/10/2018).
- 78 **Fröndhoff, Bert**, Diese 4 Unternehmen haben künftig die Macht auf dem Acker, May 2018, *Handelsblatt*. <https://www.handelsblatt.com/unternehmen/industrie/nach-bayer-monsanto-fusion-diese-4-unternehmen-haben-kuenftig-die-macht-auf-dem-acker/22611654.html?ticket=ST-2308376-yHB6v2NKfrsP9aJZuCUi-ap6> (assessed on 20/10/2018).
- 79 **Berkhout, Frans; Iizuka, Michio; Nightingale, Paul; Voss, Georgina**, Innovation in the chemicals sector, September 2013, *WWF*. <http://assets.wwf.org.uk/downloads/innovationreport.pdf> (assessed on 20/10/2018).
- 80 **Infiniti Research**, Five Biggest Challenges in the Agrochemical Industry, May 2018, *Businesswire*. <https://www.businesswire.com/news/home/20180514005521/en/Biggest-Challenges-Agrochemical-Industry%C2%A0-Infiniti-Research>
- 81 **Varinsky, Dana**, The \$66 billion Bayer-Monsanto merger just got a major green light – but farmers are terrified, May 2018, *Insider Inc.* <https://www.businessinsider.com/bayer-monsanto-merger-has-farmers-worried-2018-4> (assessed on 16/10/2018).
- 82 **Varinsky, Dana**, The \$66 billion Bayer-Monsanto merger just got a major green light – but farmers are terrified, May 2018, *Insider Inc.* <https://www.businessinsider.com/bayer-monsanto-merger-has-farmers-worried-2018-4> (assessed on 16/10/2018).
- 83 15 U.S.C. §18.
- 84 **Koch, Brigitte**, Bayer verkauft das Digital-Farming, April, 2018, *Frankfurter Allgemeine*. <http://www.faz.net/aktuell/wirtschaft/unternehmen/bayer-verkauft-weitere-geschaefte-an-basf-15562273.html> (assessed on 09/10/2018).
- 85 **Lownsborough, Hannah**, This merger would threaten food supplies around the world. Who will stop it?, August 2017, *The Guardian*. <https://www.theguardian.com/commentisfree/2017/aug/23/bayer-monsanto-merger-agricultural-control-farming> (assessed on 21/10/2018).
- 86 **Lownsborough, Hannah**, This merger would threaten food supplies around the world. Who will stop it?, August 2017, *The Guardian*. <https://www.theguardian.com/commentisfree/2017/aug/23/bayer-monsanto-merger-agricultural-control-farming> (assessed on 21/10/2018).
- 87 **Dierig, Carsten; Ettl, Anja**, Experten fürchten Fusion von Bayer und Monsanto, September 2016, *Die Welt*. <https://www.welt.de/wirtschaft/article157992307/Experten-fuerchten-Fusion-von-Bayer-und-Monsanto.html>
- 88 **Harwell, Drew**, Bayer and Monsanto to merge in mega-deal that could reshape world’s food supply, September 2016, *The Washington Post*. [https://www.washingtonpost.com/news/business/wp/2016/09/14/bayer-and-monsanto-merge-in-mega-deal-aimed-at-domi-worlds-food-supply/?utm\\_term=.3aaf85f1ccc8](https://www.washingtonpost.com/news/business/wp/2016/09/14/bayer-and-monsanto-merge-in-mega-deal-aimed-at-domi-worlds-food-supply/?utm_term=.3aaf85f1ccc8) (assessed on 22/10/2018).
- 89 **Khan-Fontanella, James; Massoudi Arash**, Bayer closes in on \$66bn deal with Monsanto, September 2018, *The Financial Times*. <https://www.ft.com/content/37691718-7a05-11e6-97ae-647294649b28> (assessed on 15/10/2018).
- 90 **Koch, Brigitte**, Bayer verkauft das Digital-Farming, April, 2018, *Frankfurter Allgemeine*. <http://www.faz.net/aktuell/wirtschaft/unternehmen/bayer-verkauft-weitere-geschaefte-an-basf-15562273.html> (assessed on 15/10/2018).
- 91 **BASF homepage**, BASF closes acquisition of businesses and assets from Bayer, August 2018, *BASF*. <https://www.basf.com/en/company/news-and-media/news-releases/2018/08/p-18-285.html> (assessed on 15/10/2018).
- 92 **BASF homepage**, BASF closes acquisition of businesses and assets from Bayer, August 2018, *BASF*.

- 
- <https://www.basf.com/en/company/news-and-media/news-releases/2018/08/p-18-285.html> (assessed on 15/10/2018).
- 93 **Ridder, Olaf**, BASF bekommt Bayer-Agrargeschäfte, August 2018, *Finanzen.net*.  
<https://www.finanzen.net/nachricht/aktien/milliarden-deal-basf-bekommt-bayer-agrargeschaefte-6453481> (assessed on 14/10/2018).
- 94 **Koch, Brigitte**, Bayer verkauft das Digital-Farming, April, 2018, *Frankfurter Allgemeine*.  
<http://www.faz.net/aktuell/wirtschaft/unternehmen/bayer-verkauft-weitere-geschaefte-an-basf-15562273.html> (assessed on 15/10/2018).
- 95 **Fröndhoff, Bert**, Diese 4 Unternehmen haben künftig die Macht auf dem Acker, May 2018, *Handelsblatt*.  
<https://www.handelsblatt.com/unternehmen/industrie/nach-bayer-monsanto-fusion-diese-4-unternehmen-haben-kuenftig-die-macht-auf-dem-acker/22611654.html?ticket=ST-2308376-yHB6v2NKfrsP9aJZuCUi-ap6> (assessed on 16/10/2018).
- 96 **Dye, Jessica; Shubber, Kadhim**, US set to approve Bayer-Monsanto deal with divestitures, May 2018, *The Financial Times*.  
<https://www.ft.com/content/8c3d51d0-6349-11e8-90c2-9563a0613e56> (assessed on 15/10/2018).
- 97 **Xinhua**, Bayer begins with Monsanto integration after finalizing merger, August 2016, *Xinhuanet*.  
[http://www.xinhuanet.com/english/2018-08/16/c\\_137396170.htm](http://www.xinhuanet.com/english/2018-08/16/c_137396170.htm) (assessed on 15/10/2018).
- 98 **Fröndhoff, Bert**, Diese 4 Unternehmen haben künftig die Macht auf dem Acker, May 2018, *Handelsblatt*.  
<https://www.handelsblatt.com/unternehmen/industrie/nach-bayer-monsanto-fusion-diese-4-unternehmen-haben-kuenftig-die-macht-auf-dem-acker/22611654.html?ticket=ST-2308376-yHB6v2NKfrsP9aJZuCUi-ap6> (assessed on 16/10/2018).
- 99 **Moldenhausner, Heike; Hirtz, Saskia, Monsanto** and Co: From seven to four– growing by shrinking, October 2017, *Heinrich Böll Stiftung*.  
<https://www.boell.de/en/2017/10/31/monsanto-and-co-from-seven-to-four-growing-by-shrinking> (assessed 12/10/2018).
- 100 **Fröndhoff, Bert**, Diese 4 Unternehmen haben künftig die Macht auf dem Acker, May 2018, *Handelsblatt*.  
<https://www.handelsblatt.com/unternehmen/industrie/nach-bayer-monsanto-fusion-diese-4-unternehmen-haben-kuenftig-die-macht-auf-dem-acker/22611654.html?ticket=ST-2308376-yHB6v2NKfrsP9aJZuCUi-ap6> (assessed on 12/10/2018).
- 101 **Piranesko, Ivan**, Bayer-Aktie verliert nach Urteil gegen Monsanto, August 2018, *Zeit Online*.  
<https://www.zeit.de/wirtschaft/unternehmen/2018-08/glyphosat-usa-bayer-monsanto-kurverlust-aktie-urteil> (assessed on 23/10/2018).
- 102 **Milman, Oliver**, Weedkiller found in wide range of breakfast foods aimed at children, August 2018, *The Guardian*.  
<https://www.theguardian.com/environment/2018/aug/16/weedkiller-cereal-monsanto-roundup-childrens-food> (assessed on 23/10/2018).
- 103 **Maier, Thomas**, Bayer-Aktie stürzt nach Urteil gegen Monsanto ab, August 2018, *Der Spiegel*.  
<http://www.spiegel.de/wirtschaft/unternehmen/monsanto-bayer-aktie-stuerzt-nach-schmerzensgeld-urteil-ab-a-1222868.html> (assessed on 25/10/2018).
- 104 **Journo Moore, Jim**, Weedkiller wars: The battle for farming’s future, November 2018, *The Independent*.  
[https://www.independent.co.uk/news/long\\_reads/monsanto-bayer-weedkiller-roundup-dewayne-johnson-court-glyphosate-world-health-organisation-a8586951.html](https://www.independent.co.uk/news/long_reads/monsanto-bayer-weedkiller-roundup-dewayne-johnson-court-glyphosate-world-health-organisation-a8586951.html) (assessed on 02/12/2018).
- 105 Was die Bayer-Monsanto-Fusion für unsere Ernährung bedeutet, March 2018, *Der Spiegel*.  
<http://www.spiegel.de/spiegel/bayer-monsanto-fusion-das-sind-die-folgen-fuer-die-welternahrung-a-1199860.html> (assessed on 25/10/2018).
- 106 Was die Bayer-Monsanto-Fusion für unsere Ernährung bedeutet, March 2018, *Der Spiegel*.  
<http://www.spiegel.de/spiegel/bayer-monsanto-fusion-das-sind-die-folgen-fuer-die-welternahrung-a-1199860.html> (assessed on 23/10/2018).
- 107 **Piranesko, Ivan**, Bayer-Aktie verliert nach Urteil gegen Monsanto, August 2018, *Zeit Online*.  
<https://www.zeit.de/wirtschaft/unternehmen/2018-08/glyphosat-usa-bayer-monsanto-kurverlust-aktie-urteil> (assessed on 25/10/2018).
- 108 **Maier, Thomas**, Bayer-Aktie stürzt nach Urteil gegen Monsanto ab, August 2018, *Der Spiegel*.  
<http://www.spiegel.de/wirtschaft/unternehmen/monsanto-bayer-aktie-stuerzt-nach-schmerzensgeld-urteil-ab-a-1222868.html> (assessed on 24/10/2018).
- 109 **Grefe, Chistiane**, Monokulturen in den Köpfen, März 2018, *Zeit*. <https://www.zeit.de/wirtschaft/unternehmen/2018-03/bayer-monsanto-eu-demokratie-landwirtschaft-zusammenschluss-erlaubnis> (assessed on 25/10/2018).
- 110 **Fröndhoff, Bert; Jahn, Thomas; Kort, Katharina**, Klagewellen und Imageschaden – Monsanto ist für Bayer ein Milliardenrisiko, August 2018, *Handelsblatt*. <https://www.handelsblatt.com/unternehmen/industrie/analyse-klagewellen-und-imageschaden-monsanto-ist-fuer-bayer-ein-milliardenrisiko/22945566.html?ticket=ST-4619510-RcZl729RwELEWlf5751z-ap6> (assessed on 26/10/2018).
- 111 **Detrick, Hallie**, The Justice Department is going to let Bayer buy Monsanto. Here’s why it matters. April 2018, *Fortune*.  
<http://fortune.com/2018/04/10/bayer-monsanto-deal-doj-approval/> (assessed on 15/11/2018).
- 112 **Lownsbrough, Hannah**, This merger would threaten food supplies around the world. Who will stop it?, August 2017, *The Guardian*.  
<https://www.theguardian.com/commentisfree/2017/aug/23/bayer-monsanto-merger-agricultural-control-farming> (assessed on 21/10/2018).

- 
- 113 **Lownsbrough, Hannah**, This merger would threaten food supplies around the world. Who will stop it?, August 2017, *The Guardian*. <https://www.theguardian.com/commentisfree/2017/aug/23/bayer-monsanto-merger-agricultural-control-farming> (assessed on 11/11/2018).
- 114 **Sullivan, Bartholomew**, Mega-mergers in agribusiness raise concerns about food costs, biodiversity, August 2017, *USA Today*. <https://eu.usatoday.com/story/news/politics/2017/08/29/mega-mergers-agribusiness-raise-concerns-food-costs-biodiversity/558980001/> (assessed on 15/11/2018).
- 115 **Sullivan, Bartholomew**, Mega-mergers in agribusiness raise concerns about food costs, biodiversity, August 2017, *USA Today*. <https://eu.usatoday.com/story/news/politics/2017/08/29/mega-mergers-agribusiness-raise-concerns-food-costs-biodiversity/558980001/> (assessed on 24/10/2018).
- 116 **Detrick, Hallie**, The Justice Department is going to let Bayer buy Monsanto. Here's why it matters. April 2018, *Fortune*. <http://fortune.com/2018/04/10/bayer-monsanto-deal-doj-approval/> (assessed on 02/11/2018).
- 117 **Bayer-Monsanto Merger: A Dubious Marriage**, 2017, *RiskWatch*. <http://riskwatch.sganalytics.com/bayer-monsanto-merger-a-dubious-marriage/> (assessed 03/11/2018).
- 118 **Fröndhoff, Bert; Jahn, Thomas; Kort, Katharina**, Klagewellen und Imageschaden – Monsanto ist für Bayer ein Milliardenrisiko, August 2018, *Handelsblatt*. <https://www.handelsblatt.com/unternehmen/industrie/analyse-klagewellen-und-imageschaden-monsanto-ist-fuer-bayer-ein-milliardenrisiko/22945566.html?ticket=ST-4619510-RcZl729RwELEWlf5751z-ap6> (assessed on 28/10/2018).
- 119 **Fröndhoff, Bert; Jahn, Thomas; Kort, Katharina**, Klagewellen und Imageschaden – Monsanto ist für Bayer ein Milliardenrisiko, August 2018, *Handelsblatt*. <https://www.handelsblatt.com/unternehmen/industrie/analyse-klagewellen-und-imageschaden-monsanto-ist-fuer-bayer-ein-milliardenrisiko/22945566.html?ticket=ST-4619510-RcZl729RwELEWlf5751z-ap6> (assessed on 01/11/2018).
- 120 **Bayer-Monsanto Merger: A Dubious Marriage**, 2017, *RiskWatch*. <http://riskwatch.sganalytics.com/bayer-monsanto-merger-a-dubious-marriage/> (assessed 03/11/2018).
- 121 **DeCarlo, Samantha**, And Then There Were Four?, April 2018, *USITC Executive Briefings on Trade*. [https://www.usitc.gov/publications/332/executive\\_briefings/ag\\_ma\\_ebot\\_final.pdf](https://www.usitc.gov/publications/332/executive_briefings/ag_ma_ebot_final.pdf) (assessed 02/12/2018).
- 122 **DeCarlo, Samantha**, And Then There Were Four?, April 2018, *USITC Executive Briefings on Trade*. [https://www.usitc.gov/publications/332/executive\\_briefings/ag\\_ma\\_ebot\\_final.pdf](https://www.usitc.gov/publications/332/executive_briefings/ag_ma_ebot_final.pdf) (assessed 02/12/2018).
- 123 **Statistics Portal**, Bayer Finally Seals Takeover Deal With Monsanto, September 2015, *Statista*. <https://www.statista.com/chart/5849/bayer-takeover-monsanto/> (assessed 28/11/2018).
- 124 **Leroux, Juliette**, Food Security at Stake: What the Bayer-Monsanto merger means for Europe, March 2018, *Green European Journal*. <https://www.greeneuropeanjournal.eu/food-security-at-stake-what-the-bayer-monsanto-merger-means-for-europe/> (assessed 08/12/2018).
- 125 **DeCarlo, Samantha**, And Then There Were Four?, April 2018, *USITC Executive Briefings on Trade*. [https://www.usitc.gov/publications/332/executive\\_briefings/ag\\_ma\\_ebot\\_final.pdf](https://www.usitc.gov/publications/332/executive_briefings/ag_ma_ebot_final.pdf) (assessed 13/11/2018).
- 126 **Hofmann, Siegfried**, BASF: the unexpected winner in the Bayer-Monsanto merger, March, 2018, *Handelsblatt*. <https://www.handelsblatt.com/today/companies/lady-luck-basf-the-unexpected-winner-in-the-bayer-monsanto-merger/23581584.html?ticket=ST-385922-3Yr5BD9isayvdfmfefKO3-ap6> (assessed 09/12/2018).
- 127 **Bayer Official Statement**, Monsanto Acquisition Update, June 2018, *Bayer*. <https://www.investor.bayer.de/securedl/16185> (assessed 04/12/2018).
- 128 **Bayer Official Statement**, Monsanto Acquisition Update, June 2018, *Bayer*. <https://www.investor.bayer.de/securedl/16185> (assessed 04/12/2018).