

Pre-restructuring Capital Structures, Financial Restructurings and Recovery Prospects:

Assessment of Their Interdependence

Bocconi Thesis:

Chapter 11: Impact of Pre-filing Debt Structure and Filing Delay on Performance Improvement

SSE Thesis:

Pre-Restructuring Capital Structure and Turnaround Outcome: The Case of SAS Group

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1. INTRODUCTION: TOPIC, BACKGROUND, AND MOTIVATION

1.1 Focus of the study

In the context of Chapter 11 restructurings, the objective of the thesis is to investigate the existence of any relationships between, on the one hand, improvements in economic and stock performances of the restructured businesses and, on the other, pre-filing debt structures and filing delays. In order to do so, this thesis also assesses thoroughly whether Chapter 11 reorganizations actually produce improvements in the performances of distressed businesses. Notably, this latter analysis is conducted differently from those of most of existing literature. In particular, while most of previous authors have relayed on the analysis of post-restructuring performances taken alone to assess the effectiveness of Chapter 11 restructurings, in this study the focus is on the *relative* improvements obtained by comparing post-restructuring and pre-filing performances, such that both variables are considered. In other words, the key metric is the relative improvement, defined as the difference between the post-restructuring and pre-filing value assumed by given performance metrics, rather than the absolute post-restructuring performance.

The focus on US Chapter 11 proceedings is due to two main reasons. First, US bankruptcy law is very advanced, to the extent that even companies domiciled in other countries tend to make their credit agreements under its rules when possible. For this reason, it has often become the international benchmark for the development bankruptcy law elsewhere. For example, with the Corporate Insolvency and Governance Act of 2020, the United Kingdom reformed the rules for restructuring proceedings making them much more similar to those of US Chapter 11¹. As a result, while substantial differences might still exist between US Chapter 11 and the respective in-court-restructuring proceedings of other countries, Chapter 11 is still a good benchmark, in particular for credit agreements within Anglo-Saxon

¹ For further details, please refer to the dedicated section of the UK Government website (<https://www.legislation.gov.uk>)

jurisdictions. Second, existing literature provides mixed results on the effectiveness of US Chapter 11 proceedings, and therefore this research could provide additional clarity by assessing existing data from a different perspective, as described above.

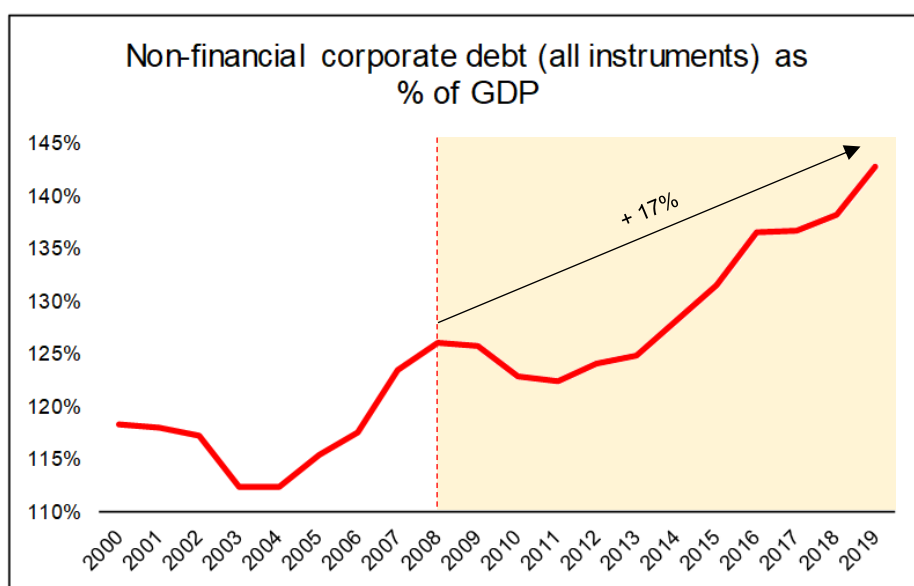
My interest for financial distress started back during my undergraduate studies, when, on my third year of B. Sc. at Bocconi University, I had the opportunity to study abroad at the University of Michigan – Stephen M. Ross School of Business. There, I was introduced for the first time to the concept of corporate financial distress, which caught my attention immediately. As a result, I decided to write my undergraduate final dissertation on a related topic, focusing on the effectiveness of turnaround strategies for financially distressed businesses. Subsequently, during the summer of 2020, I had the opportunity to work in London, United Kingdom, with the Restructuring Team of Evercore, an American investment bank focused on M&A, restructuring, and special situations advisory. There, I got to chance to work on several live deals in the midst of the Covid-19 pandemic, which has been a tremendously formative experience that fostered my interest for financial distress even further and led me to explore in depth the topics covered in this thesis.

1.2 Background and motivation: US corporate leverage and COVID-19 disruption

Since the 2007-2008 financial crisis, non-financial corporate debt levels in the United States have been constantly rising, along with both leverage levels and the share of companies earning sub-investment grades from the three major rating agencies (Fitch, Moody's, and Standard & Poor's). Together with the ultra-low interest rate environment paired with strong economic growth, some analysts and policy makers argue that the key drivers of these trends include the pursuit of share buybacks and other forms of financial engineering undertaken to the benefit of shareholders, such as leveraged recapitalizations and buyouts.

The charts below provide insights into the evolution of debt and leverage levels in the US since the 2007-2008 financial crisis. In particular, Chart 1 plots the evolution of non-financial corporate debt as % of GDP, which is indicative of the leverage of the economy at an aggregate level, excluding financial institutions; Chart 2², instead, provides insights at a disaggregate level, in particular with regard to the leverage levels of the individual sectors in which the economy can be decomposed, excluding the financial sector.

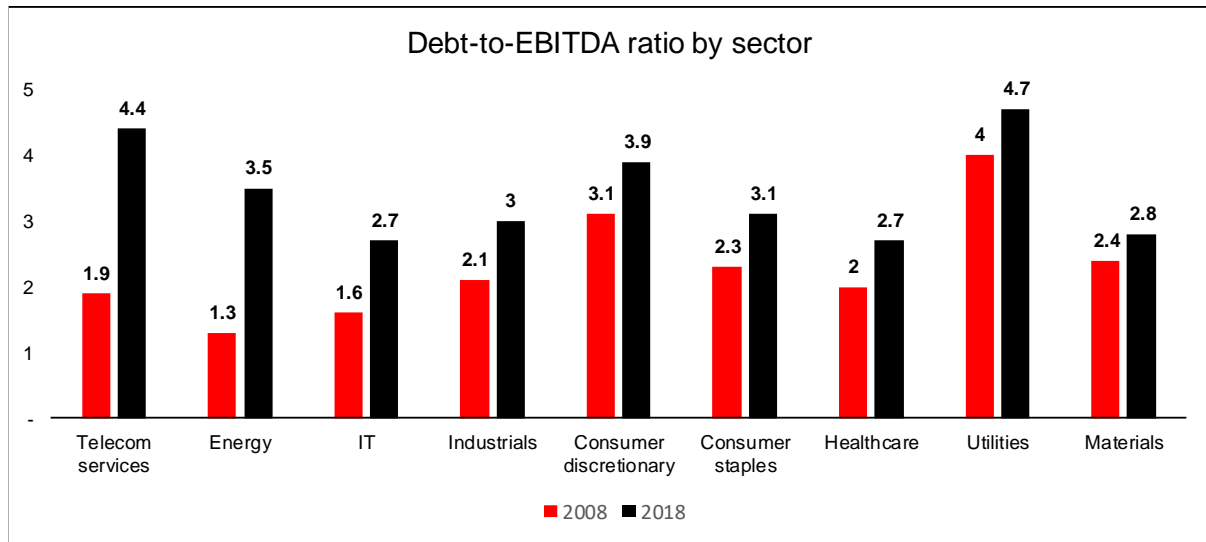
Chart 1.



Source: IMF Datamapper data.

² Taraun Khurana, Werner Regm, Anurag Srivastava, "Is a leverage reckoning coming?", McKinsey & Company, May 9, 2019 (mckinsey.com)

Chart 2.



Source: McKinsey & Company, 2019.

In both cases, the tendency of increased leverage levels is evident. As a result of these trends, back in 2018 American economists and policy makers raised concerns about the potential implications for the economy in case of downturns. In particular, they argued that companies were taking on too much debt and could be in trouble should some unexpected shock hit the economy or markets. Among them, the former Chair of the US Federal Reserve Board, Mrs. Janet Yellen, said:

“Corporate indebtedness is now quite high and I think it’s a danger that if there’s something else that causes a downturn, that high levels of corporate leverage could prolong the downturn and lead to lots of bankruptcies in the non-financial corporate sector”.³

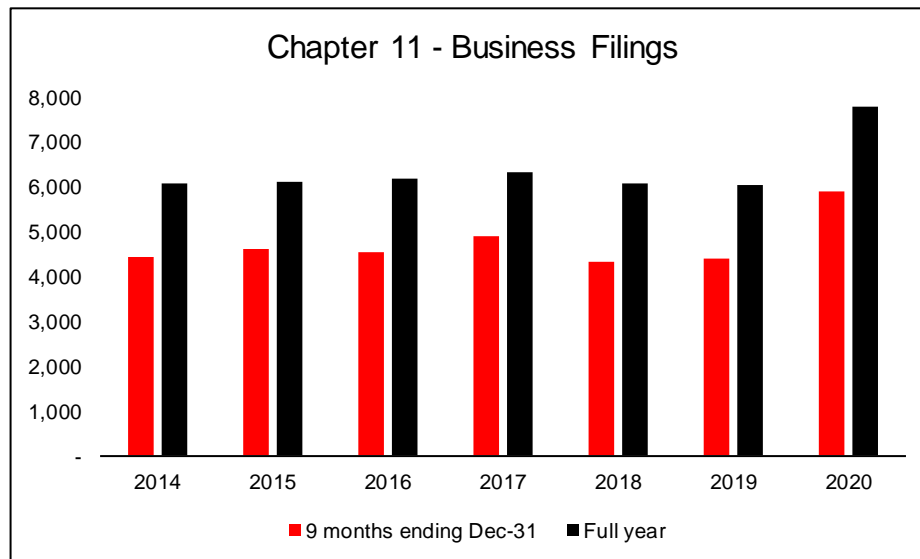
Up until 2020, in corporate America little changed. Indeed, companies kept raising cheap debt and investors kept giving them capital at risky terms in the desperate search for yield. In the spring of 2020, however, the United States and the whole world experienced an

³ Thomas Franck, “Former Fed Chair Yellen says excessive corporate debt could prolong a downturn” CNBC, December 10, 2018 (cnbc.com)

unexpected shock of the kind anticipated by Janet Yellen: the Covid-19 pandemic. As a result of the outbreak of the virus and the subsequent restrictions, millions of people were forced to stay at home and businesses to remain shut. As a result, at least initially, companies in nearly any sector of the economy had to operate in an ultra-uncertain, zero-revenue environment, which made it difficult for many of them to meet their financial obligations. Consequently, businesses of any size both in the US and all around the world fell into financial distress.

In the United States, troubled businesses typically have different options to deal with their financial obligations: out-of-court restructuring (“private workout”), in-court restructuring (“Chapter 11”), or liquidation (“Chapter 7”). The key difference between, on the one hand, private workouts and Chapter 11, and, on the other, Chapter 7 is that in the former cases companies continue to operate as going concerns, while in the latter case their assets get forcibly sold and/or enforced by creditors, and they cease to exist. Clearly, businesses with going-concern value and/or less severe financial problems typically restructure (or merge with healthier businesses), whereas businesses with no going-concern value and irreversible financial problems are typically liquidated. All else equal, companies prefer to restructure out of court, if possible, due to the incremental costs associated to in-court proceedings (i.e., additional professional fees and greater business disruption, as we shall see later). However, when debtors and creditors cannot agree on any terms for a private workout, and/or the debtors prefer to file for bankruptcy in order to receive debtor-in-possession financing or other benefits (such as protection from creditors’ enforcement actions), companies typically file for in-court restructurings. Chart 3 below plots some statistics on bankruptcy filings in the United States over the last few years.

Chart 3.



Source: US Courts, uscourts.com.

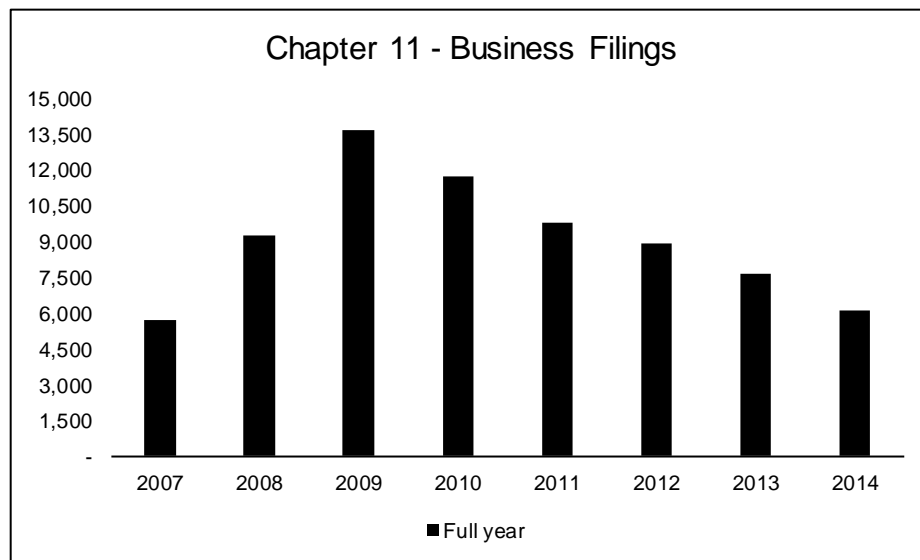
As shown in the chart, in 2020 there was a material increase of Chapter 11 filings from businesses. In particular, when compared to 2019, there were 34% and 29% more filings in, respectively, the April-December period (i.e., since Covid-19 started spreading in the US and the first restrictions were put in place) and the full year. Interestingly, however, such increases are significant but not extreme, and there might be at least two reasons to explain this. First, when Covid-19 started spreading in the United States and the first restrictions were put in place, the US fiscal and monetary authorities extended unprecedented support very quickly, which helped to contain the damage. In particular, the US Federal Reserve increased M2 money supply of nearly 25% in 2020⁴ to keep liquidity flowing. On the other hand, the US Federal Government implemented a number of relief efforts, the largest of which was the Coronavirus Aid, Relief, and Economic Security (“CARES”) Act, which provided more than \$2 trillion to people and businesses, and was the largest supplemental appropriation in American history⁵. Second, it must be noted that companies tend to delay filings as much as possible by firstly seeking private workouts or alternative solutions.

⁴ Data from FRED database of the Federal Reserve Bank of St. Louis (<https://fred.stlouisfed.org>).

⁵ Data from Beta Datalab database of the US government (<https://datalab.usaspending.gov>).

Therefore, it is possible that a large share of the bankruptcies related to the pandemic have not materialized yet as of the time of writing (2021). This is exactly what happened after the 2007-2008 financial crisis, when the number of companies filing for Chapter 11 peaked in 2009-2010 and did not return to 2007 levels until 2014, as shown below in Chart 4.

Chart 4.



Source: US Courts, uscourts.com.

Hereof, it is important to understand what will be ahead of those companies which will ultimately file for bankruptcy in the coming years, and whether there are any factors which might impact the effectiveness of their in-court restructurings.

With this regard, along with leverage levels, a factor which might possibly play a role is the composition of debt structures. Indeed, different debt securities have different features and kinds of owners, which might possibly produce different impacts. In particular, as we shall see in the dedicated paragraph below, previous literature has shown that debt structures influence the way companies restructure, when they do it, and at which terms. As a result, it might therefore be very well possible that also the improvements of performances that companies might expect to achieve following a Chapter 11 restructurings could be influenced by their own debt structures.

Along with debt structures, the presence of substantial costs of bankruptcy creates incentives for companies and creditors to avoid filing for Chapter 11 early on by trying to firstly restructure out of court. For this reason, there is often a lag between the time companies become financially distressed and the moment they file for bankruptcy. Such procrastination, however, might very well be costly too, as it might compound the costs of financial distress for longer periods of time. As a result, the ability of the company to turnaround subsequently – and improve its performances – might also be affected.

The assessment of such relationships might therefore have important implications for the different stakeholders of distressed businesses, in particular managers, shareholders, creditors, and new potential investors. Considering managers, they are in charge of taking decisions regarding how to finance their companies' operations and investments. As a result, any relationships between debt structures and improvements of performances might be indicative of additional costs and/or benefits being associated to certain kinds of debt, factor which would therefore need to be considered when taking decisions regarding debt financing. For shareholders, creditors, and new potential investors, such relationships might be useful to assess the convenience of investing in the business after bankruptcy: if certain debt structures tended to lead – on average – to superior post-restructuring performances, then the investment – on average – would be more or less worth making. Finally, this analysis might be useful to the other players of the competitive landscape in which the distressed firms operate, as it might be indicative of their post-restructuring competitiveness and soundness (e.g., employees concerned by job security, competitors, or suppliers).

2. LITERATURE OVERVIEW, RESEARCH GAP, AND RESEARCH HYPOTHESES

2.1 Literature overview and research gap

Previous literature has been typically focused on two main topics, namely the costs of financial distress and bankruptcy, and post-restructuring performances. In particular, the study of the impact of corporate financial distress and bankruptcy on firm value goes back to the trade-off theory, in which companies balance the tax advantage of debt and the costs of financial distress when choosing their optimal leverage level. Such theory was firstly introduced by Kraus and Litzenberger (1973) as part of the debate over Modigliani and Miller's theorem when taxes were considered (Modigliani and Miller, 1963). Subsequently, many other authors started focusing on the effectiveness of Chapter 11 reorganizations instead, as measured by post-restructuring performances.

However, these topics have been mostly studied separately, in the sense that the respective analyses have been often carried out without considering them jointly by comparing them one another. Indeed, as we shall see below, the direct and indirect costs of financial distress and bankruptcy have been typically estimated with respect to pre-distress and/or pre-bankruptcy firm value, without investigating whether they could also impact post-restructuring performances. On the other hand, post-restructuring performances have been mostly studied from the date of emergence from bankruptcy going forward, regardless of how the companies performed before being reorganized. With this regard, few exceptions such as Denis and Rodgers (2007) and Hotchkiss (1995) actually considered both post- and pre-restructuring performances jointly, obtaining however contrasting results. In addition, none of them was actually focused on the magnitude of the improvements, as they only considered the presence of either positive or negative relationships among the variables (e.g., between higher pre-restructuring margins and higher post-restructuring margins). As a result, previous literature has rarely put post- and pre-Chapter-11 performances into

perspective by systematically comparing them one another, trying to understand whether Chapter 11 actually produces any improvements in *relative* terms. In particular, the goal of this study is to understand how superior the performances of businesses that emerge from Chapter 11 are with respect to those of the businesses they were before filing for it.

Furthermore, previous literature documents thoroughly the impact that debt structures have on the way companies restructure and their likelihood to file for bankruptcy once in financial distress. However, to my knowledge, no authors have systematically investigated whether debt structures (and delays in filing for Chapter 11) actually influence the sign and magnitude of the economic and stock performance improvements that companies might expect to achieve as a result of Chapter 11 reorganizations. This thesis has exactly the objective of filling these gaps, in addition to presenting an alternative way to assess the effectiveness of Chapter 11 proceedings based on relative improvements of performances rather than just post-restructuring ones.

In the remainder of this chapter, I present the relevant findings of existing literature on the topics, starting with the different kinds of costs of financial distress and pre-bankruptcy performances, and then focusing on post-restructuring performances. Finally, I briefly discuss how previous literature has covered debt structures and filing delays in the context of Chapter 11 restructurings, and then I introduce the relevant research hypotheses of this thesis.

2.1.1 Costs of financial distress and pre-bankruptcy performances

Existing literature finds that once a firm becomes financially distressed, the implications for its performances and value can be very severe because of both the direct and indirect costs of financial distress and bankruptcy.

Direct costs

Distressed firms nearly always hire advisory professionals such as accountants, lawyers, and investment bankers to investigate potential solutions to their financial troubles and, eventually, negotiate with creditors. Such professionals typically charge hourly or weekly fees, along with transaction fees in case of successful restructurings. Together with any bankruptcy administrative fees, such expenses are referred to as the direct costs of financial distress and bankruptcy.

Previous literature provides substantial evidence of the material impact that such costs have on firm value. In two of the earliest studies on this topic, Warner (1977) examined a sample of 11 railroads and estimated direct bankruptcy costs of 4% of firm value, as computed one year before bankruptcy; and Altman (1984) estimated the direct costs to be 4.3% of firm value, based on a sample made of retailers and industrial companies. Subsequently, as summarized by Branch (2002), many other authors contributed to the literature with studies based on larger samples, such as Weiss (1990), who studied the direct bankruptcy costs for 37 filings between 1976 and 1986 found direct costs of 3.1% of the sum of book value of debt and market value of equity, or 2.8% of assets. Betker (1997) obtained similar results, with estimates of direct costs of 3.93% of assets for 75 traditional Chapter 11 cases and 2.85% for 48 pre-packaged Chapter 11's. Finally, Lubben (2000) examined 22 large corporate bankruptcies filed in 1994 and found that the direct costs of Chapter 11 average 1.8% of firm value, or 2.5% if pre-packaged bankruptcy cases are excluded. However, he also showed how these figures are also sensitive to firm size, with percentages declining for larger companies. All of these studies examined Chapter 11 reorganizations specifically, but it is important to recognise that also firms which undertake private workouts bear direct costs. In such cases, literature is limited but generally shows that out-of-court restructurings tend to be less expensive than the in-court ones. In particular, Gilson (1990) examined a

sample of 26 out-of-court financial restructurings and found that exchange offer costs averaged 0.65% of the book value of the distressed firm's assets, excluding however expenses related to preliminary negotiations (i.e., previous advisory expenses occurred independently from the exchange offer). Betker (1997), who also includes fees paid in preliminary negotiations, estimates total direct costs to 2.51% of assets, which is close to the estimates other studies found for Chapter 11's, but lower than his estimates for in-court restructurings (3.93% and 2.81% for, respectively, traditional and pre-packed Chapter 11).

Overall, previous literature finds evidence of material direct costs associated to financial distress and bankruptcy, averaging 3-4% of total firm value.

Indirect costs

Indirect costs, instead, are represented by severe deteriorations of performances driven by the disruption caused by financial distress and bankruptcy, which adversely affects the firm as a whole and its competitive positioning, and in turn its performances. Among others, as reported by Berk and DeMarzo (2014), the most important indirect costs of financial distress are:

Loss of customers: since distressed companies have a greater probability of going bankrupt, customers may be reluctant to purchase goods whose value depends on future support or service from the distressed firm. Indeed, bankruptcy may enable it to walk away from its commitments to customers. This would adversely affect growth by making top-line sales decrease.

Loss of suppliers: since, by definition, financially distressed businesses have troubles with meeting their financial obligations, then their suppliers may be reluctant to sell goods to them, as they might not be paid. Without supplies, distressed companies might not be able to generate revenues due, for example, to lack of raw materials, which adversely affects

growth. Equivalently, they might need to look for alternative suppliers, which is costly and reduces profitability.

Loss of bargaining power: given the desperate need of distressed companies to generate revenues to survive, customers might be in the position to exercise pressures on prices and payment terms. In particular, instead of not buying the products at all, they might be willing to do so at lower prices and/or by delaying payments, which affect profitability and liquidity. In the same way, suppliers might continue to sell goods to distressed companies provided that they pay sooner, which adversely impacts liquidity.

Loss of employees: The financial distress costs related to the loss of employees may be significant and involve both current and new (potential) employees. Indeed, since financially distressed firms might not be able to offer job security with long-term employment contracts, they may have difficulty in hiring new employees, and existing employees may quit or be hired by other firms, for example because they fear their salaries will not be paid. As a result, the firm might experience lower sales (e.g.: when key salespeople leave) and profitability, as the most valuable and productive/efficient employees would likely leave. These factors clearly affect growth and profitability.

Loss of receivables: financially distressed firms tend to have difficulty in collecting money that is owed to them. Indeed, the awareness that they might cease operations and go out of business reduces the incentive of customers to maintain a reputation for timely payment. This undermines liquidity.

Fire sales of assets: when companies are financially distressed, their first priority is to raise cash. To do that, they might start to sell assets at discount, collecting losses. This undermines profitability as well as growth since the sale of revenue-generating assets causes sales drops and fire sales cause losses.

In terms of impact on firm value and performances, previous literature finds evidence suggesting that indirect costs tend to be much larger than the direct ones. In particular, Altman (1984) estimated the indirect costs of bankruptcy based on the unexpected loss of profits for the 3 years before filing. Such costs amounted to 4.5% and 10.5% of firm value for, respectively, retail and industrial companies. He also provided evidence of substantially deteriorated operating performances. However, his work was later criticized by Wruck (1990), who deemed it *“impossible to tell whether the loss in profits is in fact caused by financial distress or whether financial distress is caused by the loss in profits”*. As a result, these estimates remained debatable. In a later study focused on highly leveraged firms operating in industries which were experiencing a downturn, Opler and Titman (1994) found that companies in the top decile of their sample (based on leverage, i.e., those with highest leverage) suffered a 26% greater loss in sales than less leveraged companies (bottom decile). A similar trend was followed by their market capitalization. However, the authors did not provide any estimates as of the impact on firm value in terms of percentage declines. In a study on junk bond issuers, Asquit et al (1994) also found indirect evidence of deteriorated operating performances, fire sales of assets, and strong reductions in capital expenditures occurring when firms become financially distressed. Chen and Merville (1995), who based their analysis on Altman's Z-scores applied to a sample of 1014 firms, also found evidence that the indirect costs of financial distress are material, even if they do not provide any estimates of the precise magnitude of these costs. Finally, Andrade and Kaplan (1998) analysed a sample of 31 highly leveraged transactions that became financially distressed and found that the total costs of financial distress amount to 10-20% of firm value, of which up to 17% represented by indirect costs. In addition, they found evidence of material deteriorations of operating performances (in particular at profitability and liquidity level) occurring as a result of distress, as well as investment cuts and fire asset sales.

Overall, previous literature also finds evidence of material indirect costs associated to financial distress and bankruptcy, which tend to be higher than the direct ones.

Agency costs

Another category of costs of financial distress is represented by the so-called agency costs, namely asset substitution (excessive risk-taking), debt-overhang (under-investment), and leverage ratchet effect, which have been studied extensively in works such as Myers (1976) and Jensen and Meckling (1976). These costs relate to the misalignment of interests between equity and debt holders in financially distressed businesses, and as a result are very hard to estimate reliably.

2.1.2 Post-restructuring performances

The second branch of literature on corporate financial distress, instead, is focused on post-restructuring performances. In particular, once firms file for Chapter 11, the possible outcomes can be either failure or success of the proceeding. In the former case, firms do not manage to restructure even in court, and so get ultimately liquidated; in the latter case, the in-court reorganization is successful, and the companies emerge as going concerns. With this regard, Altman and Hotchkiss (2006) found that, for public firms of all sizes, only 26-45% of them ultimately emerge as independent, going concerns. While the determinants of success of Chapter 11 might vary and also include exogenous factors (such as the health of the overall credit markets), they found that the most important driver of successful emergence was firm size, while Dahiya (2003) also underlined the importance of the ability to secure debtor-in-possession financing, which is also typically positively correlated to size. Out of those firms that ultimately manage to emerge from bankruptcy, it is particularly important to understand how they perform after the restructuring. With this regard, the results of existing literature are mixed, but overall suggest that typically they might be poor

because accounting performance is weak, debt ratios are high, and further debt restructuring is frequently required.

Gilson (1997) found that leverage levels after both in-court and out-of-court restructurings remain high, although they are substantially more elevated after private workouts. In particular, studying 58 private workouts and 51 Chapter 11 occurred between 1980-1989, he found that the median ratio of long-term debt to the sum of long-term debt and common shareholders equity (market value) was 0.64 for firms that restructure out-of-court and 0.47 for those that reorganize in Chapter 11. Moreover, out of his total sample he found that 25% of companies had to restructure their debt again subsequently. His results suggest that the significant post-restructuring leverage levels could lead to persistence of poor performances, and that therefore restructurings do not always allow companies to effectively turnaround. Similar results were subsequently confirmed by Heron et al (2006), who studied a sample of 172 firms that emerged from Chapter 11 with a significant change in equity ownership between 1990 and 2004. In particular, they found that such companies still emerged with higher leverage than their industry peers.

Together with high leverage levels, also poor operating performances represent a key driver of any subsequent needs for companies to restructure again. Interestingly, they often come to represent both the cause and effect of financial distress. As reported by Altman et al (2009), several studies examined the performances of recently reorganized firms and found that more than two-thirds of the emerged firms underperform industry peers for up to five years following bankruptcy. In extreme cases, as reported by Hotchkiss (1995), up to 40% of firms continue to experience operating losses for the three years after emergence from bankruptcy and 32% of reorganized firms file again for bankruptcy or restructure again privately. Finally, LoPucki and Whitford (1993) found that nearly one-third of the companies

of the sample of Chapter 11 proceedings they studied filed again within four years of emerging, citing operating problems as the primary reason for the second filing.

The poor post-restructuring performances are consistent with the hypothesis that – in some instances – companies that are not economically viable are nevertheless allowed to reorganize and emerge from Chapter 11. Chatterjee, Dhillon, and Ramirez (1996), for example, concluded that economically viable firms generally restructure privately, implying that firms that file Chapter 11 are likely not economically viable.

Nevertheless, other studies provide evidence of solid performances after the restructuring. In particular, Denis and Rodgers (2007) found evidence that Chapter 11 does allow promising firms to restructure successfully and perform well afterwards, and Hotchkiss (1995) found evidence that many firms experience positive growth post Chapter 11, even if profitability did not show strong increases in the post-bankruptcy period. In terms of cash flows, Alderson and Betker (1999), who studied a sample of 201 firms that completed Chapter 11 reorganization between 1983 and 1993, found that, although post-bankruptcy operating margins were poor, firms did not systematically underperform industry peers on average in terms of cash flows. Regarding stock returns, Eberhart, Aggarwal and Altman (1999) reported that publicly traded reorganized firms produce abnormally high common stock returns, and Lee and Cunney (2004) found that investing in formerly bankrupt firms' equities between 1988 and 2003 resulted in a positive average 85% relative to the S&P 500 Index performance in the first 12 months after emergence, even if returns were extremely volatile.

As anticipated, it is therefore clear that previous literature, which has been focused on post-restructuring performances, has historically found mixed evidence on the effectiveness of Chapter 11 restructurings.

2.1.3. Pre-filing debt structures and filing delays

As mentioned above, previous literature on how pre-filing debt structures and filing delays can affect post-restructuring performances (and improvements in performances) following Chapter 11 reorganizations is very scarce. The main work investigating if and how debt structures influence the behaviour of distressed firms is Asquit et al (1994). The authors found that debt structures do influence – sometimes significantly – the way firms restructure, and that the combination of private debt and numerous public debt issues tends to impede successful private workouts, therefore increasing the probability of a Chapter 11 filing. However, despite assessing how such debt structures can lead to different outcomes (private workouts / Chapter 11's), they did not assess specifically how they did actually influence the performances. In the same work, though, they found evidence that companies with more bank debt tend to be able to delay filing for Chapter 11 more than others. Indeed, being traditionally well secured, banks might “loosen the screws” in case of covenant breaches (i.e., technical defaults) since – even in case of bankruptcy – they would have their claims paid fully, since they are well secured. Also Andrade and Kaplan (1998) – as part of a more comprehensive analysis on the costs of financial distress – found that companies tend to delay the filing for Chapter 11, but did not investigate how this might affect performances.

2.2 Research hypotheses

In order to fill the research gap on the role that pre-filing debt structures and filing delays might have on the improvement in performances following a Chapter 11 reorganization, it is necessary to verify the existence of improvements in the first place. In addition, the focus on the improvements might help to give some additional clarity on the effectiveness of Chapter 11 restructurings, given the mixed results provided by previous literature. Accordingly, the analysis is organised in two steps:

- First, it investigates whether businesses that emerge from Chapter 11 are better than the businesses they were before filing for it, in terms of both economic and stock performances. To do that, pre-filing and post-restructuring performances are firstly assessed separately, and then jointly (i.e., by looking for evidence of improvements when comparing them one another).
- Second, the potential relationships between improvements and pre-filing debt structures and filing delays are assessed.

It follows that the research hypotheses are:

H1: Economic and stock performances before Chapter 11 are deteriorated (i.e., zero or negative).

Poor pre-filing economic and stock performances are expected, as previous literature finds strong evidence of both direct and indirect costs of financial distress which affect performances and, in turn, firm value. Deteriorated pre-filing performances are also one of the determinants of the improvements, which are indeed computed as differential between post-restructuring and pre-filing performances.

H2: Economic and stock performances after the restructuring are good (i.e., at least positive).

Good post-restructuring performances are expected, as – at least in theory – Chapter 11 should allow firms to turnaround and perform well. However, this result is not trivial as most of existing literature suggests that performances tend to remain poor even after the reorganization. Together with pre-filing performances, post-restructuring performances are the second determinant of the improvements.

H3: *Improvements in economic and stock performances are positive and statistically significant.*

Intuitively, improvements are expected to be positive and statistically significant. Otherwise, there would be no point of trying to reorganize in court distressed firms which did not manage to restructure out of court, as they would be simply liquidated. Positive evidence of improvements is also crucial to subsequently test hypothesis 4.

H4: *Pre-filing debt structures influence (i) improvements in performances, and/or (ii) pre-filing and/or post-restructuring performances.*

Previous literature shows that pre-filing debt structures do influence the way and terms at which firms restructure. As a result, they might also influence pre-restructuring performances. Possibly, they could also influence performance improvements and post-restructuring performances by either helping or undermining optimal reorganizations.

H5: *Filing delays influence (i) improvements in performances, and/or (ii) pre-filing and/or post-restructuring performances.*

Longer delays are expected to be associated with relatively worse pre-filing performances, as they compound the costs of financial distress over longer periods of time. In addition, they might undermine improvements and post-restructuring performances by creating irreversible disruption in the businesses, which Chapter 11 might not be effective in fixing.

3. DESCRIPTION OF VARIABLES, DATA SOURCE, AND METHODOLOGY

3.1 Variables, data sources, and input statistics

This section describes the variables which have been used in the analysis. It is organized in two sub-sections, one for the dependent variables and one for the independent ones.

Dependent variables

The dependent variables and the way they are computed are summarized in table 1.a below. The relevant input data have been collected from WRDS, supplemented by Capital IQ and SEC filings (10-K and 10-Q forms) in case of missing information. In such cases, cross-checks have been performed to ensure consistency in the way input variables were computed.

Table 1.a

This table provides an overview of the dependent variables considered in the study. In particular, for each of them the relevant inputs, computation methodology, and data sources are shown. The focus is on two main areas: economic (profitability, growth, and liquidity) and stock performances.

Dependent variable	Inputs	Computation	Data source
EBITDA¹ margin improvement	Let X be the year of filing and Y the year of emergence from Chapter 11. The inputs are EBITDAs of year X-2, X-1, Y+1, and Y+2.	$\frac{(EBITDA_{Y+1} + EBITDA_{Y+2})}{(Sales_{Y+1} + Sales_{Y+2})} - \frac{(EBITDA_{X-2} + EBITDA_{X-1})}{(Sales_{X-2} + Sales_{X-1})}$	WRDS Capital IQ SEC filings
Sales growth Improvement	Let X be the year of filing and Y the year of emergence from Chapter 11. The inputs are sales of year X-3, X-2, X-1, Y+1, Y+2, and Y+3.	$\left(\frac{Sales_{Y+3}}{Sales_{Y+1}} - 1 \right) - \left(\frac{Sales_{X-3}}{Sales_{X-1}} - 1 \right)$	WRDS Capital IQ SEC filings
EBITDA growth Improvement	Let X be the year of filing and Y the year of emergence from Chapter 11. The inputs are EBITDAs of year X-3, X-2, X-1, Y+1, Y+2, and Y+3.	$\left(\frac{EBITDA_{Y+3}}{EBITDA_{Y+1}} - 1 \right) - \left(\frac{EBITDA_{X-3}}{EBITDA_{X-1}} - 1 \right)$ * When needed, the formula has been adjusted to incorporate the impact of negative signs.	WRDS Capital IQ SEC filings
FCF² / Sales improvement	Let X be the year of filing and Y the year of emergence from Chapter 11. The inputs are operating free cash flow, capital expenditure, and sales of year X-3, X-2, X-1, Y+1, Y+2, and Y+3.	$\left(\frac{FCF_{Y+3}}{Sales_{Y+3}} - 1 \right) - \left(\frac{FCF_{X-3}}{Sales_{X-1}} - 1 \right)$ * When needed, the formula has been adjusted to incorporate the impact of negative signs.	WRDS Capital IQ SEC filings
Improvement of stock returns	Let X be the date of filing and Y the date of emergence from Chapter 11. The inputs are the share prices of day X-260, X-520, X, Y, Y+260, and Y+520, where 260 and 520 are trading days.	$\left(\frac{Share\ Price_{Y+260}}{Share\ Price_Y} - 1 \right) - \left(\frac{Share\ Price_{X-260}}{Share\ Price_X} - 1 \right)$ $\left(\frac{Share\ Price_{Y+520}}{Share\ Price_Y} - 1 \right) - \left(\frac{Share\ Price_{X-520}}{Share\ Price_X} - 1 \right)$ For, respectively, 1- and 2-year cumulative returns.	WRDS Capital IQ SEC filings

¹ Earnings before interest, taxes, depreciation, and amortization.

² Free cash flow, computed as FCF = (operating cash flow - capital expenditures).

The variables belong to two key areas: (i) economic performances, including operating profitability, operating growth, and liquidity; and (ii) stock performances. Both categories cover the two years before the filing and the two years after emergence from Chapter 11.

Regarding economic performances, operating profitability is proxied by EBITDA margin (% of sales); operating growth by sales growth and EBITDA growth (which also captures the interaction between changes in EBITDA margin and sales growth); and liquidity by the free-cash-flow-to-sales ratio. In particular, the dependent variables are represented by the improvement obtained by the company in each of the metrics, which is defined as the difference between post-restructuring and pre-filing performances. As already mentioned previously, this is an innovative approach when compared to most of existing literature, which, instead, generally focuses on pre-filing and post-restructuring performances separately in order to study, respectively, the costs of financial distress / bankruptcy and the effectiveness of Chapter 11 restructurings. The value added by this approach is that it puts everything in relative terms: given that bankrupt businesses have generally lost any chance to turnaround autonomously and their only alternative to Chapter 11 is liquidation, Chapter 11 is effective as long as post-restructuring performances are better than pre-filing ones. Indeed, whether post-restructuring performances are good or bad in absolute terms does not necessarily capture the effectiveness of Chapter 11, which is instead given by any improvement that the company achieves as a result of filing and restructuring.

Furthermore, it is important to underline that, as it can be seen in table 1, the metrics and their improvements disregard what happens *during* Chapter 11. For example, companies might downsize substantially during the proceeding, or the additional costs associated with the filing might decrease firm value even further. None of these (nor similar) factors is captured by the variables used in this analysis. The reason is that the first part of this analysis has the goal of understanding whether businesses that emerge from Chapter 11

are better than the businesses they were before filing for it. As a result, it is necessary to treat the same company before and after the restructuring as if it were two separate businesses, therefore ignoring what happens during the Chapter 11 proceeding. For this reason, when considering pre-filing performances, one should look from the perspective of owners and creditors of the company before the filing; instead when considering post-restructuring performances, one should look from the perspective of a new owner or creditor that starts investing in the company on the day it emerges from bankruptcy. These are also the perspectives considered by previous authors when studying – separately – pre-filing and post-restructuring performances separately.

In the context of assessing the effectiveness of Chapter 11, the omission of what happens during the proceeding might be seen as a limit of the analysis for two reasons. First, for the shareholders, creditors, and stakeholders of the company what happens during the restructuring (e.g., asset sales, new equity issuances, and debt write-downs) might be very relevant, as it would directly impact their interests. Second, because different restructuring strategies might be associated to different economic and stock performances, in particular after the emergence from Chapter 11. However, netting out the impact of all of this is actually sensible, economically consistent, and statistically solid for the reasons outlined below.

From an economic standpoint, the disruption occurring during Chapter 11 would happen anyways under any alternative solution still available. As a result, it should be considered a cost of (severe) financial distress itself, rather than a cost of Chapter 11. Indeed, distressed businesses generally have three alternatives to deal with their problems, in order of convenience: private workouts, Chapter 11, and Chapter 7 (liquidation). Private workouts are much less expensive, quicker, and more flexible. As a result, businesses and creditors nearly always have the incentive to pursue them over the alternative solutions. This means that – in most of the cases – when companies file for bankruptcy it is because they have no

alternative solutions. With this regard, once private workouts are ruled out, the only alternatives left are in-court restructurings (Chapter 11) and liquidation (Chapter 7). Given that liquidation is much more costly and disruptive, firms will prefer Chapter 11. Following this reasoning, any additional costs in terms of downsizing and further deterioration of firm value associated to Chapter 11 would occur – to an even greater extent – also under any alternative solution still available, which is liquidation. Therefore, they should not be seen strictly as costs of Chapter 11, but as costs of very severe financial distress in general (“very severe” in the sense that it prevents companies from restructuring out of court). In this sense, incorporating in the analysis what happens during Chapter 11 might not necessarily help to better explain its effectiveness.

However, as mentioned above, it can be argued that certain restructuring strategies (and the related disruption) might still impact the results of the analysis, since economic and stock performances might be correlated with specific restructuring strategies. Even though this is not the goal of this thesis, in order to assess this hypothesis a further analysis has been carried out (see “Empirical analysis and results” section below for further details). Specifically, in order to control for any potential implications which different restructuring strategies might have on performances, a qualitative classification based on the presence of (i) asset sales, (ii) equity issuances, and (iii) debt write-downs during Chapter 11 has been done. Such information was collected from 10-Q and 10-K SEC filings. In particular, the companies of the sample have been grouped based on the restructuring strategy adopted, and for each strategy the statistics of the relevant pre- and post-restructuring performances, as well as improvements, have been computed and compared to those of the general sample. The results of this analysis provide evidence that even if one were to incorporate information on what happens during the restructuring, the results of this study would be

unlikely to change, since nearly all the statistics of the restricted samples would not be statistically different from those of the general sample.

A final note regards the choice of considering the economic variables for the two years up to the year *before* the filing (for pre-filing performances) and starting from the year *after* the restructuring (for post-restructuring performances). This choice is driven by two considerations: first, the focus is intentionally on short-term performances, since the less time passes after the restructuring, the less likely it is that exogenous variables – different from Chapter 11 – could impact the companies' performances, thus biasing the analysis. As a result, short-term performances are a better indicator of Chapter 11's efficacy. Second, including the performances of the year of filing would have created inconsistencies, since they would have been – at least partially – reflective of the performances achieved *during* the Chapter 11 proceeding. The same applies for post-restructuring performances, in the sense that at least a portion of the year of the emergence was spent by companies under the Chapter 11. As a result, if the performances of that year were considered, they would have been biased to the extent that they would have reflected – at least partially – the performances of the company while it was still in Chapter 11.

Independent variables

The independent variables are summarized in table 2.a below and include debt structure variables and delay. The relevant input data have been collected from Capital IQ.

Table 2.a

This table provides an overview of the independent variables considered in the study. They include debt structure variables (secured debt; bank debt, leases, and other borrowings; and convertible debt) and a restructuring delay variable. For each metric, inputs, computation method, and data sources are shown.

Independent variables	Inputs	Computation	Data source
Secured debt	Let X be the day of the filing. The inputs of this variable are the amounts of total financial debt and secured debt as of the last quarterly filing before X.	$\left(\frac{\textit{Secured Debt}}{\textit{Total Financial Debt}} \right)$	Capital IQ
Bank debt, leases, and other borrowings (including term loans, RCFs, leases, and other borrowings)	Let X be the day of the filing. The inputs of this variable are the amounts of total financial debt and bank debt, leases, and other borrowings as of the last quarterly filing before X.	$\left(\frac{\textit{Bank Debt} + \textit{Leases} + \textit{Other borrowings}}{\textit{Total Financial Debt}} \right)$	Capital IQ
Convertible debt	Let X be the day of the filing. The inputs of this variable are the amounts of total financial debt and convertible debt as of the last quarterly filing before X.	$\left(\frac{\textit{Convertible Debt}}{\textit{Total Financial Debt}} \right)$	Capital IQ

<p>Delay</p>	<p>Let Y be the year of filing. The inputs of this variable are EBITDA and interest expenses as of Y-5, Y-4, Y-3, Y-2, Y-1, and Y.</p>	<p><i>(Filing Year – First Year of Distress)</i></p> <p>* Measured in years. First year of distress computed according to the methodology provided by Asquit et al (1994), the firm firstly became financially distressed. In particular, a firm is considered to be in financial distress if its coverage ratio (defined as EBITDA/Interest Expenses) is less than one for two consecutive years or below 0.8 in any given year.</p>	<p>Capital IQ</p>
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Debt structure variables are (i) secured debt, (ii) bank debt, leases, and other borrowings (“BLOB”), and (iii) convertible debt. All these variables are computed as fractions of total financial debt and are therefore bounded below by 0 and above by 1.

The choice of these variables is the result of a selection process having two goals: first, giving a comprehensive but detailed representation of the debt structure by discriminating by collateral (secured / unsecured), owner type (bank debt, leases, and other borrowings / bonds), seniority (non-convertible / convertible). Second, producing sound statistical evidence by preventing problems due to multicollinearity among regressors in the regression analysis.

As evident from above, each category of debt has been opposed to its complementary: secured debt to unsecured debt; bank debt, leases, and other borrowings to bonds; and convertible debt to non-convertible debt. Clearly, for each pair, only one of the variables, say X , could be used in the regression analysis, as the other one was simply $(1 - X)$ and its inclusion would have caused the same information to be represented twice. Nevertheless, because they were complementary variables, by using only one of them there was clearly no loss of information.

Importantly, because of multicollinearity, it was not possible to discriminate further the layers of debt by considering also the information given by the intersections between the different classifications, namely secured BLOB, unsecured BLOB, secured bonds, and unsecured bonds. This has been verified by computing the relevant variance inflation factors (“VIF”), all of which assumed values well above 5. In the case of the independent variables used for the analysis, instead, no VIF assumed a value greater than 1.1, suggesting the absence of strong linear correlations amongst the regressors.

Regarding the delay variable, as reported in table 1, it is measured in years and is defined as the difference between the filing year and the year the company firstly

became financially distressed. In order to identify the first year of distress, the methodology proposed by Asquit et al (1994) has been used. Accordingly, a firm was considered distressed if its coverage ratio (defined as EBITDA/Interest Expenses) was less than one for two consecutive years or below 0.8 in any given year.

The relevant statistics are reported in Table 2.b. The sample size is 55 units.

Table 2.b

This table provides an overview of the relevant statistics for the independent variables. In particular, for each metric the average, median, and standard deviation are reported. The sample includes 55 units.

	Average	Median	Standard Deviation
<u>Debt structure (% of total financial debt)</u>			
Secured	50.1%	47.3%	34.3%
Bank, leases, and other borrowings	31.8%	26.0%	29.7%
Bonds	18.3%	0.0%	26.5%
Unsecured	49.9%	52.7%	34.3%
Bank, leases, and other borrowings	8.1%	0.0%	20.5%
Bonds	41.8%	43.0%	31.9%
Bank, leases, and other borrowings	39.9%	36.9%	30.6%
Secured	31.8%	26.0%	29.7%
Unsecured	8.1%	0.0%	20.5%
Bonds	60.1%	63.1%	30.6%
Secured	18.3%	0.0%	26.5%
Unsecured	41.8%	43.0%	31.9%
Convertible debt	13.6%	0.0%	27.9%
Non-convertible debt	86.4%	100.0%	27.9%
<u>Delay</u>			
Delay (years)	1.74	1.00	1.70

3.2 Sample selection procedure

One of the key problems with analysing bankruptcies is the lack of large samples of consistent data. Indeed, in the average company's lifecycle, bankruptcy is a very rare event which makes it difficult to find large data samples available to the public (i.e., not banks' internal databases) for analytical purposes. For this reason, the sample selection procedure was designed to maximize the number of companies in the sample, at the expense of other factors such as the dispersion of the years in which the bankruptcies took place (2002-2017), as we shall see below. In particular, a comprehensive list of bankruptcies has been collected from Capital IQ by considering all the transactions in their database, which returned a sample of 26,465 transactions (as of March 2021). Then, the results have been filtered according to the following criteria:

1. Only considered public companies which remained listed also after the bankruptcy, which returned a sample of 407 units. This step was necessary in order to have all the economic and stock information available for the analysis.
2. Filtered the sample by bankruptcy filing announcement date to only consider companies which filed for bankruptcy between 2002 and 2017, which resulted in a sample of 294 units. The starting and ending years have been chosen in order to maximize the availability and consistency of all the economic and stock information.
3. Filtered the sample by bankruptcy filing type to only consider companies that undertook a Chapter 11, which resulted in a sample of 183 units.
4. Filtered the sample to only consider companies that emerged from the proceeding (i.e., excluding cases when the filing was dismissed and when the company was liquidated before emerging from Chapter 11), which resulted in a sample of 131 units.

5. Filtered the sample to only consider companies incorporated in the United States and obtained a sample of 122 units.
6. Filtered the sample by primary sector of bankrupt companies to exclude financial services firms and obtained a sample of 109 units. This step was necessary given that companies operating in the financial services industry have capital structures completely incomparable to those of companies of other sectors.
7. Removed companies having incomplete information and obtained a sample of 61 units.
8. After the removal of the outliers (top and bottom 5% based on economic and stock performances), the final sample includes 55 companies. In particular, in order to keep the sample homogenous for the different analyses, a company has been considered an outlier according to the following procedure:
 - a. For each company, all the 6 economic and stock performance improvement metrics have been computed.
 - b. For each metric, all companies have been sorted in ascending order. Subsequently, the top and bottom 5% of observations have been considered outliers for the given metric.
 - c. Considering all metrics together, a company has been considered an outlier for the total sample when it had been considered an outlier for the single metrics more often than the other companies. In the case of this sample, there has been a nearly perfect overlap of the outliers for the different metrics, meaning that when a company was considered an outlier for a given metric it was also considered an outlier for nearly all of the others.

The relevant sample statistics sample are reported in table 2.c below.

Table 2.c

This table reports relevant information on the companies of the final sample. In particular these include size (proxied by sales and total financial debt); industry; and restructuring year. For size, total financial debt (in book value terms) has been considered instead of other metrics, such as market capitalization, due to the fact that in the context of financially distressed businesses it represents a better, more stable and objective measure. The sample includes 55 units.

Size (\$m)	Average	Median
Sales	2,698	786
Total financial debt	3,012	1,156
Industry	Count	% of sample
Energy	14	25.5%
Industrials	12	21.8%
Consumer	12	21.8%
IT, telecom and media	9	16.4%
Other	8	14.5%
Total	55	100.0%
By restructuring year		
2002-2005	13	23.6%
2006-2009	15	27.3%
2010-2013	10	18.2%
2014-2017	17	30.9%
Total	55	100.0%

As it can be seen from the data above, the companies of the sample tend to be of large size, both in terms of sales and total financial debt. Furthermore, the breakdown by industry and restructuring year suggests that no industry nor period dominates the sample, which helps reducing potential biases, in particular considering the relatively limited size of the sample.

3.3 Methodology

The analysis has been carried out by following two different approaches depending on the different research hypotheses of focus, as described in the paragraphs below.

3.3.1 Hypotheses 1, 2, and 3

Hypotheses 1, 2, and 3 are focused on assessing, respectively, pre-filing performances (H1), post-restructuring performances (H2), and whether Chapter 11 restructurings produce improvements in economic and/or stock performances (H3).

The presence of statistically significant results supporting the different hypotheses has been mainly investigated by using one-sided t-tests on the average values. However, due to the relatively limited size of the sample and the high standard deviation of the values assumed by each company for the different variables, cross-checks have been carried out to ensure the soundness of the results suggested by the t-tests. In particular, the following metrics have been also considered: median values and % of negative observations (e.g., % of companies with negative EBITDA margin or negative improvements in EBITDA margin). The use of such metrics has been particularly important in those cases where average values were not statistically significant. In particular, they have been used as follows:

1. Regarding pre-filing and post-restructuring performances (H1 and H2), such metrics have been compared, individually, with the average. In case of contradictory results, each case has been assessed individually to understand which factors might drive any discrepancies and how they might impact the general considerations underlying each hypothesis.
2. Regarding improvements, such metrics have been considered in two ways: first, by computing them for the improvements (e.g., median improvement in EBITDA margin); second, by comparing the values assumed by pre-filing and post-

restructuring performances for each metric (e.g., pre-filing median EBITDA margin vs post-restructuring median EBITDA Margin). In case of contradictory results, the same procedure as above has been applied.

3.3.2 Hypotheses 4 and 5

The analysis for testing hypotheses 4 and 5 has been carried out with multivariate regressions and OLS estimation via Microsoft Excel.

In particular, as already mentioned in the paragraph dedicated to the variables, preliminary checks have been carried out to ensure the absence of multicollinearity among the independent variables used in the analysis. To this end, the relevant variance inflation factors (VIF) have been computed, all of which assumed values below 1.1 for the variables considered, suggesting the absence of multicollinearity.

Subsequently, the relevant dependent variables (i.e., pre-filing performances, post-restructuring performances, and improvement in performances) have been regressed individually against the independent ones by using the following equation:

$$y = \alpha + \beta_1(\% \text{ secured debt}) + \beta_2(\% \text{ BLOB}) + \beta_3(\% \text{ convertible debt}) + \beta_4(\text{delay}) + \varepsilon$$

where y is the dependent variable, α the intercept, β_i the coefficients, and ε the error term.

Subsequently, in order to test the statistical significance of the β_i coefficients, two-sided t-tests have been carried out for each coefficient. In particular, in case of statistically significant coefficients, each result has been discussed individually and possible economic interpretations have been provided. Importantly, for the explanation of the relationships between the independent variables and the improvements, the results related to pre-filing and post-restructuring performances have been extensively used and discussed, as they represent the drivers of the improvements themselves.

4. EMPIRICAL ANALYSIS AND RESULTS

4.1 Pre-filing and post-restructuring performances, and effectiveness of Chapter 11

The results of the analysis are discussed in the order followed by the research hypotheses. In particular, for each of them both the statistical evidence and the related economic interpretations are discussed. The relevant statistics for the first three hypotheses are reported in the table 4.1 below. Subsequently, in table 4.2, a breakdown by restructuring strategy of the performance statistics is shown. This further analysis helped to assure that what happens during the restructuring (in terms of strategy implemented) does not necessarily bias the results of the analysis. Indeed, the statistics of the different sub-samples are not statistically different from those of the general sample. This result is explained by two factors. First, distressed companies tend to implement combinations of asset-based (e.g., asset sales) and liability-based (e.g., debt write-downs, new equity issuances) strategies rather than just one of them. As a result, conditioning the performances to the “restructuring strategy” variable does not add any value to the statistical analysis, since most of the observations fall within all the different sub-samples at the same time (i.e., the variable does not allow to discriminate the observations further). Due to this substantial overlap, it is evident that the statistics in the different sub-samples will not be statistically different from those of the general sample, as indeed confirmed by t-tests carried out for any relevant significance level (90%, 95%, and 99%). The only exception regards post-restructuring EBITDA Margin within the “Equity Issuance” sub-sample, which is statistically different from the value assumed in the general sample at 95% confidence level. Second, the different variables have very large volatilities which make it difficult to reject the null hypothesis of the restricted-sample statistics being equal to the wide-sample ones (i.e., to find evidence that they are different and thus that what happens during Chapter 11

matters). As a result, considering this sample, ignoring what happens during Chapter 11 does not distort the results of the analysis.

Table 4.1

This table provides the relevant statistics for hypotheses 1, 2, and 3. The computation methodologies are described in table 1.a above. For each metric, statistical significance has been assessed with one-tailed T-tests, given that the focus of the different hypotheses was on investigating, depending on the cases, the statistical significance of the sign and direction. The relevant t-statistics are reported in brackets below the average they are referred to, and the sample includes 55 units.

	Average	Median	Std. Deviation	% observations < 0
Economic performances				
EBITDA Margin				
Pre-filing	-5.4% (-0.636)	4.7%	60.8%	20.0%
Post-restructuring	8.7% (1.194)	10.4%	52.7%	7.3%
Improvement	14.1%*** (2.674)	1.9%	38.0%	27.3%
Sales Growth				
Pre-filing	-10.5%** (-1.720)	-11.0%	44.0%	65.5%
Post-restructuring	0.1% (0.673)	-3.2%	38.3%	52.7%
Improvement	10.6%* (1.452)	12.4%	52.7%	34.5%
EBITDA Growth				
Pre-filing	-115.2%*** (-3.020)	-21.2%	275.0%	65.5%
Post-restructuring	13.4% (0.491)	-11.6%	143.6%	56.4%
Improvement	128.6%*** (3.093)	22.3%	299.8%	30.9%
FCF/Sales				
Pre-filing	-16.8%** (-2.202)	-1.6%	55.0%	52.7%
Post-restructuring	-10.7%* (-1.401)	-0.1%	54.8%	47.3%
Improvement	6.1%* (1.564)	3.0%	28.3%	36.4%

Stock performances				
1 year				
Pre-filing	-44.9%*** (-8.850)	-55.3%	37.6%	87.3%
Post-restructuring	15.9% (1.096)	-12.9%	107.8%	56.4%
Improvement	60.8%*** (4.332)	51.2%	104.1%	21.8%
2 years				
Pre-filing	-83.7%*** (-20.630)	-95.3%	30.1%	96.4%
Post-restructuring	14.9% (0.817)	-20.5%	135.3%	65.5%
Improvement	98.6%*** (5.500)	69.1%	133.0%	5.5%

***, **, and * denote statistical significance at 99%, 95% and 90% level respectively, as measured by one-tailed T-tests.

Table 4.2.

This table provides a breakdown of the relevant economic and stock statistics by restructuring strategy implemented. In this case, to test statistical significance, two-sided T-tests have been performed. In particular, the underlying null hypothesis of the test is that a given statistic (e.g., EBITDA Margin improvement) computed in the restricted sample (e.g., sample made of companies that executed an asset sale during Chapter 11) is equal to the same statistic computed in the general, wider sample including all companies. The t-values for the different metrics are reported in brackets.

Restructuring strategy	Observations				% of sample	
Asset sale	40				72.7%	
Equity issuance	28				50.9%	
Debt write-down	46				83.6%	

	Asset sales		Equity Issuance		Debt write-downs	
Economic performances						
	Average	Median	Average	Median	Average	Median
EBITDA Margin						
Pre-filing	-9.0%	3.7%	0.2%	6.5%	-6.7%	5.0%
	(-0.346)		(0.761)		(-0.143)	
Post-restructuring	5.7%	9.5%	16.0%**	11.2%	8.2%	10.9%
	(-0.321)		(2.107)		(-0.069)	
Improvement	14.7%	2.2%	15.8%	2.2%	15.9%	2.1%
	(0.099)		(0.212)		(0.304)	
Sales Growth						
Pre-filing	-11.7%	-9.4%	-15.4%	-20.4%	-11.6%	-11.4%
	(-0.161)		(-0.627)		(-0.166)	
Post-restructuring	1.5%	-4.5%	-0.9%	-1.5%	1.0%	-3.1%
	(0.215)		(-0.127)		(0.151)	
Improvement	13.2%	19.3%	14.6%	23.2%	13.4%	18.1%
	(0.296)		(0.421)		(0.352)	
EBITDA Growth						
Pre-filing	-156.4%	-46.4%	-114.3%	-83.3%	-136.3%	-35.3%
	(-0.877)		(0.020)		(-0.505)	
Post-restructuring	25.2%	-11.6%	42.0%	-1.3%	15.7%	-11.6%
	(0.477)		(0.867)		(0.105)	
Improvement	181.6%	57.0%	156.3%	79.4%	150.4%	30.2%
	(1.051)		(0.517)		(0.479)	
FCF/Sales						
Pre-filing	-22.8%	-1.8%	-18.4%	-0.8%	-18.3%	-0.4%
	(-0.628)		(-0.134)		(-0.171)	
Post-restructuring	-14.4%	0.8%	-9.9%	-0.7%	-12.5%	-0.1%
	(-0.384)		(0.076)		(-0.220)	
Improvement	8.4%	4.1%	8.5%	3.1%	6.4%	3.0%
	(0.468)		(0.499)		(0.049)	
Stock performances						
	Average	Median	Average	Median	Average	Median
1 year						
Pre-filing	-47.1%	-55.4%	-47.2%	-58.9%	-46.3%	-54.9%
	(-0.283)		(-0.231)		(-0.154)	
Post-restructuring	8.9%	13.8%	-1.4%	-9.5%	17.9%	-3.3%

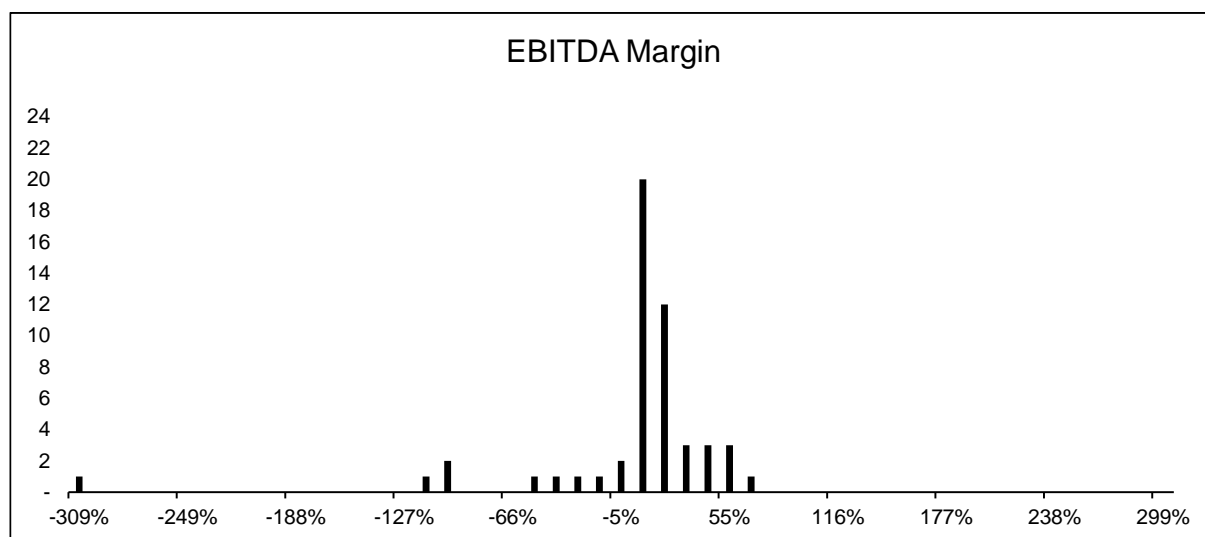
Improvement	(-0.567) 56.0% 49.5% (-0.470)	(-1.413) 45.8% 50.6% (-1.262)	(-0.037) 64.2% 58.3% (0.016)
2 years			
Pre-filing	-83.0% -95.3% (0.049)	-80.1% -95.1% (0.421)	-83.2% -95.2% (0.008)
Post-restructuring	3.7% -21.4% (-0.697)	13.7% -17.6% (-0.023)	19.8% -17.6% (0.264)
Improvement	86.7% 63.5% (-0.696)	93.8% 71.4% (-0.168)	103.0% 66.9% (0.266)
***, **, and * denote statistical significance at 99%, 95% and 90% level respectively, as measured by one-tailed T-tests.			

H1: Economic and stock performances before Chapter 11 are deteriorated (i.e., zero or negative).

The results of the analysis strongly support the first hypothesis. Indeed, I find evidence of extremely deteriorated economic and stock performances before the filing.

Profitability

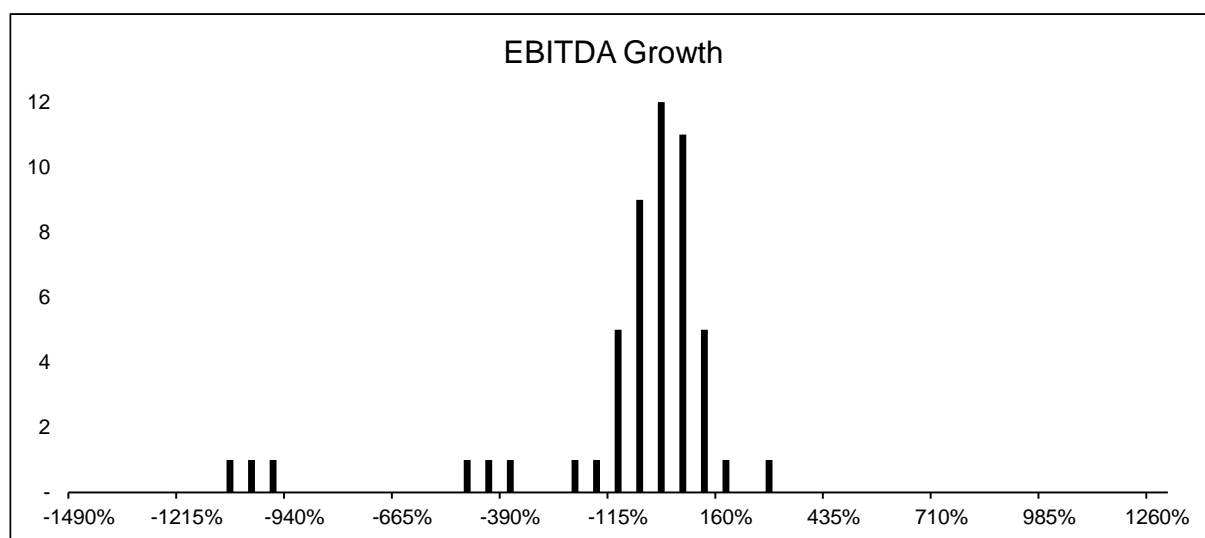
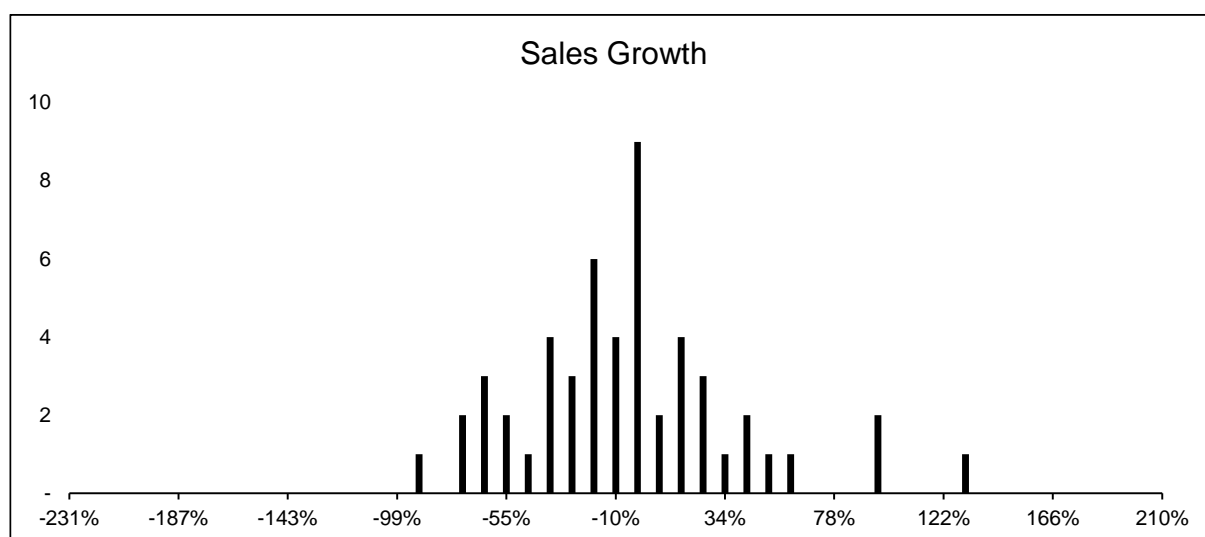
Average operating profitability is not statistically different from zero and the median value is very low (4.7%). Interestingly, the number of companies with negative EBITDA margin before the filing is relatively limited as it only represents 20.0% of the total sample. When negative, however, pre-filing profitability can be very negative, as it can be seen in the chart below, which plots EBITDA Margin levels for up to 5 standard deviations from the mean (x axis) and the number of companies of the sample having given levels of EBITDA Margin (y axis).



Overall, this condition of near-zero operating profitability confirms the expectation that financially distressed companies tend to struggle to turn their sales into operating profits while in financial distress. In particular, it shows that financial distress is often coupled with economic distress, which clearly worsens operating profitability.

Growth

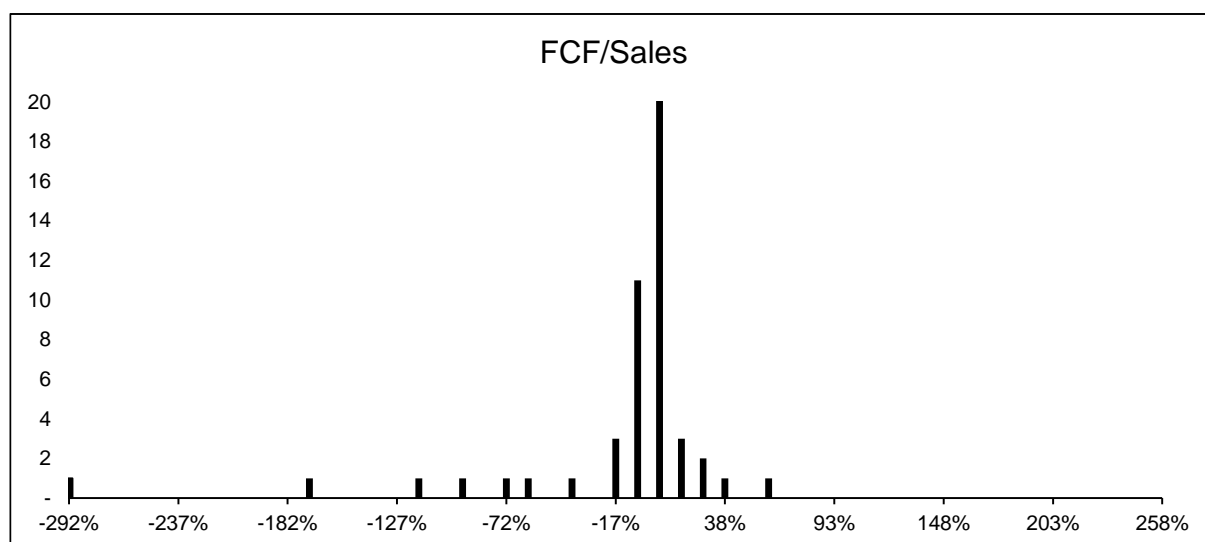
Average growth is negative and this result is statistically significant. In particular, the average declines of sales and EBITDA are, respectively, -10.5% and -115.2%. These results are confirmed when looking at the medians, which are also deeply negative (respectively -11.0% and -21.2%), and the number of companies with negative growth, which amounts to 65.5% of total sample for both metrics. These results are also confirmed in the charts below, which also capture the extreme volatility of growth metrics of distressed businesses.



Overall, these results suggest that, as expected, growth capabilities are severely compromised for financially distressed businesses and that, like in the case of profitability, such condition is often coupled with economic distress.

Liquidity

Average liquidity is negative and this result is statistically significant. In particular, the average FCF/Sales ratio is -16.8%. Also this result is confirmed when looking at both the median, which is -1.6%, and the number of companies with negative liquidity, which amounts to 52.7%. Finally, as it can be seen from the chart below, the distribution of the liquidity levels of the companies in the sample is characterized by the presence of many observations close to zero, but also by a non-negligible number of companies with extremely negative liquidity.

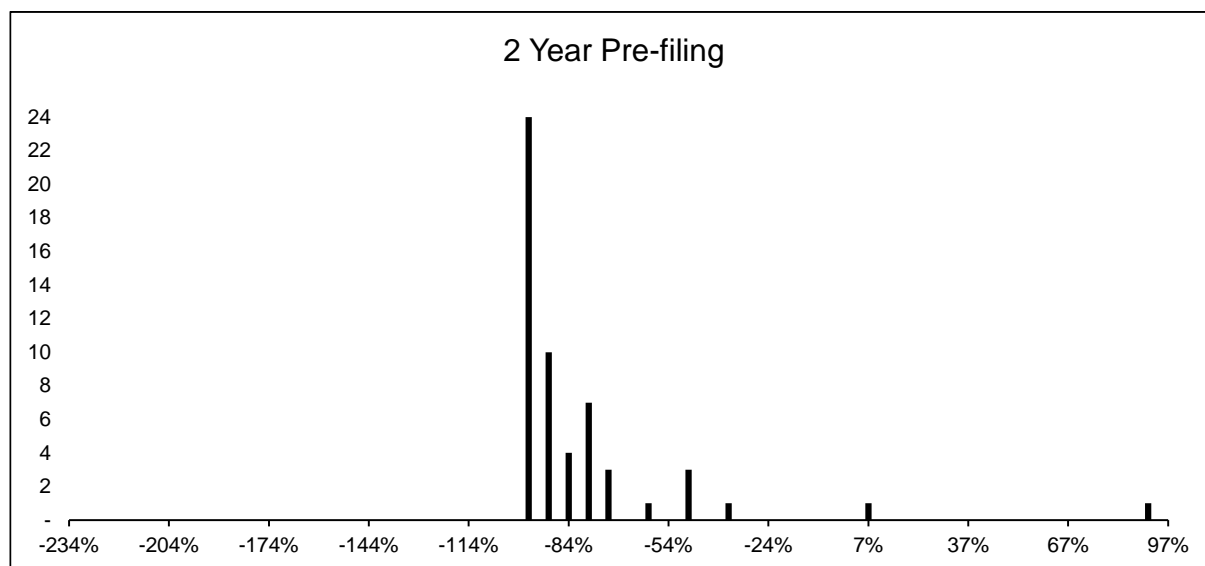
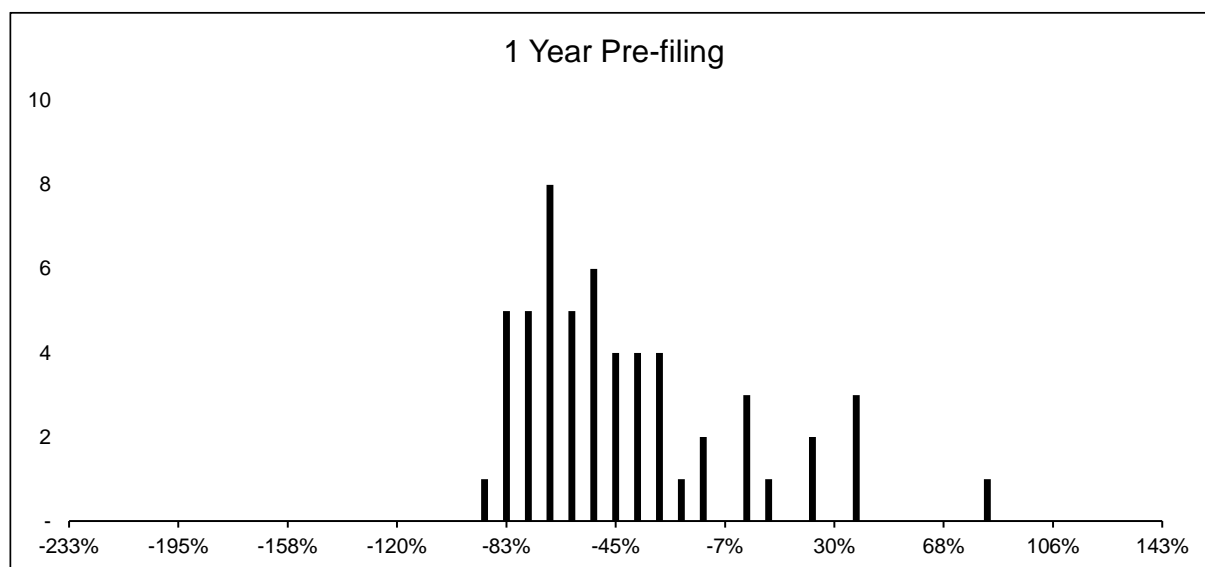


Overall, these results were expected since financially distressed businesses tend to have liquidity problems which prevent them from meeting their financial obligations.

Stock performances

The evidence of negative stock performances is statistically significant. In particular, for the 1 year and 2 years before the filing date, the average cumulative returns are, respectively, -44.9% and -83.7%. Such evidence is also strongly confirmed when

considering the medians, which are deeply negative as well (respectively -55.3% and -95.3%), and the number of companies with negative returns, which are respectively 87.3% and 96.4% of the total sample. Finally, the charts below provide a visual representation of the strong evidence in support of extremely deteriorated stock performances before the filing.



Overall, these results were expected because of the poor economic performances and also because financially distressed companies are often insolvent, which means that in bankruptcy shareholders are often wiped out, bringing equity value to zero or close to it. Equivalently, the probability of bankruptcy increases and – in turn – the expected

costs of bankruptcy (i.e.: costs weighted for the probability of bankruptcy) increase, making firm value – and therefore equity – less valuable, all else equal.

Economic interpretation of the results

Economically, all these results were expected. Indeed, as already documented by existing literature, financially distressed businesses are subject to substantial direct and indirect costs of financial distress, which undermine both performances and firm value severely.

In terms of direct costs, financially distressed companies pay fees to advisors to help them renegotiate their debts. It is important to note that these costs are likely to occur also in the pre-filing phase, since financially distressed companies usually try to firstly restructure out of court, which clearly requires advisors and therefore paying fees. Moreover, troubled businesses face agency costs that reduce firm value due to the misalignment of interest between equity and debt holders, such as debt-overhang and excessive risk-taking, as described in the dedicated paragraph in the literature chapter.

In terms of indirect costs, instead, financially distressed companies suffer from pressures from many stakeholders, such as customers, suppliers, employees, and also undertake initiatives, such as fire asset sales, which are detrimental for firm value.

In particular, since financially distressed firms have a greater probability of filing for bankruptcy than healthy competitors, customers may be reluctant to purchase goods whose value depends on future support or service from them. Indeed, bankruptcy may enable it to walk away from commitments to its customers. As a result, revenues decrease, triggering growth declines both in top-line sales and – for given levels of EBITDA margin – in EBITDA growth.

Furthermore, since these companies also have troubles with meeting their financial obligations, then suppliers may be reluctant to sell goods to them, fearing that they might not be paid. Without supplies, distressed companies might not be able to generate revenues due, for example, to lack of raw materials, which adversely affects growth. Equivalently, they might need to look for alternative suppliers, which is costly and reduces profitability.

Along with these dynamics, given the desperate need for distressed companies to generate revenues to survive, customers might be in the position to exercise pressures on prices and payment terms. In particular, instead of not buying the products at all, they might be willing to do so at lower prices and by delaying payments, which affect profitability and liquidity. In the same way, suppliers might continue to sell goods to distressed companies provided that they pay sooner, which adversely impacts liquidity.

Financial distress might also make it difficult for companies to manage their human capital. In particular, the financial distress costs related to loss of employees may be significant and involve both current and new (potential) employees. Indeed, since financially distressed firms might not be able to offer job security with long-term employment contracts, they may have difficulty in hiring new employees, and existing employees may quit or be hired by other firms, for example because they fear their salaries will not be paid. As a result, the firm might experience lower sales (e.g.: when key salespeople leave) and profitability, as the most valuable and productive/efficient employees would likely leave. These factors clearly affect growth and profitability.

Financially distressed firms tend to also have difficulty in collecting money that is owed to them. Indeed, the awareness that they might cease operations and go out of business reduces the incentive of customers to maintain a reputation for timely payment, which undermines liquidity.

Finally, when companies are financially distressed, their first priority is to raise cash. To do that, they might start to sell assets at enormous discounts, collecting losses. This undermines profitability as well as growth since the sale of revenue-generating assets causes sales drops and fire sales cause losses.

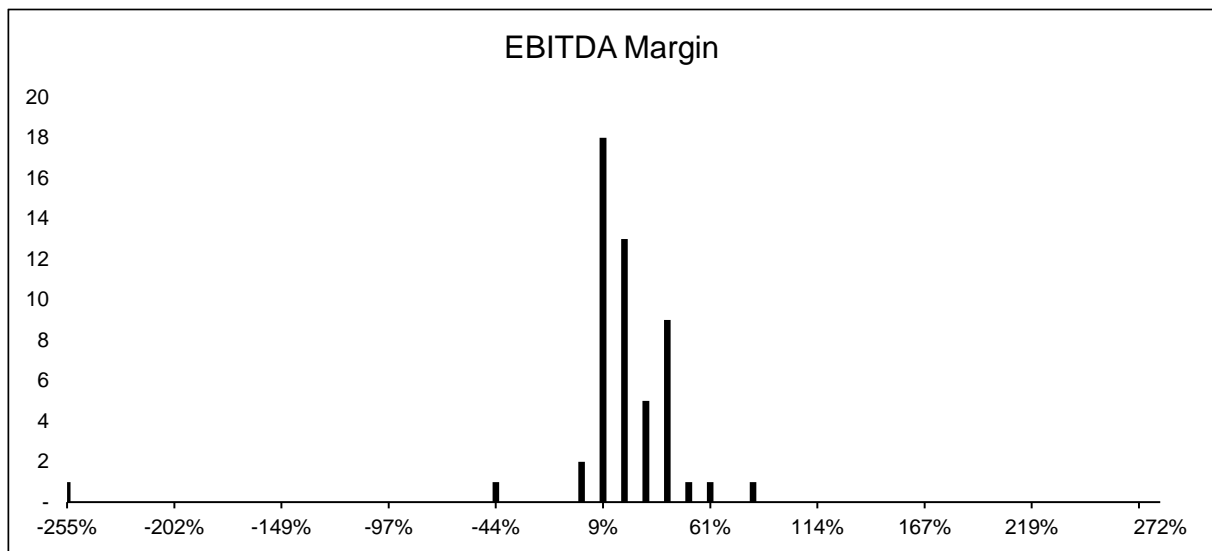
H2: Economic and stock performances after the restructuring are systematically good (i.e., at least positive).

The results of analysis do not support this hypothesis. Indeed, I do not find strong evidence of systematically good post-restructuring performances.

Profitability

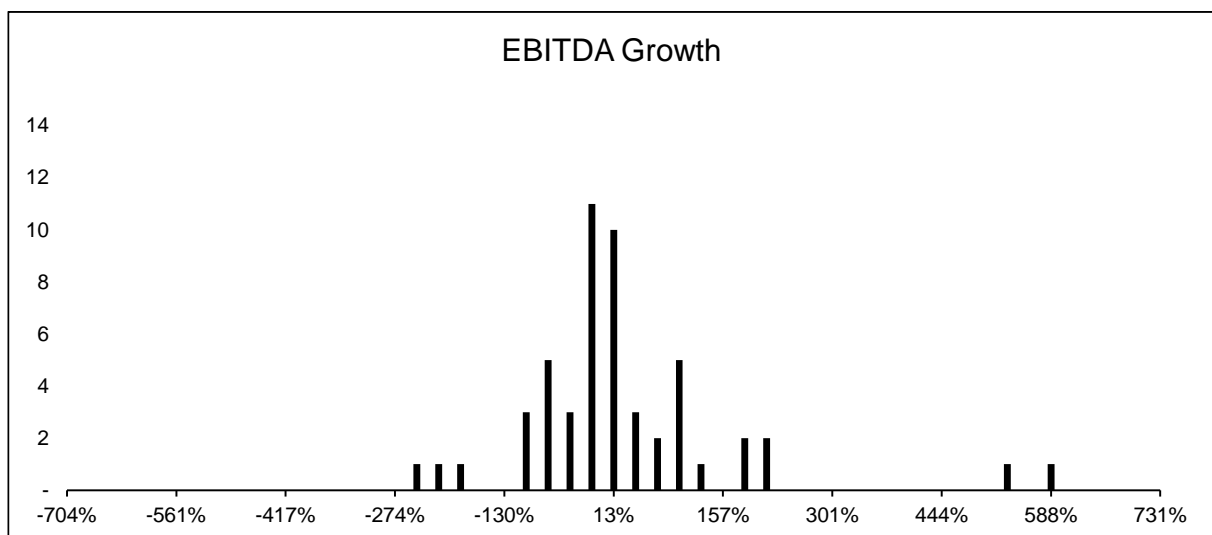
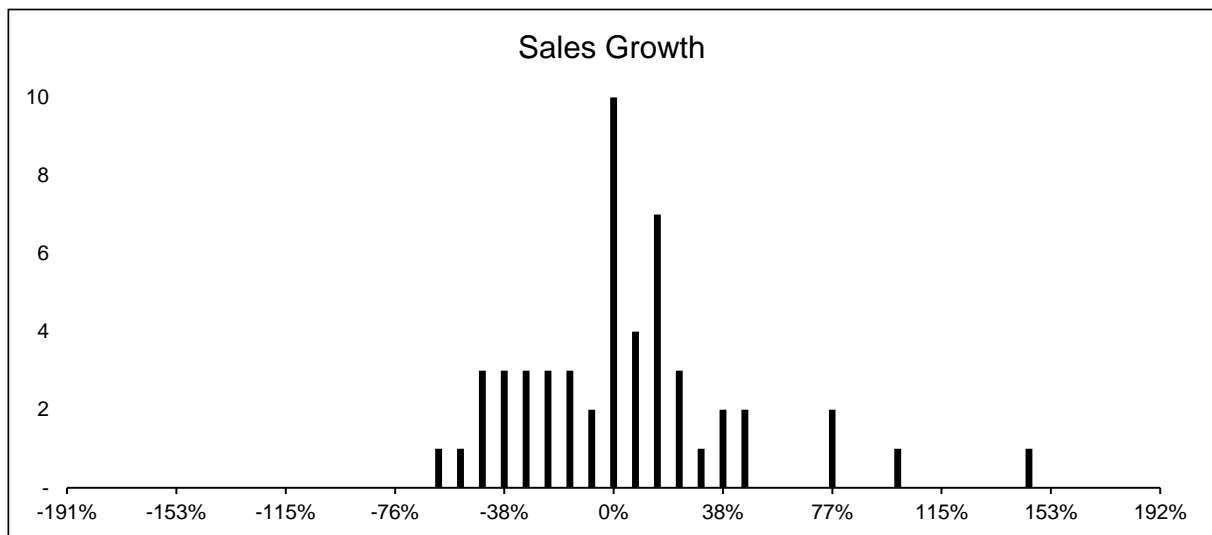
Average profitability is positive (8.7%), but this result is not statistically significant. However, the median is positive (10.4%) and the number of companies with negative post-restructuring profitability is very limited, as it only represents the 7.3% of the sample. The lack of statistical significance is therefore probably attributable to the large volatility in the EBITDA margins of the companies in the sample, which is 52.7%, and dominates the average. Overall, despite the lack of significance of the average, post-restructuring profitability is somewhat good, but not excellent. This result is also confirmed when looking at the chart below, where most of the observations show positive profitability, many of which are however very close to zero (included in the 9% column⁶).

⁶ They are included in this column by construction, given that – due to large volatility – each value on the x axis includes values which might be different one another.



Growth

Average growth is close to zero at sales level (0.1%) and positive at EBITDA level (13.4%), but none of these results is statistically significant. Regarding EBITDA growth specifically, also in this case the lack of statistical significance might be due to the extreme volatility, which amounts to 143.6%. By looking at both medians and percentages of companies with negative growth, post-restructuring growth seems to be poor. Indeed, both medians are negative and, in both cases, more than 50% of the sample continues to post negative growth after the restructuring. Finally, also the visual inspection of the charts below suggests that for both sales and EBITDA growth the number of companies with deeply negative growth metrics is high, even if there are instances with extremely positive results.

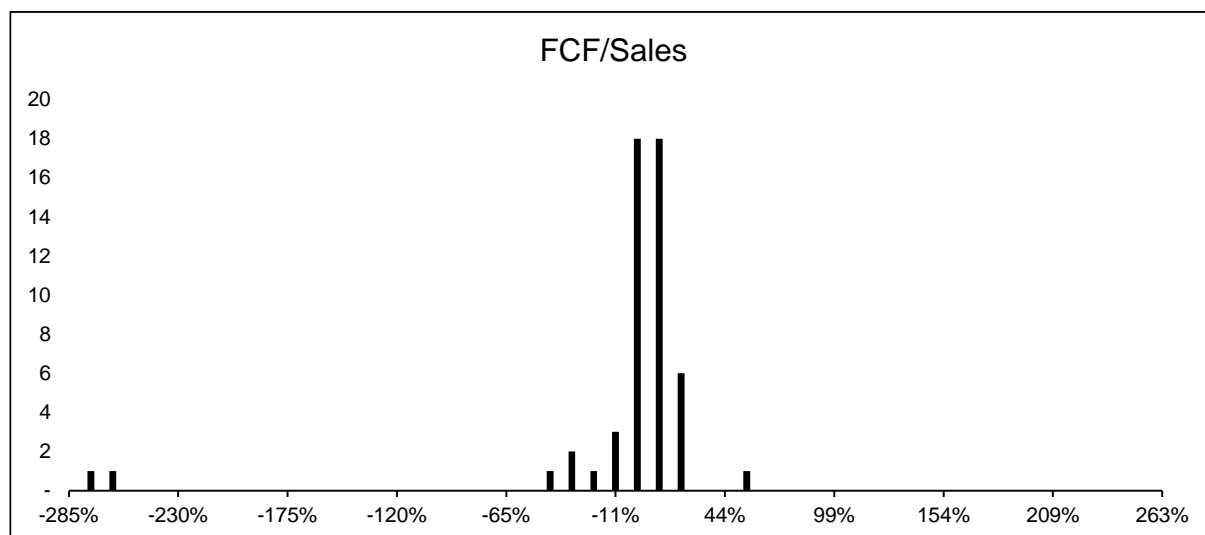


These results are particularly interesting as they suggest that, after the restructuring, companies continue to face troubles with revenue generation and growth in general. Overall, growth is therefore not good on aggregate, even if it can get extremely good for some companies.

Liquidity

Average liquidity, which is typically the key problem for distressed businesses, is negative (-10.7%) and this result is statistically significant. Such evidence is also confirmed by looking at the median – which is nearly zero (-0.1%) – and the number of observations which post negative liquidity after the restructuring, which amounts to 47.3% of the sample. Finally, as it can be verified with the visual inspection of the chart

below, many observations show liquidity levels close to zero but there are also cases where liquidity becomes extremely deteriorated after Chapter 11.

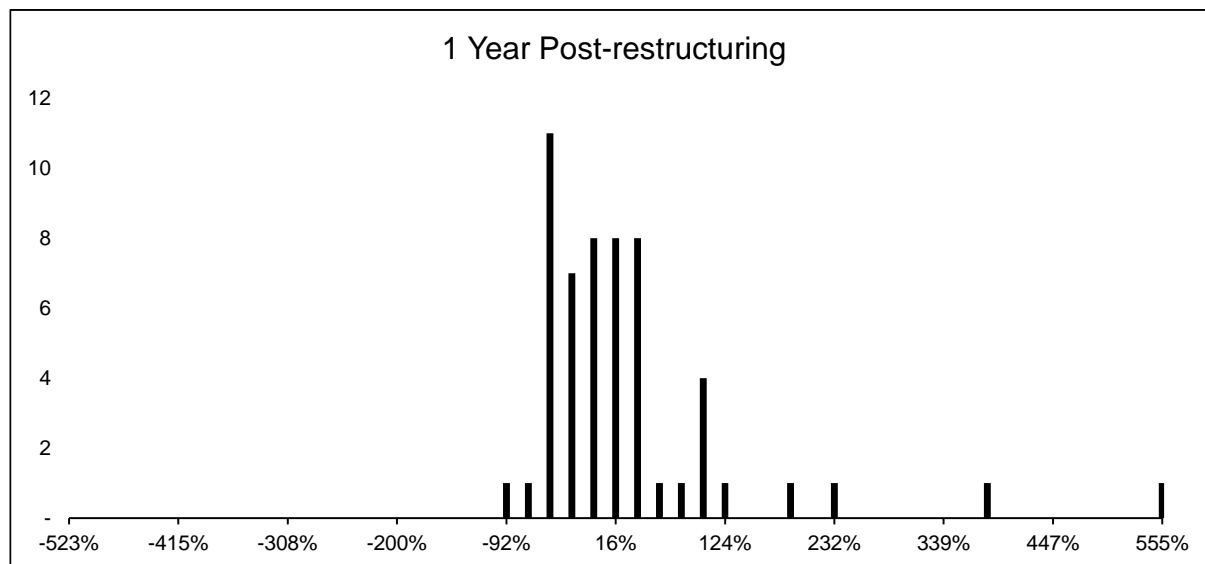


This result suggests that liquidity problems continue after the restructuring and that therefore Chapter 11 is not as effective as it could be to solve this problem, at least in the short term. Overall, liquidity is therefore not good.

Stock performances

Stock performances after the restructuring are positive (15.9% and 14.9% for, respectively, the 1 and 2 years after emergence), but this result is not statistically significant. In particular, the lack of significance is attributable to the extreme volatilities of returns, which are respectively 107.8% and 135.3% for the 1- and 2-year performances. Such high post-restructuring volatilities in stock returns were expected, as they are consistent with previous literature. In addition, both the medians (-12.9% and -20.5%) and the percentages of companies that continue to post negative stock performances after the restructuring (56.4% and 65.5%), suggest that stock performances after the restructuring tend to remain very poor. This might be due to the fact that, as just seen, restructured businesses continue to be financially unstable and weak. Interestingly, however, as it can be seen from the charts below, for both the 1

and 2 years after the restructuring there is a non-negligible number of cases in which firms post extremely high returns.



performances, which often bring them back in court to restructure again. In particular, as we shall see later, these results suggest that Chapter 11 seems to be only able to reduce but not remove the indirect costs of financial distress, at least in the short term, which causes bad performances to persist. There might also be other reasons behind such poor performances, however. In particular, because of the substantial costs associated with Chapter 11, only those firms which are unable to restructure out-of-court eventually file for it. Intuitively (and also according to previous literature), these firms might be of lower quality than those that manage to restructure out of court, and therefore their poor post-restructuring performances might be influenced by the *ex ante* lower quality of their businesses. Finally, in terms of stock performances, when one also considers the extremely high volatility, they seem to reflect the high risk of recently-bankrupt businesses as well as the uncertainties on the companies' ability to avoid further restructurings in the future, as also suggested by previous literature.

Overall, these results imply that Chapter 11 might not be an effective tool to completely turnaround – in absolute terms – troubled firms, but only to partially do so.

H3: Improvements in economic and stock performances are positive and statistically significant.

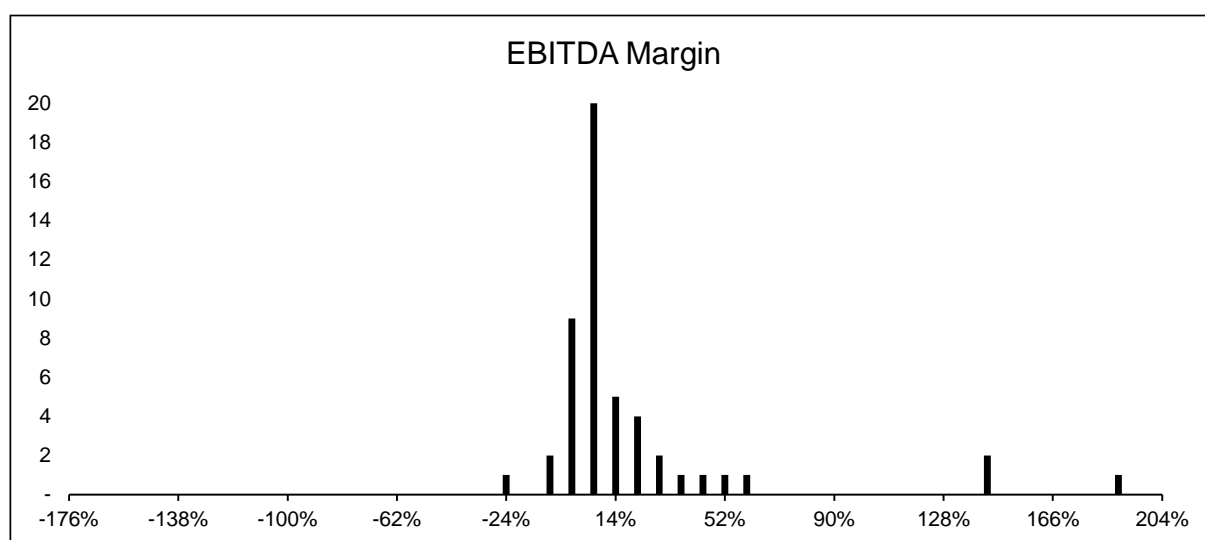
The results of the analysis provide strong support to this hypothesis.

Profitability

The average improvement in EBITDA margin is 14.1% and is statistically significant, which suggests that – on average – Chapter 11 leads to significant improvements in profitability in relative terms. However, the median (1.9%) and the % of negative improvements (i.e., deteriorations, 27.3%) suggest that this result might not be as strong as it seems.

When looking at pre-filing and post-restructuring levels jointly, the median EBITDA margin increases from 4.7% to 10.4%, and the % of companies with negative profitability decreases from 21.2% to 7.7%. These results clearly support the effectiveness of Chapter 11 proceedings to generate profitability improvements.

When digging into the magnitude of the profitability deteriorations and improvements, a visual inspection of the chart below can be helpful.



In particular, it shows that nearly all the negative improvements are less than 0.5 standard deviations from the mean of 14%, which, given a standard deviation of 38%, correspond to negative deltas of no more than -5% (i.e., very small).

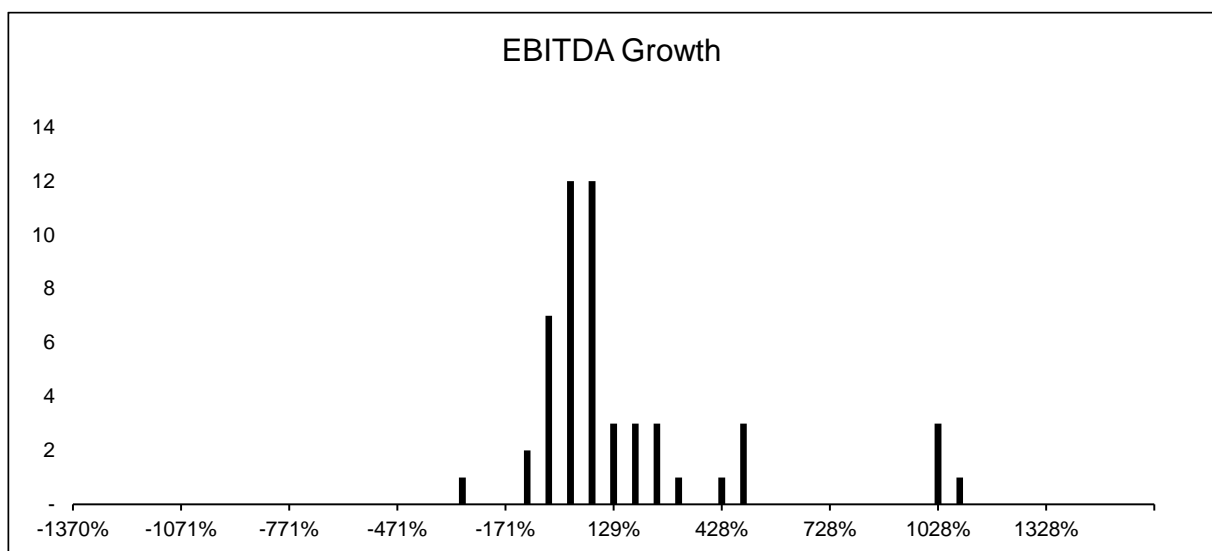
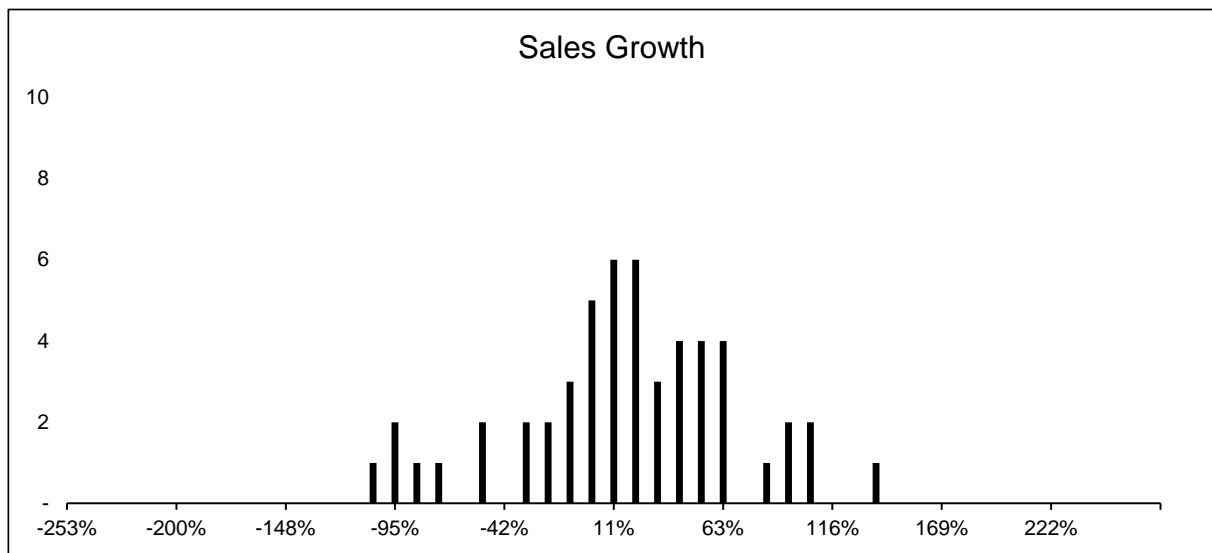
Finally, It is also important to note that, even after the removal of the outliers, the sample is characterised by a non-negligible number of very large positive improvements and the lack of equally large deteriorations. This suggests that while the deteriorations tend to be very small, positive improvements can be very large (more than 3-4 standard deviations from the mean).

Overall, it is evident that Chapter 11 helps companies to make their profitability better, thus delivering improvements.

Growth

The average improvements in growth are 10.6% and 128.6% at, respectively, sales and EBITDA level. These results are statistically significant and suggest that – on average – Chapter 11 leads to significant improvements in growth. These results are also supported by the median improvements, which are large and positive (respectively, 12.4% and 22.3%), and by looking at pre-filing and post-restructuring median growth levels jointly. Indeed, median sales growth improves from -11.0% to -3.2% and median EBITDA growth from -21.2% to -11.6%.

However, similarly to the case of profitability, there is a non-negligible share of companies experiencing negative growth improvements (respectively, 34.5% and 30.9%). Unlike profitability, in the case of growth such deteriorations can also be substantial, as it can be seen from the charts below. Indeed, in particular in terms of sales growth, decreases can also be of more than 2 standard deviations from the mean.



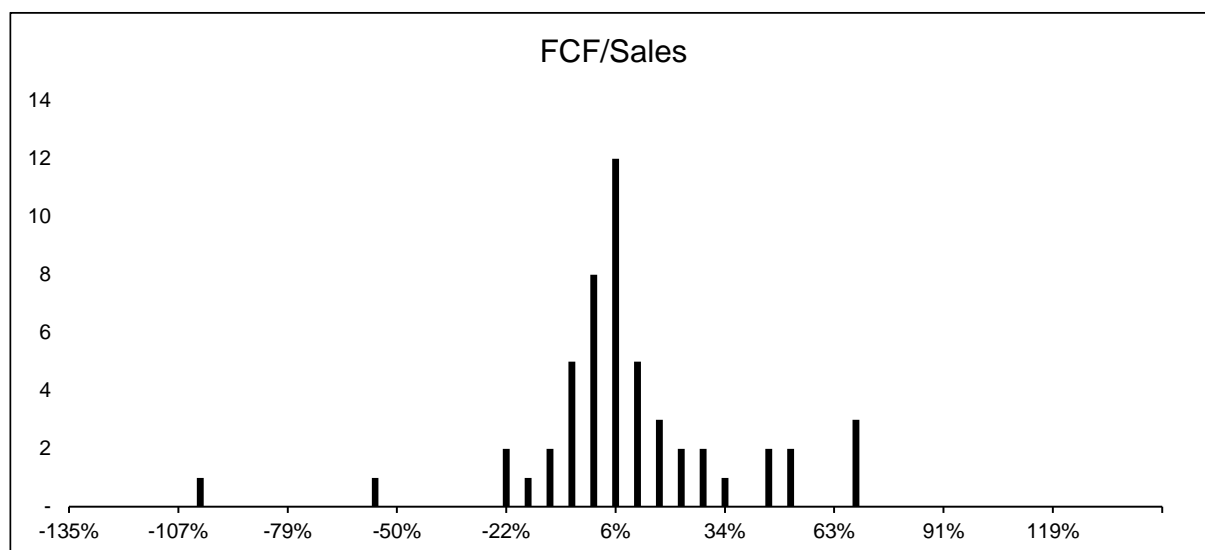
Nevertheless, in both cases the number of companies experiencing negative growth after the restructuring decreases when compared to pre-filing levels (from 65.5% in both cases to 52.7% and 56.4%, respectively), even if the decrease is not substantial.

In general, by looking at pre-filing and post-restructuring performances jointly, it is therefore evident that Chapter 11 helps companies to improve, but not enough to systematically achieve positive post-restructuring growth. Also in this case, this evidence supports the hypothesis that Chapter 11 helps companies to achieve improvements in growth, since the focus is on the relative levels rather than the absolute (post-restructuring) ones.

Finally, the large differential between sales growth and EBITDA growth in terms of improvements (10.6% and 128.6%) can be explained by the interaction of the EBITDA metric with improvements of profitability. In other words, since both sales and EBITDA margin (in %) grow, then EBITDA will benefit from their interaction and grow at a substantially faster pace (in particular when metrics turn from negative to positive).

Liquidity

The average improvement in liquidity is 6.1% and this result is statistically significant, which is indicative of the conclusion that Chapter 11 helps firms to achieve positive liquidity improvements. This result is also (weakly) confirmed by the median value, which is low but positive (3.0%), and by looking at pre-filing and post-restructuring median values separately, which improve from -1.6% to -0.1%. However, similarly to the case of growth, the share of companies experiencing negative improvements is relatively high (36.4%) and such deteriorations can be substantial, as it can be seen in the chart below.

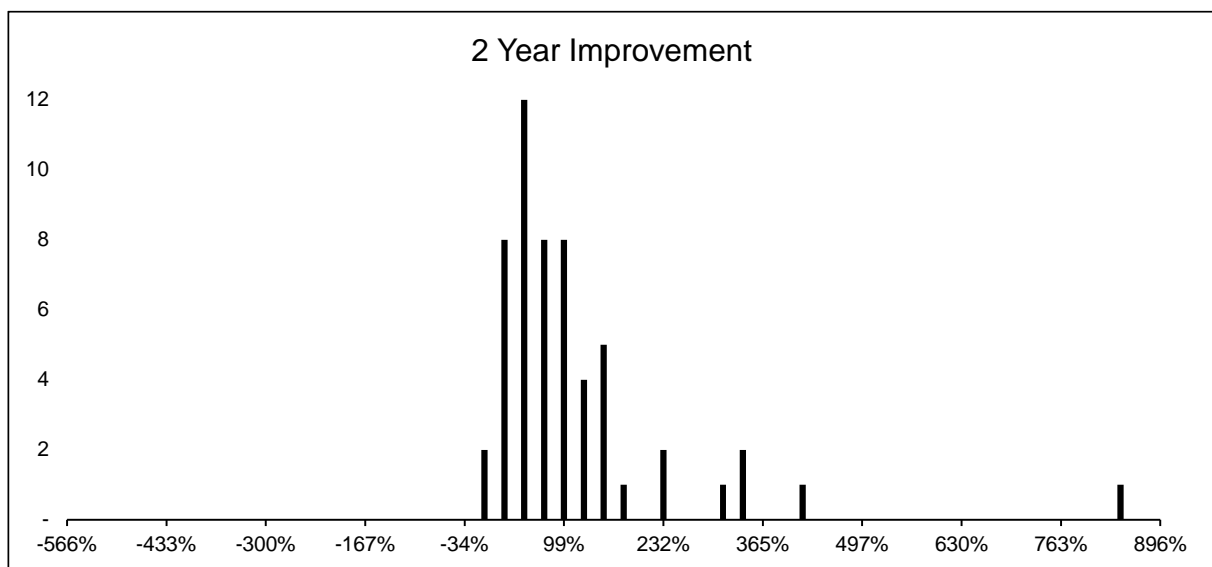
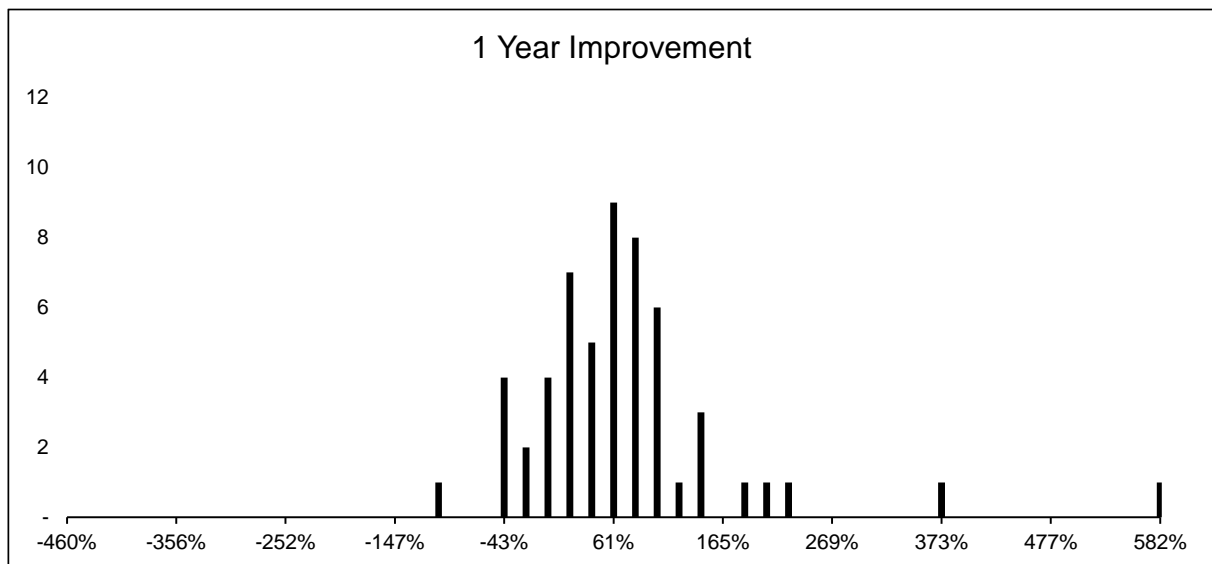


When looking at the percentages of companies with negative liquidity pre-filing and post-restructuring, it decreases from 52.7% to 57.3% of the sample, which is a weak result but still an improvement.

Overall, there is evidence that Chapter 11 allows firms to improve liquidity, even if not in a substantial manner. Indeed, similarly to growth, it is evident that Chapter 11 helps companies to improve, but not enough to systematically achieve positive post-restructuring growth.

Stock performances

There is strong evidence of statistically significant improvements in stock performances after Chapter 11 reorganization. The average improvements in 1- and 2-year cumulative returns are respectively 60.8% and 98.6%. These results are also confirmed by the median improvement levels (respectively 51.2% and 69.1%) and by comparing pre-filing and post-restructuring median returns. Indeed, the 1-year median grows from -55.3% to -12.9%, and the 2-year median from -95.3% to -20.5%. Finally, also the percentages of companies experiencing negative improvements are extremely limited, in particular for the 2-year returns (respectively, 21.8% and 5.5%). The same finding applies when looking at the percentages of firms experiencing negative returns pre-filing and post-restructuring separately, which decrease in both cases (from 87.3% to 56.4% for the 1-year metric; from 96.4% to 65.5% for the 2-year metric). Therefore, overall, there is strong evidence that Chapter 11 is effective in making the equity of the restructured companies a better investment, even if this is not enough to make returns systematically positive in the post-restructuring period. A visual inspection of the charts below can be useful to verify the findings above.



Economic interpretation of the results

Following the same framework proposed previously, the economic reasons for the improvements in economic and stock performances can be explained as the reduction and/or partial resolution of some of the indirect costs of financial distress. In particular, once a firm is reorganized a number of improvements in its competitive landscape might take place.

Customers

The company's bargaining position with customers improves, as it no longer has a desperate need to sell goods to survive, which might lead to the following benefits. First, customers might not be able to ask for lower prices anymore and, at the same time, might start purchasing goods and services again from the company. Indeed, they would have no reasons to be scared of purchasing products whose value depends on future support from the distressed firm anymore, as it is no longer able to easily walk away from its commitments via bankruptcy. Second, customers might be in a relatively-weaker position to delay payments, even if adjustments to this might require time and occur gradually (for example because the renegotiation of contracts might require extended periods of time). Third, receivables might start to be paid on time again, since customers would now have the incentive to maintain their good reputation with timely payments.

Suppliers

The company's bargaining position with suppliers improves, so that it might not need to look for alternative suppliers anymore, which is usually costly. In addition, in line with what described for customers, also suppliers might start selling products and services to the company again, therefore allowing it to process and use them to generate revenues. Finally, suppliers might allow the company to delay payments since they do not fear anymore that they will not be paid. The same considerations as for customers apply regarding the time required for these changes.

Employees

Job security for current and new (potential) employees is no longer at risk, so the firm might be able to attract and retain talented people again.

Asset sales

Fire sales of assets are no longer required, so that the company does not need to sell revenue-generating assets at loss to survive.

Capital expenditures

The limited improvements in liquidity can be (at least partially) explained by the fact that, due to cuts to capital expenditures, enforcement actions, and asset sales which often occur during Chapter 11 and right before it, the company might need to resume capital expenditures which could absorb liquidity and undermine any improvements of it.

Stock performances

Restructured businesses tend to have more sustainable capital structures, which reduce the probability of bankruptcy and the associated costs therefore increasing equity value. In addition, another driver of the improvements is the relatively higher quality of the restructured business compared to the pre-filing business, which makes the company a relatively better investment, all else equal. Indeed, as shown in the economic performances section, Chapter 11 is effective in reducing the costs of financial distress which in turn improves the quality of the company, even if short term economic performances might continue to be poor after the restructuring. In other words, Chapter 11 makes companies “less bad” and, as a result, stock performances are relatively better.

Overall impact

As a result of all these dynamics (or of a combination of them), both economic and stock performances improve.

However, the benefits do not seem to be enough to completely remove the related costs of financial distress. This might be explained by the fact that – as mentioned above and shown by previous literature – businesses that emerge from Chapter 11 continue to be relatively weak, which in turn reinforces a vicious circle that makes it difficult from them to completely eliminate the indirect costs of distress through the dynamics proposed above, even if they are not distressed anymore (the company is weak → indirect costs increase → the company gets weaker and so on). Nevertheless, there is strong evidence that – on a relative basis – the improvements are non-negligible.

4.2 Relationships between pre-filing debt structure and delays, and performances

The relevant results for hypotheses 4 and 5 are reported in tables 4.2 and 4.3 and then discussed separately below.

Table 4.2 – Relationships between pre-filing debt structures and delays, and pre-filing and post-restructuring performances

This table shows the key regression statistics of the multivariate regressions investigating potential relationships between pre-filing debt structure variables and delays, and pre-filing and post-restructuring economic performances taken separately. All regressions have been estimated as follows:

$$y = \alpha + \beta_1(\% \text{ Secured Debt}) + \beta_2(\% \text{ BLOB}) + \beta_3(\% \text{ Convertible Debt}) + \beta_4(\text{delay}) + \varepsilon$$

where the α is the intercept, β_i the coefficients, and ε the error term. The sample includes 55 units.

	Pre-RX EBITDA Margin	Post-RX EBITDA Margin	Pre-RX Sales Growth	Post-RX Sales Growth	Pre-RX EBITDA Growth	Post-RX EBITDA Growth	Pre-RX FCF/Sales	Post-RX FCF/Sales	Pre-RX 1-year Stock Return	Post-RX 1-year Stock Return	Pre-RX 2-year Stock Return	Post-RX 2-year Stock Return
Intercept	0.024 (0.125)	0.200 (1.115)	-0.475*** (-3.325)	-0.148 (-1.136)	-2.037** (-2.145)	-0.759 (-1.582)	0.014 (0.085)	0.156 (0.928)	0.676*** (-5.484)	-0.265 (-0.745)	-0.975*** (-9.934)	-1.174*** (-2.882)
% Secured Debt	-0.013 (-0.056)	-0.097 (-0.433)	0.032 (0.172)	0.039 (0.228)	0.370 (0.327)	-0.401 (-0.700)	-0.167 (-0.788)	-0.367 (-1.714)	0.229 (1.409)	0.460 (0.979)	0.191 (1.494)	1.265** (2.383)
% BLOB	0.427* (1.771)	0.231 (0.828)	0.544** (2.411)	0.325 (1.578)	2.253 (1.570)	1.367* (1.885)	0.354 (1.287)	0.336 (1.214)	0.206 (1.126)	0.541 (1.024)	-0.092 (-0.619)	1.423** (2.315)
% Convertible Debt pre	-0.044 (-0.134)	-0.312 (-1.006)	0.390 (1.336)	-0.089 (-0.336)	3.087** (2.035)	2.327*** (3.034)	-0.225 (-0.817)	-0.397 (-1.428)	0.129 (0.688)	0.373 (0.691)	0.013 (0.069)	-0.465 (-0.580)
Delay	-0.157*** (-3.195)	-0.082* (-1.770)	0.058 (1.487)	0.001 (0.037)	-0.426* (-1.778)	0.135 (1.117)	-0.133*** (-3.026)	-0.100** (-2.256)	0.007 (0.203)	-0.060 (-0.603)	0.057** (2.129)	0.107 (0.952)

***, **, and * denote statistical significance at 99%, 95% and 90% level respectively, as measured by two-tailed T-tests.

Table 4.3 – Relationships between pre-filing debt structures and delays, and improvements in performances

This table shows the key regression statistics of the multivariate regressions investigating potential relationships between pre-filing debt structure variables and delays, and improvements in economic and stock performances. All regressions have been estimated as follows:

$$y = \alpha + \beta_1(\% \text{ Secured Debt}) + \beta_2(\% \text{ BLOB}) + \beta_3(\% \text{ Convertible Debt}) + \beta_4(\text{delay}) + \varepsilon$$

where the α is the intercept, β_i the coefficients, and ε the error term. The sample includes 55 units.

	EBITDA Margin Improvement	Sales Growth Improvement	EBITDA Growth Improvement	FCF/Sales Improvement	1-year Stock Return Improvement	2-year Stock Return Improvement
Intercept	0.176 (1.373)	0.328* (1.820)	1.278 (1.212)	0.142 (1.471)	0.411 (1.166)	-0.199 (-0.494)
% Secured Debt	-0.083 (-0.523)	0.007 -0.029	-0.771 (-0.613)	-0.199 (-1.623)	0.231 (0.496)	1.074** (2.048)
% BLOB	-0.196 (-0.981)	-0.220 (-0.773)	-0.885 (-0.556)	-0.018 (-0.112)	0.335 (0.640)	1.515** (2.495)
% Convertible Debt	-0.268 (-1.207)	-0.480 (-1.305)	-0.759 (-0.451)	-0.171 (-1.075)	0.244 (0.457)	-0.479 (-0.604)
Delay	0.075** (2.261)	-0.056 (-1.155)	0.561** (2.110)	0.033 (1.307)	-0.067 (-0.680)	0.049 (0.444)

***, **, and * denote statistical significance at 99%, 95% and 90% level respectively, as measured by two-tailed T-tests.

H4: Pre-filing debt structures influence (i) improvements in performances, and/or (ii) pre-filing and/or post-restructuring performances.

The results of the analysis provide mixed evidence supporting this hypothesis, as described below.

Profitability

There is no evidence supporting the existence of relationships between improvements in EBITDA margin and pre-filing debt structures. Interestingly, however, the share of debt in the form of bank debt, leases, and other borrowings is significant to explain pre-filing profitability, as the coefficient of 0.43 is statistically significant. Regarding post-restructuring profitability, all the coefficients of the different kinds of debt are not statistically significant.

Economically, these results suggest that the choice of debt securities that companies use to finance their operations and investments before Chapter 11 does not seem to have any influence on its post-restructuring profitability taken alone, nor on the magnitude of the improvements in profitability that the company can expect to achieve as a result of the bankruptcy proceeding. Instead, the result on pre-filing profitability suggests that larger shares of BLOB are associated to less disruption in terms of profitability before Chapter 11. This can be explained by the fact that – as suggested by previous literature such as Asquit et al (1994) – banks and lessors tend to waive covenants and be more accomodating than other creditors, therefore allowing firms to continue their operations without exercising enforcement actions or other restrictive measures. As a result, companies might not need to undertake actions which might undermine their profitability, such as fire asset sales, therefore avoiding losses before the Chapter 11 filing and keeping profitability in a relatively better shape.

Interestingly, it is important to remind that the choice of debt securities might become relevant when one considers, instead, what happens *during* Chapter 11, i.e. between the filing and emergence date. Indeed, previous literature shows that pre-filing debt structures instead do impact the choice of firms to restructure, the terms at which they do it, and when they do it. All of these factors might very well be correlated with certain kinds of debt being associated to greater disruption during the proceeding resulting, for instance, from more difficult negotiations and enforcement actions which may subtract income-producing assets to the firm. However, this is out of scope for the purposes of this analysis and, as explained before, does not impact the overall results.

Growth

Sales Growth

When sales growth is taken as a proxy of growth, debt structures are not significant to explain growth improvements. Interestingly, however, the share of debt in the form of bank debt, leases, and other borrowings is significant to explain pre-filing sales growth, as the related coefficient of 0.54 is statistically significant.

Economically, this result suggests that larger shares of BLOB are associated to less disruption in terms of sales growth before Chapter 11. This can be explained by the same factors which explained the relationship between BLOB and profitability in the paragraph above. In particular, in this case, the accomodating behavior of banks and lessors allows firms to continue their operations without being subject to enforcement actions or other measures which might subtract them sales-generating assets, undermine their flexibility, and/or limit their revenue-generating capabilities in general, which would in turn adversely affect sales growth.

EBITDA Growth

When EBITDA growth is taken as proxy of growth, improvements are not associated with pre-filing debt structures, while both pre-filing and post-restructuring growths are. Indeed, regarding pre-filing performances, the coefficient of convertible debt is 3.09 and is statistically significant; regarding post-restructuring performances, the coefficients of BLOB and convertible debt are respectively 1.37 and 2.33, both of which are statistically significant.

Economically, the fact that convertible debt might be associated positively with better pre-filing performances is surprising. Indeed, previous literature shows that convertible securities are typically used by firms for which normal debt has become too expensive, or which have no debt capacity anymore. Therefore, one would expect these securities to be used by companies having relatively worse pre-filing performances. The results of this analysis, instead, suggest that the sophisticated investors which invest in these securities might represent a value-added to the firm in both the pre-filing and post-restructuring periods. Regarding the latter, the result is consistent with previous literature. Indeed, Hotchkiss and Mooradian (1997), found that restructured firms with activist investors tend to outperform other restructured peers in terms of post-restructuring operations. This might be due to a number of reasons, such as the fact that they might have hands-on approaches which help the firm to perform better. In terms of post-restructuring performances, the presence of convertible debt might also help to achieve better performances due to the fact that it is junior and unsecured, so that it can get easily called and converted into equity during the restructuring. This practice is also supported by previous literature such as King and Mauer (2012), that finds that the probability of calling convertible debt increases when the firm is undergoing financial restructuring and/or financial distress. As a result, the post-

restructuring capital structure might be much less leveraged and much more sustainable, which might help the company to achieve better performances.

Regarding BLOB, the fact that it is associated positively with post-restructuring growth may be due to the fact that banks are sophisticated investors which might make the restructuring smoother therefore better positioning the firm for good post-restructuring performances by minimizing disruption. This result is however not aligned with that of sales growth, for which the statistically significant coefficient was the one of pre-filing growth, nor post-restructuring growth.

Sales Growth and EBITDA Growth: comparison

Regarding improvements, there is consistency in the findings of the two metrics, Indeed, I find no evidence supporting potential relationships between pre-filing debt structures and sales nor EBITDA growth. However, some relationships exist when looking – separately – at pre-filing and post-restructuring performances. The differences in the relationships between EBITDA growth and sales growth regarding pre-filing and post-restructuring performances taken separately might be due to the fact that the former is the result of the interaction of sales growth with pre-filing and post-restructuring margin growths, which is however not captured in my analysis. Indeed, for the two years before the filing I use the average EBITDA margin without capturing the growth of margin between year -2 and -1. The same applies for post-restructuring metrics.

Liquidity

The improvements in FCF/Sales do not seem to be associated with pre-filing debt structures. This result is also confirmed by investigating any potential relationships between such variables and pre-filing and post-restructuring liquidity levels taken separately. Indeed, also in this case all the coefficients are not statistically significant.

Economically, these results suggest that the choice of debt securities that companies use to finance their operations and investments before Chapter 11 is not associated with pre-filing nor post-restructuring liquidity, nor with the related improvement resulting from the reorganization. This is an interesting result since there could be channels through which debt structures could be associated to liquidity. For example, the riskier (and more expensive) kinds of debt as well as hybrid securities are typically issued by badly-troubled firms, and Essig (1991) shows that the volatility of cash flows is positively associated to the propensity of firms to employ convertible debt. As a result, one could expect some relationships between these kinds of securities and relatively-worse liquidity performances. However, I do not find evidence supporting such dynamics.

Stock performances

1-year improvement of cumulative stock returns

Regarding 1-year post-restructuring cumulative returns, none of the coefficients is statistically significant, suggesting poor explanatory power of the debt structure variables in the very short term (i.e.: < 12 months).

2-year improvement of cumulative stock returns

There is evidence supporting the conclusion that improvements of 2-year cumulative stock performances are associated with secured debt (coefficient of 1.07) and bank debt, leases, and other borrowings (coefficient of 1.52). In particular, the drivers of these relationships regard post-restructuring performances. Indeed, the post-restructuring 2-year cumulative return is associated with secured debt (coefficient of 1.27), and bank debt, leases, and other borrowings (coefficient of 1.42).

Economically, these results suggest that – unlike economic performances – improvements in stock performances are heavily influenced by debt structures. This might be due to the fact that, as studied by previous literature, secured creditors, banks, and lessors can facilitate more investor-friendly restructurings through better monitoring, smoother negotiations (driven by creditor concentration), and because of the presence of lease contract's put options. Indeed, previous literature found that:

- Bank loans are easier to renegotiate or restructure in financial distress than public debt and trade credit, since bank loans are associated with more concentrated ownership, which reduces the severity of holdout and free-rider problems.
- Achieving a consensus on a debt restructuring involving bank and secured debt may be easier because these lenders are thought to be more sophisticated than other kinds of lenders and better informed due to their ongoing involvement in monitoring covenants and collateral, which in turn may reduce the information asymmetries between the borrower and creditors.
- For distressed businesses, the presence of leases is particularly relevant because Section 365 of the Bankruptcy Code allows firms to reject lease contracts in Chapter 11 (i.e.: they have a put option on those contracts). Previous literature shows that the lease put option is exercised extensively in Chapter 11 and that the disposition of lease commitments rivals asset sales as a means of asset reduction in bankruptcy. Such exercise of put option mitigates the costs of fire asset sales, therefore preserving firm value while quickly reorganizing the company.

As a result of all these factors, restructurings involving these categories of lenders tend to be more effective and, therefore, the resulting post-restructuring capital structures

are more sustainable and enable companies to create more value for shareholders, all else equal.

H5: Filing delays influence (i) improvements in performances, and/or (ii) pre-filing and/or post-restructuring performances.

Profitability

There is evidence supporting the conclusion that improvements in EBITDA margin are associated with longer delays in filing for Chapter 11 (statistically significant coefficient of 0.08). This result is also confirmed by investigating the potential relationships between such variables and pre-filing and post-restructuring profitability levels taken separately. Indeed, in this case the delay variable is negatively associated with both pre-filing and post-restructuring EBITDA margin, with coefficient of respectively -0.16 and -0.08.

Economically, the analysis suggests that longer delays are associated to better improvements and that such improvements tend to be driven by relatively-worse pre-filing performances (i.e., by a base effect). This result is economically intuitive since one might reasonably expect that the longer a company waits before filing, the worse its profitability will become due to the compounding of the costs of financial distress. In terms of post-restructuring performances, the negative relationship with delays might be explained by the persistence – to a lesser extent – of costs of financial distress even after the restructuring, such as weak bargaining power which compresses margins. Thus, overall, the improvement is the result of “less bad” post-restructuring profitability being associated to longer delays, when compared to pre-filing profitability.

Growth

Sales Growth

When sales growth is taken as a proxy of growth, delays are not significant to explain growth improvements. This result is also confirmed when investigating potential

relationships with pre-filing and post-restructuring growths taken separately, which do not show any statistically significant coefficients.

Economically, these results suggest that – unlike profitability – sales growth (in terms of pre-filing, post-restructuring, and improvements in performances) is unaffected by how much time companies wait before filing for Chapter 11. This result is counter-intuitive as one might reasonably expect that longer delays might be associated (at least) to worse pre-filing sales growth because of the compounding of the costs of financial distress as mentioned above. Apparently, this is not the case for sales growth. This result can be explained by the fact that – possibly – most of the negative growth might occur in the first, say, one or two years of financial distress, while in the following years sales might only experience decreases of smaller magnitudes or stabilize to a minimum level supported also by the fact that – unlike profitability – they cannot become negative (i.e., negative revenues), so they have a minimum “floor”. Therefore, looking only at the last two years before filing (which is what this analysis does) might not capture most of the decrease for those firms that became distressed before (e.g., 4-5 years before the filing). Profitability, instead, might be more subject to the compounding of the indirect costs of financial distress and continue to decrease substantially with the passage of time as it has no floor and can go very negative.

EBITDA Growth

When EBITDA growth is taken as proxy of growth, instead, larger improvements are associated to longer delays, as the coefficient of 0.56 is statistically significant. Interestingly, longer delays are also associated negatively with pre-filing growth, as the coefficient of -0.43 is statistically significant, but not with post-restructuring growth. Taken together, these results imply that – similarly to the case of profitability – such improvements are driven by relatively-worse pre-filing performances.

The difference between the evidence regarding EBITDA growth and sales growth can be explained by the fact that EBITDA growth is the result of the interaction of sales growth with EBITDA margin. As a result, since EBITDA margin is associated to delays, then also EBITDA growth is associated to delays to some extent.

Because of this, also the possible economic interpretation follows – at least to some extent – the same logic as the one of profitability (i.e., compounding of costs of financial distress). Unlike profitability, however, longer delays are not associated to post-restructuring EBITDA growth, which suggests that overall Chapter 11 might be effective in resolving growth problems related to longer delays to a greater extent than what it does with profitability, where it only reduces them.

Liquidity

The magnitude and direction of the improvements in FCF/Sales do not seem to be associated with delays in filing for Chapter 11. However, the delay variable is negatively associated with both pre-filing and post-restructuring liquidity. This result suggests that the longer companies wait to file for Chapter 11, the worse their liquidity will get, and the harder it will be for them to achieve positive liquidity also after the restructuring. The fact that the improvement is not associated with the variable, while both pre-filing and post-restructuring performances are, might be explained by the fact that the coefficients of pre-filing and post-restructuring liquidity are very similar (-0.13 and -0.10) and therefore Chapter 11 does not seem effective at all at improving liquidity overall.

Economically, the evidence of correlation with both pre-filing and post-restructuring liquidity performances were expected. Indeed, for pre-filing performances, the more financial distress lasts the higher the indirect costs of it will be, as explained above. Just like the case of profitability, liquidity – unlike sales growth – has no floor so can

go very negative with the passage of time. Regarding post-restructuring performances, instead, negative correlation was expected for two reasons. First, after having been in financial distress for many years (which often implies persistent cuts of capital expenditures), companies need to start investing again in fixed assets, which absorbs liquidity. Second, in order to turnaround effectively and achieve substantial growth improvements, companies might need to invest in working capital, which absorbs liquidity.

Stock Performances

Improvements in 2-year cumulative stock performances do not seem to be associated to delays in any way. However, this variable is associated with pre-filing 2-year cumulative performances (statistically significant coefficient of 0.06).

Economically, these results suggest that longer delays are associated to better pre-filing stock performances, which is counter-intuitive but might be explained by the fact that – similarly to the case of sales growth – probably the largest decreases in equity value occur when financial distress is first observed. Indeed, equity investors are forward looking and might therefore incorporate the expectation of higher expected costs of bankruptcy immediately. As a result, most of the negative returns might occur in the first, say, one year of financial distress, while in the following years equity values might only experience decreases of smaller magnitudes, or potentially improvements if the distress softens. Therefore, looking only at the last two years before filing might not capture most of the decrease in equity value for those firm that became distressed before (e.g., 3-4 years before the filing) and, as a result, longer delays seem to be associated to relatively better stock performances because of this.

5. CONCLUSIONS, LIMITS OF THE ANALYSIS, AND FINAL REMARKS

5.1 Conclusions

The analysis proposed offers relevant findings which either consolidate or expand the existing literature on Chapter 11 bankruptcies.

1. It provides additional evidence of the adverse impact that the combination of direct and indirect costs of financial distress has on the performances of distressed companies. In particular, it finds sound statistical evidence suggesting that corporate financial distress is often coupled with economic distress, which is characterised by extremely poor economic (profitability, growth, and liquidity) and stock performances. In particular, before filing for bankruptcy, the companies of the sample have essentially null operating profitability, negative growth, negative liquidity, and negative stock performances.

2. Similarly to a large part of existing literature, this analysis finds that – after a Chapter 11 restructuring – firms remain weak and, as such, their economic and stock performances remain poor. Indeed, while profitability tends to be positive (but close to zero), growth and liquidity are generally negative, and stock performances are poor and extremely volatile. However, when comparing post-restructuring and pre-filing performances, this analysis finds that Chapter 11 helps company to achieve better performances in a systematic manner, which leads to the third finding.

3. The alternative approach proposed – based on the comparison of post-restructuring performances with pre-filing ones – is able to better capture and measure the effectiveness of Chapter 11 restructurings. Indeed, it finds that – even if post-restructuring performances remain poor – they tend to be systematically better than the pre-filing ones. In other words, Chapter 11 enables companies to achieve improvements in relative terms. This result was expected but never thoroughly

documented by previous authors, who simply measured the effectiveness of Chapter 11 reorganizations by assessing post-restructuring performances. As such, it enriches existing literature by proposing a more consistent way to study Chapter 11 restructurings.

4. In terms of economic performances, pre-filing debt structures do not seem to affect the improvements that companies might expect to achieve through a Chapter 11 reorganization but may be correlated with pre-filing and/or post-restructuring performances taken separately. In particular:

- Larger shares of bank debt, leases, and other borrowings are positively associated to superior pre-filing profitability, pre-filing sales growth, and post-restructuring EBITDA growth, and post-restructuring 2-year cumulative stock returns.
- Larger shares of convertible debt are positively associated to both pre-filing and post-restructuring EBITDA growth.

5. In terms of stock performances, pre-filing debt structures are associated to superior improvements in cumulative 2-year stock performances, as well as to pre-filing and/or post-restructuring performances taken separately. In particular:

- Larger shares of secured debt are positively associated to 2-year cumulative stock return improvements as well as 2-year post-restructuring cumulative stock returns.
- Larger shares of bank debt, leases, and other borrowings are positively associated to 2-year cumulative stock return improvements as well as 2-year post-restructuring cumulative stock returns.

6. The longer firms delay the filing for Chapter 11, the worse their pre-filing and post-restructuring performances will get. In particular, filing delays are associated negatively to:

- Pre-filing profitability, EBITDA growth, and liquidity.
- Post-restructuring profitability and liquidity.

However, they are associated positively to pre-filing 2-year cumulative stock performances. On the other hand, longer delays are associated positively with improvements in profitability and EBITDA growth.

5.2 Limits of the analysis, possible areas of future research, and final remarks

Similarly to previous research on this topic, this analysis has the main limit of having a relatively small sample, even if it is larger than the ones used in many past studies. Indeed, bankruptcy is a rare event by definition and, therefore, large data samples of bankrupt companies (for a given time period) are not easily accessible. This limit has two main consequences.

1. The sample used for this research includes companies that might have experienced financial distress at different stages of the economic cycle, which might not make them perfectly comparable and forces the researcher to adopt a through-the-cycle approach. Indeed, between 2002 and 2017, the United States experienced both phases of strong expansion and a deep recession. Clearly, these different macro environments might have important consequences on credit markets and, thus, on financial restructurings and their outcomes. Also, it is possible that – over extended periods of time – bankruptcy law could be changed, as it happened in the United Kingdom in 2020. Such events might make the results of restructurings occurred before and after the change of rules not perfectly comparable. However, this should not be the case for this

analysis, as US Chapter 11 legislation has not changed substantially during the period of focus.

2. Another limit – which is, again, common to nearly all studies on this topic – is that economic and stock performances of bankrupt companies are extremely volatile. When the sample size is limited, this characteristic might prevent the estimates of the regressions, or the sample statistics, to be precise. As a result, they might only provide an indication of the true relationships, but their magnitude could be barely reliable.

For all these reasons, this analysis might be improved and extended further by considering larger samples, and by using shorter time frames, which might be done by using databases with more data available for any given time period. In such instances, the results could be also conditioned (or adjusted) to the given phase of the economic cycle to provide additional, precise insights.

This research also has the (intentional) limit that it disregards what happens to companies during the restructuring, as it only considers what happens before the filing and after the reorganization. By using larger data samples, it might also be possible to deepen this research further by conditioning the different restructuring outcomes (in terms of performances) to what happens during Chapter 11.

Finally, from a statistical perspective, this analysis only investigates whether there exist linear relationships between the dependent and independent variables. Clearly – in particular if larger samples were available – the analysis could be extended outside the linear space.

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Pre-Restructuring Capital Structure and Turnaround Outcome:

The Case of SAS Group

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1. MOTIVATION

As part of my prior work “Chapter 11: Impact of Pre-filing Debt Structure and Filing Delay on Performance Improvement”, I analysed whether Chapter 11 reorganizations (used as a proxy for restructurings) produced improvements in the performances of financially distressed businesses on a relative basis (i.e. investigated the presence of a statistically significant delta between post- vs pre-restructuring performances). Additionally, it investigated the existence of any relationships between, on the one hand, improvements in economic and stock performances of restructured businesses and, on the other, pre-filing debt structures. The key findings were that Chapter 11 did help companies to produce statistically significant performance improvements, while the evidence of relationships between performance improvements and pre-filing debt structures was mixed.

The purpose of this paper is to investigate this topic further by looking at the peculiar case of SAS Airlines, which underwent several restructurings throughout its history. The analysis of a specific case – as opposed to a sample as in my prior work – helps to analyse the relationship in greater detail, as it allows to fully capture all the information available without the need to standardize it. It also provides the opportunity to appreciate how the qualitative aspects of business models and restructuring transactions play a role to eventually determine the outcome of the turnaround.

2. COMPANY OVERVIEW

2.1 History

SAS Group (“SAS” or “the company”) is an airline company headquartered in Stockholm, Sweden, partially owned by the governments of Sweden (c.15%) and Denmark (c.14%).

The company was formally founded in 1951 as a merger between the flag carriers of Sweden (Aerotransport, founded in 1924), Denmark (Det Danske Luftfartselskab, founded in 1918) and Norway (Det Norske Luftfartselskap, founded in 1927), which had been cooperating via the SAS Partnership on international and European routes since 1946 and 1947, respectively. When established, the ownership of the combined entity was split between SAS Danmark (28.6%), SAS Norge (28.6%) and SAS Sverige (42.8%), all of which were owned by both private investors and their respective governments.

The SAS Partnership started operations in 1946 focusing on international flights connecting the three Nordic countries with the US, which kicked off the airline’s long history of long-haul traffic from the Scandinavian region. In 1947, SAS expanded into mainland European routes, and, in subsequent years, it added Asia and South America to its international destinations. In 1959, SAS entered the jet age by flying the Caravelle, a revolutionary French-built jet, which allowed the company to drastically cut down flight time for its US and South American routes.

In the following decades, the company began its diversification outside of the airline business, particularly to the hotel sector, and significantly expanded its airline operations via M&A. These investments, combined with increased competition on both European and international routes, ultimately led to financial pressure on the airline in the 1990s. At this time, SAS pioneered airline alliances as a way to reduce costs and, among others, formed the European Quality Alliance (“EQA”) with Swissair and Austrian Airlines. The EQA ultimately resulted in a failed attempt to merge SAS, KLM, Swissair, and Austrian Airlines. The next round of cost-cutting resulted in SAS divesting part of its non-core businesses, such as catering and hotels,

and re-focusing on domestic Scandinavian routes. Finally, in 1997 SAS founded the Star Alliance with United Airlines, Lufthansa, Air Canada and Thai Airlines, which allowed carriers to offer their passengers the opportunity to travel to any major destination without needing separate tickets.

In the 2000s, SAS started to lose market share to the likes of Ryanair, EasyJet, and other low-cost carriers. This required the carrier to quickly cut costs to survive, further pushed ahead by the 2008 financial crisis. Back then, due to pressures from creditors and struggling operations, the company had to undertake a first restructuring which resulted in the sale of several of its airline subsidiaries, including AirBaltic, British Midland and Spanair. By 2012, the airline began even more aggressive cost-cutting efforts to secure further cash support. SAS reduced its workforce, cut salaries, shrunk the fleet, and dropped routes to remain competitive. Finally, after a decade of tough measures, the carrier turned back to profit in 2015 and continued that streak until 2020, when the Covid-19 hit. The pandemic made it necessary for the airline to undertake another restructuring. Despite it, the company ultimately filed for Chapter 11 protection in 2022 due to major disruptions caused by the post/pandemic inflationary pressures.

2.2 Business Description and Market Context

SAS' main business is the transportation of passengers to, from, and within Scandinavia, with an attractive offering developed for frequent travellers. As of 2019, the company operated 158 aircraft and flew a total of 30 million passengers via 299 routes globally, with 800 daily departures to 127 destinations. As of 2019, the company employed c.10,000 people.

Business Segments

The company's revenues can be split in traffic revenues, which are derived from its airline activities, and other operating revenues, which are generated via ancillary activities. The key product lines include:

- **Airline Operations (81% of revenues):** transportation of passengers to, from, and within Scandinavia, with a focus on frequent travellers. This segment also includes charter activities.
- **Freight and Mail (Cargo) Services (3%):** provision of air freight solutions to, from, and within Scandinavia. The offering includes a broad selection of cargo and forwarding services based on the cargo capacity of SAS aircraft and are complemented with ground distribution.
- **Ground Handling Services (3%):** provision of ground services at airports in Copenhagen, Oslo, Stockholm, Malmo, and Gothenburg. Services offered include passenger cargo, and ramp services for SAS and other airlines.

Revenue by Segment

<i>MSEK</i>	FY19	% of Total
Passenger Revenue	35,479	76%
Charter	2,117	5%
Freight and Mail	1,506	3%
Other Traffic Revenue	2,936	6%
Traffic Revenue	42,038	90%
In-flight Sales	263	1%
Ground Handling Services	1,236	3%
Technical Maintenance	169	0%
Terminal and Forwarding Services	394	1%
Sales Commissions and Charges	622	1%
Other Operating Revenue	2,014	4%
Other Operating Revenue	4,698	10%

Source: Company information, financial statements

Fleet

As of 2019, SAS operated a fleet of 158 aircraft through a combination of owned and leased aircraft. This combination (owned / leased) enabled SAS to have higher flexibility regarding the return of aircraft, which is important for airline companies, as the airline industry is cyclical and exposed to macroeconomic fluctuations that could rapidly have a negative effect on demand. SAS had 25 aircraft on operational lease agreements that could be returned to the owners over the next two years, which represented 20% of the total fleet.

	Airbus A330/340/ 350	Airbus A320 Family	Boeing 737 NG	Bombardier CRJ	ATR-72	Tot
Age	13	7	15	4	5	10
Owned	10	17	28	-	-	55
Leased	6	34	30	-	-	70
Wet Lease	-	-	-	25	8	33
Total	16	51	58	25	8	158
SAS Scandinavia	16	42	58	-	-	116
SAS Ireland	-	9	-	-	-	9
Wet Lease				25	8	33
In Service for SAS	16	51	58	25	8	158

Source: Company information, financial statements

In addition to its existing fleet, SAS had ambitious plans for its future, with 63 aircraft on order through 2024 to expand its fleet. Aircraft to be purchased or leased on firm order represented capital commitments (cash outflows) that SAS had locked in for the coming years. Compared to its existing fleet of 158 aircraft, the addition of 63 new assets represented a fleet expansion of c.40%.

	Airbus A330/340/350	Airbus A320 Family	Boeing 737 NG	Bombardier CRJ	ATR- 72	Total
Firm Order Purchase	8	38	-	-	-	46
Firm Order Lease	-	17	-	-	-	17
Aircraft on Order	8	55	-	-	-	63

	FY20	FY21	FY22	FY23	FY24	Total
Aircraft on Firm Order	20	8	15	18	2	63
% of Cumulative Total	32%	44%	68%	97%	100%	

Source: Company information, financial statements

Market Landscape and Positioning

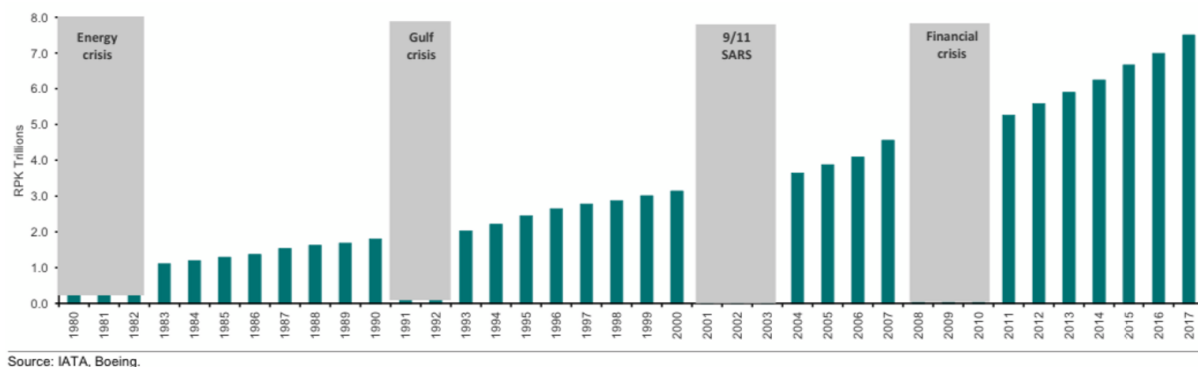
As of 2019, SAS was the leading airline in Scandinavia, with c.30% market share. The focus on the Nordic region was highly attractive for SAS as Scandinavians fly far more than the European average. Indeed, despite a relatively small population of 21 million, SAS estimated that the Scandinavian travel market was worth 110bn SEK, driven by the fact that Norwegians, Swedes, and Danes were estimated to fly 7.0, 3.6, and 5.4 times a year (vs European average of 1.2). Furthermore, the Scandinavian market was more consolidated than the rest of Europe, with SAS and Norwegian Air Shuttle controlling c.70% of the market combined. Measured by number of passengers, SAS ranked #1 in Norway, Sweden, and Denmark, commanding a 38%, 25%, and 34% market share, respectively.

Global Airline Market Growth Drivers

Market growth in the airline industry is driven by a number of factors, including economic growth, growing middle class, and ageing population with more disposable income and time which sustain global airline traffic growth. Additionally, deregulation also expands the market by opening up new routes.

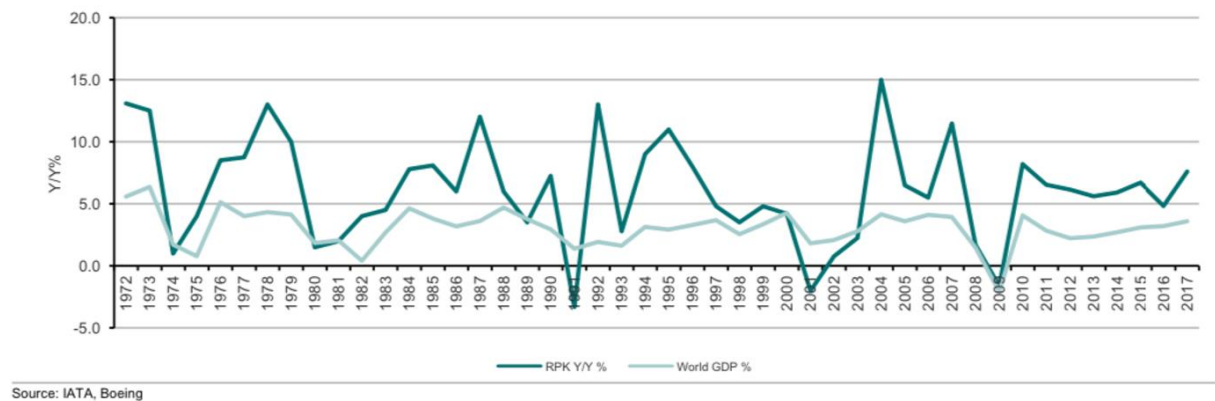
Global airline traffic growth driven by macroeconomic factors and secular trends. Airline traffic has strong structural growth, which is closely linked to world GDP growth. Although there have been historical setbacks with energy crises, terrorist attacks, and epidemics, growth tends to accelerate once the dust settles and reverts to its historical trend. In 1980-2017, growth averaged 5.6% and there have never been two consecutive years of negative traffic growth, signalling solid underlying demand trends.

World Revenue Passenger Kilometres (RPK)



Source: DNB Markets

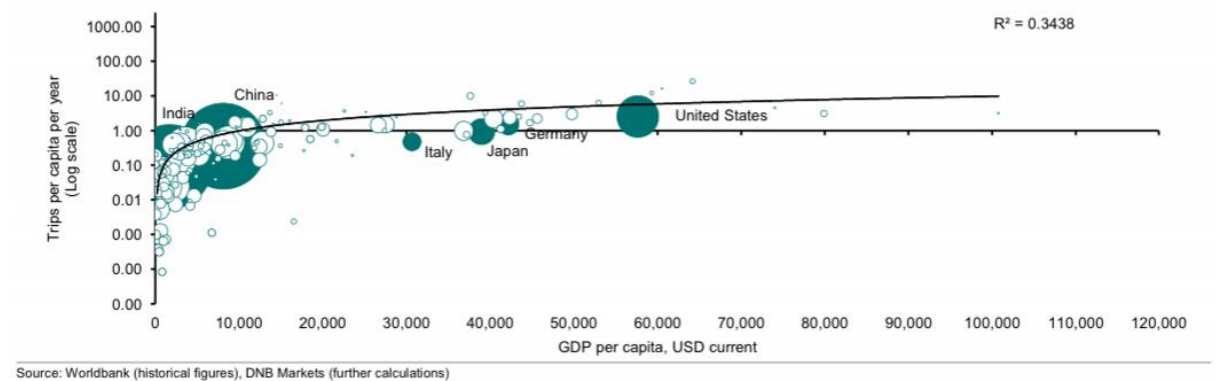
YoY World RPK vs GDP Growth



Source: DNB Markets

Expanding middle class also supports airline traffic as it results in higher disposable income in the population. Middle class was expected to grow from 3.2 billion in 2016 to 5.2 billion in 2028, which would in turn boost the number of trips per capita in already mature markets and further sustain growth via increased penetration in emerging economies (China and India in particular).

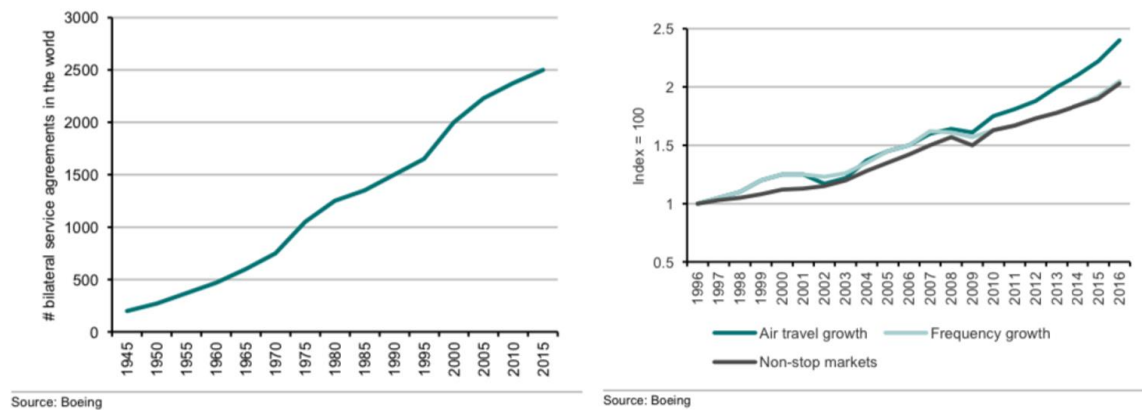
Flights per Capita



Source: DNB Markets

Deregulation. The airline industry has experienced significant deregulation of traffic since the 1940s. This has been a key growth driver as it has opened up new routes. The Open Skies framework has been central to this (introduced by the US in 1992).

Bilateral Air Service Agreements (Left) and # of Routes (Right)



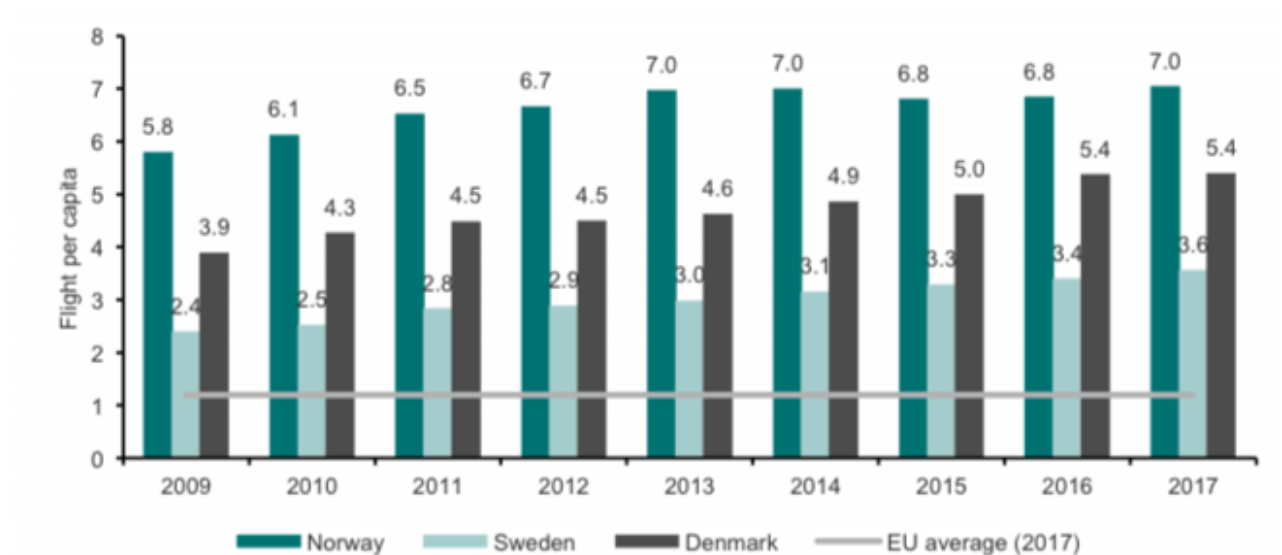
Source: DNB Markets

Scandinavian airline market growth drivers

According to SAS, the annual value of air travel was 110 billion SEK and close to 100 million annual passengers. Further to the drivers described above, the Scandinavian market benefited from several other idiosyncratic factors, including:

- Scandinavians fly more often than European peers, with Norwegians, Swedes, and Danes flying 7, 3.6, and 5.4 times a year (vs European average of 1.2).
- Steady underlying positive trend in flight per capita of +2-5% p.a. since 2009
- GDP growth in the region was higher than global growth (6.1% p.a. in Sweden, 3.6% in Norway and 3.9% in Denmark between 2009-2017).
- Passenger growth outpaced population growth (2009-2017) reflecting increased income per capita in the countries in recent years.
- Accelerating leisure travel (growing 7% p.a. vs business travel being largely flat).

Annual Flights per Capita

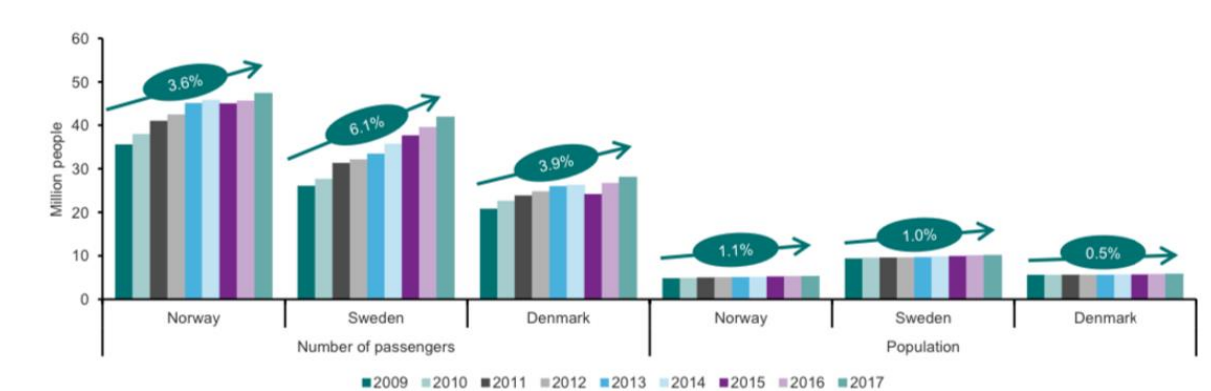


Source: Avinor, Statistics Denmark, Statistics Norway, Statistics Sweden, Swedavia, DNB Markets (estimates)

Note: *Passenger numbers for e.g. Norway are not adjusted for intra-Scandinavian passengers. This likely results in some double counting and incurs some upward bias in our estimate of flights per capita for the various countries

Source: DNB Markets

Passenger and Population Growth



Source: Avinor, Statistics Denmark, Statistics Norway, Statistics Sweden, Swedavia

Source: DNB Markets

Median Household Disposable Income by Country (Norway / Sweden / Denmark)



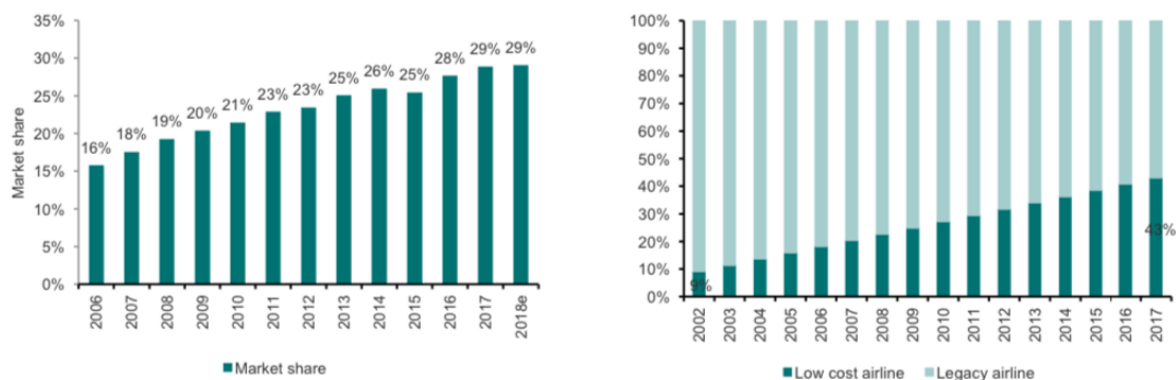
Source: DNB Markets

Competitive landscape

The Scandinavian market was very consolidated with SAS and Norwegian Air Shuttle having c.70% of domestic and international travel combined. As a result, competition in the region was lower than in other geographies. Looking at passenger growth, Norwegian had been gaining market share since 2005, with the two companies having become more equal in size in recent years.

At European and global level, since early 2000s low cost-carriers started broadening the market. Their share of worldwide seat capacity was 30% in 2018, up 13% from 2006. The growth had been driven by Western Europe, where the share increased from 9% in 2002 to 43% in 2017. This growth came at the expense of the legacy players, which saw their market share reducing fast.

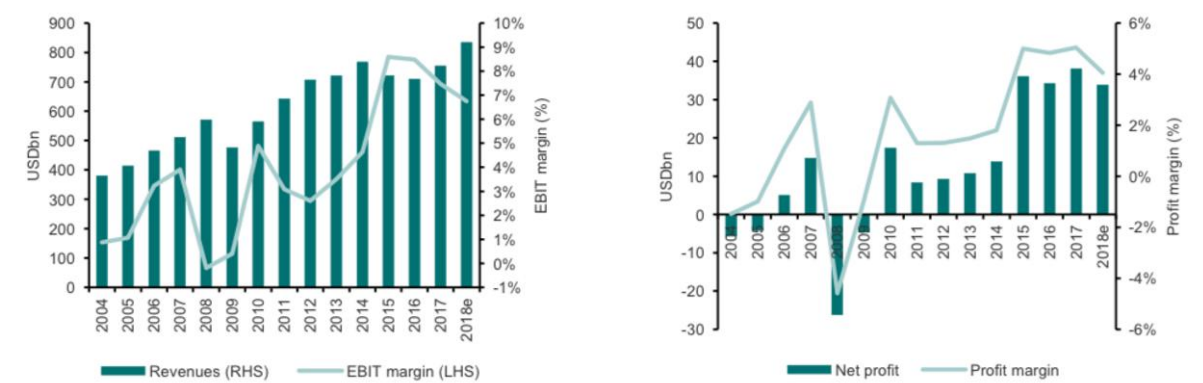
Low-Cost Carriers Seat Share Globally (Left) and Western Europe (Right)



Source: DNB Markets

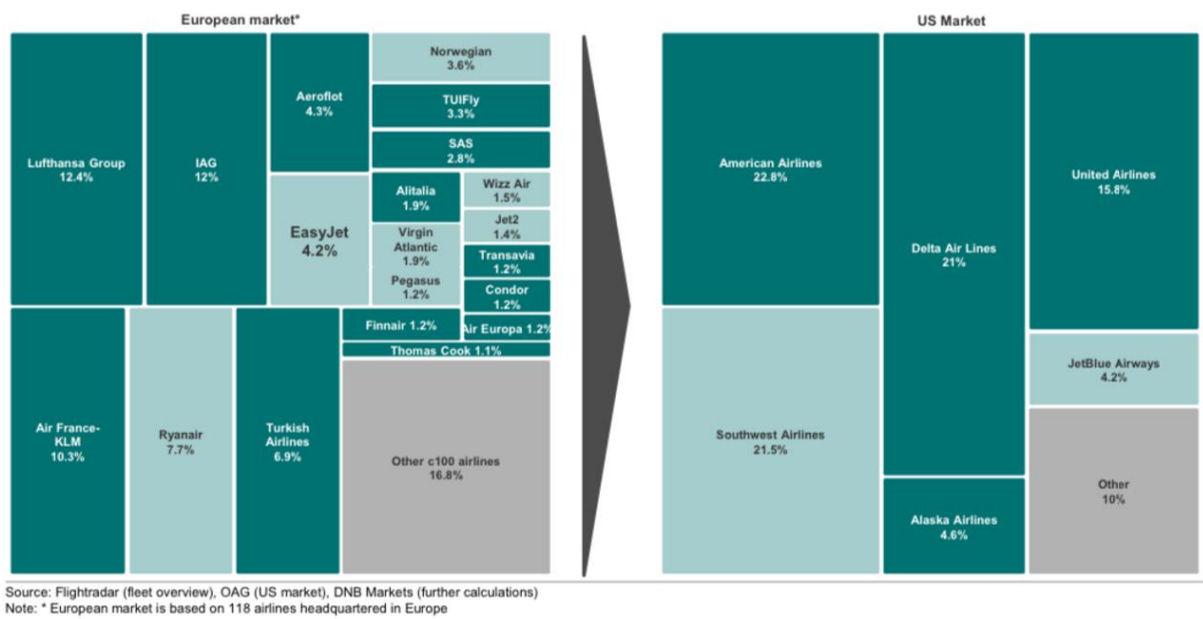
While the Scandinavian market was very consolidated, the European market showed a greater degree of fragmentation, particularly when compared to the US market. As a result, it tended to be less profitable, in a context where profitability in the airline industry was already very low. However, a decade-long consolidation wave had supported profitability, particularly in the US where 90% of the market is controlled by six companies (in Europe the figure was estimated at 53%). This had a clear positive impact on profitability with North American airlines, which generated c.44% of global profit in 2018 and average profit per passenger of \$15.7. By contrast, European airlines generated \$8.6bn of profit in 2018 (25%) or only \$7.6 per passenger. However, the European market started to consolidate in recent years, with Lufthansa's and EasyJet's acquisition of Air Berlin, and IAG's recent bid for Norwegian Air Shuttle. This represented an opportunity for SAS, as it had historically driven consolidation in the European market with a few other players.

Historical Airlines Market Profitability



Source: DNB Markets

Market Concentration, Europe (Left) and US (Right)



Source: Flightradar (fleet overview), OAG (US market), DNB Markets (further calculations)
 Note: * European market is based on 118 airlines headquartered in Europe

Source: DNB Markets

European Market Consolidation



Source: DNB Markets

Source: DNB Markets

2.3 Key Financial Information

Income Statement

SAS' key P&L metrics are revenues and EBITDAR, with the latter being defined as operating income before tax, net financial items, income from the sale of fixed assets, share of income in affiliated companies, depreciation and amortization, and leasing costs for aircraft. In 2019, SAS earned SEK 46.7bn of revenues and generated SEK 6.5bn of EBITDAR.

A detailed overview of SAS' cost structure and profitability profile is shown in the following tab.

<i>MSEK</i>	2019	% of Tot. Revenues	Fixed / Variable
Traffic Revenues	42,038	90%	
Other Operating Revenues	4,698	10%	
Total Revenues	46,736	100%	
Payroll expenses	(9,934)	21%	Fixed
Jet fuel	(9,672)	21%	Variable
Government user fees	(4,194)	9%	Variable
Technical aircraft maintenance	(2,893)	6%	Fixed
Handling costs	(2,832)	6%	Fixed
Sales and distribution costs	(2,743)	6%	Fixed
Computer and telco costs	(1,637)	4%	Fixed
Wet-lease costs	(1,472)	3%	Fixed
Catering costs	(1,249)	3%	Fixed
Other Operating Expenses	(3,561)	8%	
EBITDAR	6,549	14%	
Leasing costs for aircraft	(3,561)	8%	Fixed
EBITDA	2,988	6%	
D&A and impairments	(1,924)	4%	Fixed
Other	102	0%	
EBIT	1,166	2%	
Net financial expenses	(372)	1%	Fixed
EBT	794	2%	
Tax	(173)	0%	Variable
Net Income	621	1%	

Source: Company information, financial statements

The key cost items are represented by:

- Payroll expenses: these include salaries and benefits, as well as training and recruitment costs. This is typically one of the largest expense items for airlines, as it requires a significant amount of personnel to operate and maintain planes around the clock. This cost is fixed in nature, as it takes time to increase or decrease the number of personnel hired, and it does not strictly depend on the revenues generated (e.g. salaries paid are fixed regardless of the flights operated; however, if the number of flights operated were to increase or decrease materially, then the related workforce would be adjusted accordingly thus impacting this line item).
- Jet fuel: this includes the cost of jet fuel, which can fluctuate depending on global oil prices. Fuel costs are influenced by the total distance flown, the type of aircraft used, weather conditions, and other factors. This cost is variable as it depends on the number of flights operated, distances, etc.
- Government user fees: these are expenses based on the number of passengers flown and are therefore variable in nature.
- Leasing costs: leasing expenses incurred for the utilization of aircraft. These costs are fixed in nature as they are incurred despite the utilization of the aircraft and disciplined by contracts.
- Maintenance costs: these include the cost of regular maintenance and repairs, as well as any major overhauls or replacements of aircraft components. As planes age, maintenance costs typically increase, as more frequent and expensive repairs are required. These costs are largely fixed as aircraft requires ongoing maintenance. However, if utilization were materially lower, these costs would also decrease.

Overall, SAS had high operating leverage with a largely fixed cost base (>60% of revenues) and thin margins, which made it vulnerable to shocks.

Assets

SAS's assets mostly comprise of fixed assets (66% of total), with the single largest item being represented by aircraft (34%) and other related assets. The airline business model is capital intensive and, as such, a high share of tangible assets is the norm.

<i>MSEK</i>	2019	% of Total
Aircraft	11,609	34%
Prepayments on new aircraft commissioned	3,071	9%
Land and buildings	569	2%
Spare engines and spare parts	87	0%
Other operating assets	233	1%
Tangible fixed assets	15,569	46%
Intangible fixed assets	1,416	4%
Long-term receivables	2,519	7%
Pension funds	2,004	6%
Other	773	2%
Total financial fixed assets	5,296	16%
Total fixed assets	22,281	66%
Cash and cash equivalents	6,490	19%
Short term investments	2,273	7%
Accounts receivables and other receivables	1,776	5%
Prepaid expenses and accrued income	846	2%
Expendable spare parts and inventories	346	1%
Total current assets	11,731	34%
Total assets	34,012	100%

Source: Company information, financial statements

Liabilities and shareholders' equity

SAS' liabilities mostly comprise of financial liabilities (c.40% of total) and deferred revenues (21%).

<i>MSEK</i>	2019	% of Total Liabilities	% of Total Liabilities & Equity
Loans	5,147	18%	15%
Bonds	3,063	11%	9%
Provisions	1,966	7%	6%
Other Liabilities	1,926	7%	6%
Subordinated loans	1,240	4%	4%
Deferred tax liability	183	1%	1%
Total long-term liabilities	13,525	47%	40%
Unearned transportation liability	6,049	21%	18%
Accrued expenses and prepaid income	3,202	11%	9%
Accounts payable	1,700	6%	5%
Current portion of provisions	1,559	5%	5%
Short-term loans	1,049	4%	3%
Current portion of long-term loans	784	3%	2%
Other liabilities	732	3%	2%
Prepayments from customers	23	0%	0%
Tax liabilities	17	0%	0%
Total current liabilities	15,115	53%	44%
Total liabilities	28,640	100%	84%
Shareholders' equity	5,372	n.a.	16%
Total liabilities and shareholders' equity	34,012	n.a.	100%

Source: Company information, financial statements

In addition to the reported figures, SAS had additional leasing liabilities of SEK 20bn and contractual purchase commitments for new aircraft of \$2.8bn (approximately SEK 25bn).

The combination of high financial debt burden and material lease liabilities and contractual purchase commitments made SAS' capital structure vulnerable to sudden shocks, as the company had to fulfil substantial financial obligations (despite of its operating performance) despite its performance.

Cash flows

Despite favourable working capital dynamics (customers pay for tickets in advance), SAS' cash flows were tight due to material investment needs.

<i>MSEK</i>	2019
Cash flow from operations before change in working capital	2,305
Change in working capital:	1,013
<i>of which change in inventories</i>	54
<i>of which change in accounts receivable</i>	(5)
<i>of which change in accounts payable</i>	964
Cash flow from operating activities	3,318
Other investments	(112)
Purchases of buildings, equipment, and investments in progress	(116)
Pre-payments for aircraft	(1,183)
Purchases of aircraft	(4,796)
Total investments	(6,207)
Proceeds from sale & leaseback transactions	1,329
Sale of subsidiaries & affiliates	394
Other	(96)
Cash flow from investing activities	(4,580)
Free cash flow	(1,262)
Cash flow from financing activities	269
Change in cash	(993)

Source: Company information, financial statements

Structural Operating Challenges and Risks

SAS business model is characterized by inherently high distress risk due to the combination of the following factors:

- Limited profitability and weak cash flow generation.
- Cyclical demand in a very competitive and price-sensitive market.
- Capital intensive nature of the operations, with tangible assets being predominantly financed by financial debt.

- Material off-balance sheet non-financial liabilities in the form of committed capital expenditures for new aircraft and lease liabilities.

In addition to the above, SAS faced a number of operational risks. A summary of all key risks is outlined below.

Risk area	Risk	Risk level	Risk control measures fiscal year 2019
1	Market risks		
	1.1 Macro-economic trend	●	Continual adaptation of SAS' capacity offering and production.
	1.2 Market and competition trends	●	Implementation of SAS' efficiency program and a more flexible production model.
2	Employee risks		
	2.1 Right skills	●	Annual people reviews and successor identification.
	2.2 Engagement	●	Strengthened leadership, skills days, increased internal communication and transparency.
	2.3 Processes and systems	●	Follow-up of low and high-performing individuals. Documentation of internal processes.
	2.4 Strikes	●	Strengthen dialogue and relationships to increase consensus with the unions. Prioritized meetings for dialogue and negotiation in 2020 with the aim of securing long-term agreements.
3	Operating risks		
	3.1 Incidents and accidents	●	Continuous internal monitoring and reporting to the Board.
	3.2 Suppliers	●	During 2019, SAS focused on closer collaboration with strategic suppliers, as well as monitored quality levels and efficiency.
	3.3 Competitive costs and efficiency	●	SAS has a cost differential compared with newly-started competitors. In fiscal year 2019, the efficiency program delivered slightly more than SEK 0.9 billion efficiency gains.
4	Sustainability risks		
	4.1 Environmental directives and requirements	●	Structured environmental work certified under ISO 14001 and containing measures for improving climate and environmental performance, and ensured compliance with applicable laws and regulations.
	4.2 Anticorruption	●	Implementation of a training program for employee groups at the greatest risk of corruption.
	4.2 Human rights	●	Ongoing requirements updates and monitoring of subcontractors.
5	Legal and political risks		
	5.1 Political and regulatory risks	●	SAS conducts active dialogues with the political systems and industry organizations (IATA) to obtain early information about regulatory changes and to influence decisions. Together with the industry, SAS has promoted air travel's importance for business and society. SAS is analyzing the legal, financial and commercial effects of Brexit, and is collaborating with decision-makers nationally and in the EU. The UK is an important market for SAS, and it is crucial to the entire airline industry that a transition period or a new air traffic agreement with the same conditions as the current one is in place before the planned exit in January 2020.
	5.2 Crime and fraud	●	Continuous improvement of SAS' capabilities for proactive identification and prevention of potential criminal and fraudulent activity.
	5.3 Legal and insurance risks	●	Development of policies and training to ensure compliance with various rules and laws. Continual monitoring of laws and policies. Legal counsel and participation in contract processes for minimizing contractual risk. Securing complete insurance protection of operations and employees.
6	Financial risks		
	6.1 Liquidity risk and refinancing	●	Follow-up and forecasting financial preparedness. Continuous discussions with banks and financial backers aimed at managing maturing borrowings and leases.
	6.2 Exchange rates	●	Currency hedging in line with SAS' financial policy and monitoring the currency market.
	6.3 Interest rates	●	Fixing rates in line with SAS' financial policy and monitoring the interest-rate market.
	6.4 Jet-fuel price and emission rights	●	Jet-fuel hedging in line with SAS' financial policy and monitoring the jet-fuel price trend.
	6.5 Counterparty losses	●	SAS' counterparty risks are managed in line with SAS' financial policy.
7	IT		
	7.1 Operational reliability and dependability	●	Continual improvement of incident- and problem-handling procedures. Focus in fiscal year 2019 on reducing IT problems that affect the SAS website, planning system and management of cyber attacks.
	7.2 Cybercrime	●	Continuous improvement of SAS' capabilities for proactive identification and prevention of potential cybercrime, by using both processes and automated tools.
8	Other events		
	8.1 Extraordinary events	●	Increase cost flexibility to reduce costs in the case of reduced demand.
	8.2 Brand and reputation	●	Monitoring information pertaining to SAS.

● Low risk ● Medium risk ● High risk

Source: Company information, financial statements

2.4 Post-GFC Restructurings and Historical Performance

Past Restructurings

SAS had a long history of operational and financial restructurings, with the latest series dating back to the post great financial crisis period. These involved, among others:

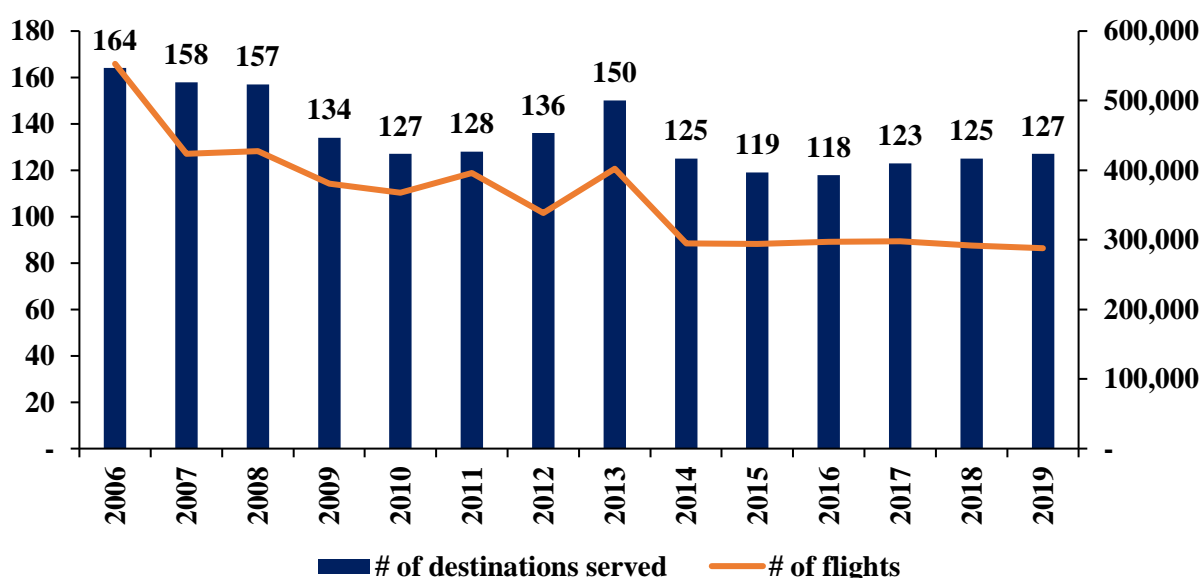
- Sale of non-core or unprofitable airline subsidiaries, including AirBaltic, British Midland and Spanair.
- Re-focus on profitable airline operations by cutting weaker routes and divesting most of its real estate, ground handling and catering operations.
- Aggressive cost-cutting initiatives, including reduction of workforce and salaries. The company also downsized the fleet and replaced older and less fuel-efficient aircraft with newer and more fuel-efficient models.
- Introduction of a revised business model focused on point-to-point routes and based on increased cooperation with other airlines.

As a result of these measures, SAS turned back to profit in 2015 and continued that streak until 2020, when the Covid-19 pandemic hit.

Below, there is an overview of SAS' key operational, profitability, cash flow, and financial health metrics over time, from before the great financial crisis to before the Covid-19 pandemic hit. Overall, SAS emerged from many years of restructuring (2009-2015) as a more focused and profitable airline, with better financial health and cash flow generation capabilities.

Operational metrics

As part of its restructurings, the number of destinations and flights operated by SAS shrunk, as it focused on more profitable routes and divested several airline subsidiaries. Overall, compared to pre-GFC levels, the number of destinations served decreased from 164 to 127 (-23%) and the number of flights operated from 553k to 288k (-60%), reflecting a significant decrease in scale.



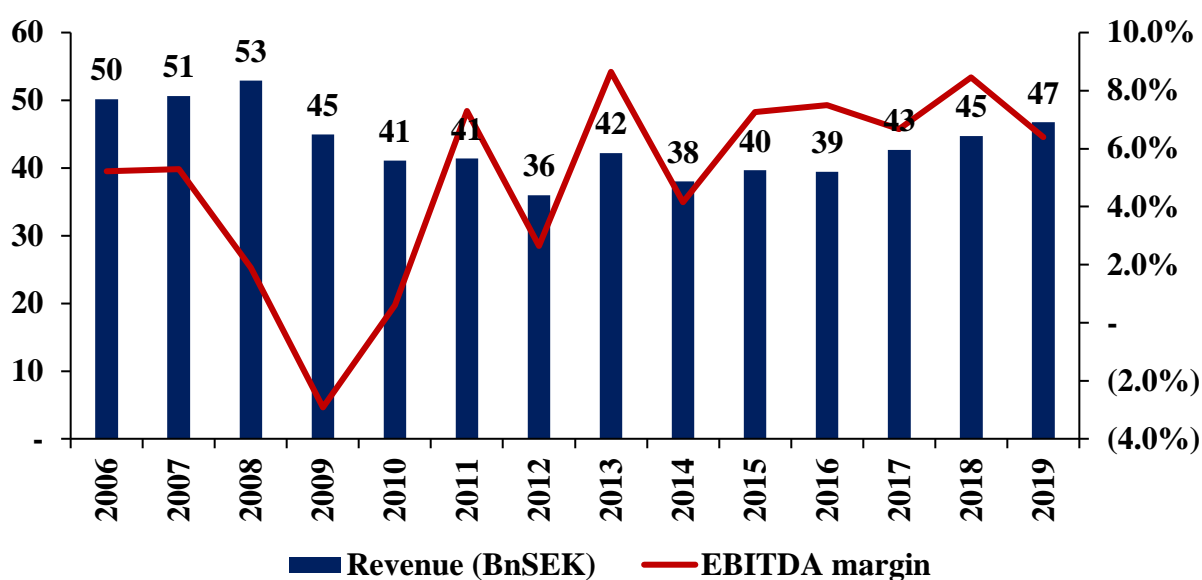
Source: Company information, financial statements



Source: Company information, financial statements

Profitability

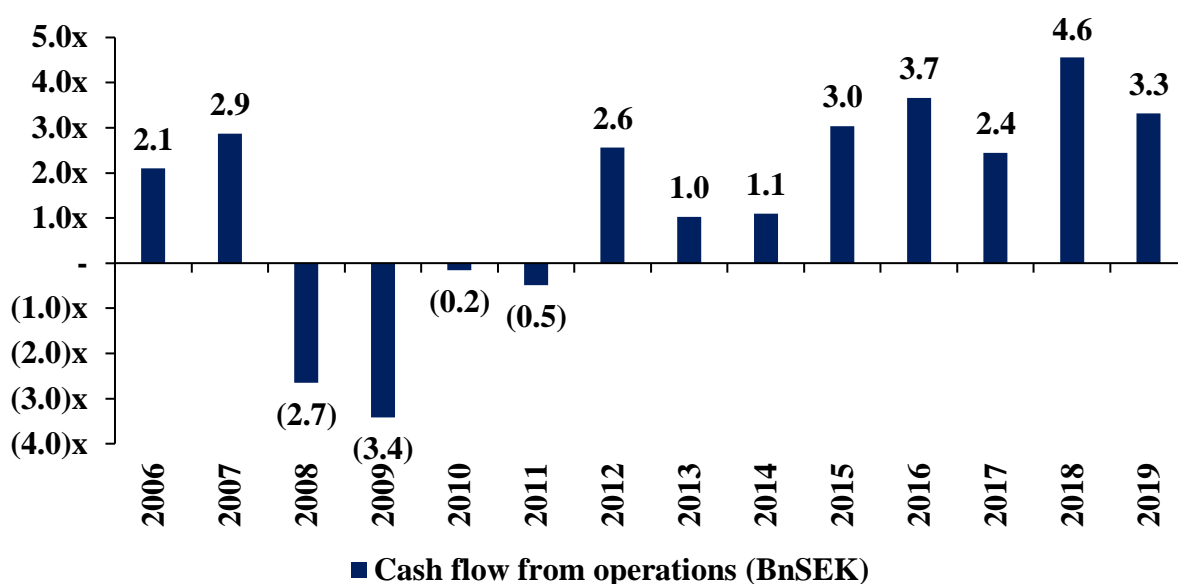
Following several years of restructuring and volatility in margins, SAS managed to broadly recover to pre-GFC levels both in terms of top-line and profitability, despite the reduction in scale. This was driven by significant focus on more profitable routes and business lines in conjunction with aggressive cost-cutting measures.



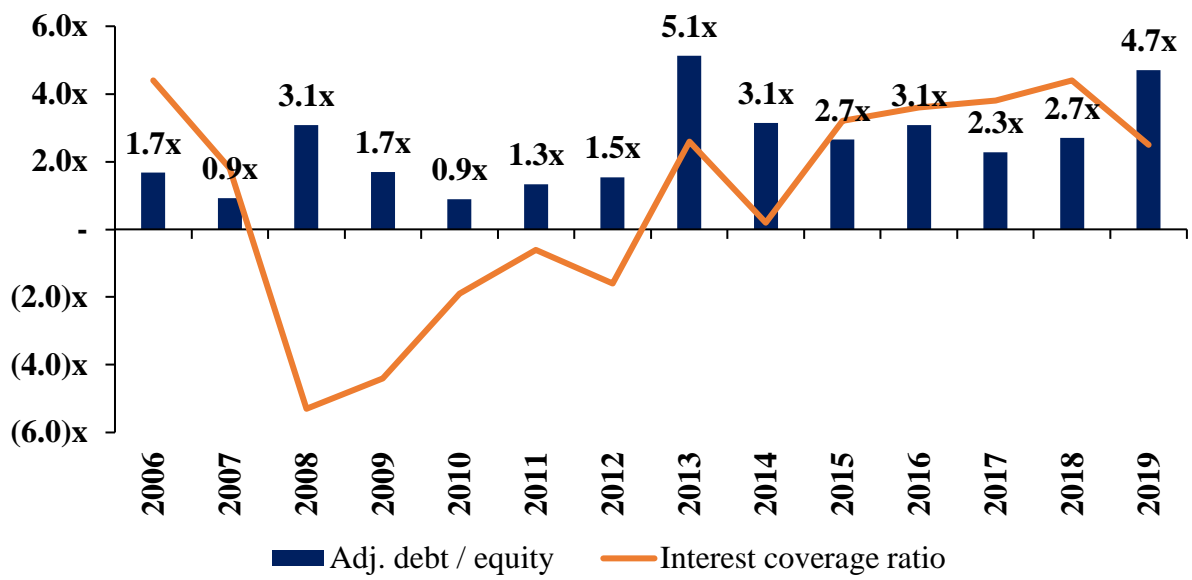
Source: Company information, financial statements

Cash flows and financial health

Throughout its restructurings post-GFC, operating cash flows have been very volatile, as restructuring efforts involved significant one-time cash costs. Since 2015, however, cash generation successfully stabilized. As a result of that, despite increased leverage levels driven by expansion of the fleet, interest coverage levels improved significantly compared to the crisis period.



Source: Company information, financial statements



Source: Company information, financial statements

3. COVID-19 PANDEMIC AND 2020 FINANCIAL RESTRUCTURING

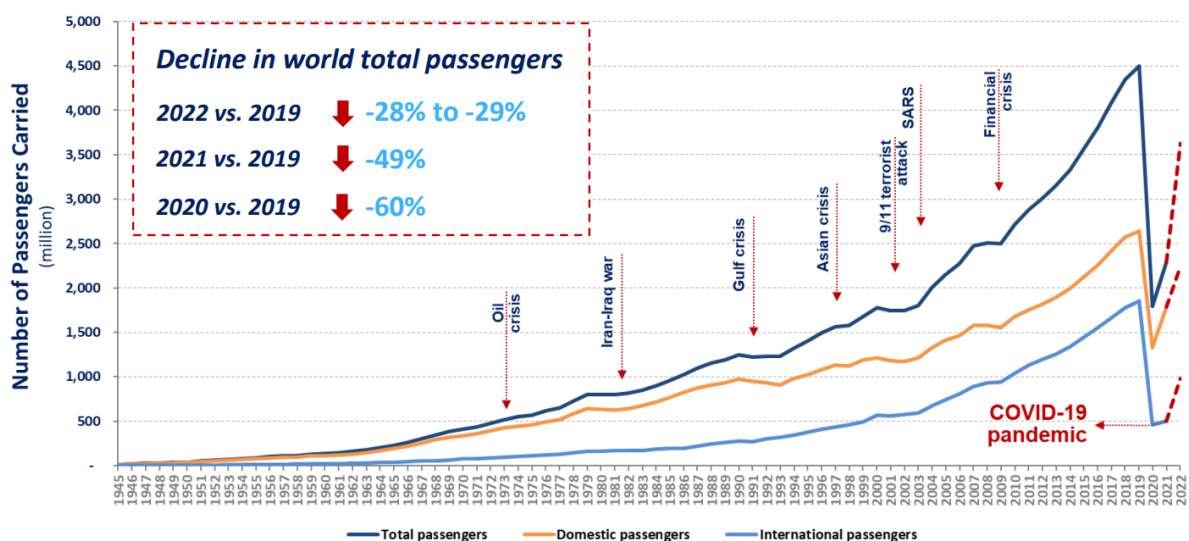
3.1 Industry Distress Drivers

In the spring of 2020, due to the outbreak of the Covid-19 pandemic and the subsequent restrictions, people were forced to stay at home and businesses to remain shut. As a result, demand for air travel cratered to nearly zero in a matter of weeks, leaving airlines with significant losses and cash burn.

Several factors led the airline industry to decline in 2020 and beyond. First, the travel restrictions and border closures across the globe hindered the movement of passengers. Second, fear of contracting the virus while flying and the imposition of quarantine measures discouraged people from traveling even after a vaccine had been developed and rolled out starting from late 2020 / early 2021. Third, businesses and governments halted nonessential travel, and most countries' tourism industries were severely impacted.

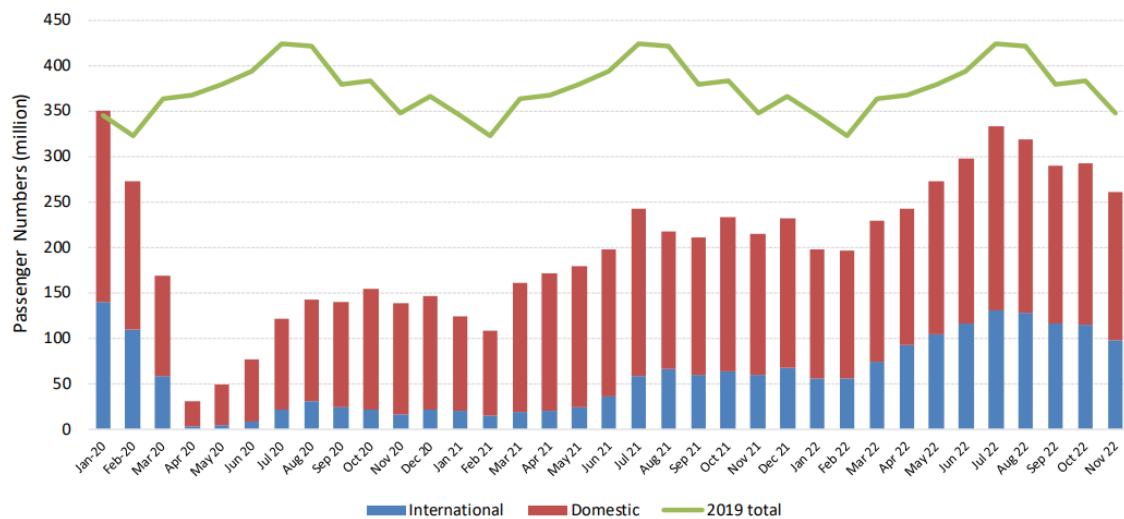
The following charts depict the impact on passenger traffic according to the International Civil Aviation Organization (“ICAO”).

World Passenger Traffic Evolution: 1945-2022



Source: ICAO

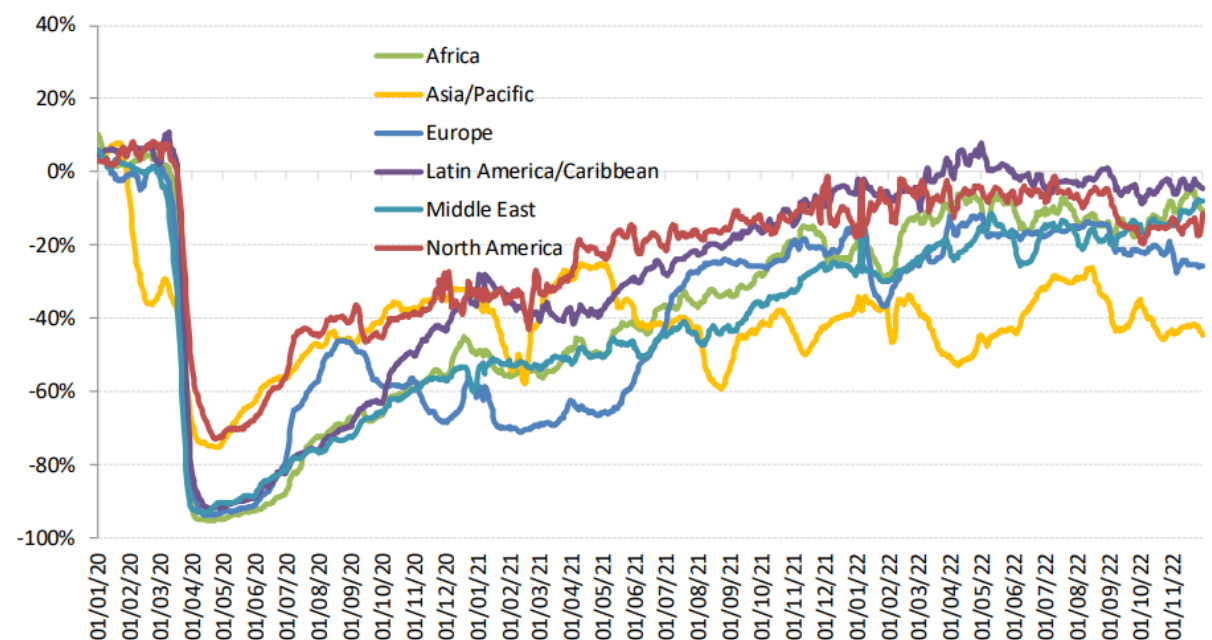
Monthly Passengers in 2020/2021/2022 vs 2019



Source: ICAO

As a result of decreased demand, airlines reacted by immediately reducing seat capacity via grounding and disposal of aircraft, and cancellation of routes (among others).

Total Seat Capacity by Region vs 2019



Source: ICAO

Overall, the ICAO estimates that the COVID-19 impact on world scheduled passenger traffic and passenger revenues has been as described in the following table.

Delta vs 2019 levels

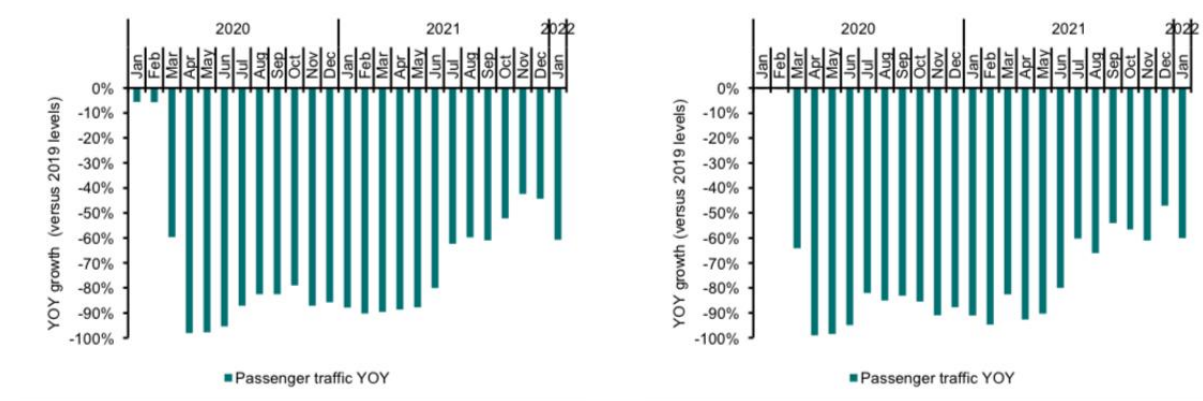
	2020A	2021A	2022E
Seats offered by airlines	(50%)	(40%)	(26%)
Passengers	(60%)	(49%)	(29%)
Airline passenger revenue loss	\$372bn	\$324bn	\$175bn

Source: ICAO

In total, airlines are estimated to have lost c.\$870bn of passenger revenues between 2020 and 2022 due to the pandemic.

The Scandinavian market was hit to a similar extent, with nearly 100% decreases in passenger volumes in the early days of the pandemic.

Number of Passengers in Sweden (left) and Copenhagen Airport (Right)



Source: DNB Markets

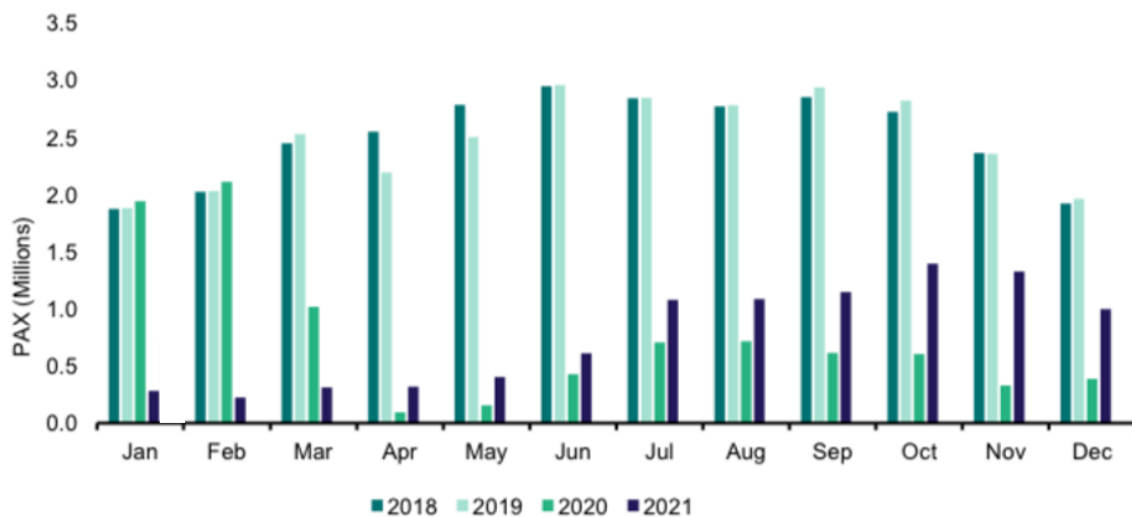
Airlines implemented various measures to cope with the economic fallout. These included reducing capacity (as seen above), cancelling flights, and cutting costs. Some airlines have requested government assistance, and several have filed for bankruptcy. In parallel, governments took measures to support the ailing aviation industry. The U.S. government, for instance, offered \$25 billion in payroll support to airlines under the Coronavirus Aid, Relief,

and Economic Security (CARES) Act. The European Union also announced a €750 billion recovery fund that included support for the aviation industry.

3.2 SAS: Disruption of Operations and Economic Distress

SAS also experienced a dramatic decrease in passenger volumes, which forced the company to immediately adopt measures to limit losses and preserve cash.

SAS Number of Passengers by Month (2019-2021)



Source: DNB Markets

In response to dramatically lower passenger volumes, one of the first measures taken by SAS airline was the reduction of the number of flights operated. For instance, the airline temporarily suspended all routes to China and drastically decreased its capacity to other destinations. These measures were taken to save on operational costs, especially on fuel, maintenance, and labour.

Secondly, the airline implemented additional cost-saving measures, including reducing staff costs and renegotiating contracts with suppliers. The airline sought to tap into government support programs such as payroll support, and it also started talks with its unions to reduce personnel. This resulted in c. 5,000 redundancies in 2020 alone, or c.50% of its workforce.

Thirdly, in light of reduced need for seat capacity, the company implemented an accelerated phase-out of 20+ of its less fuel-efficient aircraft which resulted in additional liquidity through the sales of aircraft and engines, as well as reduced spend on maintenance and leasing.

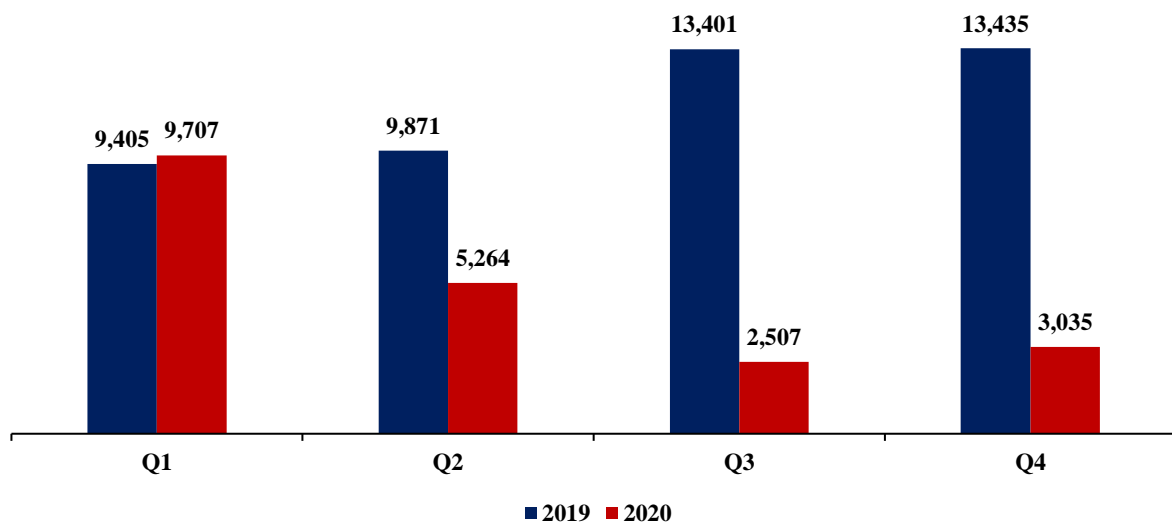
Additionally, the company agreed with Airbus (key aircraft supplier) to defer the delivery of new aircraft, helping the company to preserve cash.

Lastly, SAS airline explored new revenue streams like expanding its cargo offerings to include commercial and medical supplies.

Financial Impact

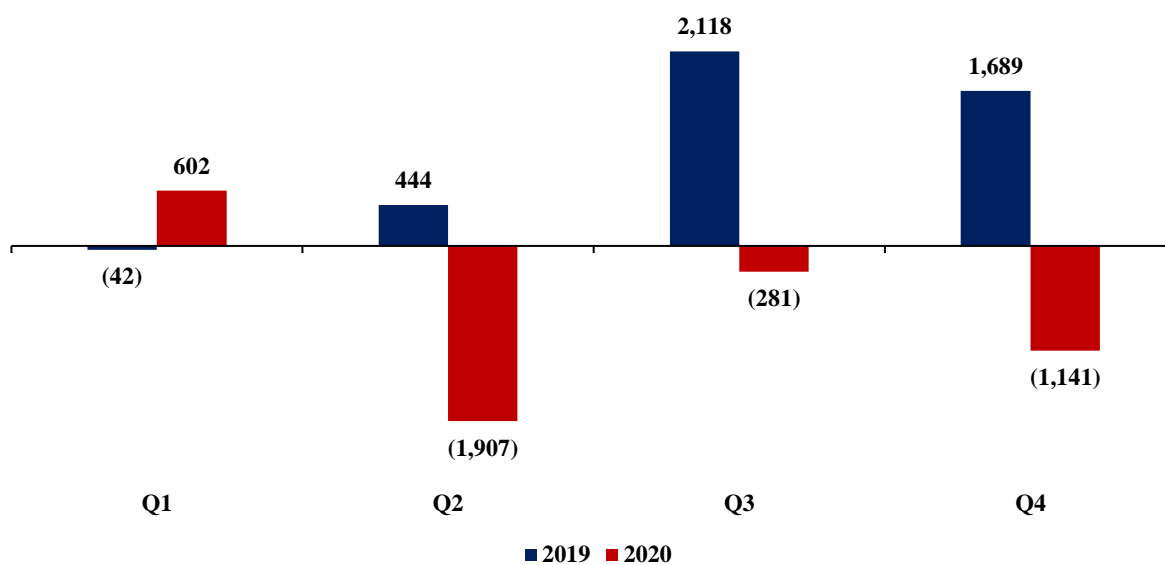
Due to the pandemic, the company suffered major losses. Revenues decreased by 47%, 81% and 77% in Q2, Q3, Q4 2020 vs 2019, leading to even more dramatic EBITDA losses in light of high operating leverage, despite the cost cutting measures put in place. Operating cash flows also deteriorated meaningfully, thus threatening the company's liquidity position, with cash balances decreasing meaningfully in Q2-20.

Revenues



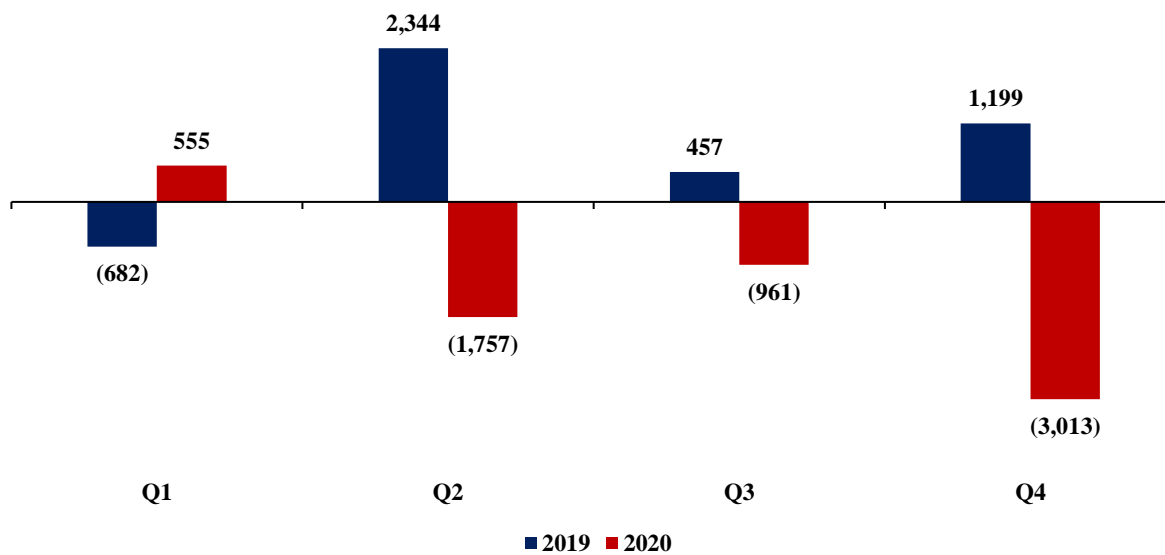
Source: Company information, financial statements

EBITDA



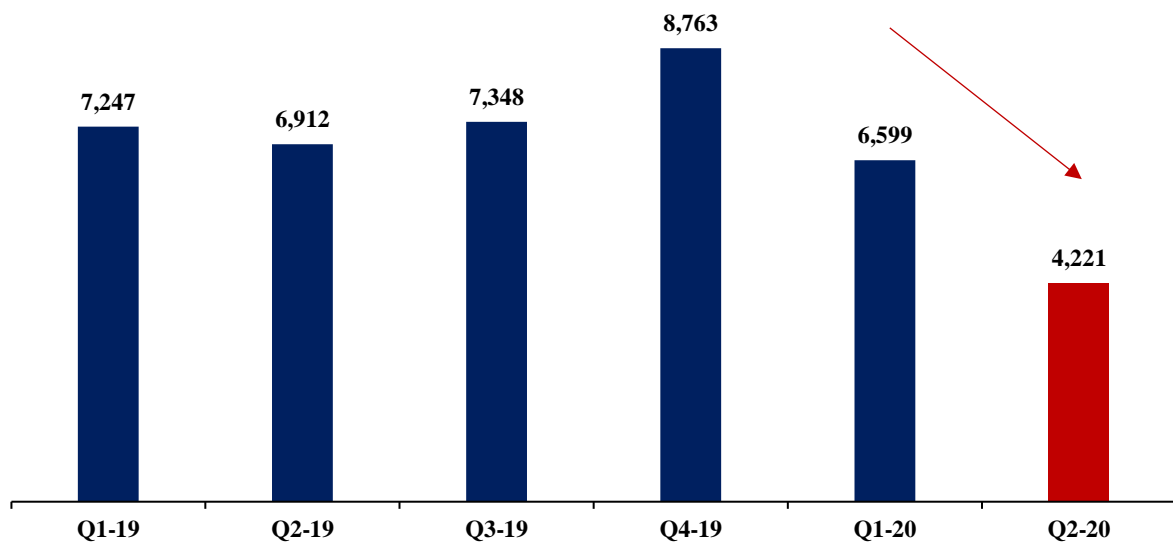
Source: Company information, financial statements

Operating Cash Flow



Source: Company information, financial statements

Cash Balance



Source: Company information, financial statements

As a result of continuously deteriorating operating performance and cash burn, the company fell into economic and financial distress, which required it to ultimately address its capital structure challenges via a financial restructuring.

3.3. Capital Structure and Restructuring Overview

Companies facing financial distress typically handle them via a combination of asset- and liability-based strategies. The most relevant ones for standalone entities (i.e. excluding business combinations with healthier players) include:

- Asset sales
- Write-off and/or conversion of existing debt into new debt instruments and/or equity
- Renegotiation of terms (e.g. maturity extensions and interest deferrals)
- New money injections via debt and/or equity issuances

Asset sales, renegotiation of terms, and new money injections are typically implemented in contexts of severe liquidity pressures, as they enable companies to benefit from additional capital and limit cash outflows. Write-offs, equitizations, and conversions are typically used in situations where businesses are over-levered. In the cases of SAS, both conditions applied, which made it necessary to implement a combination of strategies.

Particularly, in Q3-20, the governments of Sweden and Denmark (key shareholders) put forward a proposal for a financial restructuring. The recapitalization plan included several features:

- Equity injection from existing shareholders
- Equitization of certain bonds and conversion of the remaining into new hybrid notes (treated as equity)
- Conversion of existing hybrid notes into equity
- Issuance of new hybrid notes to the Danish and Swedish governments

Following the recapitalization, SAS signed an additional NOK 1.5bn term loan agreement with the Norwegian government to increase liquidity further. Additionally, SAS received cumulative grants of SEK 788m from the governments of Sweden, Denmark, and Norway for its furlough

scheme, and the Norwegian government purchased SEK 625m of commercial capacity from SAS, thus providing further liquidity.

All included, the restructuring plan adequately addressed the company's key challenges. In particular, liquidity was addressed with sizeable cash injections and leverage with equitization. The full recapitalization and liquidity details are provided in the following tables.

SEK m	Jul-20		Oct-20		Restructuring	Pro Forma	
	Undrawn	Outstanding	Undrawn	Outstanding	Amount	Undrawn	Maturity
SEK 3.3bn RCF ⁽¹⁾	-	3,300	-	-	-	-	2023
€150m RCF	1,544	-	2,751	14,992	-	14,992	Jan-21
\$137m Credit Facility	1,156	30			-		Jun-21
\$26m Credit Facility		15,613			-		Dec-20
\$34m Credit Facility					-		Sep-21
\$57m Credit Facility					-		Jan-23
€10m EMTN Bond					-		2021
€30m EMTN Bond					-		2022
€35m EMTN Bond					-		2023
CHF 127m Perpetual Bonds					-		Perpetual
NOK 1.5bn Term Loan ⁽²⁾					-		
SEK 2.25bn Unsecured Bonds ⁽³⁾		2,250		-	-	Nov-22	
Finance Lease		16,580		16,604	-	16,604	
Total Debt	2,700	37,773	2,751	31,596	1,427	33,023	
Cash and Cash Equivalent ⁽⁴⁾		(6,244)		(10,231)	(568)	(10,799)	
Lease Adjusted Net Debt		31,529		21,365	859	22,224	
SEK 1.5bn Perpetual Hybrid Bonds Treated as Equity ⁽⁵⁾		1,474		-	-	-	Perpetual
SEK 5bn Perpetual State Hybrid Bonds Treated as Equity		-		5,000	-	5,000	Perpetual
SEK 1bn Perpetual State Hybrid Bonds Treated as Equity		-		1,000	-	1,000	Perpetual
SEK 1.615bn Perpetual Commercial Hybrid Bonds Treated as Equity		-		1,615	-	1,615	Perpetual
SEK 1.35bn Perpetual Hybrid Bonds Treated as Equity ⁽⁵⁾		-		1,350	-	1,350	Perpetual

Sources: Debtwire, company financials, Oct-20 rights issue prospectus

- 1) SAS signed for the debt package on 5-May-20, 90% of this was guaranteed by the governments of Sweden and Denmark. The company repaid and cancelled this facility in Q4-20 through proceeds from new shares from recapitalization
- 2) New facility received in Dec-20, fully guaranteed by the Norwegian government
- 3) Under the recapitalization plan, unsecured bonds were converted into equity, 72% of bonds were converted into new commercial hybrid notes and the remaining 28% of bonds were converted into equity
- 4) Pro forma cash balance, accounting for SEK 1.4bn from new term loan, SEK 241m from sale proceeds of aircraft and refunds paid during Oct-Dec-20
- 5) 90% of these bonds were converted into SEK 1.35bn perpetual hybrid bonds

Sources: Debtwire, company financials, Oct-20 rights issue prospectus

Liquidity and Recapitalization Detail

<i>SEKm</i>	Amount
Cash balance as of 31-Jul-20	6,244
Proceeds from share issuance to Swedish and Danish Governments	2,006
Proceeds from right issue to existing shareholders	3,994
Proceeds from state government hybrid bonds	6,000
Total new equity injection from key shareholders	12,000
Repayment of RCF	(3,300)
Other financing activities	(628)
Amortization of lease liabilities	(856)
Operating activities	(1,948)
Refunds	(1,000)
Investing activities	(280)
Total cash outflow for operating, financing, and investing activities	(8,012)
Cash balance on 31-Oct-20	10,231
Undrawn facilities as of 31-Oct-20	2,751
Total liquidity as of 31-Oct-20	12,982
Proceeds from NOK 1.5bn Norwegian government guaranteed loan	1,427
Proceeds from sale of aircraft	241
Additional refunds paid	(1,100)
Pro forma liquidity	13,550

Equity Injection Detail

Total new equity injection from key shareholders	12,000
Conversion of 72% of SEK 2.25bn unsecured bonds to commercial hybrid bonds	1,615
Conversion of 28% of SEK 2.25bn unsecured bonds into equity	635
Total equity infused through recapitalization as of 31-Oct-20	14,250

Source: Debtwire

Pre-restructuring, the company's capital structure mostly comprised term loans and bonds. Generally speaking, companies with large amounts of public debt (bonds) might face challenges in expeditiously implementing restructurings due to hold-out problems and dispersed lender base, where a quorum for consensus is hard to find. On the other hand, companies with material bank debt (RCFs and term loans) might experience smoother restructurings, as the lender base is more concentrated and can get to a decision more quickly. In parallel with the considerations above, it is generally easier for lenders to make concessions when large cheques are "written behind" them (i.e. capital is invested in more junior instruments, particularly equity). This is because they benefit from additional capital being provided to the company without impairing their seniority in the structure.

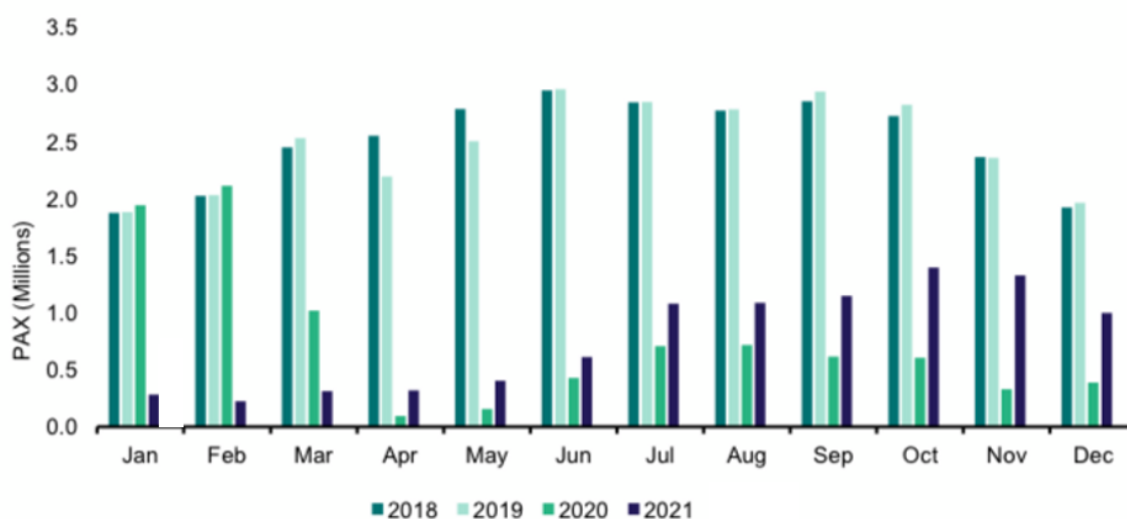
In SAS' context, the presence of the Nordic governments was crucial to expedite the process, as they provided guarantees and injected equity capital on a large scale in order to prevent the company from going underwater. As a result, lenders had a strong incentive to accept the restructuring, which indeed proceeded smoothly and was implemented fairly quickly. Separately, as mentioned before, the company successfully renegotiated its lease and contractual purchase commitments in order to get some runaway and limit cash outflows.

Overall, despite the presence of high financial liabilities, lease liabilities, and contractual purchase obligations (which *ex ante* made it unlikely for SAS to undertake a smooth restructuring), the company managed the restructuring well, helped by significant government shareholding and favourable lender composition. This factor highlights how, in the context of financial distress, debt levels and leverage are not the only drivers, as also lender composition can play an important role.

3.4. Post-restructuring Performance

As a result of the restructuring, SAS started 2021 with a stronger balance sheet in terms of both liquidity and solvency, which allowed management to re-focus on running the operations. In addition, the initial roll-out of the Covid-19 provided some further support to airline traffic, although persisting lockdowns around the world resulted in traffic volumes still materially below 2019 levels.

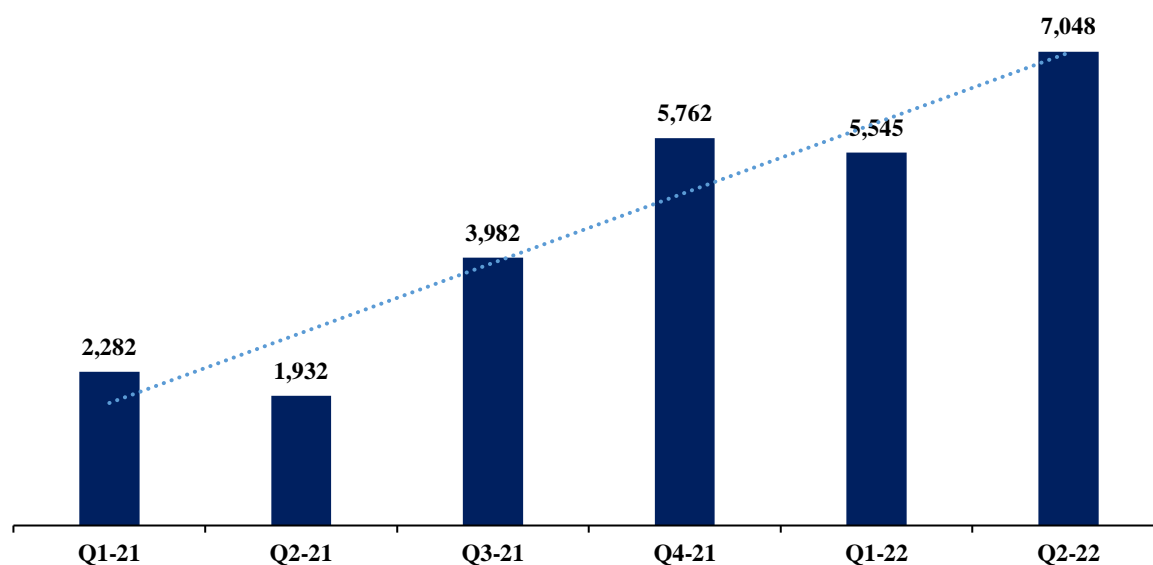
SAS Number of Passengers by Month (2019-2021)



Source: DNB Market

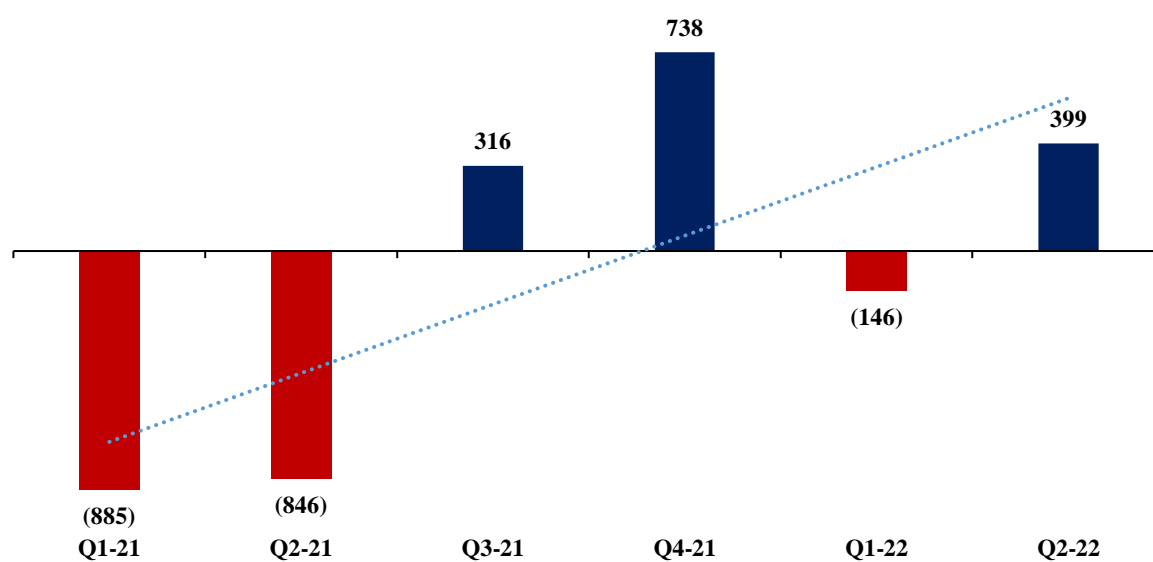
From a financial perspective, the business started to quickly improve at revenue, EBITDA, and operating cash flow level. Following a material use of cash in Q4-20 from SEK 10bn to SEK 5bn, the volatility in cash balances also declined.

Revenues



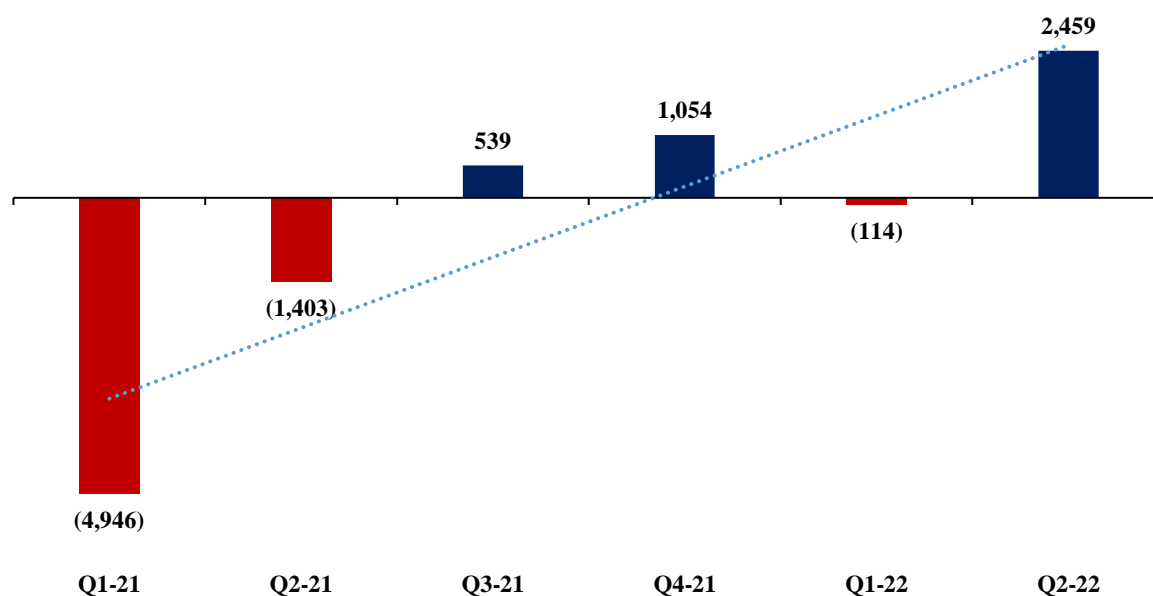
Source: Company information, financial statements

EBITDA



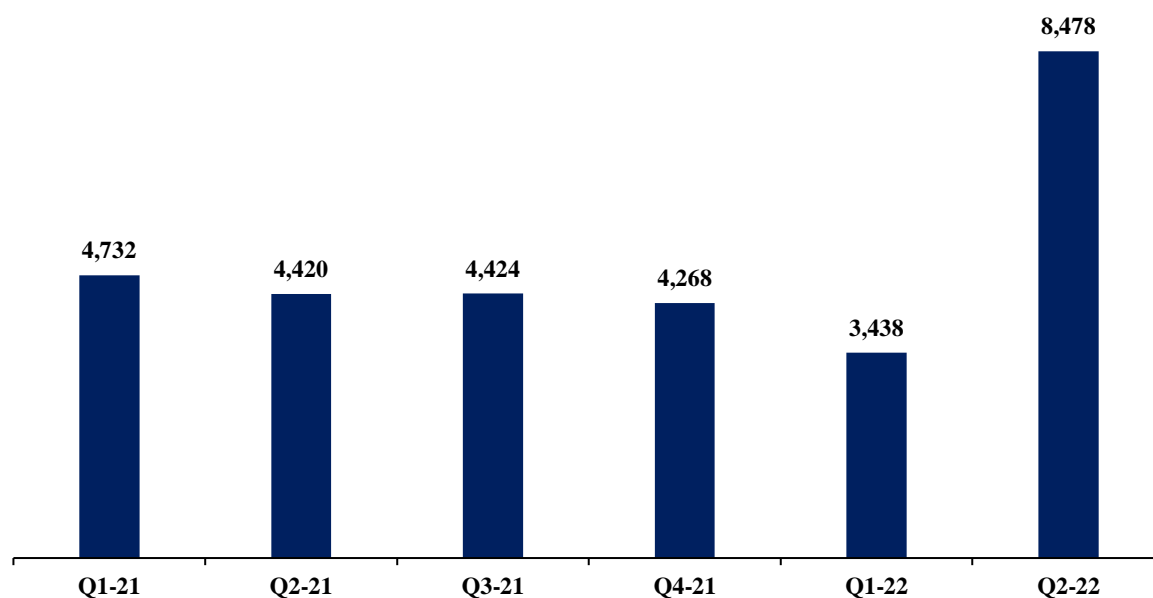
Source: Company information, financial statements

Cash Flow from Operations



Source: Company information, financial statements

Cash Balance



Source: Company information, financial statements

Overall, the business looked to be getting gradually back on track despite its recent financial challenges. In particular, the shape of the restructuring, which included material new capital

and quick execution, limited the indirect costs of financial distress which might have otherwise kept the business under water. Indeed, in a prolonged restructuring, customers might have become less willing to buy tickets for SAS flights fearing that the business would have been unable to operate them as it could have gone bankrupt before the flight date. Similarly, in order to support liquidity, the business might have needed to execute fire asset sales which would have caused both direct losses (impairments for assets sold below cost) and indirect losses (reduced revenues due to downsized airline capacity).

As such, at least in a first stage, the restructuring seemed successful as it allowed the company to get back on track to profitability and cash generation. However, in subsequent quarters, developed countries started to experience material inflationary pressures. These, among others, led the pilots' unions to call prolonged strikes, which caused severe damage to the company and eventually led SAS to file for Chapter 11 protection on 5 July 2022.

3.5 2022 Chapter 11 filing and Subsequent Performances

Chapter 11 Developments

As previously mentioned, SAS ultimately filed for bankruptcy protection on 5 July 2022. Under the restructuring, SAS aimed to continue the implementation of its operational restructuring and looked to access up to \$700m debtor-in-possession (“DIP”) financing to support operations through the process, given that liquidity started to go under pressure again due to inflationary pressures and prolonged strikes.

On 19 July 2022, SAS announced to have reached agreements with pilots’ unions thereby ending the pilot strikes which had caused the company approximately SEK 1.2bn of damage.

On 14 August 2022, the company finally entered into a \$700m DIP financing agreement with Apollo Global Management, a US-based distressed investor. The financing was structured as a delayed-draw term loan facility in aggregate amount of \$700m of which \$350m would be made available following the Court’s approval of the DIP Loan Agreement and the remaining \$350m would be made available upon satisfaction of certain other conditions under the DIP Loan Agreement. The plan was ultimately approved in September 2022 and SAS drew on the first \$350m tranche.

As part of the Chapter 11 process, SAS also took meaningful action to reduce its future capital commitments and cash outflows by, among others, renegotiating lease agreements, deferring cash interest payments on debt, and implementing further cost cutting measures.

In April 2023, SAS announced it had started a process to raise equity financing which would help the company to facilitate its emergence from Chapter 11. As part of the announcement, the company also confirmed that general unsecured creditors and existing shareholders would receive little to no recovery at the end of the Chapter 11 process. In the same month, SAS announced it would not utilize the second \$350m tranche of the DIP term loan following a

stronger-than-expected development of its liquidity position, as well as the intention to pursue other normal course financing activities (i.e. the equity raise) that if closed would supplement the company's liquidity at a lower cash cost. In May 2023, SAS received court approval of the plan.

Financial Performances during Chapter 11

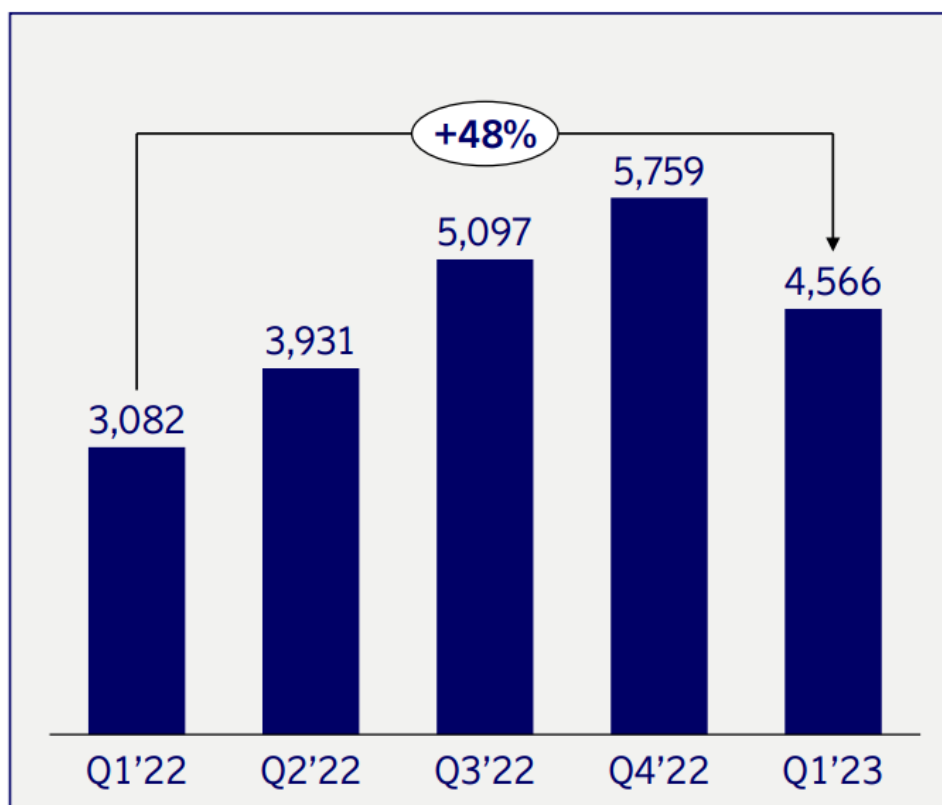
Since July 2022 (i.e. SAS Chapter 11 filing), the airlines market continued its recovery from the Covid-19 shock, with passenger volumes continuing to increase at fast pace. SAS benefited materially from it, with improving passenger volumes (+48% YoY increase in Q1-23 vs Q1-22) and material revenue growth (+42% YoY increase in Q1-23 vs Q1-22). With this regard, interestingly SAS did not seem to suffer from the most common indirect cost of financial distress for an airline business, which is passengers' reluctance to purchase tickets fearing the company would not be able to service them due to distress. This was likely because the company did not enter a free-fall bankruptcy with no visibility on its future. Rather, the company filed for Chapter 11 bankruptcy to benefit from DIP financing and have better ability to renegotiate lease agreements, among others. These factors surely contributed to the strong top-line performance and resilience achieved since Chapter 11 filing.

However, despite the material rebound in revenues growth, the inflationary environment (high fuel costs) and FX volatility continued to weight on the company's profitability and liquidity, which ultimately forced the company to continue to defer interest payments, implement cost cuts, and renegotiate lease agreements. These were primarily exogenous factors the company had no control over (outside of commodity / FX hedging – whose implementation is very costly in times of high volatility, particularly for bankrupt businesses) and which affected the market as a whole.

The charts below summarize the company's performances during the Chapter 11 period until Q1-23, focusing on passenger growth, revenues and EBT (hence costs), and cash balance. With

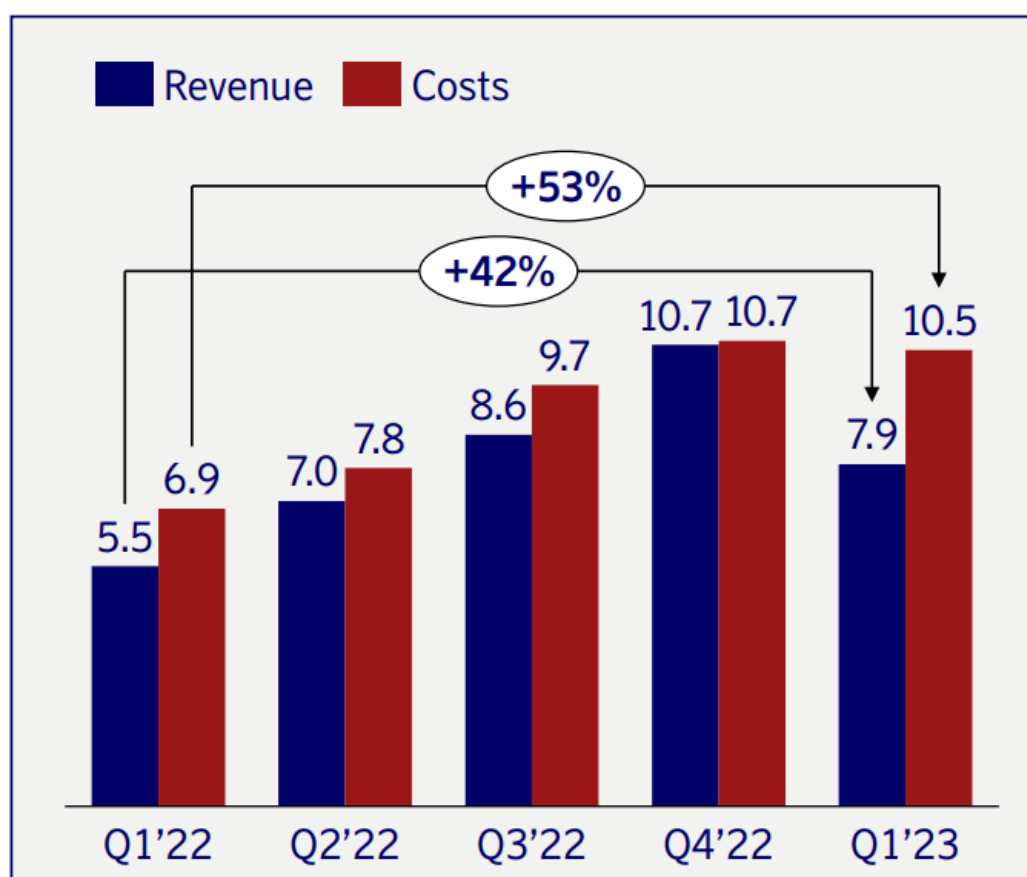
regard to revenues and EBT, full bridges detailing Q1-23 YoY deltas are provided, which give colour on the key factors driving performance.

SAS Passengers ('000)



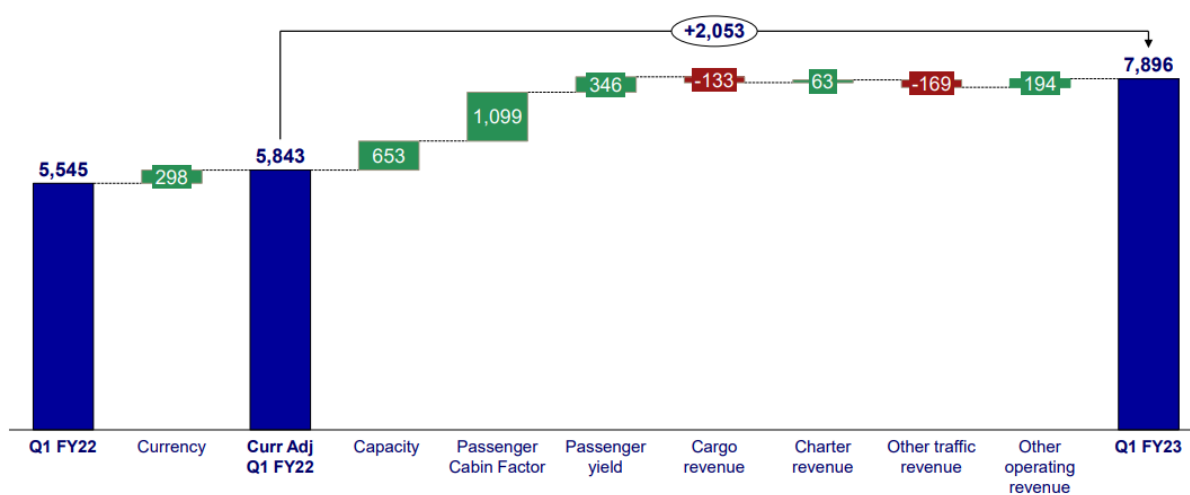
Source: Company information

Revenues and Costs



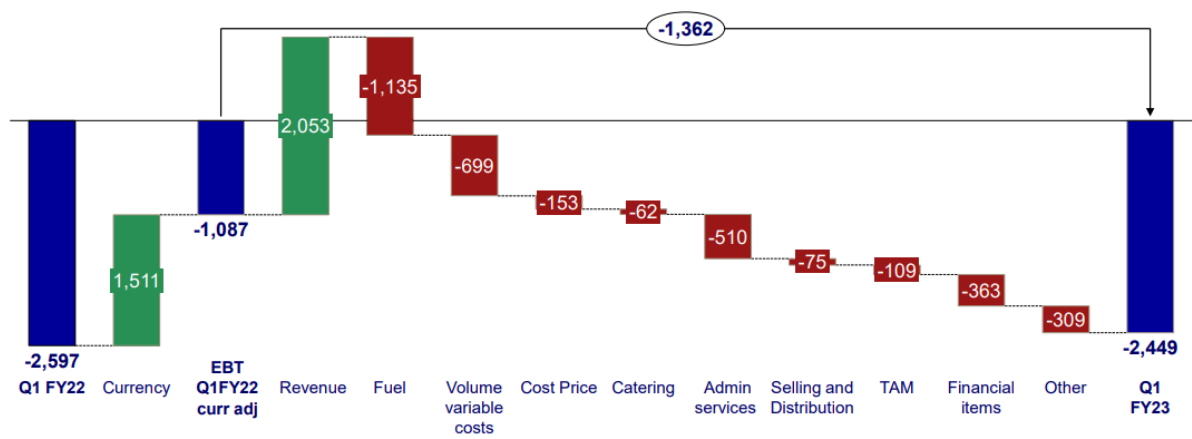
Source: Company information

Revenues



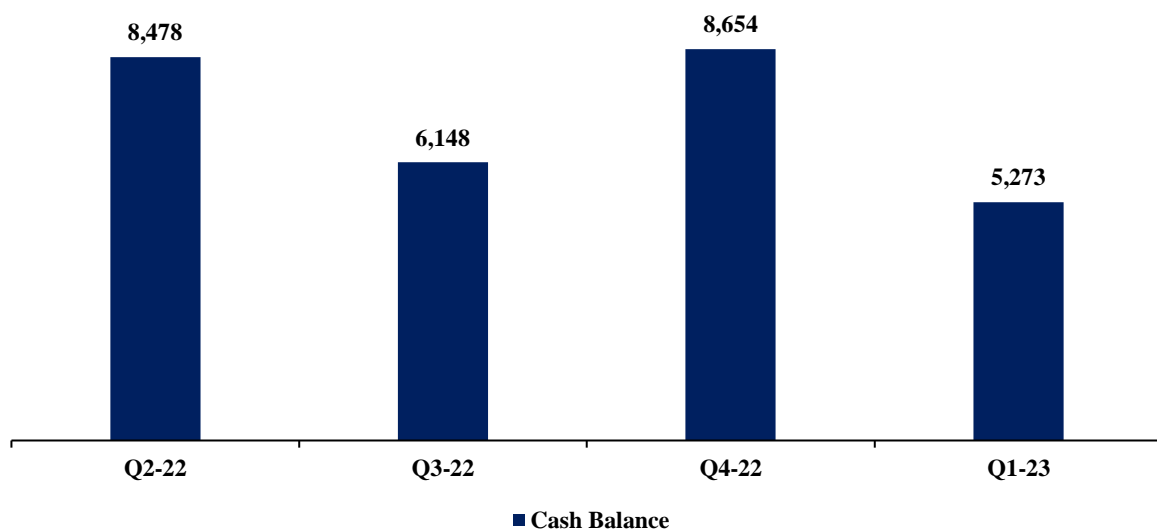
Source: Company information

EBT



Source: Company information

Cash Balance



Source: Company information, financial statements

4. CONCLUSIONS

SAS' 2020 restructuring is an interesting case as it has been one of its kind for several reasons.

- Financial distress started as a result of a sudden and unanticipated exogenous event, the Covid-19 pandemic, which led to a zero-revenue environment with material cash burn. In most cases, instead, financial distress is the result of a long process of underperformance caused by endogenous or market factors (e.g., outdated product offering, competition, mismanagement, etc) leading to economic distress, which in turn generates financial distress when coupled with high debt burdens.
- The 2020 restructuring was executed very well, in a smooth and quick fashion in light of the material equity injection (addressing liquidity), debt equitization (addressing leverage). This kind of restructuring is the one any financially distressed business can aim for, as it minimizes disruption and resets the company's balance sheet. Notably, in the case of SAS it was achieved because of the favourable shareholder and lender base, despite an unfavourable pre-restructuring capital structure (high financial liabilities, lease liabilities and contractual purchase obligations).
- Despite the successful restructuring, SAS eventually fell again in distress and filed for bankruptcy protection due to another crisis, linked to inflation and other related factors (e.g. pilot strikes).

Overall, the pre filing capital structure helped substantially since debt was relatively concentrated (large share of bank debt) and shareholders included government entities providing support. This resulted in a material improvement of post-restructuring performance, which could have not been achieved otherwise, particularly given the high initial leverage and presence of material lease and contractual purchase obligations.

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