OPEN SKIES FOR PASSENGERS, BUT WHAT ABOUT CARGO?  
RE-EVALUATING CANADA-U.S. AIR CARGO REGULATIONS

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ABSTRACT: Air cargo co-terminalization and pre-clearance restrictions impede the efficiency with which international air cargo can be moved. Removal of restrictions may allow for a more efficient system, but some industry stakeholders indicate that there will be winners and losers. This paper summarizes those perspectives of a more liberalized air cargo environment.

1.0 INTRODUCTION

The 1995 Canada-US Open Skies Agreement had a significant impact on passenger air transportation and now, a similar agreement for air cargo traffic between the two countries is being debated. Currently, a co-terminalization (CO-T) restriction prohibits the right to co-terminalize points (combine the gateway with one or more additional points beyond) on any scheduled all-cargo or courier service with aircraft having a takeoff weight greater than 35,000 lbs. This type of trade restriction is unique to the Canada-US agreement.

Under current regulations, carriers originating in the US and destined to Canada are restricted from extending their reach beyond a single city pair. In other words, CO-T is not permitted. US integrated carriers – Federal Express (FedEx) and United Parcel Service (UPS) in particular – routinely use their own aircraft fleet to make multiple outbound stops from their central sorting hubs to drop off packages at US cities. Once they reach their final outbound destination, courier aircraft and crews turn around and head back to their hubs, picking up packages at each stop along the way. CO-T rights would permit US carriers to add multiple stops in Canada as tag ends to their existing US and transborder routes.

However, CO-T is not the only air cargo regulation impacting the industry’s efficiency. Cargo pre-clearance would allow shippers and freight forwarders better, quicker, and more seamless access to US and international markets. Cargo pre-clearance would operate in a similar manner to passenger pre-clearance, which is in effect at most major Canadian airports with transborder routes. After clearing US Customs and Immigration at the Canadian airport of origin, passengers are mixed with US domestic passengers upon arrival at the US airport. By pre-clearing cargo in the same manner at Canadian airports, cargo can be handled more efficiently through the US system, avoiding delays that are out of the control of the shippers or forwarders.

This paper assesses how CO-T and cargo pre-clearance restrictions might effect the North American air cargo industry. Specifically, this paper examines:

i. a case study of air cargo routing patterns under a regulated and relaxed operating environment;
ii. stakeholder perspectives of removing current CO-T restrictions on Canada-US all-cargo operators;
iii. a potential trade-off to CO-T restriction involving the two regulatory issues; and,
iv. potential winners and losers in allowing for CO-T rights.
2.0 CASE STUDY OF A US INTEGRATOR: FEDEX

The CO-T restriction has different ramifications for all-cargo carriers in Canada and the United States. Currently, US-based carriers, such as FedEx, UPS, Emery Worldwide and Burlington Air Express (BAX) Global, contract with Canadian all-cargo carriers, such as Purolator Courier, Knighthawk Air Express (KAX) and Morningstar Air Express (MAE), to fly cargo between "tag-end points" in Canada.

This paper considers the example of how FedEx might operate between airports in Memphis, Winnipeg and Edmonton.

2.1 CURRENT AIR CARGO SCENARIO

Currently, FedEx serves several Canadian cities on transborder routes from its major sorting and regional hub network in the US. However, when the US-based integrator reaches the airports in those cities, it cannot simply exchange cargo and continue on to another Canadian point. It must return to the US carrying only US-bound or international cargo.

Figure 1 illustrates the current transborder O-D integrated air cargo route pattern for FedEx. Under the current scenario, FedEx flies a 727-100 from its Memphis sorting hub to Winnipeg. Upon arrival in Winnipeg, some of the transborder cargo destined for Winnipeg is unloaded, transferred to truck in the early morning and sent to its final destination. The remaining cargo is sorted and transferred to several MAE 727-100s and metroliner aircraft to be distributed to other Canadian points such as Edmonton (YEG), Regina (YQR), Saskatoon (YXE) and Thunder Bay (YQT). The US-based FedEx aircraft cannot serve those cities from Winnipeg because the CO-T restriction prohibits them from doing so. Once unloaded, the US-based aircraft is reloaded with Winnipeg cargo destined for the US, including Canadian cargo flown to Winnipeg from other parts of Canada by MAE.

Figure 1 Current Transborder O-D Air Cargo Route Pattern

MAE aircraft are identical to FedEx aircraft in appearance; both carriers are painted with the familiar “blue & orange” flag colours. Differences exist only in aircraft ownership and the routes they serve. MAE flies all routes for FedEx that serve Canadian cities only, while Federal Express Canada manages the movement of cargo. Similar relationships exist between many other all-cargo companies. For example, All Canada Express (ACE) flies Canadian routes for UPS.

2.2 ECONOMIES UNDER CO-T RESTRICTION
If cargo volumes were substantial enough, US integrators could serve more Canadian cities directly from their US sorting hubs, even under the current CO-T restriction. Rather than flying Edmonton-bound cargo to Winnipeg, unloading and reloading it onto another aircraft, a US carrier could serve both cities directly from its US hub, utilizing two aircraft and two routes from Memphis. For instance, FedEx could expand its operational network directly by serving both YWG and YEG from its primary sorting hub in Memphis by flying aircraft such as a B727 for each city pair (i.e. MEM-YWG and MEM-YEG). This is illustrated in Figure 2.

Figure 2 Network Economies Under CO-T Restriction

![Figure 2 Network Economies Under CO-T Restriction](image)

2.3 CO-TERMINALIZATION RIGHTS

Serving multiple Canadian cities (i.e., Winnipeg-Edmonton) with a single wide-body aircraft would improve efficiency for FedEx. Allowing for CO-T rights is illustrated in Figure 3. With the CO-T restriction relaxed, FedEx could fly a wide-body DC-10 from Memphis to Winnipeg, unload cargo, and reload with US-bound cargo. The aircraft could extend its route to Edmonton and unload the remainder of the cargo that had originated in the US and load any cargo returning to the US from Edmonton. The aircraft could return directly to Memphis, bypassing Winnipeg since it had already exchanged cargo there. Efficiency gains from reducing the fuel burn for an additional takeoff and the landing fee charge would result in cost savings to FedEx. Furthermore, utilizing fewer aircraft to move the same volume of cargo would result in labour cost savings (i.e., fewer pilots, cargo ground handlers, etc.) along the MEM-YWG-YEG triangular cargo route segment. Efficiency gains in aircraft utilization and labour productivity could be achieved by serving both Canadian destinations with a wide-body extended route. Since the marginal cost of adding additional Canadian points to their existing network is relatively low, the cost savings could be passed on to shippers through lower freight rates.
There are three aspects of the air freight industry’s economic structure – economies of density, scale and size. CO-T rights would provide for economies of density, where unit costs would decline as FedEx either adds flights or increases the capacity of existing flights (e.g., through larger aircraft), with no change in the number of points served or network configuration.\(^1\) Economies of scale would be present where unit costs decline when additional co-terminal points are added to the network. Economies of size combine economies of density and scale. It is the proportional increase in output (i.e., total revenue-tonne-kilometres (RTK) of freight), co-terminal points served and density resulting from a declining proportion in all inputs (e.g., fuel, labour, materials and service, flight capital), with average stage length and input prices fixed.

Under CO-T rights FedEx might exhibit economies of size, especially where its Canadian network is less mature. When its freight network is growing, additional traffic generated by increasing the number of co-terminal points served more than compensates for the additional costs of adding points.\(^2\) In a mature network, these effects largely counteract each other.

Cabotage regulations restrict US-based aircraft from moving domestic cargo between Winnipeg and Edmonton, or between any co-terminal points. The restriction prevents foreign carriers’ equipment and personnel from engaging in domestic point-to-point movements within Canada. Cabotage regulations are separate from CO-T restriction, and would not be altered even with changes to the restriction. There are proponents of free trade who believe that cabotage rights would bring even more efficiency to the industry. While, it is unlikely that either Canada or the US would relax those regulations, some reform has taken place. A 1997 Customs Act Memorandum of Understanding specified that international goods dropped off in a country of destination but not the final destination according to the goods’ bill of lading are still considered international. Therefore, the transport of those goods by a foreign carrier would be legal and would not be considered a cabotage move.

3.0 Consolidation Efficiencies: Not Hub-and-Spoke

US integrators currently consolidating cargo at Canadian airports may consider flying fewer aircraft to more points in Canada to be more efficient than using the current “hub-and-spoke” system. The current system relies on one carrier flying to a Canadian airport from the US to connect with several carriers destined to various locations across

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\(^1\) Additional output should have little effect on system costs, since additional traffic is normally accommodated on existing flights rather than through adding additional flights, and since ground distribution costs decrease with traffic density.

\(^2\) The marginal benefit of adding another co-terminal point exceeds the marginal cost of adding that point, hence MB>MC. In a mature network, MB=MC.
Canada. A new system might see one carrier from the US serving more than one Canadian city, eliminating the need to consolidate at a Canadian centre. Not only could a single aircraft serve Winnipeg and Edmonton, but a similar routing could be created for:

- Memphis-Wpg-Thunder Bay (MEM-YWG-YQT);
- Memphis-Wpg-Regina-Saskatoon (MEM-YWG-YQR-YXE); or,
- Other combinations that increase the operational efficiency of a carrier's operations.

Currently, Canadian all-cargo operators contract with the US couriers to operate between those “tag end” Canadian destinations, picking up and dropping off transborder packages on behalf of US integrators. While relaxing the restriction would ultimately change the air cargo industry in Canada, the resulting impacts are uncertain.

**4.0 Potential Impacts**

Potential impacts of removing the CO-T restriction must be weighed for all stakeholders in the air cargo industry. Clearly, stakeholder support for removal of the restriction is not unanimous. US-based integrators are firmly in favour of eliminating the restriction, and would further advocate the removal of cabotage regulations, enabling them to have full access to the Canadian market. The Canadian Airports Council (CAC), which represents airports that have been transferred to local and Canadian airport authorities, also supports removal. Conversely, the Air Transportation Association of Canada (ATAC), which represents the interests of Canadian cargo carriers that contract with US carriers, is in favour of retaining the current CO-T restriction. ATAC foresees no opportunities for Canadian cargo operators and no identifiable benefits for the Canadian public. Sections 4.1-4.3 identify stakeholder positions regarding CO-T.

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3 As mentioned, Regina, Saskatoon and Thunder Bay are served by smaller Metroliner aircraft flown by MAE from YWG.
4.1 ATAC POSITION

Canadian all-cargo carriers fear diminishing opportunities to move transborder cargo between Canadian cities – a cornerstone of their business. These carriers strongly support the retention of the current regulation.

ATAC claims that US couriers wish to co-terminalize Canadian destinations on transborder routes. The integration of their domestic US hub and spoke operations with co-terminal services in Canada could be achieved more efficiently and at lower cost. The inability to co-terminalize Canadian points has created the requirement to contract Canadian all-cargo charter operations to pick up and drop off transborder packages at points within Canada.

The following points list some of ATAC’s claims regarding CO-T.

i. Little reason for US carriers to contract Canadian all-cargo carriers to carry transborder cargo within Canada except possibly on a limited scale to small and remote communities, where carrier costs and airport limitations dictate the use of smaller aircraft.

ii. Maintenance and space lease contracts, and Canadian pilot and mechanic jobs could be lost at Canadian airports if the majority of aircraft return to the US each day and were no longer stationed at Canadian airports.

iii. In the absence of CO-T rights, more US courier business will not be diverted from Canadian carriers and airports to truck. US carriers already use inter-city trucking where trucks are the most timely and cost-effective mode of transport.

iv. Lower transborder courier prices through greater efficiencies to be passed on to consumers is unsubstantiated: (1) Canadian carrier unit costs are likely to be less than the US on operations between Canadian points (primarily due to lower overhead costs), and (2) Canadian all-cargo charter operators utilize smaller equipment that is more appropriate to the tag-end segments of the hub-and-spoke systems of major US carriers.

4.2 AIRPORT POSITION

Some Canadian airport authorities agree that the current CO-T restriction hinders trade development, and that relaxing the regulation would have significant benefits similar to those experienced after the 1995 Open Skies Agreement for passenger aircraft. The Edmonton Regional Airports Authority (ERAA) lists the following three benefits to Canadian airports:

i. Additional frequencies of heavier aircraft with resultant airport revenue increases from landing, parking and fuel fees;

ii. Improved service levels for the shipping public in the beyond (co-terminal) points with earlier flight arrivals in the morning and later cut-off times for receipt of shipments at the end of the day; and,

iii. Increased demand for handling space at Canadian airports due to the recovery of some shipment volume presently diverted to trucking.

While new co-terminal airports could increase revenue from heavier aircraft, there is also the distinct possibility that current gateway airports could double their revenues by handling 2 landings per day by heavier aircraft (routing

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to/from the co-terminal point) instead of just one. In such cases, aircraft would return to the gateway airport (i.e. Winnipeg) on its return to the US. However, this cargo routing does not follow the network efficiencies of triangulation described in Figure 3.

Airports view risks associated with the loss of jobs and investment in operating/maintenance bases with scepticism. Since Canadian all cargo carriers operate on the basis of short-term contracts (which can be withdrawn or cancelled in 30 days for lack of performance), they rarely undertake the risks of investing in large capital projects such as new facilities for larger aircraft. In fact, airports claim that there is no evidence of significant investment in hangar and maintenance facilities made possible by the current restriction. While additional jobs (crew, maintenance, office, etc.) may be added with a contract, these jobs are most likely to be added in constant or diminishing proportion to the number of aircraft operated. The threat of job losses is just as real under the current scenario, with CO-T. As Figure 2 shows, US cargo carriers could already reduce the number of aircraft and jobs based in Canada. As cargo volumes continue to increase, this possibility becomes more likely.

Airports view the threat of increased trucking as very real. US integrators already use trucking services to a significant degree and could increase the practice. Overnight delivery in the short-haul market and second-day expedited trucking delivery over medium distances are becoming increasingly more competitive.\(^5\) In 1997, EARA estimated that approximately 40 percent of its air cargo market was diverted to trucking, and that over 28 percent of its courier traffic was trucked between airports. In 1999, Winnipeg Airports Authority found that 25 percent of freight forwarders total inbound and outbound air cargo was diverted by truck.\(^6,7\) The largest airport leakage from YWG by truck was destined to Toronto (YYZ) and Calgary (YYC) Airports.\(^8\)

Air cargo leakage is a substantial loss to both cargo aircraft operators and airports. Leakage is bound to increase if CO-T restrictions are not relaxed. Canadian couriers must realize that their competition is an increasingly efficient trucking industry, not the heavier US integrator aircraft.

The airport perspective on lower prices is that while CO-T rights may not bring about price reductions to consumers, the lower operating costs incurred by couriers and integrators may allow them to withhold rate increases. This would improve cargo service levels.

A suggested strategy of the CAC would be to negotiate a phase-in period of CO-T for US carriers. In the short-term, US carriers are unlikely to make immediate changes to their cargo service plans. Therefore, a phase-in period that would designate specific routes for US carriers and the number of points a carrier can co-terminalize on a single route could be implemented in the interim.

**4.3 US INTEGRATOR POSITION**

US integrators are proponents of loosening the CO-T restriction. FedEx and UPS have submitted a joint position paper to the US government outlining the benefits they believe will accrue to themselves, Canadian airports and Canadian cargo carriers. At present, CO-T is being reviewed by the US DOT.\(^9\)

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\(^5\) Trucking companies can offer various time-deferred services with similar reliability at considerably less cost than traditional air express carriers.

\(^6\) Thompson, W., Crockatt, M.A. and Shurvell, S.J., Winnipeg Airports Authority Air Cargo Marketing Plan, 1999.


\(^8\) Reasons driving forwarder routing decisions at YWG stem from the lack of O-D air cargo service, the inability to accommodate large shipments due to the lack of wide-body aircraft serving YWG and insufficient frequency levels of scheduled passenger (belly capacity) and all-cargo service.

\(^9\) The FedEx/UPS joint paper was unavailable for public distribution at the time this paper was completed.
Under the current system, UPS Canada President Scott Corrigan indicated that “service offerings and market opportunities are restricted, leading to sub-optimal trading patterns”.\(^{10}\) CO-T directly results in increased costs and complexity of cargo routing to the carriers. These costs are ultimately passed on to shippers.

US carriers also point out new opportunities for air cargo operators in identifying and serving market niches. These consist of markets that cannot be tapped with the CO-T restriction in place.

Even though CO-T restrictions are perceived as necessary to protect Canadian carriers, integrators state that liberalization would not have a significant impact on their domestic partnership arrangements now in place. The ability to co-terminalize would not reduce US integrator partnership arrangements with Canadian carriers – ACE and MAE – serving the Canadian air cargo market.

5.0 Trade-Off: Cargo Pre-Clearance

The inability to pre-clear cargo is another policy that restricts the efficiency of transborder air cargo movement. It adds additional transaction costs (i.e., time, service) that impair the cargo system preventing optimal competitiveness for cargo shippers, forwarders and airlines. The ability to pre-clear cargo would help to reduce transaction costs in the system by reducing the dwell time cargo shipments would be held in bond in the US. Canada has the opportunity to negotiate a concession from the US as a possible trade-off for CO-T. ATAC alludes to the possibility that it might give up its opposition to CO-T for a counter benefit(s). While there has been no indication as to what the offsets might be, cargo pre-clearance as a counter benefit to CO-T rights might be seen as a compromise to all stakeholders.

The CO-T discussion mentioned the issue of air cargo leakage from Winnipeg, indicating that a portion of that leakage is trucked to Minneapolis-St. Paul (MSP) before being flown to its destination. If cargo could be pre-cleared at YWG, and flown by Northwest Airlines to MSP, it could then enter the domestic cargo market immediately, rather than having to clear customs on arrival. This could cut total transit time by hours, or even days for some cargo.

Advantages of cargo pre-clearance can be illustrated even more clearly when considering international air cargo originating in Winnipeg, destined for Europe via MSP. Cargo from Winnipeg could be timed to reach MSP to connect with a flight to Europe, something made much more difficult given the current dwell time cargo must endure in US airports, waiting to clear customs.

Pre-clearance would also give Canadian airports the opportunity to pursue same-plane service to international markets. For example, if a shipper in Winnipeg wanted to send freight from Winnipeg to Amsterdam via Minneapolis, the freight would have to be unloaded at MSP to clear US customs, even if, hypothetically, the same aircraft were flying directly to Amsterdam. If cargo could be pre-cleared at YWG, it could stay on the plane at MSP and fly on to Europe. This minimizes the handling of the cargo and reduces the total time it spends in transit. Furthermore, pre-clearance could be set-up at Canadian airports with relative ease, particularly where there are already US government facilities in place.

If any negative impacts would be felt from cargo pre-clearance, it would not likely occur at Canadian airports, where employment would increase with the addition of US customs officials on-site to clear cargo. Cargo volumes could be stimulated at Canadian airports due to improved service levels and the anticipated capture of some air cargo leakage that is diverted to truck. Minimal employment loss may occur at US airports due to lower cargo volumes

\(^{10}\) Corrigan, S., *National Post, June, 1999.*
requiring customs clearance. Lost jobs would be relocated from US to Canadian airports. US Customs officials at Canadian airports would still be US citizens.

6.0 CO-TERMINALIZATION WINNERS & LOSERS

Not all Canadian airports would experience the benefits of CO-T rights. There will be winners and losers. For example, FedEx could choose to serve Regina and Saskatoon directly from Memphis, bypassing Winnipeg. In such a case, YQR and YXE would benefit from increased frequencies of heavier aircraft, while Winnipeg would lose out. Similarly, while co-terminal points may receive better service, cut-off times may negatively impact "first-stop" airports, particularly if the US-bound aircraft are not returning to that city. For instance, Winnipeg would be at a disadvantage if FedEx required all boardings of transborder cargo on the Winnipeg-Edmonton segment to depart earlier than current cut-off times dictate for cargo returning to Memphis from Winnipeg. Currently, US bound cargo carriers must wait for connecting cargo from other Western Canadian points.

Before committing to a position on new CO-T regulations, Canadian regulators should consider all of the ramifications. Some airports will likely experience negative impacts. Therefore, airport officials have adopted a conservative "show-me" approach. One cargo manager for an Eastern Canadian airport, as it relates to that airport, wishes to have the overall benefits of CO-T demonstrated before supporting or opposing any changes. Each party claims benefits and/or costs to support their own opinion, but there is no way of knowing which opinion – and therefore which position on the issue – is correct.

For Winnipeg International, it would have to weigh the costs and benefits of new CO-T regulations. By maintaining the current situation, cargo operations at YWG will continue to develop slowly but steadily. However, YWG could be well positioned to benefit from CO-T rights by receiving increased landing fees if US carriers expand their use of YWG as a gateway.

YWG would benefit more if cabotage rights were also included with CO-T rights. YWG is ideally situated to be a western hub for Canadian air cargo.11 Flights could meet in Winnipeg from Hamilton, Vancouver, Calgary, Edmonton, Memphis, and numerous other US and Canadian cities. There would be no limitations on the type of cargo carried (i.e., domestic or international) or the nationality of the aircraft equipment or of the pilots used to fly the aircraft. The system would be extremely efficient, mirroring the systems set up by FedEx and UPS in the US already.

7.0 CONCLUSIONS

The 1995 Canada-US Open Skies Agreement allowed for more liberalized movement of passengers throughout North America. Open Skies has been beneficial to passengers and airlines. However, cargo activity was deliberately omitted from the agreement and is still subject to regulations restricting the efficiency with which international air cargo can be moved. There is no argument that CO-T and pre-clearance would increase overall efficiency, but there is concern over whether net benefits exist for stakeholders. Regulators face the decision either to support a more liberalized air cargo system, or support industry constraints at the expense of efficiency.

Notes

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11 In all likelihood, Hamilton would remain the hub for Eastern Canada, but would complement Winnipeg well. There are already several flights nightly between YHM and YWG.
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The authors take full responsibility for any errors or omissions.

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