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Competition Commission SINGAPORE

Post-Enforcement Evaluation Methodologies and Indicative Findings

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POST-ENFORCEMENT EVALUATION - METHODOLOGIES AND INDICATIVE FINDINGS

Aim

1. This is a report setting out some indicative findings of the impact of CCS's infringement decisions on three cases, and a description of several methodologies that may be used in future to make post-enforcement evaluations.

Background

2. Established since January 2006, the Competition Commission of Singapore ("CCS") has dealt with over 200 cases, and issued 8 infringement decisions. As the legal process for these cases has since concluded, CCS undertook a post-enforcement evaluation to assess the impact of our interventions on the affected markets in Singapore.

3. CCS engaged Professor Stephen Davies[1] to develop a framework to evaluate future interventions, and also to carry out an informal independent evaluation of one selected enforcement case from each of the three core areas of competition enforcement; namely merger control, abuse of dominance, and cartel enforcement. In doing so, CCS hopes to evaluate the impact of past interventions, improve on the robustness of our future decisions and clarify our value to our stakeholders such as consumers and the business community in Singapore.

4. Enclosed is Prof. Davies' summary of the various methodologies that the CCS may use for future post-enforcement evaluations, and the key findings from his assessment of two infringement cases and one merger decision.

[1] Stephen Davies is Professor of Economics and one of the four founders of the ESRC Centre for Competition Policy at the University of East Anglia. He is an Academic Adviser to the UK Office of Fair Trading, and has undertaken research for, and advised various other competition and governmental bodies in both the UK and overseas. More details are available at http://www.uea.ac.uk/economics/people/All+People/Academic/sdavies#info.

SUMMARY REPORT BY PROFESSOR STEPHEN DAVIES

Part I – Evaluation Methodologies

1. When discussing alternative methodologies which can be used for assessing the impact of policy interventions, the following five broad alternatives are typically considered:

a. **Simulation** – This quantitative methodology entails formally or informally modelling the nature of competition in a market, calibrating the parameters using real world information and then assessing how the intervention will change the equilibrium relative to what would have happened without the intervention. In academic literature, simulation would typically be conducted with 'full-fledged' models involving high level of econometric sophistication. However, when used by competition authorities, simulation is more often 'back-of-envelope' calculation based on simplified models and calibrated with typical values for parameters such as demand elasticity.

b. **Event Studies** – This method utilises the financial market's assessment of the impact of an intervention. The benchmark events used in this method are the initial announcement of the merger or the competition authority's announcement of investigation and the subsequent decision. The effects are quantified by comparing movements in stock prices of both the parties and their immediate rivals with movements in more general stock price indices.

c. **Difference-in-differences ("DID")** – DID is a quasi-experimental econometric technique involving a comparison of prices before and after an event relative to some other real world control, i.e. a similar market without the event or within the same market for firms not involved in the event.

d. **Before-After** – This methodology is a simple comparison of difference between the situation before an event and the effects thereafter. For mergers, the method is a simple comparison of prices before the merger with prices after the merger. For cartels, the method is to estimate the extent of cartel overcharge by comparing prices within the cartel period with pre- or post-cartel prices. In order to control for exogenous factors during the assessment period, the analysis should ideally include other variables such as demand growth, inflation, capacity utilisation, etc.

e. **Qualitative Surveys** – This is a qualitative method that involves follow-up surveys of the parties, competitors, suppliers and customer based on indepth interviews and/or questionnaires. It is quite common for competition authorities to undertake or commission reviews of their previous cases (especially mergers) based on follow-up questionnaires and/or interviews with the interested parties.

2. With the exception of (e), the other four methodologies are quantitative in nature. Quantitative methodologies are data-intensive and require a sufficient amount of time to have passed in order to be able to better assess the full impact of any intervention.

Recommendations for future post-enforcement evaluation

3. In order to ensure that the results from such post evaluation studies are robust, it is suggested that the CCS consider the following when undertaking future evaluation:

a. CCS should evaluate cases where at least two to three years have elapsed since the intervention. Two years may be sufficient if there is already evidence of significant market changes in the first two years after intervention. If not, at least three years would be preferred, especially in cases where new entry might be expected for example in abuse cases.

b. As a default when cases are considered for potential evaluation, it should be assumed that DID or Before-After methodologies will probably be used. As such, a pilot stage should first be conducted in order to ascertain whether there are sufficient data sources and an appropriate comparator market available. At times, this may require CCS to consider these issues during the advanced stages of an investigation, where an infringement decision is likely to be made.

c. Although simulation is less likely, it should not be automatically avoided. In a pilot study, it would be sensible to ascertain from previous literature whether the market concerned is suitable in principle for simulation. At this stage, back-of-envelope simulation could be attempted.

d. CCS should avoid selecting cases that are ‘easy’ to assess. Some cases may involve markets that are intrinsically easier to evaluate than others. For instance, with commoditised or homogenous products, price data is usually easier to access. Other markets involving vertical product differentiation, significant innovation, or two-sided in nature will usually present greater data problems. Predominantly opting for the ‘easy’ markets would run the risk of sample selection bias.

Part II – Assessment of Selected Cases

4. At the request of CCS, an informal evaluation was conducted of a selected case under each of the three provisions under the Competition Act. These cases are (i) merger of Samwoh and Highway (merger control), (ii) SISTIC (abuse of dominance) and (iii) Express Bus Agencies Association (cartel enforcement).[2]

Qualification on the feasibility of methodologies for the study

5. To carry out a holistic assessment, it would be ideal to study each case using both quantitative and qualitative methods. While qualitative methods would be useful to explore issues where quantification is more difficult, either conceptually or because of data unavailability, it lacks the rigour of quantitative assessment and is, therefore, more subjective.

6. It is noted that none of the identified cases was strictly suitable for a rigorous quantitative assessment in accordance to the methodologies described above. This is because the cases were too recent compared to what would be considered ideal for an ex-post evaluation (see table below).

Case	Date of CCS's decision	Type of cases
Samwoh/Highway	January 2011	Merger clearance
Express Bus Agencies Association	November 2009	Cartel infringement decision, but appealed. Competition Appeal Board ("CAB") decision delivered on March 2011
SISTIC	June 2010	Abuse of a dominant position infringement decision, but appealed. CAB decision delivered on May 2012

7. A full evaluation should cover a sufficiently long time period to observe the longer-run as well as the short-run impact of the intervention. For example, the impact of an intervention against abuse may only be felt once subsequent new firms have entered and established themselves in the market. Similarly, the full effect on the behaviour of cartel members may sometimes occur a number of years after the cartel has ended. Indeed, DID and Before-After methodologies can only be applied rigorously after collecting sufficient

[2] Details of these cases and grounds of CCS' decisions can be found on CCS' website - http://www.ccs.gov.sg/content/ccs/en/Public-Register-and-Consultation/Public-Register.html

time series data before, during and after the intervention (even two years worth of monthly data may not be sufficient for a proper assessment).

8. The second challenge with respect to the application of the methodologies is the difficulties in data collection. In many markets, there is an absence of existing published data sources covering a number of years which CCS could tap. This is especially true for the identified cases which involve relatively niche and small markets. Without available data which could be obtained easily, Prof. Davies was unable to carry out an assessment based on the quantitative methodologies. The table below provides a summary of the feasibility of applying each methodology across the cases.

Case	Simulation	Event study	DID	Before-After
Samwoh/ Highway	Theoretically feasible but data & time constraints make it impracticable	All firms (except one) are not listed	Malaysia as comparator, but judged infeasible[3]	Basic comparison was possible
Express Bus Agencies Association	Theoretically feasible: monopolistic competition with limited product differentiation. But too demanding on time/data	All firms are not listed	Malaysian bus companies or public buses are possible comparators. However, both were rejected as impracticable by CCS staff[4]	Initial thought was that this was impossible, further investigation revealed a limited version could be applied
SISTIC	Technically complex and insufficient data with which to calibrate	All firms are not listed	Insufficient post-intervention data	Insufficient post-intervention data

9. Due to the above-mentioned challenges, the assessments were mainly qualitative, although for some cases (such as Samwoh/Highway and Express Bus Agencies Association) limited data was available such that simple Before-After assessment could be carried out. The assessment for SISTIC however was mainly qualitative and based on interviews with market players.

[3] A DID study was deemed not feasible as it would be difficult in terms of time and cost to obtain detailed data of a suitable "control group" of companies in Malaysia.

[4] This is due to the difficulty in obtaining data of Malaysia bus companies. In addition, public bus services were also ruled out as they are not likely to be competitors; they do not provide express services and do not operate identical routes.

Indicative findings from post-enforcement evaluation

(i) The Samwoh/Highway merger

Case background

10. The Samwoh/Highway merger occurred in January 2009 but was cleared by CCS in January 2011. Samwoh was the largest asphalt supplier while Highway was one of its three rivals. The asphalt market can be generally described within a three-tier vertical chain. Asphalt supply is a Tier 3 segment. This segment supplies to the asphalt laying industry (Tier 2) which is one of the major services procured by civil engineering firms (Tier 1) which tender for projects by government agencies. Samwoh is integrated forward in all three tiers.

11. As a result of the merger, the number of asphalt suppliers was reduced from four to three. Besides Samwoh/Highway, the other two suppliers are Ley Choon and Yun Onn. For the merger assessment, CCS judged that the transaction would likely not lead to a significant lessening of competition on the following basis:

a. Rival asphalt supplier in Tier 3 had sufficient capacity to discipline Samwoh/Highway against price increases post-merger;
b. There would be little barriers of entry or no foreclosure relating to asphalt supply market;
c. Tier 1 organisations have considerable buyer power because of their scale. The effects on Tier 1 competition were unlikely because there were at least four bidders for most contracts.

Methodology

12. As mentioned above, a detailed quantitative ex-post evaluation using the DID method was impracticable because of lack of appropriate data, especially on comparator markets. However, a basic before-after comparison was possible and this provided some corroborating evidence for the qualitative evidence gathered in interviews. Nonetheless, this was still a largely qualitative assessment, based on extensive interviews of all interested parties such as the three asphalt suppliers and their customers.

Findings and Assessment

13. The evaluation found no discernible adverse market impact from the merger. Particularly, there was no evidence that price-cost margins have risen post-merger[5] for the largest player in the market. While Samwoh/Highway and the next largest firm in the industry [✂] appeared to have increased their market shares at the expense of the only remaining firm, there were no findings to suggest that the two companies have contracted their production capacities or supply so as to raise price. In fact, one of Samwoh/Highway's competitors' Ley Choon has commissioned a second asphalt plant in July 2013, which will triple its production capacity. However, as the third player [✂] continues to weaken, it is likely that the asphalt supply market will tend towards a largely duopolistic structure in the future.

14. The prevailing opinion among market players is that entry barriers into the asphalt supply market are high as the process to obtain regulatory approval for new asphalt manufacturing plants is lengthy and stringent. In addition, there is a perception among a number of market participants that any entry by existing market players in the asphalt laying business may provoke retaliation by incumbent suppliers. Incumbent suppliers could withhold supplies to the laying activities of the new entrant whilst its new asphalt plant is being constructed.[6] Such perception may have the effect of deterring companies from entering the asphalt supply market.

Conclusion

15. On balance, CCS's analysis and decision is found to be generally sound at the time of the assessment. However, based on interviews with different market participants, it is noted that CCS's implicit assumption of low entry barriers is likely to have been overstated. That said, the assessment that barriers to expansion for existing players in the industry are low appears to have been borne out. Notwithstanding, it is unlikely that this would have led to a different decision. However, this issue may have been considered more rigorously by CCS as part of the assessment. Looking ahead, given the increasingly duopolistic nature of the market and the high barriers of entry, it is recommended that CCS continue to monitor the market closely with respect to any future mergers or instances of abuse of dominance through foreclosing behaviour.

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[5] It should be noted the price data were provided by Samwoh-Highway are not likely to have been externally audited.

[6] While there were some claims by Tier 1 and 2 companies that suppliers do sometimes, or could, engage in foreclosure, such claims are however not universal.

(ii) SISTIC

Case Background

16. In June 2010, CCS found that SISTIC, a ticketing agent, had entered into a series of exclusive agreements with venue providers such as Singapore Indoor Stadium ("SIS") and The Esplanade Co. Ltd ("TECL") requiring that all events held at their venues use SISTIC as the sole ticketing service provider. There were also 17 other agreements requiring event promoters to use SISTIC as their sole provider.

17. CCS issued an infringement decision in June 2010 against SISTIC for abuse of dominance. CCS was of the position that the exclusive agreement had the effect of foreclosing the market to rival ticketing service providers as it prevented competitors from gaining progressive foothold in the market and that SISTIC's objective justifications for the agreements were not defensible. SISTIC was required to remove the exclusivity clauses from its contracts. SISTIC appealed to the CAB but CAB dismissed SISTIC's appeal against liability in 2012.

Methodology

18. The methodology employed for this case was purely qualitative, with most interviews being with rivals, new entrants and event promoters. Simulation would be difficult without access to a considerable amount of data and estimations of demand elasticities. An event study is also not possible because none of the ticketing services providers is quoted on the stock exchange. A formal DID is also not suitable due to lack of data. Further, it is too soon do a before-after comparison or DID analysis because the effects of removing exclusive agreements would likely only be felt after more time has passed.

Findings and Assessment

19. The key findings are that SISTIC's smaller rivals have increased their market share[7] and some new entry[8] has occurred. However, it was widely acknowledged that SISTIC continues to benefit from its incumbency, first-mover advantages, and this is reinforced by continuing brand loyalty from promoters. This is however to be expected and may be inevitable in any market where one firm has enjoyed a dominant positive for many years and is not an indication that CCS's intervention has been ineffective. Rather, the full benefits may only be felt with the passage of time or through the growth and consolidation of rival agents.

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[7] [✂] increased market share from [1-10]% to [11-20]%.

[8] [✂] mentioned that [✂] is a new entrant. PeaTiX from Japan is another new entrant that has entered the Singapore market recently.

20. In terms of prices, there has been no evidence that CCS's intervention had any impact on the fees charged by SISTIC. The price schedule that SISTIC charged as of 15 May 2013 has not changed from that during the period of abuse on 8 May 2010.[9] There is also no real evidence that the intervention per se had led to a speeding up in innovation. Even though SISTIC had introduced a mobile application[10] that would allow users to purchase tickets via mobile phones after the intervention, there is no evidence to suggest that this innovation could be attributed to CCS's intervention to remove SISTIC's exclusivity restrictions.

Conclusion

21. Based on interviews with selected market participants, it would seem that CCS's enforcement had led to some initial positive outcomes thus far for the industry. However, these outcomes should be qualified as not enough time had passed to assess whether new entrants would be able to remain viable. It might be possible that new entrants would exit the industry if they are unable to compete with SISTIC even after exclusivity was removed. In addition, it is noted that one event promoter had questioned whether the vertical ownership linkage between SISTIC and the main venue operators, such as SIS and TECL, would create a vested interest in how ticketing agents are chosen.

(iii) Express Bus Agencies Association Cartel

Case Background

22. This case involved a cartel of 13 bus companies which operated express bus services between Singapore and Malaysia. Between 1 January 2006 and 24 July 2008, these firms fixed prices on these services using two agreements - a minimum selling price ("MSP") and a fuel and insurance surcharge ("FIC"). The CCS concluded that the parties had infringed the Competition Act because the parties had agreed to fix prices. Given robust legal evidence of price fixing, there was no need for the CCS to make assumptions to reach its decision.

[9] Retrieved from the Internet Archive on 15 May 2013: http://web.archive.org/web/20100508113749/http://www.sistic.com.sg/page/FAQ.html#41

[10] Please see link for mobile application: http://www.sistic.com.sg/portal/dt?retry=1&dt.windowProvider.targetPortletChannel=JSPTabContainer/pStaticPage&dt.provider=PortletWindowProcessChannel&dt.windowProvider.currentChannelMode=VIEW&dt.isPortletRequest=true&dt.containerName=JSPTabContainer/sFreeLetters&pageID=mobileApp&dt.action=process&dt.window.portletAction=RENDER

Methodology

23. For this post-enforcement evaluation, there is far less need for a qualitative survey since the intervention has led to the cessation of the cartel, and the only substantive issue is to quantify the consequent benefits received by consumers. Hence, a simple before-after comparison method was used in this case, employing a comparison of a sample of current prices, as posted on the internet, with prices for the same routes and ticket types as recorded by the previous case team.[11]

Findings and Assessment

24. Based on a sample of 52 comparable tickets in December 2012 to January 2013, the headline finding is that prices have fallen on average by 11% from the previous cartel price recorded in 2008. The 52 tickets cover seven different destinations in Southern Malaysia, from Singapore (Golden Mile/Boon Lay). The seven destinations are Butterworth, Penang island, Ipoh, Taiping, Melacca, Kuala Lumpur and Genting.[12]

25. The actual impact of the 11% decline to consumers is most likely understated. This is because the costs of the bus companies, particularly for labour and fuel costs are likely to have increased post-enforcement. In real terms, the prices of the 52 tickets declined approximately 25% from the previous cartel price.[13]

Conclusion

26. Based on the findings, the change in ticket prices resulting from the removal of the agreement to fix the two components of bus ticket prices could be interpreted as a successful intervention.

27. There are however two important caveats to this conclusion. First, it is unclear the extent to which the sample of 52 tickets used to measure the price changes is statistically representative. That said, since it includes seven different destinations, seven of the former cartelists, and various bus types, it is likely to be representative. Second, the price decline cannot necessarily be attributed entirely to the breaking of the cartel as there could be other exogenous factors such as increased competition from low cost carriers causing the price decrease. Ideally, the comparison should be by how much price has fallen relative to what it would have been had the cartel persisted (i.e. the counterfactual). However, such

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[11] Previous prices during the cartel period were obtained from the parties directly.

[12] The post-enforcement price changes varied for different routes. The price of tickets to Ipoh fell the most by 16% while the price of tickets to Melacca actually increased by 2%.

[13] The change in ticket prices in real terms was estimated by deflating the nominal change in ticket prices using the change in the CPI during the same period. Comparatively, the inflation rate during the same period was around 14%.

comparison is not feasible due to data constraint. Nonetheless, these qualifications are unlikely to entirely negate the positive impact of CCS's enforcement action.

Overall Summary of Findings

28. On a technical level, the lack of quality data and the relatively short time period since intervention do not allow for a rigorous quantitative ex-post evaluation. Subject to these qualifications, the evaluations suggest that the CCS's decisions were sound in all three cases:

a. the Samwoh/Highway merger has not had any noticeable anticompetitive effects.
b. the prohibition of exclusivity in the SISTIC ticketing case appears to be facilitating entry.
c. the prohibition of the Express Bus Agencies Association cartel has likely contributed to significant reduction in price.