Analysis of the role of General Electric in the US airline Industry; a possible capital market mutation in response to the anomalies of Chapter 11?

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Abstract

The paper analyses four influences on companies' likelihood of failure: the macroeconomic environment, the legal framework, the relative bargaining power of major creditors, and capital structure. It draws together corporate finance, financial accounting and law. And it focuses primarily on the US airline industry, motivated by the puzzle that, on some estimates, this industry has made zero cumulative profit taking the years of the last century together, and the further puzzle that in recent years, liquidation in the industry has become rare. The paper first analyses the link between macro economic fluctuations and the frequency of bankruptcy in the US domestic airline industry. Whereas such links have been significant in other countries and industries, in this case, no strong links emerge from the standard tests. In the course of exploring why macroeconomic factors were not more powerful, two developments are identified in the US which could have changed the process of business failure in the airline industry: the evolution of the US bankruptcy code, and the development of a powerful financial intermediary, General Electric (GE), which intervened in cases of financial distress. These interlinked developments are analysed using a game theoretic framework through a case study of GE's aircraft leasing operation, where a single creditor assumes major influence over whether or when a distressed company goes into bankruptcy.

Key Words: Bankruptcy code, Chapter 11, Capital Structure, US airline industry, Liquidations, General Electric, moral hazard

JEL Classification: G38, G33

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The major airlines of USA have lost a cumulative amount of $35 billion since 2000[2], yet not a single one of them has disappeared. The second biggest, United Airlines, continues in its third year of operating under bankruptcy protection. US Airways, likewise, is operating under bankruptcy-court protection and is seeking a merger with a more solvent, but struggling, America West. Delta registered a record loss of $5.2 billion in 2005 and continues to slide towards a liquidity crisis. Yet the USA's roster of big airlines continues nearly unchanged since the beginning of an acute industry downturn that began nearly five years ago, and accelerated with a decline in travel following the Sept. 11 terrorist attacks. Not even the most financially fragile carriers appear to be in imminent danger of shutting down. This is substantiated by the fact that no large U.S. airline has simply ceased operations since Pan American World Airways shut down in December 1991[3]. This chapter attempts to explore the realities leading to this situation and critically examine the dynamic role played by the major financiers of the US Airline industry. In particular the chapter attempts to see if this situation reflects a new governance mechanism, a possible evolutionary market response to the anomalies of Chapter 11 of the US bankruptcy code.

Chapter 11

Within the US bankruptcy code, should a troubled business decide that it is unable to service its debt or pay its creditors, it can file (or be forced by its creditors to file) with a federal bankruptcy court for bankruptcy protection under either Chapter 7 or Chapter 11. Under a Chapter 7 filing the business would sell all its assets, distribute the proceeds to its creditors, and then cease operations. It is widely accepted that the Bankruptcy act of 1978 gives the debtor much greater protection against the creditor (when compared to the previous act) through Chapter 11. [Boyes and Faith (1986)]. This can be partially substantiated by the fact that there is a very large increase in the number of firms seeking protection under Chapter 11.[4] (Frank & Torus, (1989). A filing under Chapter 11 of the US bankruptcy code demonstrates an attempt to stay in business while a bankruptcy court supervises the "reorganization" of the company's contractual and debt obligations. It defines the rules by which the stakeholders of distressed firms can renegotiate their claims. The bankruptcy courts have the authority to grant complete

[2] See hearings from the US Senate Committee on Commerce, Science and Transportation, (24/1/2007); http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Statement&Statement_ID=178
[3] The disappearance of TWA was due to American Airlines acquiring the carrier in 2001
[4] For example in 1987 17,142 companies filled for Chapter 11 compared to only 6,298 in 1980. (Source: Franks & Torous, 1989)

or partial relief from most of the firm's debts and its contracts, in order to enable the firm to make a fresh start. Often, if the firm's debts exceed its assets, (i.e. a negative equity situation) then at the completion of bankruptcy the firm's owners (stockholders) end up with nothing and all their rights and interests are terminated while the firm's creditors end up with ownership of the newly reorganized company in the hope that it will eventually succeed financially as compensation for their losses. There is also an efficiency justification for having two separate bankruptcy procedures. The Liquidation route (Chapter 7) should ideally[5] be taken by firms that are economically inefficient as well as financially distressed, whereas the reorganization procedure (Chapter 11) is for firms that are economically efficient[6] but financially distressed. However the problem arises where financial distress is relatively easily observable, and economic efficiency depends on such unobservables as earnings of a firm's assets in their best alternative use. Economic distress results from problems in a company's operations without reference to its capital structure. Conversely, financial distress (in a legal context) occurs when a company's financial structure (mainly its level of debt) causes a company to be unprofitable. Although either type of distress may cause a company to enter bankruptcy, the bankruptcy process is primarily designed to alleviate financial distress[7]. One of the basic purposes of the Chapter 11 bankruptcy code is to protect firms from the seizure of assets by creditors while they reorganize. In fact Baird (1992) traces the origins of the development of bankruptcy reorganization in the US to efforts to save financially distressed railroads whose secured creditors would otherwise have foreclosed on and liquidated particular sections of the track. The rationale behind this is that the value of a typical business as a going concern may be far higher than the value of the sum of its parts if the business's assets were to be sold off individually. The loss in profits as a result of a firm encountering financial distress constitute what are described as "indirect" bankruptcy costs, and according to a study by Altman (1984) these account for about 10% of the firms' value. (The direct costs[8] accounted for 6.2% of the value in this study). For example just the announcement of distress triggered the bookings for Braniff Airlines to fall drastically due to fear of flying in (perceived) poorly maintained aircraft and a similar situation can be seen with the loss of market share of Chrysler. Altman measured these indirect costs to be the difference between projected normal profits (through regression techniques) and actual profits.

[5] In practice although financial distress is easily observable economic efficiency is not so as it depends on the earnings of a firms assets in their best alternative use.
[6] When the assets of a firm in its current use yield a higher earnings than their best alternative use
[7] For further discussion, see Douglas G. Baird, Bankruptcy's Uncontested Axioms, 108 YALE L.J. 573, 580–83 (1998).
[8] These are costs directly associated with the bankruptcy process such as lawyers fees, audit and accounting fees etc.

Thus it follows that it may be economically more efficient to allow a troubled company to continue running, cancel some of its debts, and give ownership of the newly reorganized company to the creditors whose debts were cancelled. Ideally this should lead to a proportion of jobs and assets being retained, with at least part of the business being maintained rather than being dismantled, and (as a Chapter 11 plan is required to demonstrate as a precursor to plan confirmation), the business's creditors at least in theory should end up with more money than they would in a Chapter 7 liquidation. However, in reality, agency problems can lead to value destruction while operating in Chapter 11 especially under a debtor-sympathetic judicial system and this is clearly evident in the case of Eastern Airlines (1989). (See appendix 1)

The relation bewteen GECAS and US airlines

US airlines now rely heavily on lease finance for their aircraft fleets. The operating lease business was essentially founded by International Lease Finance Corporation (ILFC) in the early 1970s and today several companies are in the field. Approximately one third of all commercial aircraft worldwide are now leased. The share is larger for Narrowbody (37.16%) than for Widebody Aircraft (23.07%)[9]. Interestingly, the largest lessors are not the aircraft manufacturers - Boeing and Airbus - even though both have recently established Trading/Leasing divisions. The US aircraft leasing industry is dominated by two players, ILFC, the founder, and General Electric Commercial Aviation Services (GECAS). The largest lessor[10] is GECAS, a unit of General Electric Company. At the beginning of 2005, GECAS had an inventory of 1,342 aircraft (per AvSoft/The Wall Street Journal.) Nearly all aircraft owned by GECAS are powered by engines from GE-Aviation, another subsidiary of General Electric. In addition to its own aircraft fleet GECAS today, manages approximately 300 aircraft for others and has more than 230 airline customers. In early 2007, GECAS placed an order with Boeing for fifteen 777 aircraft and twenty four 737-800 aircraft in a $5.34 billion deal. The aircraft are scheduled to be delivered between 2008 and 2010[11]. As a standard of comparison, the largest carrier in the world, American Airlines, operates around 700 aircraft. The market structure for leasing is that the two very big lessors - GECAS and ILFC jointly have the biggest share of the market and a restricted number of other lessors split the rest of the market. At the beginning of 2005, ILFC had an inventory of 824 aircraft (per AvSoft/The

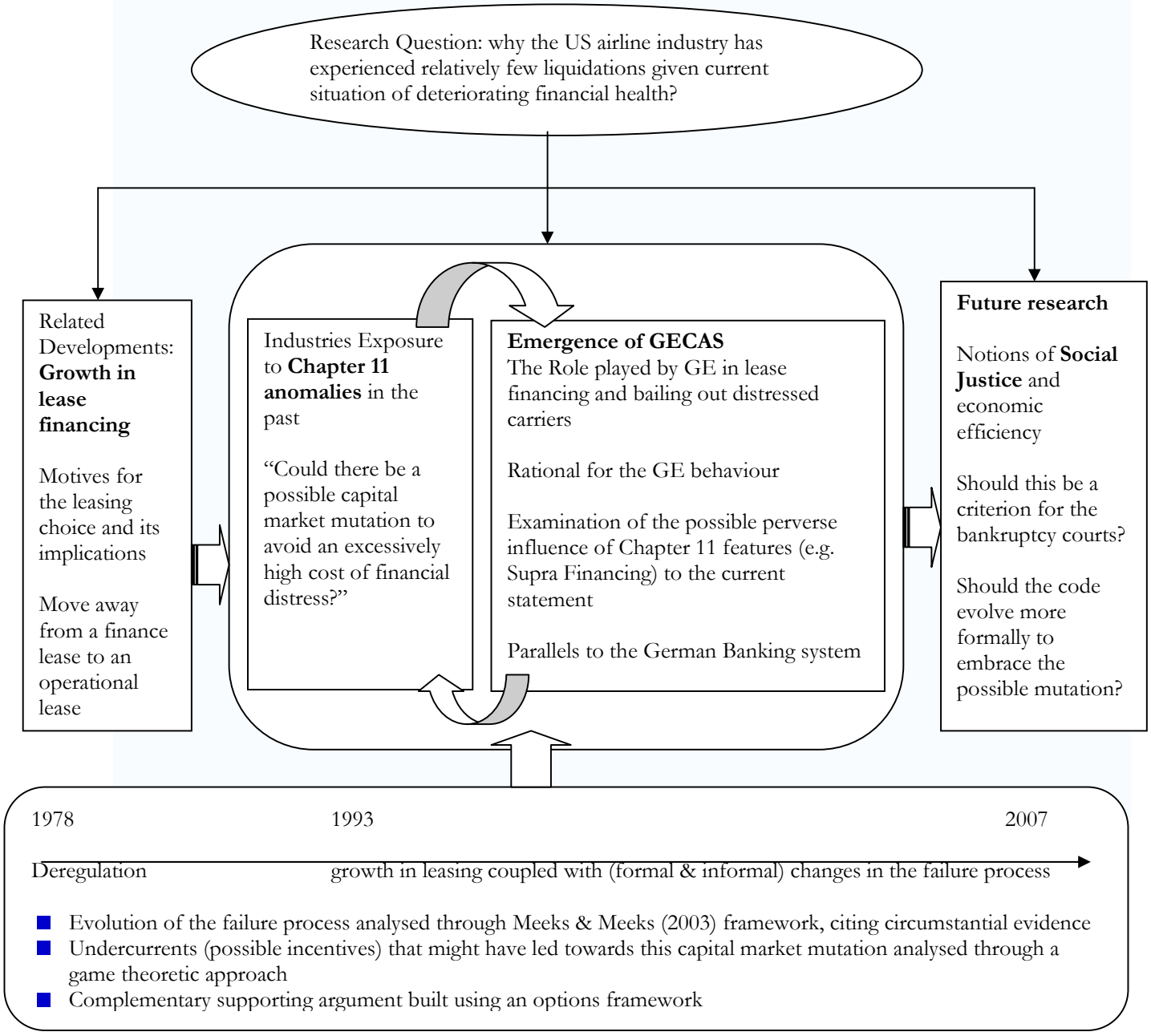
[9] Source: Gavazza, (2005), 'Leasing and Secondary Markets: Theory and Evidence from Commercial Aircraft', *www.som.yale.edu/faculty/ag562/aircraftleasing.pdf*
[10] In terms of the number of aircraft owned
[11] See BBC news on 22-1-2007

Wall Street Journal.) According to Aviation Week and Space Technology magazine (August 6, 2007) as of August 2007, ILFC had an inventory of over 900 aircraft valued at more than $48 billion. The two market leaders have a different geographical coverage: while over half of GE's fleet are with American carriers ILFC leases nearly 90% of its planes to non American carriers, making GECAS the most dominant entity when considering the US aircraft leasing market.

Approach and Methodology

This paper seeks to shed light on one of the key research objectives of why the US airline industry has experienced relatively few liquidations given the current situation of deteriorating financial health. The figure set out below gives a road map of the flow of arguments and the various frameworks used to analyze the above mentioned research objective.

Figure (1): Road map of the flow of arguments and the frame work adopted



This paper adopted a case study methodology. Case study research excels at bringing an understanding of a complex issue and can extend experience or add strength to what is already known through previous research. It emphasizes detailed contextual analysis of a limited number of events or conditions and their relationships. Case study research methods have been in use for many years across a variety of disciplines. Social scientists, in particular, have made wide use of this qualitative research method to examine contemporary real-life situations and provide the basis for the application of ideas. Yin defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context;

Many well-known case study researchers such as Stake (1995), Simons (1980), and Yin (1984) have written about case study research and suggested techniques for organizing and conducting the research successfully. This case study of role played by General Electric in context of an evolving failure process in the US airline industry broadly follows the techniques suggested by these researches.

This study draws on multiple sources of data such as Datastream, OSIRIS, various journal articles, administrative and legislative reports, minutes, and news clippings, open-ended interviews with key members

A key strength of the case study method involves using multiple sources and techniques in the data gathering process. This method, with its use of multiple data collection methods and analysis techniques, provides researchers with opportunities to triangulate data, uncover patterns and converging lines of inquiry in order to strengthen the research findings and conclusions. The advantages of the case study method are its applicability to real-life, contemporary, human situations and its public accessibility through written reports.
The approach adopted in this chapter can be very briefly summarized as follows.

- **Research Question**: why has the US airline industry experienced relatively few liquidations given the current situation of deteriorating financial health?. Are we witnessing an evolution in the failure process?

- **Method** : Case study methodology – GE's Aircraft leasing operation

- **Tools used for analysis :**

  Meeks and Meeks (2003) framework
  Game Theory
  Options Based argument

- **Data** : OSIRIS, Datastream, interviews with key personnel, academic journals, Newspapers and trade magazines

- **Conclusion** :Two developments which could have changed the failure process in the US airline industry are identified

  1) The evolution of the US bankruptcy code
  2) The development of a powerful financial intermediary, GE, which intervened in cases of financial distress.

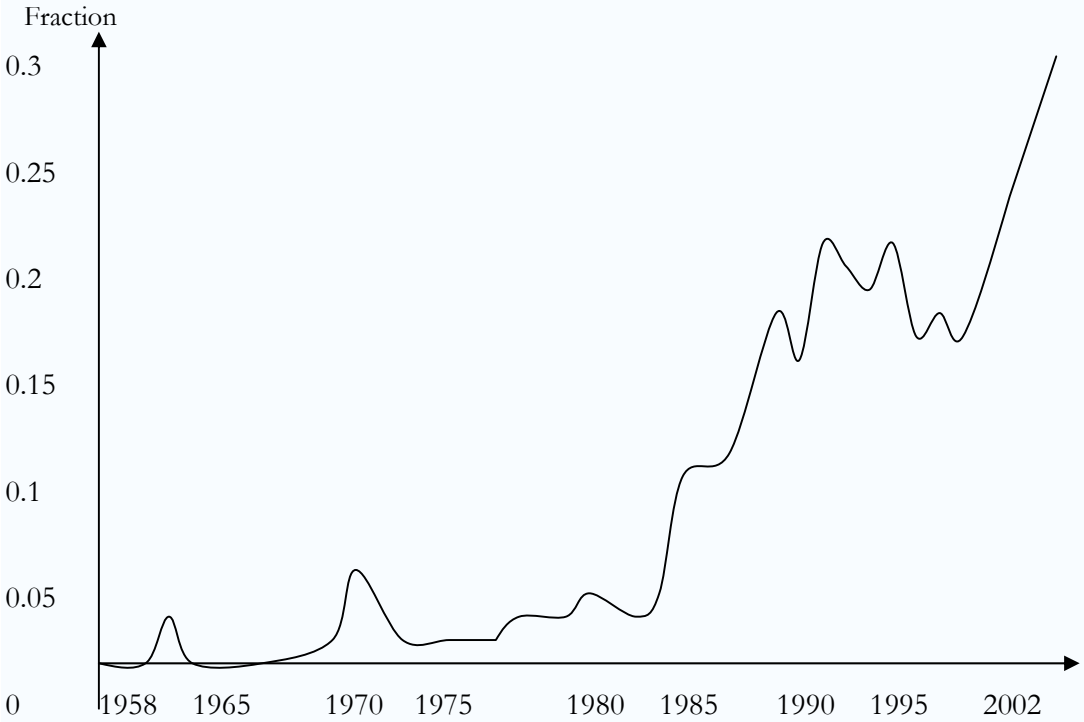
The rest of the paper is structured as follows. Section I sets out the reasons for the gradual rise in popularity of leasing as an option for aircraft financing and looks at the benefits of opting for leasing in the face of financial distress. Section II describes the US bankruptcy code in more detail focusing on its anomalies and makes a critical assessment of how the role played by GECAS can be portrayed as a possible response to those anomalies. Section III elaborates more on GECAS's actual role and the perceived impact on the US airline industry as a whole. Section IV concludes by outlining possible scenarios for the future.

SECTION I

The case for the growth of Aircraft Leasing

An Operating Lease, based on a rental contract between a lessor and an airline for the use of the aircraft for a short period of time (typically 4-5 years), has recently become a very popular financial instrument in the global aircraft market. The figure below illustrates the ratio of new Narrow-body and Wide-body aircraft delivered to lessors by year and shows a sharp growth in the proportion financed by lease.

Figure (2): Illustration of the new aircraft[12] delivered to lessors by year.



Source : Gavazza (2005)

Lessors are also very active participants in the secondary (used) market as they regularly buy and lease out aircraft, where an individual aircraft is leased out several times during its useful lifetime[13]

The operating leases remain a key financing tool for airlines despite increased opportunities for alternative means of finance in capital markets where even distressed airlines in Chapter 11 have been

[12] These include both narrow body and wide body aircraft delivered by lesees, including manufacturers like Boeing and Airbus. The fraction is the new commercial aircraft to the total aircraft delivered by year.
[13] See Gavazza, (2005), 'Leasing and Secondary Markets: Theory and Evidence from Commercial Aircraft', *www.som.yale.edu/faculty/ag562/aircraftleasing.pdf*

able to attract Debtor in Possession (DIP) financing with relative ease.[14] The aircraft leasing industry did not really exist until the mid 1980s, but since then it has grown until in 1997 about 46% of the entire world airline fleet of 12,000 airplanes are leased[15]

1.1 Characteristics of aircraft leases

Lease rentals generally tend to rise as the aircraft ages due to a filtering process. Traditionally new aircraft have been leased to a carrier with a reasonable and verifiable financial track record. Combined with a longer initial term the lease rentals would usually be the lowest at this stage thus reflecting the level of risk borne by the lessor. With a second lease comes the possibility of a shorter term: often it is for an aircraft that is no longer in production and/or to a less financially secure lessee. This is often associated with a rise in the lease rental factor (LRF)[16] reflecting the higher level of risk now borne by the lessor. By the time the third lease is secured the the lessor is most likely to have broken even and the prospect of any residual value at the end of the term can be assumed to be negligible. Thus all the revenue the lessor reaps from the lease rentals transforms into profits as the capital costs would have by now been covered in full. The old rule of thumb in the US airline industry was that an airplane produced equal revenue to its costs in one year, but some analysts believe that this has changed and now it takes two years to cover the costs of an airplane.

1.2. Accounting Treatment of leases

An operating lease (sometimes called a service lease) is usually contracted for a period much shorter than the actual life of the asset and is characterized by a stream of lease payments whose present value is much lower than the value of the asset. The ownership of the asset in an operating lease clearly resides with the lessor and the lessee usually has the option to cancel the lease (for example if the asset becomes obsolete) and return the equipment to the lessor any time during the lease. A financial lease (sometimes called a capital lease) generally lasts the life of the asset where the present values of the lease payments are expected to cover the price of the asset. Typically a financial lease cannot be cancelled[17], and the lease can be renewed at the end of its life at a reduced rate or the lessee may be given the right to acquire

[14] See Sigma aviation report 2005; http://www.sigmaraviation.com/airlinenews.0.html
[15] see www.sigmaraviation.com
[16] LRF: monthly rental is expressed as a percentage of current value. The relative strength of lease rentals is often measured against the 1% rule where an LRF <1% can be viewed as the market being particularly weak.
[17] A typical finance lease contract would factor in large penalties to deter cancellation.

the assets at a favorable price, much lower than its current market value. In many cases the responsibility for obtaining insurance and paying taxes on the asset lies with the lessee. There are certain lease arrangements that share features of both these type of leases and are called combination leases where the accounting treatment will depend on how the particular lease is interpreted.

The effect of leasing on the financial accounting statement will depend on how the lease is categorized by Internal Revenue Services for tax purposes and is measured according to Generally Accepted Accounting Principals (GAAP) guidelines. The financial accounting standards board (FASB) states that firms should treat leases as capital leases (and thus would not qualify for off balance sheet financing, where a firm can improve their gearing ratios by not capitalizing the assets in their balance sheets) if any one of the following conditions hold.

- The life of the lease is at least 75% of the asset's life
- The ownership of the asset is transferred to the lessee at the end of the life of the lease
- There exists a "bargain purchase" option, whereby the purchase price is below the expected market value, giving the incentive to the lessee to obtain the ownership of the asset at the end of the lease period
- The present value of the lease payments exceed 90% of the initial value of the asset

All other leases are treated as operating leases.[18]

1.3 Accounting implications

A cash purchase of an asset by a firm results in an increase in "property, plant and equipment" in the balance sheet and a simultaneous reduction in cash. If debt is used to finance the purchase, the cash position is not altered, but of course the debt balance would increase as a liability. In either case it could result in an immediate reduction in a firms liquidity ratios or an increase in its leverage ratios. This is because the cash outflow for the purchase is immediate but the corresponding cash inflows from revenue are spread over the asset's lifetime. However if the firm leases the same asset and the lease qualifies as an operating lease under the conditions stated in the "Generally Accepted Accounting

[18] Source : Damodaran., A 'Dealing with Operating Leases in Valuation', Working Paper - Stern School of Business, *http://pages.stern.nyu.edu/~adamodar/pdfiles/papers/oplev.pdf*

Principles" (GAAP), then the equipment would not be capitalized and reflected in the balance sheet. The GAAP, Statement of Financial Accounting Standards (SFAS) No. 13, "Accounting for Leases" states the underlying issues covering a wide range of circumstances relating to leasing. Although it was first issued in 1976 and subsequently modified, its core concept which states that "if the equipment lease genuinely leaves substantially all the benefits and risks incident to ownership of property with a third party leasing company, the equipment lease transaction qualifies to be off balance sheet" remains valid to this day. There are several empirical tests which have to be applied to ensure the eligibility to be an off balance sheet item, the foremost of which is to ensure that the present value of the minimum contractual lease payment is less than 90% of the equipment costs. Once the present value of the lease payment obligation approaches 90%, the lease may be deemed to be a finance lease (see above), effectively a purchase and thus would not qualify for off balance sheet treatment. Thus if a firm resorts to finance through operating leasing its gearing and liquidity ratios would improve relative to financing the same asset through cash or debt. Ratios are used by financial markets –suppliers and banks in assessing credit risk which in turn will determine the firms' access to cheap financing, by shareholders in assessing performance, and in determining certain triggers for various bonus payments in executive compensation contracts etc. Watts and Zimmerman (1978.1979), present a positive accounting theory where accounting practices evolve to mitigate contracting costs[19] by establishing ex ante agreement among varying parties. Applying positive accounting theory to a firm where all individual action is driven by self-interest, when faced with the value proposition of funding an asset through operating leasing, debt or cash it is likely to choose the contracting option that shows the most most favourable accounting results. Watts and Zimmerman (1979), claim that instead of providing an underlying framework for sound financial reporting practices, accounting theory may be used to further managers'interests - in this case via earnings management through lease financing. For example Watts and Zimmerman (1978) state that larger firms, ceteris paribus are more likely to favour accounting practices that reduce earnings – for tax reasons. Accounting choices are made not in terms of better measurement of certain accounting constructs (e.g earnings), but rather in terms of management objectives and the effect of accounting methods on the achievement of those objectives. Perhaps the case of Boston Chicken can be cited as an example, where although economically Boston Chicken was a big money loser all these losses were passed on to large scale franchises that act like subsidiaries but are technically not subsidiaries. The 75% start up capital that is provided to the subsidiaries by Boston Chicken is paid back in terms of fees, royalties, interest etc., that help to boost the profits of Boston

[19] These can be information, agency, bankruptcy, and lobbying costs

Chicken. If the franchises make money, Boston Chicken would then exercise their rights to convert loans into equity, thus officialy making the franchises, subsidiaries and allowing their profits to flow into Boston Chicken's bottom line. A similar situation in the reverse direction can be witnessed with Microsoft where the company toned its earnings down to manage investor expectations. Furthermore, positive accounting theory claims that the accounting standards (that influence the accounting figures) are an outcome of the self interest theory although they are not openly justified this way since this would not be politically acceptable. Banks typically tend to impose rstictive covenants on lessor possiably ristricting the usage of the aircraft[20] and demand high meaintance reserves and security deposits (usually 2 to 3 months of lease payments) as compensation for the risk[21] it carries as the financier.

Gritta, Lipman and Chow (1995) claim that lease financing in the airline industry increased substantially over the preceding decade and that some leases are structured to strategically avoid balance sheet recognition. According to the Air Transport Association (ATA) reports, in 1969 only 37 Airlines leased 317 airctaft (of a total of 2403; i.e 13.9% of their fleet[22]) while in 1991 United Airlines alone leased 221 aircraft (45.5% of its fleet[23]). They claim that although in the 1960s and 1970s where the typical lease was financial in nature[24], the distinction between operating and financial leases was clear and unambiguous, by 1993 the predominant lease contract was structured as an operating lease[25], where the distinction between the two was far less clear. The study reports that in 1991, if operating leases were recognised as long term debt, and capitalised, American Airlines' debt burden would increase by $ 6.1 billion (103.1%), more than a 6 fold increase from the corresponding figure for 1961. Furthermore in 1991 United Airlines' debt/equity ratio jumps from 1.52 to 6.72[26] when the effect of non-cancellable operating leases is reflected as part of the airlines long term debt burden, suggesting strong motives for airlines to strategically structure the leases so that they are kept off the balance sheet.

[20] See http://www.boeing.com/commercial/startup/pdf/business/Financing_Options.pdf
[21] Part of this risk would be the inaccurate reporting as a result of the lesors behavioral aspects described above.
[22] See 'Aircraft Leasing', Airline Management and Marketing II (1970) by Robert Parrish.
[23] See UAL annual report 1991
[24] In 1969 276 of the 317 aircraft (87%) on lease were Finance Leases (Gritta, R. Chow, G. and Lippman, E. (1995)
[25] By 1991 Operating lease accounted for 82% of the leased aircraft (Gritta, R. Chow, G. and Lippman, E. (1995)
[26] See Gritta, R. Chow, G. and Lippman, E. (1995)

Background to leasing decisions in the airline industry

The table summarizes some key accounting ratios of Southwest Airlines (SW), Continental Airlines (CA) and industry averages. Southwest Airlines was chosen since it is widely accepted[27] that it is a financially healthy low cost carrier. In contrast, Continental Airlines is a "legacy carrier" operating a large fleet of aircraft. The industrial averages are only available from 1999.

The ratios in the table below are defined as follows. (The ratios are based on average values and incorporate the effect of leasing)

EBIT Margin (%) =(Earnings Before Interest & Tax / Operating Revenue / Turnover)* 100

ROE (%) = (Profit /Loss for Period / Shareholders Funds) * 100

ROA (%) = (Profit /Loss for Period / Total Assets) * 100

ROCE (%) = (Profit /Loss for Period - Financial Expenses) / (Shareholders Funds + Non Current Liabilities) * 100

Current Ratio = (Current Assets / Current Liabilities)

Acid Test = (Current Assets – Stocks) / Current Liabilities)

Interest Cover = (Operating Profit/Loss / Financial Expenses)

Gearing (%) = (Non Current Liabilities + Loans) / Shareholders Funds * 100

[27] See Gritta 1979

Table 1: Brief comparison of the financial health of two representative 'legacy' and low cost carriers
Source of raw data used in constructing the table: OSIRIS database

		Profitability Ratios				Liquidity Ratios			
Ratios		**EBIT Margin (%)**	**ROE (%)**	**ROA (%)**	**ROCE (%)**	**Current ratio**	**Acid test**	**Interest Cover**	**Gearing (%)**
	SW	**10.81**	**8.21**	**3.85**	**6.08**	**0.94**	**0.9**	**9.88**	**64.36**
	CA	**-0.35**	**-30.09**	**-0.65**	**4.63**	**1.01**	**0.95**	**-0.1**	**n.s.[28]**
2005	**Industry**	-2.34	101.27	-18.6	-21.37	0.96	0.9	-0.62	-517.63[29]
	SW	**8.48**	**5.67**	**2.76**	**3.94**	**1.01**	**0.95**	**11.31**	**69.1**
	CA	**-2.4**	**-263.87**	**-3.89**	**-0.46**	**0.9**	**0.84**	**-0.63**	**n.s.**
2004	**Industry**	-4.28	149.87	-6.8	-5.74	0.85	0.79	-1.23	
	SW	**8.14**	**8.75**	**4.47**	**6.13**	**1.34**	**1.29**	**8.33**	**65.5**
	CA	**2.09**	**3.85**	**0.26**	**5.12**	**0.9**	**0.84**	**0.51**	**n.s.**
2003	**Industry**	-0.64	n.s.	-3.48	-1.38	0.89	0.83	-0.18	
	SW	**7.56**	**5.45**	**2.69**	**4.39**	**1.56**	**1.5**	**4.67**	**73.02**
	CA	**-3.88**	**-60.23**	**-4.34**	**-1.63**	**0.78**	**0.69**	**-0.98**	**970.14**
2002	**Industry**	-9.16	-143.05	-7.24	-6.36	0.84	0.78	-2.66	**n.s.**
	SW	**11.36**	**12.73**	**5.68**	**8.29**	**1.13**	**1.09**	**12.81**	**69.34**
	CA	**1.61**	**-8.18**	**-0.97**	**2.32**	**0.73**	**0.64**	**0.57**	**520.16**
2001	**Industry**	-9.09	-26	-4.22	-3.35	0.81	0.75	-3.48	362.37
	SW	**18.07**	**17.47**	**9.04**	**12.02**	**0.64**	**0.58**	**24.12**	**58.78**
	CA	**7.36**	**28.97**	**3.65**	**8.52**	**0.83**	**0.73**	**3.76**	**462.5**
2000	**Industry**	6.48	10.98	2.67	5.98	0.74	0.67	3.37	207.52
	SW	**16.5**	**16.73**	**8.39**	**10.6**	**0.66**	**0.59**	**34.16**	**65.72**
	CA	**7.12**	**28.56**	**5.53**	**11.62**	**0.94**	**0.85**	**3.46**	**262.15**
1999	**Industry**	8.55	18.79	4.9	8.77	0.69	0.62	5.38	185.4
	SW	**16.42**	**18.08**	**9.19**	**12.01**	**0.67**	**0.62**	**22.28**	**61.7**
1998	**CA**	**8.84**	**32.1**	**5.41**	**10.9**	**0.96**	**0.9**	**5.7**	**308.63**
	SW	**13.73**	**15.82**	**7.48**	**10.7**	**0.93**	**0.87**	**12**	**74.16**
1997	**CA**	**9.95**	**41.81**	**6.57**	**14.5**	**0.76**	**0.7**	**5.47**	**317.9**
	SW	**10.3**	**12.58**	**5.57**	**8.26**	**0.98**	**0.91**	**9.48**	**80.21**
1996	**CA**	**8.25**	**54.04**	**6.03**	**15.44**	**0.78**	**0.72**	**3.18**	**478.83**
	SW	**10.91**	**12.8**	**5.61**	**7.94**	**0.77**	**0.71**	**11.43**	**86.29**
1995	**CA**	**6.61**	**70.49**	**4.46**	**15.09**	**0.66**	**0.6**	**1.81**	**902.62**
	SW	**12.22**	**14.48**	**6.35**	**7.79**	**0.6**	**0.53**	**n.a.**	**86.51**
1994	**CA**	**-0.19**	**-597.04**	**-13.45**	**-28.22**	**0.41**	**0.35**	**n.a.**	**n.s.**
	SW	**12.71**	**16.09**	**6.58**	**8.08**	**0.9**	**0.84**	**n.a.**	**100.52**
1993	**CA**	**-0.31**	**360.57**	**50.96**	**81.38**	**0.68**	**0.6**	**n.a.**	**373.14**
	SW	**10.75**	**12.98**	**4.82**	**5.74**	**1.43**	**1.35**	**n.a.**	**128.05**
1992	**CA**	**-1.94**	**3.24**	**-3.85**	**-7.48**	**0.66**	**0.53**	**n.a.**	**-145.98**

[28] n.a indicates non availability of data
[29] Negative values reflect negative equity situations

Chart 1: Graphical representation of the above data over the recent past

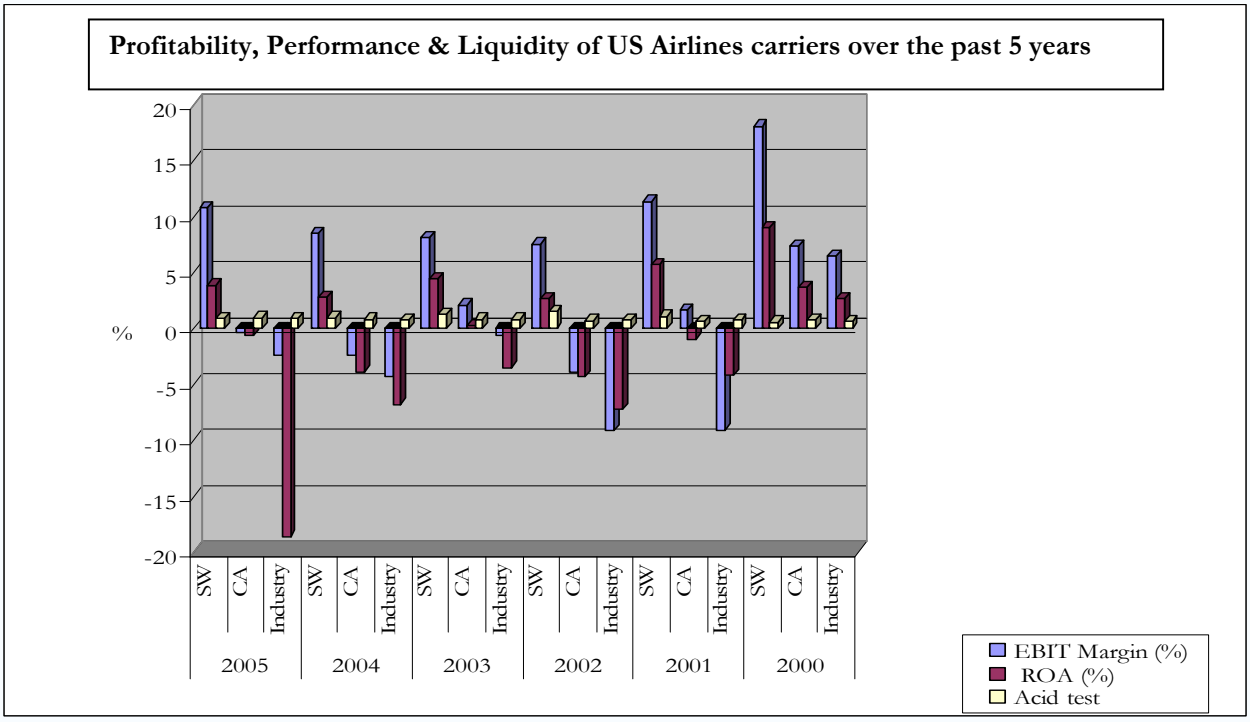
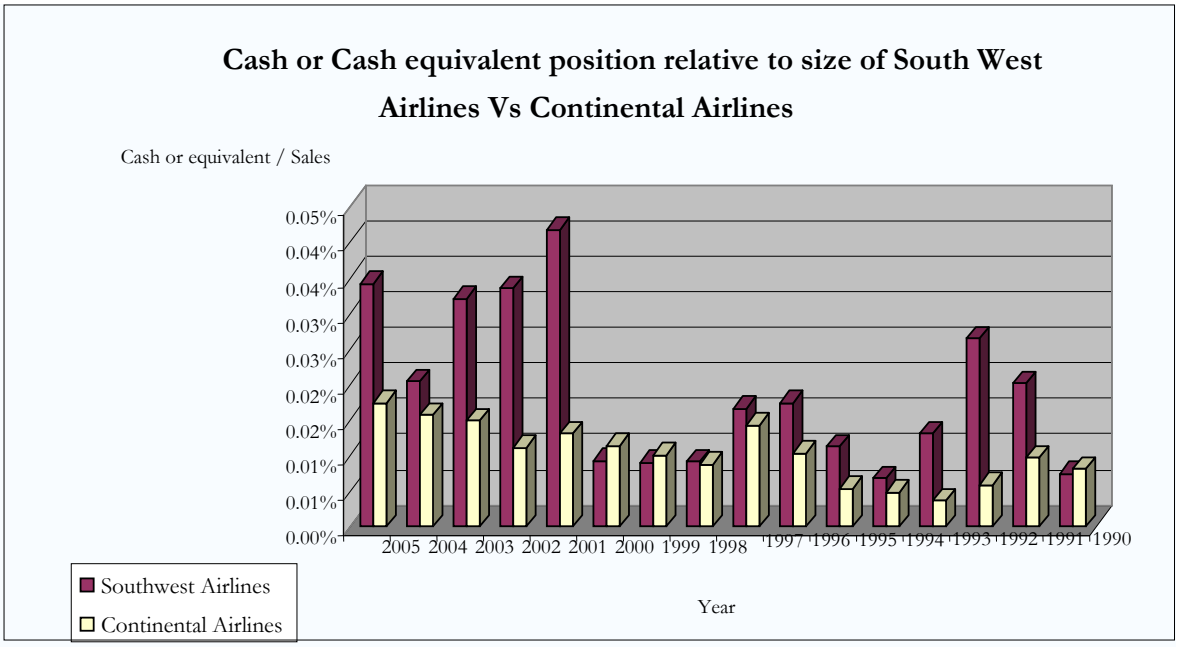


Chart 2 below summarizes the net cash position of the two carriers.



Source: Compiled using raw data from the OSIRIS database equivalent

At least with regard to legacy carriers, it is plausible to conclude that they do not possess high net cash positions especially in the recent past. This view is strengthened in chart 2 where an individual comparison between Southwest Airlines and Continental Airlines show that Southwest have been able to maintain a comparatively high relative short term cash and cash equivalent position over the past 5 years. Furthermore table 1 and chart 1 show that that in terms of performance (measured by (ROA%) and liquidity (gauged by the acid test) SW has constantly been outperforming CA and the industry in the recent past. Also with regard to gearing (table 1) where data is available it can be clearly seen that the legacy carrier and the industry as a whole generally carry highly levered balance sheets.

1.4 Implications for the leasing decision

Consider the possible accounting implications that a leasing decision as opposed to a purchase decision (funded by debt or equity) can have on a typical legacy carrier. Considering the fact that their short term liquidity (reflected by the acid test, and the relative net cash positions) and the longer term solvency (reflected by the gearing ratios) positions are not healthy, it could be more comfortable for such a carrier to resort to leasing (especially an operating lease) to acquire the use of an asset. At times it may be the only option available considering the weak cash and liquidity position, as equity financing (perhaps through retained profits) or debt financing through further gearing would be unrealistic. On the other hand a financial institution would be more willing to lease rather than to lend, as the ownership of the assets rests with the lessor (as opposed to lending money and obtaining the asset as security) and would facilitate easier repossession in the event of a default. However Elam (1975) states that, there is little empirical evidence to support this with regard to financially weak firms. Theory of leasing suggests that each dollar of leasing replaces one dollar of debt capacity. (Slovin, Sushka and Ploncheck (1990)). However, although financial markets regard debt and leasing as close substitutes[30] whether they are still close substitutes in terms of signal content is not clear[31]. Furthermore, since operating leases are off balance sheet they carry the additional incentive in limiting the adverse movement of the gearing ratio in the carriers already highly levered balance sheets thus providing an avenue to by-pass certain restrictive loan covenants that may be required by lenders or bondholders,[32] thus providing valuable financial flexibility. Watts and Zimmerman (1986) claim that a firm closer to a specific restrictive covenant is

[30] See Bowman (1980), where it is shown that both debt and leasing affect the systematic risk.
[31] See Slovin, Sushka and Ploncheck (1990).
[32] these covenants are at times in expressed in terms of conventional working capital, debt to worth, and cash flow coverage ratios; see CIMA study text; stage IV : Financial strategy

more likely to use accounting methods that will help prevent it breaching that covenant. El-Gazzar et al.(1989) find that accounting definitions used in a sample of private debt agreements give the management the freedom to avoid default through the use of off balance sheet finance. Furthermore the management can enforce accounting policy changes that may not be disclosed, thus severely limiting a lender's room to manoeuvre[33]. Citron (1992) states that the presence of financial ratio covenants may effect financing methods and/ or accounting policies adopted by borrowers and is an important example of the economic significance of accounting numbers. In his study of 33 leading UK bankers, he reports that financial ratio covenants are widely used, particularly for loans in excess of £ 1 million and with companies that are relatively highly geared. He states that covenant breaches without prior warning attract high cost penalties such as loan acceleration while a majority (60%) of the lenders surveyed indicated that they may take no action in response to a voluntary accounting method change. His research shows that voluntary accounting method changes by borrowers may often be an effective means of avoiding covenant violation. Studies by Dhaliwal (1992), Holthausen (1981), Browen et al. (1981), Daley and Vigeland (1983) show that a higher gearing ratio is associated with the adoption of income increasing accounting methods while Chrstie (1990) examining a number of previous studies on an aggregate basis concludes that leverage interest cover and dividend constraints are significant influences of accounting method choice.

Another factor that has led to the popularity of operational leases is that they are the only source that offers 100% funding, as capital markets in general expect 15%-25% equity participation in debt contracts. In this context the "sale and lease back" option has become popular[34] especially with carriers who have a strong asset base that could be pledged as collateral as it effectively creates an operating lease and offers 100% funding. Slovin, Sushka and Ploncheck (1990) studying a sample of announcements of sale and lease back of aircraft find that these announcements are associated with positive abnormal returns to the lessees, resulting from an overall reduction in the present value of expected taxes occasioned by the transactions. In particular they examine the market valuation effects of sale and lease back transactions and test the practitioners' argument that these transactions serve to legitimate commercial needs and generate mutual tax advantages. In a sale-and-leaseback a company sells an asset it owns to another party and simultaneously leases the asset back from the new owner. The lessee receives the current market value of the asset while retaining the productive use of the asset to

[33] see Financial Ratio Covenants in UK Bank Loan Contracts and Accounting policy Choice, Citron (1992), Accounting and Business research; footnote 28

[34] See http://www.sigmaraviation.com/index.php?id=11&backPID=9&tt_news=63

generate income. The lessor obtains the title of the asset and incidental benefits of ownership such as depreciation allowances and tax credits[35]. In a competitive market a valuation effect can occur only if a sale-and-lease back transaction makes the circumstances of the lessor and lessee differ in some way as the real production activity is unaffected. Theoretical work has produced conflicting views on the valuation effects of leasing. Miller and Upton (1976) use capital budgeting techniques in a perfect market to show that leasing is a window-dressing activity and that there is no real positive net present value accruing from leasing.

However Lewellyn, Long and McConnell (1976) and Myers, Dill and Bautista (1976) claim that there can be non trivial tax advantages, contingent on the asset life and the relevant depreciation and capitalization rates from leasing, giving rise to gains in valuation for the firms involved. This line of argument suggests that sale-lease-back transactions may provide mutual tax advantages where the seller (lessee) can take advantage of full tax deductibility of rental payments as they are classified as necessary business expenses. In particular the rental payments may be equal to the full fair market value of the property, in effect benefiting from any positive upward revaluations of property[36] over and above their historic costs. However Lewellyn, Long and McConnell (1976) argue that not only are these gains likely to be short lived in a competitive market, but that they are also likely to be offset by the transaction costs involved in leasing unique assets for specific purposes. But Myers, Dill and Bautista (1976) claim that the potential for net gains is still high especially where the opportunity cost of capital is high as the sale-and-leaseback transaction frees up capital. There is also asymmetric information and a signaling effect of securities issuance affecting valuation that may have to be considered with regard to a sale-and – leaseback transaction. As sale-and leaseback transactions can be viewed as form of collateralised external funding consistent with Miller and Rock (1985) and Mayers and Majluf (1984), the market may view this as a signal of an unexpected shortfall in the firm's earnings - making a negative impact on the shareholders (lessee's) wealth. Thus the actual valuation effect becomes an empirical question and Slovin, Sushka and Ploncheck (1990) conclude that with regard to the lessee there is a positive market perception resulting from the reduction of the expected taxes.

[35] Del Cotto (1981) argues that sale-and-leasebacks are simply financing transactions and their accepted tax treatment is misguided.
[36] Including land in the case of value appreciation

1.5 Tax Implications

Accelerated depreciation (offered in the form of capital allowances) can significantly benefit certain firms through tax deferral, thus incentivizing capital expenditure. The domestic fiscal policy of the U.S. is tilted towards rewarding investments in equipment located within the U.S. since it offers the potential to improve domestic output. However certain firms cannot benefit from accelerated depreciation. These are capital intensive industries that may be subject to Alternative Minimum Tax (which limits depreciation benefits); additionally the firms that do not have a positive bottom line cannot benefit as they do not have any taxable profits-they are "tax exhausted". In this context Airline Carriers are both capital-intensive and generally do not consistently make taxable profit. This places industry outsiders such as financial institutions specialized in leasing in a good position to take advantage of these tax benefits. For example many of GECAS leases to American Airlines are leveraged leases which allow GE to defer its own tax bills by writing off the cost against tax over seven years. When one factors in the (tax-deductible) interest on the money borrowed by GE to finance the plane, the result is a significant reduction of the lessor's tax payments in the early years of the lease. This mechanism has actually resulted in firms not even distantly related to the aviation industry such as EDS, Walt Disney and Whirlpool (producer of white goods) being involved in this scheme in order to defer tax. A firm could through the creation of a special-purpose entity invest a significantly smaller proportion of the aircraft costs and claim 100% tax relief. Special purpose entities (SPEs), which are limited-purpose vehicles into which a business can shuttle assets and liabilities. One striking feature with SPEs' is that, a company can create one with a minimum outside investment of just 3%. Thus the sponsoring company can retain up to a 97% stake, yet get to claim that this is not ownership for accounting purposes. Consider the illustration below for the comparison between the Traditional method of financing (i.e. a Bank loan) vs raising finances through an SPE.

Raising money the Traditional way

1. 'ABC' airline needs $ 50 million to purchase a new aircraft and approaches 'Easy money' Bank for a loan.
2. 'Easy money' approves the investment and lends the funds.
3. ABC airline needs to record the cash as an asset and the debt as a liability on its balance sheet.
4. ABC airline repays the loan to 'Easy money' bank according to the agreed terms.

Raising money through an SPE

1. ABC airline needs $50 million to purchase a new aircraft and does not want the debt to show up on its balance sheet. It creates an SPE to be the financing middleman.

2. To stay off ABC's books, the SPE must have a controlling outsider (e.g. 'Easy money' Bank) who needs to invest only a small percentage, (3%) of the total funds. The rest can come from other sources. The equity providers[the 'controlling outsiders'] thus reduce their tax obligations by depreciating the airplane over a seven-year period.

3. Once the $50 million is raised it will fund ABC's investment. Neither the aircraft (asset) nor the debt associated with it (the liability) will appear on ABC's balance sheet. Instead, both appear on the SPE's balance sheet which may be only accessible for a handful of people to see.

4. ABC pays the SPE for use of the aircraft according to the agreed – on terms, recording the payments as operating expenses rather than as debt repayments.

Many such off-balance-sheet transactions improve key ratios such as return on assets and debt to Capital[37].

Airlines regularly utilize a special purpose entity (SPE) known as a Pass Through Trust. The Pass Through Trust enables the airline to aggregate a large number of aircraft secured notes into one trust vehicle, facilitating the issuance of larger bonds called Pass Through Certificates (PTCs). The most common form of PTCs issued by airlines is the "enhanced equipment trust certificate," (EETC). EETCs provide investors with entrenched rights to cash flows from a financial instrument, as well as stratified collateral positions in the related asset. While the underlying classes of equipment notes vary by maturity and/or coupon depending upon tenor or level of subordination of the specific equipment notes and their corresponding claim on the aircraft, the basic function of the Pass Through Trust in an EETC remains: to passively hold separate debt investments to enhance liquidity for investors, who in turn pass

[37] See 'Off-Balance' by Feldman in 'Money'; Apr2002, Vol. 31 Issue 4, p46

this liquidity benefit directly to the airline in the form of lower coupon and/or greater debt capacity[38]. EETCs have been used by Continental Airlines to finance 75 percent of its airplanes, by America West to finance virtually all its airplanes, and by US Airways to finance almost 100 percent of its purchases since 1995[39].

However there is a downside risk that prevails with this type of leasing. When an airline goes bankrupt, the deferred tax could become payable sooner than expected, and the money in the SPE could be at risk. After September 11, airline travel decreased, and airlines cut their flight schedules. Thousands of unneeded airplanes were parked in the desert, and the value of airplanes decreased 20 to 40 percent[40]. Disney announced in late 2002 that it was taking a non-cash charge of $114 million to write down losses on an equity position in an EETC. EDS (Electronic Data Systems) took a $23 million charge to cover leases to US airways, AT&T reported $70-80 million liabilities and Whirpool $68 million liabilities of a similar nature in 2002. Furthermore Bank of New York, Morgan Stanley, Pitney Bowes all took write-downs when US Airways and United went into Chapter 11. As for GE, another airline bankruptcy could lead to twin difficulties : lost or lower lease revenues and large tax payments.

1.6 Risk and Flexibility

In industries where new technologies encourage business to shed obsolete equipment, leasing can be perceived as a favorable mode of financing since the risk of obsolescence is borne by the lessor. Although the lessors charge a premium for this risk, they are in a better position to diversify and spread this risk among the client base (analogous to a function of an insurance provider) In the airline industry carriers often opt for aircraft with newer technologies to take advantage of the cost savings mainly in the form of higher fuel efficiency, speed and reliability. Furthermore modern aircraft generally have long life spans (at times well in excess of 20 years) and also the desert storage provides a cost effective way of deferring capacity for the future and so effectively creating excess capacity on the supply side. Thus here again leasing presents an attractive option as it can be used to manage the frequent demand side shocks in the industry since it gives the option for the carrier to commit itself to a shorter period where the demand can be better forecasted. Gavazza (2005) sees lessors as intermediaries who provide liquidity and reduce friction in secondary markets, enhancing their efficiency, and thus become a key factor in the

[38] See Boeing Capital Corporation 2003 annual report
[39] See Crawford and Fredericks, (2003)
[40] See journal of Contemporary Business Practice, 2003, volume 6 no 2

airline industry's speed of adjustments to shocks. Furthermore, with an operating lease, since lessors would retain ownership of the equipment they would be in a better position to repossess the aircraft (as opposed to lending the carrier funds to purchase the aircraft) because of certain special provisions extended to the lessors of aircraft under the US bankruptcy code.(discussed further in section II). Eades and Marston (2002) in their study of samples of the 100 largest lessees and 100 largest lessors in the U.S. where their lessee sample accounted for more than 60 percent of the leasing dollars of Compustat firms, and the lessor sample captured approximately 80 percent of the equipment leasing market, did not find conclusive evidence that either taxes or financial contracting motives control the leasing decisions of the largest lessors and lessees. Furthermore they suggest the possibility that real options, as modeled by Grenadier (1995), were likely to be a significant incentive for leasing. Grenadier cites contract provisions such as the ability to renew, purchase, relocate, cancel, and sublease as valuable real options which enhance strategic flexibility for lessees. In essence their results suggest that the efficiency of the leasing contract is more likely derived from the flexibility afforded to the contracting parties and other asset-specific attributes rather than from tax arbitrage or reduced cost of capital. Although there is an equal and opposite loss of flexibility to the lessor who runs the risk of being saddled with an unsuitable aircraft the lessor would be in a better position to spread its risks among a large number of its clients as it performs a centralized intermediary function. Furthermore lessors are often industry outsiders and lower value users[41] of assets[42] and can benefit from industry cycles. An illustration of this was evident when GE strategically purchased some aircraft in the industry down cycle when the 'industry was hurting' in 2000-2001 period and traded these back at a substantial profit in the industry upturn[43], demonstrating how firms can make money on fire sales. (Pulvino, 1998) Thus in a competitive market the lessor would be able to pass on some of the efficiency gains it reaps from its centralized function as an intermediary to the lessee by way of lower rental premiums. This argument is analogous to the one where it is questioned whether it would make sense for a firm to diversify or for the shareholders to diversify the risks. In general terms the shareholders would be in a better position to diversify, and the investors would not be willing to pay a premium if the firm makes diversification as one of its objectives. In practice many factors other than straightforward cash flow constraints influence airlines in selecting the optimum financing mode. These include requirements for flexibility, the ability to respond to short term changes in demand and concerns about residual value risks making operating leasing

[41] This is where the specific assets would not be required to carry out an integral part of the user's business. (e.g. when banks purchase aircraft)
[42] See Shleifer, A. and Vishny, R. (1992)
[43] According to facts obtained from an industry expert who wished to remain anonymous.

particularly attractive in deregulated markets. This is because deregulated markets are inherently more volatile making forecasting and planning more difficult thus calling for more flexibility and agility which is provided to some extent by operating leasing.

In a more operational sense recent developments in the airline industry have had the effect of reducing the operational risk especially for the lessor. The Cape Town Convention, a treaty drawn up in 2001 to establish an international register of aircraft interests, was something of an industry milestone and should make it easier for lessors to transfer aircraft between different countries and retrieve aircraft in the event of a default. Lower risks will also mean lower financing costs and, according to IATA (International Air Transport Association), this convention will save the aviation industry an estimated $5 billion annually[44].

Implications of leasing for the efficiency of transactions

Gavazza (2005) in his study on leasing in the commercial aircraft sector argues that lessors as intermediaries act to enhance the efficiency with which capital is redeployed across firms. Carriers trade aircraft either to replace their fleet or to reduce excess capacity. He argues that transaction costs (these include search costs) create a wedge between the price paid by the buyer and the price received by the seller and act as a barrier to trade. Thus, Gavazza contends that trading frictions hinder efficient capital allocation and lessors reduce this friction by centralizing the exchange. He argues that, comparing outright purchase by carriers, and leasing, the leased aircraft trade more frequently. This improves the matching process between productive firms and capital and results in leased aircraft recording a higher output than the owned ones. Gavazza claims that the increased gain is due to three effects and provides evidence for these generalisations.

- The first being the parking effect where leased aircraft are shown to be parked inactive less frequently than owned ones.
- Second, the productivity effect where lessees' productivity is higher than the productivity of the owners conditional on the aircraft being used.

[44] See society of British aerospace companies at www.sbac.co.uk/community/dms/download asp?txtFilePK=1374

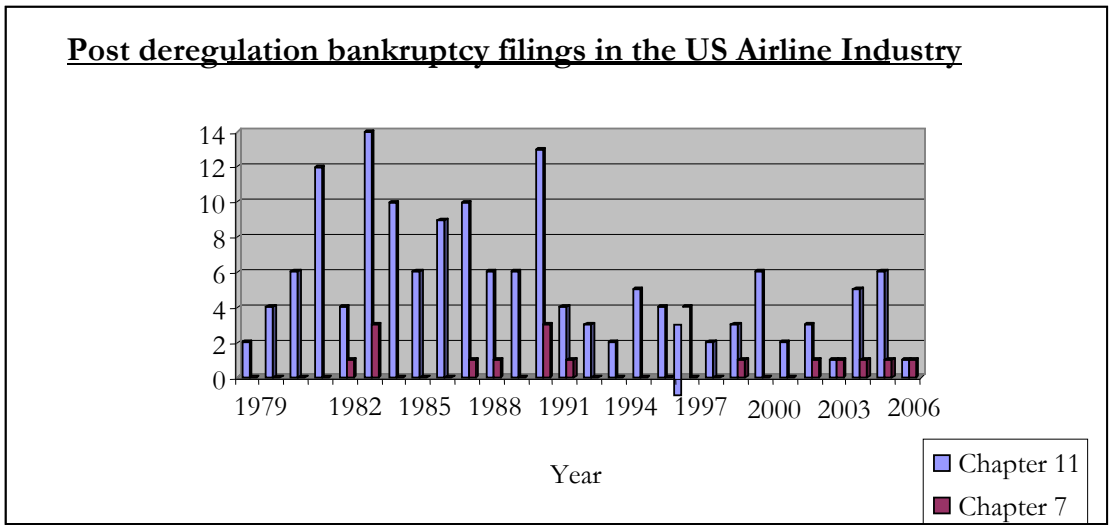
- Thirdly, the pairing effect where the covariance between the quality of the aircraft and a carriers' productivity is higher for the leased aircraft as opposed to the owned ones, again conditional on the type of the aircraft.

The study shows that leased aircraft trade more frequently and produce a higher output over their lifetime than owned aircraft and in particular the empirical results show that the leased aircraft have a holding duration 40% shorter and 8% higher output than owned aircraft.

1.7 The effect of financial distress on firms with large operational Leases

This section considers the various dynamic effects that can come into play when a lessee firm carrying a significant portfolio of operating leases faces financial distress. Most of the financing in the present aircraft market is completed through either operating or financing leases[45]. Frost & Sullivan (2005) estimate that majority of the leases provided by leasing companies are operating in nature. At the end of 2004, for example, ILFC maintained 667 aircraft on operating leases and only 9 on financial leases. Given the popularity of leasing in the US Airline Industry and the fact that, at the time of writing, more than half the capacity of the US airline industry is in Chapter 11[46], this question is very pertinent.

Chart 3: Post deregulation bankruptcy filings in the US airline industry



Source: *complied from data extracted from Ciliberto and Schenone (2005), Air and Transportation Association (ATA), Bankruptcy Research Database from Professor Lynn LoPucki and news searches in Lexis-Nexus and Factiva*

[45] See http://www.frost.com/prod/servlet/report-brochure.pag?id=A873-01-00-00-00#report-mkt-sectors
[46] See CNN Money, September 15, 2005; http://money.cnn.com/2005/09/14/news/fortune500/bankruptcy_airlines/

The above chart records bankruptcies in the US airline industry in the 28 years, 1979-2006. It shows that during the years prior to 1993, (i.e. during the first 14 years after de-regulation of the industry, where leasing was not considered a mainstream source of finance by the major airline carriers. (Refer section 1.1) the number of bankruptcy filings (both Chapter 7 and chapter 11) was relatively high. The average annual Chapter 11 and Chapter 7 fillings were 7.57 and 0.71 for the first half (i.e. pre 93) while the corresponding annual figures for the second half were 3.35 and .42, thus suggesting a marked decline in the second half. However this statistic should not be taken at face value. From the standpoint of making an assessment of the overall impact of the US airline industry what is more important is the size of the Chapter 11 filings and the subsequent liquidations. Although a comprehensive analysis of this data is not possible due to the difficulties in data sourcing, some suggestive evidence is available. Between the years 1989 and 1992 there were 7 large[47] US carriers who made bankruptcy filings: Eastern (March 1989), Braniff (September 1989), Continental (December 1990), Pan Am (January 1991), America West (June 1991) and TWA (January 1992). Out of the 7 large[48] carriers only 2 (i.e. Continental and America West) remain today. As opposed to this, during the post 1993 era, although there have been several bankruptcy filings by large US carriers, i.e. Delta (September 2005), Northwest (September 2005), US Air[49] (September 2004), United (September 2002), none of these carriers has had to liquidate. In other words all of them have received life lines in one form or other.One significant difference between the pre and post 93 times is the dominance of leasing in the post 93 era, consistent with some form of negative correlation between leasing and liquidations. Table 2 below – constructed from a range of industry sources - gives a detailed breakdown of all Chapter 11 and Chapter 7 airline filings from 1991 to 2006.

[47] Annual revenue above $100 million
[48] Where the size here is defined by the number of effected domestic routes
[49] US Air merge with American West in 2005

Table 2: Chapter 11 and Chapter 7 fillings from 1991 to 2006.

Airline Name	File 11	File 7	Voluntary	Filing Nu.	Date Filed	Date Emerged	Convert 11 to 7	Convert 11 to 7	Grounded[50]	Days
Continental Air Lines, Inc.	1	0	1	2	12/3/90	4/27/93	0	0	0	864
America West Airlines, Inc.	1	0	1	1	6/27/91	8/25/94	0	0	0	1138
Trans World Airways, Llc	1	0	1	1	1/30/92	11/3/93	0	0	0	633
Hawaiian Airlines, Inc.	1	0	1	1	9/21/93	9/12/94	0	0	0	351
Markair, Inc.	1	0	1	2	4/14/95	n.a	1	12/4/95	10/25/95	230
Trans World Airways, Llc	1	0	1	2	6/30/95	8/24/95	0	0	0	54
Grand Airways, Inc.	1	0	1	2	11/28/95	n.a	1	1/4/96	1/4/96	36
Business Express	1	0	0	1	1/22/96	4/17/97	0	0	0	445
Kiwi International	1	0	1	1	9/30/96	n.a	1	7/17/97	10/15/96	287
Air South, Inc.	1	0	1	1	8/28/97	n.a	1	1	9/16/97	18
Western Pacific Airlines	1	0	1	1	10/5/97	n.a	1	2/4/98	2/4/98	119
Pan American Airways Corp	1	0	1	2	2/26/98	6/28/98	0	6/28/98	2/26/98	122
Kiwi International	1	0	1	2	3/23/99	n.a	1	8/27/99	3/24/99	154
Eastwind Airlines, Inc.	0	1	0	1	9/30/99	n.a	0	0	9/8/99	
Tower Air, Inc.	1	0	1	1	2/29/00	n.a	1	12/7/00	5/1/00	
Pro Air, Inc.	1	0	1	1	9/19/00	n.a	1	10/5/01	9/19/00	376
National Airlines	1	0	1	1	12/6/00	n.a	1	11/6/02	11/6/02	690
Trans World Airways, Llc	1	0	1	3	1/10/01	n.a	0	4/9/01	0	89
Midway Airlines, Inc.	1	0	1	2	8/14/01	n.a	1	10/30/03	9/11/01	796
Sun Country Airlines	0	1	0	1	1/8/02	4/15/02	7 to 11	4/15/02	12/7/01	97
Vanguard Airlines, Inc.	1	0	1	1	7/30/02	n.a	1	12/19/03	7/30/02	499
USAir	1	0	1	1	8/11/02	3/31/03	0	0	0	230
United Airlines	1	0	1	1	12/9/02	n.a	0	0	0	
Hawaiian Airlines, Inc.	1	0	1	2	3/21/03	6/2/05	0	0	0	791
USAir	1	0	1	2	9/12/04	9/27/05	0	0	0	375
Ata Airlines d/b/a Ata.	1	0	1	1	10/26/04	n.a	0	0	0	NA
Aloha Airlines, Inc.	1	0	1	1	12/30/04	n.a	0	0	0	NA
Delta Airlines	1	0	1	1	9/14/05	n.a	0	0	0	NA
Northwest Airlines	1	0	1	1	9/14/05	n.a	0	0	0	NA

Source: *compiled from data extracted from Ciliberto and Schenone (2005), Air and Transportation Association (ATA), Bankruptcy Research Database from Professor Lynn LoPucki and news searches in Lexis-Nexus and Factiva*

[50] The date the carrier stopped flying

The second and third columns of the above table show that almost all carriers initially file for Chapter 11 protection when faced with financial distress. While larger airlines immediately begin developing reorganization plans, smaller carriers first attempt to keep the business alive by seeking an investor willing to buy the carrier's flying certificates and any other assets it might still possess. (Ciliberto and Schenone(2005)). If this fails the smaller carrier would convert into Chapter 7 as seen with the case of MarkAir's second filing after spending more than 11 months under Chapter 11. Column 4 shows that only in two instances (Sun Country and Eastwind) did the carrier first file for Chapter 7, and in both these cases the filing was involuntary, initiated by its creditors. This data suggests that there could be a tendency both on the part of the carrier's management and its creditors to try and keep flying under Chapter 11 rather than to close shop. In general when considering the overall US economy the numbers of Chapter 7 filings are much higher than the Chapter 11 filings primarily due to the personal bankruptcy filings under Chapter 7. However even if only the business filings were considered the number of Chapter 7 filings were much higher than the corresponding chapter 11 figures in the last decade[51]. Furthermore the final column suggests that there is no clear relationship between the duration of time spent under bankruptcy protection and the probability of its emergence from bankruptcy.

1.8 Effects of bankruptcy on incumbent firms and their rivals in the US airline industry

There has been considerable theoretical work on the influences of financial / capital structure on product-market behavior. One argument could be that filing for bankruptcy protection can directly alter costs and demand as the bankrupt carriers are able to lower their marginal costs through abolition of existing unprofitable contracts. Again passengers may perceive the bankrupt carriers to offer lower quality service and consequently reduce their demand for its flights which may lower the carriers preferred price on a route. The response from competing airlines may be to lower or raise their prices depending on how the bankruptcy affects their residual demand. A bankruptcy may lead an airline to discount future revenues more heavily leading to higher prices as in models with consumer switching costs[52]. Another alternative could be that the bankrupt firm would reduce prices as in collusion models, where increases in discount rates could lead to departures from cooperative pricing behavior. Furthermore

[51] For example there were 21,008 Chapter 7 filings as opposed to just 9,185 Chapter 11 filings in 2003. (Source: Bankruptcy Research Database of LoPucki)
[52] Where low current prices can be viewed as an investment in future market share.

bankruptcy may alter the strategic position of the firm, committing it to more aggressive competition reinforcing the view often held by managers that firms with financial constraints have nothing to lose, and will slash prices to generate cash. It has been argued[53] that financially weak airlines, especially those under Chapter 11 bankruptcy protection have cut prices thus damaging the financial health of the industry as a whole. On the other hand, bankruptcy can lead to less aggressive competition in the face of increasing liquidity constraints limiting managerial responses. Finally bankruptcy may invite predatory behavior from financially healthy rivals as the ability of a bankrupt firm to finance a costly price war is limited over time.

1.9 Balance sheet endogeneity

In relation to the timing of the bankruptcy process, the work of Meeks and Meeks (2004) is relevant, on the endogenous balance sheets of distressed companies. This suggests that balance sheet endogeneity can be shown to delay economically efficient management changes, inhibiting reallocation of control from an inferior incumbent management team and this then can be inferred to lead to higher agency costs under a debtor oriented US Chapter 11 regime.

A firm becomes insolvent in the eyes of the law once its liabilities exceed its assets and thus enters into a negative equity situation. In other words this occurs when $A < L$ where A is the value of the firm's assets and L is the value of its liabilities. However the economic justification for the existence of a firm is that its assets are put into the most efficient and productive use in its present state. In other words, if an alternate use of the firm's assets would yield a higher value than its present use then the existence of the firm cannot be economically justified. This occurs when $A_{PV} < A_{NRV}$, where A_{PV} is the present discounted value of net future cash flows generated by the company's assets if they are retained in their existing use and A_{NRV} is the net realizable value of the assets, if they are sold for an alternative use. Meeks and Meeks point out that the two conditions may not necessarily coincide, leading to a situation where

a) A business could be insolvent on legal grounds but on an economic assessment the assets would best remain employed in their present use, or

[53] The report of the National Commission to ensure a strong competitive airline industry acknowledges that bankrupt carriers have been one of the factors that have caused financial problems in the industry. (page 15)

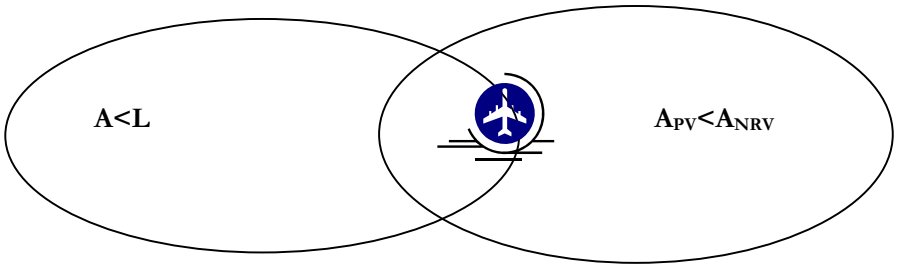
b) A business is worth more if it is liquated as opposed to a going concern, however the legal system does not compel liquidation.

In the context of the US airline industry perhaps the following hypothesis can be presented differentiating between the pre 93 and the post 93 (leasing dominated) eras.

Post 93 Era[54] (when the financing options for carriers are dominated by leasing)

It is plausible to argue that most legacy carriers that are in financial distress today lie on the boundary of 'b' above (see figure below) where a carrier would be solvent on legal grounds, however it would not make economic sense to keep it flying.

Figure (3): Hypothesised Position of the US domestic airline Industry in the Post 93 Era



Rationalization of the above diagram

This view can be further developed by drawing certain insights from the work of Ciliberto and Schenone (2005). They investigate the effects of financial distress and Chapter 11 and 7 filings in the airline industry on ticket prices between 1993 and 2005. Their results show that in markets where a bankrupt carrier is present, the dramatic worsening of its financial condition (as measured by the firms' long term leverage ratio) determines the change in competitive behaviour. They infer that financially distressed firms drop prices to generate cash, which is a result consistent with Hendel (1996)[55]. Furthermore they show that in markets where bankrupt firms are not active, but would be a potential competitor, the largest carriers lower their prices after the bankrupt carrier files for chapter 11

[54] The cut off point at 1993 was chosen for two reasons. First, it represented the first 14 years in the 28 year post deregulation period leading up to the time of writing this thesis. Second it was the point which showed the maximum differentiation between the ratio of bankruptcies between the two periods. See chart 3. Ironically, the post 93 period generally saw a growth in the popularity of leasing, coinciding with the Chapter 11, section 1110 amendment on aircraft lease trascations.

[55] See Ciliberto F and Schenone C (2005), 'Financial Decisions, Bankruptcy and product market competition in the Airline Industry', *Working Papers, University of Virginia*

protection. After a chapter 11 filing the probability that a bankrupt carrier enters new markets seeking profitable routes increases and the non-bankrupt carrier's response to this threat of entry is to lower prices and make those routes less attractive to the bankrupt carrier. This result and interpretation is consistent with Benoit's (1984) model of financially constrained entry, where the competitors actively try to keep the bankrupt firm from entering their market. This view is confirmed by Busse (2002) who finds that financial distress as measured by the leverage ratio, significantly increases the probability that the carrier starts a price war. The above literature draws these inferences and conclusions based on more recent (post 1993) empirical evidence of the US airline industry. Thus in the light of the above perhaps it is plausible to hypothesize that in the post 93 era a carriers' dramatic weakening of its financial condition leading to its bankruptcy has a depressing overall effect in terms of economic value depletion on the US airline industry as a whole. Therefore, perhaps there exists a persistent trend of economic value depletion in the post 93 era in the US airline industry as a whole, in line with the surprising fact that there has been no liquidation of a large carrier in this period. If this is the case it would justify as to why the industry should lie at the boundary as illustrated in the above diagram. Furthermore when considering the economic costs and benefits, a carrier cannot be considered in isolation. At present the industry is engaged in a self destructive price war fuelled by excess capacity[56] and the benefit that the other carriers would gain in terms of the ability to increase the margins as a result of a demise of an existing carrier must be factored in when considering the total economic costs and benefits. Dattner (2005) states that an important objective of the Congress, when formalising bankruptcy legislation might be to promote competition and achieve social justice. In the light of this objective he argues that it is not sufficient to contend that it is desirable to allow ailing firms to survive, but also it must be established that the total costs of allowing these firms to survive do not outweigh the potential benefits. Many studies have argued that the negatives associated by Chaper 11 filings significantly out way any advantages provided by Chapter 11 protection[57]. The disadvantages include the fall in customer confidence resulting from the announcement of the filing, the need to pay ongoing operating expenses in cash (as opposed to financing such expenses using credit), the costliness (in terms of money, time, and other resources) of Chapter 11 proceedings, the difficulty in retaining employees, and difficulties in

[56] See USATODAY.com (2/15/2005), Washigtonpost.com (9/1/2005) CNNMONEY.com (14/9/2005) and The Wall Street Journal (31/5/2005)

[57] See Tonny K. Ho, Telecom Bankruptcies, Practising Law Institute, PLI Order No.B0-014Z, Aug. 13–14, 2001, 571, 586–87 (discussing the intangible disadvantages of bankruptcy);see also Susan Jensen-Conklin, Do Confirmed Chapter 11 Plans Consummate?The Results of a Study and Analysis of the Law, 97 COM. L.J. 297, 328 (1992) (discussing the disadvantages noted by firms who had been through Chapter 11).

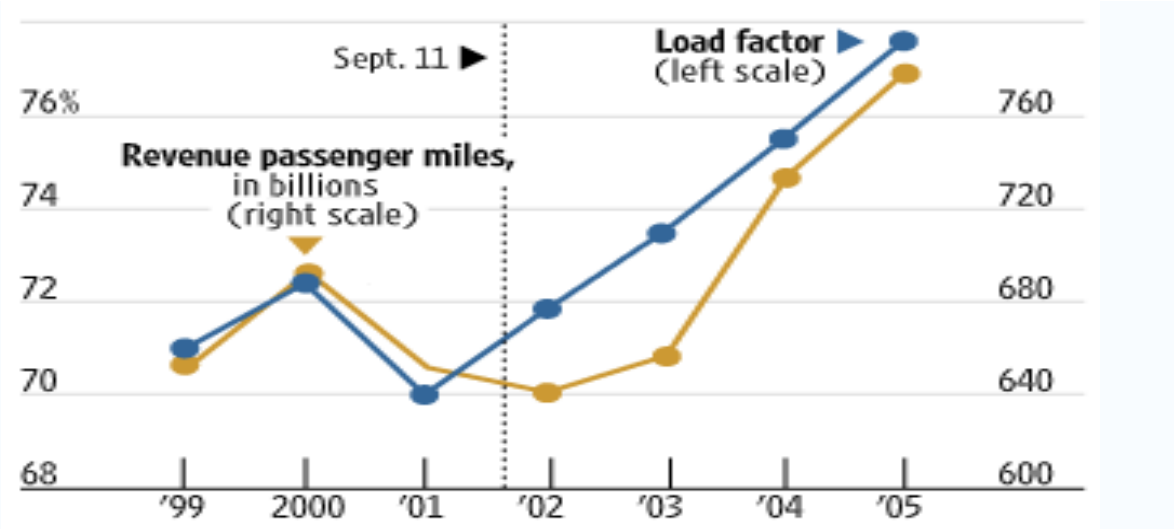
contracting with third parties.(Dattner, 2005). Furthermore the large percentage of firms that enter Chapter 11 without ever emerging[58] lends some credence to the belief that Chapter 11 is not a panacea[59].

Circumstantial evidence

It is possible to present some circumstantial evidence from much more recent times (post 2000) that would be consistent with the above view, that during this period the legal system did not facilitate what is perhaps economically more desirable.

Consider the following diagrams

Chart 4: US airlines' Load factor – (ratio of paid seats to capacity)-- and revenue passenger miles -- each signifying one passenger, one mile



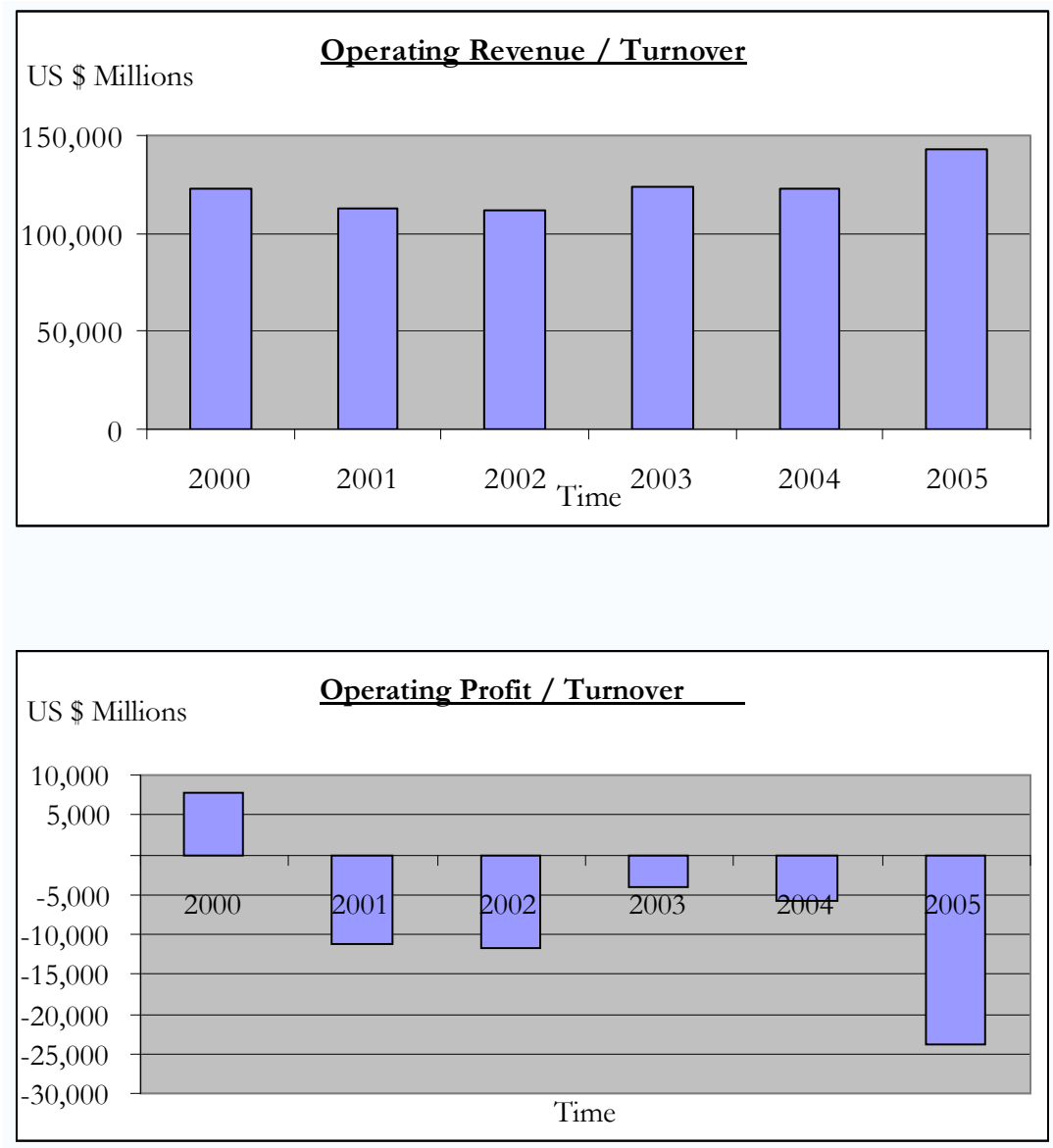
Source: Air Transport Association

This Chart shows that the actual growth per se measured in terms of the Load factor and the revenue passenger miles has been increasing in the last 5 years. Thus the industry as a whole has been growing in terms of activity.

[58] The court may convert a Chapter 11 case to a Chapter 7 case for a number of reasons including: inability to effectuate a plan, continuing losses to the estate without reasonable likelihood of rehabilitation or unreasonable delay by debtor which is prejudicial to the creditors. 11 U.S.C. § 1112 (2000).

[59] One 1989 study found that only 10–12% of firms that file for Chapter 11 emerge out of the proceeding as a continuing entity. Edward Flynn, Statistical Analysis of Chapter 11, Administrative Office of the U.S. Courts Statistical Analysis and Reports Division, Bankruptcy Division (Oct. 1989) (unpublished report).

Chart 5: Annual operating profit[60] and operating revenue of U.S. passenger airlines



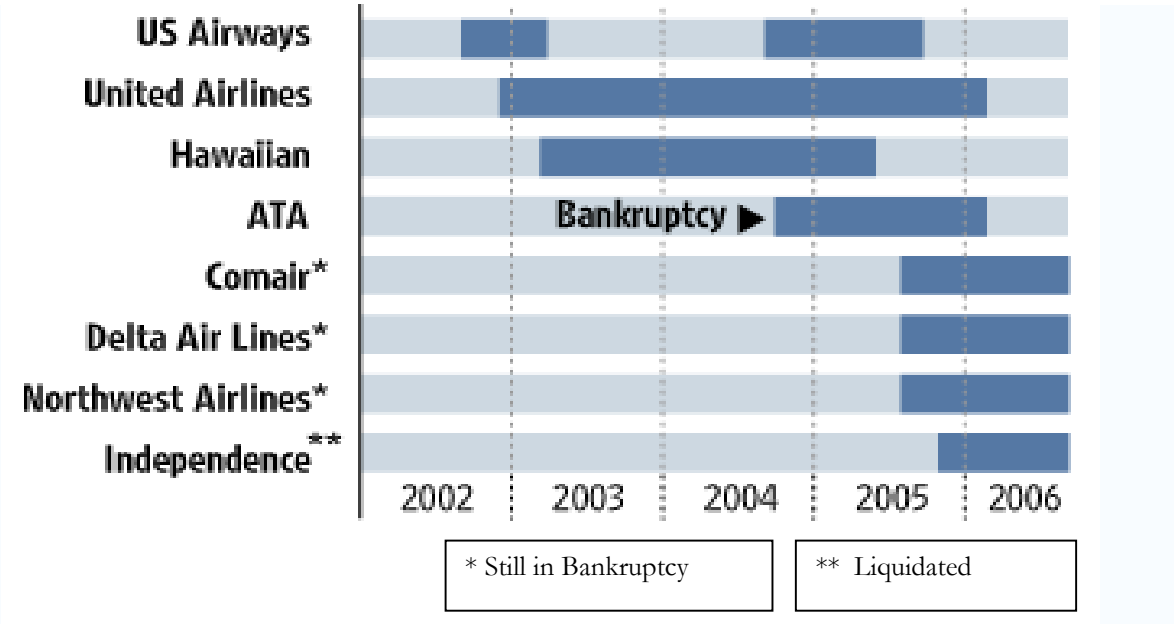
Source: OSIRIS database

This chart shows how the industry growth characterized in Chart 4 is represented as expected through the gradual modest increase in the overall industry revenues. However what is puzzling is that in the face of this modest increase in the overall operating revenues the US airline industry as a whole has been making significant losses in the past few years. This further adds

[60] Operating profit is a good measure of underlying performance.

weight to the studies referred in the previous section making it plausible to conclude that serial bankruptcy filings could have fuelled a price war leading to a state in the industry that is economically undesirable.

Chart 6: Chapter 11 filings and emergences, by carrier



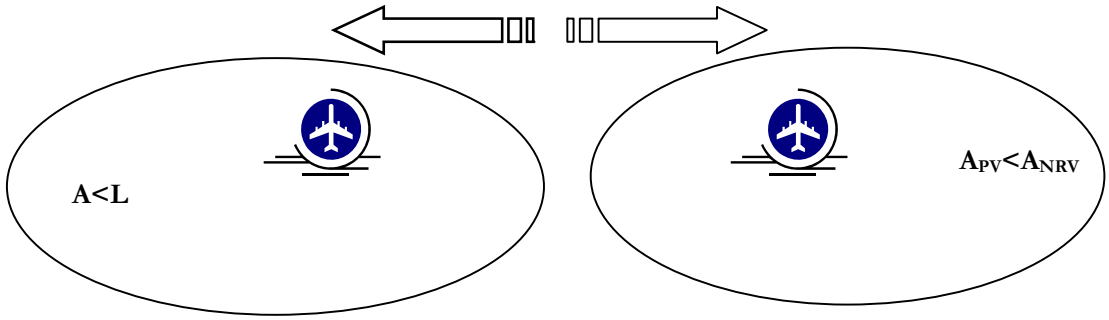
Source: Companies, Air Transport Association

Chart 6 illustrates the chapter 11 filings over the past 5 years and shows that only one airline (Independence, which was not a large carrier) has liquidated during the period. Thus the above empirical data on the US airline industry for the last 5 years does not contradict the view that the legal system has failed in facilitating exit from the industry – which prima facie appears economically desirable.

Pre 93 Era (Where leasing was not a popular source for airline finance)

In this era it is plausible to conclude that the legal system facilitated an economically efficient outcome for the financially distressed carriers in the US airline industry leading to a situation where the two sets in the Venn diagram shown above are separate and disjoint. In this case the PV a carrier would generate in its current use would be lower than its net realisable value (in an alternative use) ($A_{PV}<A_{NRV}$) and the legal system would facilitate the insolvency since the liabilities would exceed the assets (A<L) of the carrier.

Figure (4): Hypothesised Position of the US domestic airline Industry in the Pre 93 Era



Rationalization of the above diagram

This view can be further rationalized by drawing on the work of Borenstein and Rose (1995). They investigate seven large bankruptcies prior to 1993 (from 1989 to 1992) and find little evidence that bankruptcy per se affected airline pricing behavior, although financial distress that can manifest itself in a bankruptcy filing appears to be associated with somewhat lower prices. Furthermore, their study concludes that carriers competing with bankrupt airlines do not lower their prices on overlapping routes, nor do they lose passengers to their bankrupt rival following a bankruptcy filing during this period. Their results state that the net change in prices over a year long window[61] around bankruptcy is -5.5% for the bankrupt carrier and +1.1% for its competitors, (both statistically significant at a 99% confidence level) and in essence show that the bankrupt carriers do not harm the financial health of their competitors. This is in line with the general consensus that the expected effects of contestability theory

[61] The study suggests that the airlines that file for bankruptcy protection cut their prices 90-180 days prior to a chapter 11 filing at an average of 5.6% and maintain this lower price level over the subsequent 9 months.

were not apparent in the US airline industry since its deregulation. (Borenstein; 1992). Contestability Theory[62] implies that potential competition has a disciplining effect on the existing market. It was argued that airlines can enter a new market quickly with low sunk costs. However Morrison and Winston (1987), Borenstein (1989), Brueckner, dyer and Spiller (1990) show that a potential competitor does not have a major impact[63] on an actual competitor and appears to be no substitute to actual competition. Stiglitz (1987) states that if sunk costs are non-trivial, albeit small, an incumbent can respond in price and quantity as quickly as a new competitor can enter, thus creating little incentive to respond in advance of the actual entry. Thus advertising and other short run losses associated with moving into a new route appear to be sufficient sunk costs to inhibit contestability in the airline industry lending little support to the suggestion that potential competition disciplines airline markets.

In the light of the above arguments, coupled with the fact that 5 out of 7 large[64] bankruptcies investigated during the period of 1989 to 1992 ended in liquidation, there could be some weight to the presumption that during the pre 93 era the legal system facilitated what was economically desirable. This might be evident by the high percentage of bankruptcies ending up in liquidations in terms of size.

It is interesting to note that this study was done using pre 93 data and the conclusion was that there was no depressing effect on the financial health of the industry as a whole due to bankrupt carriers which was somewhat contradictory to the outcomes of the study done by Ciliberto and Schenone (2005), using post 93 data[65].(section 1.8). In this context, ironically one of the significant changes is the widespread popularity of leasing in the post 93 era, which raises questions about structural change in institutional or market arrangements in the later period.

[62] Contestability Theory in its pure form suggests that the number of actual competitors have no effect on prices although the applicability of this to the post de regulated US airline industry has been challenged as well in studies done by Bailey, Graham and Kaplan (1985), Call and Keeler (1985), Morrison and Winston (1987), Borenstein (1989), Hurdle et al. (1989)
[63] In terms of the threat to the loss in market share
[64] Where the annual revenue is over $ 1 Million, in line with the US Department of transportation categorizations.
[65] The Ciliberto and Schenone study considered data between 1993 and 2005 whereas the Borenstein and Rose (1995) study uses data from 1987 to 1992

Balance Sheet test for insolvency

As Meeks and Meeks (2004) point out, US bankruptcy law essentially entails a balance sheet test of insolvency[66], where insolvency is defined as negative equity. I.e. Assets fail to cover the liabilities of a firm at a given point in time. In this context it would be interesting to establish whether any of the distressed carriers would fail the balance sheet test if the off balance sheet financing they have contracted through operating leases were to be brought on their balance sheets[67]. Perhaps the most credible way this could be established might be to factor in the relevant cost of debt into the financial statements. This is assuming that a firm would have to resort to debt finance instead of leasing as equity financing might be unrealistic in the light of the poor net cash positions of most legacy carriers. If the legacy carriers actually do fail the balance sheet test in this context then the legal system would have facilitated what is economically desirable even in the post 93 era.

[66] His work show that even with other regimes such as the Australian law and the UK law to some extent, although insolvency is defined as a cash flow condition it essentially boils down to a balance sheet test once you consider the 'stock' and 'flow' interactions of the financial statements.

[67] Refer previous comments on the study done by Gritta, Lipman and Chow (1995)

SECTION II

Chapter 11 and its implications on Airline Leasing

This section discusses in more detail certain salient features in the US bankruptcy code with regard to the US airline industry, that might help gain some understanding of the forces that have led the industry to evolve into its present state described in the introduction.

Although in the recent past the United Kingdom, France, and Germany have all recognized the importance of encouraging the reorganization of firms in financial distress and have adopted new bankruptcy procedures, they differ substantially from Chapter 11 and among themselves. Compared to Chapter 11, in all 3 countries, in the decisions affecting a firm in distress, managers are given much less power over the reorganization process. Instead of managers making the choice between liquidation and reorganization in a bankruptcy, it is the bankruptcy judge or an official appointed by the bankruptcy court that makes the decision and formulates the reorganization plan if this option is chosen in these 3 countries. Thus if we define a Type I error as firms which are financially distressed but still economically efficient being liquidated, then a Type II error can be defined as the consequence of economically inefficient, financially distressed firms being saved. The cost of a Type I error is the loss of firm specific human capital and extra transaction costs (as these firms will probably be re-opened) while the cost of a Type II error is that of retaining assets in inefficient outmoded uses. Thus different countries have different levels of Type I and Type II errors depending on the different means of assigning financially distressed firms to liquidation or re-organization. In the UK and Germany bankruptcy reorganizations are still rare so there could be a high probability of Type I errors whereas in France, since its bankruptcy official's primary objective would be to safeguard the business one could expect relatively high levels of Type II errors. In the US, since the managers have the right to choose between Chapter 7 and Chapter 11 one could expect a relatively high probability of Type II errors.

In an ideal world Chapter 11 would filter out the viable firms from the non viable ones and the viable firms would be allowed to function as going concerns through value increasing asset and financial restructurings, whereas the non viable firms would be shut down. Thus Chapter 11 could be seen as a process that protects distressed firms while serving to enforce a disciplinary role in the market for corporate control by forcing firms to restructure or shut down.

However the literature suggests that in the real world Chapter 11 does not always function as efficiently as intended to achieve its objectives. This has given rise to a flourishing field of academic research into the anomalies of chapter 11. There are case studies (e.g. Eastern Airline, Weiss and Wruck;1998) on the shortcoming of Chapter 11 and academic papers analyzing the different dimensions of Chapter 11. This study will now discuss some of the major shortcomings that can be evident in a typical Chapter 11 bankruptcy procedure especially evident in the 1990's pertaining to a large business entity. Then, it will compare the same anomaly under the hypothetical assumption of the existence of an entity, in the post 1993 era, with an overwhelming market presence and bargaining power, and attempt to draw some implications under this situation. For the moment this entity will be referred to as GE (or GECAS to be exact) and section III will provide factual evidence as to why GECAS may constitute such an entity.

The problem of Information Asymmetry in a typical Pre 93 context

Information asymmetry can be critical in a chapter 11 process and can come into play in many areas. Even in the unlikely circumstance where the concerned parties' interests (e.g. managers, investors, creditors, employees etc) are aligned, it is difficult to value a distressed firm. Claimholders must obtain sufficient reliable information to judge whether the firm's decline in value is a temporary or a permanent phenomenon. Even then, as Meeks and Meeks (2003) point out, this could give rise to a catch 22 situation where in the face of financial distress a firm's value in the balance sheet will crucially depend on the market's perception of its future survival prospects. However the market would consider the information in its financial statements when assessing its probability of default. This estimation is critical as a permanent decline in a firm's value calls for a reduction in fixed claims and substantial restructuring which can include liquidation. Furthermore, even though Chapter 11 requires detailed reporting, it is the managers - who might have conflicting interests - who are entrusted with producing and interpreting the information to the court. This situation is made worse by the fact that firms in Chapter 11 cease to provide audited financial statements.

The problem of Information Asymmetry in the light of a leasing dominated post 93 context

It is likely that the problem of information asymmetry might be less between a large and powerful lessor such as GECAS and a carrier's management since the carrier would be intricately interlocked in many

dimensions with the lessor. For example given below is an extract from the Economist magazine (May, 2005) elaborating GE's exposure in the airline sector.

> "A glance at GE's exposure to American carriers explains its willingness to intervene to help airlines stave off Chapter 11 and liquidation. GE was quick to help United airlines with a short term loan when it entered Chapter 11. It has also led a syndicate that lent up to $630 Million on a secured basis to Delta. It is to take 24 regional jets back from Independence Air and defer the troubled carrier's lease or loan payments on other aircraft. It has agreed to contribute $140 Million to US Airways through loans and deferrals of lease or loan payments, and to take back 25 Boeing and Airbus planes. Counting only US Airways, ATA (a smaller carrier in chapter 11), Aloha Airlines[68] and United, GE's exposure is $ 5.4 Billion. Furthermore GE has a further 225 aircraft placed with Continental Airlines, Northwest Airlines and America West, which are all ailing carriers and before long GE might be called upon again to dip its hands into its deep pockets to fend off the effect of leases going bad."

This gives us an idea as to how closely GE is involved with its client carriers and the vested interests of both parties make this a much more intimate relationship (an aspect which will be explained further below) than an arms length standard lease contract between a lessor and a lessee. It is plausible to conclude that in the light of such a relationship there would exist a greater degree of information symmetry (rather analogous to the relationship between the banks and its clients in the German banking system) between GE and its ailing client carriers (in Chapter 11 or at the brink of it) which would not be apparent in the pre leasing dominated era as explained above.

Edwards and Nibler (2000) find that the ownership is highly concentrated in large listed and unlisted German firms[69]. The big 3 commercial banks provide various forms of financing and hold in excess of 50% of the voting rights of the top 10 companies in Germany. In addition these banks appoint their members to the supervisory boards of these companies and held 145 seats and 20 chairs in the top 100 companies in 2005. These developments place the banks more

[68] Although GE has extended funding to these smaller airlines the impact on the industry is, chiefly determined by the distress conditions affecting the larger carriers.
[69] Franks and Mayer (1995) find that nearly 85% of 170 listed German firms had a sole shareholder ownership stake of at least 25% of share capital. The corresponding figure for UK was 16%.

in line with creditor – partner style relationship with the clients, where the banks stand to suffer large losers in the event of misbehaviour, very similar to the relationship GE has with its clients. Shifer and Vishny (1997) describe Germany as having a system of corporate governance by both permanent large shareholders and banks. In theory this system could overcome the problems of information asymmetry, and facilitate the use of "voice" (where the directors intervene and initiate change) over exit (where the drop in share price initiates change by attracting predators) as a disciplinary mechanism. This would at least in theory reduce the exposure of the system to the various forms of inefficiencies experienced in "exit" process. However the system is criticised, especially by the Chicago school stating that it would insulate the directors and the clients from market forces and perhaps it is not impossible to draw a parallel to the criticism that the carriers receive of not being exposed to the natural Darwinian process of demise in the airline industry.

One can also draw parallels from Japan by looking at the role of Japanese banks in reducing costs of financial distress. Hoshi et al. (1990) investigate the idea that financial distress is costly due to free rider problems[70] and information asymmetries which make it difficult for firms to renegotiate with their creditors. They present evidence that Japanese firms that hold financial structures where there is substantial investment in debt and equity[71] (limited to 10% by statute) in the debtors firms by a few financial institutions, minimise there problems and thus these perform better than other firms after the onset of financial distress. Their findings suggest that, when financial claims are spread among many creditors, financial distress is more costly than when concentrated. They consider three forms of costs of financial distress. First, simultaneous negotiation is difficult with many creditors and can lead to free rider problems, underinvestment and inefficient liquidation. Second these problems would be exacerbated due to information asymmetry. Finally, they consider more subtle forms of credit (e.g. trade credit) extended through customer and supplier confidence that may be difficult to obtain when a firm is in financial distress. Suzuki and Wright (1985) suggest that concentration of financial claims enables firms to avoid formal bankruptcy litigation, and yet still work out of financial distress. This is consistent with Gilson, John and Lang's (1990) analysis of US firms show that firms which rely more on bank financing than bond financing are more likely to restructure

[70] Where an individual creditor bears the full loss, but has to share the benefit.
[71] Sheard (1985) calculates that for 72% of Japanese firms the largest lender was one of the top five shareholders.

bankruptcy courts. Bond financing encourages debt to be diffusely held and exacerbates problems stemming from financial distress. Hoshi et al. (1990) state that it may be wise for Us firms to shy away from high debt levels, whereas Japanese firms have taken on larger amount of risky debt, but have an established institutional structure to cope with high leverage. Similarly GE's role as a provider of debt finance by a concentrated creditor might be seen too as a mechanism that can reduce the cost of financial distress.

Debt can provide a disciplinary role as it can serve to reduce the managerial agency costs that arise due to information asymmetry and contractual incompleteness. (Jensen and Meckling, 1976). A study by Lawless and Ferris show that the presence of secured debt lowers overall Chapter 11 costs, while causing a wealth redistribution where non secured creditors bear a disproportionate share of costs. However, debt can give shareholders perverse incentives in making investment decisions as they do not share the entire downside due to their limited liability. Armour and Frisby (2001) argue that by allowing a concentrated creditor who has invested in information gathering about the debtor to conduct private insolvency procedure, the UK administrative receivership procedure could generate more savings and is likely to be more efficient through the reduction of the cost of debt finance. GE's informal workouts with carriers bear a striking resemblance.

Drawing these threads together it is not too remote to see how a GE dominated failure process can result in certain superior outcomes. A striking resemblance can be witnessed in the German banking system, the role of Japanese banks and the role of a concentrated creditor in a receivership setting.

In the course of preparing this dissertation an industry expert with a close knowledge of this case was consulted at some length. He agreed to the reporting of information from our interview, but asked that the comments not be attributed. This means that the information cannot be fully referenced, as a thesis would normally require; but the quality of the source meant that the benefits of including the information outweighed this drawback. The discussions revealed that there is indeed a significant amount of information symmetry especially in the areas of a carrier's actual financial position, its strategy for the future etc. though not so much with regard to various employee compensation plans. The expert argued that GE would always take a

long term view and only step in to bail out carriers that had the potential to be survivors and be winners in the long term, and in order to make a credible assessment of this, it is crucial that GE have access to very detailed inside information.

The Agency problem in a typical Pre 93 context

The agency problem is another critical issue with chapter 11. Agency problems arise since the reorganization plan has implications for the distribution of value across the claimants and not just for the total firm value. (Wruck, 1990). For example shareholders have an incentive to claim that a firm's value decline is just temporary in order to retain their equity stake, whereas the creditors have an incentive to claim that the decline in value is a permanent feature in order to cut the shareholders out of the reorganization. In essence this turns into each agent maximizing his/her own wealth, with little concern for the overall total value. Weiss and Wruck (1996) identify certain features of Chapter 11 that facilitate and exacerbate these problems. It allows management exclusive rights to file a plan of reorganization for at least 120 days (followed by 60 additional days to obtain approval for this), and it is often extended several times. The managers (who ironically happen to be the ones who were running the company when it fell into financial distress) have the right to set the agenda during this time which provides them with an opportunity to extract value as evident with the Eastern Airlines case. (refer appendix for a summary of the case of Eastern Airlines)

The agency problem in the light of a leasing dominated post 93 context

In a GE dominated Chapter 11 or a near Chapter 11 scenario it is possible to argue that the agency problems might be lesser, especially if the management hold a substantial equity stake. One reason for this could be the closer than normal relationship between the management of a firm and GE (as explained before) since the vested interests of both parties are very high as the stakes are huge. From a management standpoint they have to rely on GE's lifelines and concessions on its lease and loan obligations simply to keep the carrier afloat and thus their job may well be dependent on obtaining GE's cooperation. From a GE perspective, if an exposure to a carrier is large it is in their interest to keep the firm alive as the default of a major carrier would result in a flood of aircraft into the market (which is already suffering over capacity) and it

might not be a straightforward issue to find lessors for a substantial number of aircraft immediately. Furthermore GE's exposure is not simply limited to leased aircraft (as explained later) as their 'GE only' policy ensures that a carrier is locked in at various points (engines, equipment, maintenance and overhaul etc.) in the supply side. 'USA TODAY', of April 4th 2005 reported that GE has lent in excess of $8 billion to ailing airlines since 9/11. "Having lots of liquidity is great, but owing GE lots of money is even better," says UBS analyst Robert Ashcroft and goes on to state that if GE is significantly involved, it is likely to act to keep an airline in business. David Butler, an Atlanta attorney and former U.S. bankruptcy trustee reconfirms this point by saying "when an airline owes hundreds of millions, lenders are not creditors, they're partners," (USA TODAY.com).

Again the discussions with the anonymous industry expert seem to reinforce this. At a very basic level, when GE (or any entity for that matter) owns an aircraft it would generally be in their interest to ensure that the aircraft is kept in the air as much as possible.

Another reason for probable lower agency costs in this regime could be that the legal system provides a special provision in Chapter 11 which gives the aircraft lessors a privileged position over other creditors. As shown below this provision serves to reduce the risk to the financier limiting the downside bankruptcy costs as compared to an ordinary creditor.

"Over forty years ago, Congress determined that it was necessary and in the public interest to provide unique protections to financiers of aircraft equipment so that airlines could properly meet the heavy demands of increased air travel and at the same time attain a sound financial condition which would obviate the need for continued subsidy and this led to the establishment of section 1110 of Chapter 11, which was designed to override all other provisions of the Bankruptcy Code thus helping the debtor to obtain advantageous financing for the acquisition of aircraft. Furthermore Section 1110 applies only in reorganization under chapter 11 and has no applicability where the debtor seeks to liquidate under chapter 7 of the Bankruptcy Code. To encourage lenders to provide financing at favorable rates, § 1110 provides secured lenders, lessors, and conditional vendors with the assurance that if, within sixty days after the debtor's filing of its chapter 11 petition, the debtor in possession does not agree to perform all the debtor's obligations under the applicable security agreement, lease, or conditional sale contract

or fails to cure all defaults, the financier has the right to take possession of the aircraft and to enforce any of its other rights or remedies under the applicable agreement or lease. Where it applies, however, § 1110 not only strips the court of any power to prevent the repossession of aircraft equipment, but also facilitates the financier's repossession of that equipment by eliminating the requirement that the financier move to lift the automatic stay and subordinating the debtor's right to use, sell, or lease the equipment to the financier's right to possession. Specifically, § 1110 protects the repossession rights of secured lenders, lessors, and conditional vendors of specified aircraft equipment. The specified equipment includes aircraft, aircraft engines, propellers, appliances, and spare parts."

(Extracted from the American Bar Association-2003 Supplement)

Another important distinction is that unlike certain other aspects of law which appear to be explicit and straightforward, but are however constantly violated depending on the judges' discretion and interpretation[72], so far the provisions granted in section 1110 have not been overruled.

The birth of contemporary lender protection for the airline industry took place in 1978, when Congress adopted the new federal bankruptcy code. § 1110, which treats aircraft different from other assets was twice amended by the Congress in an effort to clarify ambiguities brought to light through bankruptcy court litigation. In 1994 the amendment expanded the definition covered by carriers and clarified whether leasing was subject to § 1110. The 2000 amendments clarified that lessors have "an unqualified, immediate and complete right to retake possession and control of their collateral if the debtor fails to remedy their obligation within 60 days. Perhaps the ambiguities in the pre 93 era which were presumably clarified in these amendments might explain why, for example the creditors of Eastern Airlines who were not lessors but held security interest in collateral were not able to retake possession immediately in an efficient way in 1989.

[72] Weiss (1990) states that violation of the strict priority of claims (the absolute priority rule) is the norm for New York Bankruptcies. Franks and Torus (1989), LoPucki and Whitford (1990) and Eberhart et al (1990) report that the violations of the absolute priority rule occur in 50 to75% of all large firm reorganizations and unsecured creditors typically receive payoff rates between .5 to .7 in Chapter 11 reorganizations.

This was reaffirmed when the court overruled on May 2005 an appeal made by UAL Corp against its lessors (demanding an injunction on the repossession), who went on to seize their leased aircraft when the carrier defaulted on its lease rentals and was in Chapter 11, 'debtor-in-possession' under Automatic Stay. The fact that section 1110 serves to limit the lessors' downside, which undoubtedly would be reflected in the lease rental charges in a competitive market, could further explain the popularity of aircraft lease financing. Thus it would be plausible to assume that Section 1110 has had a material effect in sustaining the US aircraft commercial leasing market and had the courts granted a decision enjoining the repossession it would have had a chilling effect on aircraft financing.

Furthermore, this view was reconfirmed by an industry expert who confirmed that § 1110 worked very smoothly in the recent repossession of some aircraft owned by GE, and stated that the presence of § 1110 made a material difference in GE's attitude towards aircraft leasing.
In the light of these considerations there might be a case that, (at least) confined to the specific boundaries of the US airline industry, the dire agency problems faced during the days of Eastern Airlines are less apparent today. Perhaps one of the discriminating factors between that era and today is the increased presence of leased financing which has led to the heightened significance of section 1110 of Chapter 11 and this could be seen as one of the main contributory factors leading to the decreased dysfunctional behaviour observed by the management today (compared with the Eastern Airlines' example). Given below is an extract of a motion filed by US Airways in a bankruptcy court of Eastern Virginia requesting permission to enter into a global settlement with GE, which would support the case that there is currently stronger goal congruence between the management and its major lease financiers.

"GECC (General Electric Capital Corporation) is the single largest aircraft creditor of the debtors. Together with Engine services and other affiliates, GECC directly financed or leased 150 Debtors aircraft prior to the petition date. In addition, GE Engine Services is a critical vendor for the Debtors, maintaining the engines for virtually all of the Debtors' aircraft. GECC is also one of the few financial institutions currently having the ability and the willingness to provide substantial funding to lease or acquire regional jets, which continue to be a critical part of the Debtors business plan upon emergence.

In view of these factors, the Debtors believe that it is in the best interest of their estates and all parties in interest to enter into the Global Settlement to resolve all issues with GECC and its affiliates, and acknowledge the critical role that GECC will play in the Debtors' recovery plan. The resolution reached with GECC reflects its unique relationship with the Debtors and its willingness to provide critical regional jet leases as the Debtors restructure their operations, both during the pendency of these cases and after emergence from bankruptcy."[73]

The motion hints at how the balance has shifted from the Debtor dominated 1990's era towards a creditor dominated regime as it talks about the credible threats of very costly complex litigation that can rise due to the default remedies contained in various agreements with GE entities and emphasizes how the global settlement can effectively avoid this, without which the Debtors ability to function would be severely jeopardized.

The heightened significance of the role played by the Bankruptcy Judge in the Pre 93 Era

Another relevant feature is the decisive role played by the Judge in a bankruptcy court. White (1989) argues that the courts, in their emphasis on preventing premature liquidation, tend to protect non viable firms and thus prevent resources from flowing to higher valued uses. Here the judges' perception of a distressed firm's prospects becomes crucial. The judge can fulfill equity claims, traditional creditor claims or even claims from employees and the general public if he deems them justified and has the discretion to fund the firm's operating deficits using proceeds of asset sales or debtor in possession financing. If and when such financing is granted for non viable firms, it amounts to court sponsored asset stripping. Here the judge treads a very thin line in deciding whether financing an ailing firm would lead to value destruction or if it would be an investment that would yield a positive net present value in the longer term. To make a well informed correct decision it essentially requires that the judge should be an expert in many disciplines such as business strategy, valuation, feasibility analysis etc. or make use of independent outside experts or make use of the market for corporate control. Weiss and Wruck (1998) argue that the valuations provided by the market for corporate control are more credible since they have a vested interest. However in a more absolute sense the credibility is rather limited as any assessment of the future potential value would depend on accurate forecasting and

[73] See http://www.aaae.org/_pdf/_regpdf/usairmotion.pdf

a forecast is always hazardous and almost always wrong. As Weiss and Wruck (1998) point out in their Eastern Airlines case study, a judge's biases, errors or misconceptions about the use of experts or the market for corporate control can be extremely costly.

The role of the Bankruptcy Judge in the light of a leasing dominated post 93 Era

It may not be implausible to draw a parallel between the hugely powerful role played by a judge in the early 90's and the much more market-oriented, but just as decisive role played by a powerful lessor such as GE today. Perhaps this transition can be seen as a move from a more external role created for a bankruptcy judge to an equally decisive, less arm's length, part played by GE as a creditor. The external impact of the judge can be considered to have the virtue of independence. However, the literature suggests he / she was susceptible to the above mentioned biases, errors or misconceptions caused at times by inadequate information. The internal role of GE, though would be well informed, and could be expected to follow self -interest. GE's role has proven to be decisive especially when it comes to assessing a carrier's viability (as evidenced previously) and the lessor's wide-ranging power makes it hard to construct any credible valuations without giving due consideration to GE. In other words GE has too many levers of influence and a carrier's future would be in jeopardy without GE's consent which is a marked difference from the early 90's era when aircraft leasing was not so popular. Discussions with an industry expert did not seem to oppose the view that today there could be less of an incentive on the part of the carriers (where GE is a strong creditor) to avoid financial distress as the carriers can often realistically expect GE to bail them out. This can lead to a problem of a 'moral hazard' regarding bail outs in the US airline Industry. A growing number of critics accuse GE of blocking much-needed industry consolidation in North America by keeping laggards in business while profiting from the industry's troubles[74]. Insiders who have a significant equity stake or the managers who run the carriers and thus depend on it for work might have an incentive to act on self interest and engage in actions that increase the risk of the firm at the expense of the overall enterprise value[75], if they sense a safety net in the form of a bail out by GE.

[74] See WallStreet Journal (WSJ.com) 31st March 2005

[75]For a general discussion of the potential for excessive risk-taking by managers, see Alon Chaver & Jesse M. Fried, Managers' Fiduciary Duty Upon the Firm's Insolvency: Accounting for Performance Creditors, 55 VAND. L. REV. 1813, 1821–22 (2002)

Incentive for the emergence of a superior solution due to the erosion of net assets under bankruptcy

Related to this question of bailout, Meeks and Meeks (2003) show how endogenous balance sheets can inhibit the effective reallocation of control. This may be applied to GE and the US airline industry in its current state. Meeks and Meeks (2003) discuss the implications of net asset erosion for the efficient reallocation of corporate control under bankruptcy, analysing two cost categories namely E_4 and S. Consider a scenario where a US firm has entered into Chapter 11 and continues to trade, enjoying the automatic stay provisions which shield it from its creditors. Suppose that there is a classic principal-agent problem and the incumbent management is squandering the firm's assets through incompetence, dysfunctional behavior or consumption of perks (Jensen and Meckling (1976)). Say S is the amount of wealth being squandered by the management or in other words is the amount by which a firms value would increase under an alternative competent management team. Thus other things being equal the owners would replace the inferior existing management team in order to avoid the agency costs, S. However with endogenous balance sheets this allocation of control might be inhibited because of the expected costs as a result of asset erosion (E_4) that can occur in the process of removing the incumbent management team. E_4 can take the form of direct and indirect bankruptcy costs, crystallization of liabilities that were previously contingent and thus left out of the statutory balance sheet (for example non discretionary redundancy payments), depletion of the balance sheet as a result of a permanent loss of value in stocks, intangibles (for example brands), real estate, plant and machinery , loss of value due to distressed asset sales, loss suffered as a result of losing favourable credit terms, loss suffered on various contractual agreements that tie a firm's obligations to its balance sheet ratios, loss suffered due to the repossession of equipment that is critical to a firm's operation which were under finance leases etc.; and the study argues that E_4 could indeed be very high[76]. Thus owners would wish to proceed with replacing the inferior management only if $S > E_4$. A classic illustration of this mechanism where the efficient allocation

[76]However, Dattner (2005) Claims that there could be substantial comparative cost advantages for the debtor as result of bankruptcy protection. These include the automatic stay, reduction in the debt load and the ability to cancel or restructure unfavorable contracts and these benefits should be factored in as they have the effect of pulling down E_4. White (2004) confirms this view and describes the benefits that firms in Chapter 11 enjoy. These include ability to retain only the profitable pre bankruptcy contracts while rejecting the unprofitable ones, to terminate under funded pension plans, cease paying interest to creditors, and with the court approval to give priority to creditors that provide post bankruptcy loans at the expense of pre bankruptcy creditors.

of control was severely delayed due to the behaviour of endogenous balance sheets under distress can be witnessed with Eastern Airlines under Chapter 11. (Weiss and Wruck (1998).

Analysis of the implication of asset erosion under bankruptcy in the Pre and post 93 eras

Previous paragraphs lead to the argument that this value S could be significantly lower for the US airline industry today[77], compared to the Pre 93 era. This is because of the less significant impact of agency problems in the presence of powerful lessors today that was not a feature in the pre 93 era for example with Eastern Airlines. It is plausible to conclude that in the post 93 Era, S has reduced significantly, while it can perhaps be agued that E_4 too might have reduced slightly [78] relative to the Pre 93 Era. Let us now analyze this relationship from a game theoretic framework in order to understand the nature and the incentive for the emergence of a post 93 creditor-partner style Management. Suppose that the management and the equity stakeholders of an airline in Chapter 11 is attempting to negotiate reorganization plan with its large creditor – partner. Let A_{nrv} be the net realizable value of the assets after accounting for asset erosion E_4 in the event the creditor presses for his/her claims and A_{pv} be the present value of the net cash flows the carrier would generate if it were to be reorganized and continued as a going concern. Now consider a situation where the firm is balance sheet insolvent (i.e. the legal system would recommend closure) but economically viable (i.e. the firm would best continue to operate as its assets would earn more in their present use than in the best alternative). Then,

A_{pv} = Claim of Creditor-Partner + Equity / Management interest > A_{nrv}

This situation can be analyzed by a standard game theoretic framework of a prisoner's dilemma as shown in the table below. The Creditor can either choose to cooperate or oppose the plans of the management and / or equity stakeholders' and likewise the management and / or equity stakeholders can either choose to work with or oppose the creditors. The payoff shown in the respective cells gives the maximum likely loss that each party can suffer as a consequence of choosing a particular strategy. Thus if both parties decide to cooperate the loss suffered by the

[77] Furthermore Dattner (2005) states that the informational effect of a bankruptcy filing may be less relevant to large public entities as they must disclose their financial condition to the public on a regular basis.
[78] The nature of E might now be more volatile and is explained in the next section.

respective parties will be 0 as A_{pv} = Claim of Creditor-Partner+ Equity/ Management interest, and the firm will operate as a going concern and both parties are more likely to recover their claims eventually. However if we consider the payoff structure across the diagonal where either party does not cooperate it will result in a Pareto inferior outcome where the cooperating party is likely to suffer a loss. In the case where the creditor –partner cooperates and the management opposes (as in the case of eastern airlines) the creditor –partner will suffer a loss of α as a result of E_4 (where $\alpha >= E_4$). If the management cooperates with a forced solution by the creditors (i.e. where the creditors effectively reject the managements' original plan and enforce a new management team), then the management would stand to lose β where $\beta < S < 0$, the portion of perks etc. enjoyed by the existing incompetent management. At the other extreme, if both parties oppose, then the re-organization plan is likely to reach a stalemate and the bankruptcy court can decide to liquidate the firm at the net realizable value (A_{nrv}) of the assets again yielding a Pareto –inferior outcome. Thus the two stakeholders (i.e creditor – partner and the management / equity) would suffer losses of λ and μ respectively where $A_{pv} - A_{nrv} > \lambda,\mu > 0$. Clearly the first quadrant where both parties cooperate yields a Pareto superior outcome and is a Nash equilibrium.

Figure (5): Game Theoretic framework for the analysis of the Post 93 Creditor – Partner style management

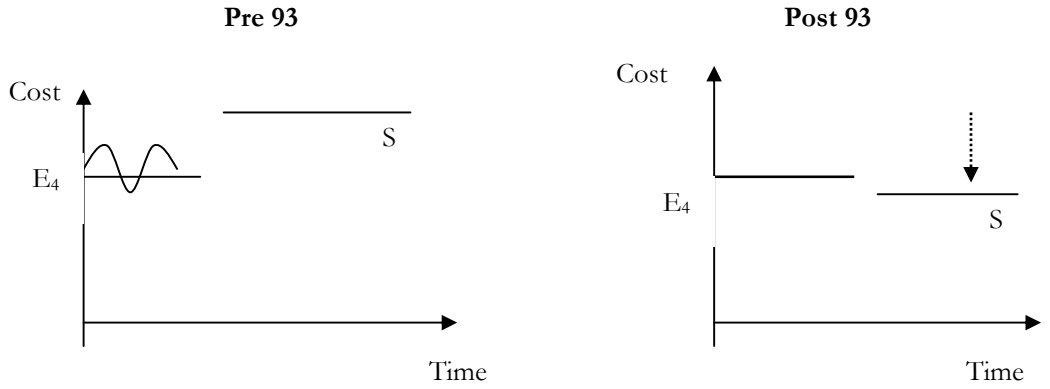
		Management / Equity	
		Cooperate	Oppose
Creditor-Partner	Cooperate	(0,0)	(-α, 0)
	Oppose	(0,-β)	(-λ, -μ)

It is interesting to note that perhaps there is enough evidence to suggest that in the post 93 era, $E_4 >> S$ (as S has reduced significantly) which has created extra incentive for GE style arrangements to create a superior collective solution. This is depicted by the arrows indicating the shift away from the other quadrants to the first quadrant and perhaps this helps to explain why there has been no big liquidation of a carrier in the US airline industry in the recent past.

Analysis of asset erosion from an options stand point

Consider the graph below.

Figure (6): Comparative change of E_4 and S in the transition from the Pre 93 to the Post 93 Era



It can perhaps be argued that due to the creditor-partner nature of the big lessors, E_4 might now be slightly lower than Pre 93 levels and possibly be slightly less volatile. From an options theory stand point an increase in the volatility of the underlying process would lead to an increase in its option value. It might be possible to view this option as the decision available to the equity holders to replace an inferior management team, where the underlying uncertainty is the value of the firm's assets, and the strike price, at the point where $E_4 = S$[79]. In the context of a creditor – partner vs. management and / or equity interaction, management/equity holders have an interest in delaying agreeing to a reorganization plan in order to play out the option. Thus the creditor must compensate the management and or equity for giving up the option by agreeing to a plan. As the value of the option increases with the volatility of the firms earnings (which in turn affects the volatility of the firms assets), the management and / or equity gets more in bargaining over a Chapter 11 plan as the firms' earnings become more risky. However in the context of the US airline industry the main difference between the pre and post 93 eras is that $S_{Pre\ 93} >> S_{post\ 93}$. Thus for the US airline industry today we could perhaps depict the same relationship in the form where the Creditor-Partners would proceed to replace the inferior management if $S_{Post\ 93} > E_{4\ (post\ 93)}$, where $S_{Post\ 93} << S_{Pre\ 93}$ and $E_{4\ (post\ 93)}$ is presumably slightly lower and less volatile than $E_{4\ (Pre\ 93)}$. When one considers the Creditor Partner nature of a big lessor, once the lessor has made a big commitment into a carrier's fleet the chances are that there would be rescue packages extended

[79] It is possible to build a real options model for this and make a quantitative evaluation of the option value using actual data, however this would fall beyond the scope of this paper.

to the ailing carrier[80] thus reducing the absolute level of E_4. For example, as opposed to a traditional picture of a gradually declining sick firm (where the costs can be reasonably expected to move only in one direction), today we have an ailing firm with very powerful friends (i.e. in the form of big lessors like GE) with a high degree of vested interests (as explained more in the next section) who have shown that they are more and more willing to extend lifelines and rescue packages. Thus the likelihood that a carrier that looked like sliding downhill incurring a lot of direct and indirect bankruptcy costs (and other cost categories that are included under E_4 mentioned in the previous section) might recover tomorrow is substantially higher than before. In other words the costs might be less uncertain than the Pre 93 era and this can cause the reduction of the volatility of E_4.

Thus two key changes can affect the option value in the Post 93 era. The option value should definitely reduce due to a reduction in the strike price S. Furthermore if there is a reduction in the volatility as hypothesised above, this too would cause a reduction in the option price. Thus the value of the option held by the management/equity stakeholders (in the context where the Creditor – Partner has a high degree of vested interest in the carrier) would reduce quite significantly once the Creditor – Partner (big lessor) announces a rescue package due to the reduction in the volatility of E_4 and the lower level of S apparent in the Post 93 Era

This decrease in the option value held by the management and / or equity stake holders would reflect a weakening of their relative bargaining power and provide an incentive for them to cooperate with the Creditor – Partners to bring about a superior collective solution. This too could form a complementary explanation towards understanding why there has been no major liquidation in the US airline industry since the 1990's despite the industry recording a cumulative loss of over $35 billion since 2000[81].

[80] Although industry experts state that this is not the only factor that GE would consider prior to extending lifelines.
[81] See hearings from the US Senate Committee on Commerce, Science and Transportation, (24/1/2007); http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Statement&Statement_ID=178

SECTION III

The Role of GE

The chapter will now attempt to explain why GE can be considered a very influential player with an overwhelming bargaining power in the US aircraft finance and equipment maintenance industry.

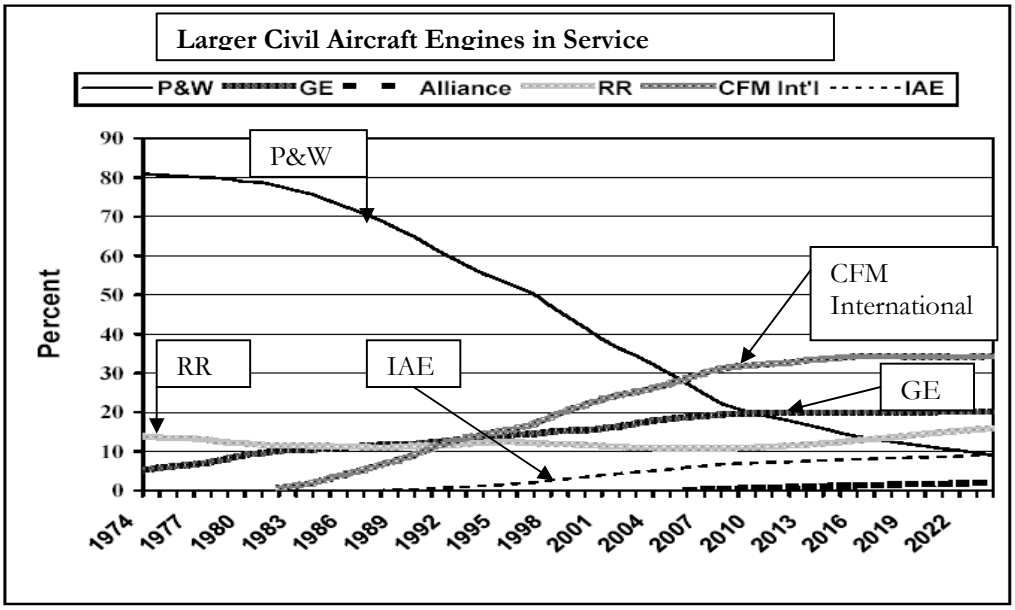
Arguably one of the most significant changes in the US airline industry since 1990's has been the growing role of the aircraft lessors, which is led by GE, a giant which owns more than 1350 aircraft, a massive aircraft engine unit, and has in excess of $33 billion in loans and leases to airlines. In addition to being the leading lessor in the US aircraft financing market GE also holds a dominant position in the market for large jet engine aircraft with approximately 65% market share of sales of total aircraft engines.

> Three prime companies dominate production of large civil aircraft engines in the world: General Electric Aircraft Engines/GEAE (United States), Pratt & Whitney (United States) and Rolls-Royce PLC (United Kingdom). Three other engine manufacturers are joint ventures which include one or more of the big three. The CFM International is a joint venture between SNECMA Moteurs (France) and GEAE, and is one of the largest civil aircraft engine producers. International Aero Engines, Inc. is a consortium of Pratt & Whitney (P&W), Rolls-Royce, MTU of Germany, and the Japanese Aero Engines Company. The Engine Alliance LLC is a joint venture between GEAE and P&W to produce an engine model for the A380. GEAE, P&W, and Rolls-Royce manufacture civil aircraft engines for most Boeing and Airbus models as well as Bombardier and Embraer regional jets. They also provide engine overhaul, repair, and fleet management services.
>
> GE Aircraft Engines (GEAE) (United States) is a subsidiary of General Electric, the most diversified of the three prime engine corporations. In 2003, only 8 percent of General Electric corporate revenue came from the aircraft engines division. However, that percentage equated to nearly $11 billion in revenue. However, it dominates the regional jet aircraft engine market as the exclusive supplier for Bombardier's[82] entire line of regional jets and the two new larger

[82] Bombardier is a publicly listed company on the Toronto Stock Exchange, although the Bombardier family owns more than 50 percent of the company. Much of the content in Bombardier regional jets has in the past come from a broad supplier base across Canada and the United States. General Electric Aircraft Engines is the sole engine supplier for Bombardier RJs.

Embraer[83] regional jets. Given below is a global projection of large civil aircraft engines in service.

Figure (7): Larger Civil Aircraft Engines in Service



Source: *Airline Monitor*, 2004

Drauz (2002), states that GECAS is the largest purchaser of new aircraft, ahead of any individual airline carrier or other leasing company. It also has the largest single fleet of aircraft in service, as well as the largest share of aircraft on order and options.

Furthermore a substantial percentage of business of the leasing arm of GE (GECAS) relates to leaseback agreements where by the airline carriers sell planes they already own to GECAS and then lease them back. This is in line with the Shleifer and Vishny (1992) model when applied to the airline industry, where one can conclude that carriers may sell industry specific assets (aircraft) to industry outsiders even though there exist insiders who would place a higher value on the assets, as the latter would themselves be financially constrained especially during a recession. Distressed airlines find it difficult to raise capital since they must overcome the perception that the carriers' financial health is a reflection of management incompetence resulting in securities being offered at a discount to entice investors. (Myers and Majluf (1984)). Since aircraft form a major component of their collateral these sale and lease back arrangements

[83] Embraer is Brazil's largest single exporter and relies almost entirely on non-Brazilian markets for regional jet sales.

present at times the only viable source of raising finance. These transactions improve the balance sheet of the carriers (as they can be considered a form of off-balance sheet financing) and create tax and depreciation benefits (see section I). Discussions with an anonymous industry expert revealed that one of the key strengths of the GECAS is a highly competent technical team, capable of assessing various factors such as the stage of the industry cycle, liquidity of specific aircraft, the possibility and the potential costs of redeployment of reposed aircraft etc. and quantifying these factors into a dollar amount with significant precision[84]. This aspect becomes critical as GE generally does not take other collateral except the aircraft themselves[85] and thus it is important to establish the right price for a given aircraft at a given time.

GE's policies ensure that their customers are effectively 'locked in' to a high degree by instigating contractual commitments that make them committed at many points down the supply chain. In 1996 GE announced its 'GE only' policy whereby it used its dominance in the leasing market to secure market share in the aircraft engine market by asking its leasing clients to commit only to GE engines where available. The European Commission feared that the GE only policy would be extended to cover products of Honeywell (which is the leading manufacturer of avionics and non-avionics aerospace components) further transforming its market dominance. This led to the banning of the attempted merger between the two firms in Europe.

Thus it is perhaps possible to argue that part of GE's motivation to extend lifelines to ailing carriers is to shelter the market for GE products, therefore creating further justifications for cross-subsidization of the leasing business as a way of capturing and safeguarding perhaps the more profitable manufacturing business.

Consider a case where a firm has a presence both as a supplier of components to manufactures (Airbus/Boeing in this case) and as a buyer (GECAS) of final products from these manufacturers although this buyer is not the end user of the product, and instead packages the

[84] GECAS has an above average technical team that generally do this by attaching a score to each aircraft which is usually linked to its liquidity and are able to quantify a value for the aircraft and an assessment of how uncertain the value can be (i.e a confidence interval).
[85] This is not to say that GECAS does not undertake asset backed lending. On the contrary they do a significant amount o asset backed lending but this statement refers specifically to the leasing transactions.

aircraft with a financing scheme and sells it to the end users (i.e. the carriers) When it comes to new aircraft purchases the carriers have the option to go to GE or to purchase separately and obtain financing from different sources. Given that there is little product differentiation between the products, and the products are offered at roughly the same price the natural tendency on the part of the carrier would be to go to GE especially upon considering the bundle of options that GE offers in the form of aircraft maintenance, pilot training etc. GE on the other hand due to its market dominance and the "G.E" policy[86] inherits the luxury of creating many bundled product and service options and in effect cross-subsidizing these services and products so that it can earn a higher accumulated margin than its competitors on various products and services offered at different points in the supply chain that goes on to make the final product. Furthermore since this strategy entices the carrier to opt for the GE products and services most of the time it goes towards enhancing GE's market share. This could perhaps be one of the important reasons why GE can afford to be generous and keep the carriers afloat, as from a GE standpoint it may make sense to do this to maximise returns for the business as a whole.

From a risk standpoint although GE would carry large exposure to the volatile airline industry and would have to bear the cyclical demand fluctuations and the risk of obsolescence in technology, quite apart from the very significant counterparty default risk it faces by financing ailing carriers, from an overall perspective it seems to be well hedged. GE makes money from the well-collateralized loans[87] and thus it would be in their interest to keep as wide a customer base as possible. GE also demands so much collateral and places so many conditions on assistance that analysts believe its downside is limited. The loans to Delta, for example, are backed by $3.5 billion (in assets in relation to $630 million debt[88]), ranging from spare parts to landing slots. It is the liquidity issue that appears to be the main problem with the carriers as they hold substantial assets (although industry specific and not 'redeployable' in Williamson's (1996) terms) that could be used as collateral. For example Consultant Jon Ash[89] of InterVistas-ga2 estimates that:

• United could raise up to $2 billion through the sale of its Pacific division, bought from Pan Am nearly 20 years ago.

[86] The 'GE only' policy forces a carrier to purchase only GE products and services if it obtains financing for its fleet.
[87] See BusinessWeek Online, February 7, 2005.
[88] See Economist May 2005.
[89] See USAToday 5/4/2005; http://www.usatoday.com/money/biztravel/2005-05-04-airline-troubles_x.htm?csp=34

• Northwest, likewise, has Pacific and Asian routes worth as much or more.

• Delta's two regional carriers, ASA and Comair, could net perhaps as much as $1 billion total.

• American's Latin American division and its rights to serve Heathrow might fetch $3 billion or more.

In addition most carriers have real estate, airport-gate leases, service subsidiaries, spare parts and equipment, and, even light bulbs that can be used to generate cash. According to analyst Roger E. King of CreditSights[90], even if GE were to take back a few planes, the risk associated would be minimal as these could be easily moved to U.S. freight haulers or Asian carriers within a year. With air travel and airline profits recovering outside America, GE would be in a position to place some of its now unwanted Boeing 737s and Airbus A320s elsewhere, particularly Asia. In the first quarter of 2005, GE re-deployed 18 Boeing planes in China, India and Brazil that were returned by ATA. However the liquidation of one of the big American carriers to which it is heavily exposed would have far more troubling consequences for GE. According to an unnamed industry expert the main strength of GE in terms of risk mitigation is the presence of a highly competent technical team that can assess the right price of an aircraft prior to acquisition so that the aircraft value itself will stand alone in the form of collateral and also the presence of a global network that has significant manoeuvrability and flexibility to place an aircraft almost anwhere in the world.

GECAS saw its net earnings rise 13% in fourth-quarter 2004, to $167 million, though overall GE's earnings for the year rose by only 3%[91]. This was after GE set aside $195 million in "aviation industry reserves" in the fourth quarter, primarily to offset anticipated losses related to US Airways as a precaution. GE owns the fast-growing airline-leasing unit, and has new aircraft on order with a list price of $10.2 billion. Revenue at GE Capital Aviation Services was $3.2 billion in 2004, double that of 1999.An integrated analysis over time of GECAS financial performance and that of its major clients would lead to gaining significant insights into the validity of certain statements and hypotheses presented in this chapter. Unfortunately this

[90] See BusinessWeek Online, February 7, 2005.
[91] See airline industry news reports 2006

information is extremely proprietary and is not possible to obtain it through the usual avenues of research study.

SECTION IV

Concluding Remarks

In conclusion the chapter now considers some market perceptions about GE's role in the US airline industry and outlines some discussion of the evolution of the practice of Chapter 11 of the US bankruptcy code. In particular certain concerns of other academic papers are highlighted and related to the situation of GE and the US airline industry.

Robert Ashcroft[92], an analyst at UBS investment research argues that aircraft lessors, especially GECAS, have substantially altered the US commercial aviation industry and states that airline capacity forecasts should be performed under the assumption that, if GECAS is significantly involved then it would act to protect its interest by preventing the carrier going into Chapter 11 or Liquidation. He claims that renegotiating leases keeps more capacity in the system, ultimately depressing the stocks of the airline industry as a whole. Industry observers argue that GE's aid is actually preventing a fully fledged recovery of the airline industry by keeping weaker carriers such as US airways afloat. They argue that if ailing carriers are not allowed to collapse, the glut of seats would continue the downward push on fares, revenues and stocks. Airline analyst Bill Lauer[93] compares GE to a "drug dealer" who keeps his customers alive only so they will come back for more and argues that GE's presence interferes with the market forces, the Darwinian process which would have resulted in a natural selection, for example against US Airways. Others argue that GE's power as a creditor has fundamentally altered the pattern of industry downturns. In the six months leading to April 2005, GE has intervened three times to keep airlines from liquidating or from filing for Chapter 11 bankruptcy[94], and because of GE's help, no major carrier has gone out of business since the 9/11 attacks. This is despite more than $35 billion in losses for the industry causing a big rise in collective indebtedness as losses accumulate. When this is compared to the late 1980s and early '90s, when major businesses such as Pan Am, Braniff and Eastern all collapsed amid turmoil, it becomes clearer that GE may represent a safety net for carriers today. GE spokesman Eric Jones, in response states[95] that it is necessary to have airline customers to be in business, and in general GE would like to help their clients as it makes sense for GE, thus adding weight to Lauers' view that it is purely GE's self interest that has lead to the situation today. There have been many market participants lobbying against this situation. For example Southwest Airlines in a letter[96] to their

[92] See USA Today posted on 4/5/2005.
[93] See USA Today posted on 20/5/2005
[94] See Pittsburgh Post-Gazette; 19/04/2005
[95] See Economist; Mach 19th 2005
[96] See Southwest Airlines annual report of 2004

shareholders say that such assistance works against "the free enterprise 'law' of supply and demand and by not allowing high-cost carriers to cease operations it enables the continuing sale of ever more seat miles at less than the cost of producing them.

It is estimated that one in twelve jobs in the US is linked to the US airline industry either directly or indirectly - illustrating the critical role of this industry in the US economy. G. Bisignani, the CEO of the International Air Transport Association points out[97] that everyone else in the aviation industry such as airports, component makers, aircraft manufactures, aircraft financiers make money, while most airlines chronically fail to show a steady profit. The 'Economist' of May 2005 reports that GE is not alone in seeking to maintain the ailing airlines on life support, whether in or outside Chapter 11. A $250million loan from Airbus has contributed towards the merger of US Airways and America West, thus allowing both these carriers a life line. Banks with credit cards tied to air miles also have a vested interest, as they do not want their customers to lose their air miles. One industry estimate[98] links 40% of Citigroup's credit-card revenues just to American Airlines' frequent-flyer programme. The magazine also identifies another problem inhibiting the revival of the US airline industry. For consolidation to occur in any industry, at a national or global level, there must usually be at least one strong firm able to expand and take over the business of distressed carriers. For instance, in airlines in the early 1990s, American Airlines and United picked up the lucrative international routes of distressed PanAm and TWA. The 'Economist'[99] claims that no big airline is currently strong enough to expand and successfully acquire the operations of any liquidated carrier and that the industry's outlook is too bleak to attract outside investors to take on the challenge.

Consider some recent discussions of the evolutionary process of the practice of Chapter 11 of the US bankruptcy code. Baird (2005) in his empirical study of the dynamics of large and small Chapter 11 cases show that firm size plays a decisive role in the distribution to the general unsecured creditors where the smaller the business the lower would be the distribution per dollar of debt. However, more importantly, the study states that the whereas criticism of Chapter 11 during the 1980's focused on instances in which old equity holders benefited at the expense of the general creditors or how the reorganization was being run in a manner contrary to the interests of the general creditors, in recent times critiques have emphasized how the control the secured creditors now enjoy in large Chapter 11 cases comes at the

[97] See Economist March19th 2005
[98] See Economist March 19th 2005
[99] See Economist March 19th 2005

expense of general creditors. Baird (2005) claims that in recent years, more than eighty percent of the Chapter 11s of large publicly traded businesses followed one of two patterns. Either the institutional lenders of a financially distressed large business would agree with each other on how to restructure an insolvent business and use the bankruptcy process to wipe out equity holders and quell whatever dissent that might exist among their ranks. Alternatively (or sometimes together), the institutional lenders file a Chapter 11 in order to effect a sale of the assets. The dominant feature here is the large degree of control exercised by the senior institutional lenders, consistent with the claim that there has been a structural change from the days in which the old managers used the system to keep their jobs and protect the old equity.

Perhaps this is substantiated by the fact that in North America, where over half the airline industry is in Chapter 11 bankruptcy protection, the airlines have little difficulty in attracting money. According to Steve Udvar-Hazy, chief executive of ILFC[100], there is an emerging trend for large banks that have traditionally been airline financiers for aircraft and working capital shifting to being debtor-in-possession [DIP] providers, and find it more profitable to lend to distressed carriers. Their loan is secured on the pledge of the remaining assets in the business, therefore the risk is low especially with the comforting knowledge that there is a high probability that the absolute priority rule be respected now. Thus, clearly plenty of money is going into Chapter 11 carriers. CitiGroup and JP Morgan, for instance, are seeking out partners for a $3 billion loan to United Airlines, with GE Capital acting as syndicate agent for the deal which will involve a $2.7 billion loan for six years and a $300 million revolving credit facility. Another important shift in recent times on the part of distribution (under this new regime) is that the Absolute Priority is, for the most part, respected. Equity is usually completely wiped out in large reorganizations. For example Baird's research show that when a business has assets worth more than $5 million, secured creditors currently receive on average 94% of what they are owed, which is a significantly higher recovery rate than it was in the 1980s. His work shows that through the control over post petition financing among other factors, senior creditors are able to control the bankruptcy process in recent years to an extent unimaginable only a decade or so ago[101]. The study states that today it is the senior creditors that sometimes favour the Chapter 11 framework and are the ones who at times resist the market sale and prefer a court supervised restructuring. If they can persuade the bankruptcy judge that the assets are worth less than what they are owed, they may be able to confirm a plan of

[100] See http://www.sigmaraviation.com/index.php?id=11&backPID=7&tt_news=63

[101] see David A. Skeel, Jr., The Past, Present and Future of Debtor-in-Possession Financing, 25 Cardozo L. Rev. 1905 (2004).

reorganization in which they end up with the equity and those junior to them are wiped out. These findings add weight to the proposition discussed in section II, that GE as a senior creditor in most instances exerts a dominating control on the chapter 11 bankruptcy processes.

Datter (2005) argues that when the debtor operates in a capital-intensive business dependent largely upon debt financing, the advantages that the debtor receives over its competitors are magnified. In such businesses, interest payments are a substantial portion of operating expenses. Firms in Chapter 11 benefit from a number of provisions intended to increase the probability that they successfully reorganize. Managers are allowed to retain pre-bankruptcy contracts that are profitable and reject the ones that are not. They are allowed to terminate under-funded pension plans and the government picks up the uncovered pension costs. Generally a firm's obligation to pay interest to most creditors ceases when they file for bankruptcy. With the bankruptcy court's approval firms in bankruptcy may give highest priority to creditors who provide post-bankruptcy loans, even though much of the payoff to these new creditors will come at the expense of pre-bankruptcy creditors. Also, the firm escapes any obligation to pay taxes on debt forgiveness under the reorganization plan until it becomes profitable. While all firms may benefit from such a phenomenon, the benefit is substantially magnified when a firm operates with a highly geared capital structure, and the US airline industry would fit the description quite well because of its extremely high gearing levels that is a prominent feature at least with regards to legacy carriers. He goes on to claim that competitors represent a group that systematically lose when they operate in capital-intensive / highly geared industries when faced with bankruptcy or near bankruptcy of large peer entities. Typically, the filing of a bankruptcy petition by one firm in a capital-intensive/highly geared industry being followed by subsequent filings by other firms in the industry is shown as evidence to illustrate this point. This pattern was seen in the railroad industry in the 19th and early 20th century[102], in the airline industry in the 1980's and early 1990's[103] and again in the telecommunications industry over

[102] Approximately half of all railroads in the U.S. entered an equity receivership between 1890 and the United States' entry into World War I. Stephen J. Lubben, Railroad Receiverships and Modern Bankruptcy Theory, 89 CORNELL L. REV. 1420, 1420 (2004).

[103] More than 120 airlines have gone bankrupt since the Airline Deregulation Act of 1978. Mark C. Mathiesen, Bankruptcy of Airlines: Causes, Complaints and Changes, 61 J.AIR L. & COM. 1017, 1020 (1996).

the past few years[104]. This view of carriers being able to achieve an unwarranted comparative advantage by operating under Chapter 11 can perhaps be justified by the fact that when carriers run into financial problems, especially when filing for bankruptcy, lessors often cut deals to help keep the airlines in business. Joe Leonard, chairman and CEO of AirTran Airways[105] [AAI], contends that the growing use of bankruptcy as a business strategy is skewing the marketplace. Speaking at the Aero Club in Washington, D.C., in late March 2005, he said bankruptcy used to be a measure of last resort but airlines have begun using it almost as a routine part of business planning. Bankruptcy is increasingly seen as a smart and savvy means to duck credit obligations allowing legacy carriers to avoid dealing with marketplace realities according to Leonard. He made the case that while there are significant challenges to enter the airline business, they pale in comparison to the barriers keeping airlines from exiting the business. A key barrier is the motivation of leasing companies to renegotiate contracts with airline clients. Udvar-Hazy the chief executive of ILFC says that Chapter 11 carriers are effectively draining resources from healthy carriers to their less robust peers. He states that a lot of [financial] capacity that should have ideally been used toward the transformation and updating of airline fleets has shifted to DIP (Debtor in Possession) and points to fellow leasing giant GECAS as a prime example. "GECAS has shifted a lot of capital to this type of financing, now it almost seems like over half of their new cash is restructuring financing in the from of Debtor In Possession financing".

Looking at the broader picture of why the industry with a declining real yield would still continue to attract capital, the study examines the financing trends on the industry and identifies the emergence of the lease financing option as an attractive source of funding. The chapter attempts to rationalise the evolution of these financing trends in the US airline industry by investigating the various implications of lease financing, both from a creditor and a debtor standpoint. Furthermore it views this proposition from a legal perspective, and investigates whether the anomalies of the Chapter 11 of the US bankruptcy code would have facilitated the development of a powerful financial intermediary, General Electric (GE), which controls the largest market share[106] in the US aircraft leasing market. In particular the study compares how the anomalies of the Chapter 11, identified by Weiss and Wruck (1998), in their Case study on the Eastern Airlines, may be addressed in the light where a where a powerful single creditor

[104] . "Over 100 telecommunications companies have filed for bankruptcy protection,and an equal number . . . have 'shut shop,' . . . [over the past several years]." Arun S.Subramanian, Note, Assessing the Rights of IRU Holders in Uncertain Times, 103 COLUM.L. REV. 2094, 2094 (2003) (quoting)(Om Malik, Broadbandits: Inside the $750 MillionBillion Telecom Heist, at ix (2003).

[105] See Airline Business report 11/4/2005; http://web.mit.edu/TicketTax/AirlineBusinessReport20050411Excerpt.pdf
[106] In terms of number of aircraft

assumes major influence over whether or when a distressed company goes into liquidation. It then compares the Pre and Post 93 changes in the US airline industry using a broad framework proposed by Meeks and Meeks (2004). The chapter attempts to rationalise the transition using a game theoretic framework and build a complimentary argument through an options based approach. Two developments are identified in the US which could have changed the process of business failure in the airline industry: the evolution of the US bankruptcy code, and the development of a powerful financial intermediary, General Electric (GE), which intervened in cases of financial distress. These interlinked developments are analysed through a case study of GE's aircraft leasing operation, where a single creditor assumes major influence over whether or when a distressed company goes into bankruptcy.

The study shows the major creditor effectively taking over some of the powers associated with the courts under Chapter 11, and suggests that this process may indeed reduce some of the costs of financial distress. However, notions of distributive justice and economic efficiency suggest that the there might be a case for the bankruptcy Code to change and perhaps to embrace more formally the system that has evolved in the presence of the dominating influence of GE. GE in its own right in a capitalist market would act through self interest, which may not necessarily guarantee a favourable outcome to the industry as a whole. Creative destruction can be seen as a necessity to ensure to healthy capitalism if the US airline industry is to have any chance of emerging from its present state. However whether it would be a duty of the bankruptcy courts to regulate and discipline its members is a debatable issue.

The research now revisits the original question which led to the investigation of the link between macro economic factors and the frequency of bankruptcy and the subsequent discussion on GE; to examine whether it was possible to predict financial distress and bankruptcy in this industry and this leads us to the next chapter where a failure prediction model is developed and applied to the US airline industry.

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