

Shareholders' valuation of merger/alliance-related events
in the Canadian airline industry — 1991 to 1993

by

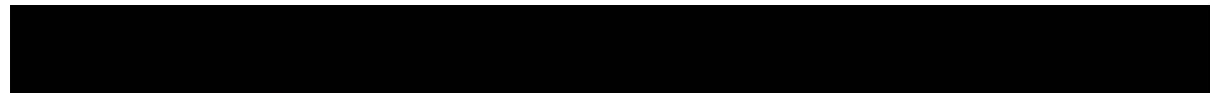
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We accept this thesis as conforming
to the standard required



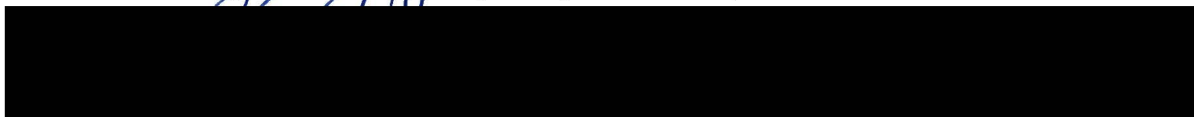
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ABSTRACT

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Using an event study, we investigate the preferences of investors regarding the merger/alliance possibilities between Air Canada, Canadian Airlines (CAI), and American Airlines over the 1991-1993 period. We conclude that investors in both Canadian firms preferred an alliance between CAI and American to a merger between Air Canada and CAI. This, despite Air Canada management's pursuit of a merger with CAI. However, because Air Canada's shareholders did not strongly support CAI's foreign alliance after the possibility of a domestic merger was eliminated, we cannot conclude that investors preferred a domestic duopoly to a domestic monopoly. We also find strong evidence of agency costs: Air Canada's management did not act in the interests of their shareholders when they pursued a "made in Canada solution" through a merger with CAI.

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1 Introduction

1.1 The issue

In 1991, the domestic Canadian airline industry was dominated by two carriers: Air Canada and Canadian Airlines International Ltd. (CAI).¹ By the end of that year, industry analysts expected the industry to evolve toward one of two possible structures: a merger between Air Canada and CAI, or an equity alliance between one or both of the carriers and a U.S. partner.² The status quo would likely lead to PWA's bankruptcy.

Due to regulatory, financial, and contractual constraints, the likelihood of these different scenarios varied considerably from early 1992 through 1993. In addition, there were considerable stock price variations over these two years as the industry underwent structural changes. These two observations suggest that a capital market approach may be particularly useful to investigate investors' preferences for these options. In this paper, an "event study" methodology is employed to examine how investors reacted to new information (events) affecting the merger/alliance possibilities in the Canadian airline industry.

1.2 Objectives

A typical event study examines how new information affects investors' valuation of a firm, an industry, or an economy. This research will use event study methodology to

¹ Air Canada was the larger of the two carriers with 1991 revenues of \$3.6 billion. PWA (originally known as Pacific Western Airlines), the parent company of CAI, had 1991 revenues of \$2.9 billion. The market shares in 1991 were 51 per cent, 42 per cent, and 7 per cent for Air Canada, CAI, and other carriers (including charters) respectively.

² Speculation focused on alliances between CAI and AMR (parent company of American Airlines), and between Air Canada and USAir.

examine investor preferences regarding the structure of the Canadian airline industry. We hope to find evidence indicating whether investors preferred a foreign alliance between AMR and CAI or a merger between Air Canada and CAI. We also investigate whether these preferences imply a structural interpretation — i.e., can we infer from these preferences whether investors preferred a domestic monopoly market structure to a duopoly with foreign alliance partners. We also consider evidence of “agency costs” in our investigation of whether Air Canada’s management acted according to the interests of shareholders when they pursued a merger with CAI.

According to the efficient markets theory, in an efficient market, share prices will reflect all information that is available to investors.³ Thus, when investors learn of new information, share prices will immediately adjust to reflect this. By observing the time that an event occurs (where an “event” is something that provides investors with new information about the future profitability of a firm), and the reaction of share prices, we can attempt to estimate the magnitude and the significance of the event’s impact. This research will provide an example of how the event study methodology can be used to investigate investors’ expectations about the consequences of merger-related choices.

The next chapter will provide a lengthy overview of the Canadian airline industry for the period from late 1991 to early 1994, in addition to a brief summary of the industry’s origins in Canada. This will allow the reader to place the merger-related events in a historical context. In Chapter 3 we present a brief survey of some of the literature which influenced this research. In Chapter 4, we explain the empirical methods used to analyse

³Fama (1976, Chapter 5) provides a good discussion of efficient markets theory.

the data. Chapter 5 describes the merger-related events that we consider in the analysis. Results are presented in Chapter 6. Chapter 7 offers a summary and some conclusions. Finally, three appendices provide a detailed description of all the events used in this study; some “sensitivity analysis” results; and a list of the “extreme” stock returns for the two airlines.

2 Overview of the Canadian airline industry

✓ *“The results of regulatory reform have created a new environment, a stable, viable, competitive airline sector.”*

Deputy Prime Minister Donald Mazankowski, April 1988.⁴

2.1 Origins

(In 1937, the Canadian government established Trans-Canada Air Lines (TCA), a crown corporation⁵ that would provide transcontinental air passenger service within Canada. It became government policy in 1938 for TCA (renamed Air Canada in 1965) to have a monopoly on all domestic transcontinental, transborder (i.e., from Canada to the U.S.), and international routes.⁶ These designations lasted until 1959, 1967, and 1948 respectively.)

The privately owned Canadian Pacific Airlines (CPAL) was created in 1942 after Canadian Pacific Railway consolidated its recently purchased collection of nine small airlines and the larger Canadian Airways. CPAL was designated as Canada’s flag carrier for Pacific routes in 1948.⁷ One year later, it began flights to Tokyo and Hong Kong. In 1959 Ottawa allowed CPAL to offer service between Montreal and Vancouver — initially, the carrier could only provide one flight daily, but these capacity constraints were relaxed over time, and removed entirely by 1978. By 1979 CP Air (renamed from CPAL in 1968) was allowed to compete with Air Canada on all transcontinental routes.

⁴The Globe and Mail, November 25, 1992, page A4.

⁵TCA was a wholly owned subsidiary of the crown corporation Canadian National Railways.

⁶The Transport Act of 1938 imposed economic regulation of all aspects of commercial aviation, with the intention of lowering fares through the elimination of “wasteful and destructive competition.”

⁷The carrier was awarded the right to fly between Canada and Australia with stops in Honolulu and Fiji — after TCA turned down the route.

In 1965, the federal government established a two airline policy for international service, and CPAL was designated flag carrier for scheduled service to Asia, Australia, New Zealand, Latin America, Southern and South Eastern Europe, and Amsterdam. Air Canada retained exclusive rights to the lucrative European and Caribbean routes.

During the post-war era, many regional carriers were established. A government policy statement in 1968 required these carriers to supplement the domestic (transcontinental) activities of the two national carriers, but not to compete with them. Similarly, Air Canada and CP Air did not compete with the regionals on their most important intra-regional routes. In 1969, another policy statement further clarified the areas where the five regional carriers could operate.⁸

The regional carrier Central British Columbia Airways (established in 1945), was renamed Pacific Western Airlines (PWA) in 1953. That same year, Max Ward established Wardair, a charter airline. In 1974, the Alberta government purchased PWA, only to privatize it nine years later. In August of 1979, Wardair was allowed to provide domestic, advance booking charters.

Air Canada maintained a monopoly on all transborder routes until 1967 when CPAL was allowed to fly between Vancouver and San Francisco. However, Air Canada continued to be allocated most of the U.S. routes that came available.

⁸Eastern Provincial Airlines covered the Atlantic provinces; Quebecair serviced most of Quebec; Nordair covered most of Ontario and north-western Quebec; Transair covered the prairies and north-western Ontario; and Pacific Western Airlines handled British Columbia and western Alberta.

2.2 The move toward deregulation

(By 1978 the passenger airline industry in the United States was deregulated; this was a significant factor which led to deregulation pressures in Canada. Canadian consumers could readily observe the resulting lower airfares available to their U.S. counterparts, and they put pressure on politicians in an attempt to force deregulation in Canada. In addition, since most Canadians live so close to the U.S. border, there was incentive to drive to a U.S. airport and fly from there.

△ In early 1984, the “New Canadian Air Policy” was unveiled in Canada; a first step in loosening the regulation of the Canadian airline industry. The country was divided into North and South regions: the sparsely populated northern region remained regulated (and continues so today), while in the southern region, entry and exit conditions were relaxed and there were no restrictions on lower fares.⁹ The “Freedom to Move” policy proposing near full deregulation was introduced in 1985. This led to the National Transportation Act of 1987, which became law in 1988. The industry now faced few restrictions on pricing and market entry and exit.¹⁰ A period of intense competition and industry consolidation had begun.)

By 1986 most of the small regional carriers were controlled by CP Air, PWA, or Air Canada; Wardair remained independent. Early in 1987, PWA purchased CP Air; the operations were combined under the name Canadian Airlines International Ltd. (CAI) and

⁹Fare regulation had begun with the Transport Act of 1938, requiring airlines to have their fares approved by a federal regulator. By the 1950s, distance-related tapered fare formulas were imposed.

¹⁰The federal government continued to control the allocation of international destinations to the carriers.

PWA continued as the holding company. Air Canada was privatized in 1988-89; and in 1989, PWA acquired Wardair. The airline industry in Canada was now a near duopoly, with Air Canada and CAI holding about 93 per cent of the market.

Intense competition combined with a global recession led to both firms sustaining heavy losses beginning in 1990. These losses, and the trend toward global consolidation in the airline industry led both carriers to seek out international alliances — Air Canada with Continental, and CAI with American Airlines. CAI's difficulties were severe enough that it could not survive as an independent carrier. By the fall of 1990¹¹, PWA concluded that to remain a viable company, it would have to form a strategic alliance with another major North American airline.

2.3 Air Canada and PWA pursue a merger: part one

On September 29, 1991, PWA senior vice president Dave Murphy, acknowledged for the first time that PWA would consider a merger with Air Canada if its other survival strategies failed. This acknowledgement came after PWA announced an unexpectedly large second quarter loss, and expectations of two more years of heavy losses. PWA's preferred strategy was to sell equity to a U.S. carrier and reduce operating expenses.

Early in November, Robert Freedman, president of an Ottawa-based airline consulting firm, revealed that his research indicated that Canada could not continue to support two international airlines. He suggested that a regulated monopoly would be better for Canada than an unprofitable duopoly. This option would also be preferable to a

¹¹ According to PWA's 1992 annual report.

domestic monopoly with international competition, or alliances with U.S. carriers. Also in November, CAI president Kevin Jenkins said that Canada's airline industry would require a major restructuring within the next 18 months, but he said that speculation of a merger with Air Canada was premature.

2.4 American Airlines and PWA pursue an alliance: part one

In December 1991, a report in the Fort Worth Star-Telegram stated that American Airlines had offered to purchase a US\$250 million stake in CAI — this led to a nearly 12 per cent one day jump in PWA's share price. The Calgary Herald claimed that its sources said that a deal was expected by the end of the month. CAI officials would not confirm that a deal was in the works.

Rumours of the deal led federal Transport Minister Jean Corbeil to say that Ottawa would not try to prevent a take-over if Canada's airline industry could remain competitive.¹² He also indicated that an AMR-CAI alliance might be preferable to an Air Canada-CAI merger. Air Canada CEO Claude Taylor responded to the rumour by claiming that "Such a prospect [an AMR-CAI alliance] would mark the beginning of the end for the Canadian airline industry."¹³

Some analysts viewed the possible AMR-CAI alliance as a quasi-takeover by AMR, with survival being CAI's motivation. Steve Garmaise, an analyst with First Marathon Securities Ltd., claimed that American would insist on acting as the controlling partner in

¹²Canadian law allows foreigners to own a maximum of 25 per cent of Canadian airlines. Also, due to a provincial law, a single shareholder can hold no more than 10 per cent of PWA's voting shares (although PWA could get around this by selling interest in CAI, its subsidiary).

¹³The Globe and Mail, December 18, 1991, page B7.

an alliance. "The only way this thing makes sense is for American Airlines to take over management control and run this airline out of Dallas-Fort Worth."¹⁴ A further incentive for AMR was CAI's connections with Asia, which were much more extensive than American's.¹⁵ AMR's interest in CAI was probably strengthened due to the fact that Donald Carty, American's executive vice-president of finance, had previously been president of CP Air.

Early in January 1992, in a lengthy discussion about the future of CAI, the *Globe and Mail*¹⁶ suggested that there were three possible scenarios: the purchase of control of CAI by AMR; a deal between CAI and Air Canada; or the status quo (the least likely scenario). There were also some reports of a possible deal between Delta Air Lines Inc. and CAI. At this point, neither CAI nor AMR would confirm that a deal was in process. The goal for PWA was to obtain the highest price for its shareholders while gaining the approval of Ottawa. PWA was experiencing severe financial difficulties at this time, and some observers believed that it would try to complete a deal as soon as possible, before it ran out of cash.

Also in January 1992, the *Globe and Mail*¹⁷ revealed that a federal task force had recommended that the limit on foreign investment in Canadian airlines be raised from 25 to 49 per cent, and that Canada's airlines should be able to sell their foreign routes to each

¹⁴ The *Globe and Mail*, December 19, 1991, page B2.

¹⁵ American served Tokyo with flights from Dallas-Fort Worth, Seattle, and San Jose, while CAI served at least six Asian cities (including Tokyo).

¹⁶ January 10, 1992, pages B1 and B4.

¹⁷ January 25, 1992, pages A1 and A2.

other.¹⁸ Easing the restriction on foreign investment would be necessary for PWA to complete a deal with AMR (it was believed that AMR wanted to purchase 49 per cent of CAI), while the right to sell international routes would be useful if Air Canada wanted to purchase CAI's overseas routes instead of merging with the company.

2.5 Air Canada advocates a "made in Canada" solution

Early in February 1992, Air Canada was openly opposing the rumoured AMR-CAI alliance, and was calling for a "made-in-Canada" solution to the industry's problems. Air Canada's Claude Taylor would not confirm that they were proposing an Air Canada-CAI merger, but this was believed to be the case.

"With one larger airline, Canada would have a stronger presence globally and would have the potential, in fact, to be a leading partner — the senior North American partner — in one of the developing mega-systems."¹⁹ This statement by Taylor left little doubt about Air Canada's intentions.

PWA's CEO Rhys Eyton acknowledged a merger was a possibility, saying that they had "not ruled out any alternatives, including a made-in-Canada solution."²⁰ Eyton also claimed that Air Canada was lobbying federal government officials to oppose a possible agreement between CAI and AMR.

¹⁸The task force, commissioned in June 1990, was known as The Ministerial Task Force on International Air Policy. The report had been available to the government since September 10, 1991, but was not released to the press until January 24.

¹⁹The Globe and Mail, February 6, 1992, page B8.

²⁰Ibid.

Eyton explained that the difficulty in completing an alliance/merger deal with another carrier was due to the problem of finding the right partner and getting the most value for PWA's shareholders. ^X (“We are not going to make a deal that is bad for shareholders. At the moment, the airline is running well, our cash is holding out and if we must we can carry on for quite a while.”²¹)

On February 20, the Globe and Mail reported that Hollis Harris had been hired to replace Claude Taylor as the president and chief executive of Air Canada (Taylor would continue as chairman). Harris was a former executive with Delta Air Lines (and spent about 35 years with that airline), and had been chairman of Continental Airlines for one year until August 1991. An industry insider claimed that Harris' hiring was the first step in Claude Taylor's "made-in-Canada" solution. Additional moves expected by the carrier included a shake-up of its management structure, a merger with CAI, and a purchase of a U.S. carrier (probably Continental or TWA, both of which were in Chapter 11 bankruptcy). Air Canada announced a record \$218 million loss (\$2.94 per share) for 1991 on Harris' first day as president.

At his first meeting with the media as president of Air Canada, Harris declared that there was room for only one major airline in Canada, and he pledged to accelerate discussions with CAI in order to complete a merger. He also spoke of his plans to seek an alliance with USAir Inc. He said that both deals “must happen this year for the benefit of [all] parties.”²²

²¹ The Globe and Mail, February 7, 1992, page B2.

²² The Globe and Mail, February 22, 1992, page B1.

The following week PWA announced that it had lost \$161 million for 1991. This amounted to a loss per (common) share of \$3.66, compared to a loss per share of \$0.60 in 1990. In March, the Canadian Bond Rating Service Ltd. dropped the company's debentures from B (high) to C; the rating given to "junk" bonds. The move reflected the company's view that PWA faced a poor financial outlook for 1992.

Although the offers were not made public at the time, it was later revealed that Air Canada had made two offers to PWA, but both were rejected in mid-March of 1992 (talks had begun in the summer of 1991). In one case, PWA was offered more than the market value of its outstanding shares in exchange for CAI's international routes (CAI was to continue operating as a domestic carrier). This offer was rejected because PWA did not feel that CAI could survive as a domestic carrier. The second offer was for a merger — it was rejected because PWA did not feel that it provided value to its shareholders, it would result in large job-losses, and it would result in a monopoly for Air Canada.²³

2.6 PWA breaks off merger talks with Air Canada (AMR-PWA alliance: part two)

On March 19, 1992, CAI announced that it had broken off merger talks with Air Canada, and it would try to conclude a major alliance deal with AMR by late summer. It was believed that a merger between CAI and Air Canada was neither politically acceptable, nor financially feasible.²⁴ Rhys Eyton stated that preliminary talks with AMR

²³ It now seems clear that PWA managers should have accepted one of Air Canada's offers, since PWA would later find itself unable to complete a quick deal with AMR and facing heavy losses. This does not necessarily imply that PWA management was not acting in the interests of its shareholders; they may have believed that a quick deal with AMR was possible. If however, they anticipated the huge losses that would be incurred while a deal was being completed, then this would be an example of "agency costs" where the managers were pursuing goals other than maximizing value to shareholders.

indicated that they could complete a deal that made sense for both companies and consumers. He claimed that control of CAI would remain in Canada, although AMR would be represented on the board of directors. By the end of March, Air Canada's Hollis Harris declared his formal opposition to any potential equity deal between CAI and AMR — Air Canada would lodge a strong objection to the National Transportation Agency to any such deal proposed.

Advocates of the proposed alliance between CAI and AMR identified many mutual benefits for the companies; including an expanded international route structure, lower ground costs through sharing of services, greater purchasing power, etc. However, it was later learned that AMR was not interested in CAI's international routes, it simply wanted a contract to provide CAI with a package of "back-office" services. The primary component of these services would be AMR's *Sabre* computer reservation system (CRS). Sabre was one of the three largest CRSs in the world, and a very lucrative component of AMR's operations.

During its ongoing dispute with CAI, Air Canada argued that it needed equal access to CAI's Japan routes in order to survive as a global carrier. Although Canada was allowed to designate two airlines to serve Japan, the federal government had only allowed CAI to fly there — this was due to the pre-deregulation "division of the world policy".²⁵ Ottawa appeared to have accepted CAI's argument that it would be seriously harmed if it

²⁴ A merger between CAI and Air Canada would likely have resulted in about 12,000 job losses, and the merged company would have debts of about \$4 billion along with 70 to 80 surplus aircraft.

²⁵ The 1987 "division of the world" agreement was intended to minimize international competition between Canadian carriers. However, with PWA's 1989 purchase of Wardair (and its international routes), CAI became a direct competitor with Air Canada in London, Paris, and Frankfurt.

had to compete with Air Canada on its service to Tokyo. Air Canada however, argued that if the AMR-CAI alliance was completed, then effective control of CAI's international routes would go to an American carrier. Rhys Eyton claimed that this was not the case, and AMR's main interest in a deal was not CAI's international routes, but in providing "back-office" services (such as ticket processing) to CAI.²⁶ Hollis Harris acknowledged that he might find the AMR-CAI alliance more acceptable if Air Canada was given access to Japan — this would make Air Canada a more powerful partner in any potential global alliances.

In April 1992, CAI announced that it was close to a deal with AMR. CAI president Kevin Jenkins said that they had signed a share-purchase agreement that would give AMR 25 per cent of CAI for US\$200 million, and they had also signed a shareholders agreement. According to Jenkins, the only way the deal would not be completed was if Air Canada managed to drive CAI out of business — CAI had repeatedly charged that Air Canada was flooding the market with seat capacity in an attempt to drive CAI toward bankruptcy. On May 5, Donald Carty, the executive vice-president of planning and finance at AMR, announced that the AMR-CAI alliance deal was about six weeks from completion. Carty also cast some doubt on the actual terms of the deal, saying that there were still two critical issues to be resolved — "how much we save, and how much we invest."²⁷

²⁶ However, many analysts did not believe that AMR would purchase a non-controlling interest in another airline.

²⁷ The Globe and Mail, May 6, 1992, page B9.

Near the end of May 1992, the contents of a study commissioned by Air Canada was leaked to the press.²⁸ The report, prepared by the Faculty of Commerce at the University of British Columbia, stated that merging Air Canada with CAI and allying the new carrier with USAir Inc. would be better for Canada than allowing AMR to take control of CAI. Air Canada supported these findings, but PWA claimed that it would maintain a controlling interest in CAI after an alliance with AMR.

On June 3, 1992 at ScotiaMcLeod Inc.'s annual airline investment conference, Air Canada's Hollis Harris toned down his opposition to the proposed AMR-CAI alliance. At the same conference, federal Transport Minister Jean Corbeil announced that until the alliance deal was settled, he would not make a decision on Air Canada's request to provide service to Tokyo. Also at the same conference, American's vice president Don Carty shed some new light on AMR's interest in CAI. He noted that AMR was not particularly efficient at flying airplanes, but they were able to make money at providing processes, systems, and services (for example, computer reservation services).

On June 4, a source revealed that the (25 per cent-US\$200 million) AMR-CAI deal was nearly completed. A proposal would be submitted to Canada's National Transportation Authority by June 22, asking for permission for PWA to sell AMR the 25 per cent equity share in CAI. The transportation agency would then have 120 days to make a decision on the matter.²⁹ On the following day, PWA denied that a deal was only

²⁸The authors of this report drew heavily on it for Oum et al. (1993).

²⁹The National Transportation Authority's role in this matter would be to ensure that control of CAI remained in the hands of Canadians. Based on PWA's share price at the time, a US\$200 million investment would give AMR more than 50 per cent of PWA's common stock. Under Canadian law, non-Canadians cannot own more than 25 per cent of any Canadian carrier. PWA could stay under this limit by selling AMR some non-voting shares.

days away — spokesman Jack Lawless said that the deal would not be completed until July at the earliest.

By mid-June of 1992, it was reported that Air Canada was considering investing in Houston-based Continental Airlines Holdings Inc.³⁰, which was operating under bankruptcy protection. The fact that Continental's former CEO, Hollis Harris, was now running Air Canada, helped fuel the speculation. Initially, Air Canada refused to comment, although they later acknowledged that the company was building up cash reserves with the intention of building alliances with other airlines.

In July 1992, Air Canada announced that, effective November 10, it would lay off 1,800 employees, representing about 9 per cent of its work force. The move was needed to cut costs and improve competitiveness. By bringing down costs and attempting to return to profitability, Air Canada would also be a more valuable partner in any alliance that it managed to arrange with another carrier.

On July 21, Air Canada's hopes for an alliance with USAir were lost, with news that British Airways PLC and USAir Inc. had completed the world's largest airline alliance. This news, and the possibility of an impending alliance between AMR and CAI, heightened the risk that Air Canada would soon be the one major Canadian carrier without a strong equity alliance with an American carrier. The news also provided some support for PWA in its bid for an AMR-CAI alliance, since the BA-USAir deal provided another example supporting the belief that international alliances were necessary for an airline's survival.

³⁰ Continental was the fifth-largest U.S. carrier, with 341 planes and 42,000 employees.

The following day, Air Canada's bid for a stake in Continental was in the news again. A U.S. bankruptcy court gave preliminary approval to a take-over bid by another firm (Maxxam Inc.), but also gave Air Canada 10 days to obtain more information from Continental, and possibly submit a counter offer.³¹ It was reported that Continental preferred a bid by Air Canada, since it involved a cash payment, as opposed to Maxxam's offer, which was mostly debt.³² Air Canada was clearly under pressure to reach an agreement with an international partner.

Near the end of July 1992, AMR and PWA reached a tentative alliance deal. AMR agreed to pay more than \$7.50 a share (a total of \$250 million) for a 25 per cent interest in PWA.³³ The investment was to be divided between voting and non-voting preferred shares, in order to abide by the 25 per cent maximum foreign ownership law for the Canadian airline industry. PWA's board of directors would consist of six representatives from PWA and two from AMR. The shareholders' agreement specified certain areas where approval by at least one of the AMR board members would be required, and also set aside certain areas of PWA's operations that AMR would be contracted to run.³⁴ CAI would also eventually use AMR's Sabre computer reservation system. Unfortunately for PWA shareholders, the deal collapsed on July 25.

³¹ Maxxam had offered US\$350 million for 72 per cent of Continental. The minimum counter bid by Air Canada was set at US\$385 million, and under U.S. law, Air Canada would own a maximum of 49 per cent of Continental, and only 25 per cent of the voting stock.

³² Although Air Canada was experiencing heavy losses at this time, it had managed to accumulate a large cash fund (targeted at \$750 million to \$1 billion) in order to strike alliance deals with foreign carriers.

³³ At the time, PWA shares were trading for about \$5.

³⁴ AMR would be paid to handle PWA's accounting, reservations, and price/capacity-determining computer systems.

2.7 PWA breaks off talks with American (Air Canada-PWA merger: part two)

Air Canada and PWA announced on Monday, July 27, 1992, that they were resuming merger discussions; this followed news that PWA had broken off alliance negotiations with AMR.³⁵ Union leaders representing CAI employees were shocked and disappointed at the news — analysts had projected that an Air Canada-CAI merger would result in a loss of around 10,000 jobs. American Airlines also expressed disappointment, noting that they had reached an agreement in principal with PWA in the previous week. PWA would not say specifically why they pulled out of the deal, although they did concede that there were certain financial conditions that the PWA board could not meet.

Investors reacted to this news on the next day by cutting the value of PWA's shares by 21 per cent. By the end of the week, PWA shares were at about half their value from the week before. This clearly indicated that PWA shareholders preferred an AMR-CAI alliance to the alternatives (a merger between Air Canada and CAI, or the status quo). It was also reported that investors were very pessimistic that an Air Canada-CAI merger could be completed (this is reflected in the fact that the share price of Air Canada did not experience much of an impact). The likely scenario seemed to be that Air Canada would simply buy PWA's most valuable assets — a much worse proposition for shareholders than a merger.³⁶

³⁵ Although announced on July 27, PWA's board made the decision on the morning of Saturday, July 25.

³⁶ It is well documented in finance literature that corporate acquisitions via mergers (and tender offers) are wealth-increasing events for shareholders. The existing evidence shows that shareholders of acquired firms almost always gain, while the shareholders of acquiring firms do not lose. A summary of the empirical evidence includes Jensen and Ruback (1983) and Jarrell et al. (1988).

Sources later reported that the AMR-PWA deal broke down because of new conditions introduced by AMR late in the negotiations. One condition was that CAI was required to win further wage rollbacks from its employees — a condition the PWA board did not think it could meet. AMR also wanted PWA to raise at least \$195 million in equity to safeguard AMR from possible cash requests if the industry continued its downturn. A further condition was that PWA had to transfer CAI's computer reservation needs from Gemini³⁷ to AMR's Sabre system — this would be difficult since CAI was under contract with Gemini until 1997. There were also reports that PWA could not obtain enough support from the Royal Bank to meet some of its refinancing commitments. PWA chairman Rhys Eyton and CAI president Kevin Jenkins reportedly supported the deal with AMR, but were overruled by PWA's board in the end.

Another related factor in the collapse of the deal was the belief that CAI could not survive long enough to complete the regulatory process involved in gaining government approval to finalize a deal with AMR. PWA approached federal and provincial government representatives, in hopes of obtaining \$150 million in loan guarantees and guarantees on a \$195 million share issue, but could not get the support they needed. The final event which led to the deal's breakdown came on July 23, 1992, when the federal government told PWA that the Department of National Defence would not purchase three of CAI's planes unless they broke off talks with AMR and tried to make a deal with Air Canada. The long-discussed deal would have earned PWA a profit of about US\$40 million.

³⁷The Gemini computer reservation system was created in 1987 when Air Canada and CAI merged their reservation systems. It was jointly owned by Air Canada, PWA, and a U.S. partner called Covia.

The media viewed Air Canada as the winner in this turn of events, since it appeared ready to at least purchase CAI's Pacific Rim routes, and possibly to take-over the airline entirely. Air Canada, being the stronger company financially, was clearly in the dominant bargaining position. Also, if it could become Canada's monopoly carrier, Air Canada would be more attractive as a partner for a foreign airline.

"If you give them a complete monopoly, with no safeguards for competition, there's no question in the short run that the new carrier will take advantage of the situation and raise fares,"³⁸ reported airline analyst Tae Oum, in his assessment of the situation.

However, the fact that the share price of Air Canada did not experience any significant gains over the period where PWA's price fell substantially, indicates that shareholders likely did not believe that these events would affect Air Canada's profitability. Either shareholders did not view an Air Canada-CAI monopoly as a likely option, or they did not expect it to be profitable for investors.

The main barriers to a deal between the two Canadian carriers would be the extremely poor financial condition of the resulting company (i.e., its massive debt-load)³⁹, and the deal's political unattractiveness — the possibility of an apparent loss of competition in the Canadian airline industry would be unacceptable in political terms.⁴⁰

³⁸ The Globe and Mail, July 29, 1992, page A1.

³⁹ The merged company would have about \$4.5 billion in debt, about \$3 billion in long-term lease obligations, and only about \$500 million in equity. The resulting 15 to 1 debt-to-equity ratio would be huge by industry standards — AMR for example, had a ratio of about 3 to 1. Analysts also expected that an Air Canada-CAI merger would require a share issue of \$500 million to \$1 billion; this could bring the debt-to-equity down to as low as 5 to 1, but the share issue would probably not be marketable without government guarantees.

⁴⁰ Transport Minister Jean Corbeil claimed that the government would not intervene in the merger talks, but they would ensure that competitive fares remained for Canadian air travellers if a deal was

Regulatory constraints would also be a very serious potential roadblock on the path to any merger deal. Any deal would require approval from the National Transportation Agency (NTA), which would require the deal to be in “the public interest.” Also, any decision rendered by the NTA could also be overturned by the federal cabinet. Furthermore, the federal Bureau of Competition Policy (Canada’s competition “watchdog”) would also review the deal, under the terms of the Competition Act.

The merger appeared to have some support from the federal government. According to Finance Minister Donald Mazankowski (a former transport minister), the government believed that a merger was possibly the only option for the two airlines. However, in a letter to the *Globe and Mail*⁴¹, Corbeil emphatically denied that there was any political pressure for an Air Canada-PWA merger.

Early in August 1992, Air Canada made a merger proposal to PWA. The offer would see Air Canada shareholders holding 65 per cent of the shares in the new company, and Air Canada executives holding the top jobs of chairman and president. This offer was seen more as a take-over bid than a merger offer.

Despite the financial difficulties involved in completing a deal with PWA, Air Canada believed that such a deal would make it a more attractive partner for a U.S.-based carrier. Air Canada spokesman Denis Couture admitted that Air Canada alone seemed unable to attract an appropriate international partner. At the beginning of August, Air

struck.

⁴¹ The *Globe and Mail*, August 13, 1992, page A13.

Canada was discussing alliance possibilities with United Airlines Inc., and had also completed its review of Continental.

Employees at CAI were strongly opposed to any merger deal with Air Canada. Early in August there were organized protests by employees in the streets of Vancouver, Calgary, Edmonton, Toronto, and Montreal. Some employees and analysts continued to believe that a deal with AMR was still a possibility. Also, the Alberta government threatened to block the sale of PWA shares if the deal with Air Canada went against provincial interests.⁴²

On August 11, 1992, it was reported that PWA and Air Canada were within days of reaching a deal, but three developments had surfaced that could scuttle the agreement. Retired vice-president of CAI, Sidney Fattedad, was trying to gain the financial support of CAI employees to revive a deal with AMR; the Canadian Auto Workers Union was scheduled to present a CAI employee investment plan; and in Ottawa, members of the Parliamentary committee on Consumer and Corporate Affairs and Government Operations requested an investigation into the proposed Air Canada-CAI deal. On the following day, it was revealed that B.C. premier Mike Harcourt had requested that Ottawa withhold approval of any merger until CAI employees had an opportunity to buy into the airline.⁴³ Five of the CAI unions had agreed to develop the idea of a payroll-deduction plan to block the merger, and support for CAI was growing among Conservative MPs in Ottawa.

⁴² Provincial legislation prevented anyone from owning more than 10 per cent of the shares of PWA. Alberta would likely enforce this legislation if the headquarters of the merged carrier was located in Montreal (federal legislation required Air Canada to locate its headquarters in Montreal).

⁴³ CAI had about 6,000 workers in B.C.; the largest private-sector employer in the province.

Although most CAI employees seemed to support the idea of a PWA alliance with AMR, it was unclear whether such a deal would actually preserve more jobs than a merger with Air Canada. The Canadian Auto Workers union (CAW), representing about 3,200 CAI ticket agents, felt that their members would be hurt more by a deal with American, and they therefore strongly opposed the employee investment plan. The International Association of Machinists and Aerospace Workers (IAM), representing about 6,500 machinists and technicians at CAI, believed that in the short term fewer jobs would be lost by aligning with AMR. The airline division of the Canadian Union of Public Employees (CUPE), representing 3,000 flight attendants at CAI and Air Canada, had weak support for the Air Canada deal, because they believed that "...the long term possibility of layoffs is much greater in the case of either or both Canadian carriers becoming part of an American operation."⁴⁴ The Canadian Air Line Pilots Association (CALPA), representing about 3,000 pilots at CAI and Air Canada, officially endorsed neither option, but suggested that two Canadian carriers offered more opportunities for pilots than a single merged carrier. The IAM and the CALPA were participating in the proposal for an employee investment plan, in an attempt to give CAI enough cash to survive long enough to resume negotiations with AMR.

On August 14, 1992, (at about 6:00 p.m. Calgary time), PWA rejected Air Canada's merger offer. In addition to considering Air Canada's offer, the PWA board also listened to an investment proposal from an employee group that was attempting to bring AMR

⁴⁴The Globe and Mail, August 14, 1992, page B2.

back to the bargaining table. On the same day, both companies reported huge second quarter losses, thanks largely to their ongoing price war.⁴⁵

PWA spokesman Jack Lawless later agreed with a claim by Air Canada that their offer would have given PWA shareholders a “substantial” premium over the market value of their shares. However, this premium was still much less than that offered earlier by AMR, due to the fact that PWA shares had dropped in half after the AMR-PWA alliance talks ended.⁴⁶ It appears that PWA turned down a seemingly fair offer from Air Canada in hopes of eventually resuming talks with AMR. Rhys Eyton did acknowledge that one of the reasons PWA turned down Air Canada’s offer was because it was considering the financing proposal put forward by the CAI employees.

Lawless also said that PWA’s deal with AMR was still “on the table”, but that they were not in a position to resume alliance talks because they could not meet the closing conditions required by AMR. If PWA could obtain government loan guarantees and employee contributions, then PWA would be able to meet AMR’s requirements.

On August 17, 1992, British Columbia’s Finance Minister Glen Clark said that B.C. preferred an AMR-CAI alliance, and his government would be willing to provide financial support if Ottawa would also help (B.C. had earlier offered to contribute \$50 million to help PWA with its deal with AMR, before it fell through). Four of CAI’s six unions were also willing to provide cash or wage concessions in support of resuming talks with AMR.

⁴⁵ Air Canada was reportedly losing more than \$1.5 million a day; PWA about \$800,000.

⁴⁶ It was later revealed that Air Canada had offered about \$4 per share — this was a premium on PWA’s share price at the time of Air Canada’s offer (about \$2.90), but was a discount from PWA’s \$5 share price just before their deal with AMR collapsed. Recall that near the end of July 1992, AMR had agreed to pay more than \$7.50 a share for a 25 per cent interest in PWA.

On August 24, Jack Lawless revealed that PWA had sent a delegation to Texas to brief AMR on the investment proposal by CAI employees. The employees had offered to purchase new shares in PWA through payroll deductions, to raise \$150 million in support of a deal with AMR. Lawless also said that a merger with Air Canada remained a possibility, although there was no offer on the table and no talks were planned.

The next day, PWA announced that it had finally completed the sale of three planes to the Department of National Defence for \$150 million. This deal would provide PWA with about \$50 million in cash (after paying down its debt related to its original purchase of the three aircraft), winning it some more time to complete a deal with Air Canada or AMR.

At the end of August 1992, Air Canada's bid for an alliance with Continental was in the news again. Air Canada joined with Air Partners L.P., a private investment group in Texas, to offer US\$400 million for interest in Continental. The deal was completed and finalized over the next few months.⁴⁷

On September 1, PWA attempted to escape from its five year contract with Gemini; a move that, if successful, would allow PWA to move CAI's reservation business to AMR's Sabre system.⁴⁸ At a Gemini board meeting, the PWA representatives tabled a motion to dissolve Gemini and appoint a receiver — claiming that Gemini had been

⁴⁷ On November 9, Air Canada, with its U.S. partners, purchased 24 per cent of Continental (the fifth largest U.S. airline) for US\$235 million. On January 7, 1993, the U.S. Transportation Department approved the plan and the bid was approved by bankruptcy court on April 16. The final terms of the deal had Air Canada purchasing a 28.6 per cent equity stake (24.3 per cent voting interest) for US\$85 million in cash and US\$140 million in debt.

⁴⁸ Recall that one of AMR's requirements for a deal with PWA was that PWA attempt to escape its contract with Gemini and move to Sabre.

insolvent for eight months. PWA simultaneously informed all of its key customers of its actions, and sent an announcement through the 38,000 Gemini terminals across the country. The motion to dissolve Gemini was rejected of course, and Gemini's president denied that the company was unable to meet its debts. Prior to the board meeting, PWA initiated a lawsuit to have Gemini declared insolvent.

On September 2, 1992, Air Canada publicly made a new merger offer to PWA. The terms differed only slightly from the two previous proposals: PWA shareholders were offered a greater share of the merged company,⁴⁹ and CAI and Air Canada would be managed separately and retain their head offices (a holding company would be set up that would own the two separate operating companies).⁵⁰ Another significant difference was that this offer did not require PWA to talk with Air Canada exclusively. Hollis Harris later revealed (in May 1993), that the deal also would have required federal loan guarantees of up to \$500 million. Air Canada set a deadline of September 9 (midnight) for PWA to respond.

Over the Labour Day long weekend, PWA management and employee representatives (the Council of Canadian Airline Employees) worked out the details of an employee investment proposal that would generate up to \$150 million in new equity.⁵¹

⁴⁹The deal would give each shareholder in both companies a one-for-one exchange for shares in the new company. Since there were about 74 million Air Canada shares outstanding, and about 48 million PWA shares, that would result in Air Canada shareholders owning approximately 60 per cent of the merged company; down from 65 per cent in the previous two offers.

⁵⁰It seemed highly unlikely that the two companies would remain separate for long however. For the merged company to benefit from the deal, they would eventually have to combine their operations and settle on a single brand identity. Clearly the holding company idea was created to satisfy political concerns. In May 1993, Hollis Harris admitted that the merger would have resulted in a single airline — possibly called Air Canadian.

⁵¹According to the proposal, CAI pilots would contribute 9 per cent of their salaries to PWA treasury

PWA employees were offered the proposal on September 8 — just before the merger deadline set by Air Canada.

On September 9, 1992, PWA's board of directors voted unanimously to accept Air Canada's merger offer.⁵² PWA said that it agreed to the deal after provincial governments did not offer enough financial support,⁵³ and the CAW union refused to participate in the employee investment plan. Although for PWA's CEO Rhys Eyton, a merger with Air Canada was not the preferred outcome, Air Canada's CEO Hollis Harris claimed that everyone would benefit, including shareholders of the holding company that would be created. Judging by Air Canada's stock price reaction to the merger news, shareholders apparently did not agree with Harris.⁵⁴

It was expected that the companies would take about a month to work out the details of the deal, and then shareholders would vote. Federal approval would also be needed to finalize the merger, although due to PWA's poor financial health, this approval was not expected to take long.

shares through payroll deduction over three years. All other employees except members of the Canadian Auto Workers Union (who refused to participate), would contribute about 7 per cent. Five of CAI's six unions (except the CAW) also agreed to extend the terms of their contracts until the end of 1995. The employees would then have representation on the boards of PWA and CAI. The plan was contingent upon AMR's investment, and a public share issue.

⁵²The board announced the news shortly after 3:00 p.m. (Calgary time).

⁵³British Columbia and Alberta offered less than \$75 million, while Saskatchewan, Manitoba, and Ontario did not provide any cash. AMR had required that PWA obtain \$150 million in bridge financing.

⁵⁴Air Canada's share price dropped overnight from \$4.30 to \$3.90 — it would take almost a year before the price would reach \$4.30 again.

2.8 PWA and Air Canada try to complete a merger

Immediately after the merger deal was announced, Ottawa was called on by the opposition Liberals to re-regulate the industry. Transport Minister Jean Corbeil said that any such action would be premature, and he would wait until the competition bureau and the National Transportation Agency had examined the deal.

Aside from regulatory issues, there were other indications that the merger might not be completed. The Council of Canadian Airlines Employees (CCAЕ) announced that they would continue to try to raise the financing to support their desired deal with AMR; and CAI president Kevin Jenkins told employees that if they could put together a viable rescue package, PWA would consider it. American Airlines vice-president Donald Carty told the CCAE that AMR would still be interested in a deal if the financial requirements were met. Also, the share prices of Air Canada and PWA did not reflect the fact that shares in both companies would be traded on a one-for-one basis for shares in the new holding company.⁵⁵ A further indication was that PWA decided not to withdraw its lawsuit against Gemini until the merger deal was finalized.

One month after the merger announcement, the two companies announced that their boards had signed a “pre-merger agreement” setting broad terms and conditions of the deal. The process of finalizing the details was taking longer than expected — an Air Canada representative said that the merger committee would present a detailed plan to the boards early in November. This delay provided more time for the CAI employees group

⁵⁵On September 10, the day after the merger deal was announced, shares in Air Canada closed at \$3.90, while PWA shares were 45 cents lower. If investors were convinced that the deal would be completed, the share prices would be the same.

to work on their own deal. The employees group was aided by the fact that the boards did not agree to a “lockup” which would have committed PWA to deal only with Air Canada.⁵⁶

On October 27, 1992, PWA and Air Canada announced that their boards had rejected the operating, financing, and transition plan developed by the merger committee. The boards apparently disagreed on a wide range of issues, but the dominant question seemed to be how the merged company would manage its debt. The companies said that they would try again to finalize a merger agreement.⁵⁷

Sources later revealed that PWA’s board had been ready to accept the pre-merger agreement, but voted against it when it learned that Air Canada’s board had rejected the plan a few hours earlier. Air Canada’s board did not believe the merged company would be viable (based on the plan presented by the merger committee), or that it would be in the best interest of their shareholders.⁵⁸

The financial difficulties faced by the merged company would have been enormous. The company would have had a debt load of about \$7.7 billion, and a debt-to-equity ratio of nearly 30-to-1 (unless they issued new equity). This would have given the carrier the highest debt-to-equity ratio of any carrier in the world. If the merged company were to issue new equity to pay down its debt, existing shareholders could have been virtually

⁵⁶In fact, the federal Bureau of Competition Policy actually *required* that PWA search for alternative purchasers (a similar request was made of Wardair before it was purchased by PWA in 1989).

⁵⁷Note that the share gap between the two companies widened on October 28, the day after the announcement. This indicates that investors did not expect that the deal could be completed.

⁵⁸Since PWA was in a worse financial position, their board could hardly refuse the deal; however Air Canada had a duty to its shareholders to act in their interest and get the best possible deal.

wiped out. Furthermore, according to documents prepared by the merger committee, the company was expected to lose about \$666.4 million in 1993, before earning a \$184.8 million profit in 1994.

Three days after the boards rejected the terms of the merger, American's vice-president Donald Carty suggested that PWA would probably be interested in resuming talks with American. Clearly AMR was still interested in an alliance.

On November 3, 1992, Air Canada announced that it had terminated its October 8 per-merger agreement with PWA because the merged carrier would fail. Sources within Air Canada said that another merger agreement was unlikely to be reached. Meanwhile, PWA confirmed that it was talking to AMR again; the CAI employees group claimed to have the necessary financial commitments to meet AMR's conditions; and a deal with American was supposedly only days away.

2.9 PWA struggles to meet AMR's alliance terms (AMR-PWA alliance: part three)

On November 5, 1992, Howard Wetston, director of investigation and research of the Bureau of Competition Policy⁵⁹, asked the competition tribunal to amend the 1989 consent order that allowed Gemini to operate.⁶⁰ If the tribunal approved his request then CAI would be free to switch to AMR's Sabre computer reservation system. Wetston

⁵⁹ Under the 1986 Competition Act, Howard Wetston's position required him to challenge any merger that would substantially lessen or prevent competition.

⁶⁰ Recall that Gemini was created in 1987 when Air Canada and CAI merged their reservation systems. In 1987, the Bureau of Competition Policy threatened to dissolve Gemini because the Bureau believed that the merger would constrain competition. In 1989 the Bureau gave Gemini special consent to operate. Howard Wetston was now suggesting that this consent order was hindering PWA's ability to compete since it could not switch to AMR's Sabre system.

made the application in an attempt to help PWA survive (believing that PWA would fail without an alliance with AMR, and he did not want to see an Air Canada-CAI merger), at the request of both PWA and AMR.

PWA was still attempting to obtain federal government loan guarantees — CEO Rhys Eyton met with Transport Minister Jean Corbeil late on November 10 to discuss details of the CAI employee investment plan. The new employee investment plan required three-year loan guarantees of \$90 million from Ottawa and \$100 million from the provinces. This was needed to ensure that CAI had enough cash to survive while AMR's investment was considered by federal regulators. The plan also required \$100 million from Ottawa in bridge financing while PWA attempted to get CAI out of its contract with Gemini. Corbeil and Finance Minister Donald Mazankowski agreed to meet with officials from PWA and AMR, and representatives from the CAI employee group, on November 13, 1992 to discuss the plan.

Also on the 10th (late in the day), the Canadian Auto Workers union announced that it would participate in the latest CAI employee investment plan.⁶¹ With this announcement, the plan had support from all six of CAI's unions.

The federal government did not announce any commitments after the meeting on November 13, 1992. Transport Minister Jean Corbeil initially said a decision would come in a few days, but it was delayed further. After the meeting however, PWA's board of

⁶¹ The CAW deal was independent from the one negotiated by the employees' council. They agreed to pay 5 per cent of their wages toward a stock-option plan, in exchange for job guarantees (until 1995) for 900 CAW-represented reservation agents.

directors finally officially endorsed the employee rescue plan, saying that they believed a deal with American could be reached.

When the federal government finally announced its aid plan on November 24, it was a disappointment for PWA. Ottawa offered PWA \$50 million in loan guarantees (which would give CAI one or two months of additional flying time), well short what was asked for in the CAI employee investment plan.⁶² Some industry analysts believed that this would not give PWA enough time to complete an alliance with American. Rhys Eyton remained optimistic that they could meet the shortfall by other means — likely by asking the provinces for more support.

The Council of Canadian Airlines Employees had learned a few days earlier that there would be a shortfall, and they quickly revised their rescue plan; gaining an additional \$60 million in wage concessions.

On Sunday, November 29, 1992, PWA announced that it was temporarily suspending payments to its creditors while it worked out a plan to restructure its debts. Creditors had received word of PWA's plan the previous week. PWA would continue to make all payments towards operating costs, with the exception of payments to Gemini, and some fees payable to Transport Canada.

PWA's plan was to delay payments to secured creditors, and convince unsecured creditors to swap \$725 million in debt for equity (at a discount) in the company. PWA

⁶²The employee plan called for three-year loan guarantees of \$90 million from Ottawa and \$100 million from the provinces. It also required \$100 million from Ottawa in bridge financing while PWA attempted to get CAI out of its contract with Gemini. AMR would buy 25 per cent of CAI for \$246 million.

had a total debt-load of about \$1.2 billion, plus potential lease obligations of more than \$2.5 billion. If creditors refused to go along with the plan, then the company would be forced to declare bankruptcy (and seek protection from creditors under the Companies' Creditors Arrangements Act) — secured creditors would eventually receive a fraction of their loan while unsecured creditors would get little or nothing.⁶³ By going along with the restructuring plan, creditors would be gambling on CAI's future recovery, and existing shareholders would face an enormous dilution of their equity. No matter what happened next, existing shareholders were sure to lose.⁶⁴

While it worked on the financial restructuring plan, PWA was also attempting to reduce its capacity by cancelling flights and grounding planes.⁶⁵ These types of cuts were necessary in order to meet conditions imposed by the federal government on its \$50 million in loan guarantees. However, when Air Canada did not match the cuts, CAI reinstated many of the flights. Although the over-capacity was costing CAI money, they believed that they would be worse off if they did not match the number of flights offered by Air Canada.⁶⁶ Rhys Eyton eventually called upon Transport Minister Jean Corbeil to take some type of action that would get the two companies to reduce their capacity.

⁶³The "secured" creditors would receive only a fraction of their loans because most of PWA's assets (mostly airplanes) were worth less than the loans they secured, since the market for aircraft was so poor.

⁶⁴The \$725 million debt-for-equity swap would result in 246 million common shares being added to the 48 million outstanding. CAI employees would end up with 26.2 per cent of PWA, in exchange for their \$200 million in wage concessions; AMR's \$246 million investment would give it 32.2 per cent ownership (but only a 25 per cent voting interest) and a 20 year contract (worth about \$115 million a year) to provide computer services to PWA.

⁶⁵Many airline analysts believed that Air Canada and CAI would have to cut at least 20 per cent of their seats in order to be profitable.

⁶⁶Some analysts believed that Air Canada was using the extra capacity as a tactic to drive PWA out of business; in fact PWA filed a \$1 billion lawsuit against Air Canada in November 1992, complaining of such predatory practices.

In the week before Christmas, PWA gained an additional \$70 million in loan guarantees from British Columbia and Alberta. The money was immediately available and came attached with the same restructuring conditions as imposed by Ottawa.

On December 29, 1992, AMR signed a conditional agreement to invest \$246 million in CAI. This move gave PWA an additional bargaining chip in its quest to complete a restructuring deal with creditors. PWA still had several hurdles to clear before any money actually changed hands: it had to complete its debt restructuring; finalize the employee concession/investment plan; free itself from its contract with Gemini; and gain government approval for the deal. Getting out of the Gemini contract was seen as the most crucial component of the deal, since gaining CAI's computer reservation contract was what made the entire deal attractive to AMR.

PWA's attempt to escape from its contract with Gemini led to a series of lawsuits. Early in September 1992, PWA sued to have Gemini declared insolvent; Gemini then responded on November 12 by suing PWA and AMR for \$1.5 billion.⁶⁷ Covia Group, one of the three equal partners in Gemini (along with Air Canada and PWA), followed on December 2 with a \$1.2 billion lawsuit against PWA and AMR. The three lawsuits were consolidated, and hearings were scheduled to begin on February 26, 1993.

Both carriers experienced record losses for 1992. Air Canada's amounted to \$6.13 a share — \$454 million in total. PWA managed to lose \$543.3 million (\$11.37 a share).

⁶⁷ PWA was charged with breaching its fiduciary responsibility, and AMR was charged with interfering with Gemini's business.

On February 1, 1993, the federal Competition Tribunal began hearings to determine whether CAI should be allowed to escape its contract with Gemini.⁶⁸ PWA argued that if it was forced to stay with Gemini then it would not be able to complete a deal with AMR and it would eventually be forced to merge with Air Canada — creating a virtual airline monopoly. Air Canada claimed that if PWA was allowed to leave then CAI would eventually become a regional feeder carrier for AMR.

Hearings before the National Transportation Agency began in Calgary on March 22, 1993. The purpose of the hearings was to determine if the deal between PWA and AMR would leave effective control of CAI in the hands of PWA. AMR however, was not interested in controlling CAI; its interest was in obtaining a 20 year contract for computerized “back-office” services.

The Ontario court rejected PWA’s suit against Gemini late on April 2 (but it did not rule on the two suits by Gemini and Covia against AMR and PWA). PWA said it would appeal the decision.⁶⁹ The court’s decision placed the deal with AMR in serious jeopardy, although PWA remained hopeful that the federal Competition Tribunal would dissolve Gemini.

The Competition Tribunal hearings concluded on March 4, and on April 22, 1993, the Tribunal ruled that it did not have the jurisdiction to allow CAI to escape its contract with Gemini. However, it also said that if the airline could convince the Federal Court of

⁶⁸This hearing was initiated by Howard Wetston’s application in November (to the Bureau of Competition Policy) to amend the 1989 consent order that allowed the Gemini Group to operate. Both the Bureau of Competition Policy and the National Transportation Agency would need to approve a merger. The Bureau of Competition Policy is independent from cabinet action, the NTA is not.

⁶⁹The ruling was upheld in the Ontario Court of Appeal on August 11, 1993.

Appeal that the tribunal did have jurisdiction, then the tribunal would rule in CAI's favour. Although the decision was not what PWA had hoped for, it was viewed as a victory for PWA.

On April 30, 1993, PWA resumed making monthly payments to its creditors.

The Globe and Mail reported on May 21 that sources had revealed that the National Transportation Agency would be rejecting the AMR-PWA deal. However, this report was revealed to be untrue when the NTA announced on May 27 that it had approved the deal. PWA's remaining hurdle was to escape from its contract with Gemini. As expected, Air Canada said it would appeal to the federal cabinet, asking it to overturn the decision. Ottawa chose to uphold the NTA's ruling, announcing its support on June 23, 1993.

PWA was following three different avenues to try and obtain CAI's release from Gemini: 1) it would try to convince the Federal Court of Appeal that the Competition Tribunal did have the authority to break the contract with Gemini; 2) it would appeal to the Ontario Court of Appeal, the earlier decision by an Ontario court that Gemini was not insolvent; and 3) it was attempting to negotiate a settlement with Gemini.

On July 30, the Federal Court of Appeal announced that the federal Competition Tribunal had the authority to free PWA from its contract with Gemini, but only by dissolving Gemini. This was a clear victory for PWA, but the requirement to dissolve Gemini lent some uncertainty to the situation. The Competition Tribunal then had to decide whether or not they wanted to dissolve Gemini — there was now a possibility that they could change their earlier decision.⁷⁰ There was also the possibility that PWA would

not have enough cash to continue operating while the Tribunal reconsidered; or that the AMR deal would expire before the Tribunal made its decision.⁷¹

On August 18, 1993, Air Canada made an unsolicited \$1 billion offer⁷² for CAI's international routes and eight of its wide-bodied aircraft. PWA was not interested, and the board rejected the offer on August 24. The offer was clearly targeted at PWA's creditors who were scheduled to vote on August 27 regarding PWA's planned restructuring. There was a slight possibility that the creditors would reject the restructuring plan and force PWA to accept Air Canada's offer. Another possibility was that Air Canada's offer would influence the Competition Tribunal's decision on dissolving Gemini.⁷³

On August 27, more than 96 per cent of PWA's shareholders and debt-holders voted to accept the restructuring plan. The final major hurdle remaining was for PWA to escape from its contract with Gemini. This hurdle was cleared on November 24, when the federal Competition Tribunal ruled that PWA could walk away from Gemini.⁷⁴

All that remained preventing the AMR-PWA deal from being completed was Air Canada's threat to appeal the tribunal's decision, and Gemini and Covia's lawsuit against PWA.

⁷⁰ The Tribunal was scheduled to begin hearings on September 8.

⁷¹ AMR's offer was scheduled to expire on December 31, but in December it was extended for another six months.

⁷² Air Canada offered to pay \$200 million in cash, plus it would take over \$800 million of PWA's debt.

⁷³ That is, Air Canada wanted to use the offer as evidence that PWA had another option other than bankruptcy or a deal with AMR. However, Air Canada's request was turned down.

⁷⁴ The tribunal ordered Gemini Group to be dissolved in November 1994 unless the partners (Air Canada, PWA, and Covia Group) could reach a settlement by December 8 (later extended to December 20).

Air Canada made another offer on December 16, 1993 for CAI's overseas routes. The offer was slightly improved from the one made in August. PWA's board rejected the new offer a week later.

Finally, on January 27, 1994, Air Canada announced that it was dropping all litigation that would prevent PWA from making a deal with AMR. The next day, Ottawa gave Air Canada the right to fly to Osaka's new Kansai International Airport; a relatively unimportant international destination, but a crucial first step into the Asian market. It was clear that Ottawa held access to Asian airports as an incentive for Air Canada to end the dispute with PWA.

On February 15, Gemini and Covia dropped their appeals of the federal tribunal's order to dissolve Gemini. Gemini would be dissolved, but partially recreated by Air Canada as Galileo Canada — Air Canada's computer reservation service (a wholly owned subsidiary).

Air Canada reported a loss of \$326 million (\$4.23 a share) for 1993. PWA's loss amounted to \$291.8 million (\$6.13 a share). These were both improvements from 1992.

On April 27, 1994 CAI and AMR finalized the deal. AMR invested \$246 million in CAI, in exchange for a 33.9 per cent economic interest and a 25 per cent voting interest. Air Canada's share price was 91.5 per cent of what it had been on September 27, 1991 (just before PWA stated for the first time that it would consider a merger with Air Canada). The price of common shares in PWA was 18.3 per cent of what it had been.

3 Literature review

An event study methodology is applied in this paper to investigate investor preferences and determine whether investors preferred an AMR-CAI alliance or an Air Canada-CAI merger, and whether this conclusion implies a preference for a monopoly or duopoly market structure. The event study methodology has been developed by numerous authors and has become popular since the 1980s. In addition to the empirical/econometric event studies, there have also been numerous studies which look at the obvious public policy elements of mergers and foreign alliances; some focusing specifically on the Canadian airline industry. However, we know of no studies which apply an event study approach to the merger/alliance possibilities that we examine.

This chapter provides a brief discussion of some of the research which influenced the development of this paper. Some of this research cannot be directly linked to our study, though it provided a necessary introduction to the methodology.

3.1 Event studies investigating the airline industry

There are numerous articles in the economics literature that use event studies in their analysis, including several that examine the airline industry. Borenstein and Zimmerman (1988) managed to avoid the difficulties involved in choosing events and specifying event dates by considering the impact of fatal airline crashes on the share prices of the firms involved. Kyle et al. (1992) examined merger-related events with a study of the share price impact on target and bidding airline firms. Whinston and Collins (1992) used an event study to examine the share-price adjustments that occurred in reaction to

announcements of People Express' entry into US airport-pair markets. The effect of announcements relating to the privatization of Air Canada and British Airways, on the stock prices of some of their competitors, was analyzed by Eckel et al. (1993).

3.2 Some Canadian event studies

A recent Canadian event study was published by Thompson (1993), who considered the impact on some Canadian industry market portfolios of events affecting the likelihood of eventual implementation of the Canada-USA Free Trade Agreement (FTA). She investigated whether news about the FTA had a significant impact on stock market prices, and what the stock market reactions implied about the anticipated industry-level adjustment to free trade.

Another Canadian study, which used methodology similar to an event study, was undertaken by Brander (1991), who also looked at how investors responded to news about the likelihood of the FTA. Brander used public opinion polls taken during the 1988 Canadian federal election campaign, as a proxy to represent the likelihood of completing the FTA.⁷⁵ Rather than using the standard market model/dummy variable methodology, Brander regressed the difference between the TSE 300 and the Standard and Poor's 500 indices on the poll-popularity of the Conservatives.

⁷⁵ Recall that the 1988 Canadian federal election campaign focused largely on the issue of whether or not the Canada-U.S. free trade agreement should be ratified. The incumbent Conservatives were the only party that favoured the FTA, and therefore Brander proposed that stock prices should be correlated with Conservative popularity.

✓ 3.3 Public policy studies relating to the Canadian airline industry

There has also been some research activity in the area of public competition policy relating to merger activity in the Canadian airline industry. Gillen et al. (1988) considered the consequences of the merger/takeover between Canadian Pacific Airlines and PWA. Oum et al. (1993), in a study which focuses on many of the public policy elements of our research, compared two different policy options for the Canadian airline industry. They concluded that a monopoly carrier would allow the possibility that Canada could occupy a dominant role in the emerging global airline industry, with substantial benefits to Canada. They argued that only a merged carrier would have a sufficient network and fleet size to become a senior partner in one of the emerging global airline networks. The resulting economic benefits to Canada (e.g., the benefits due to having one or two global hub cities in Canada) would greatly exceed those from a situation where both airlines end up as feeder-carriers for a global network.⁷⁶

3.4 Other influential event studies

Brown and Warner (1985) used simulation procedures with actual daily stock return data to examine how the characteristics of daily data — for example, non-normal distribution of returns and non-synchronous trading intervals — can affect event study methodologies. They concluded that testing methodologies based on the OLS market model are well specified under most conditions. These conclusions, along with our sensitivity testing, led us to focus our attention on the OLS market model rather than the many, more sophisticated, alternative econometric specifications available.

⁷⁶ Also, a merged carrier would not lead to monopoly pricing if the government opened the domestic market to competition with U.S. airlines.

Salinger (1992a, 1992b) examined the method for computing standard errors in event studies, observing that estimated abnormal returns were usually not uncorrelated (even though *true* abnormal returns are uncorrelated, assuming efficient markets). However, he found this to be a non-serious problem when event windows are short (as in our research). When news is revealed over a long period of time (as in a regulatory event study for example), the method used for computing standard errors needs to be adjusted.

Patterson and Brorsen (1993), and de Jong et al. (1992) used a GARCH methodology with their event studies. Patterson and Brorsen look at the impact of the *U.S. Export Sales* report on futures prices, while de Jong et al. use an extended market model to test for the presence of certain anomalies on the Dutch stock market. We chose to investigate the effect this relatively recent specification to our research, by incorporating it in the form of sensitivity testing.

3.5 The wealth and price effect of airline mergers

Kim and Singal (1993) looked at the impact of airline mergers on airfares. They found that, although mergers may offer efficiency gains, these are more than offset by the resulting price increases. These results supported the well known hypothesis that mergers are wealth-increasing events for shareholders of the acquired firms (while shareholders of the acquiring firms tend to just break even). As we will show, Air Canada's shareholders did not appear to support this view, although they may not have believed that a monopoly was ever a possible outcome.

3.6 Agency costs

Jensen and Meckling (1976) provide a detailed discussion of the economic theory behind agency costs. These costs, which result from the well-known principal-agent problem, offer an explanation of why managers may not always act in the best interests of the owners/shareholders whom they represent. Jensen and Meckling's discussion and definition will form the basis for our examination of agency costs. We find some evidence of these costs when managers at Air Canada pursued a merger with CAI, apparently against the interests of shareholders.

4 Methodology

4.1 Introduction

This research examines the effects of merger-related events on the share price of Air Canada and PWA. Based on news reports in the *Globe and Mail* and the *Financial Post*, we will identify several events⁷⁷ which (in our opinion) changed the likelihood of the different merger and alliance possibilities. We then perform econometric tests to determine whether the events had a significant impact on these possibilities.

Fama (1976) defined efficient markets as follows. “An efficient capital market is a market that is efficient in processing information. The prices of securities observed at any time are based on ‘correct’ evaluation of all information available at that time. In an efficient market, prices ‘fully reflect’ available information.” If the Canadian market is efficient, then the change in equity value resulting from an event corresponds to an unbiased estimate of the financial consequences of that event. There is a great deal of empirical evidence supporting market efficiency (e.g., see Keane (1983) or Copeland and Weston (1988) for details), and for this study we will assume that markets are efficient.⁷⁸

Note that, for a proposed event, if there is no significant impact on the share price of the firm under consideration then we can infer that the “event” was not actually an event at all — investors had either already incorporated its effects into their valuation of the stock prices (i.e., they were already aware of the “new” information), or they judged the

⁷⁷Recall that, for our purposes, an event is something that provides investors with new information about the future profitability of a firm. An event window is a period of time (usually one or two trading days) where we are confident that investors learned of the new information and acted on it.

⁷⁸To use the more precise terminology of the literature, we are assuming “semi-strong” efficiency.

new information to be unimportant to the firm's future profitability. Binder (1985) found this to be a serious problem when measuring the effects of industry regulation with stock price data — when standard sources are used to choose events, the “abnormal returns” associated with the event tend to be insignificant because investors have anticipated the regulatory decisions. We hope to avoid this difficulty since we are not focusing on government regulatory decisions — it seems likely that investors find it more difficult to predict the merger/alliance decisions of three different airlines, than the regulatory decisions of a government. In fact, we will show that most of the events discussed here were significant and thus did convey new information to shareholders.

To examine the impact that merger-related news had on the share prices of PWA and Air Canada, we will use a procedure that involves comparing the daily stock price returns⁷⁹ observed over an event period with the “normal” returns. Then we estimate the probability that these event returns are abnormally high or low.

The focus of our attention will be the standard *Market Model*. Ordinary least squares (OLS) has been the usual approach to estimating this model; it has been found to yield powerful, well-specified testing results in the simulations of Brown and Warner (1980, 1985)⁸⁰ and the empirical work by Thompson (1993), and many others. We will also briefly consider a newer approach to estimating the market model: assuming a

⁷⁹The *returns* used in this research are a percentage measure of the daily share price change — negative returns are observed when a stock declines in value and positive returns are observed when its value is rising. We consider continuously compounded returns ($R_t = \ln(P_t / P_{t-1})$), rather than the simple arithmetic returns commonly reported in news media. This is a common practice which allows us to avoid some econometric difficulties.

⁸⁰Based on their simulation procedures with actual daily stock return data, Brown and Warner (1985, page 25) concluded that “...methodologies based on the OLS market model and using standard parametric tests are well-specified under a variety of conditions.”

GARCH disturbance process and estimation using Maximum likelihood. The GARCH methodology incorporates some of the properties typical of financial data into the model. Bollerslev et al. (1992) advocate this GARCH approach to event studies, and empirical work has been performed recently by de Jong et al. (1992) and Patterson and Brorsen (1993).

4.2 Questions regarding investor preferences

The methodology discussed in this chapter is motivated by a desire to reveal the preferences of Air Canada and PWA investors, regarding the merger and foreign alliance possibilities. Examination of the stock price impacts of various events will allow us to estimate the probability that investors preferred one outcome to another. If investors prefer a certain outcome, then we expect to observe higher than “normal” stock returns in reaction to events favouring this outcome.

In Chapter 5 we will discuss the various events used in this research. For now it is sufficient to note that we will be dealing with two different time periods, with a set of events contained in both periods. The *merger-event period* contains events which affected the probability that AMR and CAI would form an alliance, or alternatively, Air Canada and CAI would merge. In the *structural-event period*, it was very unlikely that Air Canada and CAI would be able to complete a merger. The events in this period reflected the probability of an AMR-CAI alliance versus the probability of a failure of the alliance leading to CAI’s bankruptcy followed by a probable monopoly for Air Canada.

The questions we investigate include a primary hypothesis and three secondary questions. We will attempt to answer these questions based on the results from our estimation of the market model (to be specified later in this chapter) and the appropriate hypothesis tests.

Primary hypothesis: Did the merger and foreign alliance-related events affect the stock prices (statistically and economically)? We hypothesize that the events did have an impact. If the empirical evidence supports our hypothesis (which it does), then we consider the three secondary questions.

Secondary question I (the merger-event period preferences): Did investors prefer an AMR-CAI alliance or a Air Canada-CAI merger? An Air Canada-CAI merger might have resulted in a domestic near-monopoly — with all of its associated rents — which would clearly be profitable for shareholders. However, the huge debt-load faced by a merged carrier, combined with the political unattractiveness of such a deal (and the possibility that the government would open the Canadian market to foreign carriers) would not be desired by shareholders.

Secondary question II (the structural-event period preferences): If our investigation of *Secondary question I* reveals evidence that investors favoured an AMR-CAI alliance to an Air Canada-CAI merger (which it does), does this suggest that investors prefer a duopoly⁸¹ market structure to a monopoly? Economic theory would strongly suggest otherwise.

⁸¹ This duopoly would have CAI aligned with American and Air Canada possibly aligning with another U.S. mega-carrier.

Secondary question III (the effect of agency costs): Did investors value the events in the same way that management did, i.e., were the airlines' managers acting in the best interest of the shareholders? In particular, were Air Canada's managers acting in the interests of its shareholders when they pursued a merger with CAI?⁸² If they were not acting in the best interests of the shareholders, then over the merger-event period we would observe that Air Canada's stock returns would tend to be lower than "normal" over events which favoured a merger. This would provide an example of *agency costs*, which result from the diverging interests between owners and managers.⁸³

Note that there is link and, on the surface, a possible contradiction between the first two secondary questions (the merger and structural preferences). The merger-event preferences of investors do not necessarily imply their structural-event preferences. It could be the case that, over the merger-event period, investors preferred an AMR-CAI alliance (domestic duopoly) to an Air Canada-CAI merger (domestic monopoly), but over the structural-event period they preferred an Air Canada monopoly (i.e., failure of the AMR-CAI deal). However, this would not necessarily imply that, over the merger-event period, investors expected higher profits under a duopoly (with at least one carrier aligned with a U.S. airline) than under an Air Canada monopoly. This result could, for example, simply reflect investors' expectation that the merger itself was unworkable. It may be the

⁸²The fact that the boards of directors for both PWA and Air Canada rejected an Air Canada-CAI merger proposal in October 1992 indicates that such a merger was not in the best interest of shareholders, contrary to popular belief and economic intuition.

⁸³More specifically, Jensen and Meckling (1976) define agency costs (for the owner/shareholder versus manager case) to be the sum of 1) the expense incurred by the owner to monitor the manager; 2) the cost to the manager to demonstrate commitment to the owner's interests; and 3) the reduction in the owner's welfare due to the manager's tendency to maximize his own welfare.

case that investors preferred an Air Canada monopoly to a duopoly, but they viewed the (possible) monopoly resulting from an Air Canada-CAI merger as unworkable and/or unprofitable due to the debt burden of the merged carrier.

If investors preferred a duopoly market structure, then we would observe a preference for an AMR-CAI alliance over both the merger-event period and the structural-event period. If investors preferred a monopoly market structure, then we would observe a preference for an Air Canada-CAI merger over the merger-event period, and against the AMR-CAI alliance over the structural-event period. Note that we do not expect PWA shareholders to support the monopoly market structure over the structural-event period, since this result would only have occurred (in the structural period) with PWA's bankruptcy.

4.3 The OLS market model

4.3.1 Introduction

To statistically investigate the questions about investor preferences that we raised in the previous section, we need to compare the observed stock returns over event periods with the “normal” (non-event) stock returns. Following the methodology of many other researchers, we apply the market model to estimate how much the event returns deviate from normal returns. We can then perform hypothesis tests to estimate the probability that the new information had an impact on the share prices — i.e., we wish to determine if investors' perceptions changed due to the new information.

The standard model used with a stock market event study is one where the return to firm i follows the market model:

$$R_{ti} = \alpha_i + \beta_i R_{tm} + \varepsilon_{ti} . \quad (1)$$

R_{ti} measures the one-period (daily) return to stock i at time t , α_i is an intercept term, β_i measures the systematic risk of the stock, R_{tm} is the return to the market portfolio (the TSE 300 index), and ε_{ti} is a random error term. The term $\beta_i R_{tm}$ represents the portion of R_{ti} that is due to market-wide factors; α_i measures the part of the average daily return that is not due to market factors; and ε_{ti} measures the part of R_{ti} that is not explained by market movements or the firm's average daily return. This model assumes that asset prices adjust to yield a "normal" rate of return with a risk adjustment (β_i).

The model can be estimated using OLS to obtain $\hat{\alpha}_i$ and $\hat{\beta}_i$ which estimate α_i and β_i . On an event day, the deviation in the actual return to stock i from what is expected based on equation (1) is estimated by:

$$\hat{AR}_{ti} = R_{ti} - \hat{\alpha}_i - \hat{\beta}_i R_{tm} . \quad (2)$$

This is known as the estimated *abnormal return* (AR); it represents an unbiased estimate of the financial impact of the event. The *cumulative abnormal returns* (CARs), associated with an event window, are estimated by summing the estimated ARs over the event window.

To calculate the abnormal returns associated with many events, it is helpful to use dummy variables with the market model; this allows us to easily compute the significance of the events individually, or the overall significance of several events together. An

additional benefit of using a separate dummy variable for each day in each event window, is that our estimates of β_i and its variance will be identical to the estimates obtained if we estimated the model without including any of the event days. This is an important consideration if we are concerned that events may alter the market model parameters.⁸⁴

4.3.2 The market model with dummy variables

For computational ease, we will use the simple market model with dummy variables to describe the impact of merger-related events in the Canadian airline industry:

$$R_{ti} = \alpha_i + \beta_i R_{tm} + \sum_{e=1}^E \gamma_{ie} D_{te} + \varepsilon_{ti}. \quad (3)$$

Where:

- $t = 1, \dots, N$;
- $i = \text{Air Canada, PWA}$;
- N is the number of trading days in the data set;
- R_{it} is the daily return to either Air Canada or PWA;
- R_{tm} is the daily return to the market portfolio (the TSE 300 index),⁸⁵
- β_i is the risk adjustment coefficient;
- E is the number of event days;
- D_{te} is the dummy variable corresponding to trading day t and event day e ,⁸⁶

⁸⁴ Salinger (1992b) discusses this issue.

⁸⁵ The TSE 300 index can be expected to reflect many of the economy-wide events that affect Canadian airline markets and yet be relatively insensitive to events that may affect the Canadian airline industry. To support this claim, we regressed returns to the TSE 300 on returns to the New York Stock Exchange's Standard and Poor's 500 index and the event dummy variables. We found that the event dummies did not have significant effects on returns to the TSE 300.

⁸⁶ The dummy variable matrix is the same for estimating returns to Air Canada, as well as PWA.

- γ_{ie} , the dummy variable coefficients, represent the abnormal returns during event days; and
- ε_{it} is the stochastic error term, assumed to have zero mean and a constant variance equal to σ_i^2 .⁸⁷

Note that the matrix of dummy variables is $N \times E$; for each event day we use a different dummy variable. Dummy variables are equal to one on event window days and zero otherwise. In conjunction with the standard market model, the dummy variables allow us to separate the overall market effects from the “event effects”.

Note the distinction between an “event window” and an “event day”. For this research, an event window is a period of time (one or more trading days) where we believe that investors’ expectations regarding the likelihood of an Air Canada-CAI merger (or an AMR-CAI alliance) have changed. An event day is a trading day within an event window. Thus the number of event days depends on both the number of event windows, and the number of days in each event window.

Equation (3) can be written in matrix form as:

$$\underline{R}_i = \mathbf{X}\underline{\beta}_i + \underline{\varepsilon}_i, \quad (4)$$

i.e.,

⁸⁷ The constant variance assumption is nearly always violated with daily financial data; we will attempt to deal with this later by using the GARCH market model.

$$\underbrace{\begin{bmatrix} R_{1i} \\ R_{2i} \\ \vdots \\ R_{Ni} \end{bmatrix}}_{N \times 1} = \underbrace{\begin{bmatrix} 1 & R_{1m} & D_{11} & \cdots & D_{1E} \\ 1 & R_{2m} & D_{21} & \cdots & D_{2E} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 1 & R_{Nm} & D_{N1} & \cdots & D_{NE} \end{bmatrix}}_{N \times (E+2)} \underbrace{\begin{bmatrix} \alpha_i \\ \beta_i \\ \gamma_{1i} \\ \vdots \\ \gamma_{Ei} \end{bmatrix}}_{(E+2) \times 1} + \underbrace{\begin{bmatrix} \varepsilon_{1i} \\ \varepsilon_{2i} \\ \vdots \\ \varepsilon_{Ni} \end{bmatrix}}_{N \times 1}. \quad (5)$$

For each event window w , the abnormal returns are summed to compute the cumulative abnormal return (CAR_{iw}), which estimates the impact of the event:

$$CAR_{iw} = \sum_w \gamma_{iw}. \quad (6)$$

Note that for a one-day event window, the cumulative abnormal return is simply the dummy variable coefficient for that day (i.e., γ_{ie}).

We can also extend the notion of CARs to compute the *total* CARs (TCARs) over several event windows. This will allow us to estimate the total impact of a series of related events.

The covariance matrix of the abnormal returns, presented in Salkever (1976), is written:

$$\text{Cov}(CAR_{ie}) = \sigma_i^2 \left[\mathbf{I}_E + \mathbf{X}_e (\mathbf{X}'_{\tilde{e}} \mathbf{X}_{\tilde{e}})^{-1} \mathbf{X}'_e \right], \quad (7)$$

with

$$\sigma_i^2 = \frac{\underline{R}'_{i,\tilde{e}} \left(\mathbf{I}_{N-E} - \mathbf{X}_{\tilde{e}} (\mathbf{X}'_{\tilde{e}} \mathbf{X}_{\tilde{e}})^{-1} \mathbf{X}'_{\tilde{e}} \right) \underline{R}_{i,\tilde{e}}}{N-E-2}. \quad (8)$$

Where:

- \mathbf{I}_E is an $E \times E$ identity matrix;

- \mathbf{X}_e is the matrix of non-dummy explanatory variables over each event day (\mathbf{X}_e is $E \times 2$);
- $\mathbf{X}_{\tilde{e}}$ is the matrix of non-dummy explanatory variables, not including those over event days ($\mathbf{X}_{\tilde{e}}$ is $(N - E) \times 2$);
- $\underline{R}_{i,\tilde{e}}$ is a column matrix of the daily returns to Air Canada or PWA, not including the returns on event days; and
- \mathbf{I}_{N-E} is a $(N - E) \times (N - E)$ identity matrix.

The covariance matrix defined in equation (7) and (8) refers to the covariance matrix for all the event days (i.e., each diagonal element is the estimated variance of an event day's estimated abnormal return) — it does not explicitly estimate the variance of the cumulative abnormal return for an event window longer than one event day. To compute the CAR variance of a multi-day event window, we sum the event-day CAR variances over the event window and adding twice the sum of the covariances.

To control for non-merger related effects, the hypothesis tests are performed for a model with returns to AMR as the dependent variable and returns to the Standard and Poor's 500 (S&P 500) index as the market portfolio. We also consider returns to a U.S. airline index as the dependent variable. Clearly the returns to these portfolios will reflect events affecting the airline industry in general, but they will not be greatly affected by merger-related events in the Canadian airline industry. Overall, we find that our events did not have a significant impact on the U.S. returns.

We also test for the sensitivity to the choice of market portfolio by estimating the market model for PWA and Air Canada using returns to the S&P 500 index and the U.S.

airline index as the market portfolio. We find that our results are robust to the choice of market portfolio.

4.4 The GARCH market model

4.4.1 Introduction

It is well known that financial data in general (and stock returns in particular) do not usually conform to the properties of the classical linear regression model. The distributions of financial data sets tend to have “fat tails” (i.e., more frequent extreme values than with normally distributed data), changing variances over time, and also tend to exhibit “clustering” where disturbances of a given magnitude tend to be followed by disturbances of a similar magnitude (but an unpredictable sign). We would therefore like to use an estimation procedure that takes these properties into account.

Some recent event studies (e.g., Patterson and Brorsen (1993), and de Jong et al. (1992)) have used the *Generalized AutoRegressive Conditionally Heteroskedastic* (GARCH) model in an attempt to incorporate these properties. The family of GARCH models, first introduced by Engle (1982) and expanded by Bollerslev (1986) and many other authors, all describe a form of heteroskedasticity where the variance of the forecast error depends on the size of the previous disturbance.⁸⁸ For the purposes of this research, the GARCH methodology is used as a sensitivity test, and detailed results are confined to Appendix 2.

⁸⁸ Since Engle’s seminal paper, the ARCH modelling strategy (and its extensions) have been applied to financial data in hundreds of research papers. Bollerslev et al. (1992) provide a useful survey.

4.4.2 Description of the model

The dependent variable, y_t is expressed as

$$y_t = x_t' \beta + \varepsilon_t; \quad t = 1, \dots, T \quad (9)$$

where x_t is a $k \times 1$ regressor of exogenous variables (and/or lagged dependent variables), and β is a $k \times 1$ matrix of regression slope parameters. The stochastic error term, ε_t , is *conditional* on the “information set” available at time $t - 1$ (i.e., it is dependent on past realised variables). We can represent the information set at time $t - 1$ as

$$\Psi_{t-1} = \{y_{t-1}, x_{t-1}, y_{t-2}, x_{t-2}, \dots\}. \quad (10)$$

The error term is then written

$$\varepsilon_t | \Psi_{t-1} \sim N(0, \sigma_t^2), \quad (11)$$

with

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^p \alpha_i \varepsilon_{t-i}^2 + \sum_{i=1}^q \Phi_i \sigma_{t-i}^2; \quad \text{with } \alpha_0, \alpha_i, \Phi_i > 0, \quad \sum_{i=1}^p \alpha_i + \sum_{i=1}^q \Phi_i < 1. \quad (12)$$

The form of this process implies that the conditional variance of the disturbance depends on its own past values, as well as past values of the disturbance itself. In fact, even when $p = q = 1$ — known as GARCH(1,1) case — the conditional variance is influenced by all past disturbances.

We will only consider the GARCH(1,1) specification:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \Phi \sigma_{t-1}^2; \quad \text{with } \alpha_0, \alpha_1, \Phi > 0, \quad \alpha_1 + \Phi < 1. \quad (13)$$

This specification is often used to represent the disturbances associated with financial data (especially stock returns). Higher values of p and q are not believed to add a useful improvement to the model. Note that when α_1 and Φ equal zero then (13) reduces to the classical OLS specification.

4.4.3 Estimation of the GARCH model

To estimate the GARCH models used in this research, we use a maximum likelihood estimation procedure. The log-likelihood function for this model (with T observations) is given by Bollerslev (1986):

$$\ln L = -\frac{1}{2} \sum_{t=1}^T \ln \left(\alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \Phi \sigma_{t-1}^2 \right) - \frac{1}{2} \sum_{t=1}^T \frac{\varepsilon_t^2}{\alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \Phi \sigma_{t-1}^2}. \quad (14)$$

4.5 Empirical data

The time period being considered for this research is from the end of 1991 (when news of a possible AMR-CAI alliance first appeared in the *Globe and Mail*) to the end of November, 1993 (when the federal Competition Tribunal ruled that CAI could walk away from its contract with Gemini).⁸⁹

The data set includes daily stock returns to Air Canada and PWA (common shares), as traded on the Toronto Stock Exchange, and the TSE 300 index. We also have U.S. data giving the daily returns to AMR (the parent company of American Airline), a U.S. airline price index, and the Standard and Poor's 500 index.⁹⁰

⁸⁹ Although the AMR-CAI deal was not finalized until April 27, 1994, once the Tribunal released CAI from Gemini there was little doubt that the deal would be completed.

⁹⁰ Most of the TSE data was recorded from newspapers, the remainder was obtained from Globe Information Services. The U.S. stock price data was obtained from the CRSP database at the University of Chicago.

5 The merger/alliance-related events

5.1 Determining which events are appropriate

Choosing which events to use in this study is a somewhat subjective process — different researchers would probably not choose exactly the same set of events. The goal here is to choose the most important merger/alliance-related events, from the time period beginning with the first discussion of a AMR-CAI alliance and ending with the announcement that the alliance was finalized.

A difficulty with this study is in choosing which days to define as “event days”, since it is a somewhat subjective task to determine on which days investors learned new information about the likelihood of a merger or alliance. An event study which looked at, for example, the impact of fatal airline crashes on airline share prices,⁹¹ would present comparatively few difficulties in determining appropriate event days.

Note that although there is great opportunity for “data mining” with this type of study, this fact does not necessarily affect the validity of the events chosen. The events used in this research were chosen based on our opinion of which were relevant, not based on which were associated with the widest price swings.⁹²

5.2 Event information sources

All events were chosen based on information in the two major Canadian financial newspapers — the Globe and Mail, and the Financial Post.⁹³ The Canadian Business and

⁹¹ Borenstein and Zimmerman (1988) consider this type of event study.

⁹² We list the widest price swings for Air Canada and PWA stocks in Appendix 3. Many of these “extreme” days are not event days.

Current Affairs (CBCA) database on CD ROM was searched to provide a list of every Globe and Mail and Financial Post news article that discussed Air Canada or Canadian Airlines, within the time period of interest.⁹⁴ For the time-period August 1991 through April 1994, the search found 672 articles in the Globe and Mail, and 544 articles in the Financial Post. The information in these articles not only describes the events, but also provides an approximate date in which the new information reached investors.

5.3 Description of events

This section contains a list of the merger/alliance “event windows” that apply to this research. Note that it is critical to choose the dates of these windows as precisely as possible so as to isolate the effects of the event from other factors. However, there is a trade-off between isolating the event and being confident that the “true” event days are actually used: the shorter the event window is, the less “noise” there will be in measuring the price response; but if the true event day is not known with certainty, we need to ensure that the market’s response is contained within the window.

There is some difficulty in determining exactly which trading day investors were able to first use their new information — i.e., we know which day new information was announced, but sometimes we do not know for certain whether or not investors were aware of that information before the markets closed. We attempt to overcome this

⁹³The Financial Post was considered a secondary source.

⁹⁴The CBCA CD ROM was used to obtain a complete listing of Globe and Mail and Financial Post news articles which discussed PWA/CAI and/or Air Canada. The software produces a list which provides the journal name, date, headline, and page number. Based on the headline alone, many articles can be discounted as irrelevant to this research. The appropriate articles were read and the relevant information recorded.

difficulty by using two-day event windows where day 1 is the last trading day before news of the event appeared in the *Globe and Mail*, and day 2 is the next trading day following day 1. Only when we are quite certain of the date and time that investors learned the news, do we use a one day event window. In one case we use a three-day window because separate news relating to the event was released over two days.

We divide event windows into two categories and two sub-categories as follows:

1) The merger event period. These are the merger/alliance-related events that occurred over the period of time from December 16, 1991 to October 28, 1992. During this period it was expected that either Air Canada would merge with CAI, or AMR would form an alliance with CAI.⁹⁵

a) "Positive events."⁹⁶ These are event windows where there is news indicating that an AMR-CAI alliance has become more likely (or an Air Canada-CAI merger has become less likely).

b) "Negative events." These are event windows where there is news indicating that an AMR-CAI alliance has become less likely (or an Air Canada-CAI merger has become more likely).

⁹⁵PWA was still relatively financially strong over the merger event period, so both Canadian carriers faced the choice between a merger and an alliance. During the *structural* event period however, PWA's financial situation had worsened and it would probably have lapsed into bankruptcy if it could not complete the deal with AMR.

⁹⁶The designation of "positive" or "negative" event window is arbitrary; it only serves to differentiate between the two kinds of news. For both the merger and the structural event periods, we have chosen to refer to news favouring an AMR-CAI alliance as a positive event, and news favouring the alternative as a negative event. This also tends to reflect the sign of Air Canada and PWA stock returns over these events.

2) The structural event period. These are the AMR-CAI alliance-related events that occurred over the period of time from November 5, 1992 to November 24, 1993. During this period it was expected that either AMR would form an alliance with CAI, or CAI would go bankrupt (or nearly bankrupt, and then fall into the hands of Air Canada). The alternative to an AMR-CAI foreign alliance was very likely an Air Canada monopoly (or near-monopoly).

- a) “Positive events.” These are event windows where there is news indicating that an AMR-CAI alliance has become more likely (or PWA bankruptcy has become less likely).
- b) “Negative events.” These are event windows where there is news indicating that an AMR-CAI alliance has become less likely (or PWA bankruptcy has become more likely).

For each event window, we provide a brief description of the news (more information is provided in Appendix 1), we indicate with a (+) or a (-) whether it is “positive” or “negative” news, and we list the relevant dates and the daily stock returns to Air Canada and PWA.

	Date	Air Canada	PWA
Merger events		Returns (%)	
Event 1 (+): Sources claimed that AMR had offered to purchase a stake in CAI.	91/12/13	0.00	11.25
	91/12/16	-1.71	0.00
Event 2 (+): PWA terminated its merger talks with Air Canada, and announced that it would try to conclude a deal with AMR.	92/03/19	-3.57	3.08
	92/03/20	1.80	5.88
Event 3 (+): PWA announced an agreement with AMR.	92/04/14	8.00	4.65
	92/04/15	0.00	-2.30
Event 4 (+): The AMR-PWA alliance was said to be about six weeks from completion.	92/05/05	4.55	2.47
	92/05/06	2.20	2.41

	Date	Air Canada	PWA
Event 5 (-): PWA terminated negotiations with AMR, then announced talks with Air Canada.	92/07/27	-1.01	0.00
	92/07/28	3.47	-23.57
	92/07/29	-3.47	-64.14
Event 6 (+): The proposed Air Canada-PWA merger stalled.	92/08/11	1.06	13.62
	92/08/12	0.00	8.95
Event 7 (-): Air Canada made a new merger offer to PWA.	92/09/02	-4.55	4.65
	92/09/03	1.16	1.50
Event 8 (-): PWA agreed to a merger deal with Air Canada.	92/09/10	-9.76	1.46
Event 9 (+): The boards of directors for Air Canada and PWA rejected the merger proposal.	92/10/27	3.70	6.73
	92/10/28	6.00	-10.80
Structural events			
Event 10 (+): The Bureau of Competition Policy sought a court order to allow PWA to escape its contract with Gemini.	92/11/05	4.08	-47.86
	92/11/06	0.00	29.02
Event 11 (-): Ottawa announced that it would provide a small loan guarantee to PWA.	92/11/24	1.44	-23.18
	92/11/25	-0.36	-13.98
Event 12 (-): PWA suspended payments to its creditors.	92/11/30	0.00	-38.36
Event 13 (+): AMR and PWA signed a conditional alliance deal.	92/12/29	3.35	15.82
	92/12/30	8.67	-5.00
Event 14 (-): PWA's bid to dissolve the Gemini computer reservation system was rejected by an Ontario court.	93/04/02	3.45	-1.74
	93/04/05	3.33	-21.44
Event 15 (+): The Competition Tribunal supported PWA's bid to dissolve the Gemini partnership, but it was unclear if the tribunal had jurisdiction.	93/04/22	9.10	5.13
	93/04/23	-4.45	4.88
Event 16 (+): The National Transportation Agency ruled in favour of AMR-PWA alliance.	93/05/27	0.00	0.00
	93/05/28	-4.51	26.83
Event 17 (+): The Federal Court of Appeal ruled that the Competition Tribunal had the authority to release PWA from its contract with Gemini.	93/07/30	-4.45	10.08
	93/08/03	-1.53	-5.64
Event 18 (+): the federal Competition Tribunal ruled that PWA could walk away from its Gemini contract.	93/11/24	2.41	13.72
	93/11/25	-2.41	24.18

6 Results

6.1 Hypothesis tests

We test each event window for both the merger-event period and the structural-event period, to determine if there is evidence of abnormal returns. Evidence of abnormal returns will suggest whether investors regarded the event as “good news” or “bad news”.

The hypotheses to be tested are:

$$\begin{aligned} H_0: CAR_{iw} &= 0 \Leftrightarrow \text{non-abnormal event window returns,} \\ H_a: CAR_{iw} &\neq 0 \Leftrightarrow \text{abnormal event window returns.} \end{aligned}$$

The tests are repeated for each event window w , and for i = returns to Air Canada, PWA, and the Air Canada-PWA portfolio.

We also test for evidence that the *total* cumulative abnormal returns (over the merger-event period and the structural-event period) are abnormal. Prior to calculating the TCARs and their associated variances, we multiply the event day returns by either +1 or -1, depending on whether the event was believed to be “positive” or “negative” (as described in the previous chapter).⁹⁷ Clearly if we were to sum a statistically significant positive-event CAR with a statistically significant negative-event CAR, we could conceivably end up with a TCAR that not significantly different from zero, even though it is obvious that the two events together provide us with significant information about investors’ preferences. By multiplying the appropriate returns by +1 or -1, we can avoid this possibility.

⁹⁷ Recall that positive events are those which convey news favouring the opposite outcome conveyed by negative events.

Evidence supporting abnormal TCARs will allow us to reveal investor preferences regarding the merger and alliance possibilities. The hypotheses to be tested are:

$$H_0: TCAR_i = 0 \Leftrightarrow \text{total impact of events is insignificant,}$$

$$H_a: TCAR_i \neq 0 \Leftrightarrow \text{total impact of events is significant.}^{98}$$

The tests are repeated for both event periods, and for i = returns to Air Canada, PWA, and the Air Canada-PWA portfolio.

6.2 The OLS market model⁹⁹

Before proceeding with estimating the market model we tested for stationarity to confirm that we were not estimating a “spurious” regression.¹⁰⁰ Using the Augmented Dickey-Fuller Test, we confirmed that the stock returns are $I(0)$ — integrated of order zero — and therefore the market model yields a non-spurious regression.

We also performed the usual tests for heteroskedasticity, and found some evidence in favour of the GARCH form of heteroskedasticity. In Appendix 2 we consider estimation with a GARCH disturbance assumed.¹⁰¹

Using the OLS market model with dummy variables, we were able to determine which events were individually significant, and whether the events were jointly significant

⁹⁸Note that it is conceivable that we could fail to reject the null hypothesis when the total impact of the events is significant. This could occur if we made the mistake of designating some events as “positive” when in fact they were “negative” (and vice versa). Thus our overall conclusions rely heavily on a consistent designation of positive and negative events.

⁹⁹All results from the OLS models reported in this paper were obtained using version 7.0 (June 1994) of Shazam as described in White (1993). For the GARCH results, we used version 4.1 of Rats.

¹⁰⁰A spurious regression results from using non-stationary variables that are trending in a general direction. Regressing one non-stationary variable against another can yield results which indicate an economic relationship when none exists.

¹⁰¹We focus on the OLS market model because other authors found it to be well-specified for this type of event study. We apply the GARCH model as a sensitivity test.

and consistent with our prior hypotheses about investor preferences. We ran separate regressions, covering the nine “merger events” and the nine “structural events”, as described in the previous chapter.

The estimation period for the two sets of event windows was specified as follows. For the merger-event regression, the estimation period began 240 days before Event 1, and ended 10 days after the last day of Event 9. Similarly, for the structural-event regression, the estimation period began 240 days before Event 10, and ended 10 days after the last day of Event 18. In our sensitivity testing, we find that using a shorter estimation period does not have a substantial impact on our conclusions.

6.2.1 The Air Canada market model for the merger-event period

In Table 1 below, we report the estimated cumulative abnormal returns (CARs), obtained from estimating the OLS market model over the merger-event period, using a separate dummy variable for each day in each event window. We indicate with a “✓” when the estimated CAR has the same sign as our proposed “positive” and “negative” designations for the events, as described in the previous chapter.

The CAR for each event is calculated by adding the dummy variable coefficients for the event days in the window. The standard errors are computed in the normal manner by adding the appropriate variances and covariances from the matrix described in equation (7), and taking the square root of the result. All of the reported p-values are two-sided, and are obtained from the usual t-statistics.

The estimated CARs and the standard errors are recorded in percentage terms, while the p-values are recorded as probabilities.

Table 1: Results of the OLS estimation of the Air Canada market model for the merger-event period.

	CAR	Standard error	P-value
Event 1	-1.17	2.99	0.70
Event 2	-1.84	2.99	0.54
Event 3 ✓	7.82	2.99	0.01
Event 4 ✓	7.28	2.99	0.02
Event 5 ✓	-1.02	3.66	0.78
Event 6 ✓	2.47	2.99	0.41
Event 7 ✓	-4.29	3.00	0.15
Event 8 ✓	-9.37	2.11	0.00
Event 9 ✓	8.34	3.01	0.01
Total CARs	37.60	8.96	0.00
Regression statistics			
DW statistic = 2.0577	R-squared = 0.1823	Adj. R-squared = 0.1478	

The results provide strong evidence supporting our primary hypothesis (that the events affected the stock prices) for only 4 of the 9 events. However, upon examination of the TCARs, we find strong evidence that events favouring the AMR-CAI alliance were greeted positively by the market, while events decreasing its likelihood were greeted negatively. These results suggest that Air Canada's investors preferred an AMR-CAI alliance to an Air Canada-CAI merger. Air Canada investors apparently expected that a merger with CAI would be unprofitable, due to the massive combined debt-load and/or the possibility that the Canadian government would not allow a domestic monopoly.¹⁰²

¹⁰² Recall that if an Air Canada-CAI merger was completed, there was a possibility that the Canadian government would open up the domestic market to foreign competition in order to ensure a competitive airline industry. There was also the possibility (though probably less likely) that the government would re-regulate the industry if they viewed the monopoly as uncompetitive.

These results also imply that there was a significant “agency costs effect”, whereby Air Canada managers appeared to go against the preferences of the owners (i.e., the shareholders) in management’s pursuit of a merger with CAI. Another possibility however, was that Air Canada’s management had superior information about the profitability of a merger, but they elected not to share this information with shareholders.

6.2.2 The Air Canada market model for the structural-event period

Table 2 contains the abnormal returns estimated from the OLS estimation of the Air Canada market model over the structural-event period.

Table 2: Results of the OLS estimation of the Air Canada market model for the structural-event period.

	CAR	Standard error	P-value
Event 10 ✓	5.87	4.55	0.20
Event 11	1.34	4.54	0.77
Event 12 ✓	-0.09	3.21	0.98
Event 13 ✓	12.07	4.54	0.01
Event 14	7.53	4.54	0.10
Event 15 ✓	4.17	4.54	0.36
Event 16	-4.20	4.54	0.35
Event 17	-6.29	4.54	0.17
Event 18	-0.11	4.54	0.98
Total CARs	2.73	13.24	0.84
Regression statistics			
DW statistic = 2.1128	R-squared = 0.0969	Adj. R-squared = 0.0643	

Most of the CARs to Air Canada for the structural period are insignificant. This is not unexpected, since the events in this period mostly reflected PWA’s bid to release CAI from its contract with Gemini, secure financing, and finalize an alliance with AMR. An Air Canada-CAI alliance seemed quite unlikely since the boards of both companies had

already rejected the previous proposal, and CAI's employees were strongly opposed to any deal with Air Canada.

Although Air Canada's managers continued to try to prevent the AMR-CAI deal and promoted its "made in Canada solution", the insignificant TCAR here seems to indicate that its shareholders were not very concerned with PWA's quest for a deal with AMR. This results also indicates that although (during the merger event period) Air Canada shareholders preferred an AMR-CAI alliance to an Air Canada-CAI merger, there is no evidence to support the idea that they preferred a domestic duopoly to a domestic monopoly. Had they preferred a domestic duopoly, we would expect to see a significantly negative TCAR here.

6.2.3 The PWA market model for the merger-event period

Table 3 contains the CARs estimated from the OLS estimation of the PWA market model over the merger-event period.

Table 3: Results of the OLS estimation of the PWA market model for the merger-event period.

	CAR	Standard error	P-value
Event 1 ✓	11.89	6.48	0.07
Event 2 ✓	8.65	6.48	0.18
Event 3 ✓	1.87	6.48	0.77
Event 4 ✓	5.51	6.48	0.40
Event 5 ✓	-88.03	7.95	0.00
Event 6 ✓	24.56	6.49	0.00
Event 7	4.56	6.50	0.48
Event 8	1.96	4.58	0.67
Event 9	-6.37	6.52	0.33
Total CARs	127.62	19.44	0.00
Regression statistics			
DW statistic = 2.3716	R-squared = 0.3751	Adj. R-squared = 0.3487	

The results show that three of the merger-related events had a statistically significant impact on investors' perceptions about PWA's future profitability. More importantly, the highly significant large TCAR leaves no doubt that PWA shareholders' preferred an alliance with AMR over a merger with Air Canada. This implies that PWA shareholders did not believe that they could achieve a merger with Air Canada, or else they felt that the resulting merger would not be as profitable as an alliance with AMR.

Note that if PWA shareholders believed that the Canadian government would not allow a domestic monopoly (the government could open the market to foreign competitors, or re-regulate the industry), then the shareholders would not expect to capture any monopoly rents after a merger.

6.2.4 The PWA market model for the structural-event period

Table 4 contains the CARs estimated from the OLS estimation of the PWA market model over the structural-event period. Most of the events are found to be significant, and, unsurprisingly, the highly significant positive TCAR implies PWA shareholders preferred an alliance with AMR to the alternative of probable bankruptcy.

Table 4: Results of the OLS estimation of the PWA market model for the structural-event period.

	CAR	Standard error	P-value
Event 10	-17.49	8.88	0.05
Event 11 ✓	-36.69	8.86	0.00
Event 12 ✓	-38.25	6.26	0.00
Event 13 ✓	11.17	8.86	0.21
Event 14 ✓	-22.42	8.86	0.01
Event 15 ✓	10.04	8.86	0.26
Event 16 ✓	27.33	8.86	0.00
Event 17 ✓	4.58	8.86	0.61
Event 18 ✓	38.15	8.86	0.00
Total CARs	171.15	25.84	0.00
Regression statistics			
DW statistic = 2.0765	R-squared = 0.2869	Adj. R-squared = 0.2612	

6.2.5 The Air Canada-PWA portfolio market model for the merger-event period

Finally, we attempted to model the overall preferences of Canadian airline investors by creating an Air Canada-PWA “value-weighted” portfolio and estimating the associated OLS market models. The daily portfolio price was calculated using the formula

$$P_{AC-PWA} = \frac{P_{AC} \cdot Q_{AC} + P_{PWA} \cdot Q_{PWA}}{Q_{AC} + Q_{PWA}}, \quad (15)$$

where P refers to the closing price and Q is the number of shares outstanding (The t subscripts are assumed). The continuously compounded returns were calculated in the usual manner.

Table 5: Results of the OLS estimation of the Air Canada-PWA portfolio market model for the merger-event period.

	CAR	Standard error	P-value
Event 1 ✓	3.14	2.82	0.27
Event 2 ✓	1.46	2.83	0.61
Event 3 ✓	5.70	2.83	0.04
Event 4 ✓	6.62	2.82	0.02
Event 5 ✓	-27.03	3.47	0.00
Event 6 ✓	8.36	2.83	0.00
Event 7 ✓	-1.47	2.83	0.60
Event 8 ✓	-5.39	2.00	0.01
Event 9 ✓	3.66	2.84	0.20
Total CARs	62.81	8.47	0.00
Regression statistics			
DW statistic = 2.1232	R-squared = 0.3132	Adj. R-squared = 0.2842	

The results in Table 5 show five of the nine event windows with significant CARs. It is also interesting to note that all of the CARs have signs consistent with our designations of “positive” and “negative” events. There is a highly significant positive TCAR, providing strong evidence that Canadian investors preferred an AMR-CAI alliance to an Air Canada-CAI merger. The Canadian government’s initial alleged support of a deal between the two Canadian carriers appears to have been not only against the interests of consumers — since it might have resulted in a virtual monopoly on domestic routes — but also seemed to go against the interests of shareholders.¹⁰³

¹⁰³ Oum et al. (1993) suggest that in the long run, a domestic monopoly would be in the interests of Canadian consumers due to the resulting benefits if the monopoly carrier became a key player in the global airline industry.

6.2.6 The Air Canada-PWA portfolio market model for the structural-event period

Table 6 contains the CARs estimated from the OLS estimation of the Air Canada-PWA portfolio market model over the structural-event period. We find fairly strong evidence that Canadian shareholders preferred an AMR-CAI alliance to the alternative of probable PWA bankruptcy. The significantly positive TCAR indicates that the “net” preference of Air Canada and PWA shareholders over the structural-event period was for an AMR-CAI alliance. However, this does not imply a significant “net” preference for domestic duopoly, since PWA shareholders saw no profitable alternatives to an alliance with AMR.

Table 6: Results of the OLS estimation of the Air Canada-PWA portfolio market model for the structural-event period.

	CAR	Standard error	P-value
Event 10 ✓	0.12	4.33	0.98
Event 11 ✓	-7.05	4.32	0.10
Event 12 ✓	-6.90	3.05	0.02
Event 13 ✓	11.92	4.32	0.01
Event 14	4.46	4.32	0.30
Event 15 ✓	4.65	4.32	0.28
Event 16	-0.91	4.32	0.83
Event 17	-5.02	4.32	0.25
Event 18 ✓	5.08	4.32	0.24
Total CARs	25.34	12.60	0.04
Regression statistics			
DW statistic = 2.0564	R-squared = 0.1128	Adj. R-squared = 0.0807	

6.2.7 Sensitivity testing

We used several procedures to test the validity of these results. Using U.S. stock return data, we re-estimated the OLS market model by regressing returns to AMR on the

returns to the Standard and Poor's 500 index and the dummy variables. We then substituted returns to a U.S. airline index for AMR and repeated the estimation. Any significant abnormal event window returns would indicate that there were probably events common to the overall airline industry which caused the abnormal returns, rather than the merger or structural events that we propose.

When we regressed AMR on the S&P 500 and the dummy variables, we found that none of the events had a significant impact on AMR returns, and the TCARs were also insignificant. These results held for both the merger-event estimation period, and the structural-event estimation period. These are somewhat interesting results since they imply that the possibility of an AMR-CAI alliance had no significant impact on the future profitability of AMR. Since AMR was about five times larger than PWA (in terms of annual revenue), this is perhaps unsurprising.

When we regressed the U.S. airline index returns on the S&P 500 and the dummy variables, we found one merger event (event 4) and one structural event (event 10) each had significantly positive impacts on the airline index returns (the p-values were 0.05 and 0.04 respectively). We believe these results are simply coincidences, and that they do not affect our overall conclusions. The TCARs for both periods were insignificant.

We performed further tests to ensure that the results are not sensitive to the choice of market returns. We combined our Canadian and U.S. data sets, and re-estimated the Air Canada, PWA, and Air Canada-PWA portfolio models using the S&P 500 index

returns and the returns to the U.S. airline index as the market portfolios.¹⁰⁴ Results were found to be robust to the choice of market portfolio.

To make sure that the results are not sensitive to the length of the estimation period, we re-estimated the models for both periods, using the data beginning on the first event day (compared to 240 days prior) and ending on the last event day (compared to 10 days after). The coefficients and p-values change slightly, but there is no overall significant change to our results.

We also re-estimated the models using weekly returns instead of daily. Again, all the estimated coefficients and p-values change somewhat, but the most interesting result is that the TCAR for the Air Canada model over the merger-event period goes from highly significant (when we used daily returns) to insignificant (the p-value is 0.47). This may cast some doubt on our conclusion that Air Canada investors preferred an AMR-CAI merger. However, the TCAR remains positive for the weekly data, so the evidence still points to preference for an AMR-CAI alliance rather than an Air Canada-CAI merger. In addition, the power of our test (i.e., the probability that we reject the null hypothesis when it is false) will be greater when we use daily returns rather than weekly.

Our final sensitivity test involved re-estimating the models using a maximum likelihood procedure and assuming a GARCH(1,1) error specification. This approach has been applied in some recent published event studies. Our results are provided in Appendix

¹⁰⁴ Because U.S. and Canadian holidays do not always coincide, some modification of the data was required. Returns on trading days when one market was closed (the TSE or the NYSE) were deleted, and returns on the following trading day for both markets were also deleted. Both Thompson (1993) and Brown and Warner (1985) used this type of modification. As a result however, we were unable to use event 13, 17, or 18 in our estimations.

2, but once again the overall conclusions do not change from the original OLS results. The estimated coefficients and p-values differ, but the TCARs remain significant, except for the Air Canada model over the structural-event period.

6.3 Economic interpretation

This section will offer a brief discussion of the economic interpretation of our results. We need to consider what factors led to investors preferring one outcome over another.

Over the merger-event period, we find that investors in both carriers preferred an AMR-CAI alliance to an Air Canada-CAI merger. So although there may have been a belief that an AMR-CAI alliance would generate efficiency gains to CAI, leading to lower profits for Air Canada, it seems that this effect was dominated by the impact of eliminating a potential unworkable merger. The possibility that an AMR-CAI alliance would make Air Canada more likely to align with another U.S. mega-carrier, may have also played a role in the positive Air Canada investor response.

Over the structural-event period, we found that PWA shareholders (as expected) preferred a domestic duopoly to their bankruptcy (and a likely Air Canada monopoly). However, since Air Canada shareholders did not share this preference, we cannot conclude that they wanted a domestic duopoly, even though they preferred an AMR-CAI alliance to an Air Canada-CAI merger over the merger period. This helps to explain why the two carriers engaged in a series of legal and political battles throughout 1993. Although it seems likely that Air Canada shareholders preferred an Air Canada monopoly,

the stock price reactions do not reflect this. Perhaps they did not believe it to be a possible outcome due to political difficulties.

It also appears that Air Canada actively pursued a merger with CAI against the wishes of shareholders — which seems to indicate that there was a divergence between the interests of managers and shareholders. One source of these “agency costs” may be the limit imposed on individual shareholdings which effectively gives Air Canada’s management total control.¹⁰⁵

¹⁰⁵The privatization of Air Canada was made subject to a number of conditions, most of which were enshrined in the enabling legislation passed in August 1988. One condition was that no individual shareholder is allowed to hold more than 10 per cent of the shares sold to private investors (see Oum et al., 1991).

7 Summary and Conclusions

We have used an event study methodology to investigate investor preferences regarding the merger/alliance possibilities in the Canadian airline industry.

Beginning in late 1991 and continuing until October 1992, investors expected the Canadian airline industry to evolve toward one of two possible structures. Either Air Canada and CAI would merge, forming a near monopoly carrier, or the two carriers would retain their duopoly and CAI would form a foreign alliance with AMR. We defined this period of time as the “merger-event period”.

We identified many events which were found to convey significant new information to investors about the likelihood of these outcomes and their affect on the profitability of the firms involved. Using the market model with dummy variables corresponding to the event days, we performed hypothesis tests to reveal investor preferences. For the merger-event period, it appears that shareholders for both companies preferred an AMR-CAI alliance to an Air Canada-CAI merger. This result reflects the difficult financial situation that would be faced by a merged Air Canada-CAI carrier, and the possibility that the Canadian government would not allow the merged company to hold a monopoly.

It is interesting to note that despite Air Canada management’s pursuit of a “made in Canada solution” and early government pressures to complete an Air Canada-CAI merger, Air Canada shareholders preferred an AMR-CAI alliance to a merger of the two Canadian carriers. Their wishes became evident in October 1992 when the boards of both companies rejected a merger proposal.

After October 1992, and until late 1993, CAI faced serious financial difficulties and was not expected to survive without an alliance with AMR. A merger with Air Canada seemed very unlikely. If the AMR-CAI alliance failed then CAI was expected to fall in the hands of Air Canada, resulting in a virtual Air Canada monopoly. We defined this period of time as the “structural-event period”.

Several events were identified over the structural-event period, and we performed more hypothesis tests to reveal the preferences of Air Canada and PWA shareholders. Since the alternative was bankruptcy, it is unsurprising that PWA shareholders were found to show a significant preference for an alliance with AMR. Air Canada investors however, did not appear to be highly concerned with CAI’s future — they did not show a significant preference for success of the AMR-CAI alliance, even though they supported this result over the merger-event period.

Thus, although investors preferred an AMR-CAI alliance over the merger-event period, they did not necessarily prefer a domestic duopoly market structure to a domestic monopoly. If investors had supported a domestic duopoly outcome, then investors for both carriers would have supported the AMR-CAI alliance over both periods.

We can also conclude that Air Canada’s pursuit of a merger with CAI seems to indicate that managers were not acting in accordance with the wishes of shareholders. One source of this “agency cost” may be the limit imposed on individual shareholdings which effectively gives Air Canada’s management total control.

8 References

- Binder, J.J., (1985), "Measuring the effects of regulation with stock price data." *RAND Journal of Economics* 16, 167-183.
- Bollerslev, T., (1986), "Generalized autoregressive conditional heteroskedasticity." *Journal of Econometrics* 31, 307-327.
- Bollerslev, T., R.Y. Chou, and K.F. Kroner, (1992), "ARCH modeling in finance." *Journal of Econometrics* 52, 5-59.
- Borenstein, S. and M.B. Zimmerman, (1988), "Market incentives for safe commercial airline operation." *The American Economic Review* 78, 913-935.
- Brander, J.A., (1991), "Election polls, free trade, and the stock market: evidence from the 1988 Canadian general election." *Canadian Journal of Economics* 24, 827-843.
- Brown, S.J. and J.B. Warner, (1980), "Measuring security price performance." *Journal of Financial Economics* 8, 205-258.
- Brown, S.J. and J.B. Warner, (1985), "Using daily stock returns: the case of event studies." *Journal of Financial Economics* 14, 3-31.
- Copeland, T.E., and J.F. Weston (1988), *Financial Theory and Corporate Policy*. Don Mills: Addison-Wesley.
- de Jong, F., A. Kemna, and T. Kloek, (1992), "A contribution to event study methodology with an application to the Dutch stock market." *Journal of Banking and Finance* 16, 11-36.
- Eckel, C., D. Eckel, and V. Singal, (1993) "Privatization and competition: the intra-industry effects of the sale of British Airways and Air Canada." Mimeo, (Virginia Polytechnic Institute and State University, Blacksburg, VA).
- Engle, R.F. (1982) "Autoregressive conditional heteroskedasticity with estimates of the variance of United Kingdom inflation." *Econometrica* 50, 987-1008.
- Fama, E.F. (1976), *Foundations of Finance*. New York: Basic Books, Inc.
- (Gillen, D.W., W. Stanbury, and M. Tretheway, (1988), "Duopoly in Canada's airline industry: consequences and policy issues." *Canadian Public Policy*, 14, 15-31.
- Jarrell, G.A., J.A. Brinkley, and J.M. Netter (1988), "The market for corporate control: the empirical evidence since 1980." *Journal of Economic Perspectives* 2, 49-68.
- Jensen, M.C., and W.H. Meckling, (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure." *Journal of Financial Economics*, 3, 305-360.

Jensen, M.C. and R.S. Ruback (1983), "The market for corporate control: the scientific evidence." *Journal of Financial Economics* 11, 5-50.

Keane, S.M., (1983), *Stock Market Efficiency*, Oxford: Philip Allan.

Kim, E.H., and V. Singal, (1993), "Mergers and market power: evidence from the airline industry." *The American Economic Review* 83, 549-569.

Kyle, R., T.H. Strickland, and B. Fayissa, (1992), "Capital market's assessment of airline restructuring following deregulation." *Journal of Applied Economics* 24, 1097-1102.

Oum, T., A. Taylor, and A. Zhang, (1993), "Strategic airline policy in the globalizing airline networks." *Transportation Journal*, 14-30.

Patterson, P.M., and B.W. Brorsen (1993), "USDA export sales report: is it news?" *Review of Agricultural Economics* 15, 367-378.

Salinger, M., (1992a), "Standard errors in event studies." *Journal of Financial and Quantitative Analysis* 27, 39-53.

Salinger, M., (1992b), "Value event studies." *The Review of Economics and Statistics* 74, 671-677.

Thompson, A.J., (1993), "The anticipated sectoral adjustment to the Canada - United States Free Trade Agreement: an event study analysis." *Canadian Journal of Economics* 26, 253-271.

Whinston, M.D., and Collins, S.C., (1992), "Entry and competitive structure in deregulated airline markets: an event study analysis of People Express." *RAND Journal of Economics* 23, 445-462.

White, K.J. (1993), *Shazam User's Reference Manual Version 7.0*. Toronto: McGraw-Hill.

Appendix 1: Detailed description of events

This appendix provides the reader with a detailed list of the merger/alliance event windows which apply to this research. We indicate with a (+) or a (-) whether the news associated with each event is considered “positive” or “negative”.¹⁰⁶

A1.1 Merger-event windows

Event 1: Sources claimed that AMR had offered to purchase a stake in CAI. (+)

On Saturday, December 14, 1991 the Globe and Mail reported that the Fort Worth Star-Telegram had stated that American Airlines had offered to purchase a US\$250 million stake in CAI. The Calgary Herald claimed that its sources said that a deal was expected by the end of the month. CAI officials would not confirm that they were working on a deal.

Table 7: The returns associated with event 1.

	Air Canada return	PWA return
Friday, December 13, 1991	0.00	11.25
Monday, December 16, 1991	-1.71	0.00

Event 2: PWA terminated its merger talks with Air Canada, and announced that it would try to conclude a deal with AMR. (+)

On Friday, March 20, 1992 the Globe and Mail reported that Canadian Airlines announced Thursday that it had broken off talks with Air Canada, and would try to reach an alliance agreement with American Airlines. Rhys Eyton supported the idea of such an

¹⁰⁶ Recall from the discussion in Chapter 5 that we use an arbitrary designation of “positive” or “negative” for each event window to differentiate between the two kinds of news. For both the merger and the structural event periods, we have chosen to refer to news favouring an AMR-CAI alliance as a positive event, and news favouring the alternative as a negative event.

alliance, saying “we feel there is the making of a deal that would be sensible to both of us and to consumers.”¹⁰⁷

Federal Transport Minister Jean Corbeil appeared open-minded to the idea of a U.S. company obtaining part ownership of PWA. His press secretary, Patrice Miron, said, “We will consider any proposal that is in the interests of the Canadian travelling public.”¹⁰⁸

Table 8: The returns associated with event 2.

	Air Canada return	PWA return
Thursday, March 19, 1992	-3.57	3.08
Friday, March 20, 1992	1.80	5.88

Event 3: PWA announced an agreement with AMR. (+)

On Wednesday, April 15, 1992 the Globe and Mail reported that the president of CAI, Kevin Jenkins, announced Tuesday that CAI had signed a share-purchase agreement with American Airlines that will give American 25 per cent of CAI for \$200 million. The companies had also signed a shareholders agreement which dealt with all control issues.

Table 9: The returns associated with event 3.

	Air Canada return	PWA return
Tuesday, April 14, 1992	8.00	4.65
Wednesday, April 15, 1992	0.00	-2.30

Event 4: The AMR-PWA alliance was said to be about six weeks from completion. (+)

The Globe and Mail reported on Wednesday, May 6, 1992 that AMR’s executive vice-president of planning and finance, Donald Carty, said that its proposed alliance with

¹⁰⁷ The Globe and Mail, March 20, 1992, page A1.

¹⁰⁸ The Globe and Mail, March 20, 1992, page A2.

CAI could be completed in 30 to 45 days. In his speech on Tuesday, Carty also said that there are still two crucial issues to be resolved, “how much we save and how much we invest.”¹⁰⁹

Table 10: The returns associated with event 4.

	Air Canada return	PWA return
Tuesday, May 5, 1992	4.55	2.47
Wednesday, May 6, 1992	2.20	2.41

Event 5: PWA terminated negotiations with AMR, then announced talks with Air

Canada. (-)

On Tuesday, July 28, 1992, the Globe and Mail reported that PWA announced Monday that it had broken off negotiations with AMR. This news was followed by an announcement that PWA and Air Canada would resume merger talks later in the week.

The PWA board of directors decided over the weekend to walk away from the deal with American, because they felt that PWA would be unable to meet certain financial closing conditions.

In Wednesday’s Globe and Mail, it was reported that federal Finance Minister Donald Mazankowski indicated on Tuesday that a merger might be the only option available to Air Canada and CAI. “Canadian chose to try and forge an alliance with AMR. That obviously has failed. The other option is a merger.”¹¹⁰

¹⁰⁹The Globe and Mail, May 6, 1992, page B9.

¹¹⁰The Globe and Mail, July 29, 1992, page A2.

Table 11: The returns associated with event 5.

	Air Canada return	PWA return
Monday, July 27, 1992	-1.01	0.00
Tuesday, July 28, 1992	3.47	-23.57
Wednesday, July 29, 1992	-3.47	-64.14

Event 6: The proposed Air Canada-PWA merger stalled. (+)

On Tuesday, August 11, 1992, the Globe and Mail reported that PWA and Air Canada were within days of reaching a deal, but three developments had surfaced that could scuttle the agreement. Retired vice-president of CAI, Sidney Fattedad, was trying to gain the financial support of CAI employees to revive a deal with AMR; the Canadian Auto Workers Union was scheduled to present a CAI employee investment plan; and in Ottawa, opposition to the deal was growing. On Wednesday, it was revealed that B.C. premier Mike Harcourt had requested that Ottawa withhold approval of any merger until CAI employees had an opportunity to buy into the airline. Five of the CAI unions agreed to develop the idea of a payroll-deduction plan to block the merger. PWA rejected the merger proposal on Friday, August 14, 1992.

Table 12: The returns associated with event 6.

	Air Canada return	PWA return
Tuesday, August 11, 1992	1.06	13.62
Wednesday, August 12, 1992	0.00	8.95

Event 7: Air Canada made a new merger offer to PWA. (-)

On Thursday, September 3, 1992, it was reported in the Globe and Mail that Air Canada made a new merger offer to PWA on Wednesday. Air Canada president Hollis

Harris referred to the proposal as “the best offer they are going to get from us.” The new offer changed only slightly from the previous one, giving PWA shareholders more representation in the merged company and proposing that CAI be retained as a corporate entity. The deal was to expire at 11:59 p.m. on September 9, 1992.

Table 13: The returns associated with event 7.

	Air Canada return	PWA return
Wednesday, September 2, 1992	-4.55	4.65
Thursday, September 3, 1992	1.16	1.50

Event 8: PWA agreed to a merger deal with Air Canada. (-)

On Thursday, September 10, 1992, the Globe and Mail reported that PWA agreed on Wednesday to merge with Air Canada. PWA announced their decision on Wednesday, shortly after 3:00 p.m. (Calgary time). Hollis Harris, the CEO of Air Canada, claimed that the deal was “the best thing to happen to both companies.”

Table 14: The returns associated with event 8.

	Air Canada return	PWA return
Thursday, September 10, 1992	-9.67	1.46

Event 9: The boards of directors for Air Canada and PWA rejected the merger proposal. (+)

On Wednesday, October 28, 1992, the Globe and Mail reported that, on Tuesday, the boards of directors for Air Canada and PWA both rejected the operating, financial, and transition plans that were developed by the merger committee. On Thursday it was

reported that the dominant factor in the rejection was the high debt-load that the merged airline would carry.

Table 15: The returns associated with event 9.

	Air Canada return	PWA return
Tuesday, October 27, 1992	3.70	6.73
Wednesday, October 28, 1992	6.00	-10.80

A1.2 Structural-event windows

Event 10: The Bureau of Competition Policy sought a court order to allow PWA to escape its contract with Gemini. (+)

The Globe and Mail reported on Friday, November 6, 1992 that on Thursday the head of the Bureau of Competition Policy, Howard Wetston, sought a court order that would allow PWA to escape from its contract with the Gemini computer reservation system.

Table 16: The returns associated with event 10.

	Air Canada return	PWA return
Thursday, November 5, 1992	4.08	-47.86
Friday, November 6, 1992	0.00	29.02

Event 11: Ottawa announced that it would provide a small loan guarantee to PWA.

(-)

On Wednesday, November 25, 1992, the Globe and Mail reported that on Tuesday the federal government announced that it would provide \$50 million in loan guarantees to PWA. This was somewhat disappointing news because the amount fell far short of the

\$190 million that PWA had requested. However, the loan would provide PWA with an additional month or two of flying time — perhaps not enough to finalized an alliance with AMR however.

Table 17: The returns associated with event 11.

	Air Canada return	PWA return
Tuesday, November 24, 1992	1.44	-23.18
Wednesday, November 25, 1992	-0.36	-13.98

Event 12: PWA suspended payments to its creditors. (-)

On Monday, November 30, the Globe and Mail reported that PWA announced on Sunday that it was temporarily suspending payments to many of its creditors while it worked out a plan to restructure its debts. If creditors refused to go along with the plan, then the company would be forced to declare bankruptcy (and seek protection from creditors under the Companies' Creditors Arrangements Act), and the deal with AMR would be out of reach.

Table 18: The returns associated with event 12.

	Air Canada return	PWA return
Monday, November 30, 1992	0.00	-38.36

Event 13: AMR and PWA signed a conditional alliance deal. (+)

On Wednesday, December 30, 1992, the Globe and Mail reported that on Tuesday, American Airlines signed a conditional agreement to invest \$246 million in CAI. The deal was viewed as a bargaining tool for use with PWA's lenders. Before the AMR-CAI deal could proceed, PWA needed to: convince its creditors to swap \$900 million of debt for

common shares; obtain approval from employees for wage give-backs over four years and a three year wage freeze; escape from Gemini contract; and obtain federal regulatory approval.

Table 19: The returns associated with event 13.

	Air Canada return	PWA return
Tuesday, December 29, 1992	3.35	15.82
Wednesday, December 30, 1992	8.67	-5.00

Event 14: PWA's bid to dissolve the Gemini computer reservation system was rejected by an Ontario court. (-)

On Saturday, April 3, 1993, the Globe and Mail reported that, late on Friday, an Ontario court rejected PWA's claims that Gemini was insolvent and the partnership was unworkable. This decision threatened PWA's alliance deal with AMR, since one of AMR's conditions was that CAI use AMR's Sabre computer reservation system.

Table 20: The returns associated with event 14.

	Air Canada return	PWA return
Friday, April 2, 1993	3.45	-1.74
Monday, April 5, 1993	3.33	-21.44

Event 15: The Competition Tribunal supported PWA's bid to dissolve the Gemini partnership, but it was unclear if the tribunal had jurisdiction. (+)

On Friday, April 23, 1993, the Globe and Mail reported that, on Thursday, the Competition Tribunal ruled that it did not have the jurisdiction to release CAI from its contract with Gemini. However, the tribunal said that if CAI could convince the Federal

Court of Appeal that the tribunal had jurisdiction, they would rule in CAI's favour. CAI said it would appeal.

Table 21: The returns associated with event 15.

	Air Canada return	PWA return
Thursday, April 22, 1993	9.10	5.13
Friday, April 23, 1993	-4.45	4.88

Event 16: The National Transportation Agency ruled in favour of AMR-PWA alliance. (+)

The Globe and Mail reported on Friday, May 28, 1993 that, on Thursday, the National Transportation Agency ruled that PWA can sell a third of CAI to AMR. PWA still needed to release CAI from its contract with Gemini before AMR would invest.

Table 22: The returns associated with event 16.

	Air Canada return	PWA return
Thursday, May 27, 1993	0.00	0.00
Friday, May 28, 1993	-4.51	26.83

Event 17: The Federal Court of Appeal ruled that the Competition Tribunal has the authority to release PWA from its contract with Gemini. (+)

On Saturday, July 31, 1993, the Globe and Mail reported that, on Friday, the Federal Court of Appeal ruled that the Competition Tribunal has the authority to release PWA from its contract with Gemini. This ruling followed the Competition Tribunal's decision in April 1993 that it supported PWA's bid to dissolve the Gemini partnership, but

the tribunal was unsure whether or not it had the jurisdiction to release PWA (this was event 15).

The Court of Appeal ruled that the Tribunal has the power to release PWA from its contract with Gemini, but only by dissolving Gemini. Therefore, the Tribunal needed to re-examine its original decision to determine if it would be acceptable to dissolve Gemini in order to free PWA. Since AMR's deadline for closing its deal with PWA was the end of the year, there was a risk that the Tribunal's decision would not be made in time.

Table 23: The returns associated with event 17.

	Air Canada return	PWA return
Friday, July 30, 1993	-4.45	10.08
Monday, August 3, 1993	-1.53	-5.64

Event 18: The federal Competition Tribunal ruled that PWA can walk away from its Gemini contract. (+)

The Globe and Mail reported on Thursday, November 25, 1993 that, on Wednesday, the federal Competition Tribunal ruled that PWA could walk away from its contract with Gemini. The tribunal ordered the dissolution of Gemini next November if the Gemini partners could not reach a negotiated settlement by December 8. Gemini was expected to appeal the tribunal's ruling.

PWA would seek an extension of the current end-of-year deadline to reach an alliance agreement with AMR.

Table 24: The returns associated with event 18.

	Air Canada return	PWA return
Wednesday, November 24, 1993	2.41	13.72
Thursday, November 25, 1993	-2.41	24.18

Appendix 2: Results from the GARCH market model

We have re-estimated the OLS market models using a maximum likelihood procedure and assuming a GARCH(1,1) disturbance process. That is, we numerically maximize the GARCH log likelihood function shown in (14). The estimated coefficients and the p-values have changed slightly, but the overall conclusions are the same as for OLS. The results are presented in Tables 25 to 28 below.

Table 25: Results of the GARCH estimation of the Air Canada market model for the merger-event period.

	CAR	Standard error	P-value
Event 1	-1.30	2.66	0.62
Event 2	-1.93	2.82	0.49
Event 3 ✓	7.74	3.64	0.03
Event 4 ✓	7.15	12.92	0.58
Event 5 ✓	-1.16	2.96	0.69
Event 6 ✓	2.28	3.37	0.50
Event 7 ✓	-4.33	2.56	0.09
Event 8 ✓	-9.45	1.76	0.00
Event 9 ✓	8.33	2.47	0.00
Total CARs	37.21	15.60	0.02

Table 26: Results of the GARCH estimation of the Air Canada market model for the structural-event period.

	CAR	Standard error	P-value
Event 10 ✓	5.73	4.38	0.19
Event 11	1.26	3.79	0.74
Event 12	-0.01	2.61	0.96
Event 13 ✓	12.00	8.03	0.14
Event 14	7.43	5.21	0.15
Event 15 ✓	4.12	4.37	0.35
Event 16	-4.29	3.85	0.27
Event 17	-6.35	6.01	0.29
Event 18	-0.02	4.31	0.97
Total CARs	2.47	14.64	0.87

Table 27: Results of the GARCH estimation of the PWA market model for the merger-event period.

	CAR	Standard error	P-value
Event 1 ✓	11.80	3.72	0.00
Event 2 ✓	8.62	3.17	0.01
Event 3 ✓	1.84	6.16	0.76
Event 4 ✓	5.43	3.93	0.17
Event 5 ✓	-78.99	6.06	0.00
Event 6 ✓	24.40	11.30	0.03
Event 7	4.59	5.88	0.44
Event 8 ✓	1.91	2.61	0.46
Event 9	9.97	4.78	0.04
Total CARs	134.55	17.40	0.00

Table 28: Results of the GARCH estimation of the PWA market model for the structural-event period.

	CAR	Standard error	P-value
Event 10	-28.86	10.06	0.00
Event 11 ✓	-40.25	6.67	0.00
Event 12 ✓	-25.60	3.52	0.00
Event 13 ✓	11.07	5.15	0.03
Event 14 ✓	-16.64	21.60	0.44
Event 15 ✓	13.64	4.99	0.01
Event 16 ✓	23.75	6.96	0.00
Event 17 ✓	4.42	7.01	0.53
Event 18 ✓	33.65	5.91	0.00
Total CARs ✓	140.16	28.31	0.00

It is clear that building the GARCH disturbance term into the model does not change the results from those obtained from a simple application of ordinary least squares.

The conclusion from these results remains: both Air Canada and PWA shareholders preferred an AMR-CAI alliance to an Air Canada-CAI merger. In terms of the structural events, there is no evidence Air Canada shareholders were opposed to an AMR-CAI alliance, but we cannot infer that they preferred a domestic duopoly structure to a domestic monopoly.

Appendix 3: “Extreme” daily returns

A crude means of investigating the importance of some of the events listed is to rank the daily returns to Air Canada and PWA. Considering the date range from December 13, 1991 to November 25, 1993 (this corresponds to the first and last event windows, as listed in Appendix 1), there are 492 trading days. It is a simple procedure to identify the extreme five per cent tails of the set of returns for Air Canada and PWA: the 12 lowest returns to Air Canada and PWA are shown in Tables 29 and 31, while the 12 highest returns to Air Canada and PWA are shown in Tables 30 and 32.

A3.1 The smallest returns to Air Canada

Table 29: The smallest returns to Air Canada.

	Date	TSE 300	AC	PWA
1. Thu	18-Feb-93	-0.24	-15.42	0.00
2. Thu	07-Jan-93	-1.02	-15.12	-1.44
3. Thu	10-Sep-92	-0.15	-9.76	1.46
4. Thu	11-Nov-93	0.51	-9.10	-4.00
5. Mon	21-Sep-92	-0.73	-8.70	-5.13
6. Tue	15-Dec-92	0.08	-8.50	-5.00
7. Wed	07-Jul-93	-0.29	-6.90	-1.42
8. Mon	11-May-92	1.55	-6.90	2.41
9. Fri	21-Aug-92	-0.39	-6.74	-2.44
10. Tue	07-Sep-93	-2.50	-6.74	-1.60
11. Tue	22-Dec-92	0.10	-6.32	-13.91
12. Thu	19-Nov-92	0.06	-6.27	10.18

Explanations for Air Canada’s 12 worst returns are offered below.

1. This is likely related to Air Canada's announcement on February 19, 1993 that it had earned a record loss of \$454 million for 1992, more than double that for 1991.
2. On January 7, 1993, the U.S. Transportation department approved a plan which would allow Air Canada and a Texas-based investment group to purchase a majority stake in Continental Airlines. Air Canada would invest US\$215 million for 27.5 per cent ownership.
3. On September 9, 1992, PWA and Air Canada agreed to a merger deal. September 10, 1992 is contained within event window 8.
4. On November 11, 1993, Air Canada reported a \$43 million third-quarter profit, and announced a new equity issue that would raise \$200 to \$250 million. The drop in share price may have been due to investor uncertainty over Air Canada's intention in raising the cash, since Air Canada refused to say why it was needed.
5. Unknown explanation. Note however, that both PWA and the TSE 300 also experienced significant declines in September 21, 1992.
6. On December 15, 1992, the Toronto Stock Exchange announced that Air Canada had failed to meet criteria for inclusion in the TSE 35 index. This news may have had a negative impact on Air Canada's share price.
7. Unknown explanation.
8. Unknown explanation.
9. Unknown explanation. Air Canada announced in an employee newsletter on August 21, 1992 that a merger with PWA would make 6,000 workers

redundant. PWA disagreed, saying that a merger would cost 10,000 to 12,000 jobs, compared to only 2,000 jobs lost (at CAI) if there was an AMR-PWA alliance. It is unclear why this news might cause the share price of Air Canada to decline.

10. Unknown explanation. The Financial Post reported on September 8, 1993, that Air Canada and Gemini planned to urge the federal Competition Tribunal to adjourn proceedings that could lead to PWA's release from its contract with Gemini.
11. Unknown explanation.
12. Unknown explanation.

A3.2 The largest returns to Air Canada.

Table 30: The largest returns to Air Canada.

	Date	TSE 300	AC	PWA
1. Mon	01-Nov-93	-0.18	13.35	19.27
2. Fri	19-Feb-93	0.49	11.78	1.71
3. Thu	07-Oct-93	0.13	11.64	0.00
4. Mon	08-Feb-93	0.50	10.20	15.16
5. Thu	04-Feb-93	0.67	10.11	0.00
6. Fri	06-Aug-93	0.31	9.94	3.03
7. Thu	08-Apr-93	-0.27	9.24	0.00
8. Thu	22-Apr-93	0.06	9.10	5.13
9. Wed	14-Oct-92	-0.61	8.70	4.55
10. Wed	30-Dec-92	0.36	8.67	-5.00
11. Tue	14-Apr-92	0.67	8.00	4.65
12. Wed	27-Oct-93	0.25	7.60	1.50

Explanations for Air Canada's 12 highest returns are offered below.

1. Both Air Canada and PWA experienced significant gains on November 1, 1993 — a TSE spokesman said that this was due to (unfounded) speculation that PWA had reached some type of merger deal with Air Canada.
2. On February 19, 1993, Air Canada announced that it had had earned a record loss of \$454 million for 1992, more than double that for 1991. Air Canada's shareholders seem to have reacted to this news early, on February 18, resulting in a drop of 14.3 per cent. The gain on February 19 may be a readjustment.
3. On October 7, 1993, Air Canada filed a motion with the Federal Court of Appeal, asking for a new chance to argue against AMR's proposed investment in CAI. Air Canada argued that, since it was offering PWA \$1 billion for CAI's international routes, PWA did not need a deal with AMR in order to stay in business (as PWA had argued to the Competition Tribunal).
4. Syd Fattedad, chairman of the Council of Canadian Airlines Employees, said on February 8, 1993, that if PWA merged with Air Canada then CAI workers would withdraw their offer of \$200 million in wage concessions. The Financial Post also suggested that both Air Canada and PWA shares experienced gains because investors were anticipating industry restructuring following the conclusion of federal hearings into the possible dissolution of Gemini.
5. On February 4, 1993, Air Canada announced it had filed a formal objection to the proposed AMR-PWA deal, with the National Transportation Agency. Air Canada said that it still wanted to negotiate a merger with PWA. The federal Competition Tribunal was also told that Air Canada and CAI had planned to

increase ticket prices by 14 per cent and cut more than 8,000 jobs, if they had managed to complete a merger deal in the fall of 1992.

6. On August 5, 1993, Air Canada reported a \$14 million profit for the second quarter of 1993 — its first quarterly profit in nearly two years. On the same day, the Competition Bureau asked the chairman of the Competition Tribunal to act quickly in reconsidering CAI's release from its Gemini contract — PWA hailed this request as a victory.
7. Unknown explanation.
8. On April 22, 1993, the Competition Tribunal ruled that it supports PWA's bid to dissolve the Gemini partnership, but it was unclear if the tribunal had jurisdiction. If CAI could convince the Federal Court of Appeal that the tribunal had jurisdiction, they would rule in CAI's favour. April 22, 1993 is contained within event window 15.
9. Unknown explanation.
10. The return to Air Canada shares on December 30, 1992 may be a further adjustment to news that, on December 29, American Airlines signed a conditional agreement to invest \$246 million in CAI. December 30, 1992 is contained within event window 13.
11. On April 14, 1992 the Globe and Mail reported that CAI had signed a share-purchase agreement with American Airlines that will give American 25 per cent of CAI for \$200 million. April 14, 1992 is contained within event window 3.

12. Unknown explanation.

A3.3 The smallest returns to PWA

Table 31: The smallest returns to PWA

	Date	TSE 300	AC	PWA
1. Wed	29-Jul-92	0.38	-3.47	-64.14
2. Thu	05-Nov-92	-0.15	4.08	-47.86
3. Mon	30-Nov-92	0.19	0.00	-38.36
4. Wed	02-Dec-92	-0.26	-0.72	-24.36
5. Tue	28-Jul-92	0.44	3.47	-23.57
6. Tue	24-Nov-92	0.03	1.44	-23.18
7. Mon	05-Apr-93	0.26	3.33	-21.44
8. Wed	03-Nov-93	-0.13	6.06	-18.81
9. Thu	29-Oct-92	0.04	-0.34	-18.75
10. Tue	03-Nov-92	-0.52	0.00	-15.82
11. Wed	02-Jun-93	0.08	2.99	-15.42
12. Thu	12-Aug-93	-0.17	6.63	-15.42

Explanations for PWA's 12 worst returns are offered below.

1. On July 27, 1992, PWA announced that it had broken off negotiations with AMR. This news was followed by an announcement that PWA and Air Canada would resume merger talks later in the week. The return to PWA on July 30 is possibly a further adjustment to this news. July 30, 1992 is contained within event window 5.
2. On Thursday, November 5, 1992, the head of the Bureau of Competition Policy, Howard Wetston, sought a court order that would allow PWA to escape from its contract with the Gemini computer reservation system. November 5, 1992 is contained within event window 10.

3. On Sunday, November 29, 1992, PWA announced that it had temporarily stopped payments to some of its creditors in order to free up funds for operations. This explains the 32 per cent drop on Monday.
4. The decline on December 2, 1992 was due to PWA stopping payments to some of its creditors, and investor concerns over its proposed restructuring plan. As part of its restructuring plan, PWA was asking creditors to swap \$725 million in debt for equity — this would result in a substantial dilution of common shares, explaining the drop in price. In addition, there were rumours that some of CAI's aircraft would be seized.
5. On July 27, 1992, PWA announced that it had broken off negotiations with AMR. This news was followed by an announcement that PWA and Air Canada would resume merger talks later in the week. The return to PWA on July 29 is possibly a further adjustment to this news. July 30, 1992 is contained within event window 5.
6. On November 24, 1992, the federal government announced that it would provide \$50 million in loan guarantees to PWA. This was somewhat disappointing news because the amount fell far short of the \$190 million that PWA had requested. However, the loan would provide PWA with an additional month or two of flying time — perhaps not enough to finalized an alliance with AMR. November 24, 1992 is contained within event window 11.
7. Late on Friday, April 2, 1993, an Ontario court rejected PWA's claims that Gemini was insolvent and the partnership was unworkable. This decision

threatened PWA's alliance deal with AMR. The decision, late on Friday, probably caused the decline in PWA's price on Monday, April 5. April 5, 1993 is contained within event window 14.

8. PWA's decline on November 3, 1993, may have been in response to news that the speculation of a deal between Air Canada and PWA was unfounded. PWA shares experienced strong gains on November 1 and 2; on November 3, the Financial Post reported that these gains were due to speculation.
9. The decline in PWA's price on October 29, 1992, occurred two days after the boards of directors for Air Canada and PWA rejected the operating, financial, and transition plans that were developed by the merger committee (event window 9). The Financial Post reported on October 30, 1992, that a fundamental restructuring of the merger plan would be necessary.
10. On November 3, 1992, Air Canada announced that it had terminated its October 8 pre-merger agreement with PWA, because the merged carrier would fail.
11. On June 2, 1993 Air Canada announced that it would appeal the National Transportation Agency's decision to allow an AMR-PWA alliance (the Agency's decision is contained within event window 16).
12. On August 11, 1993, the Ontario Court of Appeal upheld the April 2, 1993 ruling that rejected PWA's request to declare Gemini insolvent.

A3.4 The largest returns to PWA.

Table 32: The largest returns to PWA.

	Date	TSE 300	AC	PWA
1. Fri	06-Nov-92	-0.87	0.00	29.02
2. Fri	28-May-93	-0.09	-4.51	26.83
3. Thu	25-Nov-93	0.14	-2.41	24.18
4. Mon	31-May-93	0.42	-1.55	21.13
5. Mon	01-Nov-93	-0.18	13.35	19.27
6. Tue	15-Jun-93	0.40	-2.63	17.73
7. Tue	29-Dec-92	-0.15	3.35	15.82
8. Tue	02-Jun-92	0.18	0.00	15.76
9. Mon	08-Feb-93	0.50	10.20	15.16
10. Fri	05-Mar-93	0.66	1.63	14.57
11. Fri	30-Oct-92	0.00	-0.34	14.52
12. Mon	26-Apr-93	-0.04	-1.53	14.39

Explanations for PWA's 12 highest returns are offered below.

1. On November 6, 1992, the Bureau of Competition Policy sought a court order to allow PWA to escape its contract with Gemini. November 6, 1992 is contained within event window 10.
2. On May 27, 1993, the National Transportation Agency ruled in favour of the AMR-CAI alliance. May 28, 1993 is contained within event window 16.
3. On November 24, 1993, the federal Competition Tribunal ruled that PWA could walk away from its Gemini contract. November 25, 1993 is contained within event window 18.
4. The high return to PWA on Monday, May 31, 1993 appears to be a further adjustment (after the weekend) to the National Transportation Agency's ruling

(on Thursday, May 28, 1993) in favour of AMR-PWA alliance. This ruling corresponds to event 16.

5. Both Air Canada and PWA experienced significant gains on November 1, 1993 — a TSE spokesman said that this was due to (unfounded) speculation that PWA had reached some type of merger deal with Air Canada. The Financial Post reported that “Analysts said investors possibly believed an Air Canada-PWA deal, instead of an AMR-PWA equity alliance, would mean less dilution for holders of common shares.”¹¹¹
6. Unknown explanation.
7. On December 29, 1992, American Airlines signed a conditional agreement to invest \$246 million in CAI. The deal was viewed as a bargaining tool for use with PWA’s lenders, since there are still several obstacles. December 29, 1992 is contained within event window 13.
8. Unknown explanation.
9. Syd Fattedad, chairman of the Council of Canadian Airlines Employees, said on February 8, 1993, that if PWA merged with Air Canada then CAI workers would withdraw their offer of \$200 million in wage concessions. The Financial Post also suggested that both Air Canada and PWA shares experienced gains because investors were anticipating industry restructuring following the conclusion of federal hearings into the possible dissolution of Gemini.
10. The jump in PWA’s share price on March 5, 1993 may be linked to the news report in the Globe and Mail that day, that the federal competition tribunal had

¹¹¹ The Financial Post, November 3, 1993, page 18.

concluded hearings into PWA's effort to leave Gemini. The tribunal indicated that it would try to make a decision as quickly as possible.

11. The jump in PWA's price on October 30, 1992, occurred three days after the boards of directors for Air Canada and PWA rejected the operating, financial, and transition plans that were developed by the merger committee (event window 9). On October 30, Donald Carty, a senior executive with American Airlines, said that there would probably be renewed alliance talks between AMR and PWA.
12. Unknown explanation.

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