

Climate Change Policies and Impacts on Air Fares

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The Issue

How do climate change policies (e.g. Tradable permits) impact on air fares (and the profitability of airlines)?

The pass through issue



Outline

- **Background**
- **Competition and Monopoly**
- **Constrained Routes**
- **Oligopoly**
- **Free Permits**
- **Summary**



Background

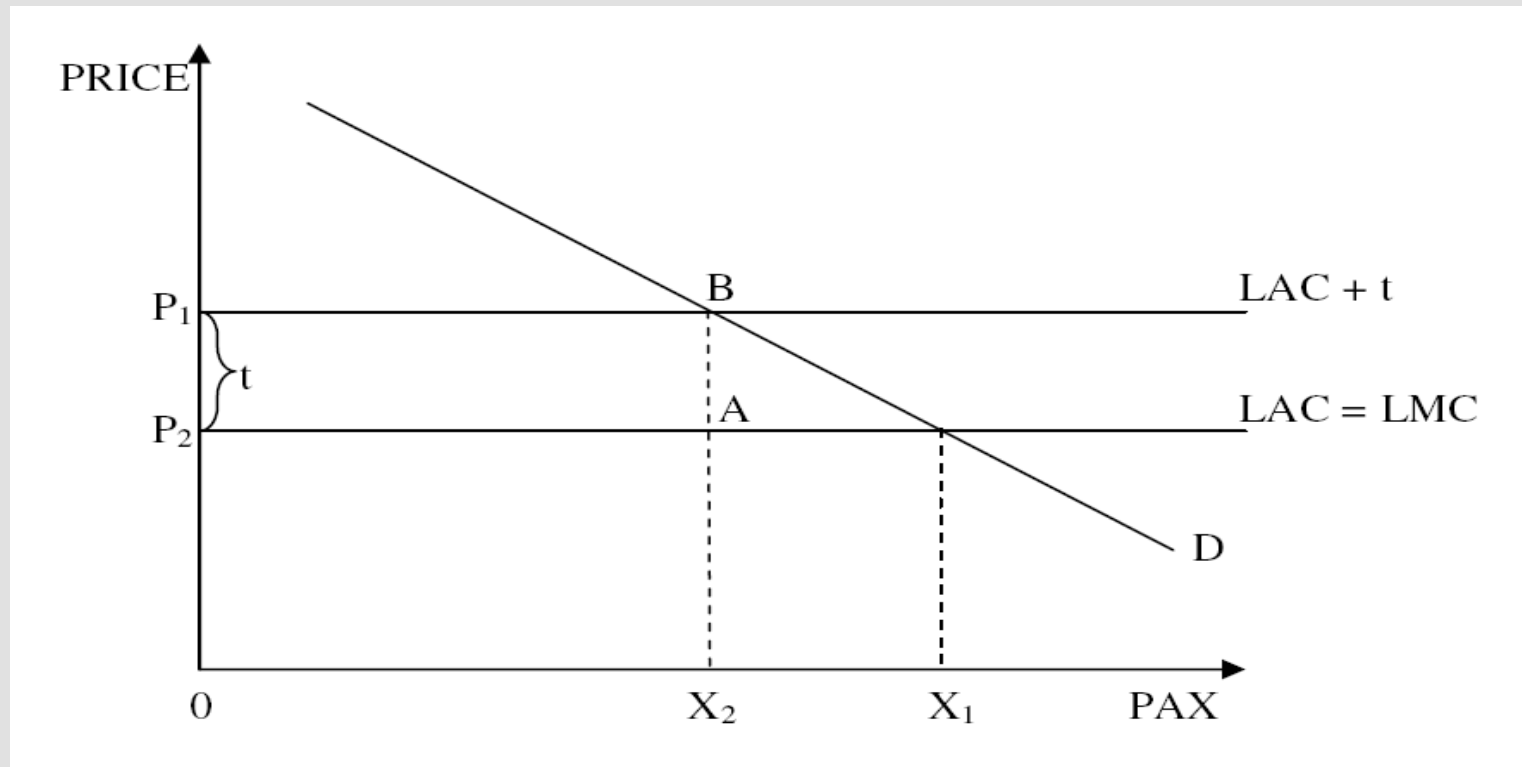
- **Countries/EU implementing climate change policies and extending them to aviation**
- **Initial assumption- full pass through and passengers pay all**
- **This challenged- several consultant reports**
- **Case of incomplete pass through- depends on market structure**
- **Seek to provide a comprehensive view**



Competitive Airlines

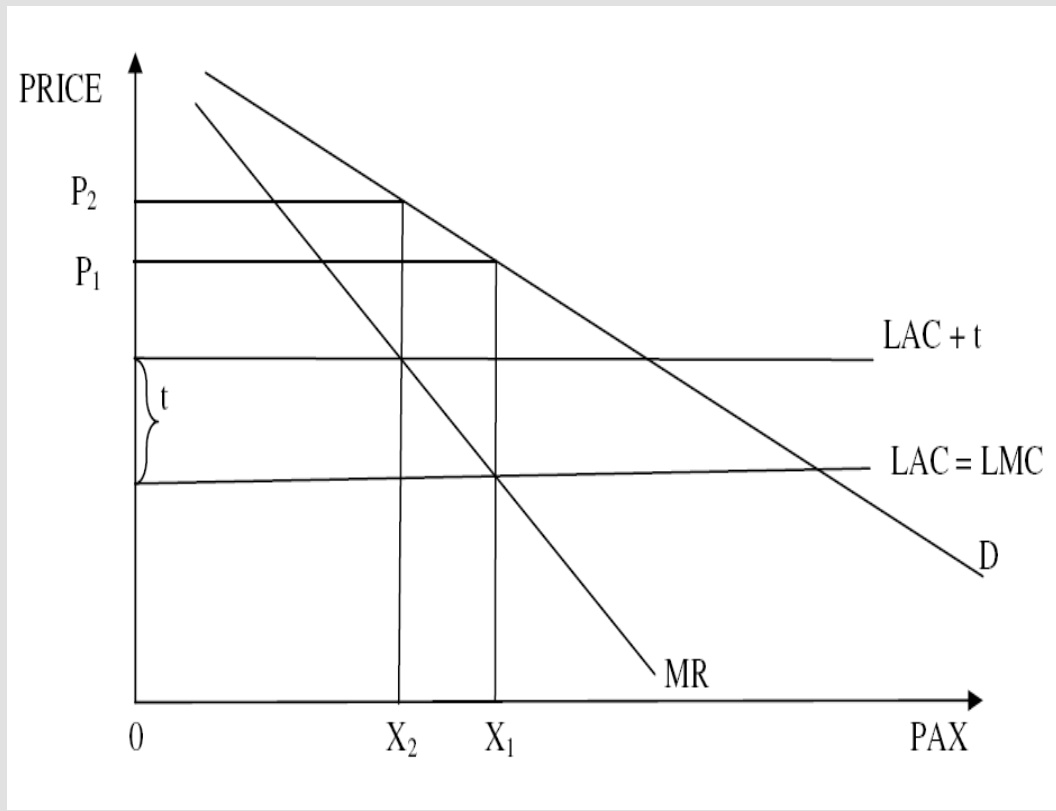
- **Full pass through**
- **Long run result- not short run**
- **In short run, airlines will lose out, since it takes time for firms to exit**
- **Price initially rises by less than the full cost increase**
- **Firms still continue to operate with $AC > P > AVC$**





Monopoly

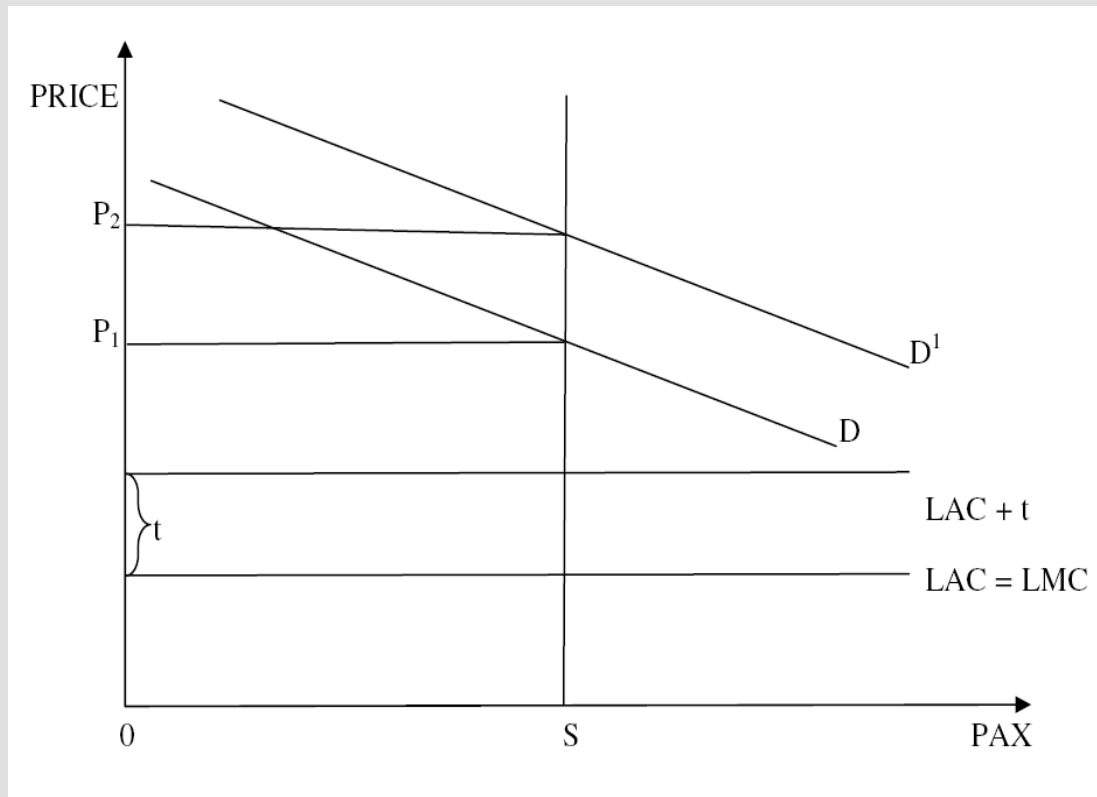
- **Can have less than complete pass through**
- **Linear demand curve case- 50% pass through**
- **Holds in SR, LR**
- **Marginal monopoly route- airline exits, profit reduction limited**



Slot Limited Airports

- **Price set by demand and capacity constraint**
- **Airlines earn slot rents**
- **Increase in costs must be met from slot rents**
- **But: there may be competition on route from other routes**
- **E.g. LHR-CDC and LTN-CDG**
- **Flights at non constrained airports raise prices, demand for constrained flights increases**
- **Will be able to raise fares, though by less than the cost increase**





Constrained International Routes

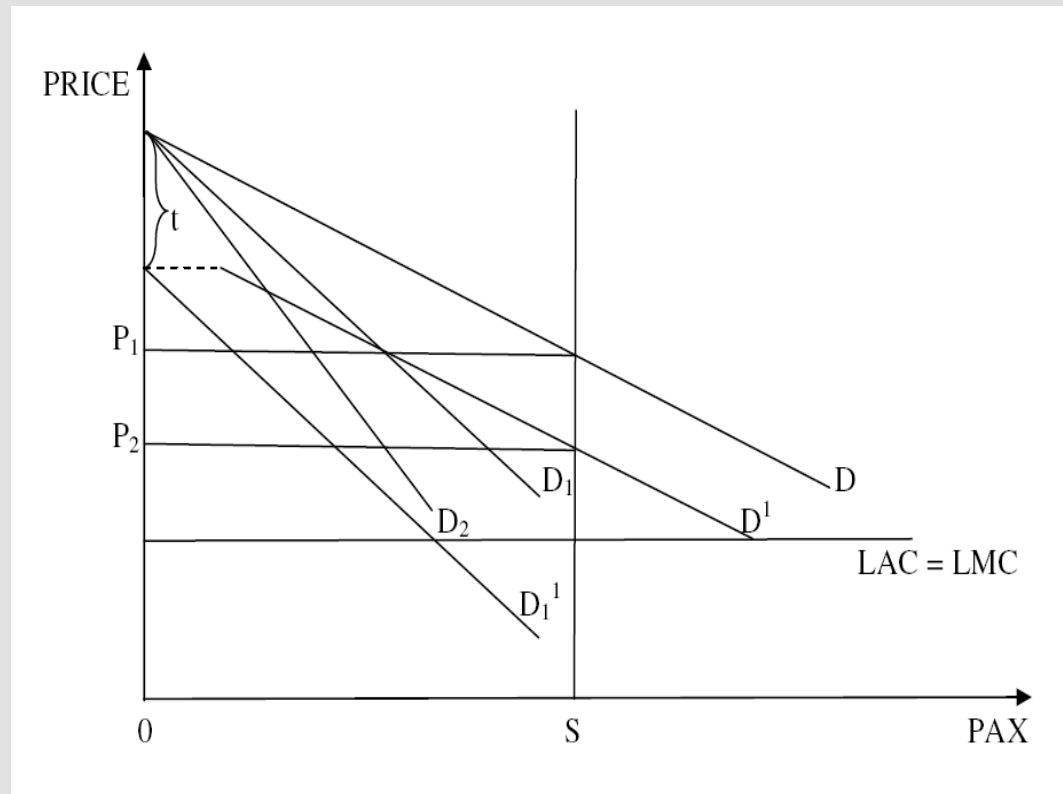
- **Restrictive bilaterals still exist**
- **Capacity on route limited**
- **Analysis similar to that for slot controls- pass through not possible**
- **If costs rise and profits fall, regulators may restrict capacity more to restore profitability**
- **In a LR situation with growth, this amounts to slowing the growth in capacity**



Differential Permit requirements

- **Two types of flight: LH and SH**
- **LH flights pay more**
- **Two demands- D1 and D2, total D**
- **Permit cost for type 1 flights = t**
- **Price overall for slot falls by $< t$**
- **Fewer type 1 flights, more type 2**
- **Passengers on type 1 flights gain; SH airlines which do not pay for permits will lose profits**
- **LH airlines will be able to pass on some of their higher costs**
- **Possibility: reverse this. What if LH (international) flights were excluded from the System, but SH were included?**





Oligopoly- Short Run

- **2-4 airlines on a route- realistic**
- **Suppose Cournot game**
- **Costs not fully passed through**
- **Would seem to be a strong result, with practical implications**

Comment

- **Most air routes monopoly or oligopoly**
- **Airlines do not earn economic profits**
- **Though there are cycles**
- **If costs increase, will airlines become chronically unprofitable?**
- **Did this happen with fuel price increases?**
- **Airlines can adjust by entry and exist**

Oligopoly- Long Run

- **Fixed number of firms unrealistic**
- **Firms enter oligopoly markets when profits exist, exit when unprofitable**
- **Oligopoly equilibrium: number of firms maximum consistent with cost recovery**
- **Cost increase leads to unprofitable firms and exits**
- **Cost recovery restored**
- **Costs shocks- airlines rationalise their route structures**
- **In oligopoly, start with cost recovery in SR; return to cost recovery in LR**



Fuel Price Shock

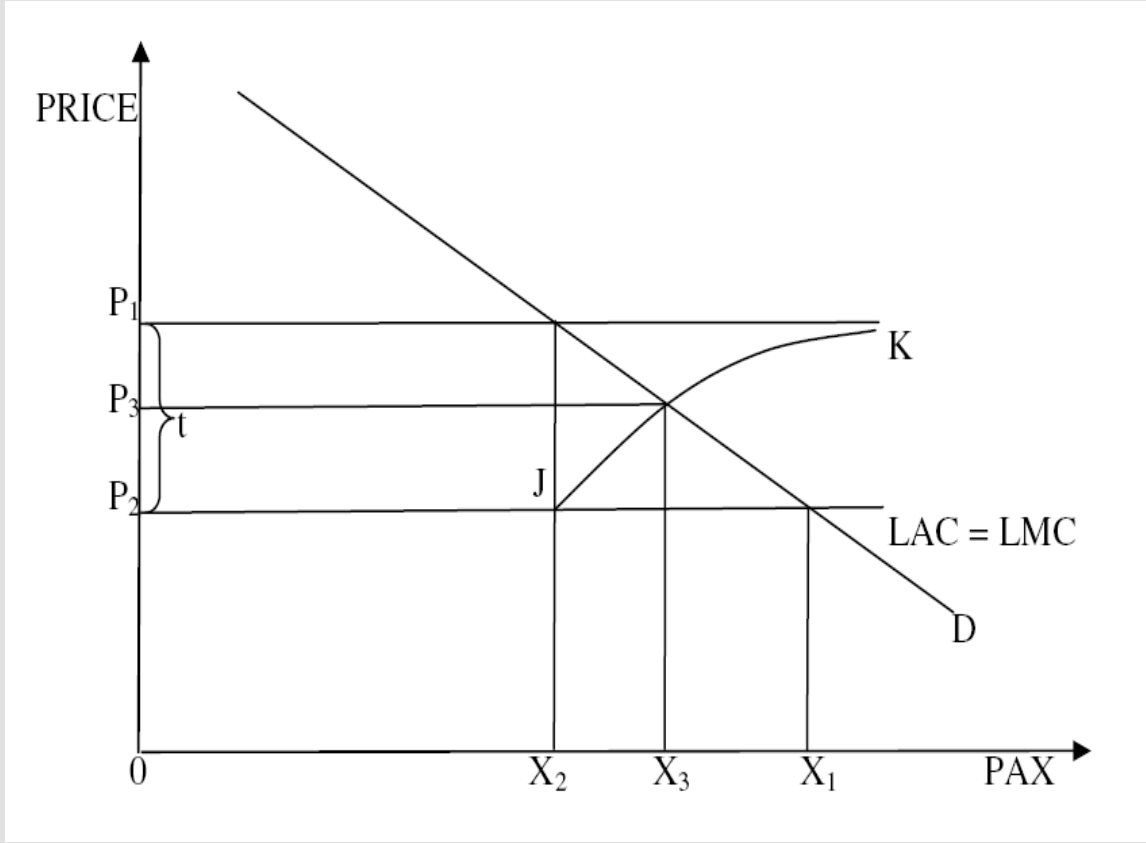
- Led to firms rationalising their networks, and dropping unprofitable routes
- BA dropped the LHR-MEL route
- Fuel surcharges- cannot always pass on all extra costs in the SR
- Impacts on profitability masked by hedging
- Airlines with lots of slots (LH, BA) : did they have to absorb fuel cost increases?
- These airlines should be less profitable than others after the fuel price shock (if equally profitable before)



Free Permits

- **For profit maximising airlines, results will be the same as for purchased permits**
- **Permits have a market price which is factored into costs (like slot values)**
- **Permits enable airlines to earn profits**
- **If airlines are not profit maximisers, they will behave differently**
- **Sales maximiser- seeks to cover costs**
- **Costs “free ”permits at zero, purchased permits at cost**
- **Average cost increases with output beyond free permit output level**
- **Air fare increase modest: output and emissions reduction modest**
- **ETS would not work efficiently if this were so- selling permits would be more efficient**





Summary

- **Extent of pass through depends on market structures**
- **SR pass through less than LR**
- **If routes are constrained, zero pass through in the simple case, though some pass through is feasible when there are unconstrained routes which compete**
- **Oligopoly- incomplete pass through in SR, but not such a problem in the LR**
- **Free permits add to airline profits**
- **Small air fares response for airlines which are sales maximisers**
- **An inefficiently small response to climate change policies**

Vielen Dank!

