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Economic analysis and evidence in abuse cases

– Contribution from Chinese Taipei –

1. This paper presents economic tools and evidence used by the competition agency in Chinese Taipei, the Fair Trade Commission (hereinafter referred to as the "CTFTC") to analyze the abuse of market power in practice. It illustrates the CTFTC's empirical knowledge and experience with a recent predatory pricing case.

1. A brief overview of economic analysis for predatory pricing

1.1. Theory of predatory pricing

2. In more general economic terms, predatory pricing is defined as a dominant firm's conduct in setting a product's price below its marginal cost of production with the aim of excluding competitors in a relevant market. By doing so, the dominant firm can drive equally or more efficient competitors out of the market, or deter potential competitors from entering into the market, and then charge a monopoly price for the product in question. Predatory pricing entails the following features:

- Predator's negative profit, or loss, in the short run

  As individual firms' strength, scale, and operational costs will vary, prices set by each firm in a relevant market can also be varied. Prices based on a respective firm's conditions and powers suggest the existence of price competition, under which individual firms' short-term profits are not necessarily positive. In contrast, a firm employing a predatory pricing strategy will certainly have a negative short-term profit.

- Predatory pricing needs to be implemented by a firm with the ability to subsequently raise prices

  Successful predation requires the predator to be able to recoup short-term losses with future gains. In other words, the possession of substantial market power is a precondition for a firm that engages in predatory pricing. Another implementation condition of predatory pricing is that there are high barriers to entry in the relevant market where the predator operates. Only if a firm has substantial market power, can it expel competitors from the market and regain profits to an extent compensating it for the losses resulting from price reductions.

- Rivals are likely to be excluded by predatory pricing

  Predatory pricing strategies employed by a firm with market power will be considered to have the intent of excluding rivals.

- Below-cost pricing signifies that a firm with market power engages in predatory pricing

  Below-cost pricing is the most salient feature of predatory pricing, which is also a major approach of examining predatory pricing claims.

3. Regarding how to determine predatory pricing, it is mainly established through two tests, i.e. the price-cost test and the recoupment test. First, the price-cost test will be used to find whether a product price is indeed below its cost. When it is found that the price is below its own cost, then it is necessary to run the recoupment test. Pricing is only considered predatory if it satisfies conditions set out in both tests.

- Price-cost test: This is used to examine whether sale prices offered by the predator is below its costs. Generally, a firm is free to set prices based on its own market conditions, characteristics of products or services, its costs and profit margins. In a case where the firm decides to reduce prices, such price cuts can be deemed as normal business practice to compete with the respective prices of rivals. Nonetheless, these prices should not be lower than the firm's costs, leading to economic losses. Below-cost prices may indicate that the firm is attempting to exclude its competitors by charging low prices instead of pursing profits.
- Recoupment test: This is used to ascertain whether a firm is able to limit or prevent competition and subsequently earn excess profits to recoup losses incurred after engaging in predatory pricing. If it is impossible for the firm to recoup or be compensated for such losses, this type of pricing behavior will not be considered a rational strategy and is unlikely to harm consumer welfare.

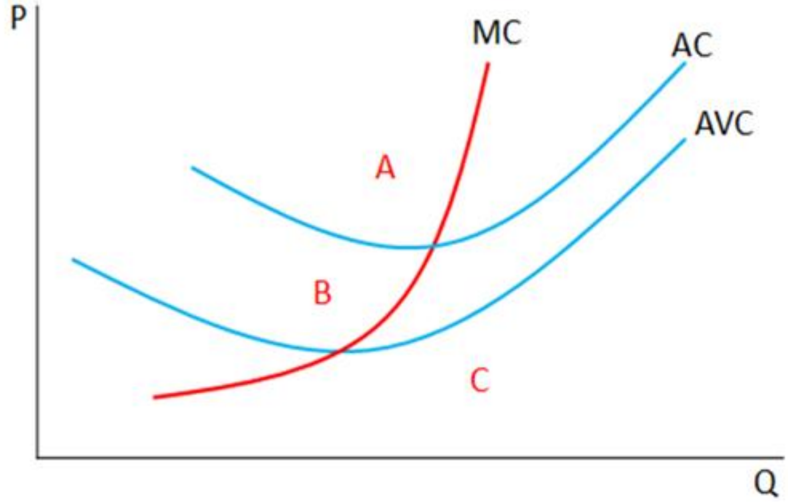
2. Cost measures to analyze predatory pricing

4. With regard to the term 'cost' used in the price-cost analysis, marginal cost (MC) is argued to be an ideal cost measure in the economic theory of predatory pricing. However, MC is not easy to measure and calculate in practice. Some scholars thus advocate for different cost measures as a practical proxy for MC, for example the average variable cost (AVC), average avoidable cost (AAC), average incremental cost (AIC) or average cost (AC).

5. Areeda and Turner (1975) proposed that short-term marginal cost could be used to determine a predatory price[1]. They identified the following sections through three cost curves: A section, $P>AC$; B section, $AC>P>AVC$; C section, $P<MC$ (see Figure 1).

[1] Areeda & Turner (1975), Predatory Pricing and Related Practices Under Section 2 of the Sherman Act, Harvard Law Review, Vol. 88, pp. 697-733.

Figure 1. Cost curves



6. Areeda and Turner concluded that any price set by a firm in either A or B section is not predatory. Predatory pricing will only be established if the price falls into section C.

- **Any price reduction in section A** will not exclude an equally efficient competitor from the market. As the price approaches MC, it is presumed to enhance the efficiency of resource allocation.
- **While price reduction in section B** is likely to exclude equally efficient competitors from the market, such price reductions can increase output and improve consumer welfare.
- **Price reduction in section C** is likely to exclude equally efficient competitors from the market, and consumers may benefit from lower prices. However, the increase in consumer welfare is derived from a change in producer surplus. Such pricing strategies further deviate prices from MC, which leads to inefficiency in production and resource allocation. Setting prices below MC are therefore considered as predatory pricing.

7. As information required to measure MC, AAC or AIC cannot be found in most businesses' financial reports, AVC is used by the CTFTC as a proxy for the price-cost test in practice.

8. The number of predatory pricing cases considered by the CTFTC is limited. In recent years, since the cable TV industry was deregulated to allow individual cable TV operators to provide services across multiple areas, then-current operators in their former designated areas chose to offer (unjustified) low prices as inducements, or employ predatory pricing strategies to strengthen their market positions or exclude new entrants from entering their geographic markets. As a result, issues on predatory pricing arose due to these incumbent operators' reactions to the policy change. A case involving alleged predation below illustrates the relevant statutory provisions and the CTFTC's analysis of predatory pricing.

3. Case examples

3.1. Provisions of the Fair Trade Act and its Enforcement Rules on predatory pricing

9. Depending on a predator's market power, predatory pricing may be subject to different provisions of the Fair Trade Act (FTA). If the predator is deemed as a 'monopolistic enterprise' under the FTA, Paragraph 2 of Article 9 of the FTA prohibits it from improperly setting, maintaining or adjusting product prices or service fees, including engaging in predatory pricing.

10. In the case where a firm has a market share of 15% or more[2], but has yet to reach monopoly thresholds, its pricing may be subject to Paragraph 3 of Article 20 of the FTA. This provision provides that 'No enterprise shall engage in any of the following acts that is likely to restrain competition: … 3. preventing competitors from participating or engaging in competition by inducement with low price, or other improper means.' According to the legislative intent, this provision is designed to protect market competition by prohibiting a firm with some degree of market power from improperly undercutting or impeding competition, which may not constitute a violation of predatory pricing, but still have anti-competitive effects.

11. According to Article 27 of the Enforcement Rules of the FTA, the 'low price inducement' under Paragraph 3 of Article 20 of the FTA refers to the offering of prices below costs or being inappropriate so as to hinder competition or prevent competitors from participating in the market. In determining whether the 'low price inducement' is likely to restrain competition, the following factors can be considered: (1) the intent and purposes of the party(ies) engaging in the conduct; (2) market position; (3) market structure; (4) the characteristics of the goods or services offered by the party(ies); and (5) the impact resulting from implementing such restrictions on market competition. The legislative intent indicates that the cost measure for 'low price inducement' is based on AVC, with some exceptions where AAC, AIC or the cost of goods purchased may be applicable in markets with specific structures or industrial characteristics.

3.2. The cable TV industry in Chinese Taipei

12. In 2012, the National Communications Commission (NCC) announced and implemented policy to lift geographic restrictions in the cable TV industry by consolidating the designated operating areas from 51 to 22, delineated using primary administrative divisions, i.e. municipalities, counties and cities. This policy allowed and enabled incumbent operators and new operators to provide services beyond their previous operating areas, which were otherwise dominated by one or two operators prior to the policy change. Following implementation of the new policy, the levels of competition particularly in Taipei City, New Taipei City, Kaohsiung City and Changhua County became more intense with a growing number of new entrants and operators providing services in multiple areas. The incumbent operators and new entrants competed for subscribers in operating areas with aggressive price-cutting strategies. The CTFTC's enforcement statistics from 2013 to 2021, shows that it has received a total of ten cases involving predatory pricing complaints, of which three cases ended with the Commission's decisions to impose penalties. Seven cases

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[2] The 1267th Commissioners' meeting on February 17, 2016 concluded that 'with regard to vertical non-price restraints under Article 20 of the Fair Trade Act, any firm that imposes such restraints will be presumed to have no market power if its market share is less than 15%, and accordingly the restraints will be unlikely to limit competition.'

closed with non-infringement decisions, that is, no finding of any violation of the FTA. This paper illustrated the CTFTC's enforcement experience with alleged predatory pricing against Yeong Jia Leh Cable TV Co., Ltd (YJL).

13. Before DigiDom Cable TV Co., Ltd (DCTV) started operating in the districts of Xinzhuang, Wugu and Taishan in May 2015, YJL was the only cable TV operator in these areas. The CTFTC received a complaint from DCTV, alleging that YJL offered DCTV's subscribers an annual plan at a zero price from July 2016. Data to June 2017 showed the number of households with cable TV subscriptions as 125,352 households for YJL and 19,324 households for DCTV, which respectively constituted 86% and 14% market share.

4. Product market definition and economic analysis

14. Both parties involved in the case were cable TV operators. To further examine whether emerging media services could be a substitute for cable TV services, for example Multimedia on Demand services provided by cable TV providers and Chunghwa Telecom company (the largest telecommunication company in Chinese Taipei), and other over-the-top media services, such as YouTube, Netflix and iQiyi, the CTFTC outsourced a consumer survey on perceived substitutability of cable TV, MOD and other media services in 2016.

15. The survey results showed that the number of viewers through cable TV systems dominated over other media distribution channels, accounting for 70.7% of total respondents. This was followed by 12.7% of the respondents who accessed services through digital TV broadcasting platforms. MOD was the third most common channel, accounting for 10.9% of respondents. The remaining respondents reported using OTT services, which 5.0% were accessing free internet-based platforms offering free audiovisual services and 0.7% were accessing internet-based platforms charging subscription fees for audiovisual services. Noticeably, only 1.7% of respondents reported that they switched from one distribution channel to another in the most recent year.

16. A questionnaire was used in the survey to implement a SSNIP (small but significant and non-transitory increase in price) test by means of an empirical tool, i.e. critical loss analysis. The sample size for the survey was 1,090, of which 771 respondents were cable TV subscribers. Having asked about the distribution channels used by respondents, the survey then asked what respondents would have done had the fees for cable TV services been 10% higher. The results (see Table 1 below) revealed that 565 respondents said they would remain connected to cable TV systems, and 206 respondents said they would turn to other audiovisual service providers, including MOD and OTT. The estimate of actual loss is 26.72% (206/771*100%=26.72%).

17. Furthermore, the data showed that the average operating profit margin for domestic cable TV operators was 15.84%. According to the figure, the critical loss was estimated to be 38.70% (10% / (10%+15.84%) = 38.7%). As the actual loss (26.72%) was smaller than the critical loss (38.70%), a product market could be defined for cable TV businesses in this case.

Table 1. SSNIP test used to define a relevant market against the candidate market - cable TV in 2016

Unit: number of respondents, %

Sample size	Viewers of cable TV	Unchanged after the price increase	Switched to other distribution channels after the price increase					Actual loss	Operating profit margin	Critical loss
			Total	MOD	Internet - based platforms	Digital TV broadcasting	Not watching TV			
1090	771	565	206	114	38	37	17	26.72%	15.84%	38.70%

4.1. Price-cost test

18. In this case, the CTFTC mainly adopted the price-cost test to examine whether YJL's zero-price offer could be considered predatory. To compare the price at issue with its related costs, the CTFTC used AVC (average variable cost), which in economics refers to costs that change when output changes. Variable costs for a cable TV operator would include total costs dependent on the number of subscribing households. Based on YJL's financial reports and the numbers of subscribing households, Table 2 below lists annual numbers of three major operating costs and subscribing households from 2006 to 2016, which were also used to calculate the correlation coefficients between individual operating costs and the number of subscribing households. As a result, estimates of YJL's correlation coefficients between 'license fees for copyrighted programs', 'installation and maintenance costs for subscribers' and 'transmission costs of programs', and 'the number of subscribing households' were 0.9485, 0.5110 and 0.0234 respectively.

Table 2. Annual numbers of YJL's operating costs and subscribing households from 2006 to 2016

Unit: household, NTD

Year	Number of subscribing households A	License fees for copyrighted programs B	Installation and maintenance costs for subscribers C	Transmission costs of programs D	Monthly AVC per household (B+C)/A/12
2006	90,954	222,661,000	50,374,000	107,947,000	250
2007	96,267	282,163,000	44,747,000	116,910,000	283
2008	123,354	325,323,000	59,551,000	128,600,000	260
2009	153,374	388,009,000	81,403,000	153,544,000	255
2010	160,031	438,024,000	97,764,000	132,826,000	279
2011	163,256	449,909,000	102,823,000	102,537,000	282
2012	150,148	444,164,000	112,907,000	99,861,000	309
2013	144,049	429,039,000	147,959,000	103,004,000	334
2014	144,424	419,902,000	183,933,000	105,511,000	348
2015	145,837	425,376,000	214,392,000	99,708,000	366
2016	143,978	431,820,000	200,973,000	86,208,000	366
Correlation coefficient		0.9485	0.5110		

19. Table 2 shows a highly positive correlation between ‘license fees for copyrighted programs’ and the number of subscribing households. YJL also confirmed that the calculation of license fees for copyrighted programs was based on the actual number of subscribing households. Installation and maintenance costs included running costs, such as outsourcing, fuel consumption and consumable materials. These costs partly reflected movements in the number of subscribing households. As such, ‘license fees for copyrighted programs’ and ‘installation and maintenance costs for subscribers’ were categorized as parts of YJL’s variable costs.

20. Given that the correlation coefficient between ‘transmission costs of programs’ and the number of subscribing households was 0.234, indicating a weak correlation, they were not included in YJL’s variable costs. The CTFTC then used the data on ‘license fees for copyrighted programs’ and ‘installation and maintenance costs for subscribers’ to calculate monthly AVC per household for YJL. These amounted to NTD 366 each month.

21. Furthermore, the CTFTC’s investigation found that YJL charged NTD 500 per month for basic cable packages earlier in 2016, and DCTV offered discounted package deals from NTD 193 to NTD 386 per month. After considering YJL’s below-cost pricing strategies and relevant evidence, the Commissioned concluded that YJL’s free annual offering for DCTV’s subscribers constituted predatory pricing in violation of the FTA as the offerings were evidently lower than DCTV’s discounted prices, and incommensurate with the calculated monthly AVC for YLJ (NTD 366).

4.2. Factors for consideration in non-infringement decisions

22. Setting prices to a level below a firm’s own costs is not necessarily considered predatory. Low prices, even at below-cost can sometimes reflect legitimate business choices in a competitive market. The following pricing strategies are generally determined legal by the CTFTC in most cases, for example, short-term promotional pricing; low prices charged by a multiproduct firm for only one type of product; a price war among rival companies, and seasonal discounts or price reduction in response to economic fluctuations.

23. From 2013 to 2021, the CTFTC investigated ten cases concerning predatory pricing in the cable TV industry, of which seven cases came to non-infringement decisions. The factors taken into account in the seven cases included (but were not limited to):

- Where the number of consumers who switched services to the firm that engaged in predatory pricing was very low. Such pricing strategies would not likely give rise to anti-competitive concerns.
- Where a new entrant in question offers short-term promotions at cheap prices to enter a new market. Its pricing strategy aimed to gain market share and get a foothold in the market, rather than excluded competitors from the market, which would not limit or distort market competition.
- Where the alleged predatory pricing strategies implemented by the firm in question targeted its current subscribers instead of subscribers of its competitors. Moreover, the discounted prices at issue were comparable with competitors’ promotional prices. No evidence showed the intent to prevent competitors from participating in competition.

5. Conclusion

24. One way to analyze and determine whether a firm is engaging in predatory pricing is to compare its prices with its costs. However, it is difficult to obtain data on marginal cost (MC). In practice, the CTFTC often uses 'average variable cost' (AVC) as a proxy for MC. When using AVC, it is important to differentiate fixed costs and variable costs by requesting the firm in question to submit internal documents for examination. In addition to internal documents, the CTFTC can use 'correlation coefficients' to measure and examine how strong a relationship is between each cost and the number of products/users at issue.

25. In Chinese Taipei, since regulatory restrictions on operating areas were removed in the cable TV industry, more businesses have decided to operate beyond their designated areas and enter into multiple geographical markets. Such a phenomenon brought a surge of competitive pressure for new entrants and existing firms, both offering promotional prices to retain current subscribers and attract new subscribers. In this context, several complaints pertinent to predatory pricing were filed with the CTFTC. When investigating alleged violations, the CTFTC first defined the cable TV product market by using surveys in critical loss analysis, and applied the price-cost test to determine whether the price at issue was predatory. In the price-cost test, the CTFTC identified variable costs of the cable TV operator through calculating correlation coefficients between each cost and the number of subscribing households.