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Terrorism-induced structural shifts in financial risk: airline stocks in the aftermath of the September 11th terror attacks

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Abstract

This paper investigates the effects of terror attacks of September 11 on a set of airline stocks listed at various international stock markets. Utilizing the Market Model as the relevant return generating mechanism, we document a structural break in systematic risk (beta) for airline stocks. Moreover, our empirical evidence shows that, apart from the systematic risk, idiosyncratic risk has also substantially increased. In quantitative terms, conditional systematic risk has on average more than doubled, while the percentage it represents over total risk has shown a considerable increase. These results have implications for portfolio diversification and the cost (and ability) of airlines in raising capital.

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1. Introduction

We have lost more in one year than we have made in our entire history. This is an industry that is now in a deep hole. We must start looking for footholds and ways to climb quickly out of the financial abyss. (IATA Director General and CEO Pierre J. Jeannot, on the opening day of the Airline Financial Summit, New York City, 8 April, 2002).

The terrorist attacks of 9/11 had had significant economic repercussions. The already by then weakening global economy, with the world's three largest economies slowing down

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(the US officially in a recession since March 2001, Japan and Germany showing virtually zero growth and heading for a recession), was adversely affected. The aviation industry (and especially the passenger carriers) absorbed a large part of the shock.¹

The 9/11 events resulted in a variety of economic as well as political effects. One may argue that these events will have enduring or even permanent effects on issues such as national security or international relations. If the terrorist attacks were a one-off anomaly, economic effects will probably be transitory. Focusing on the economic effects, the airline industry has been directly affected by the terrorist incidents. Terrorism is an act of violence and in this particular case (9/11 attacks) was an exogenous factor exerting an adverse demand shock for the airline industry. The commercial airline industry had already been facing difficulties due to the economic slowdown, and 9/11 events acted as catalysts. In the aftermath of 9/11, passenger traffic on the international scheduled services of International Air Transport Association (IATA) airlines declined by 17% in September,² compared to September 2000, and showed no growth in the first 9 months of the year.³ Carriers were unable to adjust their seat supply and the passenger load factor fell from 78% in August to 69% in September. Most notably, carriers registered in North America were most seriously affected since their passenger (and freight) traffic fell by more than 30% in September. European and Far Eastern carriers experienced a 12% fall in passenger traffic overall, but carriers with a high US component in their services fared worse. A further seven-point fall—to less than 63%—in the passenger load factor took place in October on the international scheduled services of IATA airlines. The year-on-year fall of 23% in October passenger traffic worldwide made the cumulative change for the first 10 months of 2001 negative. North American IATA carriers on average experienced a 33% fall in passenger traffic in October, while for European, Far Eastern and Central and South American carriers on average the fall ranged from 20% to 25%. In December 2001, a similar picture emerged in the global airline industry, through the effects of 9/11. [Table 1](#) summarises the market conditions.⁴

According to IATA's estimates, its members will collectively record a loss of USD 15 billion in 2001. Focusing on the US aviation industry which has been hit the most, we report recent developments for a set of performance indicators for 2001 ([Department of Transportation \(USA\), 1995–2001](#)).

There had been a downward trend in airlines profits in 2001 even before the incidents of 9/11. However, the financial results for the third quarter in 2001, which usually is the most profitable quarter for the airline industry, showed a considerable reduction in demand (see operating profit and net income). Additionally, the spread between the breakeven load factor and the actual load factor reached an unprecedented level of 15%, which effectively summarises the losses made during the third quarter of 2001.⁵ Of considerable importance for our analysis is the fall in labour productivity, essentially measured by RTM's per employee, that dropped by 13.39% compared to the third quarter of 2000. As expected, the

¹ The Insurance and Tourism industries are also sectors facing extraordinary conditions.

² Source: [IATA, 2001a](#).

³ Source: [IATA, 2001a](#).

⁴ Source: [IATA, 2001a](#).

⁵ It should be mentioned, however, that figures for the third quarter are distorted given the 3-day closure of the USA's airspace in the aftermath of the terrorist attack.

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