Market Definition and Case Study

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May 19 & 21, 2015
Bangkok, Thailand

The views expressed in this presentation are not purported to represent those of the TFTC

Outlines

- Overview
- Basic Concepts of Market Definition
- Market Definition and Market Power
- The Guidelines of Relevant Market Definition of the TFTC
- An Example
- Q & A

Overview

- Market definition is a tool to identify and define the boundaries of competition between firms
- The concept of "relevant market" is different from other definitions of market often used in other contexts

– *COMMISSION NOTICE on the definition of relevant market for the purposes of Community competition law (97/C372/03)*

Overview

- Helps specify the line of commerce and section of the country in which the competitive concern arises
- Allows the Agencies
  - to identify market participants
  - measure market shares
  - market concentration

Outlines

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- Q & A

Basic Concepts in Market Definition

- Demand Substitution
- Supply Substitution
- Product Market
- Geographic Market

Demand Substitution

- Market boundaries are determined by "…reasonable interchangeability of use or the cross-elasticity of demand …"

  Brown Shoe Co. v. United States (1962)

- The focus is on demand substitution in response to a price increase

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Demand Substitution

- the circumstances where trading counterparts can **switch to other goods or services** to replace the particular goods or services to which businesses make **adjustments on prices** or compensation

☆ **Q & A**

- What percentage of the price change?
- How long is the duration of the price change?

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Supply Substitution

- circumstances where business competitors or potential competitors can provide substitutable goods or services to replace the particular goods or services to which businesses make adjustments on prices or compensation

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☆ Firms are subject to two main sources or competitive constraints:

- demand substitutability
- supply substitutability

☆ From an economic point of view, for the definition of the relevant market, demand substitution constitutes the most immediate and effective disciplinary force on the suppliers of a given product, in particular in relation to their pricing decisions.

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☆ Supply substitutability may also be taken into account when defining markets in those situations in which its effects are equivalent to those of demand substitution in terms of effectiveness and immediacy

– *COMMISSION NOTICE on the definition of relevant market for the purposes of Community competition law (97/C 372/03)*

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Some examples

- Demand substitution
  - gold & silver
  - different flavors of soft drinks
- Supply substitution
  - paper plants

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- **Product Market**
  - the range in which the demand substitutability or supply substitutability of a product or service is high in terms of its functionality, characteristic, use or price.
    - Which products could be subject to price increases?
    - Which firms might increase prices?

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- **Geographic Market**
  - the range in which the demand substitutability or supply substitutability of a product or service is high in terms of its functionality, characteristic, use or price.
    - Where are the consumers that could be subjected to price increases ?
    - Where are the firms that might increase prices?

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Market Definition and Market Power

- Market Definition Methods
  - Hypothetical Monopoly Test
  - Critical Loss Analysis
  - Price Correlation Analysis
  - Price Elasticity Analysis
  - Natural experiments Analysis
  - Elzinga - Hogarty test
  - Diversion Ratios
  - Qualitative Assessment

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Market Definition and Market Power

- Market power
  - Market Participants
  - Market Shares
  - Market Concentration
    - ➢ Concentration ratios
    - ➢ HHI Index

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- **Hypothetical Monopoly Test**
  - "Requires that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future seller of those products (**'hypothetical monopolist'**) likely would impose at least a **small but significant non-transitory increase in price ('SSNIP')** on at least one product in the market, including at least one product sold by one of the merging firms."

~ 2010 *U.S. Horizontal Merger Guidelines*, p. 9

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■ Hypothetical Monopoly Test

- The hypothetical monopolist is a "hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future seller of those products"
- SSNIP : Small but Significant Non-transitory Increase in Price
- Price increase <u>5% ~ 10%</u> and sustain <u>for one year</u> (depend on the case)

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■ Hypothetical Monopoly Test

- Steps of Analysis

① Start with ONE of the products which is under investigation: the **candidate market**

② Add the **next best substitute**

③ Calculate the profit-maximizing price(s) for a hypothetical monopolist over these products, and compare to current prices

④ Repeat steps ②－③ until at least one price is 5% higher (or other SSNIP)

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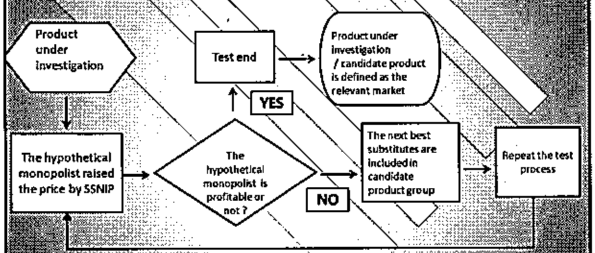
■ Hypothetical Monopoly Test



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■ An example of HMT test

	Step 1	Step2	Step3
Candidate market	Product {1}	Product {1,2}	Product {1,2,3}
Q	Does monopolization of product 1 give pricing power?	Does a hypothetical monopolist of product 1 and 2 have pricing power?	Does a hypothetical monopolist of product 1, 2,and 3 have pricing power?
A	No, because there are two perfect substitutes omitted from the candidate market. No ability to raise price of good 1.	No, because there is still a perfect substitute omitted from the candidate market (product 3) that constraints the ability of our hypothetical monopolist of product 1 and 2 to raise their prices.	• Yes, if product 4 and 5 are not good enough substitutes. If so, then the market {1,2,3} is accepted. • No, if either product 4 or 5 is a good enough substitute to constraint profitability of price increase. In that case, continue the test.

Peter Davis & Eliana Garcés(2010) *Quantitative Techniques for Competition and Antitrust Analysis*, pp.203-204.

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■ Critical Loss Analysis

- CLA asks: "what is the percentage reduction in quantity required to make an x% price increase unprofitable?"
  - This quantity reduction is known as the critical loss for an x% price increase.

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■ Critical Loss Analysis

- **Actual Loss (AL)** : the quantity of sales that would be lost if the SSNIP were implemented.
- **Critical Loss (CL)** : the quantity of lost sales that would leave profits unchanged
- When using CLA is used to define markets, one concludes that a candidate market is a relevant market if the actual loss is less than the critical loss.

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■ Critical Loss Analysis

– Actual Loss (AL) : the quantity of sales that the hypothetical monopolist is predicted to lose if the SSNIP were implemented
  - We can **only** estimate the actual loss if we know something about demand.

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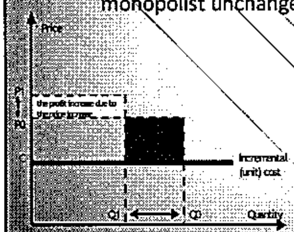
■ Critical Loss Analysis

– Critical Loss (CL) : the quantity of lost sales that would leave the profits of the hypothetical monopolist unchanged



$$\frac{\Delta P(Q-\Delta Q)}{PQ}=\frac{(P-MC)\Delta Q}{PQ}$$

$$\frac{\Delta PQ}{PQ}-\frac{\Delta P\Delta Q}{PQ}=\frac{P-MC}{P}\frac{\Delta Q}{Q}$$

$$\frac{\Delta P}{P}-\frac{\Delta P}{P}\frac{\Delta Q}{Q}=\frac{P-MC}{P}\frac{\Delta Q}{Q}$$

$$t-ty=my$$

$$t=my+ty=y(m+t)$$

$$y=\frac{t}{m+t}$$

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■ Critical Loss Analysis

– An Example
  - Product A has sales of 60 units
  - Price of A is \$1
  - Constant MC is \$0.50
  - SSNIP of 10% is considered
  - CL = 16.67%

– So the critical loss for a 10% price increase in this case is 16.67%.

– That is, if the actual loss from a 10% price increase would equal or be less than 16.67%, we would conclude:
  - **The price increase would be profitable, and**
  - **The product set constitutes a relevant market.**

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■ Price Correlation

– The **"law of one price"** states that active sellers of identical goods must sell them at identical prices.

– The intuition from "the law of one price" is that similarities in the levels of prices can indicate that goods are close substitute.

– Price correlation analysis is based on the idea that prices of close substitutes will move together.
  - Peter Davis & Eliana Garcés(2010), *Quantitative Techniques for Competition and Antitrust Analysis*, pp. 170–171.

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■ Price Correlation

– Price Correlation coefficient r

$$r=\frac{1}{n-1}\sum_{i=1}^{n}\left(\frac{P_{xi}-\overline{P_x}}{s_{px}}\right)\left(\frac{P_{yi}-\overline{P_y}}{s_{py}}\right)$$

The correlation coefficient is between −1 and 1

- $r=1$ → perfect positive correlation
- $r=-1$ → perfect negative correlation
- $r=0$ → no correlation

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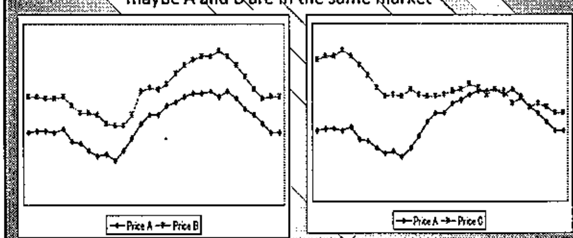
■ Price Correlation

– Drawing Price Pattern Picture
  - Product A and Product B co-movement in prices : maybe A and B are in the same market



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Example 1 - Price Correlation Test

Correlations between prices of brands of still water(A-C), sparkling water(D-F) and soft drink(G-I) – *Case under EEC regulation 4064/89. Case no. IV/M.190 Nestlé/Perrier(1992)*

	A	B	C	D	E	F	G	H	I
A	1								
B	0.93	1							
C	0.91	0.94	1						
D	0.91	0.85	0.86	1					
E	0.94	0.97	0.95	0.92	1				
F	0.93	0.99	0.96	0.88	0.99	1			
G	0.11	0.05	-0.01	0.33	-0.02	0.01	1		
H	-0.57	-0.55	0.25	0.16	0.24	0.27	0.17	1	
I	-0.77	-0.75	-0.81	-0.86	-0.86	-0.79	0.33	-0.11	1

- From the results, it appears fairly clear that the evidence suggests that the relevant market is the market for water, including both still water and sparkling water but excluding soft drink.
- Even with a very high price correlation, other evidence could potentially outweigh the correlation analysis.
  - ➢ **might also find survey evidence from consumers' preference, company documents**

Example 2 – Price Correlation Test

- **Example**
  - In Arjowiggins / M-real Zanders Reflex merger case, European Commission used the price correlation analysis to decide the market boundaries.
  - This case involved markets for carbonless paper (carbonless paper) market, but the controversial issue is this market can be further divided into reels and sheets markets.

    ~ *Case No. COMP/M.4513, Arjowiggins/ M-real Zanders Reflex [2008] C31 03*

- **Price Elasticity Analysis**
  - Cross-price elasticity of demand expresses the effect of a change in price of some other good X on the demand for good Y

    $\varepsilon_{xy} = (\Delta Q_Y / Q_Y) / (\Delta P_X / P_X)$

    If $\varepsilon_{xy} > 0$, X and Y are substitutes

    If $\varepsilon_{xy} < 0$, X and Y are complements
  - To estimate the cross-price elasticity, econometric analysis with a large set of price and quantity data is generally required

- **Natural Experiments Analysis**
  - Natural experiments analysis is the simplest way to getting a feel for the magnitude of own-and cross-price elasticities of demand without getting involved in a more complex econometric analysis.
  - Whenever there is a possibility to properly conduct a natural experiments analysis , this method will be helpful since it is both simple to apply and often very informative, making it a powerful technique.

    ~ Peter Davis & Eliana Garcés(2010), *Quantitative Techniques for Competition and Antitrust Analysis*, pp. 185~188.

- **Natural Experiments Analysis**
  - An Example

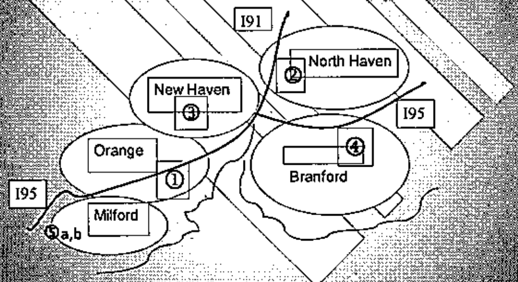

Figure: Map of locations of cinemas involved in the experiment. The theater "4" was the Branford 12 screen cinema whose price was cut for 3 weeks.

Natural Experiments Analysis

Table Theater pricing responses to the pricing experiment performed by the Branford 12 cinemas

Theater	Chain	Pricing strategy/ response
① Showcase Orange	National Amusement	$ 4.5 for three weeks
② Showcase North Haven 8	National Amusement	$ 4.5 for three weeks
③ York Square (art house)	Independent	No change
④ Branford 12	HOYTS	$ 5 for three weeks
⑤a Showcase Milford 5	National Amusement	No change
⑤b Milford Quad	National Amusement	No change

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Natural Experiments Analysis

- What is the product market and why?
- What is the geographic market and why?

- This example is quoted from "*Quantitative Techniques for Competition and Antitrust Analysis*", Peter Davis & Eliana Garcés (2010), pp. 185~188.

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Elzinga-Hogarty test

- Elzinger and Hogarty(1973,1978) proposed a two-stage test for geographic market definition. The two stages are known as "little in from outside"(LIFO) and "little out from inside"(LOFI).
- **LIFO (Little in from outside)**
  - Whether nearly all purchases come from within the region itself or whether there are substantial "imports"
- **LOFI (Little out from inside)**
  - Whether nearly all shipments go to the region itself or whether there are substantial "exports" from the region

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Elzinga-Hogarty test

- **Formula**

$$\text{LIFO} = \frac{\text{the quantity of import}}{\text{consumption in candidate area}}$$

$$\text{LOFI} = \frac{\text{the quantity of export}}{\text{production in candidate area}}$$

- When **both** LIFO and LOFI are below 25% (or 10%), the candidate area constitutes a geographical market.

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Elzinga-Hogarty test

- Examaple

unit: million tons

	Production(P)	Expot(E)	Import(M)	Consumption(C)
TA	38.44	3.28	72.02	107.18
CI	411.4	30	40	500
CA	1853.6	40	20	700
BR	1406.2	50	30	600
UA	4924.3	60	10	800

	LIFO=(M/C)	LOFI=(E/P)
TA	67.20%	8.53%
TA & CI	18.45%	7.40%
TA & CA	11.40%	2.29%
TA & BR	14.43%	3.69%
TA & UA	9.04%	1.28%

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Diversion Ratios

- A diversion ratio tries to answer the following question:
  - if the price of good i increases, what fraction of lost sales goes to good j ?

$$D_{ij} = \frac{\Delta q_j / \Delta p_i}{-\Delta q_i / \Delta p_i} = \frac{\Delta q_j}{-\Delta q_i}$$

- When $D_{ij} > 0$, good i and good j are substitutes
- When $D_{ij} < 0$, good i and good j are complements

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Diversion Ratios

- It is sometimes possible to directly estimate the degree of substitution between a good and its potential substitutes.
  - Data
    - ➢ Consumer-level data on the set of possible choices
    - ➢ Aggregate data on sales of each goods
    - ➢ Price data and characteristics of the goods

Qualitative assessment

- It is worth emphasizing that much of the time market definition relies at least in part of on qualitative assessment.
  - Narrowing the set of possibilities to those which are plausible and substantive
  - Starting with the product characteristics and the intended uses of the product → "functional substitutes"
  - Also **need to be good enough demand or supply substitutes** to actually constrain each other's price

Qualitative assessment

- Qualitative assessment can sometimes be enough to satisfactorily define the relevant market, **indeed it is sometimes necessary to rely on purely qualitative analysis.**
  - **An example (smoked salmon & caviar)**
    see "*Quantitative Techniques for Competition and Antitrust Analysis*", Peter Davis & Eliana Garcés (2010), pp. 166–167.

Q & A

- Is the market scope different when the same enterprise engages different conduct ?

★**Some examples in TFTC**

- **CVSs merger case**
- **Concerted action among CVSs**

Q & A

- Does the market scope change when the important construction is completed(e.g. high speed railway in Taiwan) ?

★**Some examples in TFTC**

- **Airline companies' concerted action cases**

Market Power

- **Market Participants**
- **Market Shares**
- **Market Concentration**
  - ➢ **Concentration ratios**
  - ➢ **HHI Index**

Market Power

- Market power is the ability of a firm to profitably raise the market price of a good or service over marginal cost. In perfectly competition markets, market participants have no market power.
- A firm with total market power can raise prices without losing any customers to competitors. Market participants that have market power are therefore sometimes referred to as "price makers," while those without are sometimes called "price takers."

Market Participants

- Market participants include:
  - All firms currently earning revenues in relevant market
  - Firms that have committed to entering in near future
- Includes "rapid entrants:"
  - firms that are not currently in a relevant market, "but that would very likely provide rapid supply responses with direct competitive impact in the event of a SSNIP, without incurring significant sunk costs"

~ *USA Horizontal Merger Guidelines: Section 5.1*

Market Shares

- Market shares are normally calculated for all firms that currently produce in the relevant market.
- May also calculate shares for other market participants
- May project historical shares into the foreseeable future, if current shares misstate future competitive significance of a firm

Market Shares

$$S_i = \frac{q_i}{Q}$$

S_i : the i th firm's market share

q_i : the i th firm's revenue (or sales, production, volume of reserves, capacity,... or **other metric**)

Q : the total revenue (or sales, production, volume of reserves, capacity,... or **other metric**) in the relevant market

- Some examples

Market Concentration

- Concentration is often a useful indicator of likely competitive effects of a merger

$$CR_n = \sum_{i=1}^{n} S_i$$

S_i : the i th largest firm's market share

Market Concentration

- Herfindahl-Hirschman Index (HHI)

$HHI = \sum_{i=1}^{N} S_i^2 \times 10,000$ S_i : Market Share of firm i

General Standard for the Relevant Markets

Definition of market concentration	Post-merger level of HHI	△HHI	Require further analysis or not
Small change in concentration		<100	no
Unconcentrated	<1500		no
Moderately concentrated	1500≦HHI≦2500	>100	Often warrant scrutiny
Highly concentrated	>2500	100≦△HHI≦200	Often warrant scrutiny
		>200	Likely to enhance market power

Source: *USA Horizontal Merger Guidelines(2010)*

Comparison of CR(4) and HHI measures of market concentration

Market 1			Market 2		
Firm	Share	Share²	Firm	Share	Share²
1	20	400	1	50	2500
2	20	400	2	20	400
3	20	400	3	5	25
4	20	400	4	5	25
5	20	400	5	5	25
--	--	--	6	5	25
CR(4)	80		CR(4)	80	
HHI	2000		HHI	2950	

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The Guidelines of Relevant Market Definition of the TFTC

■After making reference to the regulations in the US and the EU regarding market definition and compiling the cases, the TFTC has formulated the "Guidelines on Market Definition" and promulgated on March 6, 2015.

Contents of the Guidelines

Article	Content
❖ Article 1	❖ Purpose
❖ Article 2	❖ Terminology
❖ Article 3	❖ Basic Principles in Defining Relevant Market
❖ Article 4	❖ Consideration Factors in Defining Product Market
❖ Article 5	❖ Consideration Factors in Defining Geographic Market
❖ Article 6	❖ Methods of Market Definition
❖ Article 7	❖ Reasonable Substitutability Analysis
❖ Article 8	❖ Cross Elasticity Test
❖ Article 9	❖ Hypothetical Monopolist Test
❖ Article 10	❖ Opinions of Industry Competent Authority
❖ Article 11	❖ Review Standards of Specific Industries

Article 1

■ **Purpose**

– make explicit the definitions of relevant markets, so as to facilitate case reviews and business compliance

Article 2

■ **Definition of Terms**

– **Relevant Markets**: the regions or scopes within which the businesses of certain goods or services are competing

– **Demand Substitution**: the circumstances where trading counterparts can switch to other goods or services to replace the particular goods or services to which businesses make adjustments on prices or compensation

Article 2

- **Definition of Terms**
  - **Supply Substitution** : circumstances where business competitors or potential competitors can provide substitutable goods or services to replace the particular goods or services to which businesses make adjustments on prices or compensation

Article 2

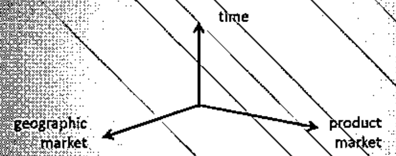
- **Definition of Terms**
  - **Product Market** : the range or the scope constituted by goods or services that are considered to be high demand or high supply substitutions within the conditions of functionality, features, uses or prices
  - **Geographic Market**: a region where trading counterparts of certain goods or services provided by businesses can easily choose or switch to other trading partners

Article 3

- **Basic Principles in Defining Relevant Markets**
  - Demand Substitution as the primary review item in defining Relevant Markets
  - take the issue of Supply Substitution into consideration depend on the features of such goods or services

Article 3

- **Basic Principles in Defining Relevant Markets**
  - Three dimensions to identify the relevant market



  - "Time" can be considered the characteristics of the product itself. It is not necessary to define the time market.

Article 4

- **Consideration Factors in Defining Product Market**
  - Changes in product prices.
  - Features and uses of the products.
  - The occurrence of substitutions between products.
  - The cost to trading counterparts when switching between different products.
  - During product price adjustment, the extent of purchase transference of trading counterparts due to price changes.
  - The viewpoints of the trading counterparts and business competitors on the substitutions between products.
  - The provisions of relevant laws or administrative regulations.
  - Other physical evidences relating to the defining of a product market.

Article 5

- **Consideration Factors in Defining Geographic Market**
  - Price variations between different regions, and shipping costs.
  - Features and uses of the products.
  - The trading costs to trading counterparts when making product purchases from different regions.
  - The convenience to trading counterparts in obtaining the products.
  - The status when trading counterparts choose to make purchases in different regions when an adjustment is made to product prices.
  - The viewpoints of the trading counterparts and business competitors on the substitution between product regions.
  - The provisions of relevant laws or administrative regulations.
  - Other physical evidences relating to the defining of a geographic market.

Article 6

- **The Analytical Method used in Defining**
  - review **reasonable substitutability** between the goods or services in question and their geographic regions and other goods or services and their geographic regions
  - apply the **cross-elasticity test** and the **hypothetical monopolist test** to define Relevant Markets
  - handling of each case is not limited to abovementioned analytical methods, and there is no set prioritization to the use of any of analytical methods

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Article 7

- **Reasonable Substitutability Analysis**
  - when defining a product market or geographical market, the reviewing of whether or not there is **reasonable substitutability** in functionality, features, uses, prices, and the competition of the geographical regions, in accordance with the trading counterparts' knowledge, between the goods or services involved in the case in question and other goods or services
  - such a substitution of goods or services constitutes the same relevant market shall be determined in accordance with the specific facts of each case

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Article 8

- **Cross Elasticity Test**
  - Cross elasticity refers to the ratio value when the price change rate of one product affects the quantity change rate of another product
  - The cross elasticity between the product and its substitution, or between their geographical regions, can be used to test the substituting relationship between the two products or geographical regions, and then used in defining the Relevant Market

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Article 8

- **Cross Elasticity Test**
  - The following items must be taken into consideration when defining the Relevant Market while using the cross elasticity test :
    - The focus of cross elasticity is on a single substitution or geographical region, and not on all substitutions or all geographical regions, with the precondition that **"all other trading terms remain unchanged"**.
    - Whether or not **the values of the cross elasticity** between the two products or geographical regions are enough to constitute the same relevant market must be determined **in accordance with the specific facts of each case**
    - **Competitive pricing** should be adopted in the evaluation of cross elasticity, so as to determine whether or not the products or geographical regions constitute the same relevant market.

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Article 9

- **Hypothetical Monopolist Test**
  - under the hypothesis that there is a monopolist in the market, the test of the profitability of the hypothetical monopolist when imposing a small but significant and non-transitory increase in price.
  - If the profit of the hypothetical monopolist decreases when prices are increased, it means that the relevant market as defined is too small, and that other substituted products or geographical regions must be included and then retested.
  - The test is repeated until the profit of the hypothetical monopolist no longer decreases when prices are increased, at which point the definition of the relevant market is also completed.

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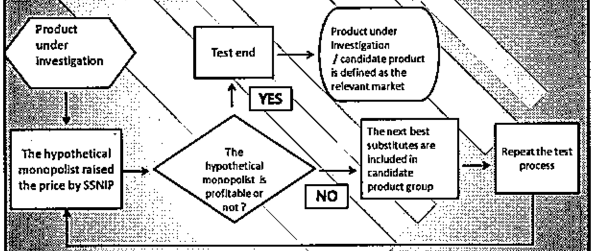
- **Hypothetical Monopoly Test**



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Article 9

- **Hypothetical Monopolist Test**
  - The following items must be taken into consideration when using the hypothetical monopolist test:
    - When using the hypothetical monopolist test to define relevant markets, the base prices used in the test must be market competitive
    - In general, the price increase is between five percent and ten percent; however, when making a determination for each case, the price increase is adjusted according to the industry or market features involved.
    - When the hypothetical monopolist test is used to define relevant markets, factors listed under item 4 and 5 must also be taken into consideration.

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Article 10

- **The Opinion of Industry Competent Authority**
  - In defining market range of a specific industry, the Commission must also refer to the opinion of the competent authority in charge of the specific

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Article 11

- **Review Standards of Specific Industries**
  - Where other principles or regulations are provided for a specific industry in the defining of relevant markets, the Commission shall comply with such principles or

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Uni-President Enterprises Co. / Weilih Food Industrial Co. Merger Case

- Acquiring firm
  - Uni-President Enterprises Corporation
    - The greatest food company in Chinese Taipei — Food Manufacturer, Hypermarket, Chain store
  - Main products:
    - instant noodle, beverages, dairy products, baking products, frozen food, edible oil, soy sauce, animal feed, health food, flour
- Acquired firm
  - Weilih Food Industrial Co., Ltd
  - Main products :
    - instant noodle, beverages, edible oil, snack food

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- Market share of overlapping products
  - Instant noodle market needs further analysis

Product	Uni-President (2009FY)	Weilih Food (2009FY)
Instant noodle	51.43% (no.1)	22.06% (no.2)
Beverages	20.63% (no.1)	0.1%
Edible oil	6.42% (no.3)	0.22%

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The Assertion of Merging Parties(1/2)

- **Market definition:**
  - Product market :Ready-to-eat food market

Ready-To-Eat Food Market ✓

- ✓Cookies & crackers
- ✓Home meal replacements
- ✓Canned food
- ✓Noodles
- ✓Frozen food

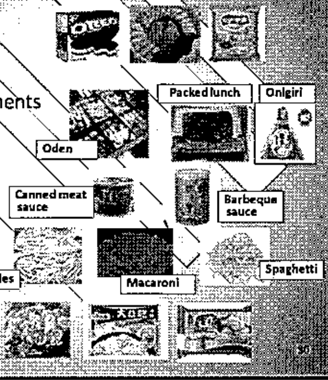
Need to combine

Instant Noodles Market ✗

Uni-President + Weilih Food	Read-To-Eat Food	Instant Noodles
Net sales(2008FY)	NT$ 10 billion	NT$ 6 billions
Market share(2008FY)	9.04%	73.49%

■ The Categories of Ready-To-Eat Food

- Cookies & crackers
- Home meal replacements
- Canned food
- Noodles
- Frozen Food

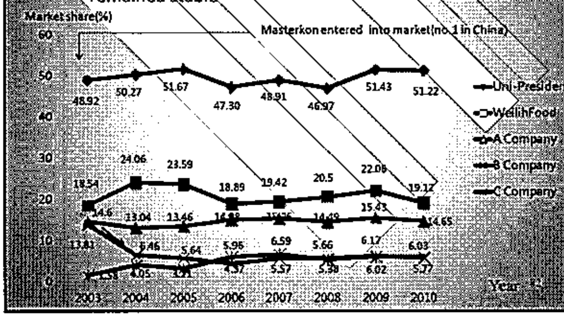


The Assertion of Merging Parties(2/2)

- Uni-President provided opinions of experts as an endorsement:
  - **Expert A**: cross-price elasticity of demand between ready-to-eat foods and instant noodles was **"supposed"** to be **positive**. (But fail to provide any data to support)
  - **Expert B**:Ready-to-eat food and instant noodles have similar characteristics, including easily to prepare, having unique flavors, and shelf-stable. They should be in the same market
  - **Expert C**: TFTC should consider global competition

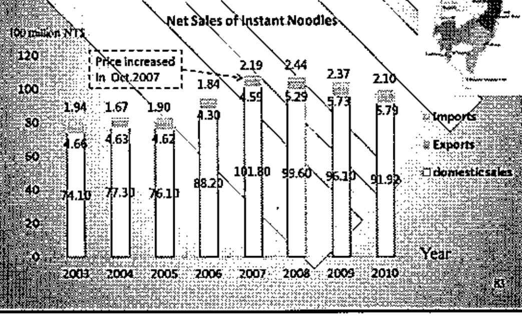
■Overview of Instant Noodle Market(1/2)

- On Dec.2002,Masterkon(no.1 brand in China) entered into market by using lower price strategy → market share remained stable



■Overview of Instant Noodle Market(2/2)

- 98% of instant noodles are sold domestically
- Geographic market: domestic market



Qualitative Analysis(1/2)

- TFTC referred to the "practical indicia" for market definition in the U.S case of Brown Shoes Co.(307 U.S. 294,82 S.Ct. 1502)
  - Industry or public recognition of the submarket as a separate economic entity
  - Product's peculiar characteristics and uses
  - Unique production facilities
  - Distinct customers
  - Distinct prices
  - Sensitivity to price changes
  - Specialized vendors

Qualitative Analysis(2/2)

Item	Instant noodles	Cookies & crackers	Home meal replacements	Canned food + Noodles	Frozen food
Serve as complete meal	Yes	No	Yes	Yes	Yes
Need to prepare?	Hot water only	No	No	Noodles need to be cooked with canned foods	Using microwave oven
Main purchase place	chain store, supermarket, e-shopping, etc.	The same as instant noodles	Chain store only	The same as instant noodles	Supermarket, e-shopping
Price range	NT$15~50	NT$20~50	Packed lunch: NT$45~70 Onigiri: NT$25~35	Canned food: >NT$40 Noodles: >NT$30	>NT$100
Shelf life	6 month	3 month~ 1 Year	1~2 day	1~3 year	9 month~ 1 Year(need refrigerator)

⟹ Instant noodles are different from other products

Quantitative Analysis-Data

- Data sources(Period :2007 ~ 2009FY)
  - 3 main chain stores
  - 3 main hypermarkets
- Product chosen
  - Instant Noodles : 11 main products
  - Cookies & crackers : 13 main products
  - Home meal replacements : 9 main products
  - Canned food : 9 main products
  - Noodles : 16 main products
  - Frozen food : 15 main products

Quantitative Analysis-Criteria

- Price elasticity of demand

$$e_d = \frac{\Delta Q^D}{\Delta P} \cdot \frac{P}{Q^D} < 0 \quad \begin{cases} |e_d| > 1 \Rightarrow \text{Elastic} & ;\text{if } P\uparrow \to TR\downarrow \\ |e_d| = 1 \Rightarrow \text{Unit Elastic} & ;\text{if } P\uparrow \to \overline{TR} \\ |e_d| < 1 \Rightarrow \text{Inelastic} & ;\text{if } P\uparrow \to TR\uparrow \end{cases}$$

- Cross Elasticity of demand

$$\varepsilon_{XY} = \frac{\Delta Q_X^D}{\Delta P_Y} \cdot \frac{P_Y}{Q_X^D} \quad \begin{cases} \varepsilon_{XY} > 0 \Rightarrow \textit{Substitutes} \\ \varepsilon_{XY} < 0 \Rightarrow \textit{Complements} \\ \varepsilon_{XY} = 0 \Rightarrow \textit{Independent} \end{cases}$$

Quantitative - Outcomes

Cross elasticity of demand	Instant noodles	Explanation
Instant noodles (price elasticity of demand)	-0.83	Inelastic ; if P↑ then TR↑
Cookies & crackers	-0.12	
Home meal replacements	0.22	Partial substitution
Canned Food+ Noodles	-0.30	
Frozen Food	0.24	Partial substitution

- Instant noodles are different from other products

Market Structure

- Herfindahl-Hirschman Index(HHI)

$$HHI = \sum_{i=1}^{N} S_i^2 \times 10{,}000 \qquad S_i : \text{Market Share of firm } i$$

General Standard for the Relevant Markets

Definition of market concentration	Post-merger level of HHI	△HHI	Require further analysis or not
Small change in concentration		<100	no
Unconcentrated	<1500		no
Moderately concentrated	1500≦HHI≦2500	>100	Often warrant scrutiny
Highly concentrated	>2500	100≦△HHI≦200	Often warrant scrutiny
		>200	Likely to enhance market power

Source: Horizontal Merger Guidelines(2010),USDOJ&FTC

Market Structure

- Instant noodle market share
  - Uni-President : 51.43%
  - Weilih Food : 22.06%
- HHI index in instant noodle market
  - Post-merger: 5712 (>2500)
  - △HHI=2269 (>200) → highly concentrated market

Outlines

- Overview
- Basic Concepts of Market Definition
- Market Definition and Market Power
- The Guidelines of Relevant Market Definition of TFTC
- An Example
- Q & A

Any Questions ?

Thank you for your Attention

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