

# Are Mutual Forbearance Strategies Relevant for European Airlines Involved in Multipoint Competition?

This theoretical paper constitutes a first part of a doctoral study held in Strategic Management. This paper combines the branches of the New Institutional Economics dedicated to the institutions of the environment (North, 1990) and of governance (Williamson, 1991) with constructs from the literature on multipoint competition (Gimeno, 1999), to formulate a model to be tested on the European airline industry. Multipoint competition refers to situations in which firms meet the same rivals in many geographical territories. There is a large consensus in the Strategic Management literature arguing that, under certain conditions, multipoint competition leads to mutual forbearance (i.e. reduction in competitive pressure) and to greater performance. We propose to test Mutual Forbearance Hypothesis in European airlines' industry. The reciprocity of Spheres of influence (Hub dominance) is identified as the main condition for airlines involved in multipoint competition to success Mutual Forbearance Strategies (MFS). This review points to the difficulties of finding a precise definition of spheres of influence, a concept central to the literature on multipoint competition. We propose an improvement of the conceptualization of airlines spheres of influence based on the influence of European airline regulation on airport slot allocation.

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The Multipoint Competition and the Mutual Forbearance Strategies (MFS). Multipoint competition refers to situations in which firms meet the same rivals in many geographical territories and/or products (Jayachadran et al. 1999). The Airline Industry is an ideal candidate to test hypotheses and provide data on this stream of research. Each territory is clearly delimited by a connection between city pairs. Most empirical research has been done with data from U.S. airlines. This project proposes a model for the purpose of testing it on European airlines. The theory of multipoint competition suggests that the phenomenon of MF may reduce the market level intensity of competition between two firms when the multi-market contact between them (the number of markets in which they compete) increases. There is a large consensus in the Strategic management literature (Karnani and Wernerfelt, 1985; Evans et Kessides, 1994; Chen, 1996; Gimeno, 1999), arguing that, under certain conditions, multipoint competition leads to mutual forbearance (Edwards, 1955) and to greater performance. The

MF, a form of tacit collusion in which airlines avoid competitive attacks against those rivals they meet in multiple city pairs markets, is proposed to occur because multipoint competition increases the familiarity between airlines and their ability to deter each other (Jayachadran et al. 1999).

Indeed, a high number of multipoint contacts between two rivals provides many foothold in each other's strategic territories, increasing the deterrents to attacks. As the resources required for response already exist, each potential attack faces the possibility of a rapid retaliation and potential escalation in the future. In such conditions, the reduction of competitive pressure allows the maintenance of a high price level and the avoidance of costly dyadic attacks and responses (Smith et al. 1992). There are strong arguments supporting a positive correlation between mutual forbearance and performance (Gimeno and Woo, 1999).

However, not all multipoint competition situations lead to successful mutual forbearance strategies

(Karnani and Wernerfelt, 1985) spheres of influence, and their empirical applicability may be determined by the predictive validity of the results (Gimeno, 1999). Gimeno (1999) measured US airlines' spheres of influence with these three dimensions.

## The market share dominance

Past research has most often used market share to predict territorial interests and to define spheres of influence (Ma and Jemison, 1994; Baum and Korn, 1996). These authors indicate that cross parry reactions might be particularly effective when market shares are widely divergent, thus suggesting that market share asymmetries influence the cost and effectiveness of an attack. They recommend multipoint competitors to maintain small market shares (foothold) in those markets in which their rivals have dominant market share, as a deterrent mechanism. The airline's market share dominance can be operationalized as the market share of a focal airline route in terms of passengers transported (Gimeno, 1999) or in terms of seats capacity (weekly frequency x available seats). We con-

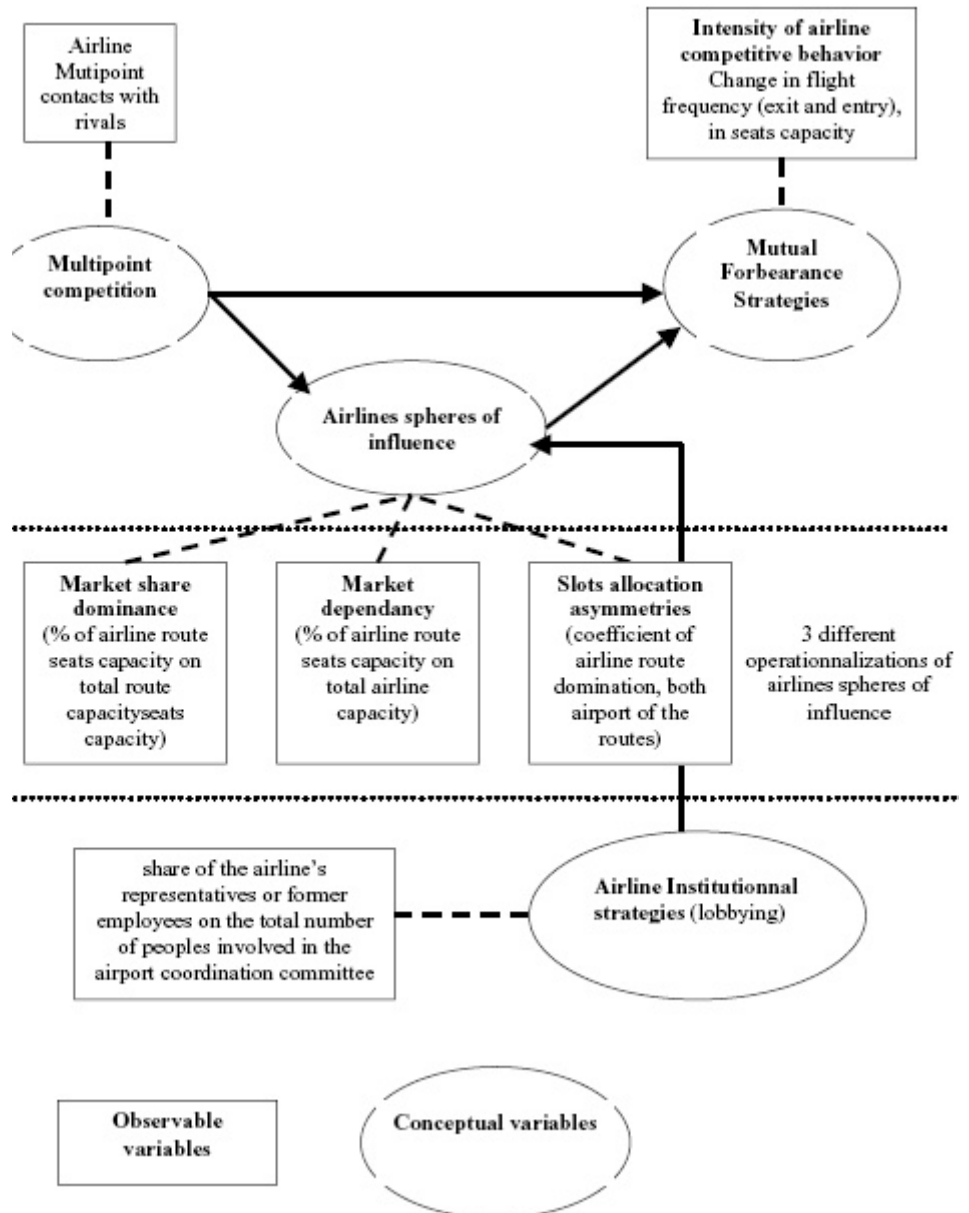
sider the second way of measurement since demand side data are not available in Europe. The market dependence A problem of using market share dominance to define spheres of influence is that it ignores the differences in market sizes and airline sizes. The airline route dependency was considered more relevant (Smith and Wilson, 1995; Chen, 1996; Gimeno, 1999) to assess airlines' strategic territories. The measure used for route dependency is the share of territory revenue on total airline revenues. Chen and Mc Millan (1992), showed that firms are more aware of rivals' competitive moves in territories they depend upon for the largest shares of their revenues. We intend to use the share of airline route weekly seat capacity on total airline weekly seats capacity to assess the airline routes dependency. The resource centrality Using resource-based view of the firm (Barney, 1991; Peteraf, 1993), Gimeno (1999) proposed that the two previous measures are a result of the firm resources and capabilities combination leading to competitive advantage. He argued that spheres of influence could also be measured by resource centrality. Routes with high resource centrality may better reflect those markets to which the airline has a long term commitment. Since the key resource do not change quickly, resource centrality may provide a more stable delineation of airlines' spheres of influence than delineation based on revenue patterns. On each city pair connection, the share of total airline's enplanements at the two end points of the route (for any destinations) is representative of resource centrality.

Gimeno (SMJ,1999) uses the three operationalizations of spheres of influence. Indicators of spheres of influence were used to weight the average number of multipoint contacts (Evans and Kessides, 1994; Baum and Korn, 1996, Chen, 1996) or as a dummy variable to assess the incumbent competitive position (leader or challenger) on each territory (Gimeno, 1999). The following hypothesis is representative of the previous research results mentioned above:

#### A fourth proposition of European airlines spheres of influence

We propose here a fourth conceptualization of spheres of influence, as complement to the three reviewed, in the European airline industry, by combining the New Institutional

on airport slots allocation is based on "grandfather's rights" and gives congested airports committee of coordination the power to allocate slots. Historic airlines have the priority for slots allocation. This method leads to hybrid governance arrangements



Economics and the Resource Based View theories of the firm. These precedent measures are based on a voluntarist view of airlines' strategic choices where competitive advantage is seen as a result to airlines' strategic resource endowments. Whereas, the regulatory environment is not considered as an independent influence either. Economic research (Borenstein, 1989) in the airline industry often highlights the role of the main scarce resource: airports slots, in competitive distortion. The European Union's regulatory policy

between airlines and congested airports. The scarcity of slots on the main European congested airports represents a strong barrier to entry for new incumbents or airlines not present on the route. Airlines can build and maintain their spheres of influence by the effective use of their rights on slots. We already reviewed the theoretical argument that differences in competitive advantage due to airlines' strategic resource endowments are antecedents to the airlines' share of passengers and territory dependency dominations. Using the

institutions of the environment branch of the New Institutional Economics (Coase, 1937, North, 1990) we propose that institutional arrangements between airlines and airports are antecedents to competitive advantage. Airline industry specialists use the concept of “hub dominance” (Borenstein, 1989). The Institutions of governance branch of the NIE (Williamson, 1985, 1991) is helpful to assess the dynamics of the relationships between airlines and airports. It provides several concepts to assess institutional arrangements allowing airlines to maintain their spheres of influence. We define individual transactions between airports and airlines as each take off and landing.

The airline/airport hybrid form of governance supports these transactions with several attributes: degree of frequency, internal uncertainty and levels of asset specificity. Furthermore it points to a situation of bilateral dependency or mutual hostage (Williamson, 1985) between individual airlines and each airport created by reciprocal assets specifically dedicated to these transactions. The transaction specific investments made by airports concern the construction and up-keep of terminals, departure and arrival gates, the education of various categories of personnel, including security. Those made by airlines concern route focussed advertising, hub investments, including plane repair and storage sites, information systems and personnel education. Using airport/airline transaction as unit of analysis also helps defining and measuring the airlines spheres of influence. The share of the airport slots allocated to a specific airline is expected to reflect and measure its sphere of influence on the airport. However, it raises a problem of unit of analysis compatibility with the three measurements of sphere of influence reviewed above, based on airline route level. We propose to assess airline’s sphere of influence at the route level by the sum of the airline domination (based on percentage of transactions) at both sides airports of a route weighted by the airport size.

The following formula is used:

$$= \frac{(PAS_1 \times a_1 + PAS_2 \times a_2)}{2}$$

Coefficient of airline route (connection airports 1 & 2) domination With:  
 PAS1 : percentage of airport 1 slots allocated to a specific airline  
 PAS2 : percentage of airport 2 slots allocated to a specific airline  
 a1: airport 1 size (average daily passenger)  
 a2: airport 2 size

We don’t expect critical differences between the delineation of European airlines spheres of influence by airlines route resource centrality and airlines route slot allocation asymmetries. First, the new conceptualization is based on a more robust theoretical background. Then, since airport slots allocation process is an antecedent to airlines strategic choices related to resource allocation trade off on routes, this new conceptualization seems to be more adapted to the reality of european airline industry. We propose to combine observations on slots allocation asymmetries with those on the airport coordination committee (share of the airline’s representatives or former employees on the total number of peoples involved in the coordination committee) to delineate airlines sphere of influence and the the determinants of its creation (or its maintaining).

### The Methodology

#### *Problematic and central hypothesis*

Does multipoint competition among European airlines with reciprocal spheres of influence lead to mutual Forbearance strategies (reduction in competitive pressure)?

This central problematic is operationalized by the following hypothesis: *“The higher the average number of multipoint contacts between airlines with reciprocal spheres of influence (airport domination), the higher the mutual forbearance strategies (decrease of airlines’ competitive behavior) are likely to succeed.”*

The second research question concerns the impact of the regulation on airport slots allocation on the European airlines effective strategies. *How does the Institutional regulation on airport slots allocations influence airline’s building spheres of influence (hub dominance)?*

### Data Set panel

To determine a sample of city pair routes in European area scheduled passengers airline industry we select a week for each of the IATA seasons: Winter 2002 - Summer 2003 - Winter 2003 - Summer 2004 - Winter 2004 - Summer 2005 - Winter 2005. The OAG database will provide data needed to assess airlines strategic choices (deserved routes, flight frequency, available seats...). Since this study focuses on multipoint competition, observation of monopoly routes will be deleted from the sample. We will define for each observed route if the connected airports are regulated by the European rules 95/93 on slot allocation (airport coordinated or not).

### Measurements

#### *Multimarket contacts*

Concerning the measurement of the main independent variables, the multimarket contacts, we choose to use the most common and simple: count measure. It adds up the number of routes in which the airline in the focal route compete outside the focal route. The average multimarket contact of the airline with each of its focal route rivals is used when the focal airline competes with multiple rivals in the focal routes. Since an airline faces different rivals in different markets, multimarket contact differs across airlines and routes.

#### **Intensity of airline competitive behavior and effects of multimarket contact on rates of market entry and exit (flight frequencies changes)**

The intensity of airline competitive behavior on a route (that reflect the MFS) is traditionally (US studies) captured by the yield defined as the average price level charged by the airline route in a time period divided by the distance of the route. These data are not available to us for the European airline industry. We pragmatically choose to use an index of change in

flight frequency (entry and exit) and in seats capacity provided by an airline on a route on a time period related to the previous period, to assess the airline route intensity of competitive behavior in a time period (Baum and Korn, 1996). Given the emphasis on entry rivalry in the strategic management literature, we think market entry provides a useful theoretical proxy for the intensity of rivalry – the higher the entry rate, the more intense the rivalry-. The mutual Forbearance hypothesis implies that rivalry will be weaker among multipoint competitors. As multimarket contact between an airline *i* and another *j* increases, the likelihood that *i* and *j* will behave aggressively toward each other decreases.

In routes in which multimarket contact is low, each airline as an incentive to establish a foothold in at least some of the same routes as other airlines in order to signal its ability to engage in multimarket retaliation. However, as multimarket contact increases and airlines recognize their interdependence, each airline as an incentive to avoid entering a new route that is currently occupied by airlines that it already meets in multiple markets to discourage potential multimarket retaliation. At the same time, as multimarket contact increases, each multimarket airline has an incentive to remain in markets it occupies with airlines it meets in multiple routes to signal its ability to respond swiftly to rivalrous actions in a given route as well as to impose multimarket retaliation in response to aggressive actions in other routes. The likelihood of an airline's exiting or reducing flight frequency on a route may also decline as increases in multimarket contact with its competitors in that market diminish the aggressiveness of its competitors.

Conversely, as a result of MF, multimarket airlines may tend to behave aggressively toward airlines they meet in one or only a few routes. Following table summarizes our basic arguments.

**Effects of multimarket contact on rates of market entry and exit and change in flight frequency (Baum and Korn, 1996)**

Multimarket contact	Market entry rate / increase in flight frequency and seat capacity	Market exit rate / decrease in flight frequency and seat capacity
<b>LOW</b>	<p><i>Stimulated by</i></p> <ul style="list-style-type: none"> <li>- Aggressive interactions among airlines that meet in one or only a few routes</li> <li>- Incentive to establish a foothold to signal ability to counterattack</li> </ul>	<p><i>Stimulated by</i></p> <ul style="list-style-type: none"> <li>- Aggressive interactions among airlines that meet in one or only a few market routes</li> </ul>
<b>HIGH</b>	<p><i>Suppressed by</i></p> <ul style="list-style-type: none"> <li>- Recognition of mutual dependence and potential for multimarket retaliation</li> </ul>	<p><i>Suppressed by</i></p> <ul style="list-style-type: none"> <li>- Decreased aggressiveness that follows recognition of mutual dependence and potential for multimarket retaliation</li> </ul>

### Conclusion

This theoretical paper constitutes a preliminary work of a doctoral research. We have explained the research potentiality to test the Mutual Forbearance hypothesis in European airlines industry (which has never been tested before). We expect the airport slots allocation process to be critical for airlines strategies implementation and for the delineation of their spheres of influence.

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