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**ANALYSIS OF THE FACTORS THAT  
DETERMINE PERFORMANCE IN A COVID  
ENVIRONMENT**

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## **ABSTRACT**

This paper analyzes the factors that have determined business performance in a COVID environment of uncertainty and rapid change. A detailed quantitative analysis is performed on three companies, namely, American Airlines, Amazon, and Zoom. An industry analysis is also carried out, comparing data for ten different sectors. After the analysis, it is concluded that high levels of revenue growth and high levels of flexibility (including investment, financing, operating, and cash return flexibility) in the years prior to the COVID outbreak, have positively impacted the performance of businesses throughout the pandemic. On the other hand, high levels of debt have had a negative impact on companies' performance. The work reveals some of the most important factors that determine survival during recessions and suggests that flexibility will likely become a central factor for businesses in an economy of rapid change and uncertainty.

## **KEYWORDS**

COVID-19, Crisis, Recession, Business Performance, Growth, Profitability, Reinvestment, Debt, Flexibility

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## **LIST OF ABBREVIATIONS**

**CAPEX:** Capital Expenditures

**CDO:** Collateralized Debt Obligations

**COGS:** Cost of Goods Sold

**EBIT:** Earnings Before Interest and Tax

**EBITDA:** Earnings Before Interest, Tax, Depreciation & Amortization

**FCFE:** Free Cash Flows to Equity

**GDP:** Gross Domestic Product

**GFC:** Great Financial Crisis

**HBR:** Harvard Business Review

**IT:** Information Technology

**MBS:** Mortgage-Backed Securities

**MIT:** Massachusetts Institute of Technology

**NYU:** New York University

**P/B:** Price to Book Ratio

**P/E:** Price to Equity Ratio

**PP&E:** Property, Plant & Equipment

**R&D:** Research & Development

**SG&A:** Sales, General & Administrative

**WHO:** World Health Organization

**YTD:** Year To Date

**YoY:** Year on Year

# **1. INTRODUCTION**

## **1.1. OBJECTIVE**

The research work that I hereby present intends to determine the main factors that have determined business survival throughout the pandemic, and the factors that will determine business performance in a post-COVID era of uncertainty and rapid change. These is the main objective of this piece of work. The analysis has been carried out specifically in three companies; American Airlines, Amazon, and Zoom. The investigation has been further extended to identify the factors at an industry level. A general overview of the COVID outbreak and its immediate consequences for businesses has been provided. An analysis of research on previous crisis, such as the dot-com bubble and the Great Financial Crisis, has been included in order to identify factors that have determined business performance in prior economic downturns and compare those situations to the unprecedented crisis COVID poses.

## **1.2. STRUCTURE**

The work is split in four sections: Introduction, Theoretical Framework, Research, and Conclusions.

### **- Section 1: Introduction**

In this first Introduction section, the objectives of the investigative work have been presented. An explanation of the methodology employed is also included, detailing the techniques utilized and the process by which the results have been derived. To finish the Introduction section, a background on the topic is given. In it, the outbreak of the COVID crisis is briefly reviewed, as well as the main implications for the economy and the markets. An overview of prior crisis

of magnitude is provided, with the intention of highlighting how the COVID crisis differs from traditional recessions.

- **Section 2: Theoretical Framework**

The second section of the work comprises the Theoretical Framework. In it, an in-depth literature review is performed. Firstly, an evaluation of the research on the factors that have determined business performance in prior recessions is presented. Then, the analysis moves on to the COVID crisis itself, with a focus on the work of acclaimed NYU professor Aswath Damodaran.

- **Section 3: Research**

The third section is where the hypothesis is tested by conducting a deductive analysis based on quantitative data. The three companies; American Airlines, Amazon, and Zoom, are studied to verify the hypothesis. A broader sectorial analysis is also included for each factor. Then, the results of the field study are presented.

- **Section 4: Conclusions**

To conclude, the objectives presented at the beginning of this work will be reviewed and compared against the findings from my research. A brief discussion about the utility and implications of the results is included, and an overall balance of the work done is presented.

### **1.3. METHODOLOGY**

To achieve the previously stated objectives, I have employed a deductive approach based on quantitative data. I have tested the following hypothesis: in a COVID era of uncertainty and

rapid change, growth, profitability, reinvestment efficiency, and flexibility have positively impacted business performance, whereas debt has had a negative impact in said performance. I have chosen companies from the Air Transport, Online Retail and Software industries to validate my hypothesis, as they have been amongst those most affected by the pandemic. I have not limited my analysis to the three companies studied. For each factor analyzed, I have provided an exploration of what has happened at a sectorial and market levels, in order to further validate my claims.

#### **1.4. BACKGROUND**

Many economists and researchers over the past decades have studied why some companies survived certain crises while others perished. Academics worldwide have looked at the causes that have led to recent crises and the factors that allowed some companies to survive or even thrive during convoluted times. As I attempt to demonstrate, the COVID crisis differs from any previously experienced crisis as it not only has caused economic decline but, more importantly, it has been a health and humanitarian crisis. It has radically changed the way in which we live and work. For those reasons, I believe there is a gap of knowledge regarding the factors that make the difference for company performance in these unprecedented times.

To set the discussion, this chapter provides an overview the COVID outbreak and its direct consequences on the world's economies. For the sake of brevity, I have left the shattering health consequences to the side for now. A background on the impact of COVID on the stock market has also been included, prior to a brief review of current knowledge and an indication of the gap that this work intends to fill.

On the last day of 2019, a type of viral pneumonia that had been affecting the citizens of Wuhan came to the attention of the World Health Organization's Country Office in China. The Wuhan Municipal Health Commission had sent a media statement detailing the impact of the virus and their concerns.<sup>1</sup> Roughly a week later, on January 9<sup>th</sup>, 2020, it was discovered that the outbreak was caused by a new type of coronavirus. The next day, the first coronavirus-related death was reported. In an effort to prevent contagion, restrictions on global air travel commenced on February 2<sup>nd</sup>.<sup>2</sup> On March 11<sup>th</sup>, the WHO officially catalogued COVID-19 as a worldwide pandemic. Immediately, countries around the world closed their borders to non-essential travel and issued mandatory stay-at-home measures. The world economy was put on hold for months, as business activity was abruptly halted. The effects of said lockdowns were devastating for small business, air transport companies, hotels, restaurants, and many more.

Phased reopenings began during the month of May, but restrictions were enforced worldwide after the summer to prevent further spread of the virus. The first half of 2021 has been marked by the distribution and administration of vaccines, with many restrictions still in place. Despite a slight recovery in the world's economies, business activity across many industries continues to be way below pre-COVID levels, with many businesses having been forced to close operations and many more struggling to stay afloat.

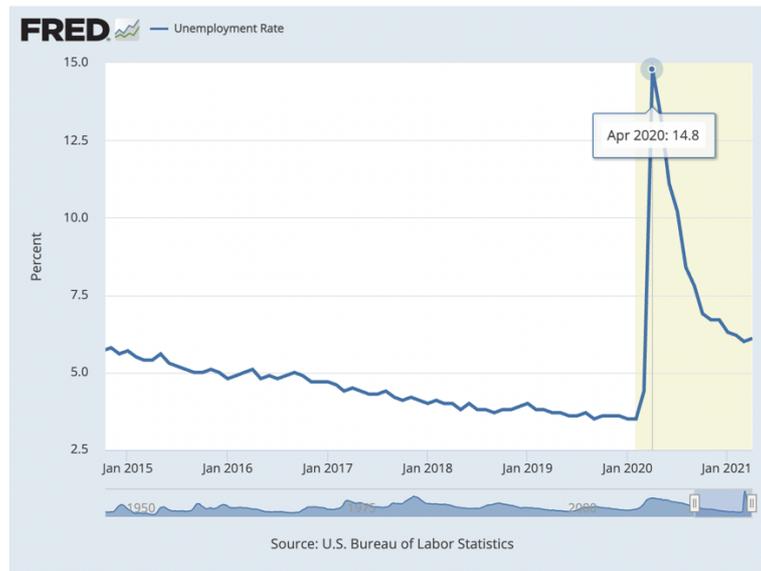
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<sup>1</sup> Timeline: WHO's COVID-19 response. (n.d.). Retrieved May 11, 2021, from [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline?gclid=Cj0KCQjw9\\_mDBhCGARIsAN3PaFNdNuEeLeE8mUY-teBq3o5zXhCXIGmIZBJu9EcNmJkFYn3Y5qU7tKoaApAmEALw\\_wcB#event-0](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline?gclid=Cj0KCQjw9_mDBhCGARIsAN3PaFNdNuEeLeE8mUY-teBq3o5zXhCXIGmIZBJu9EcNmJkFYn3Y5qU7tKoaApAmEALw_wcB#event-0)

<sup>2</sup> A Timeline of COVID-19 Developments in 2020. (n.d.). Retrieved April 20, 2021, from <https://www.ajmc.com/view/a-timeline-of-covid19-developments-in-2020>

In the United States, the unemployment rate was 3.5% at the end of 2019, a level very close to full employment.<sup>3</sup> The unemployment rate spiked to 14.8% in April 2020, as a direct result of the COVID outbreak (**Exhibit 1**).

**Exhibit 1: U.S. Unemployment Rate**



Similarly, weekly unemployment insurance claims in the U.S. had stabilized around 200,000 for years, and then reached the exorbitant number of over 6 million on April 2020 (**Exhibit 2**).

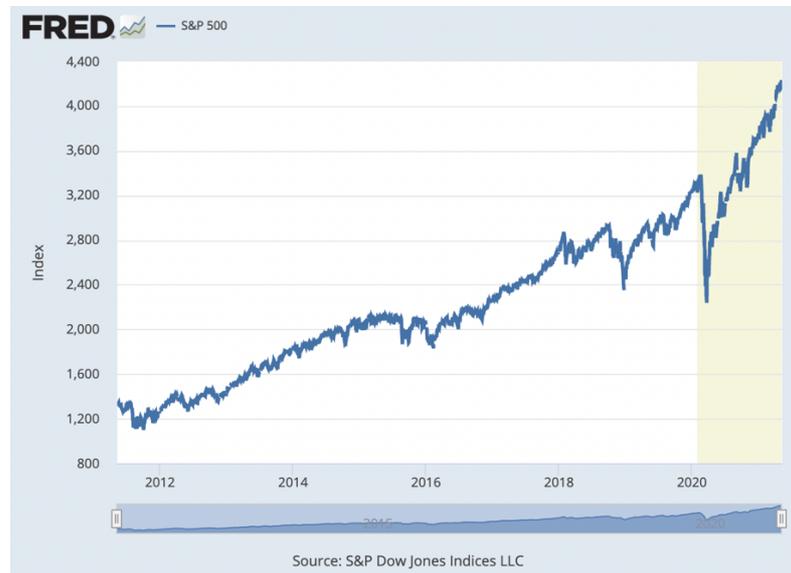
**Exhibit 2: U.S. Weekly Unemployment Insurance Claims**



<sup>3</sup> Library, H. B. (n.d.). Economic Data. Retrieved May 11, 2021, from <https://www.hbs.edu/covid-19-business-impact/insights/economic-and-financial-impacts/economic-data>

The S&P500, the main stock market index in the U.S., plunged over 33% from February to March 2020, representing the biggest correction in a decade (**Exhibit 3**).

**Exhibit 3: S&P 500 Index**



The impact was equally devastating across the world, with millions losing their jobs due to closures and layoffs. Gross Domestic Product declined across almost all nations throughout 2020, specially during the second quarter, which was marked by the outbreak of the pandemic. As seen in **Exhibit 4**, the economic decline during the second quarter of 2020 was especially pronounced in the United Kingdom (-21.7%), with the Euro Area down 15% and the US down 9.5%.<sup>4</sup>

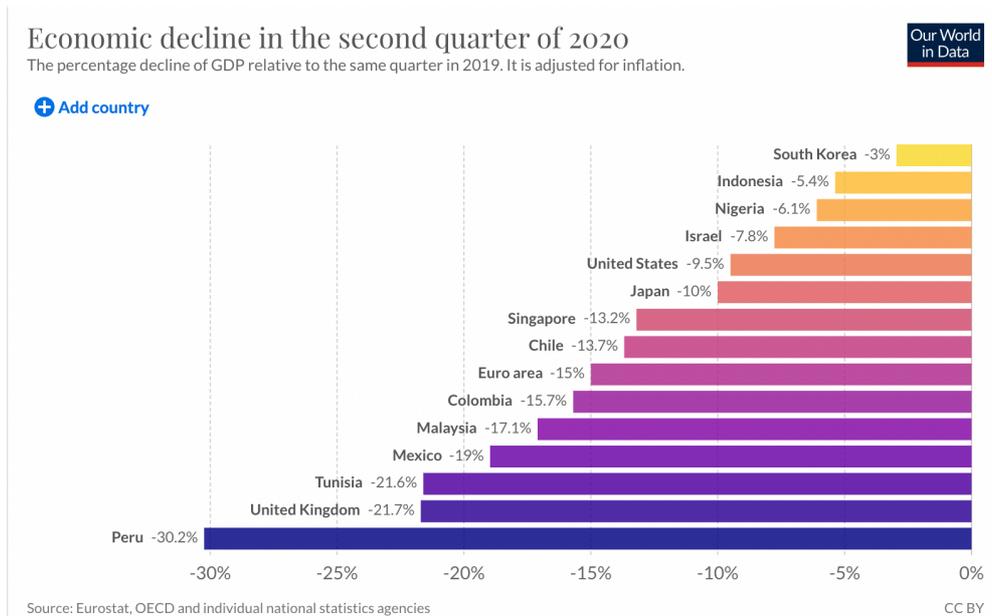
Looking back at the stock market, there has been a relatively quick recovery in the prices of equities throughout the second part of 2020 and the beginning of 2021. However, this does not

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<sup>4</sup> Hasell, J. (n.d.). Which countries have protected both health and the economy in the pandemic? Retrieved May 11, 2021, from <https://ourworldindata.org/covid-health-economy>

necessarily reflect an overall recovery of the economy. To begin with, the recovery in equity values significantly varies across countries, industries and types of companies.

**Exhibit 4: Percentage decline in GDP from Q2-2019 to Q2-2020**

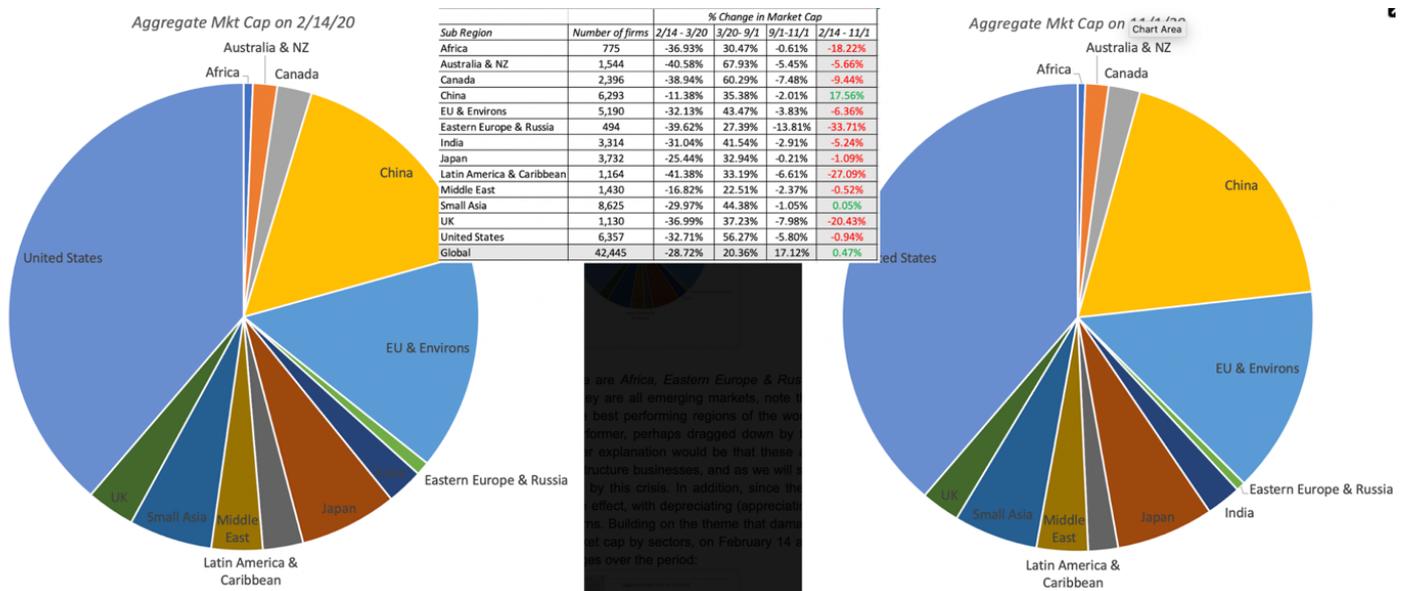


Damodaran has analyzed the impact that COVID has had on the financial markets since its outbreak through his series of blogposts called *Musing on Markets*. In his last post about the COVID pandemic, he broke down the market capitalizations of all publicly traded companies by region, sector, and industry.

As seen in **Exhibit 5**, the most affected regions are Eastern Europe & Russia, Latin America & Caribbean, Africa, and the United Kingdom. Damodaran theorizes that these regions have performed worse compared to others because they depend more on infrastructure and natural resources businesses.<sup>5</sup>

<sup>5</sup> Damodaran, A. (2020, November 05). A Viral Market Update XIV: A Wrap on the COVID market, premature or not! Retrieved May 11, 2021, from <http://aswathdamodaran.blogspot.com/2020/11/a-viral-market-update-xiv-wrap-on-covid.html>

### Exhibit 5: Market Capitalization per Region. 14/02/20 vs 01/11/20



Damodaran argues that we have seen a wealth transfer, with value reallocating from some regions to others and from some industries to others. In that light, he states how capital-intensive industries have had a hard time, whereas some capital-light industries have thrived. In **Exhibit 6** we can see Damodaran’s breakdown of the worst and best performing industries. The worst performer from the 14<sup>th</sup> of February 2020 to the 9<sup>th</sup> of November 2020 was Oil and Gas, with a -43.88% change in market capitalization. Aerospace and Defense is not far away, with a change of -31.95% in market capitalization over the period. The best performing industry was internet software with a remarkable 47.79% increase in market capitalization during said period.

## Exhibit 6: Market Capitalization change by Sectors. 14/02/20 vs 01/11/20

Industry	Market Cap (\$ Millions)		Change from 2/14-9/11		Industry	Market Cap (\$ Millions)		% Change	
	2/14/20	11/1/20	\$ Value	% Change		2/14/20	11/1/20	\$ Value	% Change
Oil/Gas (Production and Exploration)	\$ 683,665	\$ 383,653	\$ (300,012)	-43.88%	Software (Internet)	\$ 226,460	\$ 334,679	\$ 108,219	47.79%
R.E.I.T.	\$ 108,606	\$ 64,681	\$ (43,925)	-40.44%	Retail (Online)	\$ 2,454,579	\$ 3,585,642	\$ 1,131,063	46.08%
Oil/Gas Distribution	\$ 644,032	\$ 424,030	\$ (220,002)	-34.16%	Healthcare Information and Technology	\$ 768,829	\$ 1,054,953	\$ 286,124	37.22%
Reinsurance	\$ 180,669	\$ 122,608	\$ (58,061)	-32.14%	Precious Metals	\$ 419,259	\$ 557,335	\$ 138,076	32.93%
Aerospace/Defense	\$ 1,219,943	\$ 830,117	\$ (389,825)	-31.95%	Furn/Home Furnishings	\$ 330,673	\$ 406,726	\$ 76,053	23.00%
Air Transport	\$ 558,878	\$ 389,947	\$ (168,930)	-30.23%	Transportation	\$ 548,150	\$ 668,808	\$ 120,658	22.01%
Broadcasting	\$ 164,223	\$ 122,024	\$ (42,199)	-25.70%	Software (Entertainment)	\$ 2,530,194	\$ 3,059,148	\$ 528,954	20.91%
Insurance (General)	\$ 833,814	\$ 620,410	\$ (213,404)	-25.59%	Electrical Equipment	\$ 894,227	\$ 1,070,976	\$ 176,749	19.77%
Bank (Money Center)	\$ 6,844,013	\$ 5,107,604	\$ (1,736,409)	-25.37%	Computers/Peripherals	\$ 2,216,118	\$ 2,626,303	\$ 410,185	18.51%
Food Wholesalers	\$ 94,803	\$ 71,464	\$ (23,339)	-24.62%	Semiconductor	\$ 2,059,092	\$ 2,407,639	\$ 348,547	16.93%

With that background in mind, the next few paragraphs are dedicated to briefly reviewing the causes and effects of prior crises, namely, the dot-com bubble and the Great Financial Crisis.

- **The dot-com bubble:** The dot-com bubble refers to the speculative bull-run experienced by internet companies from 1995 to 2000. The beginning of the widespread use of the internet instigated a media frenzy around internet-based companies, which quickly led to overvaluation of new businesses. The abundance of available venture capital funding gave rise to a widespread money pouring into tech startups. The NASDAQ composite, a stock market index composed mainly of U.S. tech stocks, rose a 582% from January 1995 to March 2000, with the bubble bursting later that year and the NASDAQ falling by 75% from 2000 to 2002.<sup>6</sup>

The crash resulted in colossal losses for many investors and large layoffs in the technology sector as a whole. The few companies that were able to survive the crisis had some common characteristics. First, they had sound business models with cash-

<sup>6</sup> Dotcom Bubble - Overview, Characteristics, Causes. (n.d.). Retrieved May 12, 2021, from <https://corporatefinanceinstitute.com/resources/knowledge/trading-investing/dotcom-bubble/>

flow generation as a central priority. Second, they had lower beta coefficients than their overvalued peers.<sup>7</sup>

- **The Great Financial Crisis:** The great financial crisis of 2008 was a cataclysmic recession instigated by the collapse of many prominent U.S. banks after the bursting of the housing bubble. Throughout the years prior to the collapse, banks had started partaking in speculative investments, purchasing risky mortgage-backed securities and collateralized debt obligations. In a nutshell, banks actively sought out risky mortgage loans, given to borrowers who were likely to default, in order to obtain profits from high-yielding derivative securities such as MBS or CDOs.<sup>8</sup> The underlying cause that allowed this to happen was the significant deregulation in the financial industry during those years. Such deregulation allowed banks to engage in hedge-fund-like trading. Traditionally, the lighter regulations imposed on hedge funds have allowed them to operate with significant leverage and trade complex financial products, among other things. The deregulation in the financial industry during the years prior to the GFC enabled banks to get involved in high-risk investments in pursuit of greater profits.

The GFC became the most severe recession since the Great Depression of the 1930s.<sup>9</sup> It had a tremendous impact in the economy as a whole, as the effects rippled over from the U.S. to Europe and all over the world. Unemployment levels rapidly rose and

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<sup>7</sup> Dotcom Bubble - Overview, Characteristics, Causes. (n.d.). Retrieved May 12, 2021, from <https://corporatefinanceinstitute.com/resources/knowledge/trading-investing/dotcom-bubble/>

<sup>8</sup> Coghlan, E. (2019, May 08). What Really Caused the Great Recession? Retrieved May 12, 2021, from <https://irle.berkeley.edu/what-really-caused-the-great-recession/>

<sup>9</sup> Danziger, S. (2013). Evaluating the Effects of the Great Recession. *The ANNALS of the American Academy of Political and Social Science*, 650(1), 6–24. <https://doi.org/10.1177/0002716213500454>

remained high for years before returning to pre-crisis levels. Businesses from all industries were affected.

Apart from the COVID crisis, the dot-com bubble and the GFC are probably the two most important crises of recent times. The effects of both were far-reaching, especially those of the GFC. Much research has been made into the factors that allow companies to survive a recession, as will be explored in the next section.

However, I believe there is a significant gap in knowledge. The reason is that the COVID crisis is radically different from any previous economic recession in history. There are obviously some similarities, such as the presence of intense uncertainty, economic collapse, and monetary and fiscal policy reactions.<sup>10</sup> Nevertheless, the differences are obvious and significant. In an interview by the Federal Reserve Bank of St. Louis to David Wheelock, an economist who specializes in U.S. monetary policy, some differences are discussed. Wheelock argues that previous crises, such as the GFC, were caused by imbalances in the financial markets. In this case, the cause is the outbreak of a pandemic.<sup>11</sup> Necessary public health measures have caused a halt in economic activity worldwide and have given rise to remote work.

The entire new paradigm provoked by the pandemic requires a revision of the factors that determine business survival and performance in a world of constant and rapid change, increasing uncertainty, and potential for halts in business activity. Traditional research around

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<sup>10</sup> Can we compare the COVID-19 and 2008 crises? (2020, October 02). Retrieved May 12, 2021, from <https://www.atlanticcouncil.org/blogs/new-atlanticist/can-we-compare-the-covid-19-and-2008-crises/>

<sup>11</sup> Engemann, K. M. (2020, August 07). How the COVID-19 Crisis Differs from Other Shocks to the Economy: St. Louis Fed. Retrieved May 12, 2021, from <https://www.stlouisfed.org/open-vault/2020/may/how-does-covid19-crisis-differ-other-shocks-economy>

recessions has become incomplete due to the specific characteristics of the COVID crisis, creating a gap in knowledge around the topic. A gap in the knowledge is a difference between what is already known about a topic and what should be known about it. The aim of this work is then to provide a comprehensive analysis of the factors that businesses need to keep in mind in a post-COVID world.

## **2. THEORETICAL FRAMEWORK**

### **2.1. OVERVIEW**

In this section of the work, an evaluation of prior research on the topic will be presented. I have reviewed literature in which researchers focused on prior recessions, and I have also analyzed what has been written to date about the COVID crisis. As a whole, I intend to present the foundations of the field study that will follow in the next section, in which I have attempted to validate my hypothesis and identify the factors that determine business performance in a COVID and post-COVID world.

### **2.2. RESEARCH ON PRIOR RECESSIONS**

Before taking about prior recessions and the research that has been carried out on them, it is important to clarify what a recession means. Recessions are characterized by two consecutive quarters of economic contraction.<sup>12</sup> They are caused by financial imbalances, sudden fluctuations in economic expectations, or economic shocks. During recessions, most companies perform worse than they would in a normal scenario. This is caused, in general terms, by decreased revenues and increased uncertainty. However, throughout the most important recessions of the last decades, there have been some companies that have not only survived but thrived, outperforming their peers by ample margins and growing when most contracted.

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<sup>12</sup> Frick, W. (2019, August 23). How to Survive a Recession and Thrive Afterward. Retrieved May 12, 2021, from <https://hbr.org/2019/05/how-to-survive-a-recession-and-thrive-afterward#>

In March 2010, Ranjay Gulati, Nitin Nohria, and Franz Wohlgezogen published an article for Harvard Business Review called ‘Roaring Out of Recession.’<sup>13</sup> In it, they analyzed the performance of almost 5,000 public companies during the recessionary periods of 1980-1982, 1990-1991, and 2000-2002. They analyzed financial data through the Standard & Poor’s Compustat database. They also examined strategy shifts by calculating how the companies’ resource allocation had shifted on six items from three years before the recession to three years after the recession. The six balance-sheet items were: number of employees; COGS normalized by sales; R&D expenditures; SG&A expenditures; capital expenditures; and PP&E stock. Based on the changes in resource allocation, they identified the following four groups:<sup>14</sup>

- **Prevention-focus companies:** Companies that had reduced, more than their competitors, their expenditure on one or more of the six previously mentioned items, and had not increased expenditures in any item compared to their peers.
  
- **Promotion-focus companies:** Companies that had increased expenditures more than their competitors on at least one item and had not decreased expenditure on any item compared to peers.
  
- **Pragmatic-focus companies:** Companies that had reduced COGS or number of employees more than competitors, while simultaneously increasing expenditures in SG&A, R&D, CAPEX, or PP&E more than other companies.

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<sup>13</sup> Roaring Out of Recession. (2010, March 06). Retrieved May 12, 2021, from <https://hbr.org/2010/03/roaring-out-of-recession>

<sup>14</sup> Roaring Out of Recession. (2010, March 06). Retrieved May 12, 2021, from <https://hbr.org/2010/03/roaring-out-of-recession>

- **Progressive-focus companies:** Companies that had cut COGS but hadn't reduced the number of employees more than competitors, while simultaneously allocating more than their peers to SG&A, R&D, CAPEX, or PP&E.

Their results were eye-opening. 17% of the studied companies did not survive a recession. From the survivors, around 80% took more than three years to recover to pre-recession growth levels. Only 9% of all the companies flourished during the recession, achieving “breakaway performance”. The authors defined breakaway performance as those companies with both sales' growth and profits 10% over those of competitors.<sup>15</sup>

The companies that knew how to find the balance between cutting costs to survive in the immediate future and also investing and making offensive moves for the long-term, those who adopted the progressive focus strategy, had the highest changes of achieving breakaway performance. The authors concluded that these multipronged strategy of focusing on operational efficiency while investing in the future through R&D and CAPEX has proved to be the best antidote to recessions.<sup>16</sup>

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<sup>15</sup> Roaring Out of Recession. (2010, March 06). Retrieved May 12, 2021, from <https://hbr.org/2010/03/roaring-out-of-recession>

<sup>16</sup> Roaring Out of Recession. (2010, March 06). Retrieved May 12, 2021, from <https://hbr.org/2010/03/roaring-out-of-recession>

**Exhibit 7: Post-Recession Sales and EBITDA Growth by Strategy**

		PROMOTION-FOCUSED MOVES		
		MARKET DEVELOPMENT	ASSET INVESTMENT	BOTH
PREVENTION-FOCUSED MOVES	EMPLOYEE REDUCTION	<b>GOOD</b> SALES 4.6% EBITDA 6.6%	<b>BAD</b> SALES 3.9% EBITDA 3.3%	<b>WORST</b> SALES 3.3% EBITDA -5.2%
	OPERATIONAL EFFICIENCY	<b>GOOD</b> SALES 7.1% EBITDA 4.2%	<b>GOOD</b> SALES 8.4% EBITDA 8.4%	<b>BEST</b> SALES 13.0% EBITDA 12.2%
	BOTH	<b>BAD</b> SALES 5.2% EBITDA 2.1%	<b>BAD</b> SALES 5.2% EBITDA -0.5%	<b>GOOD</b> SALES 9.2% EBITDA 4.6%

In a 2019 publication in HBR’s Magazine, Walter Frick performed a research roundup on ‘How to Survive a Recession and Thrive Afterward.’ In it, he analyzed numerous pieces of research and case studies, and grouped the essential discoveries in four areas: debt, decision making, workforce management, and digital transformation.<sup>17</sup> In the subsequent paragraphs, I have analyzed the core findings of his research.

- **Debt:** Most of the pieces of research analyzed agreed on the following: high levels of debt make companies vulnerable during economic crises. Xavier Giroud and Holger Mueller, highly acclaimed professors of MIT and NYU, came to the conclusion in a 2017 study that the majority of business that closed because of decreased demand

<sup>17</sup> Frick, W. (2019, August 23). How to Survive a Recession and Thrive Afterward. Retrieved May 12, 2021, from <https://hbr.org/2019/05/how-to-survive-a-recession-and-thrive-afterward#>

during a recession had high amounts of leverage.<sup>18</sup> Companies with high amounts of debt have to cut costs aggressively to stay in business. Oftentimes, they are forced to lay off employees, which can negatively affect the companies' productivity. Thus, excessive use of leverage restricts the choices companies can make in an economic downturn. Most of the conclusions Frick found in his research indicate that to perform better during a recession firms should deleverage as soon as there is indication that a crisis might be coming.<sup>19</sup>

- **Decision Making:** The extent to which a company is able to navigate a severe downturn also depends in its organizational structure. Studies show that although centralized companies may take tough decisions more easily, decentralized firms can withstand recessions better because of the increased value of local information.<sup>20</sup> Researchers classified companies into centralized and decentralized with data from the World Management Survey and found out that decentralization helped as it enabled companies to adapt quicker and better to changing conditions.
- **Workforce Management:** As stated before, recessions and crises put companies in severe financial stress. As a result, it is sometimes unavoidable to lay off some workers. However, studies show that the firms that perform better during crises are those which

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18 Giroud, X., & Mueller, H. M. (2017). Firm Leverage, Consumer Demand, and Employment Losses during the Great Recession. SSRN Electronic Journal. doi:10.2139/ssrn.2896892

19 Frick, W. (2019, August 23). How to Survive a Recession and Thrive Afterward. Retrieved May 12, 2021, from <https://hbr.org/2019/05/how-to-survive-a-recession-and-thrive-afterward#>

20 Aghion, P., Bloom, N., Lucking, B., Sadun, R., & Reenen, J. V. (2017). Turbulence, Firm Decentralization and Growth in Bad Times. doi:10.3386/w23354

relied primarily on reducing costs through operational improvements instead of layoffs.<sup>21</sup> The reason is that layoffs are expensive and may led to decreased productivity. Some alternatives that allow companies to navigate a crisis better include hour reductions, furloughs, and performance pay, studies show.<sup>22</sup>

- **Digital Transformation:** The last area Frick tackled in his research roundup was digital transformation. As he stated, crises and recessions actually encourage the adoption of new technologies.<sup>23</sup> In a 2016 study, researchers found that during recessions, employers sought after more employees with technical skills and control of new technologies.<sup>24</sup> As the study shows, the companies that fared better during the great recession also were the ones who increased their investment in IT the most. Frick found that technological advancements make businesses more transparent, flexible and efficient. On top of that, new technologies help cut costs and make companies more agile in the face of uncertainty and change that are common in recessions.<sup>25</sup>

It is clear that recessions can create huge performance differences between companies. As shown in this chapter and in **Exhibit 7** above, research indicates that despite the fact that

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21 Roaring Out of Recession. (2010, March 06). Retrieved May 12, 2021, from <https://hbr.org/2010/03/roaring-out-of-recession>

22 Sucher, S., & Gupta, S. (2019, August 23). A Better, Fairer Approach to Layoffs. Retrieved May 13, 2021, from <https://hbr.org/2018/05/layoffs-that-dont-break-your-company>

23 Frick, W. (2019, August 23). How to Survive a Recession and Thrive Afterward. Retrieved May 12, 2021, from <https://hbr.org/2019/05/how-to-survive-a-recession-and-thrive-afterward#>

24 Hershbein, B., & Kahn, L. (2016). Do Recessions Accelerate Routine-Biased Technological Change? Evidence from Vacancy Postings. doi:10.3386/w22762

25 Frick, W. (2019, August 23). How to Survive a Recession and Thrive Afterward. Retrieved May 12, 2021, from <https://hbr.org/2019/05/how-to-survive-a-recession-and-thrive-afterward#>

recessions pose challenges to all businesses, there are certain actions firms can take to weather the storm successfully. Finding the balance between cutting costs and making offensive moves, deleveraging before and during a downturn, decentralizing decision making during the crisis, looking beyond layoffs, and investing in technology are some of the ways in which companies can not only survive recessions, but get ahead.

### 2.3. THE COVID IMPACT

As previously mentioned in this work, Aswath Damodaran has been writing a series of blog posts analyzing the effects of COVID on the financial markets. This chapter is dedicated to reviewing his analysis on the factors that have determined performance during the crisis.

On his post from March 16<sup>th</sup>, 2020 called ‘A Viral Market Meltdown III: Pricing or Value? Trading or Investing?’<sup>26</sup>, Damodaran presented a framework to understand COVID’s effects on businesses (**Exhibit 7**). In it, he presented six factors that were, on his view, determining the extent of COVID’s impact.

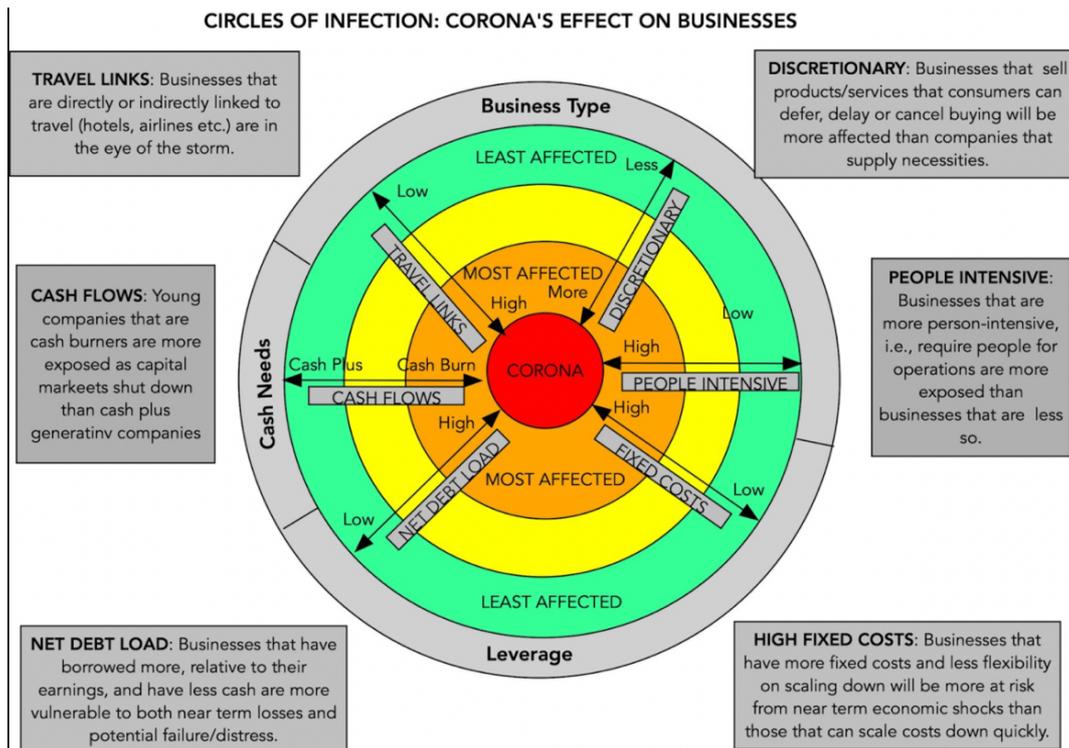
- **Travel Links:** Obviously, with all the restrictions imposed on travel, businesses most linked to travel were affected further by the pandemic than those not linked.

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<sup>26</sup> Damodaran, A. (2020, March 16). A Viral Market Meltdown III: Pricing or Value? Trading or Investing? Retrieved May 15, 2021, from <https://aswathdamodaran.blogspot.com/2020/03/a-viral-market-meltdown-iii-pricing-or.html>

- **Cash Flows:** Established companies with stable cash flows were better able to navigate COVID than young companies with unsteady cash flows or companies in general that are cash burners.<sup>27</sup>

### Exhibit 7: COVID's Effect on Businesses



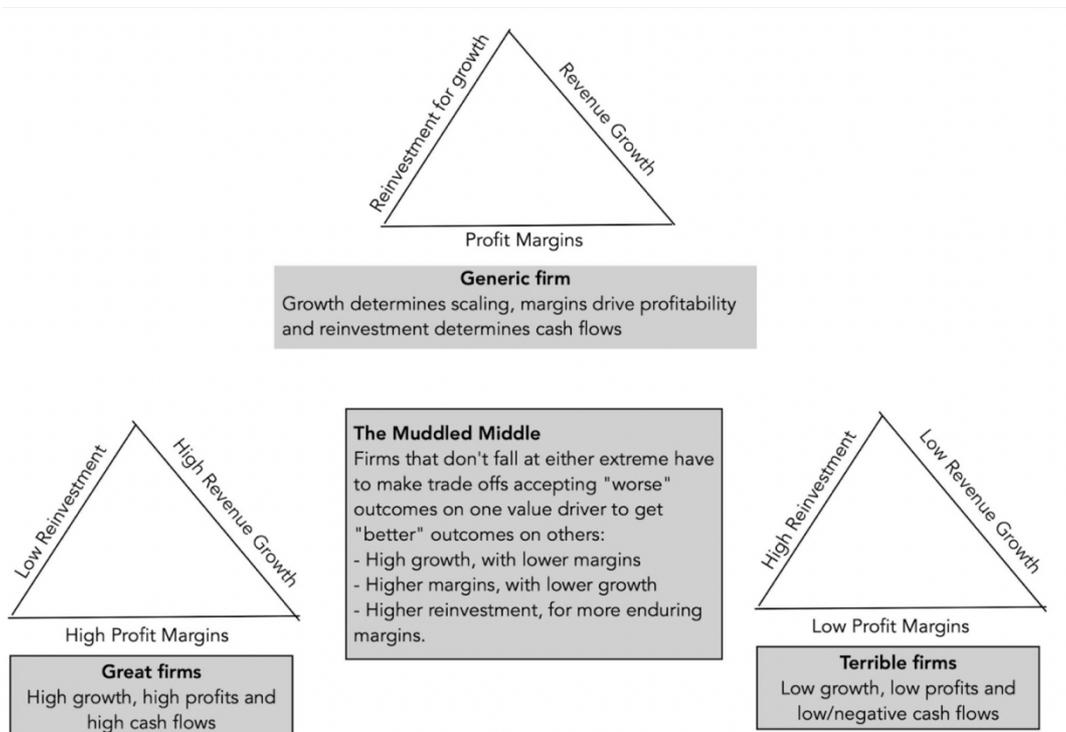
- **Net Debt Load:** As in every recession, businesses with more debt in their balance sheet, especially short-term, were much more vulnerable to losses and bankruptcy.
- **Discretionary:** Again, similarly to other crises, companies that sold products or services that are non-essential and that consumers could postpone buying suffered more than companies that sold necessary products.

<sup>27</sup> Damodaran, A. (2020, March 16). A Viral Market Meltdown III: Pricing or Value? Trading or Investing? Retrieved May 15, 2021, from <https://aswathdamodaran.blogspot.com/2020/03/a-viral-market-meltdown-iii-pricing-or.html>

- **People Intensive:** Firms that required more people to operate their businesses were more exposed to COVID's impact than companies that needed less employees for operations.
- **High Fixed Costs:** Companies with high fixed costs were more at risk from economic shocks derived from COVID as they lacked flexibility to scale down costs quickly.

Following the framework, companies that are not linked to travel, have positive and steady cash-flows, have low leverage, sell necessary products, and have low fixed costs should perform much better than firms in the opposite side of the spectrum for each of the six factors. This theory is aligned with research on prior recessions, excluding the pillar about travel.

### Exhibit 8: Relationship between Growth, Profitability and Reinvestment



Damodaran went deeper in subsequent post titled ‘Data Update 6 for 2020: Profitability, Returns, and the value of Growth.’<sup>28</sup> In it, he analyzed growth, profitability, and reinvestment, and how it is related to the impact COVID had on businesses. As seen in **Exhibit 8**, Damodaran understands the balance between these three factors as the difference maker between great, generic, and terrible firms.

In his view, growth is the scaling factor that allows companies to increase their size, with revenue growth as the main metric that reflects the concept. Profitability is the driver that makes the growth pay off, with profit margins being the most relevant metric. Reinvestment is a lever that permits growth but drains cash flows, with the reinvestment rate or the sales to invested capital ratio being the most central numbers.<sup>29</sup>

Damodaran argued that COVID’s impact was going to be way more severe in firms with low growth, small margins, and inefficient reinvestment. On the contrary, firms with high growth, ample margins, and efficient reinvestment were predicted to do much better.<sup>30</sup> He exemplified his theory by pointing to the poor performance of airlines, which belong to the low growth and small margins category, compared to technology companies, generally high growth and high margin. In sum, Damodaran believes the buffer that companies have on growth, profitability and reinvestment is a crucial factor determining survival and performance during and after COVID.

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28 Damodaran, A. (2020, March 21). Data Update 6 for 2020: Profitability, Returns and the value of Growth. Retrieved May 15, 2021, from <https://aswathdamodaran.blogspot.com/2020/03/data-update-6-for-2020-profitability.html>

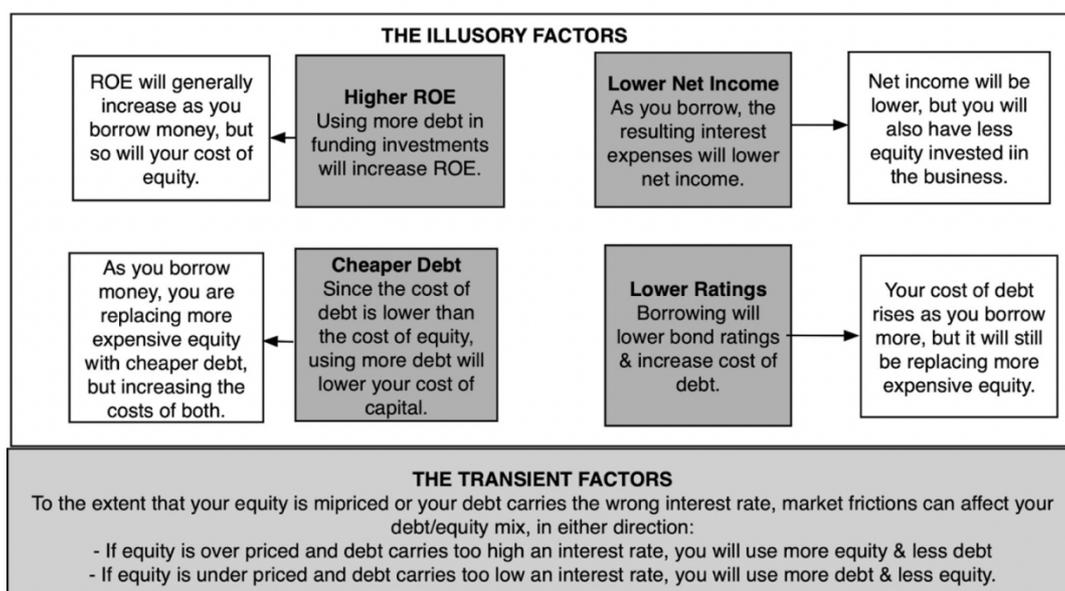
29 Damodaran, A. (2020, March 21). Data Update 6 for 2020: Profitability, Returns and the value of Growth. Retrieved May 15, 2021, from <https://aswathdamodaran.blogspot.com/2020/03/data-update-6-for-2020-profitability.html>

30 Damodaran, A. (2020, March 21). Data Update 6 for 2020: Profitability, Returns and the value of Growth. Retrieved May 15, 2021, from <https://aswathdamodaran.blogspot.com/2020/03/data-update-6-for-2020-profitability.html>

Yet another factor considered crucial by the acclaimed professor in deciding survival during COVID is debt. In his post ‘Data Update 7 for 2020: Debt Delusions and Reality’<sup>31</sup>, he explored in detail how highly leveraged companies had a much higher risk of failure amidst the pandemic. To set the discussion, he analyzed common “illusory benefits” of debt (**Exhibit 9**), explored the tradeoff between debt and equity, and detailed traditional debt measures.

### Exhibit 9: The Illusory Benefits of Debt

#### Debt versus Equity: The Illusory Benefits



Accordingly, he used the debt to capital ratio, debt to EBITDA ratio, revenue predictability, and interest coverage ratio to form the ‘debt burden’ of a company.<sup>32</sup> Thus, companies with higher debt burdens were more exposed to risk of failure from COVID than companies with

31 Damodaran, A. (2020, March 22). Data Update 7 for 2020: Debt Delusions and Reality. Retrieved May 15, 2021, from <https://aswathdamodaran.blogspot.com/2020/03/data-update-7-for-2020-debt-delusions.html>

32 Damodaran, A. (2020, March 22). Data Update 7 for 2020: Debt Delusions and Reality. Retrieved May 15, 2021, from <https://aswathdamodaran.blogspot.com/2020/03/data-update-7-for-2020-debt-delusions.html>

healthier debt levels. **Exhibit 10** shows a breakdown of the four debt measures and how they contribute to a company’s debt burden. He concluded reminding that debt not only has the potential to amplify good results, but also bad ones. When assumed in excess, it can result in constraints, distress and liquidations, and it is one of the key factors affecting performance in a COVID world.

**Exhibit 10: The Debt Burden**

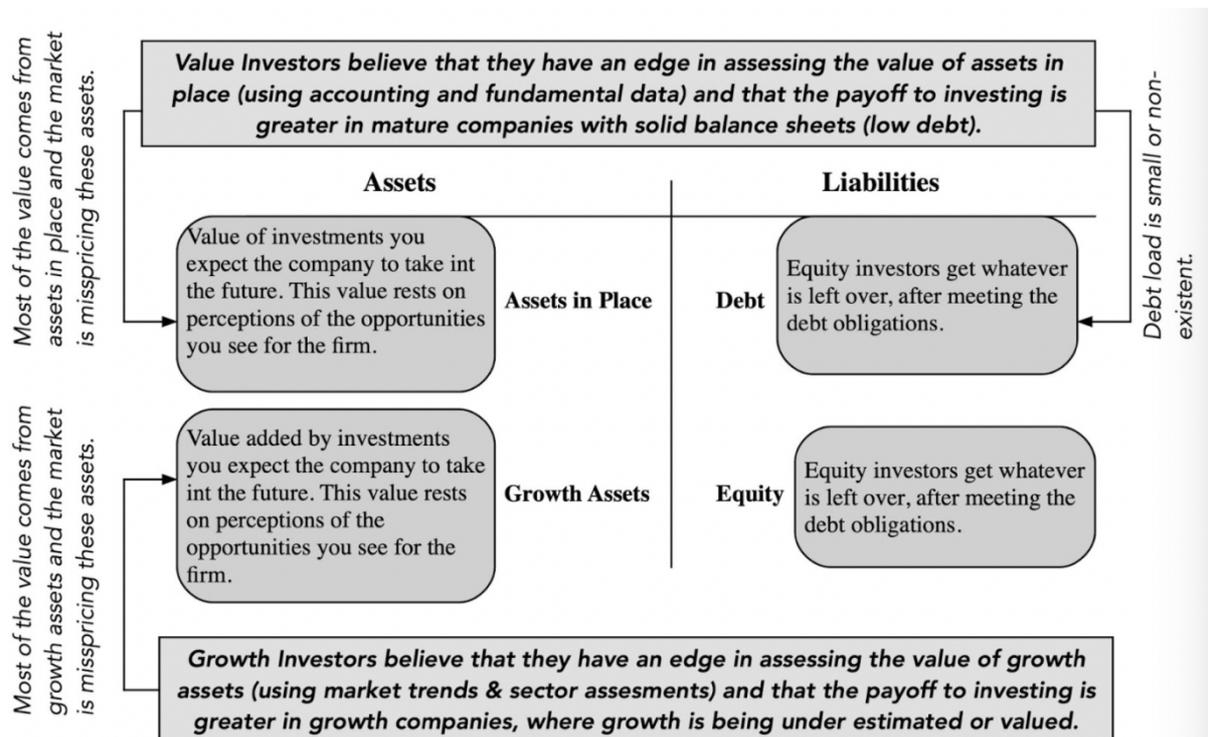
<i>Debt to Capital</i>	<i>Debt/EBITDA</i>	<i>Revenue Predictability</i>	<i>Interest Coverage Ratio</i>	<i>Extent of Debt Burden</i>
High	High	Low	Low or negative (with negative EBIT)	Code Red
Low	High	Low	Low or negative (with negative EBIT)	Highly exposed to distress, if capital markets shut down.
High	High	High	Low	Manageable, as long as costs stay controlled.
Low	High	High	Low or negative (with negative EBIT)	Dependent on earnings growth and capital access for safety.
High	Low	Low	High	Exposed to earnings shocks
High	Low	High	High	Manageable, as long as costs stay controlled.
Low	Low	Low	High	Low risk, unless earnings collapse.
Low	Low	High	High	Lowest danger from debt

In a later post titled ‘A Viral Market Update VIII: A Crisis Test – Value vs Growth, Active vs Passive, Small Cap vs Large’<sup>33</sup> published in May 2020, Damodaran carried out an analysis on the performance of value versus growth companies throughout the pandemic. As seen in **Exhibit 11**, he argues that value investors are those who invest mature companies with mispriced assets. Value companies then are those with low P/E and P/B ratios and high dividend yields. On the other hand, growth investors are considered to be those who invest in

<sup>33</sup> Damodaran, A. (2020, May 13). A Viral Market Update VIII: A Crisis Test - Value vs Growth, Active vs Passive, Small Cap vs Large! Retrieved May 16, 2021, from <http://aswathdamodaran.blogspot.com/2020/05/a-viral-market-update-viii-crisis-test.html>

companies in which the market is misestimating a key element of growth.<sup>34</sup> Growth companies are those with higher P/E and P/B ratios.

### Exhibit 11: Value vs Growth



With that in mind, he looked at the market effects across stocks with different dividend yields, P/E and P/B ratios. Damodaran concluded that value companies (those with lower P/E and P/B ratios and higher dividend yields) had lost significantly more market capitalization and value than growth companies during the pandemic.

<sup>34</sup> Damodaran, A. (2020, May 13). A Viral Market Update VIII: A Crisis Test - Value vs Growth, Active vs Passive, Small Cap vs Large! Retrieved May 16, 2021, from <http://aswathdamodaran.blogspot.com/2020/05/a-viral-market-update-viii-crisis-test.html>

On July 2<sup>nd</sup>, 2020, Damodaran published yet another post on the COVID crisis titled ‘A Viral Market Update XI: The Flexibility Premium’.<sup>35</sup> In it, he argued that possibly the most important factor determining the performance of firms throughout COVID at that point had been flexibility. He defined such flexibility as the “speed and cost with which (a company) responds to changed circumstances.”<sup>36</sup> He went further on to group a firm’s flexibility in four categories: investment flexibility, operating flexibility, financing flexibility, and cash return flexibility.

- **Investing Flexibility:** As per Damodaran, investment flexibility measures how much money a company needs to reinvest to produce a certain growth rate, and how much time will elapse for the investment to pay off.<sup>37</sup> As portrayed in **Exhibit 12**, companies with low investment flexibility are those that need to make large investments that take a long time to payoff, such as airlines, pharmaceutical companies or oil conglomerates. On the other hand, companies that only need to make small investments and that see a quick payoff have high investment flexibility, such as service-based firms, internet software companies, or sharing economy companies like Uber or Airbnb.

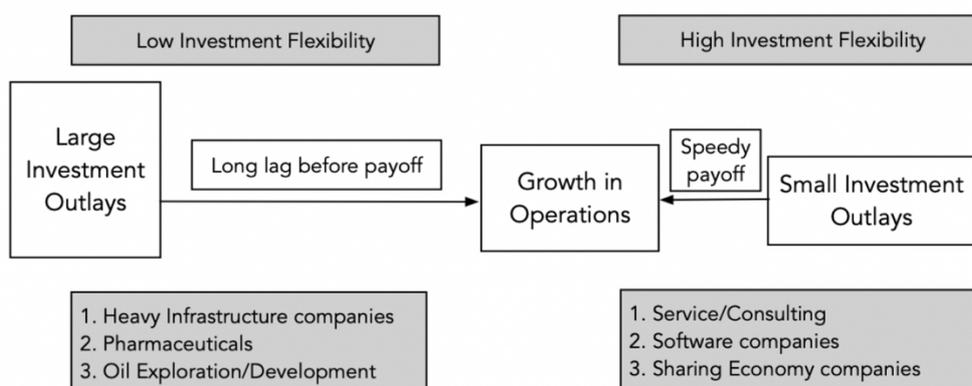
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35 Damodaran, A. (2020, July 2). A Viral Market Update XI: The Flexibility Premium. Retrieved May 16, 2021, from <https://aswathdamodaran.blogspot.com/2020/07/a-viral-market-update-xi-flexibility.html>

36 Damodaran, A. (2020, July 2). A Viral Market Update XI: The Flexibility Premium. Retrieved May 16, 2021, from <https://aswathdamodaran.blogspot.com/2020/07/a-viral-market-update-xi-flexibility.html>

37 Damodaran, A. (2020, July 2). A Viral Market Update XI: The Flexibility Premium. Retrieved May 16, 2021, from <https://aswathdamodaran.blogspot.com/2020/07/a-viral-market-update-xi-flexibility.html>

## Exhibit 12: Investment Flexibility



Damodaran then analyzed changes in market capitalization based on the ratio of sales to invested capital, which he used as a proxy of reinvestment. His results, found in **Exhibit 13**, show that the companies that are able to generate the most amount of money in relation to invested capital are signaling higher investment flexibility and have done way better than those with lower investment flexibility.

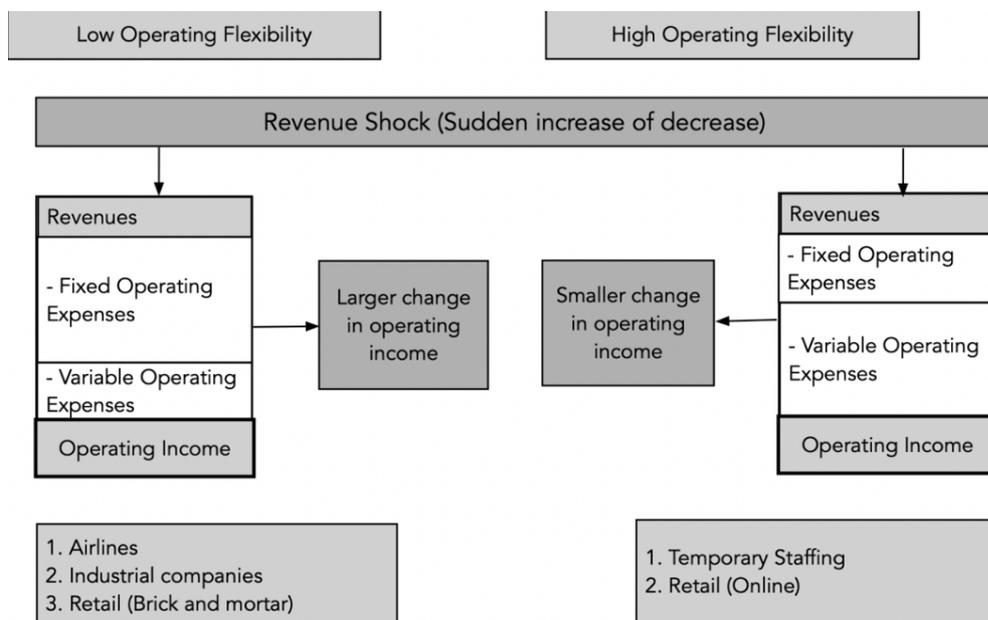
## Exhibit 13: Market Capitalization Change by Sales/Invested Capital. 14/02/20 to 26/06/20

Sales/Invested Capital	Number of firms	Market Cap (\$ millions)			Change in Market Cap (\$ millions)			% Change in Market Cap		
		2/14/20	3/20/20	6/26/20	2/14-3/20	3/20-6/26	2/14-6/26	2/14-3/20	3/20-6/26	2/14-6/26
Lowest	3,411	\$ 2,523,754	\$ 1,622,667	\$ 2,049,723	\$ (901,086)	\$ 427,056	\$ (474,030)	-35.70%	26.32%	-18.78%
2nd decile	3,412	\$ 8,263,640	\$ 5,565,441	\$ 6,732,043	\$ (2,698,199)	\$ 1,166,603	\$ (1,531,597)	-32.65%	20.96%	-18.53%
3rd decile	3,412	\$ 9,811,923	\$ 6,643,479	\$ 8,244,577	\$ (3,168,444)	\$ 1,601,098	\$ (1,567,345)	-32.29%	24.10%	-15.97%
4th decile	3,411	\$ 11,583,438	\$ 8,280,917	\$ 10,379,658	\$ (3,302,521)	\$ 2,098,741	\$ (1,203,780)	-28.51%	25.34%	-10.39%
5th decile	3,412	\$ 10,667,397	\$ 7,693,036	\$ 9,613,456	\$ (2,974,361)	\$ 1,920,420	\$ (1,053,941)	-27.88%	24.96%	-9.88%
6th decile	3,412	\$ 10,826,949	\$ 7,976,816	\$ 10,035,911	\$ (2,850,133)	\$ 2,059,095	\$ (791,039)	-26.32%	25.81%	-7.31%
7th decile	3,411	\$ 8,417,125	\$ 5,810,221	\$ 7,680,201	\$ (2,606,904)	\$ 1,869,980	\$ (736,924)	-30.97%	32.18%	-8.76%
8th decile	3,412	\$ 6,434,071	\$ 4,547,709	\$ 5,949,052	\$ (1,886,362)	\$ 1,401,343	\$ (485,019)	-29.32%	30.81%	-7.54%
9th decile	3,412	\$ 11,292,626	\$ 8,300,143	\$ 11,516,170	\$ (2,992,483)	\$ 3,216,027	\$ 223,544	-26.50%	38.75%	1.98%
Highest	3,412	\$ 5,312,563	\$ 3,863,455	\$ 5,113,297	\$ (1,449,109)	\$ 1,249,842	\$ (199,266)	-27.28%	32.35%	-3.75%

- **Operating Flexibility:** This kind of flexibility measures how unexpected changes in revenues affect a company's operating profitability (**Exhibit 14**). Companies with high fixed costs in relation to revenues will suffer a much drastic impact from sudden

revenue changes, resulting in low operating flexibility. This is the case of airlines and brick and mortar retail companies. On the contrary, companies with lower fixed costs as a percentage of revenues will enjoy a higher operating flexibility, with their operating margins being less affected by unexpected revenue shocks. This is the case of online retail companies, for example.

**Exhibit 14: Operating Flexibility**



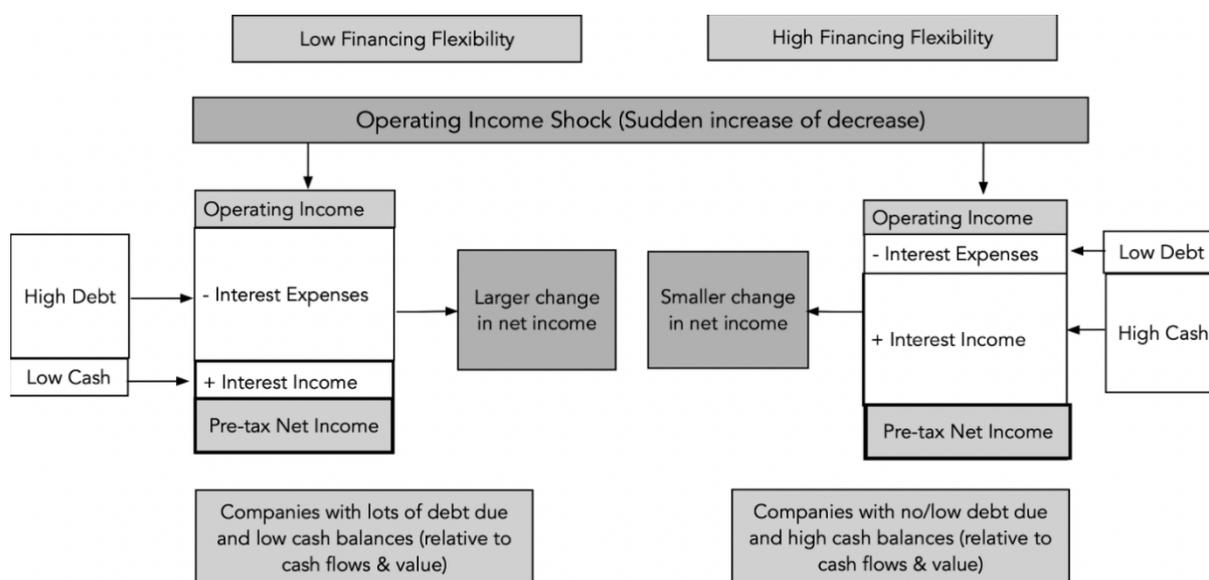
Again, Damodaran’s analysis reveals that companies with higher operating flexibility have fared much better during COVID than those with low operating flexibility.<sup>38</sup>

- **Financing Flexibility:** The third category of flexibility explored is financial flexibility. It measures how much net income is altered by changes in operating income. As seen in **Exhibit 15**, companies with low financial flexibility will see that their net income is

<sup>38</sup> Damodaran, A. (2020, July 2). A Viral Market Update XI: The Flexibility Premium. Retrieved May 16, 2021, from <https://aswathdamodaran.blogspot.com/2020/07/a-viral-market-update-xi-flexibility.html>

much more affected by changes in operating income than companies with high financial flexibility.

### Exhibit 15: Financing Flexibility



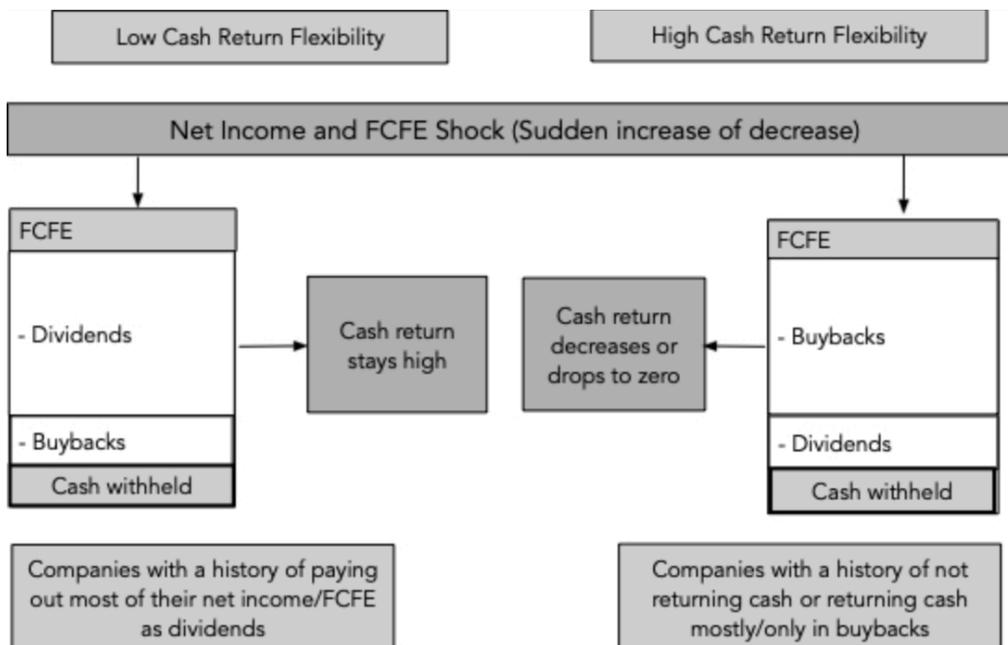
Damodaran took net debt as a percent of cash flows as the main driver of financial flexibility, and thus calculated market cap changes in companies broken down based on their Net Debt to EBITDA (**Exhibit 16**). Unsurprisingly, he found out that companies with low financial flexibility have seen way more damage in terms of value lost than companies with high financial flexibility.

### Exhibit 16: Market Capitalization Change by Debt/EBITDA. 14/02/20 to 26/06/20

Net Debt/EBITDA	Number of firms	Market Cap (\$ millions)			Change in Market Cap (\$ millions)			% Change in Market Cap		
		2/14/20	3/20/20	6/26/20	2/14-3/20	3/20-6/26	2/14-6/26	2/14-3/20	3/20-6/26	2/14-6/26
Lowest	2,570	\$ 2,456,670	\$ 1,948,571	\$ 2,596,965	\$ (508,099)	\$ 648,393	\$ 140,294	-20.68%	33.28%	5.71%
2nd decile	2,571	\$ 5,338,750	\$ 4,114,574	\$ 5,548,943	\$ (1,224,175)	\$ 1,434,368	\$ 210,193	-22.93%	34.86%	3.94%
3rd decile	2,571	\$ 8,110,264	\$ 6,190,323	\$ 8,064,541	\$ (1,919,941)	\$ 1,874,217	\$ (45,723)	-23.67%	30.28%	-0.56%
4th decile	2,571	\$ 7,966,552	\$ 6,160,956	\$ 7,809,514	\$ (1,805,596)	\$ 1,648,558	\$ (157,038)	-22.66%	26.76%	-1.97%
5th decile	2,571	\$12,326,407	\$ 8,956,105	\$11,950,234	\$ (3,370,302)	\$ 2,994,129	\$ (376,173)	-27.34%	33.43%	-3.05%
6th decile	2,570	\$12,003,037	\$ 8,434,403	\$10,573,518	\$ (3,568,634)	\$ 2,139,114	\$ (1,429,520)	-29.73%	25.36%	-11.91%
7th decile	2,571	\$11,246,677	\$ 7,657,198	\$ 9,682,193	\$ (3,589,479)	\$ 2,024,995	\$ (1,564,484)	-31.92%	26.45%	-13.91%
8th decile	2,571	\$ 8,100,285	\$ 5,505,194	\$ 6,928,814	\$ (2,595,091)	\$ 1,423,620	\$ (1,171,471)	-32.04%	25.86%	-14.46%
9th decile	2,571	\$ 6,746,382	\$ 4,259,390	\$ 5,336,247	\$ (2,486,992)	\$ 1,076,856	\$ (1,410,135)	-36.86%	25.28%	-20.90%
Highest	2,571	\$ 2,539,626	\$ 1,669,229	\$ 2,069,990	\$ (870,397)	\$ 400,761	\$ (469,636)	-34.27%	24.01%	-18.49%
Negative EBITDA	11,281	\$13,422,303	\$ 9,111,256	\$11,306,160	\$ (4,311,047)	\$ 2,194,904	\$ (2,116,143)	-32.12%	24.09%	-15.77%

- **Cash Return Flexibility:** Cash return flexibility measures the ability of companies to adjust their cash returns in the face of alterations in cash flows to equity.<sup>39</sup> As such, companies that return less cash in relation to free cash flows to equity have more cash return flexibility than companies accustomed to return a large percentage of their cash flows (**Exhibit 17**). As previously analyzed in this work, companies with low or no dividends (high cash return flexibility) have done much better than companies with high dividend yields (low cash return flexibility).

**Exhibit 17: Cash Return Flexibility**



Given the above analysis and results, it is fair to conclude that more flexible companies have seen much better performance throughout COVID than less flexible companies.

<sup>39</sup> Damodaran, A. (2020, July 2). A Viral Market Update XI: The Flexibility Premium. Retrieved May 16, 2021, from <https://aswathdamodaran.blogspot.com/2020/07/a-viral-market-update-xi-flexibility.html>

The evaluation of prior research on the topic presented in this section sheds light into the study to be performed in the next section. The literature about prior recessions tells us that by finding the balance between cutting costs and making offensive moves, deleveraging before and during a downturn, decentralizing decision making during the crisis, looking beyond layoffs, and investing in technology, companies have not only survived but gotten ahead in turbulent times.

The work of Damodaran has revealed how the cluster of growth, profitability and reinvestment, alongside debt and flexibility, were key factors in determining business performance throughout the first few months after the COVID outbreak. Also, we have seen how the pandemic has favored younger companies over their older counterparts, and growth companies over value companies. Overall, a solid foundation has been established for the next section of the work, in which I test my hypothesis through a field study.

### 3. RESEARCH

#### 3.1. OVERVIEW

With the foundations presented in the introduction and framework sections in mind, this third section focuses on the field study in which I test my hypothesis. As stated at the beginning of these pages, the overarching goal of this work is to identify which factors have determined business performance throughout COVID, and which will determine performance in a post-COVID worlds of uncertainty and constant change. The idea is to find factors that have played a key role in shaping business performance during the unprecedented crisis that COVID has been and continue to be.

The analysis has been carried out following a deductive approach, in which I have worked from a hypothesis, gathered quantitative data, and analyzed whether or not my hypothesis was verified by said data. As presented in the first section, I have tested the following hypothesis: in a COVID and post-COVID era, the main factors that determine business performance are growth, profitability, reinvestment, debt, and flexibility. The selection of this hypothesis has been influenced by the work of Aswath Damodaran, specifically by his series of posts analyzing the COVID crisis, which have been reviewed in-depth in the framework section.

The analysis has been applied in detail to three companies: American Airlines, Amazon, and Zoom. They pertain to the air transport sector, online retail sector, and internet software sector, respectively. The rationale for choosing these companies is that existing research shows that their industries have been among those most impacted by COVID. Of course, the impact for online retail and internet software companies has been positive, whereas the effect on the air transport industry has been negative.

On top of analyzing the three companies in-depth, a broad industry analysis will be performed, trying to test the hypothesis at a sector level. In the pages that follow I describe clearly how each factor is defined, and how I have measured it.

### **3.2. VARIABLES ANALYZED**

Concepts such as growth, profitability or flexibility can have many different meanings. The following paragraphs have the objective of clarifying exactly what is meant by each factor, and, most importantly, explaining how each factor has been measured.

- **Growth:** For the sake of this work, I have defined growth as the rate at which companies increase their size. This factor has been measured by looking at Revenue Growth. Revenue growth is the percentage change in revenues from one period to the next. It comes either from selling more or from increasing prices. Many other metrics could have been used, such as operating income growth, net income growth, or earnings per share growth. However, revenue growth is a broader metric and encapsulates the concept of growth as a scaling factor fittingly. The hypothesis is that companies with higher historic levels of revenue growth have seen their stock price perform better throughout the pandemic than companies with lower levels of revenue growth.
- **Profitability:** Profitability is the degree by which the firm is able to capture the value generated through its business activity. Again, there are many different measures of profit margins. For my analysis, I have decided to look at three different profit margin metrics: Operating Margin, EBITDA Margin, and Net Margin. The operating margin measures the percentage of revenues left once all operating expenses of the company,

including SG&A and any others, have been accounted for. It is calculated by taking the operating income and dividing it by revenues.

The EBITDA margin is another common profitability metric. It is highly used as it puts emphasis on the companies' cash flows and operating profitability. It is often used to compare the performance of companies within the same industry. It is calculated by taking EBITDA and dividing it by sales.

Lastly, the net margin measures what is left after subtracting all expenses, as a percentage of revenues. It represents the amount of profit that is available to equity holders per dollar of revenues. It is calculated by dividing net profit by sales. Again, the argument is that companies with higher profit margins, be it Operating, EBITDA, or Net, have performed better throughout COVID in terms of market capitalization change than those with tighter profit margins.

- **Reinvestment Efficiency:** Reinvestment efficiency is a concept that can be interpreted in wider ways than the previous two concepts. It simply measures how much capital is reinvested in relation to sales or to operating income.<sup>40</sup> The metric that I have employed is Sales to Invested Capital, with Invested Capital being the result of the following equation:

$$\begin{aligned} \text{Invested Capital} = & (\text{CapEx} - \text{Depreciation and Amortization}) + \\ & \text{Change in noncash Working Capital} + \text{Acquisitions} + \\ & (\text{R\&D Expenses} - \text{Amortization of R\&D}) \end{aligned}$$

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<sup>40</sup> Damodaran, A. (2020, March 21). Data Update 6 for 2020: Profitability, Returns and the value of Growth. Retrieved May 15, 2021, from <https://aswathdamodaran.blogspot.com/2020/03/data-update-6-for-2020-profitability.html>

Thus, Sales to Invested Capital is calculated by dividing the revenues of a period by the invested capital of the prior period. In this case, the argument is that companies that have been able to generate higher levels of revenues compares to the capital they have invested, have performed better during the pandemic than those with lower reinvestment efficiency.

- **Debt:** Debt is, perhaps, the most straightforward factor of the five being analyzed. For the sake of this work, I have taken into account all interest-bearing debt and lease commitments. In order to calculate the overall debt situation of each company, I have measured three metrics: Debt to Capital, Debt to EBITDA, and Interest Coverage Ratio.

Debt to Capital measures how much debt a company has as a percentage of its capital, which can be expressed either in market values or book values. It is calculated by dividing the debt by the sum of the book value of debt plus the market or book value of equity.

Debt to EBITDA measures the capacity a company has to repay its debt. In other words, it measures how much debt the company has in relation to its operating cash flow. It is one of the most common debt measures and is often used as a proxy for leverage. It is calculated by taking the total debt of the company and dividing it by EBITDA.

The Interest Coverage Ratio measures the ability a company has to pay the existing interest generated by its debt. It is calculated by dividing the EBIT by the Interest Expenses of the company.

In this case, the argument is that the higher the Debt to Capital and Debt to EBITDA are, the riskier is the company's level of debt, and thus, the poorer its performance throughout COVID. The Interest Coverage Ratio works the other way around, with higher levels being beneficial, and lower levels contributing to excessive leverage.

- **Flexibility:** In a business context, flexibility can be defined as the ability of a firm to respond and adapt to sudden changes. This definition, however, is very broad, and necessitates a further classification. Following the work of Damodaran, I have split the flexibility factor into four categories: *Investment Flexibility*, *Operating Flexibility*, *Financing Flexibility*, and *Cash Return Flexibility*.

As explained in the Framework section, *Investment Flexibility* measures the amount of capital a company needs to reinvest in order to achieve a specified growth rate. It is inherently tied to the Reinvestment Efficiency factor discussed above. Companies with high reinvestment efficiency can also be said to have a higher degree of investment flexibility. For this reason, the metric I have used to measure this variable is also the Sales to Invested Capital ratio.

*Operating Flexibility* measures how much is the operating profitability of a company affected by sudden shocks in revenue. Companies with high levels of fixed costs in comparison with variable costs have higher degrees of operating leverage than companies with lower levels of fixed costs compared to variable costs. High operating leverage thus results in low operating flexibility. I tried to measure operating leverage, however, due to the difficulty in extracting reliable data on fixed and variable costs, I chose gross profit margins as the metric measures. The rationale behind said choice is

that companies with higher gross margins will have more cushion, and thus, more flexibility, upon sudden revenue shocks.

*Financing Flexibility* measures the extent of change in the net income of a company given changes in operating income. For example, take two imaginary companies, Company A and Company B. Imagine they both experience a sudden decrease in operating income. Company A has high levels of debt and low cash, and consequently high interest expenses and low interest income. Company B, on the other hand, has low debt and high cash, and therefore lower interest expenses and higher interest income. Due to the higher net interest expenses, Company A will experience a larger decrease in its net income than Company B, whilst they both suffered the same decrease in Operating Income. For the sake of this work, I have chosen Net Debt to EBITDA as the main metric to measure the financial flexibility of a business.

Lastly, as discussed in the Framework section, *Cash Return Flexibility* measures the amount of cash that is withheld rather than returned to investors. Companies that tend to return most of the cash they generate via dividends have a lower cash return flexibility than companies that tend to withhold most of the cash they generate. In order to measure this factor, I have selected the payout ratio, which shows the amount of earnings that a company is returning to their shareholders as dividends.

The overall argument with this factor is that companies with higher degrees of flexibility, be it investment, operating, financing, or cash return, have performed better during COVID than companies with lower degrees of flexibility.

In order to extract the data described above, I have primarily utilized the Bloomberg Terminal. Additionally, I have looked at 10-K annual reports and 10-Q quarterly reports of the analyzed companies in order to find data that was unavailable on Bloomberg.

### 3.3. COMPANY OVERVIEW & PANDEMIC PERFORMANCE

**Exhibit 18: AAL, AMZN, ZM – 2020 Performance**

	Revenue Change YoY (%)	Net Income Change YoY (%)	Stock Price Change
<b>AAL</b>	-62%	-627%	-15%
<b>AMZN</b>	38%	84%	72%
<b>ZM</b>	326%	3000%	391%

*Source: Bloomberg Finance L.P.*

#### - American Airlines

The first company I have chosen to analyze is American Airlines Group Inc (“American Airlines” or “AAL”). American Airlines was founded in 1929 by Sherman Fairchild as the Aviation Corporation. The company was renamed to American Airlines after E.L. Cord took over.<sup>41</sup>

The company is one of the biggest airlines in the entire world. It provides scheduled air transportation services of various kinds including passenger, freight, and mail. It operates worldwide with North America, the Caribbean, Latin America, Europe and the Pacific being its main areas of functioning. Almost 7,000 flights are operated every single day around 50

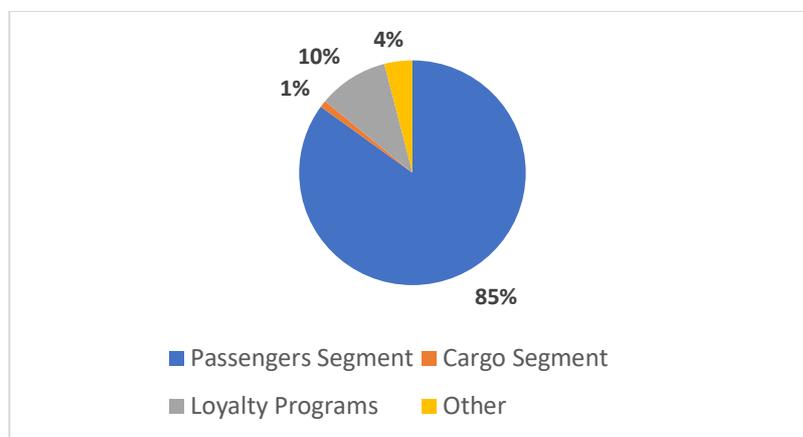
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<sup>41</sup> Bloomberg L.P. (2021). Company Description for American Airlines Group Inc. Retrieved May 27, 2021 from Bloomberg database

different countries. Its fleet is comprised of around 850 mainline aircrafts and 540 regional aircrafts.<sup>42</sup>

Most of its sales (85%) come from its passenger segment, as can be seen in **Exhibit 19**, with the US accounting for the majority of sales overall. The company has a market cap of \$15.67 billion and has over 100,000 employees.

**Exhibit 19: Sales Distribution per Segment**



*Source: Bloomberg Data*

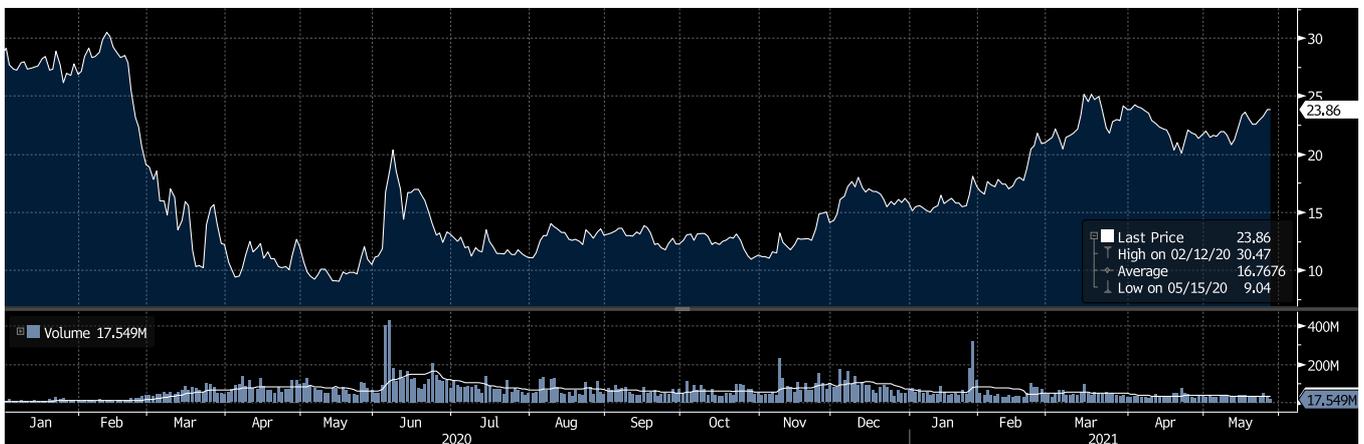
As the vast majority of airlines, the company suffered a gigantic hit as a result of the COVID pandemic. As per Bloomberg Data, 2020 revenues decreased 62% YoY to \$17.3 billion. The restrictions on air transport established by governments worldwide made passenger revenue plunge by 65.4%, with cargo revenue holding the line with a revenue decrease of just 11%. The company declared a net loss of \$8.9 billion for 2020.

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<sup>42</sup> Bloomberg L.P. (2021). Company Description for American Airlines Group Inc. Retrieved May 27, 2021 from Bloomberg database

American Airlines stock price took a massive blow, non-surprisingly, in 2020. The stock plummeted from \$30.47 on February 12, 2020 to \$9.04 on March 15<sup>th</sup>, 2020. This meant a 70.3% decline in just a month. The stock spent months hovering around the \$13 level, before closing the year at \$15.77, down 45.8% on the year. Thanks to the recent ease on air travel restrictions, the stock price has been recovering, standing at \$24.27 on May 27<sup>th</sup>, 2021 (**Exhibit 20**).

**Exhibit 20: American Airlines Stock Price – 01/01/20 to 27/05/21**



*Source: Bloomberg Finance L.P.*

If we compare AAL’s performance to the performance of the market, we find that the company has significantly underperformed during the period ranging from January 1<sup>st</sup>, 2020 to May 27<sup>th</sup>, 2021. As seen in **Exhibit 21**, AAL’s stock has experienced a -15.50% drop, whereas the S&P500 has gained a 29.99%, and the S5INDU Index (an S&P500 Industrial Sector Composite) has appreciated by 29.19%. It is clear, then, that American Airlines has had a poorer performance throughout the pandemic than most companies in the S&P500 index.

## Exhibit 21: AAL vs S&P500 vs S5INDU – 01/01/20 to 27/05/21



Source: Bloomberg Finance L.P.

### - Amazon

Amazon.com, Inc. is the global leader in the online retail shopping services space. Founded in 1994 by Jeff Bezos, the company went public in 1997. Amazon has three primary business segments: North America, International, and Amazon Web Services. Both the North American and International segments focus on retail sales of consumer products and subscriptions. AWS provides cloud, storage, and database services for various institutions.<sup>43</sup> Additionally, the company delivers advertising and content-streaming services. Amazon is the fourth largest company in the world, with a colossal \$1.63 trillion in market capitalization. It has over 1,000,000 employees worldwide.

In 2020, Amazon saw a 38% surge in revenues compared to 2019, reaching \$386.1 billion. This significant revenue increase paved the way for a net income of \$21.3 billion, an 83.6%

<sup>43</sup> Amazon (AMZN). (n.d.). Retrieved May 27, 2021, from <https://www.forbes.com/companies/amazon/?sh=7845ec906fb8>

jump compared to 2019. In terms of cash, the company increased its cash held to \$42.4 billion at the end of 2020.<sup>44</sup>

Amazon's stock, as was the case with many online retailers, saw a significant value appreciation during 2020. There was an initial drawdown following the outbreak of the pandemic, with the stock price decreasing from \$2,170.22 on February 19<sup>th</sup>, 2020 to \$1676.61 on March 12<sup>th</sup>, 2020, a 22.7% correction. However, the stock recovered and rallied to close the year at \$3256.93, a 94.2% since February's low and 71.6% up on the year.<sup>45</sup>

**Exhibit 22: Amazon Stock Price – 01/01/20 to 28/05/21**



Source: Bloomberg Finance L.P.

As opposed to American Airlines, Amazon has outperformed the stock market since the beginning of the COVID pandemic. In **Exhibit 23**, we can see Amazon's stock price compared to the S&P500 index, the S5COND Index (S&P500's Consumer Discretionary Index) and the Nasdaq Composite. Amazon's 74.52% rise beats all indices, with NASDAQ's 53.65% growth coming the closest.

<sup>44</sup> Bloomberg L.P. (2021). Company Description for Amazon.com, Inc. Retrieved May 28, 2021 from Bloomberg database

<sup>45</sup> Bloomberg Finance L.P.

### Exhibit 23: AMZN vs Main Indices – 01/01/20 to 28/05/21



Source: Bloomberg Finance L.P.

#### - Zoom

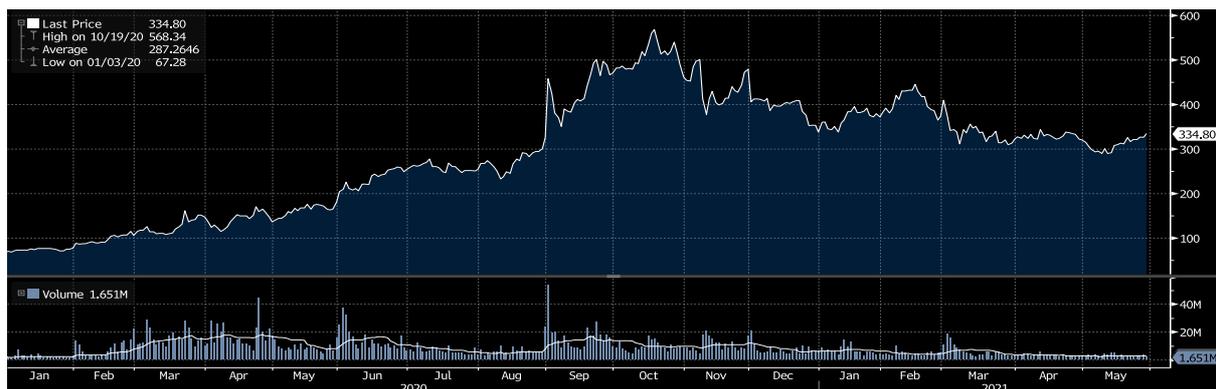
The last company I have performed a detailed analysis in is Zoom Video Communications, Inc (“Zoom”). Zoom is a video communication platform founded by Eric S. Yuan in 2011. Headquartered in San Jose, California, the company offers a range of IT software services, including video conferencing, online meetings, and group messaging, among others.<sup>46</sup> Companies from all sectors employ Zoom’s solutions, with education, finance, and government among the most active. As of May 27<sup>th</sup>, 2021, Zoom has a market cap of \$96.9 billions and employs over 4,400 people.

<sup>46</sup> ZM.O - Zoom Video Communications Inc Profile. (n.d.). Retrieved May 27, 2021, from <https://www.reuters.com/companies/ZM.O>

As has been the case for many internet software companies, Zoom has experienced a strong sales growth throughout 2020. Zoom’s revenues for FY2020 reached a staggering \$2.65 billion, a 325.8% increase over the previous year. The company closed 2020 with a net income of \$678.9 million, over 31 times over 2019 levels.<sup>47</sup>

During 2020, Zoom’s stock saw a massive bull rally, surging from \$68.72 at the beginning of the year, to \$337.32 on December 31<sup>st</sup>, 2020, a 391% appreciation. As seen on **Exhibit 24**, the stock reached a peak of \$568.34 on October 19<sup>th</sup>, 2020. During the first half of 2021, the stock stabilized around the \$300-\$400 range, sitting at \$333.12 as of May 28<sup>th</sup>, 2021.

**Exhibit 24: Zoom Stock Price – 01/01/20 to 28/05/21**



Source: Bloomberg Finance L.P.

Once again, comparing the performance of Zoom’s stock with main indices we can see that Zoom has had a remarkable performance. **Exhibit 25** shows the performance of Zoom, the S&P500, the Russell 1000 index (an index representing the 1000 largest U.S. companies by market cap) and the Russell 1000 Technology index (an index measuring the performance of IT, telecommunications, and software companies).

<sup>47</sup> Bloomberg Finance L.P.

We can see how Zoom has outperformed the broad stock market, with a price increase of almost 400% from the beginning of 2020 to May 2021, versus an increase of 32.83% and 30.41% in the Russell 1000 and S&P500, respectively. Furthermore, Zoom has significantly outperformed other companies within the technology sector, as can be seen from the difference between Zoom’s 400% rally versus the 59.19% of the Russell 1000 Technology Index.

**Exhibit 25: ZM vs Main Indices – 01/01/20 to 28/05/21**



Source: Bloomberg Finance L.P.

Having provided a brief overview of each of the three companies, along with an evaluation of their performance throughout the pandemic, it is clear that American Airlines has suffered the impact of the pandemic the most, underperforming the market as a whole. On the other hand, Amazon, and especially, Zoom, have had a brilliant year, significantly growing in terms of revenues and profit. Furthermore, their respective stocks have surged considerably, outperforming the main market indices by an ample amount. In the next few pages, I have tried

to analyze whether or not the factors of growth, profitability, reinvestment efficiency, debt, and flexibility have played a role in such dissimilar performances.

### 3.4. QUANTITATIVE ANALYSIS

The quantitative analysis that follows in the next pages attempts to validate the hypothesis that a strong track record of growth, healthy profitability levels, efficient reinvestment and overall flexibility have contributed positively to the performance of companies throughout COVID. Similarly, the argument that high levels of debt has been damaging has been tested. Instead of analyzing the companies separately, I have grouped the analysis by factors. However, I first present some tables summarizing the results per company.

**Exhibit 26: AAL Summary of Results**

<b>AAL</b>					
<b>Factor</b>	<b>Metric</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<i>Growth</i>	<b>Revenue Growth</b>	6.1%	4.5%	2.8%	-62.1%
<i>Profitability</i>	<b>Operating Margin</b>	11.4%	7.7%	8.1%	-65.7%
	<b>EBITDA Margin</b>	14.7%	15.1%	16.2%	-35.2%
	<b>Net Margin</b>	4.5%	3.2%	3.7%	-51.2%
<i>Reinvestment Efficiency and Investment Flexibility</i>	<b>Sales to Invested Capital</b>	7.3x	5.1x	5.8x	-30.4x
<i>Debt Burden &amp; Financing Flexibility</i>	<b>Total Debt to Capital</b>	50.3%	69.7%	73.1%	80.7%
	<b>Net Debt to EBITDA</b>	3.2x	4.4x	4.0x	-
	<b>Interest Coverage Ratio</b>	4.0x	2.5x	2.8x	-8.5x
<i>Operating Flexibility</i>	<b>Gross Margin</b>	28.3%	24.7%	25%	-42.2%
<i>Cash Return Flexibility</i>	<b>Payout Ratio</b>	15.4%	13.2%	10.6%	-

Source: Bloomberg Finance L.P.

**Exhibit 27: AMZN Summary of Results**

<b>AMZN</b>					
<b>Factor</b>	<b>Metric</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<i>Growth</i>	<b>Revenue Growth</b>	30.80%	30.93%	20.45%	37.62%
<i>Profitability</i>	<b>Operating Margin</b>	2.31%	5.33%	5.18%	5.93%
	<b>EBITDA Margin</b>	8.76%	11.92%	14.26%	13.77%
	<b>Net Margin</b>	1.71%	4.33%	4.13%	5.53%
<i>Reinvestment Efficiency and Investment Flexibility</i>	<b>Sales to Invested Capital</b>	6.5x	13.5x	11.1x	14.1x
<i>Debt Burden &amp; Financing Flexibility</i>	<b>Total Debt to Capital</b>	7.24%	6.26%	7.77%	5.78%
	<b>Net Debt to EBITDA</b>	0.84x	0.29x	0.56x	0.30x
	<b>Interest Coverage Ratio</b>	4.84x	8.77x	9.09x	13.90x
<i>Operating Flexibility</i>	<b>Gross Margin</b>	37%	40%	41%	40%
<i>Cash Return Flexibility</i>	<b>Payout Ratio</b>	-	-	-	-

*Source: Bloomberg Finance L.P.*

**Exhibit 28: ZM Summary of Results**

<b>ZM</b>					
<b>Factor</b>	<b>Metric</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<i>Growth</i>	<b>Revenue Growth</b>	149.18%	118.15%	88.41%	325.79%
<i>Profitability</i>	<b>Operating Margin</b>	-3.17%	1.88%	2.04%	25.24%
	<b>EBITDA Margin</b>	-1.32%	3.99%	6.23%	26.87%
	<b>Net Margin</b>	-5.41%	0.00%	3.50%	25.61%
<i>Reinvestment Efficiency and Investment Flexibility</i>	<b>Sales to Invested Capital</b>	-	0.0x	4.1x	27.7x
<i>Debt Burden &amp; Financing Flexibility</i>	<b>Total Debt to Capital</b>	-	-	0.34%	0.10%
	<b>Net Debt to EBITDA</b>	-	-	-	-
	<b>Interest Coverage Ratio</b>	-	-	-	-
<i>Operating Flexibility</i>	<b>Gross Margin</b>	80%	82%	82%	69%
<i>Cash Return Flexibility</i>	<b>Payout Ratio</b>	-	-	-	-

*Source: Bloomberg Finance L.P.*

## - Growth

As previously stated, I have chosen to revenue growth as the main metric in this category. In order to calculate revenue growth, I extracted revenue figures for the last 5 years for each company from Bloomberg Data. **Exhibit 29** provides a comparison between the three companies.

**Exhibit 29: Revenue Growth Comparison**

Revenue Growth	2016	2017	2018	2019	2020
<b>AAL</b>	-1.98%	6.08%	4.50%	2.75%	-62.12%
<b>AMZN</b>	27.08%	30.80%	30.93%	20.45%	37.62%
<b>ZM</b>	N/A	149.18%	118.15%	88.41%	325.79%

*Source: Bloomberg Finance L.P.*

American Airline's revenue growth has been stagnant during the last 5 years, with revenues growing very little year on year, before completely plummeting in 2020 as a result of COVID. Amazon has seen a very steady revenue growth every year, always around the 30% mark, with 2020 being its year with most growth in sales at 37.62%. Lastly, Zoom has experienced tremendous revenue growth levels in the last few years, more than duplicating its sales every year before a 325.79% jump in 2020.

Out of the three studied companies, American Airlines was the one with the poorest revenue growth numbers in recent years. It is also the company with the poorest performance throughout the pandemic, both in terms of business results and of stock price change. Amazon and, especially, Zoom, have experienced outstanding revenue growth during the years prior to the pandemic. Likewise, they have performed exceptionally during the pandemic.

The findings from the three companies, point to the direction that growth, measured in this case through revenue growth, has indeed been a factor in determining business performance

throughout COVID. As has been seen, companies with stronger levels of revenue growth over previous years have been able to endure the pandemic much better than companies with lower growth levels.

### - Profitability

In order to assess the profitability levels of the companies studied, I have extracted data to calculate three metrics: Operating Margin, EBITDA Margin, and Net Margin. **Exhibit 30** shows the margins for the three companies during the past five years, whereas **Exhibits 31, 32,** and **33** detail the profitability per company.

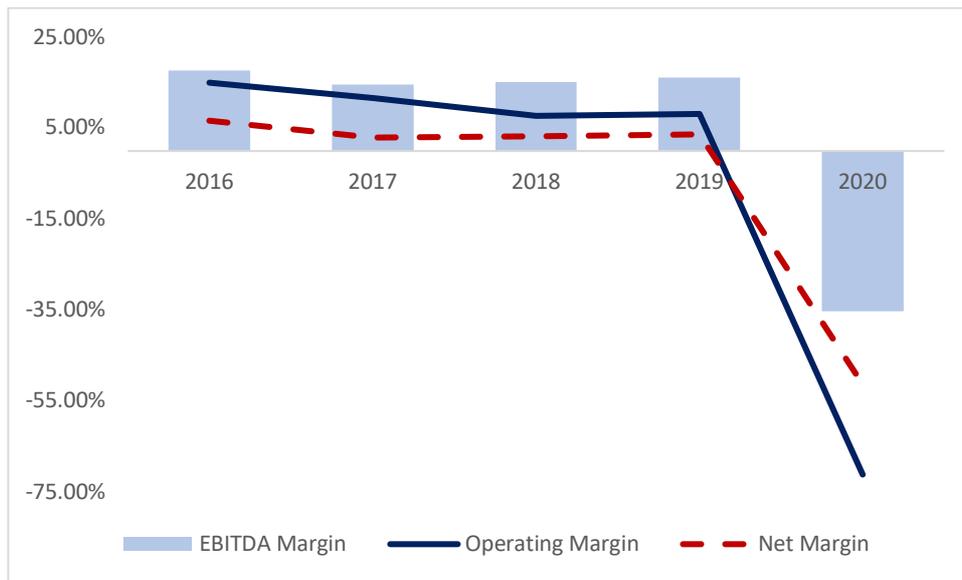
**Exhibit 30: Profitability Margins for AAL, AMZN, and ZM – 2016 to 2020**

Profitability		2016	2017	2018	2019	2020
AAL	Operating Margin	15.01%	11.65%	7.73%	8.10%	-71.07%
	EBITDA Margin	17.68%	14.66%	15.09%	16.19%	-35.15%
	Net Margin	6.66%	3.01%	3.17%	3.68%	-51.25%
AMZN	Operating Margin	3.08%	2.31%	5.33%	5.18%	5.93%
	EBITDA Margin	9.05%	8.76%	11.92%	14.26%	13.77%
	Net Margin	1.74%	1.71%	4.33%	4.13%	5.53%
ZM	Operating Margin	0.00%	-3.17%	1.88%	2.04%	25.24%
	EBITDA Margin	0.00%	-1.32%	3.99%	6.23%	26.87%
	Net Margin	0.00%	-5.41%	0.00%	3.50%	25.61%

*Source: Bloomberg Finance L.P.*

We can see how American Airlines has maintained a steady EBITDA margin around 15% from 2016 to 2019, while both operating margin and net margin decreasing slightly over the same period. American Airlines has seen its profitability margins shrink, with the Operating and Net Margins decreasing by almost 50% from 2016-2019.

**Exhibit 31: AAL Profitability Margins – 2016 to 2020**



*Source: Bloomberg Finance L.P.*

Amazon has experienced a firm growth of its profitability levels. Despite not being anything spectacular, the company was able to sustain these levels through the pandemic, even improving profitability.

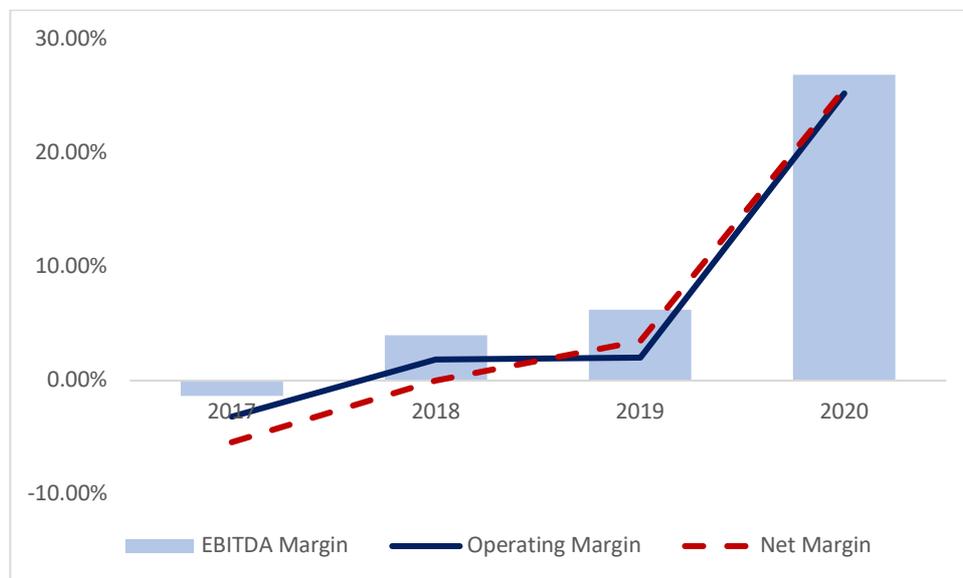
**Exhibit 32: AMZN Profitability Margins – 2016 to 2020**



*Source: Bloomberg Finance L.P.*

The case of Zoom is different. With a lifespan of only 10 years, the high-growing company just turned profitable in 2018. Its margins improved in 2018 and 2019, before taking off in 2020.

**Exhibit 33: ZM Profitability Margins – 2016 to 2020**



*Source: Bloomberg Finance L.P.*

The results from the profitability analysis are somewhat inconclusive. The data doesn't imply that companies with traditionally larger profitability margins have had an edge during the pandemic over those with tighter margins.

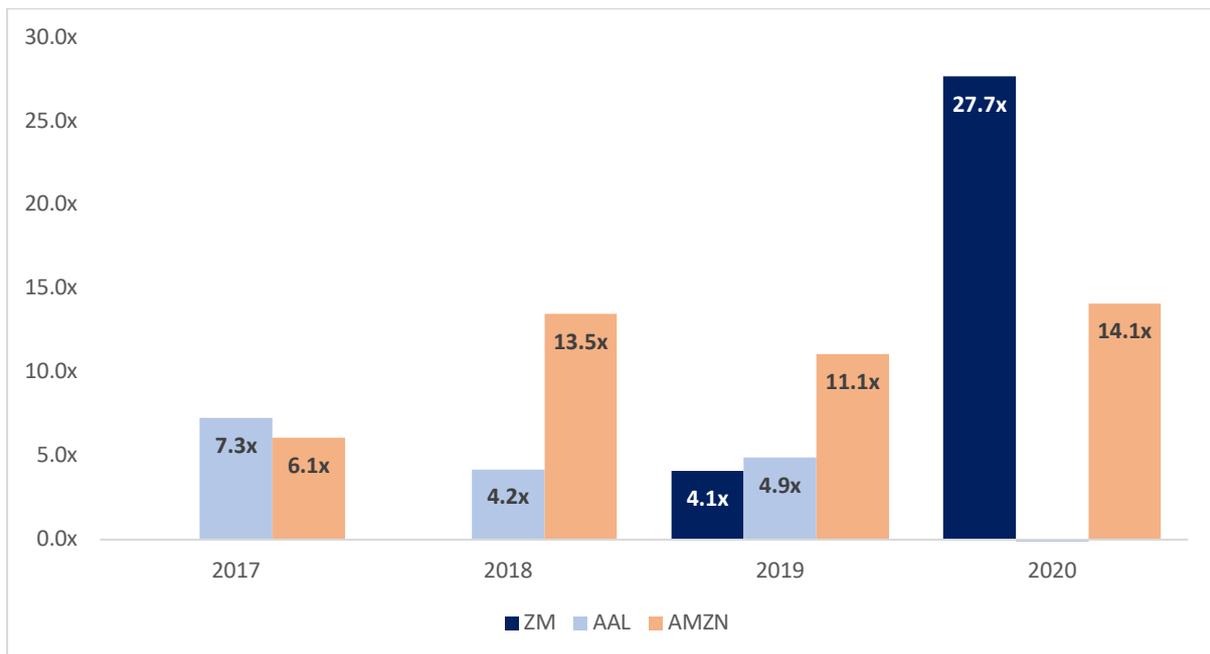
#### - **Reinvestment Efficiency**

In order to measure reinvestment efficiency, I divided the sales of each year by the invested capital of the previous year. There is variation amongst analyst when selecting what is included as part of invested capital. In this work, I calculated invested capital by subtracting depreciation and amortization to CAPEX, adding changes in non-cash working capital, adding acquisition

expenses, and adding R&D expenses. As per my hypothesis, the companies with the most efficient reinvestment have performed better throughout COVID.

Looking at the numbers (**Exhibit 34**) we can see that Amazon has had a pretty strong and steady reinvestment efficiency, generating around 10 times what they re-invest in sales. Zoom also has had a solid reinvestment efficiency, with the ratio peaking in 2020, meaning that the company was able to generate a lot more sales in 2020 based on 2019 reinvestments compared to previous years. American Airlines has also reinvested efficiently in prior years. The airline saw a dramatic decrease in sales in 2020, sending the sales to invested capital ratio to its lowest level in years.

**Exhibit 34: Sales to Invested Capital – 2017 to 2020**



*Source: Bloomberg Finance L.P*

The results for the three companies are not enough to arrive at a conclusion. However, it is logical that companies that require large investment outlays and longer periods of time before

seeing returns in their investment are more prone to suffer during recessions than companies who can grow with smaller investments that take less to pay off.

- **Debt**

**Exhibit 35** shows the debt levels of the three companies as measured by their Total Debt to Capital, Net Debt to EBITDA, and the Interest Coverage Ratio.

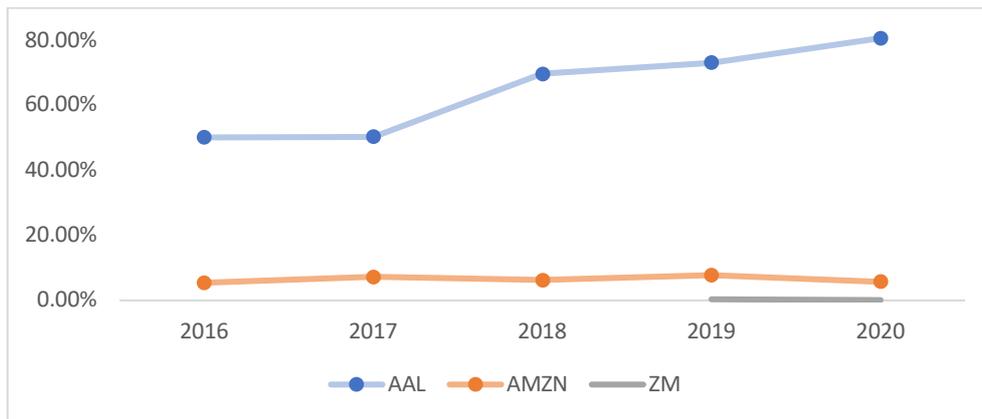
**Exhibit 35: Debt Metrics – 2016 to 2020**

Debt		2016	2017	2018	2019	2020
AAL	Total Debt to Capital	50.16%	50.33%	69.70%	73.14%	80.72%
	Net Debt to EBITDA	2.53x	3.20x	4.35x	4.00x	-
	Interest Coverage Ratio	5.33x	4.02x	2.52x	2.80x	-8.49x
AMZN	Total Debt to Capital	5.43%	7.24%	6.26%	7.77%	5.78%
	Net Debt to EBITDA	-0.45x	0.84x	0.29x	0.56x	0.30x
	Interest Coverage Ratio	8.65x	4.84x	8.77x	9.09x	13.90x
ZM	Total Debt to Capital	-	-	-	0.3%	0.1%
	Net Debt to EBITDA	-	-	-	-	-
	Interest Coverage Ratio	-	-	-	-	-

*Source: Bloomberg Finance L.P.*

Looking first at the Total Debt to Capital Ratio, we can see how AAL has a high amount of debt compared to the total capital of the business. For the 5 years, debt comprised at least half of the total capital of AAL, increasing in 2018 and 2019 and peaking in 2020. This is not surprising, as airlines necessitate large amounts of non-current assets to develop their activity. Amazon has maintained a very low level of debt to capital, never going above 8% during the past five years. Zoom is even less leveraged than that, as it did not even have any debt until 2019, and the debt it has is absolutely insignificant compared to its capital.

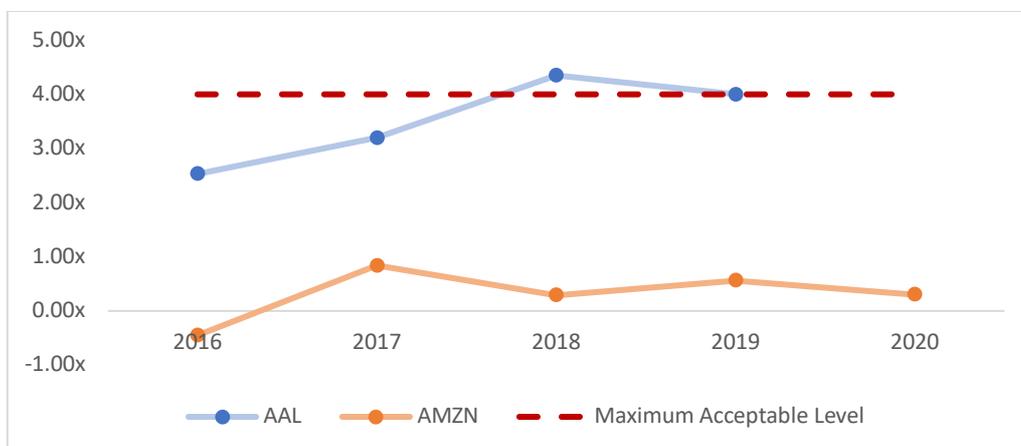
**Exhibit 36: Total Debt to Capital – 2016 to 2020**



Source: Bloomberg Finance L.P.

It is common among investors and financial analysts to favor a Net Debt to EBITDA level below 4x, although it does vary from industry to industry. As seen in **Exhibit 37** AAL had dangerous levels of debt in relation to EBITDA during the years before COVID, going above the 4x mark in 2018. Data for 2020 is not shown for AAL, as it had a negative EBITDA. Amazon, on the other hand has maintained very low levels of debt to EBITDA, never going above 1x. Zoom is not featured in the graph altogether, as its net debt was negative in 2019 and 2020, meaning that it had more cash than debt for those years.

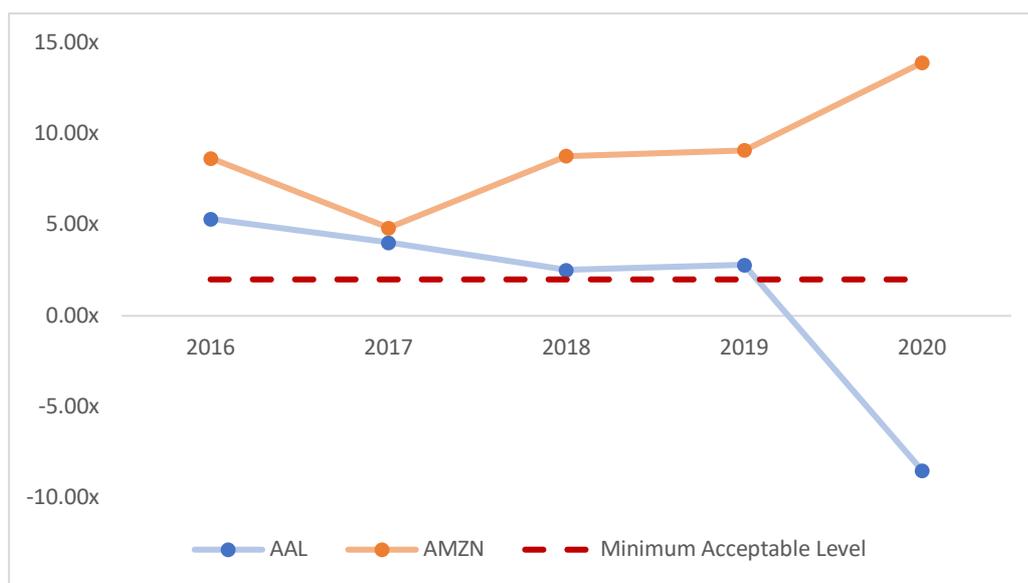
**Exhibit 37: Net Debt to EBITDA – 2016 to 2020**



Source: Bloomberg Finance L.P.

The last metric, the Interest Coverage Ratio, was very revealing. Again, it varies within industries, but investors prefer to never see this ratio below 3x, with 2x considered the minimum acceptable.<sup>48</sup> AAL's interest coverage ratio fell below 3x in 2018 and plummeted in 2020 as a result of its negative EBIT. Amazon, contrarily, always maintained its ratio above 5x, with it normally being in the 10x range. Once again, Zoom was not included in the graph as it didn't have interest expenses whatsoever from 2016-2018, and its interest expenses was positive for 2019 and 2020, meaning that the company earned more interests than it paid during those two years.

**Exhibit 38: Interest Coverage Ratio – 2016 to 2020**



*Source: Bloomberg Finance L.P.*

Looking at the three metrics together, AAL's high debt to capital, high debt to EBITDA, and low interest coverage ratio, meant that the company had a significant debt burden overall, and

<sup>48</sup> Maverick, J. (2021, May 19). What Is a Good Interest Coverage Ratio? Retrieved June 6, 2021, from [https://www.investopedia.com/ask/answers/121814/what-good-interest-coverage-ratio.asp#:~:text=Generally,an interest coverage ratio,three \(3\) or better.](https://www.investopedia.com/ask/answers/121814/what-good-interest-coverage-ratio.asp#:~:text=Generally,an interest coverage ratio,three (3) or better.)

was highly exposed to distress because of its leverage. Amazon's low debt to capital, low debt to EBITDA, and high interest coverage ratio meant that the company was in very little danger of distress because of its debt. Lastly, Zoom was not even exposed to debt risk at all, because it didn't even have debt for various years and in 2019 and 2020 its debt levels were minimal. Coincidentally, AAL, the company with the highest debt burden, was the one who performed the worst during the COVID crisis, whereas the other two companies, with very little potential danger from debt, performed wonderfully.

Given the results obtained from the analysis of the three companies, we can say that debt has negatively impacted the performance of companies during the pandemic, with those most levered being more exposed to potential distress, and those least levered being better able to survive the recession.

#### - **Investment Flexibility**

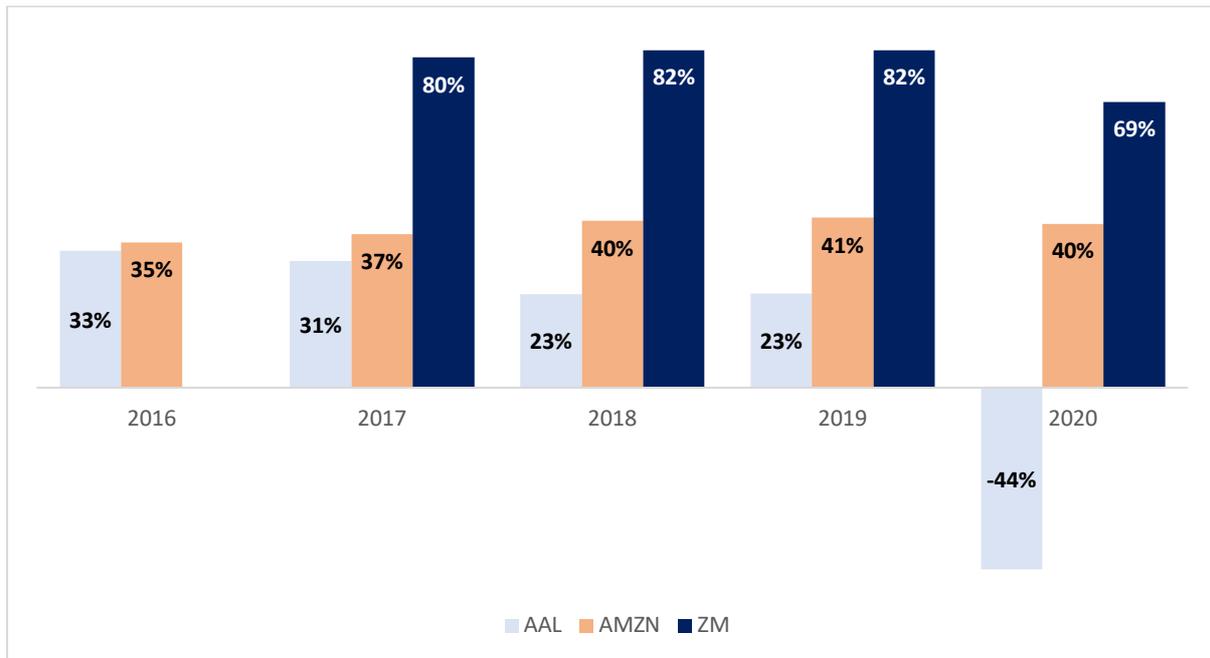
Having analyzed the factors of growth, profitability, reinvestment, and debt, the next paragraphs focus on flexibility. The first type of flexibility analyzed is investment flexibility. This measure is highly correlated with reinvestment efficiency, as companies that need smaller and fewer investment outlays to generate sales have more investment flexibility than those which need frequent and large investments to operate. The metric I have chosen to measure investment flexibility is sales to invested capital. Since that analysis has already been covered in the reinvestment efficiency factor, the conclusions are the same here.

#### - **Operating Flexibility**

The second type of flexibility analyzed is operating flexibility. The argument in this case is that companies with higher gross margins will be able to deal with sudden changes in revenue

better, and thus, have higher operating flexibility. **Exhibit 39** shows the gross margins for the three companies studied.

**Exhibit 39: Gross Margin – 2016 to 2020**



*Source: Bloomberg Finance L.P.*

Despite having very similar gross margins in 2016, AAL and Amazon followed different paths through the following years. Amazon’s gross margin established around the 40% level, whereas AAL’s dropped to the 20% range, before going negative in 2020. Due to the nature of its business model, AAL has a much higher amount of fixed costs, especially compared to AMZN and ZM. Software companies generally have higher margins due to the nature of their business models. Zoom is a confirmation of this, as its margins stayed in the 70-80% range.

#### **- Financing Flexibility**

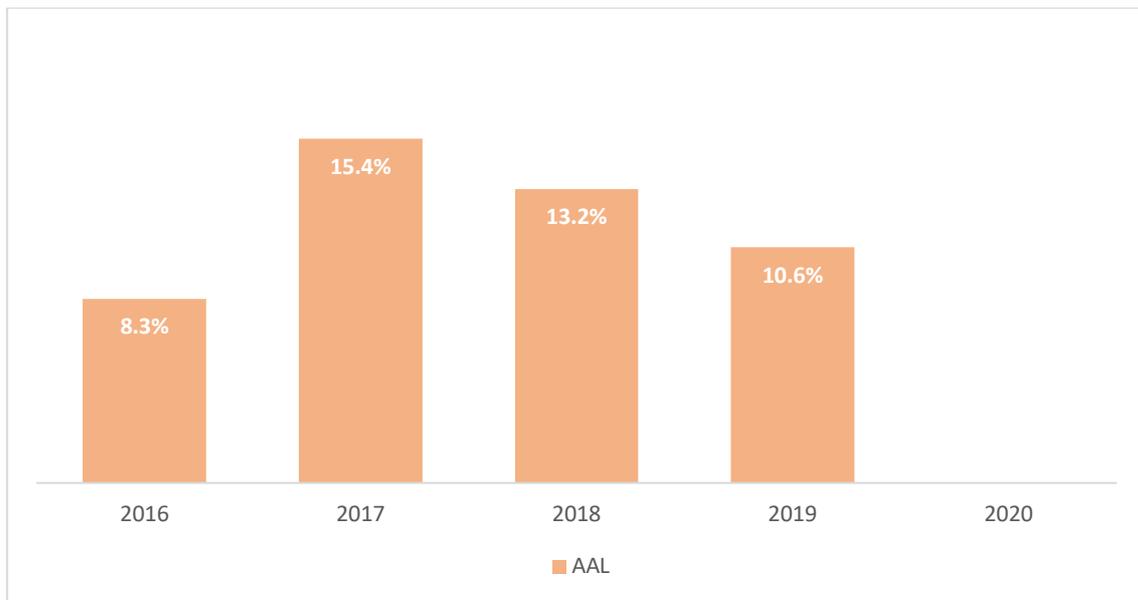
The metric for financing flexibility was Net Debt to EBITDA. This metric was already measured when analyzing Debt. **Exhibit 37** showed the levels of Debt to EBITDA of American

Airlines and Amazon. The results reveal that AAL had the lowest financing flexibility, being very close to dangerous levels of Debt to EBITDA. Amazon had much more financing flexibility and Zoom had the most flexibility out of the three, given its negative net debt.

- **Cash Return Flexibility**

Companies paying large amounts of cash in dividends have less cash return flexibility than those who are paying less dividends, or directly not paying them at all. In the case of our three companies, AAL is the only one that pays a dividend (**Exhibit 40**).

**Exhibit 40: AAL's Dividend Payout Ratio**



*Source: Bloomberg Finance L.P.*

AAL doesn't not have an excessively high payout ratio. As can be seen in the exhibit, they are returning just an 8%-15% of their earnings to investors. However, Amazon and Zoom do not pay a dividend altogether, and so their payout ratios are 0% for all the years analyzed. Consequently, even though AAL does not have a low cash return flexibility, it does have a lower level of flexibility compared to Amazon and Zoom.

With the results extracted from the analysis on the flexibility factors, it can be concluded that companies with higher levels of Investment, Operating, Financing, and Cash Return Flexibility have performed better during the pandemic than those with lower levels of flexibility.

Before moving into a broader industry analysis, I decided to take a look at some of these metrics for the industries of the analyzed companies: Airlines, Online Retail, and Internet Software (Exhibit 41).

**Exhibit 41: Metrics for the Airline, Online Retail, and Internet Software Industries**

2018-2020 (Average)	Revenue Growth	EBITDA Margin	Net Debt/EBITDA	Payout Ratio
<b>Airline</b>	-46%	13%	9.13	20%
<b>Internet Software</b>	15%	35%	0.38	1%
<b>Online Retail</b>	32%	14%	2.47	9%

*Source: CSI Market, Bloomberg Finance L.P.*

The airline industry, the worst performer of the three throughout COVID, has had the lowest revenue growth, the highest debt burden (and thus, lowest financing flexibility), and the lowest cash return flexibility of the three. On the other hand, the Online Retail and Internet Software industries have seen consistent revenue growth, low net leverage and low payout ratios on average over the past three years. Coincidentally, they have been among the best performing industries throughout COVID.

### 3.5. INDUSTRY ANALYSIS

Apart from studying AAL, AMZN, and ZM, I have performed a broad industry analysis to further test my hypothesis. First, I have compared the performance of Standards & Poor's sector indexes to that of the Wilshire 5000 index, one of the broadest U.S. indexes, comprising all publicly traded companies in the U.S.

#### **S&P Sector Indices:**

- S&P Communication Services Select Sector (XLC)
- S&P Consumer Discretionary Select Sector (XLY)
- S&P Consumer Staples Select Sector (XLP)
- S&P Energy Select Sector (XLE)
- S&P Financial Select Sector (XLF)
- S&P Industrial Select Sector (XLI)
- S&P Materials Select Sector (XLB)
- S&P Real Estate Select Sector (XLRE)
- S&P Technology Select Sector (XLK)
- S&P Utilities Select Sector (XLU)

*Source: Standard & Poor's*

AAL, as all airlines, falls into the Industrials sector, as per Standard & Poor's classifications.

AMZN falls under Consumer Discretionary, whereas ZM falls under the Technology sector.

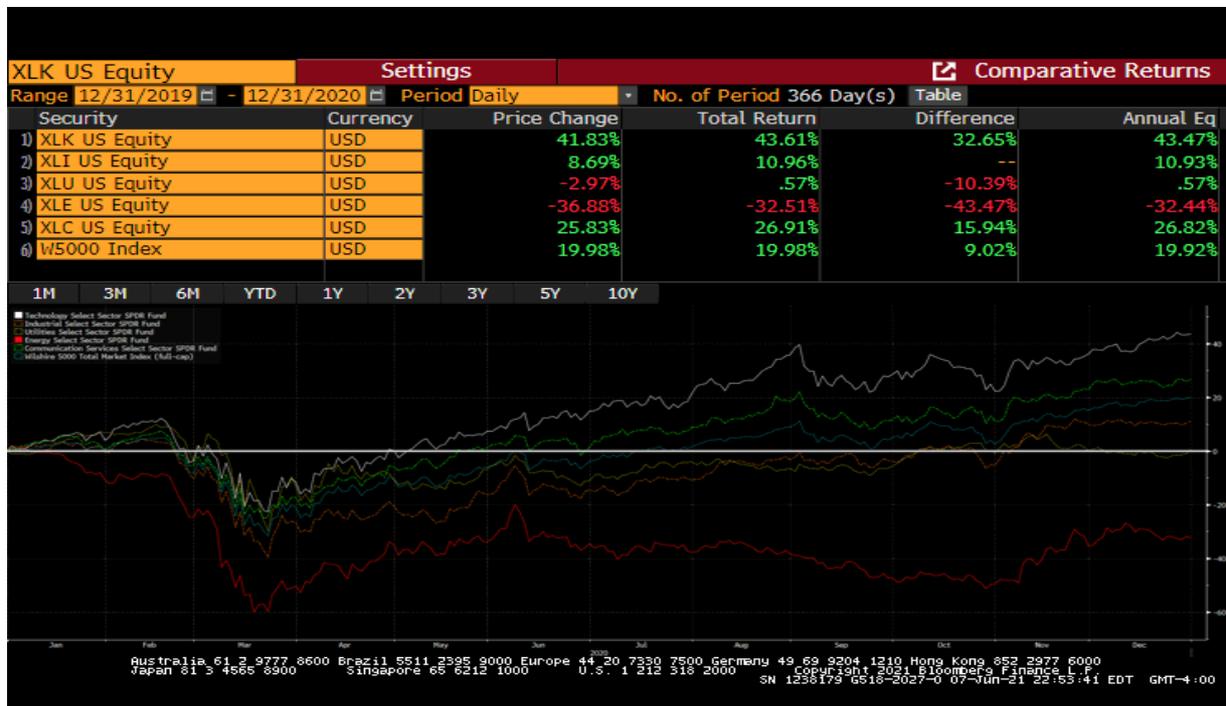
As can be seen in **Exhibits 42 and 43**, the 'total stock market', as the Wilshire 5000 is often referred, appreciated a 19.98% during 2020. Technology, Consumer Discretionary and Communication Services were the best performers, appreciating, 41.83%, 28.19% and 25.83% respectively during the year. On the other hand, Energy, Real Estate, and Financial, were the biggest losers, seeing a depreciation of -36.88%, -5.46%, and -4.22% respectively.

### Exhibit 42: S&P Sector Indices vs Wilshire 5000 – FY2020



Source: Bloomberg Finance L.P.

### Exhibit 43: S&P Sector Indices vs Wilshire 5000 – FY2020



Source: Bloomberg Finance L.P.

Out of the 10 analyzed industries, only 3 were able to outperform the broad stock market (Technology, Consumer Discretionary, Communication Services) while the other 7 underperformed the market for 2020.

I then extracted data for each industry. **Exhibit 44** shows the average revenue growth in each industry for the last 3 years, as well as the stock price change per industry in 2020. We can see how Technology has been among the industries with highest growth. On the other hand, the worst performing industries in 2020 in terms of stock price change also experienced the largest decreases in revenue growth during the year.

**Exhibit 44: Revenue Growth per Industry**

Revenue Growth	2018	2019	2020	Stock Price Change
<b>Technology</b>	25.09%	12.44%	7.89%	41.83%
<b>Consumer Discretionary</b>	8.29%	5.44%	12.29%	28.19%
<b>Communication Services</b>	-1.20%	5.88%	3.63%	25.83%
<b>Materials</b>	7.53%	35.96%	-4.12%	17.86%
<b>Industrial</b>	11.57%	7.99%	-1.80%	8.69%
<b>Consumer Staples</b>	5.00%	3.09%	-11.12%	7.10%
<b>Utilities</b>	11.23%	7.29%	-1.72%	-2.97%
<b>Financial</b>	8.27%	6.29%	-0.20%	-4.22%
<b>Real Estate</b>	0.15%	32.04%	-11.03%	-5.46%
<b>Energy</b>	16.64%	41.82%	-26.52%	-36.88%

*Source: CSI Market, Bloomberg Finance L.P.*

In terms of Profitability, we can see how there is more differences between industries. This is logical, as the profitability of a company varies depending on its business model, which is determined by the industry in which the company operates. Nonetheless, both Technology and Communication Services have had some of the largest EBITDA margins in recent years and have also experienced some of the best results in 2020. The worst performer in terms of stock price, the Energy sector, coincidentally has the smallest EBITDA margins.

### Exhibit 45: EBITDA Margin per Industry

EBITDA Margin	2018	2019	2020	Stock Price Change
Technology	29.58%	28.57%	35.33%	41.83%
Consumer Discretionary	7.46%	8.42%	13.39%	28.19%
Communication Services	27.29%	28.15%	28.06%	25.83%
Materials	11.13%	11.43%	13.67%	17.86%
Industrial	16.20%	15.94%	18.85%	8.69%
Consumer Staples	13.05%	12.15%	14.03%	7.10%
Utilities	22.85%	21.23%	27.39%	-2.97%
Financial	39.31%	35.10%	29.61%	-4.22%
Real Estate	31.71%	15.31%	29.79%	-5.46%
Energy	17.28%	5.67%	3.13%	-36.88%

Source: CSI Market, Bloomberg Finance L.P.

Moving onto debt and financing flexibility, we see Technology among the least levered sectors. Some of the worst performing industries, such as Financial Real Estate, or Energy, are also among those with higher net leverage. It is true, however, that this metric varies from industry to industry, with the Financial sector, for example, commonly maintaining much higher leverages ratios than other industries.

### Exhibit 46: Net Debt to EBITDA per Industry

Net Debt / EBITDA	2018	2019	2020	Stock Price Change
Technology	1.12	1.37	1.44	41.83%
Consumer Discretionary	2.17	2.51	2.64	28.19%
Communication Services	1.93	2.19	2.30	25.83%
Materials	1.75	1.58	1.57	17.86%
Industrial	1.35	1.62	1.55	8.69%
Consumer Staples	1.94	1.93	2.05	7.10%
Utilities	2.26	2.35	2.40	-2.97%
Financial	7.64	7.85	7.41	-4.22%
Real Estate	2.94	3.15	2.34	-5.46%
Energy	3.02	2.51	3.06	-36.88%

Source: CSI Market, Bloomberg Finance L.P.

In terms of cash return flexibility, **Exhibit 47**, shows that the industries with most flexibility (lowest payout ratios) have performed much better than industries with lower flexibility (higher payout ratios).

**Exhibit 47: Payout Ratio per Industry**

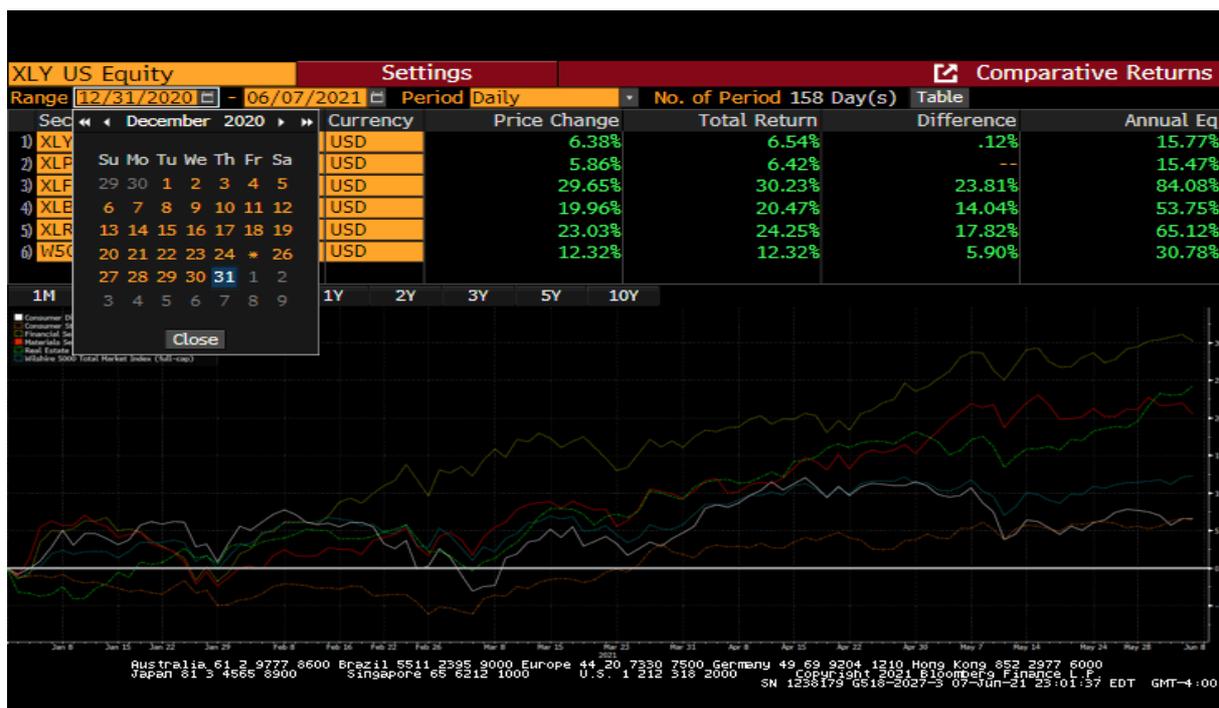
Payout Ratio	2020	Stock Price Change
<b>Technology</b>	3.07%	41.83%
<b>Consumer Discretionary</b>	18.87%	28.19%
<b>Communication Services</b>	3.50%	25.83%
<b>Materials</b>	9.18%	17.86%
<b>Industrial</b>	39.80%	8.69%
<b>Consumer Staples</b>	33.50%	7.10%
<b>Utilities</b>	10.27%	-2.97%
<b>Financial</b>	29.93%	-4.22%
<b>Real Estate</b>	36.26%	-5.46%
<b>Energy</b>	142.18%	-36.88%

*Source: CSI Market, Bloomberg Finance L.P.*

Despite more inconsistency, which is logical taking into account that many more companies are being analyzed, the overall findings from the industry analysis point in the same direction as the results from the analysis of the three companies.

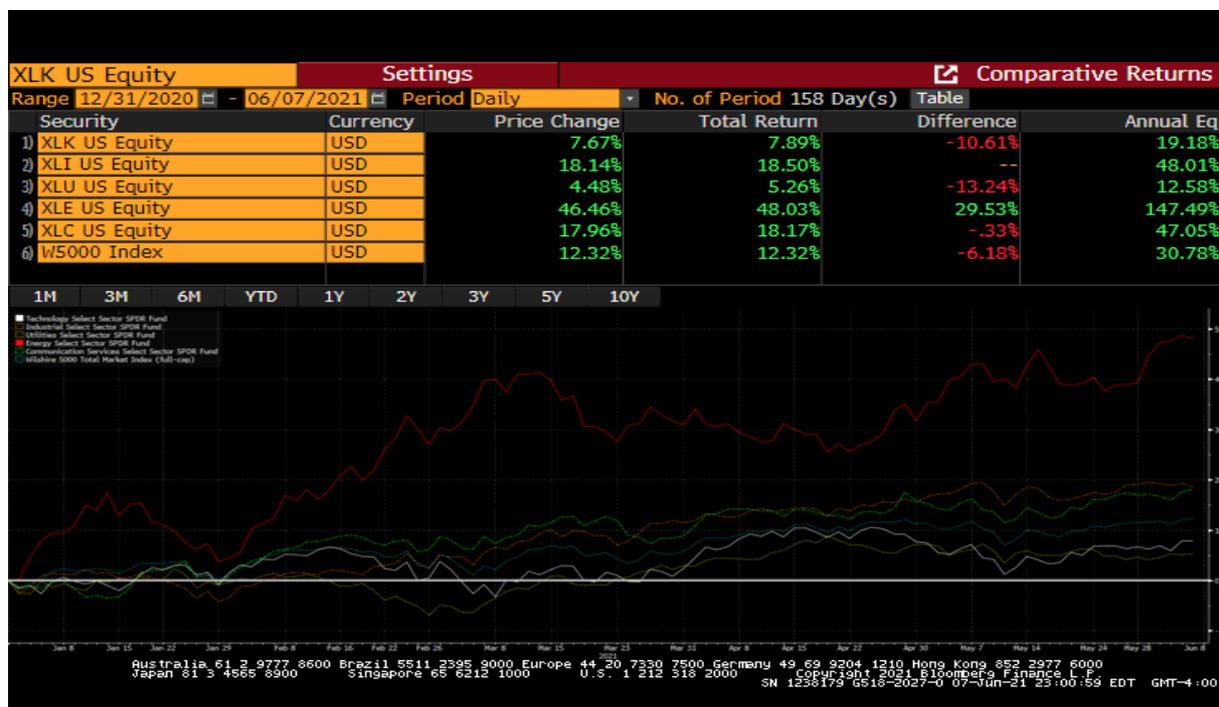
Lastly, I wanted to analyze what has happened since the end of 2020, as such, I measured the performance of the same sector indices against the Wilshire 5000 from the beginning of 2021 to early June (**Exhibits 48 and 49**).

### Exhibit 48: Sector Indices vs Wilshire 5000 - YTD



Source: Bloomberg Finance L.P.

### Exhibit 49: Sector Indices vs Wilshire 5000 – YTD



Source: Bloomberg Finance L.P.

Although the calendar in **Exhibit 48** does not allow to see the tickers with clarity, the overall message is that 2021 has seen a significant rebound in stock market prices across all industries, will all 10 sectors up for the year so far. The reopening of economies, alongside the distribution of the COVID vaccine, have enabled businesses to go back to almost normal functioning, and the stock market has reflected such cheerfulness with positive returns.

#### 4. CONCLUSIONS

COVID has affected how we live in unimaginable ways. Its impact has been devastating in terms of economic losses, and more importantly, in human losses. This research has focused on the impact of COVID in businesses. The objective of this work was to determine the main factors that have determined business survival throughout a COVID environment of uncertainty and rapid change.

Growth, profitability, reinvestment efficiency, and flexibility have positively impacted business performance, whereas debt has had a negative impact in said performance. That hypothesis was tested by analyzing three companies in-depth; American Airlines, Amazon, and Zoom. The analysis was further extended at an industry level.

The results have not been exceptionally conclusive, especially for the industry analysis. However, the findings do suggest that growth and flexibility have had a significant positive impact in business performance during the pandemic, whereas debt has had a negative effect. The profitability and reinvestment efficiency results are not convincing enough to conclude that they have had a positive impact on performance. As in any crises, there have been winners and losers. Some companies have suffered a terrible year, while others have emerged and established a new-found leadership.

COVID has been a completely different crisis to any prior recession we have lived. The unprecedented restrictions and burdens it placed on businesses motivated me to choose this topic. Although some of the results were expected, I believe this work reveals some factors that will have an important role in determining business performance in the coming years. Here are some of the key take-aways I derive from the analysis.

- Companies would be wise to look at the factors that have impacted performance during periods of crisis, in order to be well-equipped when a downturn comes.
- From the factors studied, I believe flexibility is among the most crucial, especially for the future. In a world that can change radically in very short periods of time, companies that have the ability to change fast and adapt to new environments will most certainly have an edge.
- Net Debt load is, will continue to be a factor separating winners from losers in times of recessions. Over-leveraged companies will suffer more and be exposed to potential failure.
- As a sharing-economy gets more and more ingrained in society, I believe that companies that require high levels of fixed costs to operate will be at a disadvantage against other companies with less operational leverage.
- Apart from the impact of the factors studied, the nature of the crisis to come in future years will dictate which companies are likely to succeed or suffer. For example, the nature of the COVID crisis put travel-related companies at a serious disadvantage, notwithstanding their growth, profitability, reinvestment, debt, or flexibility.

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