

Empirical Performance of Airline Mergers and Implications for Consolidation

- A Case Study based Approach -

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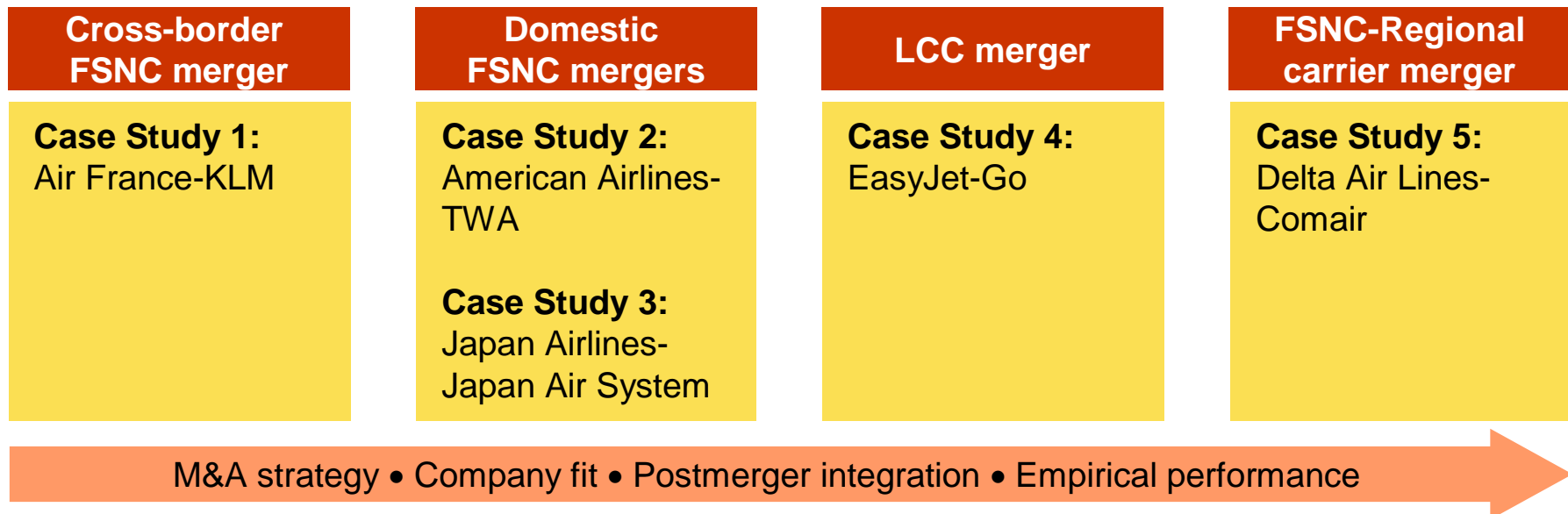
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Introduction

- **Continuous financial difficulties of large (USA) and mid-sized (Europe) incumbents create potential for consolidation in selected airline markets**
- **Recent airline transactions (i.e., Lufthansa/Swiss and US Airways/America West) underline the willingness of airlines to exploit certain M&A opportunities**
- **However, many industry observers remain doubtful about the economic success of airline mergers given past experience**
- **Precedent research work dates back to the first consolidation phase of the US airline market in the 1980s**
 - Knapp (1990): Significant CARs for airline mergers in 1986
 - Solvin/Sushka/Hudson (1991): Significant CARs for airline mergers 1978 – 1988
 - Kim/Lichtenberg (1992): Productivity gains for merged airlines 1970 - 1984
 - Singal (1996): Total CARs significantly positive at 3.2% to 3.4%
- **This research attempt tries to fill the gap by analyzing recent mergers and to identify key success factors for airline mergers**

Research Design

- A case study based research approach is chosen in order to capture all aspects of a explanatory research question with contemporary focus
- In a pattern matching process, specific characteristics of airline mergers are linked to economic success measured by event studies of stock performance



Independent Variables and Occurrences

- **M&A Strategy:**

- Expansive growth strategy (Increase in reach – Complementary Networks)
- Consolidating growth strategy (Increase in density – Overlapping Networks)

- **Company Fit:**

- Strategic (Mission, product scope and customer base)
- Technological (Fleet structure)
- Organizational and cultural (Subjective evaluation)

- **Integration Approach:**

- Full integration
- Wet-lease
- Franchise
- Independence

Case 1: Air France – KLM (2003)

Merger Characteristics

- **M&A Strategy:**

- Expansive growth strategy due to complementary networks and guarantees by Air France to maintain Amsterdam hub

- **Company Fit:**

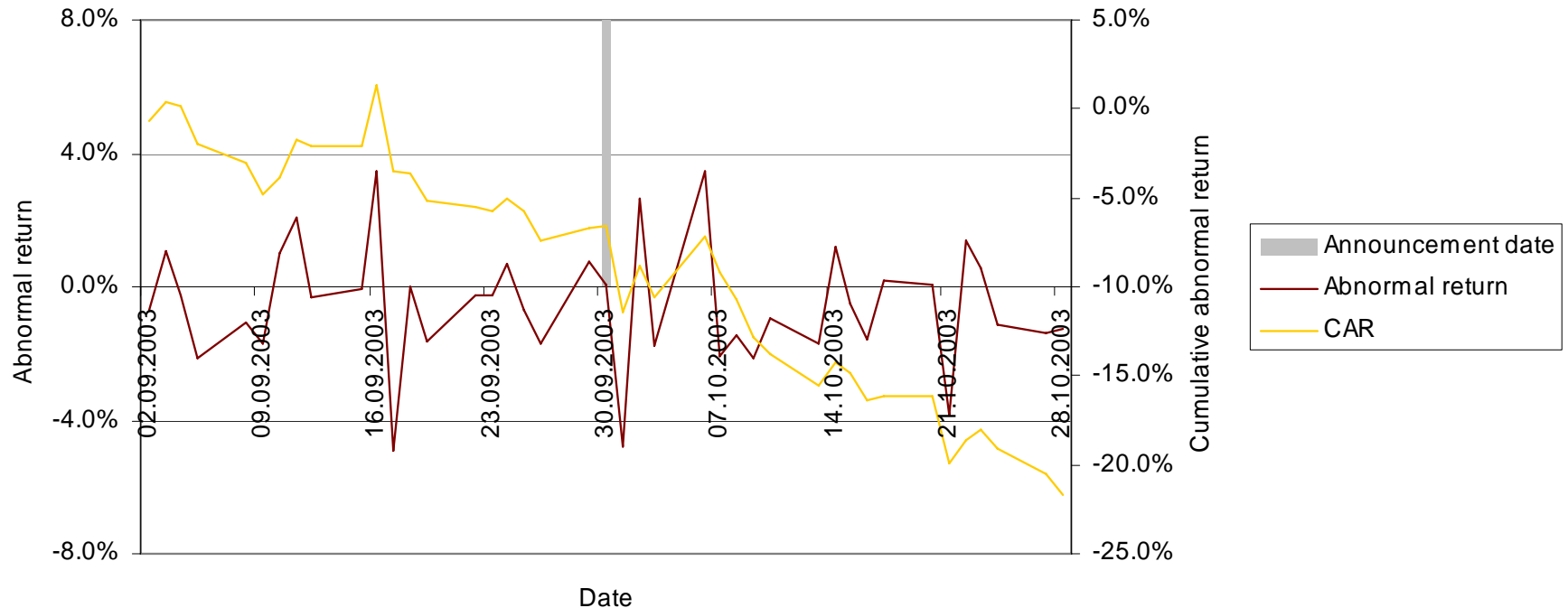
- Strategic: Good based on similar strategic orientation
- Technological: Medium given different short and medium range fleet
- Organization and cultural fit: Good based on Dutch flexibility

- **Integration Approach:**

- Corporate governance structure that guarantees large degree of independence of KLM especially in a 3-year transitional period

Case 1: Air France – KLM (2003)

Total CAR of Air France-KLM (Event period:-20/+20 MMM)



Case 1: Air France – KLM (2003)

Statistical Analysis of Stock Market Performance

EVW R (MMM)	CAR (-20/+20)	CAR (-10/+10)	CAR (-5/+5)	CAR (-1/+1)	CAR (0)
t-value	-2.024602665	-1.590089613	-0.666901961	-1.386737593	0.036745117
Crit. Value (10%)**	±1.66	±1.66	±1.66	±1.66	±1.66
Crit. Value (5%)**	±1.98	±1.98	±1.98	±1.98	±1.98
Crit. Value (1%)**	±2.63	±2.63	±2.63	±2.63	±2.63
<hr/>					
T-test (MMM)					
S(R) AF	0.019535372				
S(R) KL	0.026297406				
<hr/>					
Average equity value weights					
AF	84.8%				
KL	15.2%				
<hr/>					
** Two-tailed test				Significant with a 90% confidence interval	

Case 2: American Airlines – TWA (2000)

Merger Characteristics

- **M&A Strategy:**

- Initially expansive growth with the intention to create an additional hub in St. Louis to connect east-west coast destinations

- **Company Fit:**

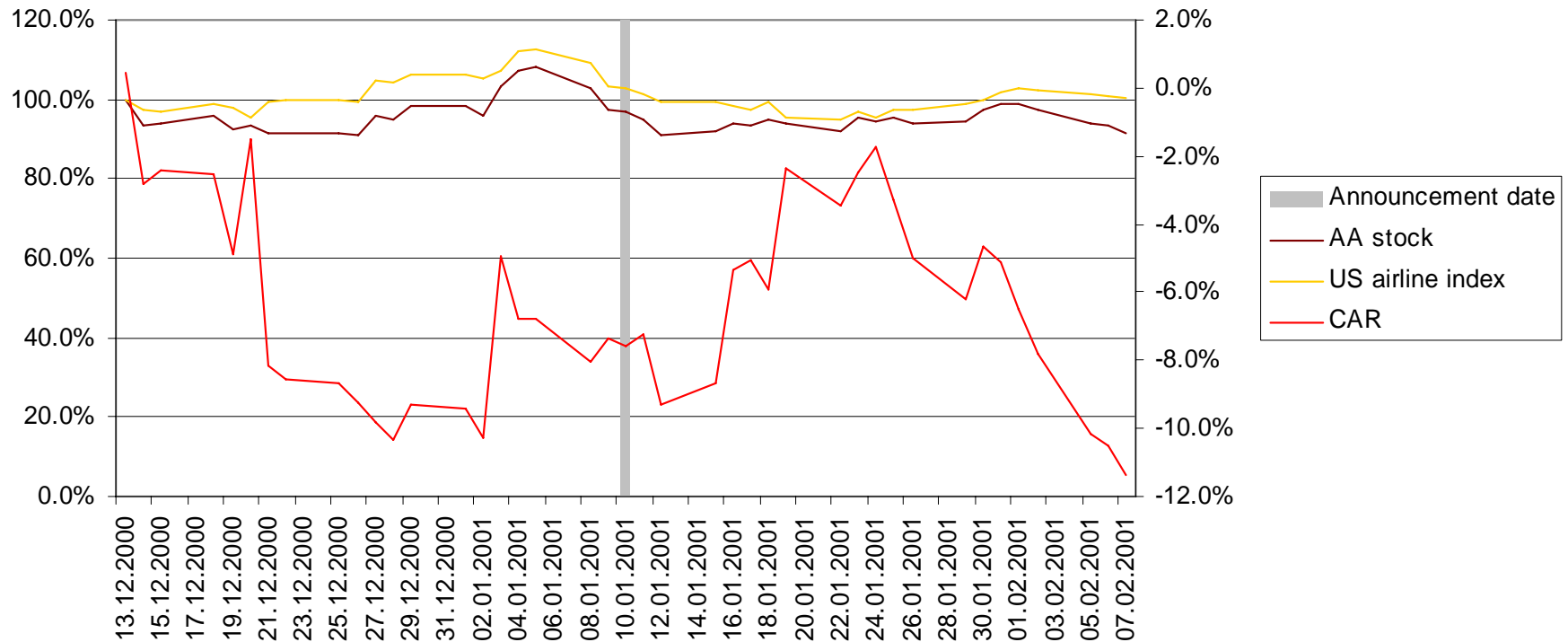
- Strategic: Medium due to different service quality perception by customers
- Technological: Limited due to different cockpit design on the MD-80 and different engine type on the B757-200
- Organization and cultural fit: Substantial misfit due to unrewarding culture of TWA

- **Integration Approach:**

- Full integration of corporate governance, network planning and flight integrations
- Massive headcount reduction after 9/11

Case 2: American Airlines – TWA (2000)

CAR of American Airlines (Event period:-20/+20 MMM)



Case 2: American Airlines – TWA (2000)

Statistical Analysis of Stock Market Performance

Date	AA stock price	Return	Price Index	Return Index	R(MMM)	CAR (-20/+20)	CAR (-10/+10)	CAR (-5/+5)	CAR (-1/+1)
<u>Market Model Method (MMM)*</u>			<u>T-test (MMM)</u>		t-value	-1.037892307	0.683957043	0.475353303	0.076062204
α	0.000857696		Mean	4.16334E-19	Crit. Value (10%)**	±1.66	±1.66	±1.66	±1.66
β	1.154411185		$\sum(R_t - R)^2$	0.029117926	Crit. Value (5%)**	±1.98	±1.98	±1.98	±1.98
R^2	0.640826676		DoF	99	Crit. Value (1%)**	±2.63	±2.63	±2.63	±2.63
			S(R)	0.017149941					
<u>Mean adjusted return (MAR)*</u>			<u>T-test (MAR)</u>						
Cum. Return	0.270083937		Mean	-9.88792E-19					
Mean adjusted	0.002700839		$\sum(R_t - R)^2$	0.08106929					
			Degrees of freedom	99					
			S(R)	0.028616109					

*Estimated from 100 days preceding the event period

** Two-tailed test

Significant with a 90% confidence interval

Case 2: American Airlines – TWA (2000)

Long-term Performance Benchmarking

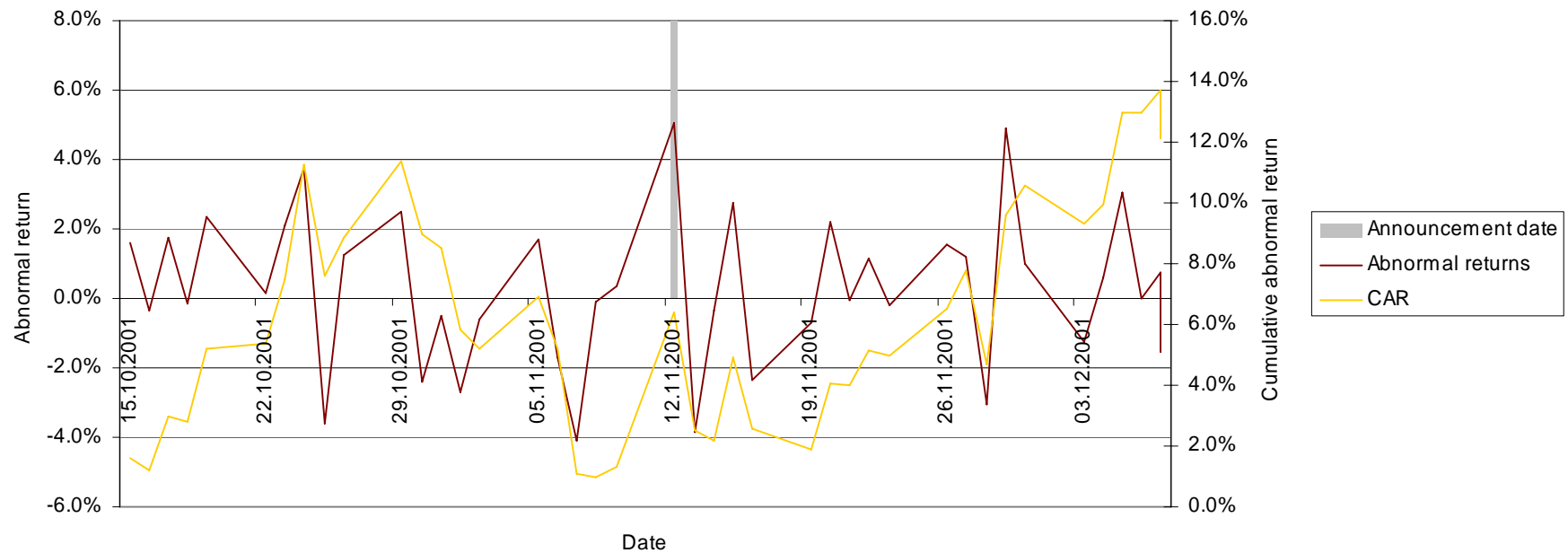


Case 3: Japan Airlines – Japan Air System (2001) Merger Characteristics

- **M&A Strategy:**
 - Consolidating growth with focus on increasing density within existing network
- **Company Fit:**
 - Strategic: Good given similar product range and customers portfolio
 - Technological: Limited due to entirely different fleet planning
 - Organization and cultural fit: Good as both airlines are strictly Japanese-style managed
- **Integration Approach:**
 - Full integration in a two staged process eliminating fleet differences and harmonizing operations

Case 3: Japan Airlines – Japan Air System (2001)

Total CAR of JAL-JAS (Event period:-20/+20 MMM)



Case 3: Japan Airlines – Japan Air System (2001)

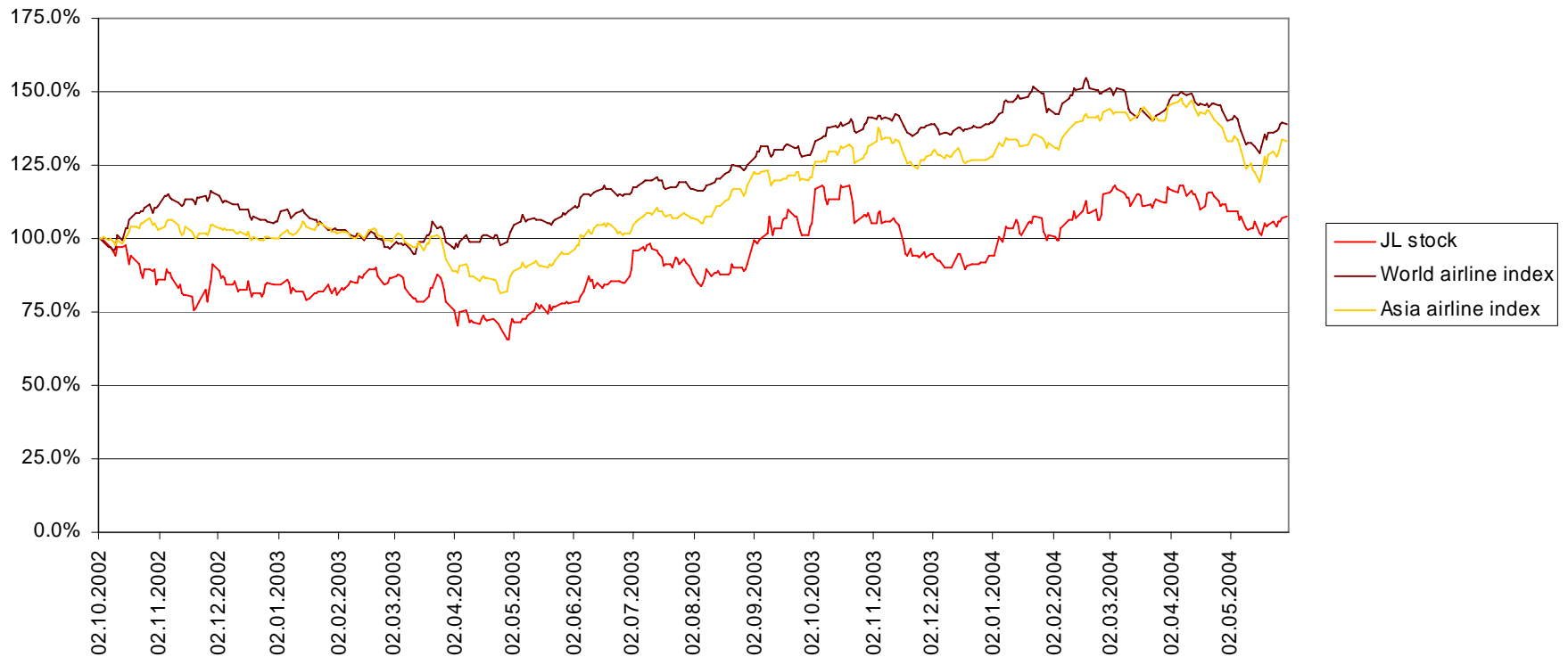
Statistical Analysis of Stock Market Performance

EVW R (MMM)	CAR (-20/+20)	CAR (-10/+10)	CAR (-5/+5)	CAR (-1/+1)	CAR (0)
t-value	0.996617845	-0.263798214	-0.524001937	0.472641009	2.652927612
Crit. Value (10%)**	±1.66	±1.66	±1.66	±1.66	±1.66
Crit. Value (5%)**	±1.98	±1.98	±1.98	±1.98	±1.98
Crit. Value (1%)**	±2.63	±2.63	±2.63	±2.63	±2.63
T-test (MMM)					
S(R) JL	0.021643483				
S(R) JD	0.007066999				
Average equity value weights					
JL	88.4%				
JD	11.6%				

** Two-tailed test

Significant with a 90% confidence interval

Case 3: Japan Airlines – Japan Air System (2001) Long-term Performance Benchmarking



Case 4: easyJet – Go (2002)

Merger Characteristics

- **M&A Strategy:**

- Blend of expansive and consolidating growth since networks were complementary but density increased were also envisioned

- **Company Fit:**

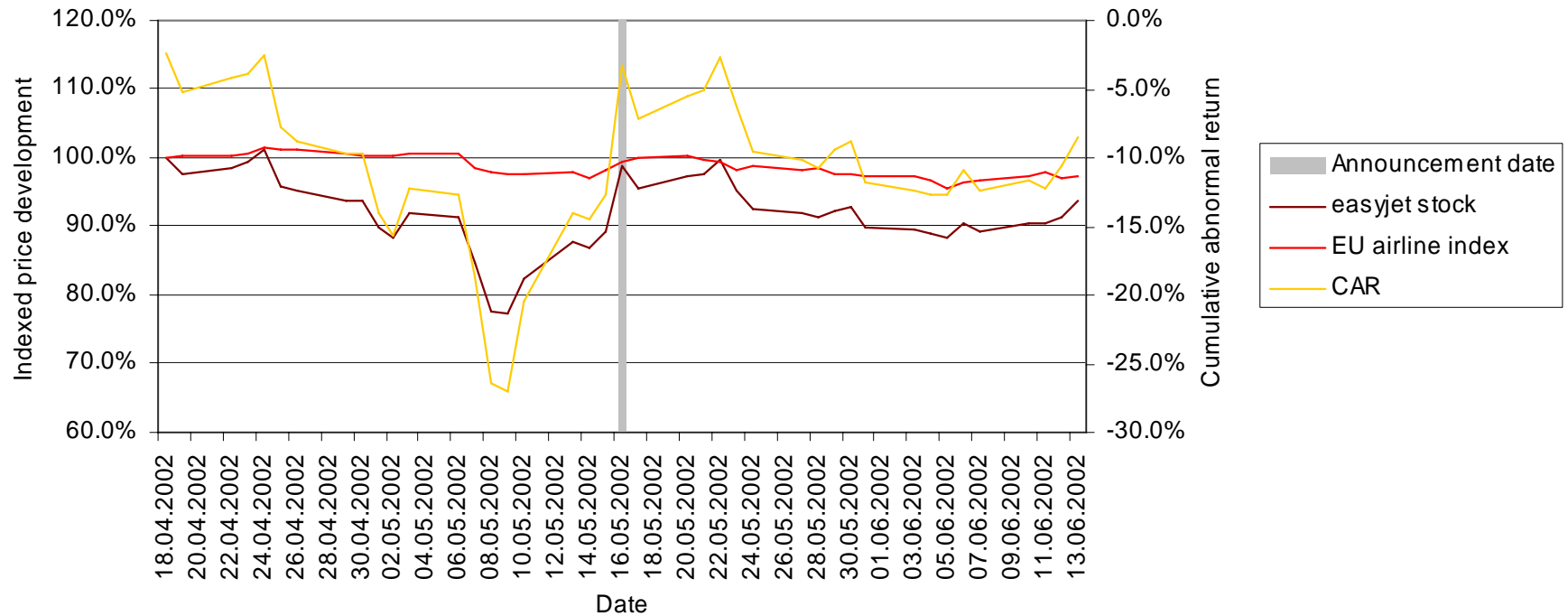
- Strategic: Perfect since Go was created on the basis of the easyJet model
- Technological: Perfect as fleet were identical at that point in time
- Organization and cultural fit: Good since key principle were alike

- **Integration Approach:**

- Full integration within an ambitious less than 24 month implementation time frame

Case 4: easyJet – Go (2002)

CAR of easyJet (Event period:-20/+20 MMM)



Case 4: easyJet – Go (2002)

Statistical Analysis of Stock Market Performance

Date	U2 stock price	Return	Price Index	Return Index	R(MMM)	CAR (-20/+20)	CAR (-10/+10)	CAR (-5/+5)	CAR (-1/+1)
<u>Market Model Method (MMM)*</u>			<u>T-test (MMM)</u>		t-value	-0.711615785	0.615057165	3.275779026	2.279380261
α	0.001004661	Mean	9.54098E-20	Crit. Value (10%)**	±1.66	±1.66	±1.66	±1.66	
β	0.761495092	$\Sigma(R_t - R)^2$	0.034091843	Crit. Value (5%)**	±1.98	±1.98	±1.98	±1.98	
R^2	0.179701653	DoF	99	Crit. Value (1%)**	±2.63	±2.63	±2.63	±2.63	
		S(R)	0.018556995						
<u>Mean adjusted return (MAR)*</u>			<u>T-test (MAR)</u>						
Cum. Return	0.198983504	Mean	1.49186E-18						
Mean adjusted return	0.001989835	$\Sigma(R_t - R)^2$	0.041560298						
		Degrees of fre	99						
		S(R)	0.020489046						

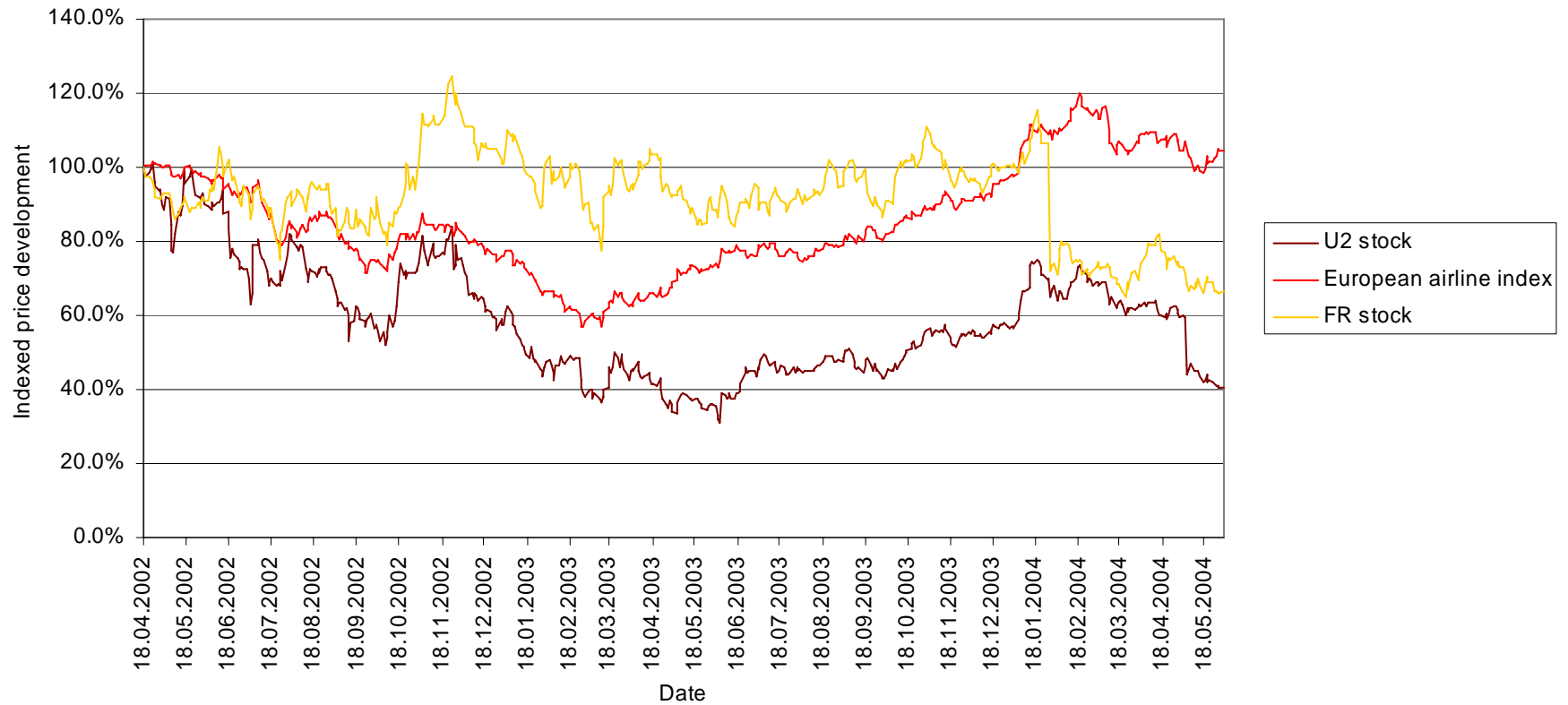
*Estimated from 100 days preceding the event period

** Two-tailed test

Significant with a 90% confidence interval

Case 4: easyJet – Go (2002)

Long-term Performance Benchmarking



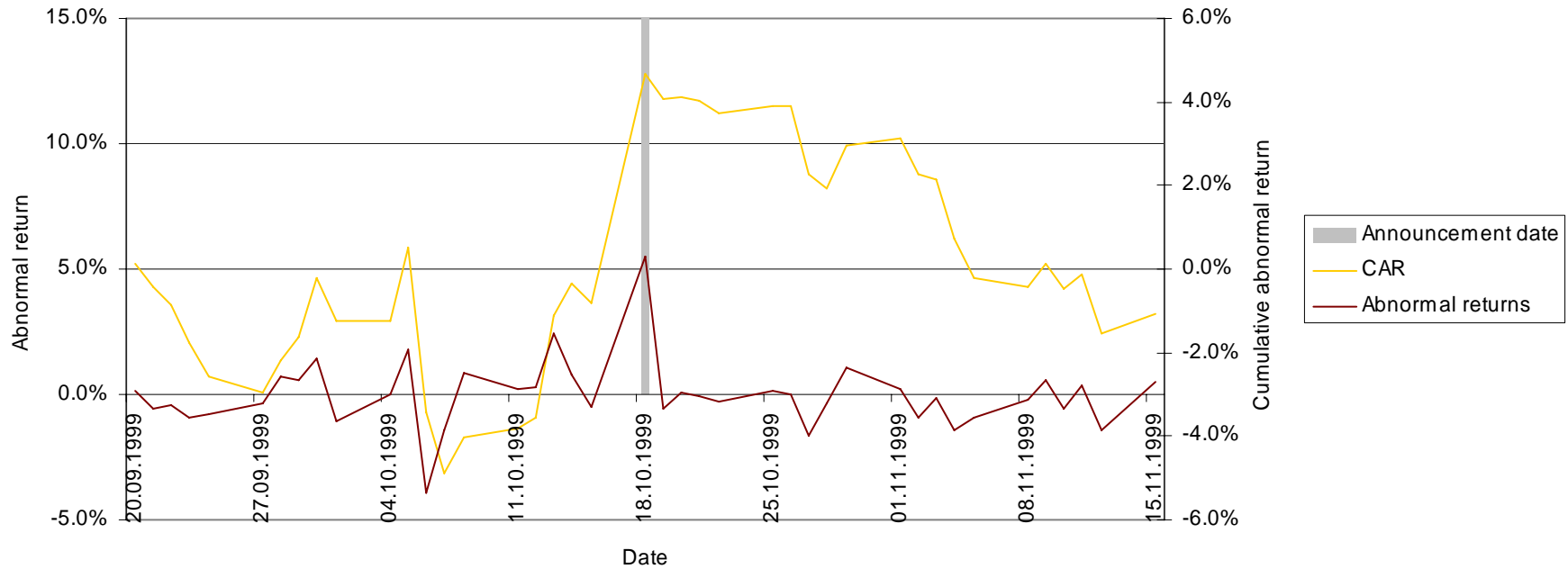
Case 5: Delta Air Lines – Comair (1999)

Merger Characteristics

- **M&A Strategy:**
 - Expansive growth into regional markets
- **Company Fit:**
 - Strategic: Good given long-term history in collaboration
 - Technological: Perfect due to same fleet structure as ASA
 - Organization and cultural fit: Limited as labor agreements between Delta and Comair varied substantially
- **Integration Approach:**
 - Wet-lease structure to continuously benefit from lower cost structure

Case 5: Delta Air Lines – Comair (1999)

Total CAR of Delta Air Lines-Comair (Event period:-20/+20 MMM)



Case 5: Delta Air Lines – Comair (1999)

Statistical Analysis of Stock Market Performance

EVW R (MMM)	CAR (-20/+20)	CAR (-10/+10)	CAR (-5/+5)	CAR (-1/+1)	CAR (0)
t-value	-0.169351824	1.059112904	2.630669336	2.807292157	6.010194399
Crit. Value (10%)**	±1.66	±1.66	±1.66	±1.66	±1.66
Crit. Value (5%)**	±1.98	±1.98	±1.98	±1.98	±1.98
Crit. Value (1%)**	±2.63	±2.63	±2.63	±2.63	±2.63
T-test (MMM)					
S(R) DL	0.011966046				
S(R) OH	0.007066999				
Average equity value weights					
DL	76.3%				
OH	23.7%				

** Two-tailed test

Significant with a 90% confidence interval

Case 5: Delta Air Lines – Comair (1999) Long-term Performance Benchmarking



Summary of Key Findings (1/2)

		M&A strategy	Company fit	Postmerger intergration	Empirical performance
Cross-boarder FSNC merger	Case Study 1: Air France-KLM	<ul style="list-style-type: none"> • Expansive growth (initially dominating) 	<ul style="list-style-type: none"> • Strategic: good • Fleet: medium • Organization and culture: good 	<ul style="list-style-type: none"> • Independent target • Complex corporate governance structure 	<ul style="list-style-type: none"> • Acquirer: -CAR* • Target: +CAR* • Total: -CAR*
	Case Study 2: American Airlines-TWA	<ul style="list-style-type: none"> • Expansive growth (initially) 	<ul style="list-style-type: none"> • Strategic: medium • Fleet: limited • Organization and culture: limited 	<ul style="list-style-type: none"> • Full integration • Fleet and cultural issues hampering integration • Massive cuts in capacity and HR 	<ul style="list-style-type: none"> • Acquirer: -CAR* • Long-term effect: under-performance
Domesitic FSNC mergers	Case Study 3: Japan Airlines-Japan Air System	<ul style="list-style-type: none"> • Consolidating growth 	<ul style="list-style-type: none"> • Strategic: good • Fleet: limited • Organization and culture: good 	<ul style="list-style-type: none"> • Full integration • Smooth two-phased integration • Moderate cuts in HR 	<ul style="list-style-type: none"> • Acquirer: +CAR* • Target: +CAR* • Total: +CAR* • Long-term effect: under-performance

Summary of Key Findings (2/2)

		M&A strategy	Company fit	Postmerger intergration	Empirical performance
LCC merger	Case Study 4: easyJet-Go	<ul style="list-style-type: none"> Blend of expansive and consolidating growth 	<ul style="list-style-type: none"> Strategic: perfect Fleet: perfect Organization and culture: good 	<ul style="list-style-type: none"> Full integration Timely integration process 	<ul style="list-style-type: none"> Acquirer: +CAR* Long-term effect: under-performance
FSNC-Regional carrier merger	Case Study 5: Delta Air Lines-Comair	<ul style="list-style-type: none"> Expansive growth 	<ul style="list-style-type: none"> Strategic: good Fleet: perfect Organization and culture: limited 	<ul style="list-style-type: none"> Wet-lease relationship Massive cultural problems during integration 	<ul style="list-style-type: none"> Acquirer: 0CAR Target: +CAR** Total: +CAR* Long-term effect: under-performance

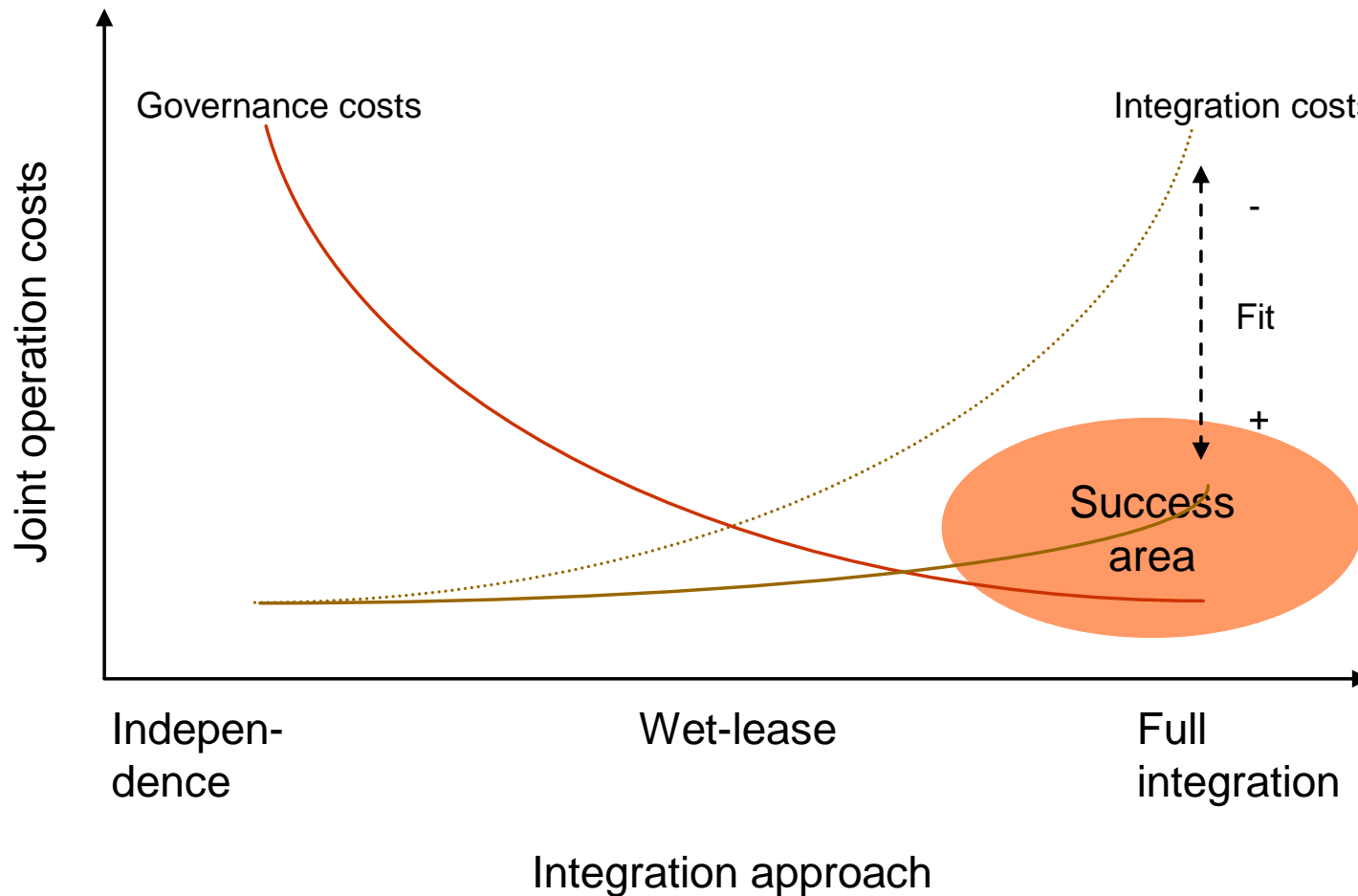
*Significant result for at least one event period

**Significant result for all event periods

Conclusions

- **M&A Strategy:**
 - Empirical evidence shows that expansive growth strategies failed for mergers among FSNCs
 - However, for regional carriers and LCCs expansive strategies created value
- **Company Fit:**
 - Cases such as easyJet – Go or American Airlines – TWA underline the importance of a sufficient company fit among acquirer and target as a prerequisite for success
 - Technological fit presents a great hurdle given the lack of standardization in aircraft specifications
 - Organization and cultural fit is mainly related to conflicts regarding labor arrangements
- **Integration Approach:**
 - Inconsistent results with full integration not delivering guaranteed economic value (i.e., JAL – JAS vs. American Airlines – TWA)
 - Refined interpretation framework required

Refined Interpretation Framework for Integration Approach



Implications for Future Consolidation in Europe

- **M&A as a means to consolidate the European airline industry is going to be considered by key players but will be a cautiously used tool given issues in precedent transactions**
- **Future transactions should be expected between overlapping networks in order to gain from economies of density rather than between complementary networks which yield doubtful synergies**
- **Each transaction will have to be individually crafted since the right fit and integration approach are vital for success of a airline transaction**
- **Regulatory hurdles in any transaction appear minimal since European liberalization moves ahead and circumventing deal structures are available as exemplified in the acquisitions of KLM and SWISS**

The Acquisition of Air Dolomiti Is a Comprehensive Case Study to Teach Students the Challenges of M&A in the Airline Industry

The Acquisition of Air Dolomiti



In his office at the Frankfurt International Airport, Dr. Karl-Ludwig Kley, Chief Financial Officer of Lufthansa German Airlines, just read the letter in charming Italian English for the second time. He had expected the letter to arrive sooner or later, but still he reacted with a slight sense of disbelief and knew that a number of strategic decisions had to be made quickly.

On 6 March 2003, Domenico Alice Leali, majority shareholder and chairman of Air Dolomiti, notified Dr. Karl-Ludwig Kley about his intention to exercise his put option to sell a 31.23% stake in the company to Lufthansa. This transaction would transfer control of Air Dolomiti to Lufthansa and trigger a mandatory tender offer for all the remaining shares. As a consequence Dr. Karl-Ludwig Kley and his key advisory staff had to take concrete actions how to structure the tender offer. In addition, the Lufthansa board would have to evaluate the strategic options on the complete integration following a successful takeover.

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