An Assessment and Measurement of Risks in the International Airline Industry: A Study of the ICAO Carriers Over the Period, 1990-2013

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A prior study by one of the authors (Gritta, et. al. 2006) published in the Journal of the Transportation Research Forum*, examined the extent of operating, financial, and total leverage facing the major U.S airlines, those carriers with total revenues of $1.0 billion or more. The study found that the vast majority of the carriers were highly leveraged at both the operating and financial levels and that this resulted in highly unstable profitability and increased the dangers of bankruptcy.*

The global airline industry has always been highly cyclical and somewhat fixed-cost driven. Airlines are thus high in what financial analysts refer to as operating leverage. In addition, the many airlines have followed aggressive debt strategies; that is, they have chosen to use large amounts of long-term debt finance to purchase assets. This results in a high degree of financial leverage. In the past, the resulting combined leverage has created severe financial problems for major carriers, both domestically and internationally.

The current study seeks to examine a sample of foreign carriers in order to measure the extent of risks on the international level. In doing so, comparisons will be made to the large U.S. carriers. If possible, the authors will use the same time horizon as in the published paper, although in some cases carriers are too new to have such a history.

INTRODUCTION

The profitability of the global airline industry has always been highly volatile. Periods of high profits have usually been followed by periods of significant losses. The causes of the instability of this industry are manifold; the vulnerability to economic cycles, the price elasticity of demand, the relative high fixed costs of the carriers, the debt burdens taken on by carriers, the periods of both high interest rates and low oil prices (and vice versa), the intense competition in many domestic and international markets, the regulation of carriers, and other variables. Some of these variables are inherent in the nature of the business itself, while others are the direct result of carrier management decision making. All industries face three levels of risk. They are business risk, financial risk, and total or combined risk. Business risk is caused by the cyclical nature of demand, the presence of fixed costs, the degree of competition faced by competing firms in the industry, and government regulation. Financial risk has but one cause-interest on debt. Combined risk, it will be shown in this paper, is the multiplicative (not additive) interaction of both business and financial risks.

The purpose of this paper is to define and measure these risks quantitatively and demonstrate the causes of this inherent volatility. The period covered in this study is 1990-2013. The sample includes 37 carriers that are members of International Civil Aviation Organization (ICAO) and for which complete data were available for the entire period. The methodology utilized is that ingrained in leading finance textbooks and in the finance literature (for example; Moyer, et. al 2014). It is the same as that used to document the instability of the U.S. airline industry in earlier domestic carrier studies (Gritta et. al 1998; Gritta et. al 2006).

The first section of the paper will define the risks facing all carriers. The second will derive statistical measures to gauge these risks over time. The third will apply these measures to the sample

of ICAO carriers. The conclusion of the paper will then outline the implications for air carrier management.

DEFINING INDUSTRY RISKS

All firms, regardless of industry type, face three types of risk. These three risks are commonly identified in financial theory as business risk, financial risk, and combined risk. (for example, Moyer, et al. 2014). Business risk can be defined as the variability in a firm's operating profit, often referred to as earnings before interest and taxes (EBIT), over time. It is attributable to the inherent nature of the firm's operations and the environment within which it operates. This type of risk is driven primarily by the firm's cost structure, product demand characteristics, and intra-industry competitive position. Some companies may face high business risk solely because of external, and therefore largely uncontrollable, factors such as high-fixed costs, the cyclical nature of its business, government regulation, and intense competition. However, high business risk can also be the result of poor cost controls, low productivity, or pricing practices that dilute revenues. The airline industry is high in business risk on virtually all these factors.[1]

Financial risk is generally defined as the added variability in earnings available to a firm's common shareholders due to the use of long-term debt to finance the acquisition of assets. It often represents the increased probability of insolvency that comes with excessive debt finance because interest on debt must be paid (unlike common stock dividends, which are paid at management's discretion). High financial risk may indicate that high interest charges are overwhelming a business enterprise, forcing it in some cases to seek court protection. Unlike business risk, financial risk is not primarily the product of the environment within which a company operates, but rather it results directly from a firm's conscious decision to use financial leverage (i.e., long-term debt or preferred stock) over time instead of issuing common stock to raise funds.

Combined (or total) risk, as the name suggests, refers to the risk that results from the interaction of both operating and financial risk. It is important to note that the interaction of the two risk types has a multiplicative, rather than an additive, effect. The impact of the combined effect can be extremely powerful, as will be evident from the discussion and statistical analysis that follows.

MEASURING RISK

One of the principal measures of a firm's business risk is its degree of operating leverage (DOL). (Moyer et al. 2014) Operating leverage generally refers to the firm's incurrence of fixed operating costs, i.e., costs which do not vary as output changes. As a general rule, high fixed costs create higher and more unstable DOLs.[2]

As an elasticity measure borrowed from microeconomic theory, DOL actually measures the responsiveness of operating profits (often referred to as EBIT, or earnings before interest and taxes) to changes in operating revenue. (Moyer et al. 2014). That is, it directly measures the X% change in operating profits that would be induced by a 1% change in operating revenues. As an elasticity measure, DOL can be defined as the percentage change in operating profits (OP or EBIT) divided by percentage change in operating revenues (OR). Operating revenues can be defined as price per unit of output *times* output (pq) and variable costs (V) equal variable cost per unit times output (vq), or q(p-v). Since fixed costs are fixed by definition, if the values of p and v remain relatively constant, the only change in OP is the change in quantity times the difference between the price and variable cost per unit (i.e., Δq[p-v]). DOL can then be derived as,

$$(1)\ \text{DOL} = \frac{\%\Delta OP}{\%\Delta OR} = \frac{\frac{\Delta q(p-v)}{q(p-v)-F}}{\frac{\Delta qp}{qp}} = \frac{\Delta q(p-v)}{q(p-v)-F} x \frac{q}{\Delta q} = \frac{q(p-v)}{q(p-v)-F} = \frac{R-V}{R-V-F}$$

where R (pq) is operating revenue and V (vq) and F are variable and fixed costs (respectively).

The sign and the magnitude of DOL are both important indicators of risk. For example, consider a situation in which a firm's operating revenues (R) are $500, its variable costs (V) are $100, and its fixed costs (F) are $150. In this case

$$(2)\quad \text{DOL} = \frac{500 - 100}{500 - 100 - 150} = +1.6$$

Since revenues (R) exceed the sum of variable plus fixed costs (V+F) here, the firm is above its operating breakeven point and DOL is positive. The positive DOL indicates that as R increases, operating profits will increase (and vice versa). In this case, a 1% increase in revenues will produce a 1.6% increase in operating profits; a 1% decrease in revenues will produce a 1.6% decrease in operating profits. In general, when R exceeds the sum of (V+F), DOL will take on a value between +1 and $+\infty$. The relatively small positive value for DOL indicates a relatively low business risk (i.e., low variability in operating profit), since changes in revenue will induce relatively small changes in operating profits. In contrast, had fixed costs (F) been higher relative to (R-V), say $350 rather than $150, DOL would increase (to +8.0), indicating a significantly higher level of business risk. If the firm has no fixed costs; that is, if F = 0, that firm has no operating leverage. Thus business risk would be low and DOL would equal +1.0.

Should costs (V + F) exceed operating revenues, operating profit would be negative and the picture changes. Suppose, for example, that: R=$500, V= $400 and F=$110. Here the firm is below its operating breakeven and

$$(3)\quad \text{DOL} = \frac{500 - 400}{500 - 400 - 110} = -10$$

The implication here is that a 1% change in operating revenues will induce a 10% change in operating profits or, more accurately, in operating losses. The negative sign indicates that when revenues *increase*, operating *losses* will decrease (and vice versa). The relatively large absolute value for DOL implies a relatively high degree of variability in operating profits (losses), which can be dangerous since the firm is operating below its breakeven point. However, such large negative values can actually be interpreted as less serious than very low negative numbers, since large absolute values indicate that current losses are relatively small and that a small increase in operating revenues can be expected to cut deeply into operating losses. Had fixed costs (F) been larger relative to (R - V), say $600 rather than $110, DOL would have remained negative—again indicating an operating loss—but its absolute value would have been substantially smaller. (In this case, DOL would have been -.2.) This smaller absolute value would be especially alarming since (1) it reflects the large size of current operating losses, and (2) it implies that positive changes in operating revenues will have only a minimal effect on reducing those losses. Negative DOL values will be between 0 and $-\infty$.

Although fixed costs are generally seen as the key to determining the value of DOL, inefficient management policies affecting variable costs or gross revenues can also contribute to high business risk. In the airline industry, for example, factors such as poor cost controls or inefficiencies in a carrier's route structure can produce unfavorable DOLs. Reduced revenues caused by aggressive fare wars may have a similar effect.

A firm's financial risk can be measured by its degree of financial leverage (DFL). This interest (I) driven measure reflects the responsiveness of net profit (NP) to changes in operating profit. The lever here is interest on debt, which is a fixed charge. More specifically, DFL measures the percentage change in net profit (NP) given a percentage change in EBIT or:

$$(4)\quad \text{DFL} = \frac{\%\Delta NP}{\%\Delta EBIT} = \frac{\dfrac{\Delta NP}{NP}}{\dfrac{\Delta EBIT}{EBIT}}$$

Since NP=R-V-F-I and EBIT (OP) = R-V-F, this means that

$$(5)\quad \text{DFL} = \frac{\frac{\Delta(R-V)}{R-V-F-I}}{\frac{\Delta(R-V)}{R-V-F}} = \frac{R-V-F}{R-V-F-I} = \frac{\text{Operating Profit}}{\text{Operating Profit} - \text{I}}$$

In this latter form, the roles of both F and I can readily be seen. Like DOL, DFL is an elasticity measure, here measuring the X% change in net profit (R-V-F-I) that would be produced by a 1% change in operating profits. It is usually assumed that tax rates are relatively constant, so that net profits before and after taxes will vary in unison. As in the case of DOL, both the sign and the magnitude of DFL are significant. To illustrate, suppose operating profit is $90, since R-V-F is 500-400-10. If interest is $10, then

$$(6)\quad \text{DFL} = \frac{90}{90-10} = +1.125$$

This indicates that a 1% change in operating profit will produce a 1.125% change in net profit. The positive sign reflects the fact that the firm is above its financial breakeven (i.e., operating profits exceed interest). It also indicates that when operating profits increase, net profits will increase; when operating profits decrease, net profits will decrease. The relatively small value of DFL here means that (1) net profit is relatively large (relative to operating profit) and (2) variability in net profit (i.e., risk) is relatively small.

Had interest been higher, the positive value of DFL would increase (so long as interest did not exceed operating profit). For example, if interest (I) were $88, DFL would equal +45. A 1% change in operating profits here would produce a 45% change in net profit. The firm would still be operating above financial breakeven (hence the plus sign), but there would be significant variability (risk) in net profits. For positive DFLs, values will range from +1 (when the firm is debt-free, i.e., when I= 0) to $+\infty$ (when interest = operating profit).

When interest exceeds operating profit, the firm is showing a net loss and DFL is negative. This negative DFL means that an increase in operating profit will lead to a *decrease* in the firm's net loss and vice versa. As in the case of negative DOLs, small absolute values for negative DFLs are especially serious since they indicate (1) large net losses for the firm, and (2) a lack of net loss responsiveness to improvements in operating profits. Negative DFL values will range from $-\infty$ to 0. It should also be noted that if operating profits are negative, DFL will be reported as negative irrespective of the value of I.

A firm's combined (or total) risk—the product of its business and financial risks—can be measured by its degree of combined leverage (DCL). The multiplicative effect of business and financial risks in the calculation of DCL means that the core causes of risk—interest and fixed costs—magnify total risk to a degree that exceeds their simple sum. Similar to the effect of levers in physics, it is as though one lever (interest) is magnifying what another lever (fixed costs) has already magnified. Specifically,

$$(7)\quad \text{DCL} = \text{DOL} \times \text{DFL}$$

$$\text{DCL} = \frac{\text{R} - \text{V}}{\text{R} - \text{V} - \text{F}} x \frac{\text{R} - \text{V} - \text{F}}{\text{R} - \text{V} - \text{F} - \text{I}} = \frac{\text{R} - \text{V}}{\text{R} - \text{V} - \text{F} - \text{I}}$$

As defined here, DCL measures the X% change in net profit that would be produced by a 1% change in operating revenues.

If revenue (R) is greater than total costs (V+F+I), the firm is operating above its total breakeven point and DCL will be positive. In such a case, smaller DCL values indicate relatively low combined risk since fixed costs and interest would be relatively low when compared to revenue. In the extreme, if DCL is +1, combined risk is minimal since fixed costs and interest would necessarily be 0.

When total costs (V + F + I) exceed revenue, the firm is operating *below* its combined breakeven point and DCL will be negative. Low absolute values for DCL are especially alarming here since they indicate that (1) losses are large and, (2) responsiveness to improvements in revenue will be sluggish. Insolvency is more likely and the firm has a long way to go to restore profitability (Gritta et al. 2006). If either DOL is negative or DFL is negative, or if *both* DOL and DFL are negative, DCL will be reported as negative. It is the absolute value that is important for reasons that will be explained shortly.

Critically, the multiplicative interaction that produces combined risk highlights the danger of employing debt finance when a company faces a high-risk DOL. To illustrate, assume two companies face the same large positive DOL, meaning that a very small decline in revenue can precipitate a very large decrease in net profits. In this case, assume DOL for both companies is +10. Company A, perceiving the business risk it faces and wary of any downturn in the economy, decides to use no debt in its capital structure, and thus has a DFL of +1. Its resulting DCL is 10 x 1 = +10. Company B, on the other hand, chooses to ignore the incremental risk associated with debt financing and, as the result of interest on its debt, faces a DFL of +4. DCL for this firm is a far more dangerous +40 (10 x 4). Should the industry experience a slowdown in activity or face a recession, Company B is clearly more seriously exposed. A 5% reduction in revenue will cause a 50% reduction in Company A's net profits (5% x 10), a serious enough drop, but B's net profits will plummet by 200% (5% x40).

The situation is even worse in cases where DCL values are negative with small absolute values, especially where such conditions persist over a long period of time. (As suggested earlier, this is because the base of losses is so large that the financial solvency of the enterprise in the long run is severely threatened.)

Because of the multiplicative effect of business and financial risks, most companies and industries try to balance risk. That is, a company high in business risk will tend to avoid significant long-term debt finance. A company low in business risk will be more likely to use debt finance since it will tend not to threaten the firm's basic stability.[3]

AIR CARRIER RISK ANALYSIS

Values for the leverage measures described in the previous section were calculated for the entire sample of the 37 ICAO airlines for which adequate data were available. Table 1 shows the ICAO carriers in the sample.

Table 1: Carriers in the Study

Aero Mexico	AMX	Korean Air	KAL
Air Canada	ACA	Lan Chile	LAN
Air Europa	ARA	LOT	LOT
Air France	AFR	Lufthansa	DLH
Air India	AIC	Malaysian	MAS
Air Nostrum	ANE	Monarch Airlines	MON
All Nippon Airways	ANA	Oman Air	OMA
Avianca	AVA	Philippine Airlines	PAL
British Airways	BAW	Pakistani International Air	PIA
Cathay Pacific	CPA	Royal Jordanian	RJA
Czech Airlines	CSA	Scandinavian Airlines	SAS
EasyJet	EZY	Singapore Airlines	SIA
El Al	ELY	Spanair	JKK
Ethiopian	ETH	SriLankan	ALK
Flybe British European	BEE	TAP Air Portugal	TAP
Iberia	IBE	Thai Airways	THA
Iran Air	IRA	Turkish Airlines	THY
Jet2	EXS	Virgin Atlantic	VIR
Kenya Airways	KQA		

The detailed results for all the carriers are summarized in Table 2. In the computation of these values, variable costs (V) are defined as the sum of flying operations, maintenance, passenger service, and air traffic costs. Fixed costs (F) are the summation of promotion and sales expenses, general and administrative costs, depreciation and amortization expenses, and various transportation related costs.[4] The Appendix to the paper shows the actual figures for each carrier for the years 1990-2000 and 2001-2013.

As can be seen from the table, many of the carriers had negative combined leverage (DCLs) for the study time horizon. On the excessive leverage side, Aero Mexico, Air Canada, Air India, Air Nostrun, Iberia, and Jet2 really stand out, and several of these carriers have had severe problems. To some extent, this analysis understates the situation since there were missing data for a few years for some of the carriers. Only a few airlines had moderate levels of risk; Kenya Airways, Ethiopian, and Thai Airways are examples. The difficult and volatile financial situation faced by the majority of the carriers is clearly evident. While the carriers' negative DOLs were certainly an important part of the problem, the biggest factor was the large number of carriers having negative DFLs during the 23-year time horizon.

The volatile nature of the industry is also apparent in some of the dramatic extremes shown in the Appendix. Such extraordinarily large positive values are typically produced when the base of profits is so small that a relatively small *absolute* change in value represents a very large *percentage* change. The tables in the Appendix also show a large number of cases in which negative levels of DFL are alarmingly small (in absolute value)—an indication that these carriers have followed financial strategies which are inappropriate in an industry characterized by high business risk. (As already discussed, very small negative values often result when the base of losses is so large that a significant absolute increase in revenue or profits has little effect in *percentage* terms.) While many of the carriers are subsidized by their governments, the record is still appalling.[5] [6]

Table 2: Number of Years with Negative Leverage, 1990-2013

CARRIER	DOL	DFL	DCL	CARRIER	DOL	DFL	DCL
AMX	12	18	18	LOT	12	15	15
ACA	9	17	17	LDH	9	15	15
AIC	13	16	16	MAS	11	12	12
ANE	6	17	17	MON	3	6	6
ANA	4	11	11	OMA	8	10	10
AVA	8	14	14	PAL	8	9	9
BAW	3	6	6	PIA	8	11	11
CPA	2	6	6	RJA	3	5	5
CSA	5	11	11	SAS	8	10	10
EZY	0	7	7	SIA	1	14	14
ELY	5	9	9	JKK	7	7	7
ETH	2	3	3	ALK	11	14	14
BEE	10	11	11	TAP	10	13	13
IBE	10	15	15	THA	0	0	0
IRA	8	8	8	THY	11	17	17
EXS	3	18	18	VIR	6	8	8
KQA	0	0	0	Source: Cumulated from tables in the Appendix.			
KAL	2	9	9				
LAN	0	3	3				

The penalty of these financing patters is detailed in Table 3. The table shows the ROA (the return on assets), ROE (the return on equity), and the standard deviations around the ROA and ROE for a subset of the IOCA carriers.

Table 3: Return Characteristics: Reduced Sample (2002-2013)

	YR	ROA AVG	ROA SD	ROA MED	ROE AVG	ROE SD	ROE MED	NDOL (%)	NDFL (%)	NDCL (%)
AEA	11	0.0589	0.0548	0.0615	-0.0220	1.0347	0.3350	18.18	18.18	18.18
AFR	9	0.0043	0.0312	0.0089	-0.0622	0.4273	0.0428	33.33	33.33	33.33
ANE	11	-0.0210	0.1343	0.0063	-0.2110	1.0050	0.1653	45.45	36.36	45.45
ANA	11	0.0239	0.0271	0.0323	0.0211	0.0812	0.0526	27.27	27.27	27.27
BAW	11	0.0317	0.0273	0.0370	0.0538	0.1947	0.1119	18.18	18.18	18.18
CPA	10	0.0146	0.0341	0.0209	0.0567	0.1027	0.0915	20.00	30.00	30.00
CSA	12	-0.0494	0.1282	0.0090	-3.2622	10.6174	-0.0361	41.67	58.33	66.67
EZY	12	0.0600	0.0377	0.0560	0.1213	0.1428	0.0688	0.00	0.00	0.00
BEE	11	-0.0141	0.0567	-0.0127	-0.5882	2.2708	0.0412	63.64	72.73	72.73
EXS	12	0.0275	0.0571	0.0306	-0.0014	0.8628	0.1891	16.67	16.67	16.67
DLH	12	0.0053	0.0133	0.0043	0.0668	0.1561	0.1032	33.33	75.00	75.00
MAS	11	-0.0376	0.0899	-0.0117	-0.1458	0.7572	0.0559	54.55	54.55	63.64
MON	11	-0.0128	0.0663	0.0121	-0.0997	0.4068	0.0453	36.36	27.27	36.36
OMA	10	-0.0604	0.0879	-0.0178	-0.5514	0.8301	-0.1185	60.00	80.00	80.00
PAL	9	0.0203	0.0464	0.0450	-0.5484	1.9440	0.1039	33.33	33.33	33.33
RJA	9	0.0100	0.0871	0.0261	-0.1904	0.7831	0.1284	33.33	33.33	33.33
SAS	10	-0.0019	0.0462	-0.0113	-0.0334	0.1065	-0.0446	60.00	70.00	70.00
SIA	11	0.0263	0.0209	0.0313	0.1521	0.1964	0.0919	9.09	9.09	9.09
VIR	11	-0.0065	0.0530	0.0119	-0.1957	1.1603	0.1244	27.27	18.18	27.27

Note that in too many cases, the average ROAs and ROEs are exceeded by the standard deviations around those returns. Finally, Table 4 shows the frequent inverse correlations that have existed between ROAs and ROEs and the standard deviations around those means.

Table 4: Correlation Analysis: Reduced Sample (2002-2013)

	ROA AVG	ROA SD	ROA MED	ROE AVG	ROE SD	ROE MED	NDOL	NDFL	NDCL
ROA AVG	1								
ROA SD	-0.6479	1							
ROA MED	0.8649	-0.3473	1						
ROE AVG	0.5409	-0.6009 (.0065)	0.2127	1					
ROE SD	-0.4413	0.5698	-0.1199	-0.9868	1				
ROE MED	0.6591	-0.1323	0.6589	0.3715	-0.2453	1			
NDOL	-0.8050 (.0000)	0.4855	-0.8618 (.0000)	-0.3101	0.2148	-0.5441 (.0160)	1		
NDFL	-0.7257 (.0004)	0.2807	-0.8174 (.0000)	-0.3540	0.2600	-0.5844 (.0086)	0.8744	1	
NDCL	-0.8039 (.0000)	0.3828	-0.8569 (.0000)	-0.4088 (.0822)	0.3174	-0.5829 (.0088)	0.9027	0.9862	1

Carriers generally recognized to be financially troubled do stand out. In general, the data suggest an alarming pattern of reliance on debt finance in the face of significant business risk. The leverage situation is not unlike evidenced in the U.S. airline industry during roughly the same period (Gritta et al. 1998 and Gritta et al. 2006).

CONCLUSION

This paper has defined airline industry risks and quantitatively measured the degrees of operating, financial, and total leverage facing major ICAO carriers, using elasticity measures borrowed from microeconomics. The findings of this research are quite revealing. The international airline industry has long been noted as one high in business risk with a variability in operating profits over time. The result of the analysis confirmed this observation. The study also, however, detailed the extremely high financial leverage persistent in the industry. It was argued that firms facing high business risk should moderate their exposure to financial risk (by employing relatively low levels of financial leverage). The majority of the carriers did not and the penalty for that strategy was confirmed in the high volatility documented in Tables 2, 3, 4, and in the Appendix.

Given the data presented, it seems clear that the long-term operating and financial performance of the international industry airline industry has been poor. Historically high-risk levels, as measured by the DOL, DFL, and DCL indicators, and chronically low rates of return, bode ill for an industry that has had more than its share of obstacles to overcome during the past three decades. Largely closed off to debt financing because of already worrisome leverage positions, and offering little in the way of reward to potential investors, some of the carriers may have to turn to selling assets, trading labor concessions for equity, finding new partners with whom to share the risk, or even merging with one another, if they are to survive the next 20 years.

One last question in this analysis remains. Has the situation facing/faced by the airlines been different from other industries, or is the situation fairly common across many different industries? While this paper's purpose is not to explore the research internationally, there is an answer in the case of the domestic U. S. airlines. Research has shown that the domestic airline industry has been unique (Gritta et al. 2005). In a sample of 35 different industrial groups, the U.S. domestic carriers ranked not only first in business risk and also first in financial risk, resulting in very high levels of total or combined risk. Furthermore, almost all of the industrial groups balanced risk (that is, those high in business risk, employed low levels of debt, and vice versa), thus conforming to the sound principle of finance that dictates that firms high in business risk should/must take on less financial risk (Moyer et al. 2014). The failure to balance risk has greatly increased the risk of financial stress/bankruptcy (Gritta et al. 2006). The lesson in the United States is conclusive evidence of this. The list of major U.S. airlines filing under the U.S. bankruptcy codes since deregulation in 1982 includes American, Continental, Delta, Northwest, TWA, United, as well as former major carriers such as Braniff, Eastern, National, PanAm, and Western, which have ceased operations or been merged to forestall the inevitable. History does provide strong support for the above mentioned sound principle of finance.

Endnotes

1. Frederick (1961) and Caves (1962) were the first airline writers/economists to discuss carrier cost structure and its effect on business risk. Dogainis (Dogainis 2002) provides a more recent and excellent discussion of airline operating cost structures and their effects on operating profit instability. Bijan Vasigh (Bijan Vasigh et al. 2010) also discusses the extremely cyclicality of carrier profits and discusses some of the measures utilized in this paper.

2. Brigham (Brigham et al. 1993) has noted that airlines must invest heavily in fixed assets, which results in high DOLs, other things being equal. As noted, this is a situation that lies largely outside of management's control.

3. The need to balance business and financial risk is a principle advanced in virtually all finance textbooks. See, for example, Moyer (2014), Brigham and Gapenski (1993), and Bijan (Bijan et al. 2010). Gritta et al. (2005) found this to be true in an empirical study contrasting levels of business, financial, and total risk in the airline industry with risk levels in other industries.

4. The accounts used are the standard account lines presented in the publication, ICAO. One further point must be noted here: To the extent that some airline variable costs, such as fuel, are "sticky" or "constant" in the economic lexicon (or, as accountants would say, they are step-variable in nature), the analysis of the DOL presented in this paper actually *understates* the true level of risk in the airline industry. Caves (1962), a prominent airline economist, argued that to a large extent, costs which might appear to be structurally quite variable, may be in fact far less so in the airline industry. As traffic declines, classical variable costs, such as fuel, cannot be cut immediately in response. Hence, they behave in a sticky manner, increasing operating leverage. The accounts used are the standard account lines presented in the publication, ICAO.

5. As described earlier, the most severe conditions a carrier can face are (1) small negative DOLs, DFLs, and DCLs, the latter being the most severe; and (2) volatile DOLs, DFLs, and DCLs over time. There are several reasons for this. First, very small negative DCLs indicate considerable financial distress since net profits (EBIT-I) are strongly negative and the carrier could default on loan payments (interest, principal, and lease obligations. Several bankruptcy studies (Gritta, et al. 2006) clearly demonstrate the effect of excess leverage on U.S. carrier solvency, one quite early on in the pre-deregulation era. Second, volatility (extreme variability) is abhorrent to stockholders and other investors, unless compensated by commensurably higher rates of return. Investors, ex-post, must perceive that they will be rewarded for assuming risk. Ex-ante, their expectations may not be fulfilled.

6. As noted earlier, if either DOL or DFL is negative, then DCL must also be negative since DCL is the product of the two values. Less obviously, should *both* DOL and DFL be negative, DCL will also be reported as negative. In every case, the absolute values of DOL and DFL that are multiplied, with the sign applied appropriately to the resulting product.

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Table 5: DOL, DFL, DCL (2013-2002)

		2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
AMX	DOL	NA	11.64	5.74	5.13	-4.56	-2.97	-2.67	-7.83	53.71	94.40	-6.08	-11.67
	DFL	NA	-2.16	1.86	1.76	-0.59	-0.70	-0.75	-0.81	3.06	3.39	-0.84	0.86
	DCL	NA	-25.18	10.67	9.02	-2.70	-2.08	-2.02	-6.30	164.17	319.61	-5.13	-10.06
ACA	DOL	NA	NA	23.56	14.97	-9.42	116.02	7.37	30.59	11.95	-52.10	-3.39	-11.90
	DFL	NA	NA	-1.57	-4.04	-0.50	-0.18	1.20	0.81	0.64	-0.10	-0.68	-0.76
	DCL	NA	NA	-37.03	-60.50	-4.67	-20.86	8.88	24.81	7.60	-5.15	-2.31	-9.07
AEA	DOL	5.74	-234.04	-61.72	9.79	13.72	379.47	14.05	71.53	68.29	12.01	19.32	30.32
	DFL	1.36	-4.61	-1.71	0.93	0.91	0.17	1.17	1.22	15.66	0.93	0.58	0.47
	DCL	7.80	-1078.96	-105.79	9.11	12.51	64.13	16.39	87.41	1069.32	11.11	11.11	14.33
AFR	DOL	NA	NA	-8.87	-16.25	-3.65	-24.40	9.16	8.33	14.18	88.70	42.33	29.72
	DFL	NA	NA	-1.25	-0.44	-0.77	-0.23	0.97	0.96	0.46	0.65	1.06	1.44
	DCL	NA	NA	-11.07	-7.19	-2.82	-5.63	8.90	7.98	6.47	57.85	44.79	42.74
AIC	DOL	-1.70	-1.20	NA	-1.21	NA	-0.56	-2.15	-1.68	-7.44	-16.43	-22.48	-12.12
	DFL	0.44	0.49	NA	-0.53	NA	-0.76	-0.79	-0.84	-0.83	-0.84	-0.74	-0.72
	DCL	-0.75	-0.59	NA	-0.65	NA	-0.43	-1.69	-1.40	-6.15	-13.86	-16.73	-8.70
ANE	DOL	-3.04	-2.38	-4.02	-520.35	-7.22	89.20	12.69	NA	9.13	8.05	4.79	3.74
	DFL	-0.89	-0.93	-0.90	-0.60	1.03	0.55	0.92	NA	1.09	1.22	1.59	1.04
	DCL	-2.70	-2.21	-3.62	-313.90	-7.42	49.06	11.61	NA	9.93	9.84	7.62	3.89
ANA	DOL	34.70	5.31	5.63	7.94	-5.83	-645.22	8.12	7.77	7.51	7.86	15.89	-49.55
	DFL	0.99	1.23	1.27	1.45	-0.78	-0.05	1.22	1.21	1.30	1.32	2.99	-0.32
	DCL	34.48	6.55	7.15	11.54	-4.53	-30.94	9.95	9.38	9.72	10.34	47.47	-16.04
AVA	DOL	NA	NA	NA	NA	22.54	11.53	2.81	NA	NA	NA	-3.71	-2.41
	DFL	NA	NA	NA	NA	1.82	0.96	0.85	NA	NA	NA	-0.98	-0.93
	DCL	NA	NA	NA	NA	40.94	11.12	2.40	NA	NA	NA	-3.65	-2.24
BAW	DOL	4.99	9.78	4.49	NA	-8.64	-14.41	3.74	5.58	4.60	5.63	7.04	10.20
	DFL	2.32	0.84	1.30	NA	-0.41	-0.37	1.28	1.23	1.40	1.57	1.78	8.59
	DCL	11.61	8.24	5.83	NA	-3.51	-5.34	4.80	6.85	6.45	8.82	12.52	87.62
CPA	DOL	9.29	-314.10	9.31	NA	NA	-0.90	4.60	5.75	6.63	4.15	19.28	4.30
	DFL	1.66	-0.06	1.42	NA	NA	-0.91	1.12	1.12	1.20	1.19	-13.07	1.24
	DCL	15.41	-19.76	13.26	NA	NA	-0.82	5.16	6.44	7.97	4.92	-252.00	5.34
CSA	DOL	-4.19	-9.42	-2.59	63.82	-1.23	27.80	34.44	48.32	-61.36	7.78	9.15	5.09
	DFL	1.00	-0.89	-0.95	17.57	-0.96	-27.61	-2.97	-2.00	-0.40	1.18	1.47	1.63
	DCL	-4.19	-8.43	-2.47	1120.95	-1.18	-767.34	-102.28	-96.58	-24.50	9.15	13.47	8.29
EZY	DOL	2.60	4.17	2.74	1.56	8.67	4.47	3.01	3.78	7.14	6.92	6.78	3.27
	DFL	1.06	1.20	1.08	1.05	1.10	1.17	0.85	0.90	0.72	0.81	1.00	0.95
	DCL	2.76	4.99	2.98	1.63	9.52	5.24	2.55	3.41	5.12	5.62	6.78	3.12
ELY	DOL	19.11	97.82	NA	7.84	-7.07	-62.95	NA	NA	7.35	10.13	18.45	23.93
	DFL	1.80	-0.67	NA	1.25	-0.77	-0.21	NA	NA	1.37	1.37	5.84	-3.04
	DCL	34.37	-65.18	NA	9.79	-5.46	-13.32	NA	NA	10.04	13.89	107.85	-72.81

Table 5: continued

ETH	DOL	NA	6.29	20.69	NA	NA	NA	12.32	8.49	5.00	6.00	10.09	9.21
	DFL	NA	1.50	3.71	NA	NA	NA	5.36	2.88	1.29	1.21	1.37	1.55
	DCL	NA	9.42	76.80	NA	NA	NA	66.07	24.41	6.47	7.23	13.85	14.31
BEE	DOL	-28.29	-6.91	-43.03	-82.96	19.13	-13.56	22.88	23.55	-308.81	7.69	-3.74	69.78
	DFL	-2766.50	-0.93	-0.65	-0.51	1.76	-0.72	1.94	1.00	-0.07	1.41	-0.92	-2.46
	DCL	-78263.00	-6.46	-27.84	-42.67	33.72	-9.81	44.28	23.55	-21.60	10.80	-3.42	-171.86
IBE	DOL	-8.84	NA	-21.19	-66.40	-4.01	-645.82	9.30	17.57	29.48	13.33	17.57	11.01
	DFL	-0.96	NA	-1.20	-0.97	1.01	0.05	0.65	0.90	0.89	0.90	0.92	1.11
	DCL	-8.51	NA	-25.34	-64.17	-4.05	-33.00	6.06	15.90	26.28	12.00	16.18	12.22
IRA	DOL	NA	NA	NA	NA	-1.76	-3.55	-6.15	-5.33	-4.51	-32.36	NA	-1.73
	DFL	NA	NA	NA	NA	-0.97	-0.98	-0.94	-0.92	-0.93	-0.73	NA	-0.98
	DCL	NA	NA	NA	NA	-1.70	-3.48	-5.77	-4.90	-4.17	-23.54	NA	-1.69
EXS	DOL	7.04	7.78	9.70	6.64	8.17	4.22	-3.41	-5583.80	19.52	6.77	24.92	37.76
	DFL	1.27	0.93	0.95	0.98	0.98	0.91	-1.27	-0.0029	0.50	0.82	0.69	0.63
	DCL	8.91	7.27	9.26	6.52	8.00	3.86	-4.34	-16.11	9.81	5.52	17.20	23.69
KQA	DOL	NA	NA	NA	NA	16.49	NA	4.21	3.59	3.41	3.27	5.96	16.41
	DFL	NA	NA	NA	NA	5.19	NA	1.34	1.27	1.16	1.13	1.24	1.94
	DCL	NA	NA	NA	NA	85.65	NA	5.64	4.57	3.96	3.70	7.36	31.83
KAL	DOL	NA	NA	NA	4.49	28.99	-39.53	6.69	7.66	NA	9.82	11.37	12.49
	DFL	NA	NA	NA	1.91	-0.35	-0.17	3.01	5.54	NA	0.49	-3.47	3.26
	DCL	NA	NA	NA	8.58	-10.13	-6.70	20.12	42.41	NA	4.84	-39.44	40.74
LAN	DOL	NA	9.10	5.17	3.92	NA	NA	NA	NA	10.22	7.44	9.32	15.17
	DFL	NA	1.93	1.37	1.32	NA	NA	NA	NA	1.42	1.26	1.54	2.83
	DCL	NA	17.56	7.10	5.16	NA	NA	NA	NA	14.48	9.40	14.32	42.89
LOT	DOL	NA	-8.84	-5.77	-6.25	NA	NA	19.80	-29.89	14.60	-63.50	269.87	-24.39
	DFL	NA	-0.57	-0.66	-0.85	NA	NA	1.00	-0.35	1.71	-0.22	1.00	-0.43
	DCL	NA	-5.03	-3.81	-5.29	NA	NA	19.80	-10.42	24.89	-13.77	269.87	-10.43
DLH	DOL	40.64	-11.70	-29.70	36.48	-11.38	23.18	9.43	13.50	103.51	41.99	-191.28	10.62
	DFL	-0.62	-0.55	-0.35	-0.64	-0.56	-24.52	1.49	3.25	-0.27	-0.67	-0.07	58.84
	DCL	-25.09	-6.45	-10.51	-23.51	-6.33	-568.15	14.07	43.81	-27.83	-28.04	-13.20	624.88
MAS	DOL	-6.62	NA	-1.24	35.74	-7.01	16.23	8.68	-11.47	-1.73	16.80	24.19	-54.77
	DFL	0.63	NA	-0.93	-4.23	-0.85	1.29	1.09	-0.89	-1.00	1.0004	1.00	-1.00
	DCL	-4.18	NA	-1.15	-151.08	-5.96	20.88	9.42	-10.17	-1.73	16.80	24.19	-54.77
MON	DOL	41.18	-3.90	-1.91	-122.67	-8.19	79.69	14.96	7.46	14.90	22.65	8.18	NA
	DFL	1.81	1.00	-0.93	-0.27	-0.86	60.76	2.92	1.55	3.14	1.87	1.16	NA
	DCL	74.40	-3.90	-1.79	-33.20	-7.01	4841.99	43.65	11.57	46.73	42.44	9.51	NA
OMA	DOL	-1.09	-1.29	-0.83	-1.20	NA	NA	15.09	12.09	95.57	90.22	-21.92	-13.90
	DFL	-0.91	-0.89	-0.90	-0.88	NA	NA	2.00	2.04	-0.18	-0.29	-0.52	-0.72
	DCL	-1.00	-1.15	-0.75	-1.05	NA	NA	30.20	24.69	-16.82	-26.04	-11.44	-10.06

Table 5: continued

PAL	DOL	NA	-9.24	-8.54	10.98	-13.74	NA	11.22	NA	9.61	6.92	8.59	7.10
	DFL	NA	-0.69	-0.76	1.67	-0.54	NA	5.14	NA	4.55	2.34	8.07	8.14
	DCL	NA	-6.41	-6.45	18.32	-7.42	NA	57.70	NA	43.75	16.17	69.35	57.80
PIA	DOL	NA	NA	NA	NA	12.92	-2.71	-3.59	-1.55	-5.80	10.62	3.89	3.04
	DFL	NA	NA	NA	NA	-0.44	-0.48	-1.00	-0.64	-0.52	-6.77	1.92	1.63
	DCL	NA	NA	NA	NA	-5.73	-1.29	-3.59	-1.00	-3.01	-71.86	7.46	4.96
RJA	DOL	-6.70	26.62	-3.39	15.91	7.27	23.40	10.52	-78.14	6.45	NA	NA	NA
	DFL	-0.81	1.96	-0.94	1.18	1.08	1.84	1.27	-0.28	1.20	NA	NA	NA
	DCL	-5.40	52.08	-3.19	18.85	7.88	43.10	13.34	-22.24	7.72	NA	NA	NA
SAS	DOL	NA	NA	15.15	-11.01	-5.88	-45.75	8.42	8.82	87.76	-15.21	-8.32	-35.29
	DFL	NA	NA	1.67	-0.72	-0.86	-0.93	1.14	1.56	-0.32	-0.65	-0.74	-0.44
	DCL	NA	NA	25.29	-7.94	-5.09	-42.74	9.57	13.77	-28.12	-9.84	-6.14	-15.46
SIA	DOL	NA	20.44	21.26	5.46	-92.12	5.34	3.19	4.22	5.97	5.42	19.29	15.23
	DFL	NA	1.16	1.10	1.02	-0.96	0.97	0.96	1.05	0.99	1.09	1.00	1.00
	DCL	NA	23.69	23.31	5.59	-88.45	5.18	3.05	4.42	5.88	5.91	19.29	15.23
JKK	DOL	NA	NA	NA	NA	-0.97	-2.01	-18.27	12.82	-73.46	NA	NA	-4.85
	DFL	NA	NA	NA	NA	-0.97	-0.88	-0.54	1.91	-0.28	NA	NA	-0.84
	DCL	NA	NA	NA	NA	-0.94	-1.78	-9.85	24.48	-20.54	NA	NA	-4.07
ALK	DOL	-0.17	-0.78	-0.75	-5.16	-2.87	-1.73	-8.48	-15.68	56.93	-31.79	8.00	11.30
	DFL	-0.91	-0.94	-0.94	-0.89	-1.00	-1.02	-1.16	-1.10	1.47	-0.75	1.09	14.54
	DCL	-0.15	-0.73	-0.71	-4.59	-2.87	-1.76	-9.84	-17.23	83.48	-23.77	8.69	164.34
TAP	DOL	16.07	15.61	NA	8.12	10.40	-3.10	7.58	14.86	NA	-13.45	22.42	12.25
	DFL	2.61	3.97	NA	1.25	0.76	-1.27	1.41	2.74	NA	-1.00	1.00	1.00
	DCL	41.98	61.90	NA	10.18	7.93	-3.93	10.70	40.65	NA	-13.45	22.42	12.25
THA	DOL	NA	NA	NA	5.76	5.98	NA	4.91	6.67	4.99	3.05	3.29	3.07
	DFL	NA	NA	NA	1.96	2.65	NA	1.59	2.07	1.59	1.26	1.30	1.42
	DCL	NA	NA	NA	11.26	15.86	NA	7.82	13.84	7.95	3.84	4.28	4.35
THY	DOL	NA	NA	54.97	9.17	5.58	NA	NA	NA	-29.32	18.77	NA	10.95
	DFL	NA	NA	0.30	0.78	0.84	NA	NA	NA	-4.69	0.65	NA	0.84
	DCL	NA	NA	16.62	7.20	4.66	NA	NA	NA	-137.47	12.26	NA	9.21
VIR	DOL	-54.40	-4.96	NA	24.59	-2.53	50.88	42.68	43.64	11.85	45.25	113.54	12.84
	DFL	0.73	-0.94	NA	1.27	-0.94	0.29	0.50	0.53	0.80	1.95	0.34	0.84
	DCL	-39.96	-4.65	NA	31.18	-2.37	14.81	21.15	23.33	9.43	88.28	38.97	10.80
AMX	DOL	-10.50	11.96	10.52	12.05	6.36	7.95	16.21	-33.24	-55.04	-22.82	-450.26	-151.53
	DFL	-0.95	0.94	0.96	0.91	0.95	1.70	-0.30	-0.23	-0.18	-0.45	-0.05	-0.54
	DCL	-9.98	11.21	10.09	10.95	6.06	13.52	-4.88	-7.76	-9.80	-10.20	-22.59	-81.40
ACA	DOL	-5.14	81.10	7.34	26.01	6.98	10.64	8.23	9.74	-19.02	-5.74	-5.37	-37.42
	DFL	-0.72	-0.34	1.59	-1.89	1.45	3.23	6.64	-1116.09	-0.32	-0.59	-0.72	-0.46
	DCL	-3.67	-27.54	11.70	-49.10	10.12	34.34	54.61	-10875.21	-6.16	-3.40	-3.86	-17.29

Table 5: continued

AEA	DOL	184.74	224.42	28.13	30.01	29.43	15.97	NA	NA	NA	NA	NA	NA
	DFL	0.24	-0.76	0.93	1.04	1.12	1.01	NA	NA	NA	NA	NA	NA
	DCL	44.89	-170.25	26.05	31.16	33.09	16.15	NA	NA	NA	NA	NA	NA
AFR	DOL	22.11	10.38	12.32	14.99	7.20	14.24	15.26	-11.69	-5.56	-21.02	-36.14	-8.36
	DFL	2.12	1.21	1.77	1.08	1.98	14.70	-0.99	-0.34	-0.54	-0.35	-0.26	-0.61
	DCL	46.96	12.56	21.76	16.23	14.28	209.23	-15.03	-4.00	-2.99	-7.34	-9.43	-5.06
AIC	DOL	-37.66	697.21	-99.13	47.92	-126.50	-4.69	-7.31	21.43	10.65	4.50	6.32	11.08
	DFL	-0.26	-0.01	-0.09	-0.18	-0.06	-0.74	-0.56	-0.69	0.92	0.93	1.30	8.19
	DCL	-9.68	-8.83	-8.49	-8.85	-7.29	-3.47	-4.07	-14.81	9.78	4.17	8.22	90.77
ANE	DOL	7.86	11.96	7.86	8.70	13.93	-1.87	NA	NA	NA	NA	NA	NA
	DFL	1.93	1.45	1.08	0.97	0.95	-0.96	NA	NA	NA	NA	NA	NA
	DCL	15.18	17.38	8.50	8.47	13.24	-1.79	NA	NA	NA	NA	NA	NA
ANA	DOL	19.39	6.15	18.02	-26.25	551.18	19.28	12.74	19.94	54.61	18.62	9.07	12.22
	DFL	-302.43	1.48	5.28	-0.29	-0.02	-1.30	-2.97	-0.64	-0.15	-0.86	5.33	6.54
	DCL	-5864.10	9.14	95.20	-7.66	-12.33	-24.98	-37.78	-12.76	-8.11	-15.99	48.36	79.95
AVA	DOL	-1.53	-1.84	-9.58	-16.79	100.13	17.84	12.93	386.27	-13.67	-7.26	-6.09	-5.53
	DFL	-0.84	-0.81	-0.51	-14.78	-0.30	2.85	2.20	-0.11	-0.68	-0.76	-0.57	-0.50
	DCL	-1.28	-1.50	-4.89	-248.21	-29.75	50.83	28.43	-42.82	-9.29	-5.54	-3.47	-2.77
BAW	DOL	-26.66	10.37	37.40	8.49	7.78	5.01	4.56	5.04	5.82	8.02	7.06	13.30
	DFL	-0.30	3.08	-0.29	7.14	1.50	0.80	1.40	1.48	1.42	1.46	1.34	1.27
	DCL	-8.06	31.95	-10.78	60.63	11.67	4.02	6.39	7.48	8.27	11.72	9.48	16.83
CPA	DOL	130.28	3.54	6.78	13.20	6.13	3.43	2.77	5.05	5.28	3.15	3.19	3.74
	DFL	-0.25	1.07	1.93	1.45	1.24	1.10	1.16	-2.57	-1.52	4.17	2.80	2.81
	DCL	-32.27	3.79	13.05	19.09	7.61	3.79	3.20	-12.99	-8.01	13.15	8.95	10.51
CSA	DOL	7.54	3.59	5.26	3.70	6.45	11.82	11.72	39.86	-6.60	NA	NA	NA
	DFL	5.22	1.93	3.13	1.73	5.10	-1.47	-1.55	-0.13	-0.37	NA	NA	NA
	DCL	39.38	6.93	16.47	6.39	32.93	-17.42	-18.14	-5.10	-2.44	NA	NA	NA
EZY	DOL	3.55	4.29	-5.70	18.71	NA	NA	NA	NA	NA	NA	NA	NA
	DFL	0.95	1.00	-1.09	0.65	NA	NA	NA	NA	NA	NA	NA	NA
	DCL	3.37	4.29	-6.20	12.10	NA	NA	NA	NA	NA	NA	NA	NA
ELY	DOL	-15.17	-8.47	36.96	15.85	42.39	-9.30	NA	NA	NA	NA	NA	NA
	DFL	-0.41	-0.60	-1.21	1.85	-2.61	-0.73	NA	NA	NA	NA	NA	NA
	DCL	-6.23	-5.11	-44.59	29.26	-110.49	-6.82	NA	NA	NA	NA	NA	NA
ETH	DOL	16.46	-5.67	-21.29	8.12	19.38	5.63	NA	6.78	8.40	5.91	5.58	NA
	DFL	5.96	-0.70	-0.34	4.43	-0.73	4.67	NA	2.87	8.10	2.94	2.74	NA
	DCL	98.14	-3.95	-7.28	35.98	-14.19	26.32	NA	19.47	68.07	17.39	15.31	NA
BEE	DOL	-3.85	-5.13	25.30	8.02	10.63	12.77	-5.92	NA	-5.83	NA	NA	NA
	DFL	-0.91	-0.91	1.98	1.19	1.23	1.02	-1.03	NA	-1.05	NA	NA	NA
	DCL	-3.51	-4.65	50.03	9.57	13.07	13.04	-6.08	NA	-6.10	NA	NA	NA

Table 5: continued

IBE	DOL	-95.75	62.26	64.65	8.24	6.15	5.51	7.23	26.69	-9.25	-13.81	-8.15	-14.44
	DFL	1.83	2.36	0.41	1.09	0.87	1.60	4.13	-0.43	-0.39	-0.41	-0.47	-0.40
	DCL	-175.06	147.11	26.76	8.98	5.33	8.82	29.88	-11.37	-3.59	-5.72	-3.85	-5.79
IRA	DOL	NA	NA	3.25	4.76	4.28	16.28	8.12	-9.62	3.85	6.21	8.29	23.29
	DFL	NA	NA	1.00	1.00	1.00	1.00	10.67	-1.00	1.00	1.00	1.00	1.00
	DCL	NA	NA	3.25	4.76	4.28	16.28	86.65	-9.62	3.85	6.21	8.29	23.29
EXS	DOL	11.77	9.16	6.44	4.80	7.36	5.69	6.14	NA	25.00	8.63	NA	NA
	DFL	0.86	0.84	0.85	0.95	1.14	0.99	0.94	NA	0.97	1.09	NA	NA
	DCL	10.17	7.73	5.49	4.59	8.37	5.64	5.80	NA	24.14	9.42	NA	NA
KQA	DOL	10.04	NA	NA	8.69	NA	NA	NA	3.01	NA	NA	NA	NA
	DFL	1.23	NA	NA	0.74	NA	NA	NA	1.18	NA	NA	NA	NA
	DCL	12.32	NA	NA	6.46	NA	NA	NA	3.55	NA	NA	NA	NA
KAL	DOL	-15.14	141.95	16.63	8.79	6.73	98.37	7.26	8.97	7.69	12.42	NA	7.55
	DFL	-0.39	-0.08	-1.35	-2.74	3.80	-0.13	2.83	2.70	1.81	4.70	NA	3.03
	DCL	-5.97	-12.06	-22.50	-24.08	25.60	-12.59	20.57	24.22	13.90	58.39	NA	22.87
LAN	DOL	16.24	11.90	NA	15.46	7.76	NA	9.52	21.30	17.98	21.40	12.32	-8.72
	DFL	2.47	1.70	NA	1.44	1.10	NA	0.93	0.85	2.72	1.94	2.18	-1.19
	DCL	40.07	20.27	NA	22.34	8.58	NA	8.87	18.16	48.91	41.56	26.87	-10.41
LOT	DOL	-1.72	NA	-19.56	6.58	17.15	6.53	5.94	-2.95	-4.00	-9.17	-3.84	8.02
	DFL	-0.97	NA	-0.70	8.93	-0.62	-8.05	-2.92	-1.00	-1.00	-1.00	-1.00	1.00
	DCL	-1.66	NA	-13.64	58.75	-10.69	-52.53	-17.35	-2.95	-4.00	-9.17	-3.84	8.02
DLH	DOL	-23.52	7.44	28.73	5.54	8.60	19.61	20.44	18.87	-888.22	-13.95	-21.14	-30.72
	DFL	-0.31	1.68	-1.64	1.27	1.02	1.27	2.19	1.86	-0.03	-0.62	-0.51	-0.54
	DCL	-7.22	12.48	-47.22	7.02	8.77	24.96	44.69	35.18	-30.69	-8.66	-10.78	-16.72
MAS	DOL	-4.94	-2.04	-5.77	-5.50	-7.38	20.35	18.38	6.67	10.96	NA	13.39	-37.36
	DFL	-1.00	-1.00	-1.00	-1.00	-1.00	1.00	1.00	4.63	8.72	NA	4.03	-0.24
	DCL	-4.94	-2.04	-5.77	-5.50	-7.38	20.35	18.38	30.85	95.61	NA	53.92	-9.15
MON	DOL	78.63	33.07	9.45	10.60	9.10	12.41	NA	10.18	7.54	7.82	18.51	6.21
	DFL	82.44	1.45	1.03	0.81	0.85	0.79	NA	0.94	1.08	1.10	17.99	2.48
	DCL	6482.61	48.03	9.75	8.54	7.73	9.75	NA	9.58	8.16	8.64	333.04	15.37
OMA	DOL	-6.38	-12.16	16.51	17.07	8.66	7.53	NA	6.29	NA	NA	NA	NA
	DFL	-0.82	-1.00	1.00	1.00	1.00	1.00	NA	1.00	NA	NA	NA	NA
	DCL	-5.25	-12.16	16.51	17.07	8.66	7.53	NA	6.29		NA	NA	NA
PAL	DOL	9.33	NA	NA	-8.46	-7.95	-33.75	-6.11	-25.88	27.33	8.08	6.28	7.15
	DFL	-2.47	NA	NA	-0.20	-0.43	-0.21	-0.58	-0.34	1.52	1.24	2.29	7.92
	DCL	-23.03	NA	NA	-1.70	-3.42	-7.22	-3.58	-8.90	41.66	10.00	14.38	56.66
PIA	DOL	47.92	-5.16	-17.72	7.46	-176.61	9.40	7.06	8.38	13.98	5.32	-61.38	10.59
	DFL	-0.20	-0.62	-0.36	4.34	-0.05	7.81	5.73	5.21	4.28	1.62	-0.27	2.30
	DCL	-9.50	-3.22	-6.31	32.42	-8.27	73.41	40.46	43.71	59.87	8.63	-16.83	24.34

Table 5: continued

RJA	DOL	NA	NA	NA	NA	NA	35.93	7.13	12.69	4.47	4.07	NA	NA
	DFL	NA	NA	NA	NA	NA	-0.10	-0.93	-0.32	-3.97	-2.41	NA	NA
	DCL	NA	NA	NA	NA	NA	-3.58	-6.66	-4.06	-17.76	-9.81	NA	NA
SAS	DOL	-10.00	25.67	76.72	13.80	10.20	11.55	7.43	19.25	-61.73	12.28	9.77	8.82
	DFL	-0.85	1.44	2.17	1.02	1.06	1.03	1.02	1.91	-0.22	-13.75	3.06	1.22
	DCL	-8.53	36.96	166.63	14.04	10.76	11.87	7.60	36.69	-13.49	-168.90	29.88	10.74
SIA	DOL	6.69	4.66	5.34	8.78	4.69	5.09	4.41	4.11	6.06	4.90	3.81	3.61
	DFL	1.11	1.05	0.89	0.82	0.90	0.87	0.90	0.90	0.84	0.81	0.80	0.78
	DCL	7.41	4.88	4.73	7.16	4.22	4.44	3.99	3.71	5.10	3.98	3.07	2.81
JKK	DOL	-7.68	-13.35	26.49	28.85	19.63	33.62	19.07	NA	NA	NA	NA	NA
	DFL	-0.79	-0.85	1.09	1.08	1.07	1.63	3.75	NA	NA	NA	NA	NA
	DCL	-6.04	-11.28	28.87	31.23	21.00	54.96	71.59	NA	NA	NA	NA	NA
ALK	DOL	-3.63	-1.57	52.71	NA	3.14	5.60	5.43	4.67	9.20	10.82	13.59	10.28
	DFL	-0.62	-0.64	-0.10	NA	4.84	-1.03	-3.23	15.71	23.22	5.63	29.94	5.22
	DCL	-2.24	-1.01	-5.06	NA	15.20	-5.79	-17.51	73.31	213.71	60.91	406.85	53.70
TAP	DOL	NA	NA	-4.84	331.02	-7696.56	12.54	-7.93	-3.46	-2.01	-2.37	-22.89	-13.67
	DFL	NA	NA	-0.76	-0.08	-0.01	-6.56	-0.72	-0.83	-0.95	-0.88	-0.46	-0.84
	DCL	NA	NA	-3.67	-27.95	-50.67	-82.27	-5.68	-2.89	-1.90	-2.09	-10.57	-11.41
THA	DOL	4.63	4.28	3.54	4.31	5.01	4.62	4.47	4.48	7.11	6.39	7.36	3.71
	DFL	2.46	1.78	1.54	2.33	2.64	1.85	1.73	1.93	8.77	3.46	3.98	1.27
	DCL	11.37	7.61	5.43	10.03	13.21	8.53	7.74	8.67	62.34	22.11	29.28	4.73
THY	DOL	-5.15	-3.80	-2.48	-33.14	-41.11	14.09	26.87	-17.47	-3.71	-9.26	-4.05	-4.76
	DFL	-0.93	-0.93	-0.91	-0.77	-0.68	1.80	-1.15	-0.42	-0.75	-0.56	-0.63	-0.55
	DCL	-4.78	-3.53	-2.27	-25.55	-27.92	25.37	-30.93	-7.30	-2.78	-5.19	-2.55	-2.61
VIR	DOL	-108.44	9.92	10.01	4.74	5.94	9.66	7.29	-17.41	-13.74	-9.57	32.18	9.74
	DFL	-0.29	1.28	1.14	1.01	0.96	0.88	1.05	-0.80	-0.70	-0.79	6.92	1.31
	DCL	-31.07	12.69	11.43	4.76	5.70	8.52	7.68	-13.99	-9.60	-7.59	222.70	12.71

Table 6: ROA, ROE 2013-2002

		2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
AMX	ROA	NA	0.0343	0.0872	0.1319	-0.1005	-0.1844	-0.2215	-0.0670	0.0140	NA	-0.0969	-0.0584
	ROE	NA	-0.0639	0.2878	3.5663	NA	NA	NA	-0.3337	0.0997	NA	-0.5393	-0.2794
ACA	ROA	NA	NA	0.0180	0.0275	-0.0333	0.0026	0.0367	0.0085	0.0305	-0.0071	-0.1213	-0.0536
	ROE	NA	NA	NA	0.0947	-0.0195	-1.7983	0.1515	-0.0238	0.1382	-4.2692	NA	NA
AEA	ROA	0.1727	-0.0041	-0.0161	0.0914	0.0704	0.0030	0.0928	0.0340	0.0133	0.0949	0.0615	0.0477
	ROE	0.7069	-2.8697	-0.9363	0.4742	0.4390	0.1847	0.4780	0.2478	NA	0.3350	0.3260	0.3726
AFR	ROA	NA	NA	-0.0316	-0.0153	-0.0612	-0.0113	0.0344	0.0429	0.0229	0.0040	0.0089	0.0133
	ROE	NA	NA	NA	0.2125	-1.0649	-0.4300	0.1541	0.2143	0.2400	0.0326	0.0383	0.0428
AIC	ROA	-0.0684	-0.0800	NA	-0.0981	NA	-0.1623	-0.0919	-0.1281	-0.0602	-0.0370	-0.0241	-0.0368
	ROE	NA	NA	NA	NA	NA	NA	NA	NA	0.0603	0.4137	NA	NA
ANE	ROA	-0.2427	-0.2426	-0.1314	-0.0011	-0.0684	0.0063	0.0509	0.0674	0.0674	0.0740	0.1308	0.1260
	ROE	-2.9921	-0.8974	-0.1750	0.2537	-0.2239	0.0000	0.1653	NA	0.2769	0.2953	0.3951	0.5816
ANA	ROA	0.0259	0.0443	0.0461	0.0323	-0.0341	-0.0004	0.0434	NA	0.0462	0.0477	0.0183	-0.0069
	ROE	-0.0082	0.0591	0.0526	0.0472	-0.1263	-0.0048	0.1279	NA	0.0867	0.0528	0.0684	-0.1228
AVA	ROA	NA	NA	NA	NA	0.0254	0.0546	NA	NA	NA	NA	-0.1554	-0.2242
	ROE	NA	NA	NA	NA	0.0268	-0.0573	NA	NA	NA	NA	NA	-3.5640
BAW	ROA	0.0430	0.0180	0.0370	NA	-0.0161	-0.0146	0.0718	0.0465	0.0555	0.0466	0.0367	0.0244
	ROE	0.1479	0.1337	0.2771	NA	-0.2720	-0.3177	0.2170	0.0095	0.2353	0.1119	0.0640	-0.0151
CPA	ROA	0.0134	-0.0004	0.0155	NA	NA	-0.0716	0.0357	0.0262	0.0275	0.0473	0.0075	0.0453
	ROE	0.0416	0.0160	0.0983	NA	NA	-0.2104	0.1384	0.0894	0.0936	0.1344	0.0420	0.1240
CSA	ROA	-0.2452	-0.0648	-0.1790	0.0089	-0.3200	0.0193	0.0127	0.0091	-0.0077	0.0619	0.0440	0.0686
	ROE	-1.4923	-0.3118	-0.6271	-0.0498	-36.9456	0.0355	0.0267	-0.0223	-0.0626	0.1046	0.1019	0.0966
EZY	ROA	0.1048	0.0571	0.0602	0.1560	0.0164	0.0327	0.0626	0.0550	0.0302	0.0381	0.0429	0.0640
	ROE	0.4663	0.3401	0.1320	-0.0569	0.0629	0.0704	0.1307	0.0974	0.0507	0.0521	0.0427	0.0673
ELY	ROA	0.0222	0.0043	NA	0.0513	-0.0448	-0.0057	NA	NA	0.0520	0.0368	0.0182	0.0136
	ROE	0.1414	-0.1431	NA	0.2305	-0.6164	-0.3532	NA	NA	0.2366	0.1810	NA	-0.1034
ETH	ROA	NA	0.0395	0.0131	NA	NA	NA	0.0262	0.0323	0.0556	0.0511	0.0449	0.0588
	ROE	NA	0.1541	0.1722	NA	NA	NA	NA	0.0567	0.1395	0.1169	0.0588	0.0970
BEE	ROA	-0.0127	-0.0647	-0.0110	-0.0059	0.0298	-0.0384	0.0219	0.0210	-0.0016	0.0678	-0.1493	0.0088
	ROE	0.0412	0.8690	0.0717	0.0350	0.3318	1.0535	0.5430	NA	-7.1873	1.0197	0.6197	0.1206
IBE	ROA	-0.0395	NA	-0.0185	-0.0060	-0.0945	-0.0007	0.0483	0.0249	0.0147	0.0407	0.0311	0.0513
	ROE	-1.9580	NA	-0.0433	0.0400	-0.4832	0.0279	0.3743	NA	NA	NA	0.1296	0.1771
IRA	ROA	NA	NA	NA	NA	-0.0912	-0.0589	-0.0421	-0.0538	-0.0572	-0.0079	NA	-0.0903
	ROE	NA	NA	NA	NA	-0.1608	-0.0680	-0.0302	-0.0631	-0.1056	0.0052	NA	-0.1042
EXS	ROA	0.0465	0.0000	0.0327	0.0556	0.0285	0.1165	-0.1214	-0.0001	0.0269	0.0807	0.0418	0.0226
	ROE	0.2076	0.2727	0.1706	0.2699	0.1442	0.6760	-2.6808	0.0020	0.2415	0.4707	0.1428	0.0664
KQA	ROA	NA	NA	NA	NA	0.0251	NA	0.0857	0.0988	0.1112	0.1470	0.0910	0.0346
	ROE	NA	NA	NA	NA	0.1018	NA	0.1715	0.2102	NA	0.3303	0.1613	0.0509

Table 6: continued

KAL	ROA	NA	NA	NA	0.0623	0.0079	-0.0063	0.0420	0.0366	NA	0.0278	0.0221	NA
	ROE	NA	NA	NA	0.1320	-0.0419	-0.5782	NA	NA	NA	NA	-0.0718	NA
LAN	ROA	NA	0.0161	0.0706	0.0918	NA	NA	NA	NA	0.0660	0.0941	0.0686	0.0391
	ROE	NA	0.0102	0.2212	0.3228	NA	NA	NA	NA	0.2916	0.3764	0.2370	0.0997
LOT	ROA	NA	-0.0364	-0.0575	-0.0601	NA	NA	0.0224	-0.0133	0.0288	-0.0080	0.0027	-0.0223
	ROE	NA	NA	-0.4490	-0.0992	NA	NA	0.0378	-0.0018	0.0458	0.0128	-0.0879	0.0854
DLH	ROA	0.0041	-0.0139	-0.0057	0.0044	-0.0140	0.0102	0.0272	0.0210	0.0027	0.0073	-0.0015	0.0221
	ROE	0.0517	0.1201	-0.0016	0.1372	-0.0184	0.0873	0.2418	0.1737	0.1047	0.1017	-0.3708	0.1737
MAS	ROA	-0.0322	NA	-0.1792	0.0091	-0.0569	0.0266	0.0600	-0.0573	-0.2254	0.0335	0.0194	-0.0117
	ROE	-0.3170	NA	-2.1445	0.0316	0.8121	0.0559	0.2289	-0.1074	-0.6680	0.0917	0.2273	0.1860
MON	ROA	0.0138	-0.1057	-0.1607	-0.0037	-0.0435	0.0104	0.0182	0.0347	0.0167	0.0121	0.0675	NA
	ROE	0.1750	-1.2294	-0.2965	-0.0603	-0.2198	0.0012	0.0583	0.0839	0.1016	0.0453	0.2438	NA
OMA	ROA	-0.1649	-0.1478	-0.1867	-0.1386	NA	NA	0.0216	0.0419	0.0027	0.0033	-0.0134	-0.0222
	ROE	-2.4980	-1.1642	-1.1422	-0.5299	NA	NA	0.0506	0.1453	-0.0875	-0.0514	-0.1172	-0.1199
PAL	ROA	NA	-0.0289	-0.0567	0.0477	-0.0341	NA	0.0415	NA	0.0494	0.0686	0.0450	0.0501
	ROE	NA	-0.2656	-5.6915	0.5587	0.1263	NA	-0.0144	NA	0.1426	0.2899	-0.1858	0.1039
PIA	ROA	NA	NA	NA	NA	0.0178	-0.0542	-0.0459	-0.0802	-0.0412	0.0244	0.0951	0.1305
	ROE	NA	NA	NA	NA	NA	NA	NA	NA	-0.7138	0.2523	0.5421	3.2866
RJA	ROA	-0.0825	0.0261	-0.1689	0.0413	0.0894	0.0241	0.0588	-0.0075	0.1089	NA	NA	NA
	ROE	-2.0400	0.0314	-0.8944	0.1284	0.2684	0.2719	0.1866	0.0736	0.2600	NA	NA	NA
SAS	ROA	NA	NA	0.0232	-0.0287	-0.0802	-0.0128	0.0723	0.0658	0.0054	-0.0191	-0.0347	-0.0099
	ROE	NA	NA	0.0233	-0.1119	-0.2059	-0.0315	0.1319	0.1150	0.0019	-0.1377	-0.0614	-0.0578
SIA	ROA	NA	0.0090	0.0083	0.0352	-0.0018	0.0366	0.0691	0.0431	0.0313	0.0373	0.0088	0.0124
	ROE	NA	-0.0586	0.0306	0.0718	0.0209	0.0919	0.1329	0.1576	0.0614	0.1115	0.4622	0.5914
JKK	ROA	NA	NA	NA	NA	-0.6849	-0.3013	-0.0508	0.0640	-0.0110	NA	NA	-0.1493
	ROE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-9.3504
ALK	ROA	NA	NA	-0.2796	-0.1246	-0.1516	-0.3165	-0.0707	-0.0457	0.0153	-0.0256	0.0885	0.0511
	ROE	NA	NA	NA	-0.1186	-0.7500	-1.4937	NA	0.0511	NA	0.0012	0.6024	0.1696
TAP	ROA	0.0278	0.0287	NA	0.0550	0.0374	-0.0833	0.0458	0.0211	NA	-0.0260	0.0180	0.0363
	ROE	0.2983	0.2809	NA	1.1835	NA	NA	0.6430	0.0621	NA	-3.7542	0.0209	-0.5782
THA	ROA	NA	NA	NA	0.0360	0.0342	NA	0.0474	0.0337	0.0460	0.1046	0.1048	0.1043
	ROE	NA	NA	NA	0.1882	0.1424	NA	0.0957	0.1369	0.1149	0.1862	0.3202	0.3607
THY	ROA	NA	NA	0.0062	0.0453	0.0845	NA	NA	NA	-0.0200	0.0463	NA	0.1240
	ROE	NA	NA	0.0041	0.0764	0.1623	NA	NA	NA	-0.0062	0.0489	NA	0.1842
VIR	ROA	-0.0099	-0.0934	NA	0.0184	-0.1225	0.0068	0.0125	0.0119	0.0426	0.0122	0.0041	0.0459
	ROE	-0.6382	-3.5140	NA	0.1488	0.9420	0.1244	0.1771	0.0872	0.2875	-0.0645	0.0173	0.2800
AMX	ROA	-0.0737	0.0704	0.0763	0.0656	0.1343	0.0799	0.0355	-0.0223	-0.0117	-0.0321	-0.0016	-0.0063
	ROE	-0.2091	0.0283	0.1847	0.1805	0.3476	0.8048	-0.1502	NA	-0.8318	-0.3579	0.0060	0.0056
ACA	ROA	-0.0864	0.0057	0.0705	0.0170	0.0637	0.0386	0.0434	0.0341	-0.0169	-0.0524	-0.0536	-0.0099
	ROE	NA	-0.2597	0.2940	-0.0107	0.2977	0.1513	0.0576	0.3534	-0.2806	-1.4345	-0.2825	-0.0745

Table 6: continued

AEA	ROA	0.0111	0.0066	0.0464	0.0458	0.0454	0.0780	NA	NA	NA	NA	NA	NA
	ROE	-0.2985	0.0441	0.0566	0.0931	0.0587	0.2807	NA	NA	NA	NA	NA	NA
AFR	ROA	0.0199	0.0436	0.0330	0.0257	0.0518	0.0204	0.0178	-0.0236	NA	-0.0244	-0.0150	-0.0528
	ROE	0.0580	0.1823	0.1003	0.1230	0.1128	0.0257	-0.3555	-0.1987	NA	-7.6564	-0.1552	-0.3387
AIC	ROA	-0.0100	0.0005	-0.0036	0.0066	-0.0023	-0.0538	-0.0404	0.0125	0.0242	0.0679	0.0479	0.0294
	ROE	0.0399	NA	-0.2446	-1.1346	-1.1766	NA	-1.7670	0.2652	2.4425	2.1656	0.9498	0.5288
ANE	ROA	0.0436	0.0659	0.0748	0.1784	0.0827	-0.3672	NA	NA	NA	NA	NA	NA
	ROE	0.2112	0.2007	0.3747	0.8721	0.7083	-11.7141	NA	NA	NA	NA	NA	NA
ANA	ROA	0.0153	0.0589	0.0171	-0.0116	0.0006	0.0168	0.0234	0.0132	0.0044	0.0138	0.0321	0.0229
	ROE	-0.0826	-0.1722	-0.0926	-0.0372	-0.0146	0.0205	0.0162	0.0219	-0.0151	0.0120	0.0369	0.0521
AVA	ROA	-0.2891	-0.2761	-0.0679	-0.0471	0.0074	0.0603	0.0809	0.0028	-0.0698	-0.1115	-0.1067	-0.0792
	ROE	-11.0135	NA	-4.0232	-0.1135	0.0422	0.2936	0.5155	0.0855	0.3482	0.3665	-1.3928	-0.3155
BAW	ROA	-0.0089	0.0272	0.0070	0.0355	0.0447	0.0704	0.0777	0.0729	0.0654	0.0488	0.0655	0.0384
	ROE	-0.0571	0.0828	0.0809	0.0278	0.1537	0.2136	NA	0.1444	0.1590	0.1481	0.2065	0.1069
CPA	ROA	0.0009	0.0473	0.0200	0.0088	0.0239	0.0493	0.0670	0.0438	0.0368	0.0613	0.0677	0.0675
	ROE	0.0210	0.1598	0.0811	-0.0219	0.0662	0.1504	0.1745	0.1753	0.1836	0.2616	0.3045	0.3778
CSA	ROA	0.0422	0.0802	0.0565	0.0990	0.0557	0.0313	0.0309	0.0068	-0.0319	NA	NA	NA
	ROE	0.0542	0.1893	0.0222	0.4592	0.1247	-0.2174	0.1715	0.0962	-0.6827	NA	NA	NA
EZY	ROA	0.0750	0.0849	-0.1667	0.0569	NA	NA	NA	NA	NA	NA	NA	NA
	ROE	0.1198	0.4738	-30.9128	0.3232	NA	NA	NA	NA	NA	NA	NA	NA
ELY	ROA	-0.0204	-0.0433	0.0109	0.0375	0.0133	-0.0555	NA	NA	NA	NA	NA	NA
	ROE	NA	0.1414	NA	NA	NA	0.5328	NA	NA	NA	NA	NA	NA
ETH	ROA	0.0287	-0.0611	-0.0136	0.0322	0.0136	0.0521	NA	0.0370	0.0253	0.0386	0.0488	NA
	ROE	0.0455	-0.0420	0.0222	0.0553	0.0201	0.0570	NA	0.0996	0.8242	0.0704	0.0714	NA
BEE	ROA	-0.1482	-0.1345	0.0308	0.0969	0.0624	0.0431	-0.1482	NA	-0.0496	NA	NA	NA
	ROE	-10.1571	-8.7047	0.0947	0.5046	0.3964	0.7513	-0.5315	NA	-41.9429	NA	NA	NA
IBE	ROA	-0.0056	0.0085	0.0081	0.0902	0.0775	0.0734	0.0529	0.0123	-0.0295	-0.0228	-0.0408	-0.0288
	ROE	0.0412	0.2519	0.1422	0.5185	0.1321	0.0376	NA	-1.5030	-1.0917	-0.2605	-0.7398	-0.1652
IRA	ROA	NA	NA	0.1433	0.1196	0.1349	0.0246	0.0460	-0.0313	0.1227	0.0642	0.0647	0.0181
	ROE	NA	NA	0.4545	NA	NA	NA	0.1967	NA	-0.0295	0.2286	0.3127	0.0388
EXS	ROA	0.1166	0.1346	0.2032	0.2819	0.1430	0.2063	0.3398	NA	0.0960	0.1631	NA	NA
	ROE	0.1678	0.2313	0.3057	0.4566	0.3049	0.4203	6.8977	NA	0.2807	0.7131	NA	NA
KQA	ROA	0.0552	NA	NA	0.0517	NA	NA	NA	0.2872	NA	NA	NA	NA
	ROE	0.1211	NA	NA	0.2019	NA	NA	NA	NA	NA	NA	NA	NA
KAL	ROA	NA	0.0021	0.0170	0.0385	0.0398	0.0031	0.0501	0.0407	0.0457	0.0261	NA	0.0356
	ROE	-0.1737	-0.1211	0.0664	0.2682	-0.5394	-0.2260	0.1464	0.0594	0.0243	0.0025	NA	-0.0201
LAN	ROA	0.0335	0.0521	NA	0.0457	0.1295	NA	0.1056	0.0453	0.0514	0.0402	0.0605	-0.0735
	ROE	0.0376	0.1693	NA	0.1382	0.3023	NA	0.2513	0.0829	0.0055	0.0201	0.0695	-0.2022
LOT	ROA	-0.2699	NA	-0.0427	0.1166	0.0400	0.0897	0.0839	-0.1237	-0.0713	-0.0256	-0.0522	0.0303
	ROE	-0.9108	NA	0.0088	-0.0049	-0.3426	-0.0864	0.0093	0.0084	0.0171	-0.0352	0.0091	0.0197

Table 6: continued

DLH	ROA	-0.0097	0.0428	0.0106	0.0755	0.0502	0.0218	0.0192	0.0383	-0.0008	-0.0445	-0.0251	-0.0165
	ROE	-0.1810	0.1675	0.1708	0.2214	0.2330	0.1627	0.0556	0.0831	-0.0581	-0.1849	-0.4104	0.0056
MAS	ROA	-0.0467	-0.1037	-0.0310	-0.0303	-0.0235	0.0112	0.0133	0.0336	0.0173	NA	0.0243	-0.0080
	ROE	-1.4967	-1.3126	-0.0138	-0.2114	-0.0853	0.0986	0.0819	0.0544	0.0031	NA	0.2450	0.5947
MON	ROA	0.0055	0.0130	0.0542	0.0533	0.0700	0.0451	NA	0.0521	0.0650	0.0594	0.0310	0.0718
	ROE	0.0007	50.8904	0.1900	0.1763	0.1806	0.1318	NA	0.1687	0.2006	0.1872	0.0052	0.1293
OMA	ROA	-0.0573	-0.0553	0.0390	0.0455	0.1051	0.1158	NA	0.1450	NA	NA	NA	NA
	ROE	-0.1860	-0.1936	0.1196	0.1237	0.2250	0.1926	NA	0.1974	NA	NA	NA	NA
PAL	ROA	0.0369	NA	NA	-0.0144	-0.0213	-0.0077	-0.0458	-0.0139	0.0211	0.0962	0.1411	0.0802
	ROE	-0.7318	NA	NA	1.5945	-0.6439	-0.2393	-0.5448	-0.2016	-0.0059	0.1226	-0.0026	0.1708
PIA	ROA	0.0093	-0.0731	-0.0218	0.0821	-0.0021	0.0432	0.0423	0.0306	0.0253	0.0746	-0.0067	0.0426
	ROE	NA	-33.3947	-0.3861	0.2164	-0.6133	0.0143	0.0654	0.0360	0.1847	0.2753	-0.0780	-0.0430
RJA	ROA	NA	NA	NA	NA	NA	0.0058	0.0315	0.0170	0.0573	0.0531	NA	NA
	ROE	NA	NA	NA	NA	NA	-0.3894	NA	-0.6190	NA	-0.5325	NA	NA
SAS	ROA	-0.0377	0.0181	0.0066	0.0391	0.0532	0.0458	0.0827	0.0285	-0.0067	0.0269	0.0522	0.0404
	ROE	-0.0800	0.1552	0.0998	0.1674	0.1638	0.1308	NA	0.2359	-0.0886	-0.0995	0.1070	-0.0709
SIA	ROA	0.0284	0.0577	0.0490	0.0261	0.0433	0.0445	0.0596	0.0652	0.0432	0.0532	0.0713	0.0742
	ROE	0.5882	0.5984	0.5702	0.4385	0.7169	0.7031	NA	0.7321	0.5634	0.5774	1.4346	1.3903
JKK	ROA	-0.0998	-0.0620	0.0390	0.0546	0.0722	0.0399	0.0517	NA	NA	NA	NA	NA
	ROE	-0.6192	0.0226	0.0744	0.1819	0.0432	0.0306	0.0086	NA	NA	NA	NA	NA
ALK	ROA	-0.1229	-0.1875	0.0049	NA	0.0980	0.0470	0.0440	0.0500	0.0390	0.0368	0.0383	0.0549
	ROE	0.4921	-4.4558	-0.0942	0.4842	-0.1826	0.4921	0.0078	0.1151	0.0707	0.0398	0.1300	0.0920
TAP	ROA	NA	NA	-0.0824	0.0015	-0.0001	0.0429	-0.0608	-0.1466	-0.2749	-0.2406	-0.0269	-0.0451
	ROE	NA	NA	-0.5485	0.0293	0.0239	NA	NA	NA	NA	NA	NA	NA
THA	ROA	0.0698	0.0882	0.1186	0.0876	0.0661	0.0715	0.0734	0.0690	0.0409	0.0414	0.0441	0.1062
	ROE	0.1539	0.4941	0.5334	0.8382	1.7572	0.1123	0.1219	0.1277	0.0355	0.1055	0.1638	0.2208
THY	ROA	-0.2841	NA	NA	-0.0322	NA	0.0685	0.0305	-0.0335	-0.0904	-0.0400	-0.0648	0.0685
	ROE	0.1065	NA	NA	0.0546	NA	0.1265	0.0189	-0.9622	-0.3348	-0.1763	-0.3012	-0.1667
VIR	ROA	-0.0045	0.0501	0.0462	0.1286	0.1095	0.0892	0.1144	-0.0592	-0.0639	-0.0832	0.0268	0.0664
	ROE	0.2263	0.1770	0.1840	0.5600	0.5420	0.4149	1.1417	NA	-0.7720	-1.9730	0.0601	0.2764