Modeling Issues

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Modeling Principles:
All Models are Simplifications
Whose Design Should Meet These Criteria

- Balance simplicity and completeness
- Capture key elements of markets
- Grounded to reality with available data
- Apply economic principles
- Robustness – pass sensitivity checks
- Transparency
- Feasibility of implementation
- Avoidance of bias

Decision-Makers Should Accord Weight to a Model Depending on How Apt Is Its Design for the Purpose of Illuminating the Key Issues

Elements of Model Design In This Record

- Relevant market – scope and granularity – how many routes?

- The market participants considered – are competitors left out?

- Objectives of firms in market – profit vs. revenue maximization?

- Nature of competitive interactions among participants ----- Cournot models – are standard, have limitations, but all employ here

- Entrants – in or out and how much – modeled or preset?

More Elements of Model Design In This Record

- Market demand – VBA vs FSA products – price elasticity of demand – business vs tourist – no key controversy here

- Calibration of the models' parameters (particularly marginal costs of each firm) – deduce from what data? capacity shares from base, counterfactual, factual scenarios?

- Assess impact of alliance – all agree on comparing cases without and with the alliance with respect to impacts on NZ consumer and producer welfare

- Treatment of transfer of 22.5% of ANZ profits and one-time $550 million payment – do they balance out? is one ignored?

- Treatment of efficiencies from alliance – inside the model or separate? All here separate for ease of calculations …

The Various Alternative Models Of the Proposed Alliance by Professor Gillen, Professor Hazledine and NECG Differ in Many of the Design Elements

- Some of these elements in my view render their models inapplicable to the policy decision on the alliance.

The Models of Both
Prof. Gillen and Prof. Hazledine Omit All Current Competitors of Qantas and Air New Zealand (ANZ)

- The **designs** of the models of Professor Gillen and Hazledine omit all current competitors of the parties on the trans-Tasman and domestic New Zealand routes (no fifth freedom carriers and Origin Pacific).

- Clearly biases results against the proposed alliance, since including actual competitors in the model would reduce potential competitive harms.

The Models of Both
Prof. Gillen and Prof. Hazledine Fail to Include Analysis of VBA Entry

- The models of both Professor Gillen and Hazledine take the output of an entrant VBA to be pre-set, rather than analyzed by the model. (In just one factual scenario (F2), Professor Hazledine's model does allow the model of competitive interactions to determine VBA output.)

- For decisions where the impact of competition from entrants is important, such a design greatly limits the value of the model. Its answer depends on what is pre-set about entry, and on its endemic unresponsiveness, rather than the analysis of the model.

The Models of Prof. Gillen and Hazledine Are Calibrated with Incorrect Market Shares in ways that Impart Bias

- Professor Gillen assumes that Qantas and ANZ have symmetric costs, while Professor Hazledine assumes that ANZ's costs are lower than Qantas's costs.

- These assumptions produce *assumed* market shares of 50 percent for Qantas and 50 percent for ANZ in Professor Gillen's model, and a 60 percent market share for ANZ and 40 percent market share for Qantas on the trans-Tasman routes in Professor Hazledine's model.

- In reality, ANZ has a lower share on the trans-Tasman routes than does Qantas.

- In Professor Gillen's model, the *assumed* symmetric costs lead to excessively high fare increase predictions in the factual case.

- In Professor Hazledine's model, the *assumed* cost advantage for ANZ leads to result that Qantas experiences a larger profit gain than does ANZ as a result of the proposed alliance. However, if Professor Hazledine used the *actual* data, he would have found the opposite result and the F2 vs CF2 comparison would have shown the alliance beneficial to NZ interests.

The Models of Professors Gillen and Hazledine Aggregate Routes in ways that Impart Bias

- Both Professor Gillen and Professor Hazledine aggregate market shares across routes into just two market shares: one for the trans-Tasman routes and one for the domestic New Zealand routes.

- This tends to result in an overstatement of the competitive effects of the proposed alliance.

- Such aggregation does not improve the ability of the model to capture network effects.

Professor Gillen's Model Assumes that Qantas and ANZ Seek to Maximize Revenue in the Counterfactual and Profits in the Factual

- This is an unusual assumption for such a model

- This assumed difference in objectives of the airlines systematically biases against the alliance any calculations based on the model. The objective of revenue maximization leads to lower prices and more output than the objective of profit maximization, *so the assumption drives the results on detriment.*

The NECG Model Is Calibrated to the Parties' Factual and Unconfidential Counterfactual

- The marginal cost parameters of the NECG model are calibrated from the market shares of the factual and unconfidential counterfactual assembled from the views of Qantas and ANZ.

- This makes the parameters different in the two cases.

- It grounds the model transparently in the business judgments of the parties.

- It provides a quantification of alliance impacts given those judgments.

- Any controversy over those judgments can spread to the model.

- The NECG sensitivity analysis shows the results are robust:

- Similar conclusions when the model is calibrated to the base case with unchanging marginal costs, base case price, and assumption that VBA marginal cost is 10% higher than alliance's.

Conclusions

- NECG model
  - □ Uses clear and transparent assumptions
  - □ Robust to controversy over calibration and consistent with facts, route by route, and economic theory.
  - □ Incorporates the key elements of competition on routes affected by the proposed alliance
- Professor Gillen's and Professor Hazledine's models
  - □ Do not capture and analyze elements of markets key to decision on the alliance
  - □ Predicated on assumptions that are inconsistent with facts and economics in ways that bias the results against alliance.