

- (i) 13 routes with zero impact on both prices and output;<sup>20</sup>
- (ii) 6 routes with zero price impact, but negative output impact;<sup>21</sup>
- (iii) 6 routes with zero price impact, but positive output impact;<sup>22</sup>
- (iv) 2 routes with negative price impact, but positive output impact;<sup>23</sup>
- (v) 1 route with both positive price and output impacts.<sup>24</sup>

The most peculiar results are those for the routes in which the model produced more output with the alliance than without (iii, iv and v). One way in which output may increase in this model, and offset any Cournot effect, is through an increase in demand by expanding capacity. However, such an increase in demand will tend to supplement the Cournotesque increase in price. Therefore, while a capacity increase may help explain (v), it does not explain (iii) and even less (iv). The combination of price and quantity impacts in (iii) and (iv) in this model requires a reduction in marginal costs of a sufficient magnitude to offset the Cournot effects, and the effects of any changes in demand (either the fall in output in the case of reduced demand, or the rise in prices as a result of increased demand). However, NECG's assumptions regarding marginal costs (described in 4.3. above) severely constrain the possibility of significant differences in marginal costs between the two scenarios. This leads us to conclude that the NECG findings in cases (iii) and (iv) are extremely difficult to understand or justify, even under the assumptions that NECG have adopted.

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<sup>20</sup> Routes: TBU-APW, APW-LAX, RAR-LAX, NAN-RAR, RAR-PPT, AKL-HNL, LAX-LHR, AKL-TPE, AKL-NRT, AKL-KIX, AKL-DUD, WLG-DUD.

<sup>21</sup> Routes: AKL-CNS, AKL-NLK, AKL-NOU, AKL-RAR, AKL-SIN, SYD-LAX.

<sup>22</sup> Routes: AKL-PER, AKL-APW, AKL-PPT, PPT-LAX, AKL-HKG, AKL-NGO.

<sup>23</sup> Routes: WLG-MEL, CHC-WLG.

<sup>24</sup> Route: SYD-ZQN.

#### **4.6. The dead-weight loss**

The calculation of dead-weight loss is explained on pages 115 to 118. The reader is given no detail at all, so it is impossible to work out how the net calculation is made. The picture in Figure 1 on page 116 is standard. However, the calculations seem not to be consistent with the Figure. The most-obvious reason for this is that the 'with' and 'without' comparisons involve a combination of effects that tend to increase prices (because of the increase in monopoly power) and effects that tend to decrease prices (because of the reduction in capacity that tends to shift the demand curve in towards the origin).

It is not clear how the dead-weight loss calculations cope with the shift in the demand curves, the shifts in marginal costs or with the combination of decreases in prices and the increases in output that occur for some routes. The logically-consistent approach would have been to estimate the difference in consumer surplus as a result of the combination of all of these effects; but it is not clear that this has been done.

Furthermore, in the NECG model average fares with and without the proposed alliance are determined using current average passenger revenue on a sector, adjusted for: a 20% reduction in ANZ fares resulting from fares available through NZ Express (p 110); an assumed cost differential between a VBA and a FSA to determine the price that would prevail in the 'with' and 'without' scenarios as a consequence of VBA entry; and the increase in price that results from the reduction in competition and number of competitors (p 112).

As discussed above, the assumption embodied in NECG's modelling is that marginal cost does not change as a result of the increase in capacity (and the under-utilisation of that capacity) in the 'without' scenario. This will result in the modelling significantly underestimating dead-weight losses relative to the more usual assumption that marginal costs, and prices, fall when there is substantial excess capacity.

#### **4.7. Effects on quantity and price of freight**

The NECG Report suffers from its attempt to analyse competition in passenger services independently of competition in air-freight services. As we noted in section 3.2. above, Appendix A of the NECG Report argues that freight and passenger services should be separately analysed. However, it

proceeds to argue that this will not create any problems, because their analysis of passenger markets can be extrapolated to freight markets:

Confining the market to only include air freight services, competitive effects are likely to be largely revealed in our analysis of air passenger service markets, impacts arising in this market are likely to be largely revealed in our analysis of air passenger markets. (p 181)

This conclusion is completely ignored in the modelling in the Report. The Report proceeds on the basis that the analysis of the effects of the proposed alliance on price and quantity of passenger services need bear no relation at all to the analysis of the effects of the proposed alliance on the price and quantity of freight services.

This asymmetry of treatment is quite inappropriate because, as we argued in section 3.2, the effects of the proposed alliance on the prices and quantities of freight are likely to be similar in type to the effects of the proposed alliance on the prices and quantities of passenger services.

The first big difference between NECG's predictions about freight and passenger services derives from their predictions about the effects of the proposed alliance on capacity. Whereas they predict that the proposed alliance will reduce capacity on passenger services (compared with the 'without' scenario), NECG predicts that the proposed alliance will increase capacity for freight by 5.3% by year 3. (p 161)

Three reasons are given for this increase in capacity:

- 'Back of the clock' flying of B767 aircraft that are currently overnighing in Melbourne;
- Possible options to expand specialised freight services into Asia; and
- The introduction of Qantas B744ER equipment from USA to New Zealand and Australia.

This reasoning raises two obvious questions. In the first place, it is not clear why these increases in capacity are contingent upon the alliance. For example, it is not apparent from the NECG Report why Qantas, in the future without the alliance, would not utilise the aircraft currently overnighing in Melbourne, or the empty freighters flying to Asia. We also understand that Qantas have already ordered the new Q744ER aircraft. Therefore, one can assume that the claimed 'introduction' of this equipment to 'enhance available capacity', would occur whether or not the proposed alliance proceeds.

Secondly, this reasoning makes no mention at all of the decrease of the number of aircraft caused by the proposed alliance that is central to the argument as to the effect on prices and quantities of passenger services.

The second big difference between NECG's treatment of passenger and freight is the way in which changes in capacity are said to affect prices and quantities. As explained in the preceding section of this Report, in its modelling of the prices and quantities of passenger services, NECG assumes that the decrease in capacity for providing passenger services caused by the proposed alliance will have no effect on marginal costs but will affect prices and quantities via the Cournot model by moving the demand curve in towards the origin.

In its analysis of the effects of the proposed alliance on freight services, NECG seems to assume that all of the additional 5.3% freight capacity is fully utilised without causing any decrease in price at all. (pp 32-3) This seems to be a quite different world from that of the Cournot competition that is assumed when modelling passenger services. Indeed, the modelling of freight seems to assume that:

- Price is determined by supply and demand;
- The supply curve is vertical; and
- The demand curve is horizontal.

The NECG Report gives no hint for these dramatic inconsistencies of their treatment of the effects of the proposed alliance on passenger services compared with freight services.

## **5. The Claimed Public Benefits**

The costs and benefits of mergers or acquisitions that are typically considered include the change in consumer welfare associated with resulting changes in prices or quantities, and the changes in producer surplus associated with efficiencies and other sources of cost savings. Table 1 (p 35) summarises the net public benefit calculation of the NECG Report. The detriment is the dead-weight loss; and (according to the Table) this is more than offset by the benefits created by the proposed alliance – the principal elements of which are the cost savings and the increase in tourism. NECG does not argue that there will be any increase in operating efficiency of the two airlines as a result from the proposed alliance. Each of the identified sources of public benefits and detriments (namely, the dead-weight loss) presents problems.

### **5.1. The cost savings**

The cost savings are outlined on pages 136 to 139. It is noteworthy that the NECG Report discusses whether economies of scale may lead to cost savings and concludes that none will arise. NECG states

Accordingly, it is our view that the net impact of scale economies will be neutral once the cost of securing those economies is taken into account. We have therefore not included either the benefits or the costs of achieving such economies in our quantification. (p 135)

Apart from possible synergies associated with improved aircraft selection, none of the scale economies or operating efficiencies that typically form the basis of arguments for the existence of public benefits in mergers is given any positive value by NECG.

Although cost savings due to improved aircraft selection is mentioned as a source of synergies arising from the proposed alliance<sup>25</sup>, the modelling approach described by NECG suggests that this is not in fact the key determinant of the estimated cost savings.

The reader is provided with no details of the calculations, but these seem to be principally savings attributable to avoiding the hard competition (capacity

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<sup>25</sup> The saving is said to arise from 'selecting the lower cost provider' in cases where the two carriers are using different aircraft with differing cost efficiencies. No explanation is offered as to why competition between independent carriers would not force the higher-cost carrier to lift its game.

increase) caused by prolonging the life of Air New Zealand. That is, the cost savings are savings from avoiding the 'wastes of competition' that would arise if Qantas were to compete head-on with Air New Zealand. The NECG Report in essence, argues that because Air New Zealand has no long-term future, the costs of this process of adjustment to the demise of ANZ can be avoided by moving straight to the proposed alliance. In effect, this means avoiding the costs of the predatory increases in capacity. In discussing the source of cost savings, the NECG Report states:

To begin with, the Alliance permits substantial costs savings associated with avoiding at least some of the duplication of capacity that already occurs and is likely to worsen in the world without the Alliance. (p 29)

Comparing the factual and counterfactual schedules under a variety of assumptions about VBA entry, there are considerable cost savings available from aircraft rationalisation, because counterfactual schedule involves significant under-utilised capacity compared with the factual schedule. (p 137)

Herein lies the key problem in these calculations, as the cost savings are driven primarily by schedules supplied by the airlines in the proposed alliance. It is not difficult to find cost savings from rationalisation when the schedules provide for excess capacity in the future without the merger.

The Report argues that 'the market' is an inefficient means of sorting out winners from losers, and that it is better to avoid these costs by moving straight to the new equilibrium arrangement:

'While the idea of allowing the market to sort out winners and losers has its obvious and glib attractions, the reality is that large scale retrenchments are highly costly to society.' (p 21)

In effect, Qantas is threatening that, if it is not allowed to proceed with the proposed alliance, it will embark on a vigorous increase in capacity. NECG seems to be arguing that the way to avoid the social costs of this excess capacity is not to rely on the abuse of monopoly provisions of the antitrust statutes of the two countries but to allow the proposed alliance to proceed.

The so-called savings flow not as much from the altered structure of the market caused by the proposed alliance, as from representations as to how the parties to the alliance intend to behave in the event that their proposal is or is not authorised. This suggests that these 'cost savings' are not benefits that derive from the proposed alliance. Rather, the 'cost savings' result from behaviour that the members of the proposed alliance say that will undertake in their 'without' scenario and say they will not undertake in their 'with' scenario.

## 5.2. Increased tourism

The second large benefit that offsets the dead-weight loss is the supposed increase in tourism. The NECG Report estimates that in the first five years, approximately \$1,134 million of net benefits in NPV terms will arise from increased tourism due to the proposed alliance. This is attributed to the activity of Qantas Holidays and the increased effectiveness of promotion. It is offset, to some extent, by the general increase in fares that is predicted by the Cournot model.

The activity of Qantas Holidays is predicted to increase tourists into New Zealand by 50,000 compared to the 'without' scenario. It is not clear that NECG believes this number. They are careful to say that the extra 50,000 tourists per annum caused by the activity of Qantas Holidays is based on 'instructions' they have received (p 148) and that these instructions were verified by Tourism Futures International.

It is very difficult to believe this 50,000 number or, indeed, the estimate of net benefits that is based on the stated increase in tourism numbers. The proposition outlined in the NECG report is highly questionable. It requires that one believes that Qantas Holidays will put an exceptionally large effort into attracting tourists to New Zealand and it will not put in this effort if the proposed alliance were not to proceed, despite the expected profitability of increased promotional expenditure.

As with the argument concerning cost savings, the argument seems to be based on avoiding the wastes of competition. NECG is asking the reader to believe that airlines that are competing (and their associated travel companies) will be less effective at promoting increased tourism (growing the market) than when those airlines have ceased to compete:

An alliance between the airlines would open up opportunities for cooperative advertising, primarily in the area of retail sales promotion in home markets. Qantas currently advertises fares to New Zealand in Australia, and Air New Zealand likewise promotes business to Australia within the New Zealand market. The possibility of cooperative advertising could reasonably be expected to lead both to more effective promotion (and hence market stimulation), as well as some potential for rationalisation of expenditure. This would free up existing expenditure for promotion in other areas. In effect, the Alliance would provide the opportunity to redirect effort into growing the market as opposed to competing for share. (p 150)

This position is stated despite the fact that the under the 'without' scenario, Qantas and ANZ are assumed to substantially increase capacity, which would give them every incentive to invest in growing the market as well as capturing market share.

The Report argues that this expenditure on tourism promotion would be profitable for the proposed alliance (pp 151-153). This raises the question as to why Qantas Holidays would not undertake this expenditure without the alliance. The answer to this question may be a version of a free-rider argument. NECG may be suggesting that Qantas will not undertake the expenditure because the benefits will be partly appropriated by Air New Zealand. However, if the proposed alliance proceeds, the same problem would presumably arise given the assumed entry by a VBA such as Virgin Blue. It is not plausible or consistent with the 'with' and 'without' scenarios described by NECG that the essence of the argument is a free-rider problem.

Furthermore, to the extent that expenditure on the promotion of tourism is subject to free-rider problems, the solution seems to be to give the task to a government agency such as Tourism New Zealand. Indeed, the best justification for the existence of bodies such as Tourism New Zealand seems to be that promotional activities of the type they undertake will be underprovided by the market because of free-rider problems.

An additional concern relates to the way in which the estimate of the benefits from increased tourism takes into account the reduction in tourism arising from the increase in fares and reduction in capacity (p 156) expected as a result of the proposed alliance. For the reasons described in section 4, these effects are likely to be substantially underestimated. The price reduction expected in the 'without' scenario does not take into account the effect of substantial excess capacity on marginal cost and airfares. Consequently, the reduction in tourism resulting from the anti-competitive aspects of the proposed alliance will be significantly understated.

### **5.3. Scheduling efficiencies**

The NECG report states that the public benefits resulting from scheduling efficiencies will amount to \$60 million (NPV) over the first five years of the proposed alliance. This is calculated solely from the estimated benefits to consumers associated with reduced waiting times. NECG does not ascribe any value to factors such as increased aircraft utilisation due to scheduling efficiencies.



NECG's basic proposition is that the proposed alliance could result in ANZ and Qantas having greater incentives to spread flights throughout the day.<sup>26</sup> This could give rise to consumer benefits.

However, the estimates of the public benefit contained in the NECG report are highly questionable for three key reasons.

First, as stated in NECG's report 'the value of time...[to business and leisure travellers]... cannot be assessed with any real accuracy'. (p 142) Any estimated benefits should be heavily discounted because of the standard error inherent in the estimates.

The second and more important criticism is that the analysis is based on a comparison between *current* schedules and schedules expected after the alliance. NECG states that the 'without' scenario cannot be used as the basis for the analysis because it only has information about the number of flights expected without the alliance, not the schedule of those flights. This is equivalent to assuming that the increased capacity expected if the alliance does not proceed would be scheduled at exactly the same time as current services. This is an absurd assumption.

Further, this assumption directly contradicts the rationale used by NECG in modelling output. (pp 114-115) In modelling output, NECG adopts a capacity elasticity of demand of 0.125. That is, NECG assumes that when capacity increases by 1% demand is assumed to increase by 0.125%. The capacity elasticity of demand arises because increased frequency and greater choice about time of travel results in a more attractive service to customers, leading people to travel more at any given price.

In modelling output of passenger services, NECG appears to assume that an increase in capacity equates to an increase in frequency and choice of schedule. In modelling the scheduling efficiencies, NECG assumes an increase in capacity results in no increase in choice of schedule. If the approach applied was consistent with that used in modelling output of passenger services, and the 'without' scenario was applied as the basis for comparison of scheduling efficiencies, the proposed alliance could be expected to impose costs on consumers as a result of a reduction in frequencies (i.e. scheduling inefficiencies).

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<sup>26</sup> This is based on another 'costs of competition' argument. See for example Hotelling H, 1929, *Stability in Competition*, Economic Journal 39: 41-45

Thirdly, the approach to valuing passengers' time assumes that without the proposed alliance, passengers will simply wait at airports for services to depart. In fact, passengers are likely to be being productively engaged in the normal course of business and arrive at the airport in time for their scheduled departure. The assumptions used will substantially overstate the public benefits of any scheduling efficiencies that could arise.

#### **5.4. Direct services**

The public benefits of new direct services as a result of the proposed alliance are estimated in the NECG report to be approximately \$116 million (NPV) in the first five years. The public benefits are calculated by estimating the value of time saved by passengers travelling on direct flights between city pairs that the Report states would be available as a result of the proposed alliance, and would not be available without the proposed alliance (p 145). Load factors are based on historical trans-Tasman load factor, although it is not stated which city pair route is used to determine the load factors.

As pointed out in section 5.3, the value of time to leisure traveller cannot be assessed with any real accuracy. Any estimated benefits should be heavily discounted because of the standard error inherent in the estimates.

Of greater concern is the basic premise underpinning NECG's argument that the proposed alliance would make it viable for the merged entity to provide direct services on the identified city pairs but that neither airline could viably do so without the alliance. NECG argues that it is currently unviable to offer direct flights, for example, from Auckland to Adelaide, but that the business case

...is significantly improved by the Alliance. This is because the Auckland-Adelaide traffic, currently being shared across the Tasman, can be aggregated. This would approximately double the volume expected for a direct service relative to the status quo for either airline. (p 145)

This example would seem spurious, as Air New Zealand currently does not fly to Adelaide at all. This means that there is no 'shared traffic' with Qantas to this destination, and hence, no benefits from their 'aggregation' in the event of the alliance proceeding. More importantly, the economic logic of the argument is highly problematic. The only reason why the proposed alliance could assist the business case for establishing a direct route is if in the 'without' scenario NECG is assuming that if one airline commences direct services on a city pair route, the other airline will also commence direct services irrespective of whether it is profitable to do so. It is highly improbable that this would be a rational competitive response on the city pair routes in question.

If a direct service can be viably provided by only one airline, normal competitive behaviour would result in only one airline (the most efficient airline) providing that service. Other airlines would not commence services knowing that it would result in them incurring ongoing losses, unless they had other objectives.

Consequently, we consider it is inappropriate to count the public benefits of direct services as benefits that result from the alliance.

## **5.5. Engineering and maintenance**

The NECG report ascribes public benefits of \$175 million (NPV) in the first five years as arising from Qantas's decision to direct 80% of its subcontracted heavy maintenance to Air New Zealand. The report states that without the proposed alliance the proportion of its subcontracted heavy maintenance to Air New Zealand could be as low as 10% in that five year period.

No support is given for this assertion, and in fact this proposition is contradicted by Qantas's current practice. The NECG report states (p 160) that in 2002/2003, Qantas will direct 78% of its subcontracted heavy maintenance to Air New Zealand.

In the absence of any other evidence or information, arguably the best estimate of public benefits (to New Zealand) from engineering and maintenance is the difference between expected future revenue and current or historic revenue. On this basis, the public benefits taken into account for increased engineering and maintenance expenditure should correspond to the 2% increase in the share of Qantas's subcontracted heavy maintenance that is directed to Air New Zealand in the future as a result of the alliance, rather than the 70% change assumed by NECG.

The second problem with this argument is that it assumes that Qantas will not seek to minimise costs if the proposed alliance proceeds. The Report states that

However, without the Alliance Qantas would seek out the most cost-effective heavy maintenance agreements available in the region. On available information it is unlikely that this process would result in large parcels of heavy maintenance work being awarded by Qantas to Air New Zealand. Thus, it has been estimated that, in the absence of the Alliance, external work directed to Air New Zealand could be as low as 10% of Qantas's requirements. (p 161)

NECG is, therefore, asking us to assume that Qantas is currently pursuing, and would persist with a high cost strategy if the alliance proceeds, despite

the supposed availability of lower cost alternatives. This is clearly not consistent with the strategy a profit maximising company would adopt.

## **5.6. Net transfers**

The NECG Report states that net transfers will give rise to a public benefit of \$98 million in NPV terms over the five year modelling period. The net transfers are comprised of transfers between consumers (producers) in New Zealand and producers (consumers) in Australia. Estimated transfers between consumers and producers in New Zealand, and between consumers and producers in Australia are ignored. Little detail is given on the how net transfers are calculated. The Report simply states that:

Transfers from consumers to producers are allocated between Australia, New Zealand and other countries on the basis of passenger shares. Transfers to producers from consumers are allocated to Australia, New Zealand and other countries on the basis of accounting methods agreed by the airlines. This is achieved by applying the comparison of net positions of each airline after allocating 60% of their respective profits to be retained by them on the basis of capacity. If that comparison reveals that Qantas's net position exceeds Air New Zealand, Qantas will pay half the difference to Air New Zealand and vice versa. (pp 117-118)

Given the information made available, it is not possible to comment on whether the method used for estimating transfers is appropriate or not. It is also unclear if in calculating the transfers to producers in Australia or New Zealand, all benefits accruing Qantas and ANZ are regarded as transfers to Australia and New Zealand respectively or as transfers to countries based on the location of ultimate shareholders in each company,

## 6. Conclusions

There are many points in the NECG Report where the argument is unclear, highly questionable, or contradictory.

The underlying argument of the Report is that ANZ has no long-term future. The long-term future is for Qantas to share the various markets with a less-direct VBA competitor, such as Virgin Blue. This will produce massive tourism benefits and will avoid the inefficient increases in capacity that would be unleashed if the proposed alliance is not authorised and the parties proceed to engage in aggressive capacity competition.

The detriments of the merger through its lessening of competition are modelled with a version of the Cournot model, which is quite inappropriate for determining the effects of price competition when capacity is given. It is notable that NECG rejects this method for modelling the effects of the merger on quantities and prices of freight.

The arguments about offsetting public benefits are not based on normal efficiency arguments. The two key arguments are that the proposed alliance will avoid wasteful duplication of capacity, and secondly, that it will lead to more effective promotion of tourism to New Zealand. However, neither of these predictions flows from a change in the structure of a market that would follow from the formation of the proposed alliance. Both these changes and the benefits that are claimed to follow from them are based on discretionary changes in behaviour on the parts of Qantas and ANZ.

We have argued that the key public benefits claimed for the proposed alliance are either not benefits that are attributable to the formation of the alliance, or are substantially overstated. If these claimed offsetting benefits are discounted, the only substantial contributor to any assessment of net public benefit would be the detriment caused by the lessening of competition. In this case, clearly the expected benefits identified by NECG as resulting from the proposed alliance would not outweigh the expected costs. The key factor that may lessen that detriment caused by the lessening of competition would be the prospect of entry - providing that entry were on a scale that would effectively replace the rivalry that the proposed alliance is designed to destroy.

## Appendix 1

This Appendix supplements section 4 of this report, and provides a more technical explanation of what we understand to be the main mechanisms behind the Cournot model in the NECG Report. The three key effects driving the price and output impact results in Table 10 and 11 of the NECG Report, are that of Cournot competition, changes in marginal costs, and changes in capacity.

### A1.1. Effects of Cournot competition

Without any changes to capacity or marginal costs between the 'with' and 'without' scenarios, the Cournot model would show that the output with the proposed alliance ( $Q_w$ ) will be lower than the equilibrium output without the proposed alliance ( $Q_{wo}$ ) and the price with the proposed alliance ( $P_w$ ) would be higher than without ( $P_{wo}$ ) for those routes on which Qantas and ANZ fly in the 'without' scenario. These price and quantity effects reflect a lowering of competition, or an increase in concentration in the market.

Let  $Q_c$  represent the extreme case of output under perfect competition. The other extreme output of pure monopoly will equal to  $Q_c/2$  (in the case of a linear demand curve). The proportion of  $Q_c$  produced for cases between these two extremes will depend on market concentration as measured by the Hirschman-Herfindahl Index (HHI). So it may be supposed that the effect of the proposed alliance will be to reduce output as a proportion of  $Q_c$  from  $y$  to  $x$ .

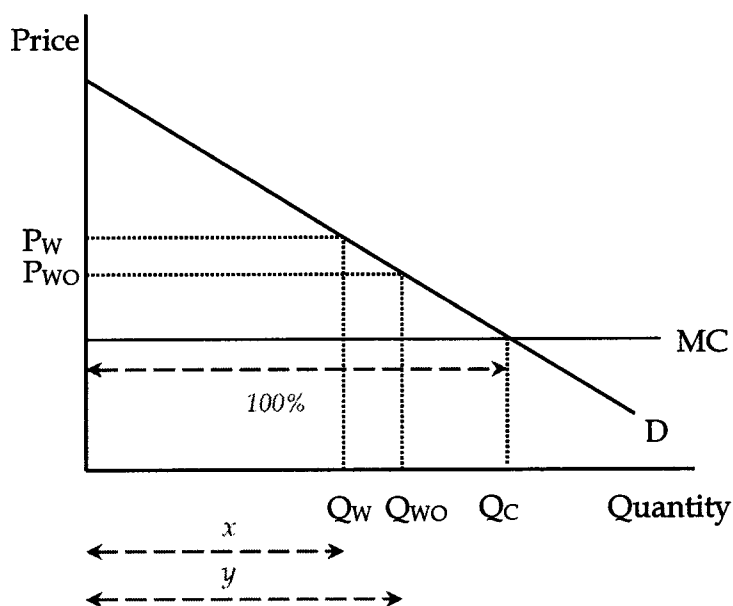
Where,

$x = Q_w$  as a % of  $Q_c$  (the output where demand equals marginal cost).

$y = Q_{wo}$  as a % of  $Q_c$  (the output where demand equals marginal cost).

As illustrated in Figure 1, the price with the proposed alliance ( $P_w$ ) will unambiguously be higher than without the proposed alliance ( $P_{wo}$ ).

**Figure 1: Effect of Cournot Competition**



## A1.2. Effects of changes in marginal costs

To illustrate the effects of changes in marginal costs in the standard Cournot model, assume that marginal costs do not vary across firms. A fall in marginal costs would unambiguously reduce prices and increase output. An increase in marginal costs would have the opposite effects.

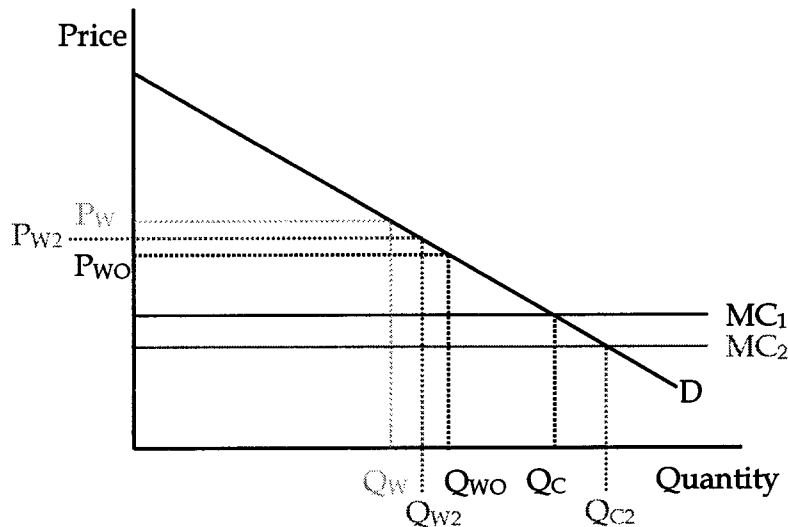
In comparing the 'with' and 'without' scenarios, a rise in marginal costs will only exacerbate the increase in price and the reduction in output as a result of the proposed alliance. Whether a fall in the marginal costs with the proposed alliance will generate a lower price and higher output than without the proposed alliance depends on the magnitude of the change in marginal costs compared with the magnitude of the Cournot effect.

In Figure 2 we depict a reduction in marginal costs from  $MC_1$  to  $MC_2$  which results in a lower price ( $P_{W2}$ ) and higher output ( $Q_{W2}$ ). A greater reduction in marginal costs may possibly push prices below, and output above, that of the base case without the proposed alliance ( $P_{WO}$  and  $Q_{WO}$ ).





**Figure 2: Effect of a Fall in Marginal Costs**



### **A1.3. Effects of changes in capacity**

As depicted in Figure 3, the NECG modelling suggests that a reduction in capacity, as the markets move from the 'without' to the 'with' scenarios, will tend to reduce both prices and output. So, to the extent that the proposed alliance is assumed to reduce the amount of excess capacity on any particular route, it will tend to supplement the reduction in output caused by the Cournot effect; but it will tend to counteract the Cournotesque price effect.

That is, the reduction in capacity caused by the proposed alliance has the effect, in the NECG modelling, of limiting the extent to which the proposed alliance is predicted to raise prices. Although the price ( $P_{W3}$ ) resulting from the combined effects of a capacity reduction and the Cournot effect will always be lower than the price which would result from the Cournot effect only ( $P_W$ ),  $P_{W3}$  may be higher than, equal to, or lower than  $P_{W0}$ , depending on the size of the fall in demand. Thus, the final price impact of the proposed alliance, resulting from a combination of Cournot competition and a capacity reduction on a particular route, can be positive, zero, or negative, relative to the 'without' scenario.

**Figure 3: Effect of a Capacity Reduction (Demand Reduction)**

