Never a Sporting Chance: Bundling Red Herrings in the Sky-Vodafone Merger Analysis

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THE PRESENTATION

- the decision
- what is wrong with the decision?
  - bundles were (largely) irrelevant
  - but even if they were relevant:
    - the wrong markets were analysed
    - economic models used to analyse them were not well-matched to case facts
- an alternative analytical approach, allowing for
  - market complexities when bundles are involved
  - empirical consideration of the effects of products that do not yet exist

THE DECISION: DECLINED

- Commission could not exclude:
  - "the real chance that the merged entity would leverage its market power over premium live sports content, foreclosing competition in the relevant broadband and mobile service markets in the long term" (para x2, p7)
  - "a real chance that it would have the incentive to use its market power over premium sports rights to supply bundles of pay TV, broadband and mobile services with which rival TSPs would be unable to effectively compete" (para x10, p8)

THE PRESUMED FORECLOSURE STRATEGY

- rivals unable to match deep bundling discounts and offers
  - "since the merged entity would likely continue to control all New Zealand premium live sports rights, for which there is no close substitute, a significant number of customers would be foreclosed to rival TSPs" (para x19, p 9)
- margin squeeze
  - smaller total pool of customers, loss of scale for at least one rival, exits market (para x23, p 10)
- reduce rivals' ability and incentive to invest and innovate => lessening competition
- merged entity could "raise or maintain prices at levels higher than would prevail absent the merger" (para x24, p 10)
- bundles make customers 'sticky' so militate against re-entry

COMMISSION SAYS THE MERGED FIRM MAY

- offer current and potential Sky Sport subscribers existing and new "bundles of pay TV, broadband and mobile services that they would otherwise be unable to acquire". New integrated bundles could include "exclusive content and 'zero-rated' Sky Sport viewing over mobile" (para x13, p 8);
- "structure the relative price of its bundles such that consumers would not be able to match the offer by subscribing, separately, to Sky Sport, and broadband and/or mobile services from a rival TSP", by discounting bundles and/or increasing the relative price of stand-alone Sky Sport (para x14, p 8); and
- set the terms on which rival TSPs could re-sell Sky Sport, thus preventing them "from creating bundles using Sky Sport that could effectively compete with the merged entity's bundles" (para x14, p 8).

CONTRIBUTING FACTORS

- the roll-out of the government–subsidised Ultra-Fast Fibre Broadband (UFB) network
  - "presents a significant opportunity for Vodafone (and other TSPs) to attract new customers" due to the increased number of consumers 'in play' as they switch from copper to fibre fixed line broadband (para x16, p 9);
- "both the availability of UFB infrastructure and multicast service eases the way for consumers to increase their viewing of media over broadband" (para 75, p 25); and
- increasing mobile data consumption as more content is viewed over mobile networks
  - "the convergence between content and mobile services is likely to increase the attraction of the merged entity's bundles, particularly as mobile data prices continue to fall" (para x17, p 9).

BUT …..

- **BROADBAND AND CONTENT BUNDLES HAVE BEEN OFFERED SINCE 2009!**
- bundling by contractual alliance
  - a merger is not necessary for a strategic foreclosure strategy to be adopted
- Sky
  - wholesales its content to Vodafone for transmission over its cable network
  - wholesales its own content and infrastructure bundles for resale with broadband (and presumably any other products)
  - only Vodafone resells Sky content
- so foreclosure (if likely) has already occurred

EVIDENCE? (i)

- fewer than 40% of NZ households purchase Sky
  - subscriber numbers dropping as CDN market becomes more intensely competitive
- the vast majority of Sky customers (NERA, 2016)
  - buy the content stand-alone
  - purchase their broadband connections from Vodafone's rivals
- maybe Sky bundles make Vodafone customers 'sticky'
  - Vodafone's market share stable (~29%) over UFB rollout (Spark's has fallen by around 10%: from 50% to 45% between 2013/4 and 2015/6)
  - Spark now aggressively marketing bundles with Netflix

EVIDENCE? (ii)

- 60% of households purchased broadband in a bundle in 2015/6 (less than 40% in 2009/10)
- but Vodafone's share of the fixed broadband market has remained remarkably constant over the same period (less than 30%)

Commerce Commission Annual Telecommunications Monitoring Reports

Whatever is driving increased broadband bundle purchases, it seems unlikely to be Vodafone's bundled sales of Sky Sport content

FALLING AT THE FIRST HURDLE

MARGINAL EFFECTS OF VERTICAL INTEGRATION

The questions the Commerce Commission should have asked:

- what are the cost savings from the merger?
- will common ownership (alone) increase the likelihood (relative to contractual bundling) of
  - increases in stand-alone content prices?
  - increases in stand-alone broadband prices?
- noting that deeper bundle discounts mostly generate large increases in sales and total consumer welfare
  - must be traded off against the expected losses to consumers (and not to competitors)

THE FORM OF BUNDLING MATTERS

- Sky and Vodafone have offered ***mixed bundles***
- most Sky content purchasers buy content separate from broadband
  - raising stand-alone content prices will cannibalise its biggest customer segment (regardless of integration)
- Vodafone cannot unilaterally increase the stand-alone broadband prices (fixed or mobile) without losing its non-Sky customers
  - raising stand-alone broadband prices will cannibalise its biggest customer segment (regardless of integration)
- deeper bundle discounts may attract new customers
  - but revenues sacrificed on existing customers
  - unbundled fibre or copper costs for new fixed broadband subscribers are not trivial (few scale economies here)

COLLATERAL DAMAGE

FORECLOSURE RISK OVERSTATED (i)

Common foreclosure models assume ***TYING*** (Whinston, 1990) not ***MIXED BUNDLING*** (Prince & Greenstein, 2014)

- two firms, 1 & 2; upstream product A has monopoly; downstream products B1, B2 competitively supplied
  - firm 1 ties its products (A1B1), crowds B2 from market
- Sky sport is monopoly; inelastic demand (for its customers only)
  - not an essential good – more broadband consumers ***DO NOT*** buy Sky Sport than do buy it
  - foreclosure risk confined to a subset of broadband consumers only
    - market segmented (rivals not foreclosed from the ***broadband*** market, just the ***Sky/broadband*** market, and only if products tied)
  - tying (if applied) can be adequately sanctioned ex post

FORECLOSURE RISK OVERSTATED (ii)

- most foreclosure models with mixed bundling assume perfect complementarity, duopolistic competition, linear demand, symmetric substitutability between bundles, saturated markets (Choi, 2008; Mialon, 2014)
  - only products A1B1, A1B2, A2B1, A2B2
  - two effects to be traded off
    - 'vertical' benefits of reduced price of bundle A1B1
    - 'horizontal' costs of raising prices of components in 'mix-and-match' systems A1B2, A2B1
  - if little effective competition between components (A1&A2; B1&B2) then only the vertical effects matter – foreclosure unlikely and merger is welfare-enhancing
  - with high degrees of substitutability and intense competition amongst systems, then foreclosure is possible

A POOR MATCH WITH CASE FACTS

- ~~perfect complementarity~~
  - Sky content can be consumed without a broadband connection (satellite)
  - broadband connections can be consumed without buying a content package of any sort
  - consumers may purchase multiple content packages, multiple broadband connections (fixed, mobile)
- ~~duopoly~~
  - multiple suppliers of broadband, content packages
- ~~linear demand, symmetrical substitutability~~
- ~~substitutabiliy, intense competition between content packages~~
  - but maybe between broadband suppliers
- ~~saturated markets~~
  - UFB market is far from saturated
  - new content varieties continually being brought to market

FORECLOSURE RISK OVERSTATED (iii)

Relaxing the assumptions makes foreclosure much less likely

- complementarity and substitutability
  - bundling and merger order matter (Gans & King, 2006, Mantovani & Vandekerchove, 2016)
    - merging after contractual bundling leads to both pairs merging and lowering welfare relative to unbundling; worst case for welfare is when one pair merges but the other pair does NOT follow
  - pure bundling more profitable if substitutability of a single product is low; product differentiation makes mixed bundling unprofitable (Mialon, 2014)
- duopoly (Choi, 2006, Mialon, 2014)
  - adding more firms in component markets reduces foreclosure probability
- market saturation (Mialon, 2014)
  - expanding market makes mixed bundling more profitable; as increased profit comes from lower prices and increased market coverage, then foreclosure is unlikely
  - if demand increase unlikely, then pure bundling softens competition and a strategic alliance is preferred to a merger

IT'S MESSY, COMPLICATED, CASE-SPECIFIC

THE MARKET WAS WRONGLY DEFINED

- not the market for single products (broadband, sport content)
- relevant market is market for ***bundles***
  - with mixed bundling of four products there are eight possible substitutes
    - A1Ø, A2Ø, ØB1, ØB2, A1B1, A1B2, A2B1, A2B2
    - a change in the price of any one may have an effect on demand for the other seven

ECONOMETRIC ESTIMATION

- technically feasible (Pereira & Vareda, 2013)
- relevant market ***can*** be defined using an SSNIP test
  - providing sufficient data can be found to estimate own- and cross-elasticities for all eight choices (36 relationships) for a simple 2 upstream/2 downstream case, using a discrete-choice model
- but what if the proposed bundle has not yet been offered?

AN ALTERNATIVE APPROACH: SIMULATION

- supplements a merger or competition analysis
- allows for
  - inclusion of case-specific structural elements
  - customisation to local case facts
  - sensitivity analysis of key assumptions
- analysis of bundles not yet offered becomes feasible
- can become part of ongoing market monitoring processes
  - e.g. NZ Commerce Commission annual reports

ADVANTAGES

- modelling consumer demand (willingness-to-pay) for components can capture the effects of
  - different distributions for different products (non-linear)
  - different degrees of complementarity for different pairings
  - different degrees and nature of correlation of demand for different products
  - different customer segments with different underlying demand characteristics
- outcomes under different forms of bundling can be examined
  - pure, mixed, bundle-size pricing, component pricing (no bundling)
- the effects of different structural options can be evaluated
  - levels of competitive intensity for different products and bundles
  - regulatory choices

DISADVANTAGES

- can be
  - data processing-intensive
  - subjective
- but better than pure guesswork

AN APPLICATION: SKY/VODAFONE

- Howell & Potgieter (2017; 2017a), based on Chen & Riordan (2013)
- 3-product bundling leading to 7 discrete bundle choices
  - basic content, premium content, broadband
  - content monopolist seeks to maximise revenue
  - calculate optimal prices, then evaluate effects on profit, consumer surplus and total welfare under different regulatory choices
  - optimal prices give worst-case scenario – assumes market power exists and is maximally exploited
- calibrating model
  - WTP for basic content normally distributed ($\mu = 50$, $\sigma = 20$)
  - WTP for premium independently Gaussian ($\mu = 30$, $\sigma = 10$)
  - broadband WTP independently Poisson ($\mu = 90$, $\sigma = 40$)

500 INSTANCES, 10 REPRESENTATIVE CONSUMERS

- optimal component prices considerably higher than observed prices, bundle prices lower

With optimal prices

- mean profit is
  - highest for mixed bundling (MB)
  - lowest for component pricing (CP)
  - bundle-size pricing (BSP) lies somewhere between the two but with a lower worst-case profit than either of the other scenarios
- mean total welfare is
  - highest in the BSP scenario
  - lowest in CP
  - but there is a somewhat wider spread for CP.
- mean consumer welfare is also highest for the case BSP

	MB	CP	BSP
Profit			
High	1530.0	1320.0	1480.0
Mean	1274.7	1136.2	1201.3
Low	1100.0	1020.0	870.0
Welfare	MB	CP	BSP
High	1823.0	1746.0	1861.0
Mean	1624.9	1517.7	1631.5
Low	1383.0	1348.0	1325.0
Consumer surplus	MB	CP	BSP
High	522.0	519.0	649.0
Mean	350.2	381.5	430.2
Low	88.0	276.0	241.0

IMPLICATIONS

- supports contention that contractual bundling has not been used anti-competitively to foreclose rivals in the NZ context
- contractual bundling has likely increased all of profits, consumer and total welfare
- even if the merged firm/contracting entities could exert market power, the form of bundling adopted may be more important for consumer welfare than its presence or absence

FURTHER FINDINGS FROM SIMULATION

- multiple price vectors yield the same profit
- price regulation can have widely-varying effects
  - should bundle or component prices be regulated?
  - and what are the likely effects?
- Example (i)
  - two sets of bundle prices ($130, $150) yield the same profit
  - regulating bundle price at $130 increases consumer and total welfare but has no effect on profitability
  - but this is an unstable solution, especially if the regulator is not perfectly informed about consumer preferences

Table 3: Setting the triple-play price, other prices unchanged.

BBBP	Profit	Consumer surplus	Total welfare
125	1250	479	1729
130	1300	429	1729
135	1215	384	1599
140	1220	343	1563
150	1300	263	1563
152	1316	247	1563
155	1160	228	1388
160	1190	198	1388
170	1200	157	1357
180	1025	146	1171
200	1025	146	1171

EXAMPLE (II)

- setting component prices unwittingly can have large effects on profit and welfare

Table 4: 50% cut in the broadband price with BBBP priced at 130

BC	PC	BPC	BB	BBC	BBP	BBBP	Profit	CS	TW
75	50	100	120	130	125	130	1300	429	1729
75	50	100	60	130	125	130	1020	452	1472

Table 5: 50% cut in the broadband price with BBBP priced at 150

BC	PC	BPC	BB	BBC	BBP	BBBP	Profit	CS	TW
75	50	100	120	145	130	150	1300	263	1563
75	50	100	60	145	130	150	730	377	1107

EARLY STAGES YET

- more experiments, calibration to different markets
  - different degrees of competition in broadband and content markets
  - different degrees of product complementarity
  - various demand correlations using different copula families

- simulation likely to provide many more interesting insights to inform merger and competition case analysis in cases where bundling is a feature

THANK YOU

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