THE QANTAS-AIR NEW ZEALAND PROPOSED ALLIANCE:

A CONCEPTUAL AND EMPRICAL ASSESSMENT

Steven A. Morrison **Clifford Winston**

July 2003

We have been asked by representatives for Qantas Airways Limited and Air New Zealand Limited to submit our views to the New Zealand Commerce Commission on the economic desirability of allowing Qantas and Air New Zealand to form an alliance. It is our understanding that an alliance in this context involves more than a so-called alliance in the United States, which primarily amounts to code-sharing and increased options to accrue frequent flier mileage, but falls somewhat short of what typically constitutes a merger in the U.S, where one company acquires and controls all the assets of another company. For purposes of our discussion, however, it appears useful and relevant to assess the Qantas-Air New Zealand alliance as akin to a merger because Qantas seeks to buy a 22.5 percent share in Air New Zealand and the carriers would coordinate their operations on many routes in Australia and New Zealand and on routes between the two countries.

Our perspective is shaped by more than two decades of scholarly research in transportation economics, with a considerable amount of our publications devoted to assessing the nature of competition in and the effects of public policy on the economic performance of the U.S. airline industry. We will draw on this research to outline our conceptual perspective on the proposed Qantas-Air New Zealand alliance. We will then test this perspective empirically using market data on the relevant pricing and service interactions of Qantas and Virgin Blue.

The U.S. airline industry was deregulated in 1978. Since that time nearly 20 mergers have been approved by the antitrust authorities (initially the Department of Transportation and now the Department of Justice) where at least one of the partners was a major carrier. What has motivated these mergers? The standard framework for

assessing the economic welfare effects of any merger identifies two forces: market power resulting from a loss of a competitor and cost savings from scale or scope economies.[1] The finance literature also suggests that mergers might be pursued because one of the firms is experiencing financial distress and seeks a partner to avoid liquidation.

We conducted an empirical assessment of the major determinants of actual and proposed airline mergers in the United States from 1978-1995.[2] Specifically, we identified every possible pair of merger partners in a given year and constructed a binary dependent variable where a pair of carriers was given a 1 if they merged (or proposed to merge); otherwise, they were given a 0. We found that the two largest influences, by far, on merger behavior were the opportunity to acquire international routes (entry into international routes is impeded by regulations) and the relative assets of the potential partners. Presumably, the firm with fewer assets seeks a merger partner because it is facing financial problems that are best solved with the assistance of a stronger carrier. We did not find that the potential to raise fares or to eliminate a vigorous competitor (defined as one with which the acquiring carrier had been engaged in a fare war) had much effect on merger decisions.

It could be argued that we were unable to identify anti-competitive motives for airline mergers because the antitrust authorities are able to sort out good mergers from bad ones and block those mergers that would harm consumers. Consequently, U.S.

---

[1] Oliver Williamson, "Economies as an Antitrust Defense: The Welfare Tradeoffs," *American Economic Review*, vol. 58 , March 1968, pp.18-36.

[2] Steven A. Morrison and Clifford Winston, "The Remaining Role for Government Policy in the Deregulated Airline Industry," in Sam Peltzman and Clifford Winston, editors, *Deregulation of Network Industries*: *What's Next*?, Brookings Institution Press: Washington, DC, 2000, pp. 1-40.

airlines do not propose mergers that would raise fares because they know such mergers would be opposed. However, Crandall and Winston (forthcoming) point out that the evidence indicates that the U.S. antitrust authorities are unable to sort out good mergers from bad ones and have failed to raise consumer welfare.[3]

What have been the economic effects of the mergers that have been approved? We have addressed this question in two ways. First, we developed a model of the determinants of air fares in a market, where fares are influenced by route and traveler characteristics and the specific carriers that serve the market. Thus, for example, the presence of Southwest Airlines in a market tends to depress fares more than the presence of other carriers in the market. This model was integrated with models of the entry and exit decisions of carriers. These decisions are also influenced by traveler and route characteristics and the carriers that serve the market. We were able to use this framework to provide prospective evidence of the effects of various hypothetical and actual mergers on air fares allowing competition to be altered because one of the carriers had exited certain markets through merger, one of the carriers had entered certain markets through merger, and carriers that were not part of the merger decided to enter or exit these markets.[4]

Generally, we found that a given merger initially led to a small increase in fares because competition was reduced. But in the long run, less than 5 years, fares declined 2 or 3 percent below premerger fare levels as other carriers entered the markets served by

---

[3] Robert W. Crandall and Clifford Winston, "Does Antitrust Policy Improve Consumer Welfare? Assessing the Evidence," *Journal of Economic Perspectives*, forthcoming.

[4] Steven A. Morrison and Clifford Winston, *The Evolution of the Airline Industry*, Brookings: Washington, DC, 1995.

the merged carrier. In most of the hypothetical and actual mergers, the void created by an initial reduction in capacity was eventually filled by lower-cost carriers that would put downward pressure on fares.

Our retrospective assessment of actual mergers has been broadly consistent with these benign effects. We have found that fares have declined, on average, on routes affected by the merger of Northwest Airlines and Republic Airlines, TWA and Ozark Airlines, and USAir and Piedmont Airlines.[5]

In sum, the general lessons we draw from our research on the causes and consequences of airline mergers in the United States are as follows. First, it is fair to say that airline mergers have not had harmful effects on consumers. In addition to the evidence that we have summarized, it is useful to step back and examine the long-run behavior of air fares in the United States. Although the industry has experienced a series of mergers since deregulation, including a major wave in the mid-1980s, real fares have continued to decline from 1978 to the present. Thus, it is difficult to identify how airline mergers have raised fares in U.S. markets. Second, by focusing on fares we have understated the beneficial effects of mergers because travelers also gain from expanded route coverage and the enhanced ability to accumulate frequent flier mileage. A merger may also lead to a change in the flight frequency in a market, but the direction of the effect is not clear unless one accounts for the service offered by new entrants. Finally, it

[5] These findings are based on a regression analyzing the determinants of the change in real average air fares between 1978:4 to 1998:4 that is reported in Steven A. Morrison and Clifford Winston, "The Remaining Role for Government Policy in the Deregulated Airline Industry," in Sam Peltzman and Clifford Winston, editors, *Deregulation of Network Industries*: *What's Next*?, Brookings Institution Press: Washington, DC, 2000, pp. 1-40. In all cases, the coefficient of the dummy variable identifying routes where a merger had taken place was negative, although the statistical significance of this variable tended to be low.

is critical that regulatory authorities consider the behavior of potential entrants into markets affected by a merger, especially low-cost carriers, as well as the networks of the prospective merger partners.

Based on these considerations, our a priori view of the Qantas-Air New Zealand proposed alliance is that it shares many of the features that have characterized benign mergers in the United States. First, the motivation for this alliance is broadly consistent with the financial distress theory. Air New Zealand has persistently lost money in an economic sense, and it is plausible that the alliance is critical to its future viability.[6] Because it has persistently made economic losses, it should not be expected to be a strong competitor against Qantas. In the United States, financially distressed carriers enter into bankruptcy. Although this reduces their capital costs because they are temporarily relieved of paying their creditors, bankrupt carriers are unable to finance investments, are more vulnerable to economic shocks, and suffer a loss to their reputation. The upshot is that we have found in U.S. markets that carriers that are not in bankruptcy are often able to raise their fares when they compete against carriers that are in bankruptcy.[7] The fact that the New Zealand government provided assistance to its carrier on a single occasion, and under exceptional circumstances, is not evidence of an ongoing intention to subsidize it. However, if the New Zealand Government chose to do so, that would only mask that airline's inefficiencies and may discourage efficient capacity from entering the market.

---

[6] Economic profits differ from accounting profits because they explicitly include the opportunity cost of capital. Air New Zealand's accounting profits are therefore greater than economic profits because they do not include this cost. Air New Zealand's accounting profits have also fluctuated in response to exogenous factors such as exchange rates.

[7] Steven A. Morrison and Clifford Winston, *The Evolution of the Airline Industry*, Brookings: Washington, DC, 1995.

Moreover, such subsidies prevent New Zealanders from realizing benefits of alternative and more highly valued uses of these public funds.

Second, the allied entity potentially faces powerful entry from a low-cost carrier, Virgin Blue. The entrance of Virgin Blue in the Australian market was an additional source of competitive pressure for Ansett Australia and played a role in Ansett's financial difficulties and ultimate failure. (Several carriers in the U.S. are currently experiencing financial distress that is exacerbated by competition provided by low-cost carriers including Southwest, JetBlue, and Air Tran.) Thus, Air New Zealand would be vulnerable to competitive entry and may exit the industry if the alliance does not move forward. Besides Virgin Blue, there are other carriers that have indicated an interest in serving some part of the Australia/New Zealand market. For example, Emirates Air has announced that it will be starting service between Australia and New Zealand. In short, a Qantas-Air New Zealand alliance will experience pressure from new entry to actually realize the efficiency benefits from joint operations or face a loss in traffic.

Like any conceptual argument, we have made some important assumptions. We will now subject two critical assumptions to market data generated by actual airline activity in Australia. First, does Virgin Blue have the potential to be an effective competitor in markets served by the alliance? Second, will Virgin Blue be willing to compete aggressively with the alliance or tend to serve routes where it does not have to compete against it?

To address the first question, we employed a common empirical tool known as a fare regression. Essentially, this regression characterizes how average fares in a market are influenced by route characteristics, such as distance and passenger demand, and

competition, typically the number of equal-sized competitors. The economic justification for this specification is that price can be expressed as a reduced form equation that includes demand and supply factors.

For our purposes, we are interested in a fare regression that measures the impact of Virgin Blue's presence in a market on Qantas' fares. These effects would then enable us to gauge the potential welfare effects on consumers of a shift in competitive capacity from Air New Zealand to Virgin Blue.

To estimate this regression, we obtained data from Qantas on the average fare it charged on 29 of the 30 most heavily traveled domestic Australian routes. (See Appendix I for a list of routes used in the analysis.[8]) The fare data consisted of the monthly average fare that Qantas charged in each of the markets from January 1998 to June 2002. (To control for price inflation, we expressed fares in real terms using the Consumer Price Index.[9]) Perhaps the most important variable that explains fares is route distance, which we have included in the specification. To capture demand-side effects of income and population of the origin and destination, we included the product of the origin's and destination's GDP.[10] To capture the effect of competition from particular airlines of interest, we included route presence variables for Ansett Australia and Virgin Blue. These variables took a value of 1 if the carrier in question served the route during a

[8] Although we had Qantas' fare data for 29 routes, one route was served for only the last month in our sample. Because correcting for serial correlation in the time series dimension requires at least two data points for each route in adjacent time periods, estimation was carried out using data from 28 routes.

[9] Consumer Price Index data were quarterly. Monthly figures were obtained by linear interpolation.

[10] Note, however, that GDP data are available at the state level for Australia.

particular month and 0 otherwise.[11] Because Qantas did not serve all routes in the sample for the entire time period of the analysis, the resulting data set was an (unbalanced) panel consisting of 28 routes for 56 months, with a total of 1,407 observations.

We estimated this equation in two different ways.[12] In the first model, we assumed that all routes share the same constant term; thus, the (average) effect of variables not included in our model is the same for all routes. The second model assumed a different constant term for each route allowing the average effect of variables not included in the model to differ from route to route. The parameter estimates for the variables of interest are quite consistent between the two methods.

Table 1 reports results for the estimation with a common constant term. Distance has the expected positive and statistically significant effect on fares, indicating that a 1 percent increase in distance raises fares by 0.42 percent. Fares increase less than proportionally with distance because of the fixed costs of takeoff and landing. The product of the GDP variable is positive but not statistically significant. We also find that Ansett Australia's presence on a route lowers Qantas' fares 6.1 percent.[13] Virgin Blue's

[11] These data were quarterly for 1998 and 1999 (for the months of February, May, August, and November) and monthly beginning February 2000. For 1998 and 1999 (and January 2000) monthly data were obtained by assuming that the service pattern in January and March was the same as February; that April and June were the same as May; that July and September were the same as August; and that October and December were the same as November. In addition to the results presented here, we also estimated fare equations for the time period February 2000 to June 2002, which did not require us to assume that route presence was identical in adjacent unsampled months. The results for the Ansett Australia and Virgin Blue presence variables were quite similar to the results presented for the longer time period.

[12] Given the time series dimension of the data, we corrected for serial correlation of the error terms using an AR(1) specification.

[13] The effect of a dummy variable in a log-linear regression is given by exp(coefficient)-1.

presence lowers Qantas' fares 10.6 percent. Virgin Blue's impact on Qantas' fares is more than the effect that a network major (e.g., Delta, United, or American) carrier's presence in U.S. routes has on fares but less than the effect that Southwest has.[14]

Table 2 reports the results with fixed route effects, which are consistent with the results presented above. The coefficients of the route presence variables all have the same signs as they did with a common constant term, are statistically significant, and very similar in magnitude.

Our fare regressions indicate that Virgin Blue is having a disciplining effect on Qantas' fares. We are unable to quantify the impact that Air New Zealand is having on Qantas' fares, but given its financial difficulties its impact is likely to be less than Virgin Blue's impact. (As indicated previously, in the U.S. carriers are often able to raise fares when they compete against a carrier in bankruptcy.) Thus, if anything, fares should fall and consumer welfare should rise if Air New Zealand's presence on a route is replaced by Virgin Blue.

To be sure, this prediction presumes that Virgin Blue would be willing to compete on routes served by the Qantas-Air New Zealand alliance. We provide some suggestive evidence on this issue by estimating Virgin Blue's route service decisions, paying particular attention to the effect that Qantas' presence on a route has on Virgin Blue's decision to serve that route. We collected a sample of 26 routes for June 2002 to estimate

[14] There is an unresolved debate in the literature as to whether carrier entry can be treated as exogenous. Empirical tests of this proposition have lacked power and some of the studies that have instrumented entry have obtained similar results when entry is not instrumented. See, for example, Steven A. Morrison and Clifford Winston, *The Evolution of the Airline Industry*, Brookings: Washington, DC, 1995. In our case, we are exploring the impact of a carrier's presence on the fare of a single carrier, not the average fare over all carriers. Carrier presence is less likely to be influenced by one carrier's fare, especially if that carrier is not a low-cost carrier.

the effect that various influences have on Virgin Blue's decision to serve these routes.[15] We estimated a logistic regression in which the dependent variable took a value of 1 if Virgin Blue served the route and 0 otherwise. Explanatory variables were route distance (to capture carrier route/network strategy), the product of the origin's and destination's population (to capture demand), and presence variables for Ansett Australia and Qantas (to capture Virgin Blue's preference for competing against or avoiding particular carriers). Notwithstanding their moderate statistical reliability due to the small sample size, the results indicate that Virgin Blue prefers short distance routes to longer routes and, as expected, prefers routes with larger population bases. All else constant, Virgin Blue also prefers to serve routes that are not served by Ansett Australia, but it is not deterred from entering routes served by Qantas. Indeed, Virgin Blue served 16 routes in our sample in June 2002. Qantas served all of these routes.

In sum, our analysis of actual Australian airline markets confirms the perspective that we have taken on the advisability and likely effects that a Qantas-Air New Zealand alliance will have on consumer welfare. The alliance's motivation is consistent with Air New Zealand's need for a financially stronger partner. Based on the U.S. airline industry's experience with financially distressed carriers, it is likely that Air New Zealand's persistent economic losses (likely to be materially increased by the impact of increasing Qantas capacity and the entry of Virgin Blue) will prevent it in the future from imposing significant competitive discipline on Qantas' fares. Qantas could gain from the alliance by enhancing its network and making more productive the use of Air New

[15] In June 2002 Virgin Blue was only allowed to serve domestic Australian routes. Due to lack of population data for three of the cities involved, the sample size of 29 was reduced to 26. See Appendix 2 for a list of routes used in this analysis.

Zealand's assets than Air New Zealand is able to do alone. However, Qantas should be under no illusions that this alliance will lead to market power. The allied entity will face a strong competitor in Virgin Blue—one that has demonstrated the ability to force Qantas to lower its fares and that is not afraid to compete with Qantas.

We can only conclude that New Zealand travelers only will benefit from an arrangement where two more financially stable carriers share a portion of the productive capacity and a low-cost carrier injects a new dose of competition to the allied entity.

Table 1

Estimation Results for Fare Model*

Dependent Variable: Qantas' Real Average Fare on Route (expressed in 1989-90 dollars, in natural logarithms)				
Variable Description	**Coefficient**	**Standard Error**	**t-statistic**	**Probability**
Constant	-0.0859	2.4020	-0.0357	0.9715
Route Distance, kilometers (natural logarithm)	0.4231	0.0208	20.3407	0.0000
Product of Origin and Destination Gross Domestic Product, 1996 dollars, natural logarithms)	0.1064	0.1169	0.9102	0.3629
Carrier presence dummy variable for Ansett Australia (1 if Ansett Australia serves the route, 0 otherwise)	-0.0629	0.0096	-6.5673	0.0000
Carrier presence dummy variable for Virgin Blue (1 if Virgin Blue serves the route, 0 otherwise)	-0.1118	0.0267	-4.1847	0.0000
Serial Correlation term (ρ)	0.8469	0.0462	18.3445	0.0000
1,407 observations (monthly data, January 1998 to June 2002, 28 routes) R squared = 0.936				
Data Sources: Fare data were obtained from Qantas. Quarterly Consumer Price Indicies and GDP data were obtained from the Australian Bureau of Statistics and Statistics New Zealand. Route presence data are from MiDT.				

*Parameter estimates obtained using Pooled Least Squares with robust standard errors.

Table 2

Estimation Results for Fare Model*
(with fixed route effects)

Dependent Variable: Qantas' Real Average Fare on Route (expressed in 1989-90 dollars, in natural logarithms)				
Variable Description	**Coefficient**	**Standard Error**	**t-statistic**	**Probability**
Carrier presence dummy variable for Ansett Australia (1 if Ansett Australia serves the route, 0 otherwise)	-0.0410	0.0103	-3.9779	0.0001
Carrier presence dummy variable for Virgin Blue (1 if Virgin Blue serves the route, 0 otherwise)	-0.1530	0.0195	-7.8588	0.0000
Serial Correlation term (ρ)	0.6123	0.0746	8.2037	0.0000
1,407 observations (monthly data, January 1998 to June 2002, 28 routes) R squared = 0.945				
Data Sources: Fare data were obtained from Qantas. Quarterly Consumer Price Indicies were obtained from the Australian Bureau of Statistics. Route presence data are from MiDT.				

*Parameter estimates obtained using Pooled Least Squares with robust standard errors.

Table 3

Virgin Blue Service Model
June 2002*

Dependent Variable: Virgin Blue's Route Presence (1 if Virgin Blue served the route in June 2002, 0 otherwise)				
Variable Description	**Coefficient**	**Standard Error**	**t-statistic**	**Probability**
Route Distance, kilometers	-0.000856	0.000549	-1.5591	0.1190
Carrier presence dummy variable for Ansett Australia (1 if Ansett Australia served the route in June 2002, 0 otherwise)	-2.578171	1.437905	-1.7930	0.0730
Carrier presence dummy variable for Qantas (1 if Qantas served the route in June 2002, 0 otherwise)	1.620614	1.032612	1.5694	0.1165
Product of origin's and destination's population	3.14E-7	2.86E-7	1.0960	0.2731
26 observations Log likelihood = -13.51				
Data Sources: Route presence variables are MiDT. Population data are from the Australian Bureau of Statistics.				

*Parameter estimates obtained using Binary Logit.

Appendix I

Routes used for Qantas Fare Regression

ADL-BNE	Adelaide-Brisbane
ADL-MEL	Adelaide-Melbourne
ADL-PER	Adelaide-Perth
ADL-SYD	Adelaide-Sydney
AYQ-CNS	Ayres Rock-Cairns
AYQ-SYD	Ayres Rock-Sydney
BNE-CBR	Brisbane-Canberra
BNE-CNS	Brisbane-Cairns
BNE-DRW	Brisbane-Darwin
BNE-GLT	Brisbane-Gladstone
BNE-MEL	Brisbane-Melbourne
BNE-PER	Brisbane-Perth
BNE-ROK	Brisbane-Rockhampton
BNE-SYD	Brisbane-Sydney
BNE-TSV	Brisbane-Townsville
CBR-MEL	Canberra-Melbourne
CBR-SYD	Canberra-Sydney
CNS-MEL	Cairns-Melbourne
HBA-MEL	Hobart-Melbourne
HBA-SYD	Hobart-Sydney
KGI-PER	Kalgoorlie-Perth
KTA-PER	Karratha-Perth
LST-MEL	Launceston-Melbourne
MEL-OOL	Melbourne-Coolangata, Gold Coast
MEL-PER	Melbourne-Perth
MEL-SYD	Melbourne-Sydney
OOL-SYD	Coolangata, Gold Coast-Sydney
PER-SYD	Perth-Sydney

Appendix II

Routes used for Virgin Blue Service Model

ADL-BNE	Adelaide-Brisbane
ADL-MEL	Adelaide-Melbourne
ADL-OOL	Adelaide- Coolangata, Gold Coast
ADL-PER	Adelaide-Perth
ADL-SYD	Adelaide-Sydney
BNE-CBR	Brisbane-Canberra
BNE-CNS	Brisbane-Cairns
BNE-DRW	Brisbane-Darwin
BNE-GLT	Brisbane-Gladstone
BNE-MEL	Brisbane-Melbourne
BNE-PER	Brisbane-Perth
BNE-ROK	Brisbane-Rockhampton
BNE-SYD	Brisbane-Sydney
BNE-TSV	Brisbane-Townsville
CBR-MEL	Canberra-Melbourne
CBR-SYD	Canberra-Sydney
CNS-MEL	Cairns-Melbourne
HBA-MEL	Hobart-Melbourne
HBA-SYD	Hobart-Sydney
KGI-PER	Kalgoorlie-Perth
LST-MEL	Launceston-Melbourne
MEL-OOL	Melbourne-Coolangata, Gold Coast
MEL-PER	Melbourne-Perth
MEL-SYD	Melbourne-Sydney
OOL-SYD	Coolangata, Gold Coast-Sydney
PER-SYD	Perth-Sydney