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HIGH-FLYING competition

It goes on and on ... Air New Zealand and Qantas continue to pursue approval for a cartel in trans-Tasman flights, most recently with New Zealand's Ministry of Transport and the Australian Competition and Consumer Commission. They've been refused approval in the past, because of regulatory concerns about the effect on prices. Tim Hazledine and Callum MacLennan report on some new research findings[1] that suggest the regulators are justified in their concern.

Probably more than any other industry, air travel has successfully practised what the airlines call yield management and economists call price discrimination – the practice of charging different customers different prices for the same or similar products, based on differences in their perceived willingness to pay.

Of course, differences in willingness to pay are pervasive across markets. That's basically why demand curves slope down. But usually the preconditions for successful price discrimination are not present. It may be difficult to identify the consumers with higher willingness to pay – certainly, they're not going to volunteer this information! Or it may be difficult to prevent the high-value customers from purchasing at the lower price offered to others, either directly or via arbitrage. Or it may simply not be worth the bother of incurring the transaction costs involved in setting up elaborate pricing schemes for low-value goods or services.

Air travel is different. It is a quite expensive item, which makes it worthwhile to invest resources in optimising yields. And it's easy to prevent arbitrage: tickets are named and cannot be used by anyone else. Even more importantly, it's possible to successfully partition customers into high- and low-value groups according to their willingness to accept some inflexibility in their travel arrangements. There is a strong negative correlation between willingness to pay and unwillingness to commit to an itinerary well in advance.

The classic instrument for taking advantage of this has been to attach advance-purchase restrictions on cheaper fares, to which American Airlines in 1985 added the clever innovation of requiring that these fares be offered only on return tickets involving a Saturday night stay-over, as a means of discriminating between leisure and business travellers. This restriction was widely adopted and was undoubtedly very effective at keeping business travellers away from the cheap tickets. Unfortunately, though, the price of this was that many leisure travellers would also be put off – as they were in increasing numbers with the rise of LCCs (low-cost carriers such as Ryanair and Southwest), which offer simple one-way itineraries and fares.

Back to basics

In November 2002, in response to these trends, Air New Zealand introduced a radically different pricing system with its 'NZ Express' fares for travel on domestic routes. These one-way fares eliminated the restrictive 'fence' raised by the Saturday night stay-over requirement, making the new fares attractive to all travellers. Their prices were also generally lower, so that now the airline's risk was that it would 'cannibalise' its high-profit-margin business travel market. Overall, NZ Express was a bold attempt to increase profits by reducing prices and making air travel simpler (the in-the-air product had the

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service frills such as hot meals and business-class seating stripped out of it). The innovation was quickly copied by Qantas, and then extended to trans-Tasman routes.

Our research analyses pricing behaviour under the new regime, making use of the web-based booking systems that provide a transparent and easily accessible source of air-fare data. We focus on **two questions** that are of interest in themselves and also have implications for policy issues in respect of the proposed trans-Tasman cartel.

First: Does the 'old' oligopoly model, in which price-raising power is linked to market structure (number and market shares of competitors), still hold? Given the greater transparency of fare offerings now, and given also the actual or potential threat of competition from LCCs such as Pacific Blue (Virgin), have cross-price elasticities increased to the point where price differentials between airlines can hardly be sustained, no matter how large their size or market share?

Second: Would the new competitive forces have wiped out most of the potential for imposing price differentials across customers – that is, the airlines' traditional price discrimination based on willingness to pay?

1001x8x21=?

We collected data on 1001 flights on 8 domestic New Zealand and 21 trans-Tasman routes (counting, for example, Auckland-Sydney and Sydney-Auckland as separate routes for this purpose). The New Zealand routes and the Auckland-Sydney route were observed for Wednesday flights in November and December 2004, and January 2005. The trans-Tasman routes (including again Auckland-Sydney) were observed for three Wednesdays in July 2005.[2] Some of the domestic routes were Air New Zealand monopolies; some were served by Air New Zealand and Qantas; and some Tasman routes were also served by Emirates and/or Pacific Blue. For each flight, we took the lowest price offered on the websites weekly from eight weeks before flight date, with daily observations in the last week before the flight.

We then constructed a weighted average of these prices, divided this by the length of each flight in kilometres, and used the result as the 'dependent variable' to be explained in a standard econometric model. In this model, the explanatory variable of key interest is the standard Hirschman-Herfindahl measure of the extent of structural competition on each route.

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Fare go

We found that the Hirschman-Herfindahl measure does indeed have a statistically significant relationship with prices – implying, in particular, that routes served by just one carrier have prices around 20% higher than duopoly routes do.

It has been suggested that the Tasman market is 'more competitive' than other airline markets. This could mean that it has lower prices for a given level of structural competition (a different pricing model or regime). Or it could mean that it has lower prices because it has more structural competition (a different market, with more carriers). Our findings support the latter interpretation: the underlying pricing model is the same for all the routes, and so lower prices on some Tasman sectors are attributable to the presence of Pacific Blue and/or Emirates.

It is interesting to focus on the Tasman market, in particular because data on available capacity and seats actually sold are available for these routes from the Australian Bureau of Transport and Regional Economics. We might expect that empty seats would generate some downward pressure on fares. When we add a variable for the ratio of passengers carried to seats available on each route, we find that this ratio is indeed linked to the prices offered by individual airlines: pricing on a route is systematically related to the size of the overhang of empty seats. A difference of five percentage points in the ratio of seats sold to seats available (for example, going from 70% to 75% utilisation) is associated with an almost equal difference in prices, other things held equal. In other words, as utilisation rises, prices rise at about the same rate.

In the Tasman model we also used what are called 'dummy variables' to isolate any airline-specific pricing effect. The results of this are also very interesting. We find that, after controlling for the other factors (flight distance, measure of competition, utilisation rate), Air New Zealand is able to set its lowest prices higher than the other airlines – about 8% higher than its main rival Qantas and more than 20% higher than the fringe competitors Emirates and Pacific Blue. These are substantial differences, and they are difficult to reconcile with any notion that the new airfare regime has resulted in homogenisation of prices across airlines.[3]

Buy now or pay later

What about price discrimination? The airlines can still take good advantage of the linkage between willingness to pay and ability to commit to travel in advance of a flight, by raising the lowest-offered fare as the flight date approaches. In yield management jargon, 'buckets' of low price tickets are removed from the market and replaced by higher-priced buckets over the weeks before

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PO Box 600, Wellington, New Zealand. Ph: +64 4 463 5562, fax: +64 4 463 5566, e-mail: iscr@vuw.ac.nz, website: www.iscr.org.nz
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Major ISCR Research Publications January 2005 – June 2006

Lewis Evans & Richard Meade, 2006. *Alternating Currents or Counter-Revolution? Contemporary Electricity Reform in New Zealand*. Victoria University Press.

Glenn Boyle & Graeme Guthrie, 2006. Payback without Apology, *Accounting and Finance*, vol 46, 1-10

Glenn Boyle & Graeme Guthrie, 2006. Hedging the Value of Waiting, *Journal of Banking and Finance*, vol 30, 1245-1267

Lewis Evans & Graeme Guthrie, 2006. Incentive Regulation of Prices when Costs are Sunk, *Journal of Regulatory Economics*, vol 29, 239-264

Lewis Evans & Graeme Guthrie, 2006. A dynamic theory of cooperatives: the link between efficiency and valuation, *Journal of Institutional and Theoretical Economics*, vol 162, 364-383.

Bronwyn Howell, 2006. Restructuring Primary Health Care Markets in New Zealand: From Welfare Benefits to Insurance Markets, *Australia and New Zealand Health Policy* vol. 2:1–22 (available at: www.anzhealthpolicy.com/content/2/1/20)

Glenn Boyle, 2005. Risk, Expected Return, and the Cost of Equity Capital, *New Zealand Economic Papers*, vol 39, 181-94

Glenn Boyle & Graeme Guthrie, 2005. Human Capital and Popular Investment Advice, *Review of Finance*, vol 9, 139-164

Matthew Burgess & Lewis Evans, 2005. Parallel Importation and Service Quality: An Empirical Investigation of Competition Between DVDS and Cinemas In New Zealand, *Journal of Competition Law and Economics*, vol 1(4), 747-770

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Lewis Evans & Neil Quigley, 2005. The Interaction Between Contract and Competition Law, ch.10 in *Competition Policy in East Asia*, Erlinda Medalla (ed), Routledge, London, 213-230

Ignatius Horstmann, Frank Mathewson & Neil Quigley, 2005. Agency Contracts with Long-Term Customer Relationships, *Journal of Labor Economics*, vol 23(3) 589-608

Bronwyn Howell, 2005. Medical Misadventure and Accident Compensation in New Zealand: An Incentives-Based Analysis, *Victoria University Law Review*, vol 35(4), 857-877

Richard Meade, 2005. Electricity Investment and Security of Supply, ch.3 in *Development of Electricity Markets*, W. Mielczarski, Instutat Elektroenergetyki Politechniki Lodzkiej, (ed), 51-85

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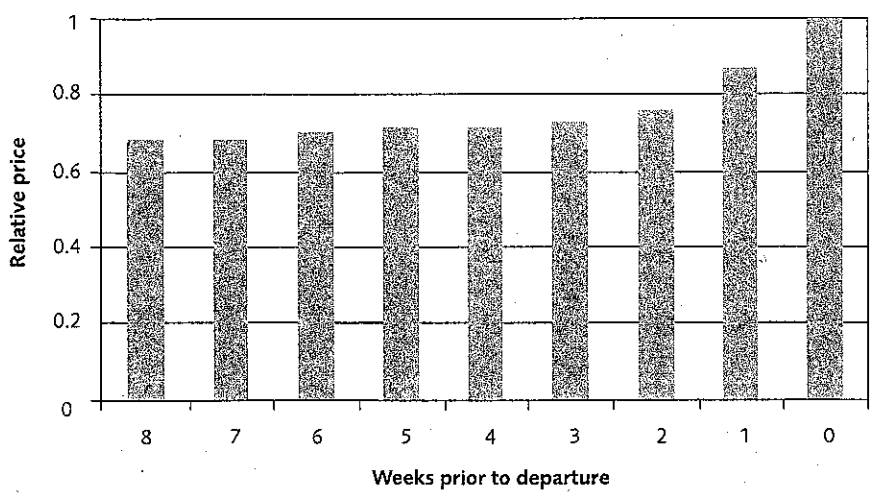
the flight. Figure 1 shows this in action. For each of the 1001 flights, the lowest price observed weekly before the flight date is divided by the price at 'week 0', which is usually the day before the flight and which usually (but not always) is the highest 'low price' observed for a flight.

We see that, on average, prices eight weeks out are about two-thirds of the last-minute price, with most of the increase taking place in the last two weeks before the flight. This inter-temporal price discrimination is probably milder than under the old Saturday night stay-over regime, under which discounted fares would disappear completely from the market when the last advance-purchase date had been passed. But it remains substantial: last minute travellers are paying about 50% more than those who were able to commit to the flight some weeks in advance.

In the new world of one-way cheap fares, internet booking, and competition from LCCs (and Emirates), the old learning about competition and price discrimination seems still valid. Prices are lower if there is more competition 'in the air'; prices are lower if there is more excess capacity; the large incumbent carriers are able to charge a price premium; and the price-discrimination practices that have been such a striking feature of the air travel market are still alive and well.

All these findings have implications for policy – in particular, for policy decisions on the current proposal by Air New Zealand and Qantas that they be able to coordinate their capacity and pricing in the trans-Tasman market.

Figure 1: Geometric means of relative prices (all observations)



1 This research is an ongoing programme supported by grants from ISCR and the University of Auckland. The most recent working paper giving a detailed account of the econometric model and results can be obtained from Tim Hazledine (t.hazledine@auckland.ac.nz).

2 The July 2005 data were collected by Callum MacLennan for analysis in his BCom (hons) dissertation in economics at the University of Auckland.

3 Since the differences here are just in the lowest prices charged, the actual differences in average prices paid will be larger, because Air New Zealand (and Qantas) also offer and sell higher-price tickets that have fewer restrictions than their lowest fares.

Tim Hazledine is a professor of economics at the University of Auckland; **Callum MacLennan** was until recently a graduate student in the Department of Economics at the University of Auckland.