



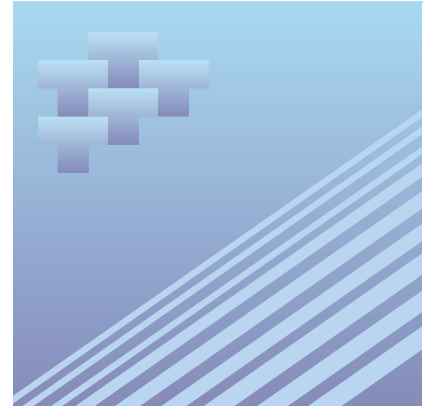
Research Paper

How much did the airline industry recover since September 11, 2001?

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Introduction

Since the tragic events of September 11, 2001 in the United States, important changes in the financial and operating statistics of airline activities in Canada have taken place. In particular, most airline companies have seen a deterioration of their financial positions, the number of flights and of seats available have generally decreased and security measures have increased. The aim of this paper is to examine the post-September 11th aviation market in Canada with respect to one key operating characteristic: the number of flights of airline companies operating in Canada. More specifically, the following questions are addressed: was there a recovery in airline activities in Canada since September 11th? Were all losses in all sectors recovered (domestic, transborder, international)? Were all losses at all airports recovered?

This paper is divided into three sections. Data sources and limitations, the scope of this research and the methodological approach used are described in the first section. The second section highlights the main results obtained and discusses these results in the context of the recent trends in airline activities in Canada. Lastly, some conclusions are offered, based on the evidence collected and analyzed.

Section 1

(a) Data source and limitations

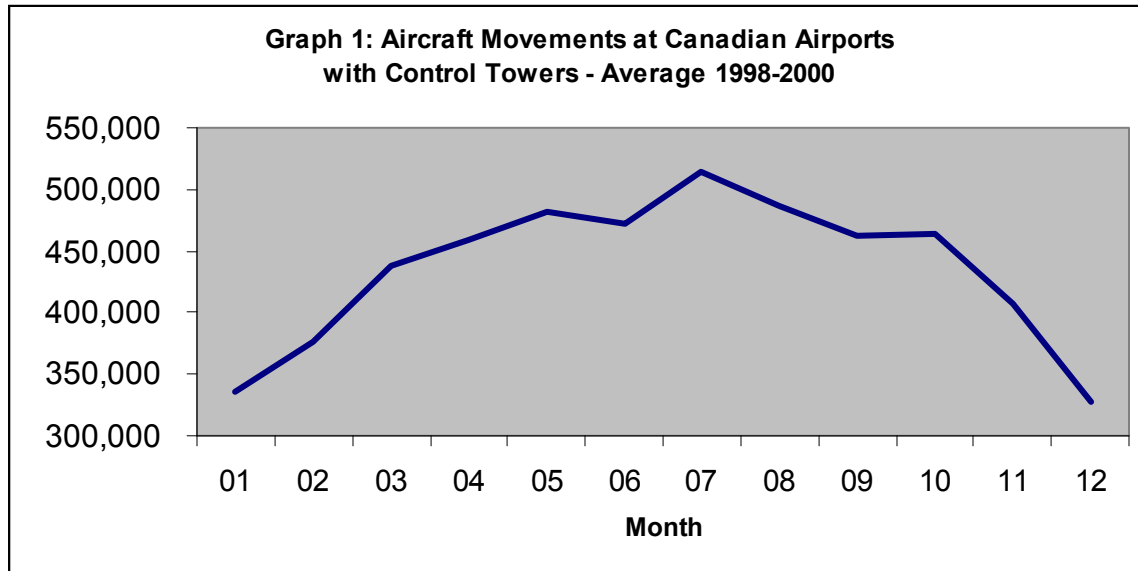
Canadian and foreign airline companies operating in Canada have reduced significantly their number of flights available since September 2001. But how much decrease in the number of flights has occurred and to what extent the industry is recovering, if at all? The Aircraft Movement Statistics (AMS) Survey can be used to shed some light on these questions. These monthly statistics are based on aircraft movements as reported by the air traffic control units at the Nav Canada control towers. AMS data constitute a good indicator of overall airline activities in Canada both by type of operation - civil (commercial, government and private) vs. military - and by sector (domestic, transborder, international). However, AMS data are limited to the number of flights, leaving out of the equation important factors such as number of seats available on the supply side and load factors on the demand side¹. Also, AMS data cannot provide any information on the financial implications of the operations.

The analysis of the trend in the number of flights since September 2001 is also to be placed in the context of the airline industry coming into September 2001. The impact of terrorist acts of September 11 cannot be analyzed separately, isolated from the other factors affecting the airline industry in the years preceding the tragic events. This historical perspective is essential. In this context, AMS data provide a measure of the fluctuations in the number of flights, but cannot indicate the cause of these fluctuations.

Finally, AMS data, reflecting the aviation activities, have a marked seasonality—they show a strong seasonal movement. Typically, as seen in the graph 1 below, aircraft movements peak in July-August, reaching over 500,000 movements on average over the last few years, and are at their lowest in December-January at around 330,000 movements. This significant seasonal pattern clearly needs to be addressed and treated properly when analyzing the impact of September 2001.

* The author would like to thank Gord Baldwin and Bruce Meyer, respectively Director and Assistant-Director in Transportation Division, Statistics Canada for their useful comments on earlier version of this paper. The author would also like to thank J.-R. Larocque for his publishing work.

¹ Statistics Canada data on capacity measures such as number of passenger-kilometers, available seat-kilometers and passenger load factor are unfortunately unavailable publicly at this point in time.



(b) Scope

In order to focus more directly on the impact of the September 2001 events, this analysis of Aircraft Movement Statistics is concentrated on civil itinerant movements. Local movements and military movements were not examined.² On average over the last few years, civil itinerant movements have represented close to 70% of all aircraft movements in Canada. Moreover, a quick analysis revealed that six major airports in Canada account for close to 50% of all civil itinerant movements. These six airports were selected for this study, namely:

Toronto – Lester B. Pearson;
 Vancouver International;
 Calgary International;
 Montréal – Dorval;
 Ottawa – McDonald-Cartier;
 Winnipeg International.

The AMS data will first allow the distinction between commercial flights and private/government flights. For the commercial sector, the AMS data will also be able to make the distinction between domestic, transborder and other international flights.³ In total, this means that 7 data elements were systematically gathered for the 6 airports:

Total aircraft movements;
 Total civil itinerant movements;
 Total civil itinerant movements – Commercial;
 Total civil itinerant movements – Commercial – Domestic;
 Total civil itinerant movements – Commercial – Transborder;
 Total civil itinerant movements – Commercial – Other international;
 Total civil itinerant movements – Private/Government.

² For the purpose of completing air traffic records, local movements are considered as movements in which the aircraft remains in the circuit.

³ Aircraft movements are reported on the basis of place "arrived from" or "departed to". Also, for instance, an arrival at Dorval airport from London, England will appear under "other international". However, if the same aircraft moved on to Toronto, both the departure at Dorval and the arrival at Toronto will be shown as "domestic".

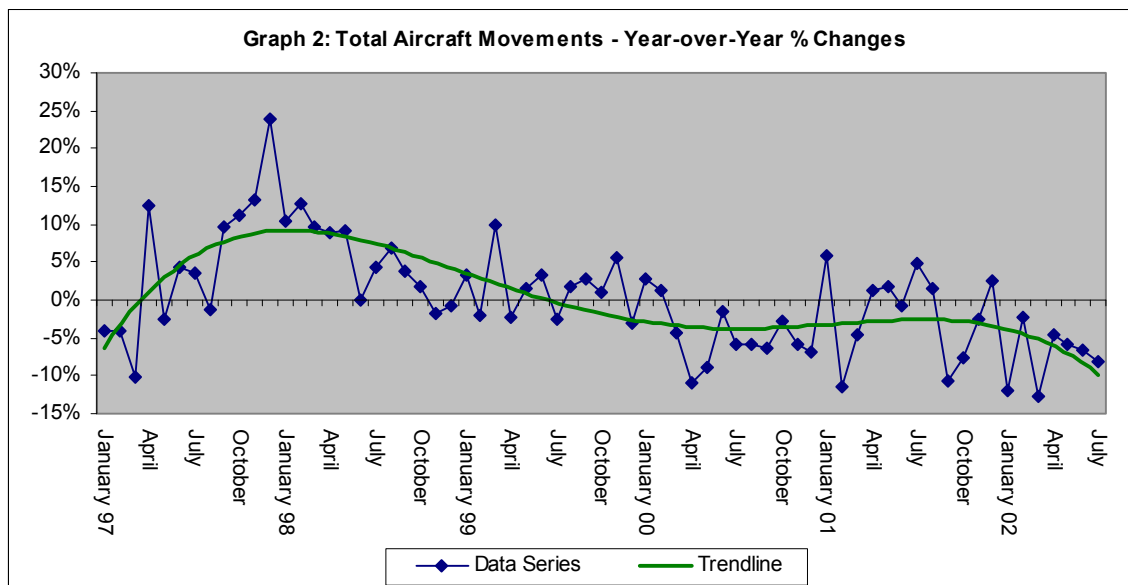
(c) Methodology

In order to capture the trends in airline activities in Canada prior to September 11 and to eliminate the effect of seasonal patterns, the analysis was carried out in two steps. First, the year-over-year percentage changes in aircraft movements for the six selected airports and for the seven data elements retained were calculated for each month for the period January 1997 to July 2002. The year-over-year percentage changes allow eliminating the effect of seasonal patterns shown in the AMS data. The second step consisted in plotting on a graph the data series for each selected airport and each data element, and in deriving a trendline⁴ to better appreciate the direction of the data series over time. The trendline offers this advantage of capturing longer-term movements in data series while minimizing the impact of shorter-term fluctuations.

Section II(a) Total Aircraft Movements

In total, over 5 million annual aircraft movements were recorded on average each year in Canada over the last few years. Graph 2 below shows the year-over-year percentage changes in total aircraft movements in Canada for the period January 1997 to July 2002⁵. Three different periods or phases can be distinguished:

- a positive trend, peaking at a strong 10% annual change in early 1998 and ending by mid-1999;
- a negative trend, with a trough at around -4% by mid-2000 and slowing improving by early 2001;
- a significant downward shift in the trend after September 2001, with year-over-year changes mostly between -5% and -10%.



One conclusion to be drawn from these observations: the events of September 11 clearly exacerbated a situation that was already difficult for the airline activities in Canada. The negative trend observed since mid-1999 in aircraft movements deteriorated further after September 2001. Keeping this general trend in mind, the AMS data will now be analyzed in more detail, starting with the distinction between civil and private/government operators.

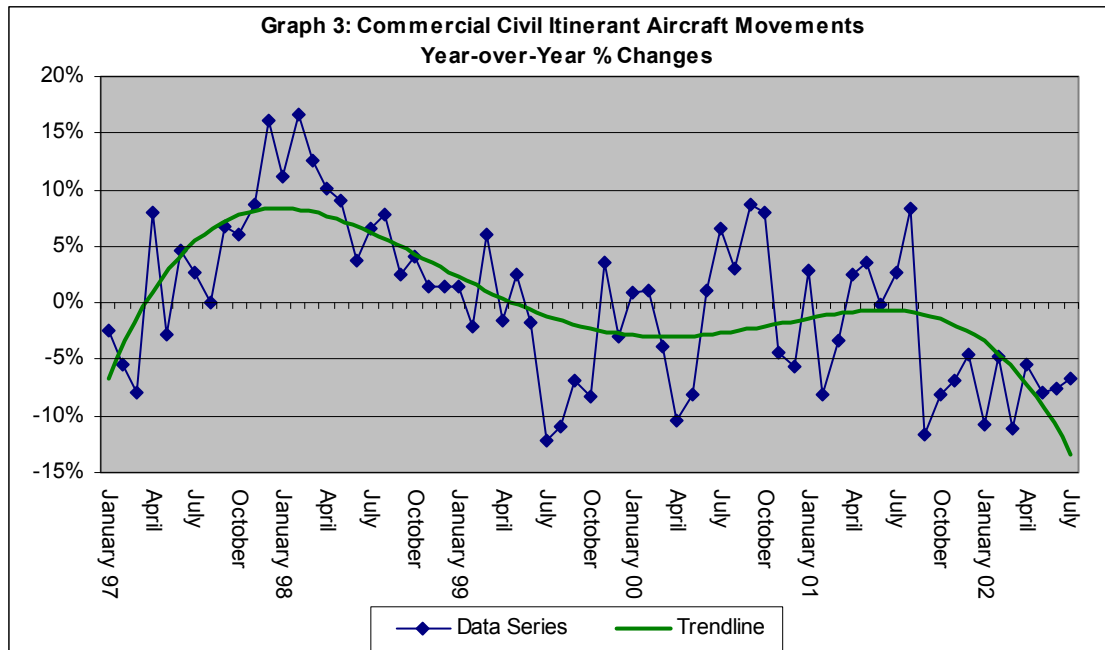
⁴ The trendline was derived by using a polynomial equation of order 4 to calculate the best least squares fit through the data series.

⁵ In this and subsequent graphs, the aircraft movements recorded for September 2001 are negatively affected by the closure of the Canadian air space for a few days after September 11th. This negative impact was slightly counter-balanced by the 200 flights diverted to Canadian airports on September 11, 2001.

(b) Civil Itinerant Aircraft Movements

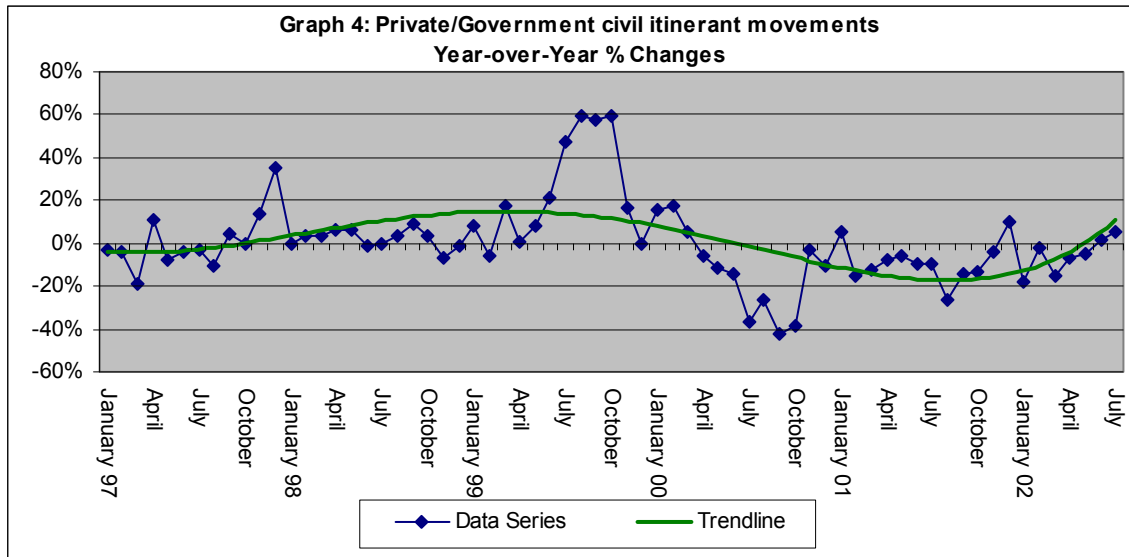
Out of the total 5 million aircraft movements recorded on average each year in Canada over the last few years, about 3.5 million or 70% were civil itinerant movements. Military and local movements account for the remaining 30%. Civil itinerant aircraft movements can be broken down further into two categories: commercial and private/government. Accounting for about 83% of all civil itinerant aircraft movements, the commercial flights (see graph 3) followed a trend very similar to the total aircraft movements (as seen in graph 2) for the years 1997 to 2002, with the following exceptions:

- The negative trend observed from mid-1999 is almost turning into a positive trend by early 2001;
- The downward shift after September 2001 is more pronounced⁶.



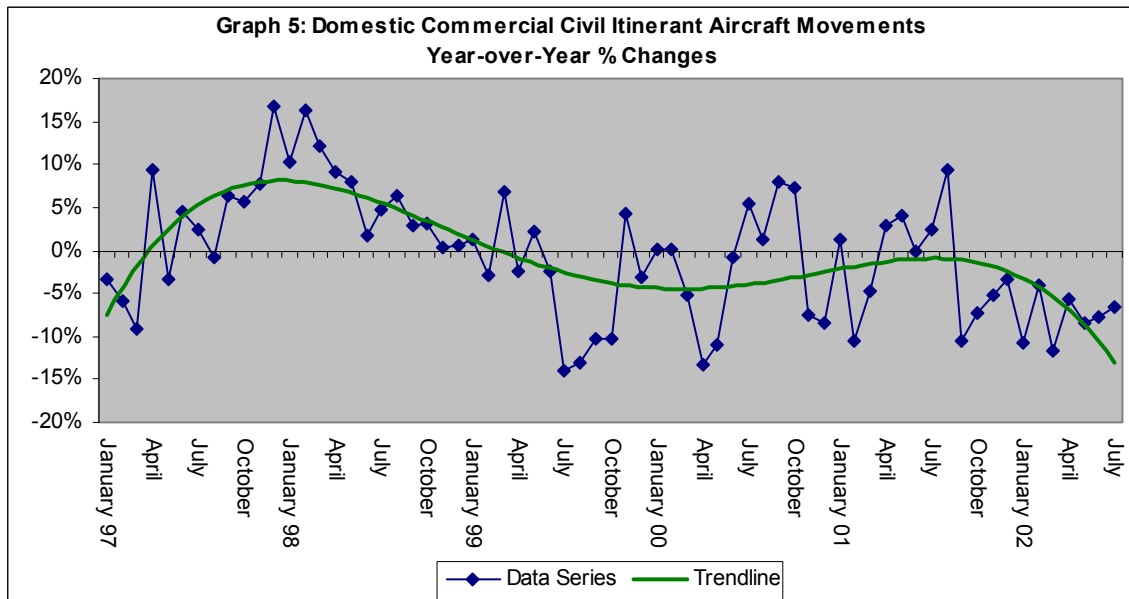
Overall, the similarities between the year-over-year changes in total aircraft movements and commercial civil itinerant movements were to be expected, given the importance of commercial flights in total aircraft movements. By comparison, graph 4 depicts the private/government civil itinerant aircraft movements. The trend exhibited by the private/government flights is quite different than the commercial flights in graph 3. For one thing, the events of September 11 do not seem to have any impact on the trend followed by the private/government flights. Moreover, two phases can be observed: a positive trend peaking in early 1999 at about 20% and a negative trend with a trough at around -20% by mid-2001. Since then, the trend is clearly upward and even positive since mid-2002. The demand for private/government flights is responding to different market and institutional influences than commercial flights. Commercial civil itinerant aircraft movements will now be analyzed by sector, starting with the domestic sector.

⁶ The erratic movement of the trendline for the last months on the graph is probably related to the difficulty to take into account the significant shift in the series after September 2001. This is noticeable in many graphs shown in this research.



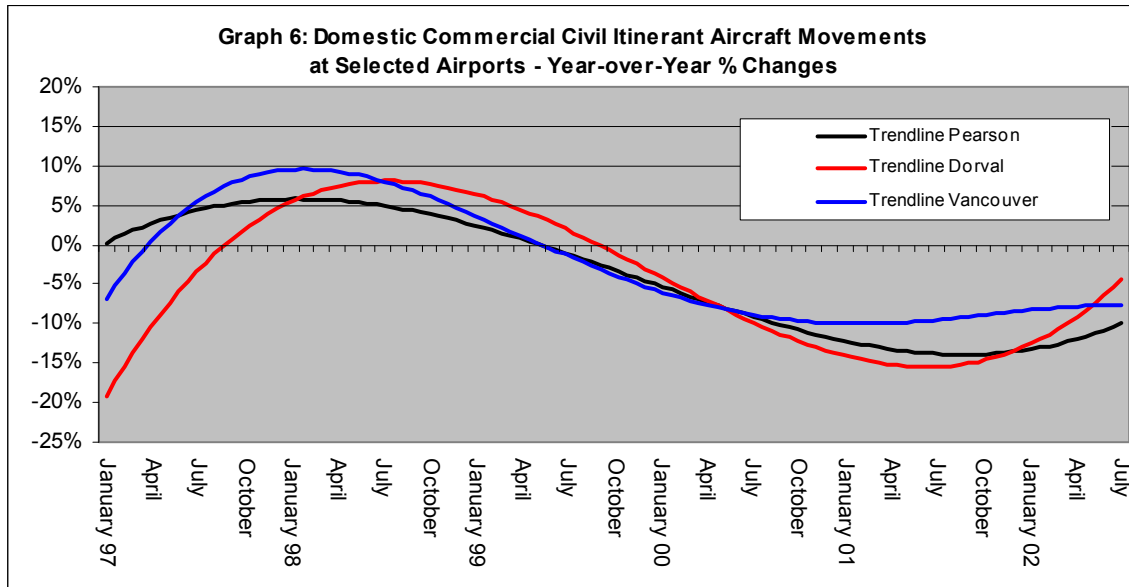
(c) Commercial Civil Itinerant Aircraft Movements: Domestic

Out of the 2.9 million commercial civil itinerant movements recorded on average each year in Canada over the last few years, about 2.4 million or 83% were for domestic flights. As a consequence, the trend of domestic commercial flights shown in graph 5 below is similar to the trend for total commercial flights depicted in graph 3 above.

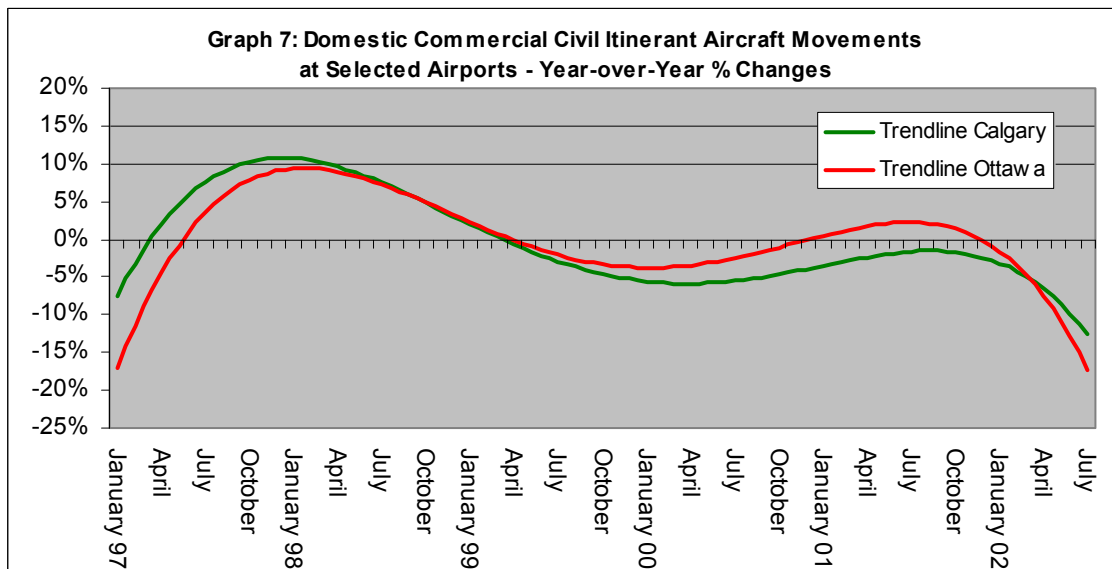


The three phases identified earlier for total aircraft movements and commercial civil itinerant flights are again clearly observable for the domestic flights. The first phase of positive trend ending in the first quarter of 1999 is probably related to good economic conditions in Canada. A worsening economy and a declining domestic travel sector as well as the amalgamation of Air Canada and Canadian Airlines operations starting in 2000 could all have played roles in the observed second phase of negative trend. The downward shift in the trend observed starting with September 2001, identified as the third phase, is similar for the domestic sector to the one observed for all commercial flights. Since October 2001, the year-over-year percentage changes are mainly ranging around -5% and -10%. The conclusion is also similar: the impact of September 11 events worsen an already difficult situation for domestic commercial flights.

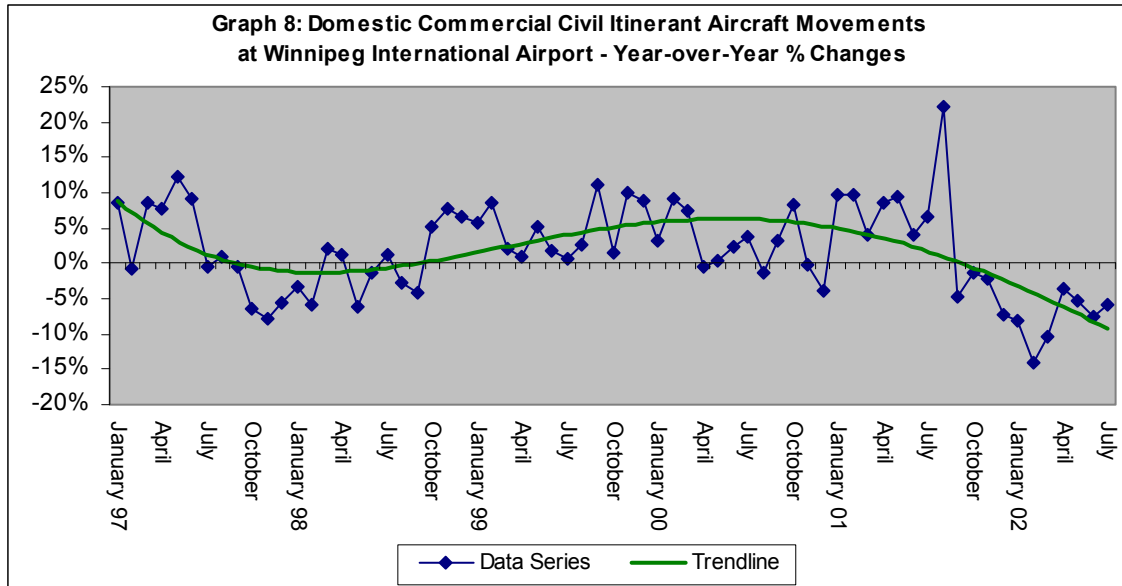
The trend analysis of the domestic movements by major airports in Canada is bringing interesting new findings to this research. For instance, three of the largest airports in Canada: Toronto/Lester B. Pearson, Vancouver International and Montréal/Dorval are showing the same two-phase trend in domestic movements: a positive trend up to mid-1999 and a negative trend since then. To facilitate the reading, graph 6 below depicts only the trendline for the domestic movements at these three airports. Already on a declining trend prior to September 2001, the return to a positive trend at these three airports was postponed by several months after the events of September 11.



Two other airports part of this study, Ottawa/McDonald-Cartier and Calgary International are showing the “typical” three-phase trend for domestic movements – see graph 7 below. Actually, the domestic flights at Ottawa/McDonald-Cartier airport were even back on a positive trend prior to September 2001.



The airport Winnipeg International, the sixth airport in this study, is in a class on its own, showing first negative trend in 1998, followed by a positive trend from 1999 onward, ended by the events of September 2001 (see graph 8). This is probably due to the arrival and growth over the last few years of new carriers using the Winnipeg International Airport facilities.

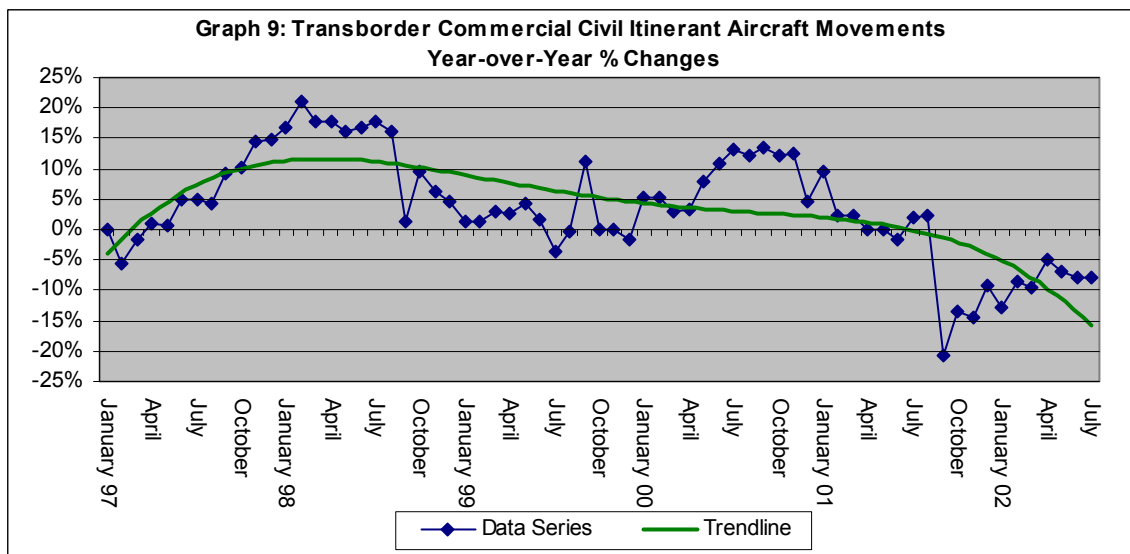


As a summary, the airline activities in Canada were already experiencing a downturn in the number of flights for the domestic commercial sector in the years proceeding September 2001. The events of September 2001 deteriorated even more this difficult situation. As of July 2002, major airports in Canada have yet to see their volume of domestic commercial flights increase by 5%-10% to come back on a positive trend.

(d) Commercial Civil Itinerant Aircraft Movements: Transborder

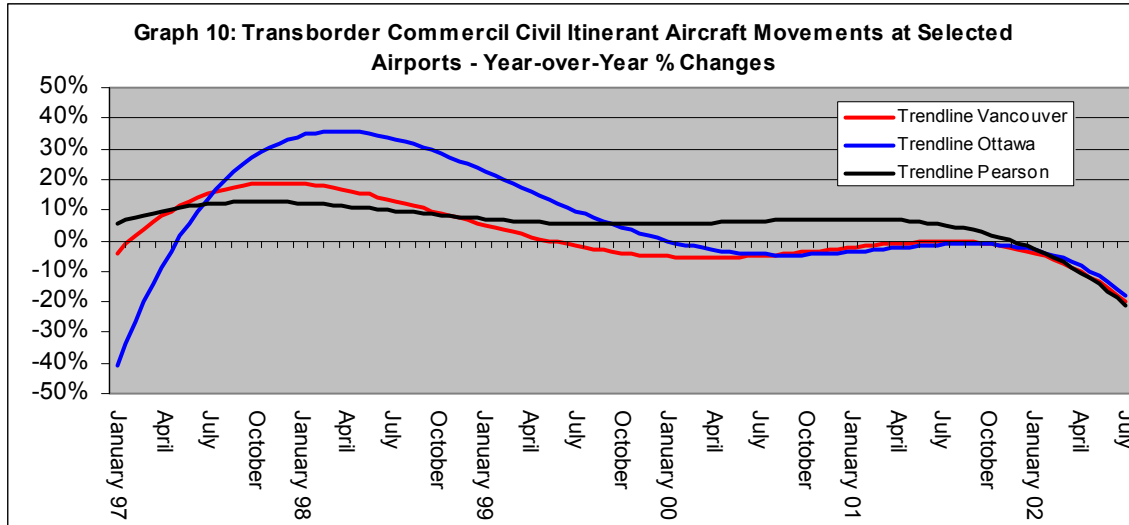
The transborder commercial flights represent about 15% of total commercial movements recorded on average each year in Canada over the last few years. As shown in graph 9, the overall trend followed by the transborder commercial flights is quite different from the trend observed in domestic commercial flights. The transborder trend can be divided in two phases:

- A positive phase, peaking in early 1998 and remaining strong up to the end of 2000;
- A negative phase starting with September 2001.

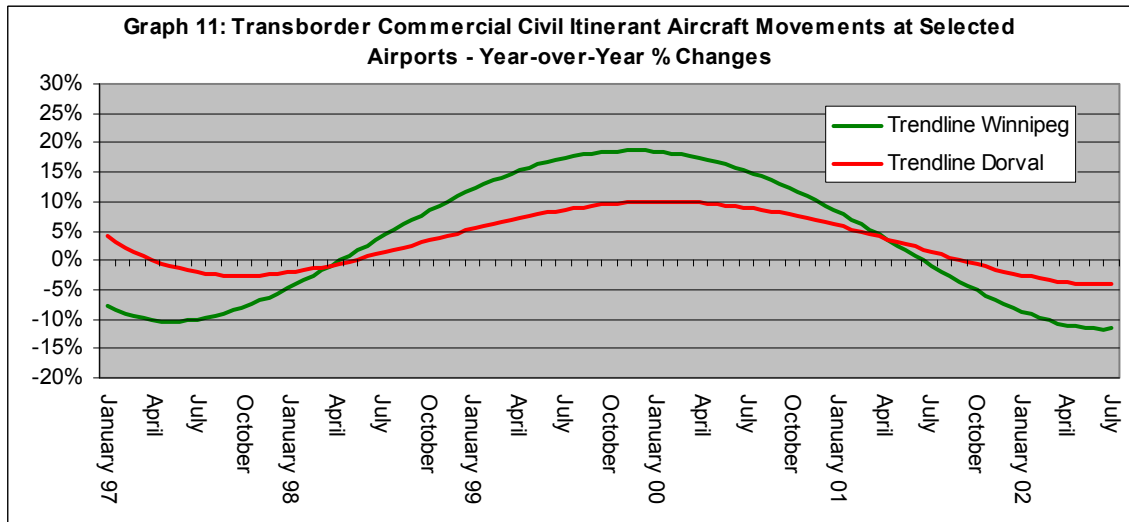


The trend analysis of transborder movements by major airports shows however large disparities. On one hand, as illustrated at Graph 10, Toronto/Lester B. Pearson, Vancouver International and

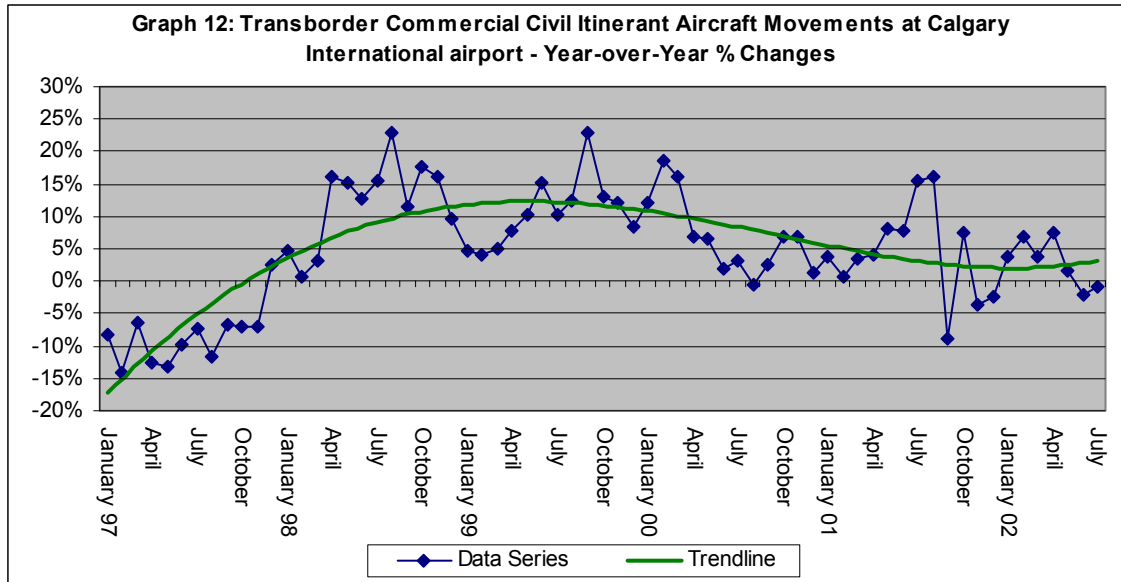
Ottawa/McDonald-Cartier are all airports showing transborder movement trends comparable to the overall trend shown in Graph 9. The trend at Vancouver International and Ottawa/McDonald-Cartier airports fluctuates more than the more stable trend observed at Toronto airports.



On the other hand, the transborder movements at Montréal/Dorval and Winnipeg International airports follow similar trends, peaking in early 2000 and remaining on relatively strong positive trend up to September 2001 (graph 11).



Finally, Calgary International airport shows at graph 12 a strong positive trend basically from early 1998 onward. Although events of September 11 slowed down the pace, the transborder movements are still on a positive trend

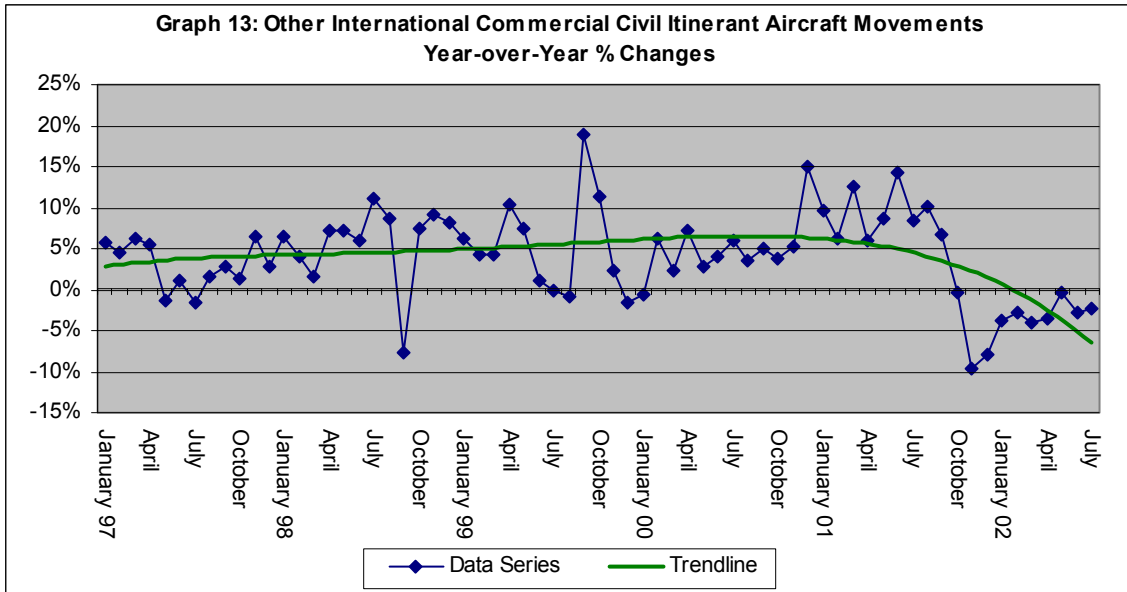


In summary, the impact of September 11 events on transborder commercial flights is comparable to the impact on domestic commercial flights. The difference between the reaction in the domestic commercial sector and the transborder commercial sector is first the strength of the transborder market compared to the weakness in the domestic market coming into September 2001. Second difference, the return to a positive trend in transborder movements at most major airports is in the order of 10% and more, compared to a 5% to 10% range in the domestic sector.

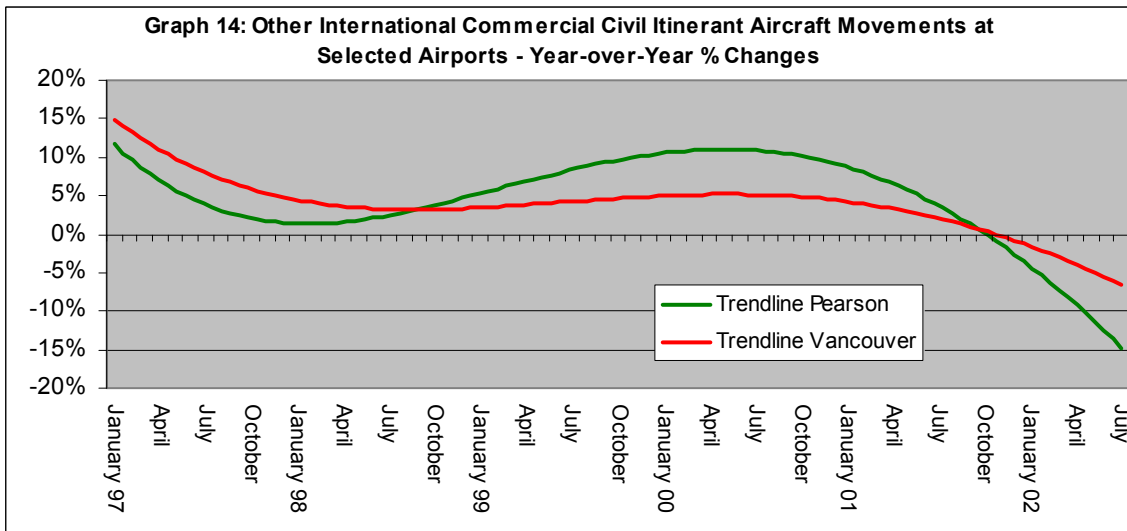
(e) Commercial Civil Itinerant Aircraft Movements: Other International

An annual average of about 70,000 commercial civil aircraft movements originated from or were destined to a country other than the United States over the last few years. This represents approximately 2% of total commercial flights in Canada. Moreover, about 65% of the other international commercial movements were accounted for at Toronto/Pearson and Vancouver International airports. As shown at graph 13, the trend followed by the other international commercial flights is comparable to the trend shown by the transborder commercial flights. Two differences are observable:

- the other international trend was positive and strong coming into 2001, while the transborder trend was still positive, but declining coming into 2001;
- the other international trend is closer to a return to a positive trend (less than 5%) compared to transborder trend (10% and more).



Graph 14 pictures the trendline for the other international movements at Toronto/Pearson and Vancouver International airports. These two trendlines are showing similar movements than the overall trendline for other international movements, although exhibiting larger fluctuations.



Conclusion

In the introduction of this paper, we identified three questions related to the impact of September 11 events on the number of flights of airline companies operating in Canada: was there a recovery in the number of flights since September 11th? Were all losses in all sectors recovered (domestic, transborder, international)? Were all losses at all airports recovered? To answer the first question, the airline activities in Canada were already experiencing a significant downturn in the years preceding September 2001. More specifically, the negative trend observed since mid-1999 in commercial aircraft movements in Canada deteriorated further after September 2001. As of July 2002, the return to a positive trend in commercial aircraft movements is yet to come.

The picture however is different from one sector to another. First, coming into September 2001, the trend in domestic commercial flights was already negative, while the trend in the two other sectors was generally positive, and strong in the case of the other international sector. Second, coming out of September 2001, the return to a positive trend is closer for the domestic sector (-5% to -10%) and the other international sector (less than -5%) than for the transborder sector (-10% and more). The analysis also demonstrated that the trend in domestic, transborder and other international sectors can vary significantly from one major airport to another.

Based on aircraft movement statistics available, the number of flights of airline companies operating in Canada clearly changed in trend since September 2001. In the future, the availability of more aircraft movement data⁷ and the publication of other statistics on capacity measurement will allow to test both the trends identified in this paper and the conclusions reached on the impact of the events of September 11.

⁷ Aircraft movements statistics can be found on-line and free of charge at Transport Canada Web site: www.tc.gc.ca.