

THEORIES OF TYING
AND IMPLICATIONS FOR ANTITRUST

By

Michael Waldman

INTRODUCTION

- Because of the Microsoft cases, significant recent attention has been paid to motivations for why firms tie and optimal antitrust policies for the behavior.
- The result has been clear progress on the first issue, but unclear progress on the second.
- Due to contributions such as Choi and Stefanadis (2001), Carlton and Waldman (2002,2006) and Nalebuff (2004), we now have a much richer understanding of the varied roles of tying behavior.
- Specifically, tying can be used for exclusionary purposes in a much broader range of circumstances than previously thought.

- Despite this, there is still no clear consensus concerning optimal antitrust policy for tying behavior.
- Some suggest a hands-off policy while others lean heavily towards aggressive intervention.
- The interventionists argue that we now know there are various settings in which tying can be used to exclude competition, so intervention is needed in order for the competitive process to operate efficiently.
- But others argue that, for various reasons, aggressive intervention is likely to do more harm than good.
- In this presentation I use theory as a guide to the development of optimal antitrust policy for tying behavior.

- I first review what we know about the various motivations for tying, where particular attention is paid to the social welfare implications of tying in various settings.
 - Efficiency
 - Price Discrimination
 - Exclusionary Motivations
 - Other Strategic Motivations
- I then take the lessons of our theoretical knowledge to suggest an optimal antitrust policy.
- Briefly, intervention only makes sense in a limited set of circumstances, where even in these circumstances the evidentiary hurdle required for intervention should be high because of the difficulty courts have in identifying motivation.

Rest of Talk

- Efficiency Rationales
 - basic efficiency arguments
 - economizing on search and sorting costs
 - variable proportions

- Price Discrimination
 - homogenizing preferences
 - metered sales

- Exclusionary Tying
 - the Chicago School argument
 - settings in which monopolizing the tied good market is profitable
 - monopolizing the tying market

- Other Strategic Rationales
 - product differentiation
 - rent shifting without exclusion

- Conclusion

EFFICIENCY RATIONALES

- Transactions Costs
 - right shoes/left shoes
 - cars and radios
 - almost every product can be thought to have transaction cost reducing tying

- Reducing search and sorting (Kenney and Klein (1983))
 - De Beers and diamonds
 - potentially other applications

- Variable Proportions (Malella and Nahata (1980))
 - eliminates inefficient input substitution when one product is characterized by market power
 - Tirole (1988) shows how this can explain aftermarket monopolization by a durable goods monopolist
 - Carlton and Waldman (2006) and Morita and Waldman (2005) show how this can explain aftermarket monopolization by a competitive seller

Aftermarket Monopolization

- Tirole (1988): durable goods monopoly and

competitive maintenance

- aftermarket monopolization eliminates input substitution distortion, but social welfare effect is ambiguous
- Carlton and Waldman (2006) and Morita and Waldman (2005): competitive durable goods producers, competitive maintenance, but switching costs
 - the switching costs create an input substitution distortion because they create ex post market power
 - aftermarket monopolization eliminates the distortion
 - social welfare effect of monopolization is unambiguously positive
 - throws doubt on the 1992 US Kodak decision

PRICE DISCRIMINATION ARGUMENTS

Homogenizing Preferences

- Negative correlation of values (Stigler (1968))

Example: Individual 1: $V_1^A=10$, $V_1^B=6$
Individual 2: $V_2^A=6$, $V_2^B=10$

Each individual values the bundle 16

- But negative correlation is not required (McAfee, McMillan, and Whinston (1989))

Example: Individuals with four valuations of equal probability - (13,13), (13,7), (7,13), (7,7) - and no costs.

- selling individual products yields $E\pi=14$
- selling a bundle yields $E\pi=15$

Metered Sales (classic argument explored formally in Chen and Ross (1993) and Klein (1993))

- In this argument the firm takes advantage of variable proportions to price discriminate.

Example: Group 1: $V_M=2000$, use 100 cards
Group 2: $V_M=3000$, use 200 cards
no costs

$$P_M + 100P_C = 2000$$

$$P_M + 200P_C = 3000$$

$$\rightarrow P_C = 10, P_M = 1000$$

- As for most price discrimination schemes, social welfare implications are ambiguous.

EXCLUSIONARY TYING

- The Chicago School argument (Director and Levi (1956), Posner (1976), and Bork (1978))

Example: right shoes/left shoes

$P=A-bX$, where X is pairs of shoes,
 $mc=c$ for a shoe
right shoe monopolist and competitive
producers of left shoes

→ $\pi=(A-2c)^2/4b$ whether the right
shoe monopolist sells right shoes
only or pairs of shoes

- Whinston (1990) explores robustness of argument
 - in a richer setting than considered by Chicago School authors, but still a one period setting, the result holds as long as monopolist's primary good is "essential"
 - intuition is that the monopolist can sell goods separately and price the primary good at optimal bundle price minus complementary good marginal cost and complementary good at its marginal cost
- Reasons the Chicago School argument breaks down
 - primary good is not essential (Whinston (1990))
 - then monopolist may tie in order to capture profits in the market in which the

primary good is not used

- goods are independent (Whinston (1990) and Nalebuff (2005))
 - tying can cause the monopolist to become a more aggressive competitor which causes rivals to exit (this is Whinston's argument)
- durable goods (Carlton and Waldman (2005))
 - tying can be used to capture "later" profits given upgrades and switching costs

- Summary of monopolizing tied-good markets

- In one period settings tying cannot be used to improve profitability by exclusion if the monopolist's primary product is essential.
- In one period settings, if there is a market for which the primary product is not essential,

then tying can increase profitability if the tying reduces competition in the “other” complementary market.

- goods are complementary but for some uses the complementary good does not require the primary good
- independent products

- In multiple period settings with durable products, even if the primary good is essential, tying may be used to increase profitability through exclusion.

- the reason is that without commitment the monopolist’s first period prices have limited ability to capture future profits in the complementary market

- Monopolizing the tying market

- tying is used to eliminate an inferior substitute for the monopolist’s primary good (Whinston (1990))
- tying is used to preserve monopoly in the primary market in the future (Carlton and Waldman (2002))

- the basic argument here in some sense formalizes the US Justice Department argument in the Microsoft/Netscape browser case
- tying is used to reduce entry probabilities in each of multiple markets (Choi and Stefanadis (2001))

OTHER STRATEGIC RATIONALES

- Tying can be used as a product differentiation device (Carbajo, De Meza, and Seidman (1990) and Chen (1997))
 - A and B are independent products where there is a monopolist of A while B can be produced by the monopolist and a single alternative producer.

- Because the two firms produce exactly the same B product and there is Bertrand competition, the two firms earn zero profits in the B market if the monopolist does not tie.
 - Tying implicitly creates product differentiation in the B market and this is profit maximizing if the monopolist's marginal cost of producing A is sufficiently high (which means the normal monopoly profit of producing A is low).
 - The effect on social welfare is ambiguous.
-
- Tying is used to shift rents towards the monopolist in the pricing game between the firms (Carlton, Gans, and Waldman (research in progress))
 - A monopolist of an essential primary good and the monopolist and an alternative producer can produce a complementary good.
 - Ties are reversible and there is added functionality (or reduced costs) associated with consuming a tied product, i.e., tying is

efficient when individuals consume the monopolist's primary and complementary goods.

- The efficiency causes Whinston's result concerning essential primary goods to break down with the result that there is inefficient tying, i.e., the monopolist incurs the added cost of tying but individuals consume the alternative producer's complementary good.

SUMMARY OF TYING RATIONALES AND SOCIAL WELFARE EFFECTS

- Efficiency Rationales
 - social welfare typically rises due to tying
- Price Discrimination
 - social welfare effects are ambiguous
- Exclusionary Tying

- social welfare typically falls due to tying (but is not guaranteed to do so)

- Other Strategic Rationales

- tying for product differentiation purposes has ambiguous welfare consequences
- tying for rent shifting purposes typically lowers social welfare

OPTIMAL ANTITRUST POLICY

- Tying should be allowed when

- courts conclude the motivation is efficiency
- courts conclude the motivation is price discrimination (price discrimination has ambiguous welfare effects and price discrimination is typically not a prohibited activity)
- courts conclude the motivation is product differentiation (again ambiguous social welfare effects)

- courts are unsure of motivation but primary market is competitive (1992 US Kodak case is a good example of drawback of not following this rule)

- Courts should consider intervening when they suspect exclusion or rent shifting rationale.

- But even in such cases the evidentiary hurdle required for intervention should be high.
 - courts have difficulty judging motivation and a policy of aggressive intervention may hurt rather than help efficiency by prohibiting or deterring efficient tying

 - great weight should be given to any plausible efficiency rationale (this means intervention should be very rare in rent shifting cases)

 - even in these strategic tying situations welfare effects are sometimes ambiguous and courts

are unlikely to be able to distinguish between good and bad strategic tying

- Hurdle should be higher for product design ties than for contractual ties.

CONCLUSION

- There has been much recent progress in the economic theory of tying and, in contrast to the Chicago School argument, it is now clear there are various settings in which tying is used to exclude competition.
- Despite this, I believe a policy of aggressive intervention is misplaced for various reasons.
- In other words, the existence of an anticompetitive rationale should not be enough to justify intervention. The evidence should clearly support the anticompetitive rationale (this is the mistake made in the 1992 US Kodak case).

- Finally, another reason for caution is that, as should be clear from the talk, this is a topic in which theory is still evolving and given the prevalence of efficient tying it makes sense to intervene rarely.