Why Tie a Product consumers do not use?

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I. Introduction

- Most previous analyses of tying focus on either efficiency, price discrimination, or exclusionary rationales.

- We provide a new explanation in which a monopolist of a primary good ties a complementary good in order to shift profits from an alternative producer of the complementary good to the monopolist by altering the subsequent pricing game.

Example

- Suppose Microsoft sells individual products
  - Consumers purchase Windows and Quicktime
  - Microsoft earns 13 per consumer

- Suppose Microsoft ties
  - Consumers purchase tied product and Quicktime (and use/consume Quicktime)
  - Microsoft earns 20-2=18 per consumer

  Tying is privately (but not socially) optimal even though the tied product is not used and the rival is not excluded.

Summary

- This paper considers a model that captures and extends the logic of the previous example.
- Basic assumptions:
  - Monopolist of primary product
  - Complementary good can be produced by the monopolist and a rival
  - Consumers only have valuations for systems (where a system consists of a primary product and one or more complementary goods – but only one is used)
  - Ties are reversible

Summary

- Different Analyses:
  - Identical consumers
  - A simple case of heterogeneous consumers
  - Endogenous R&D choice by the monopolist

    In each case we show that tying can be equilibrium behavior even when the tied product is not used in equilibrium.

Outline of Talk

II.   Relationship to previous literature

III.   Model

IV.   Analysis

V.   R&D Distortions

      A.   When the functionality of the tie is endogenous

      B.   When the existence of the rival's product is endogenous

VI.   Antitrust implications

VII.   Conclusion

In most previous analyses where tying is used to disadvantage rival producers the tying either causes exit or blocks entry.

Two previous papers consider arguments where independent products are tied with the results that profits rise because of a reduction in competition in one of the markets.

Carbajo, de Meza and Seidman (JIE 1990) Chen (J Bus 1997)

in our analysis tying shifts profits rather than reduces competition and we assume complementary products

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- Farrell and Katz (JIE 2000) consider a similar model and show various behaviors that can increase profits via a "price squeeze."
  - integration
  - R&D
  - exclusionary deals

    we show a similar result applies to tying given reversible ties and possible efficiencies

III. Model

Assumptions of the model

1. Monopolist and single alternative producer in one-period setting.

2. Primary good produced by monopolist at constant marginal cost of c_P.

3. Complementary good produced by monopolist and single alternative producer at constant marginal cost of c_C.

4. The alternative producer's complementary good is superior.

III.   Model

Assumptions of the model

5. Goods are only consumed in systems, where a system consists of the monopolist's primary good and one or both complementary goods (although two complementary units are never both used).

6. Monopolist can tie but ties are reversible (a reversible tie means that the alternative producer's complementary good can be added to the monopolist's tied product).

7. In the absence of the alternative producer tying by the monopolist is (weakly) efficient.

8. Identical consumers.

III. Model

Assumptions of the model

9. Gross consumer benefits of various consumption choices.

    0: if an individual purchases a primary or complementary good by itself

    V^M: if an individual purchases separately the monopolist's primary and complementary goods

    V^M+ : if an individual purchases the monopolist's tied product

    V^A

III. Model

' Timing of the game

1. Monopolist decides whether or not to tie (no mixed bundling).

2. Firms choose prices.

3. Consumers make purchase decisions.

Equilibrium

1. Subgame Perfect Nash Equilibrium

2. Multiple equilibria are resolved by assuming   of the "surplus" associated with the alternative producer's superior complementary product is captured by the monopolist and (1-) is captured by the alternative producer, 0   <1.

III. Model

IV. Analysis

, Proposition 1: Suppose =0 and >0. Then there is a unique equilibrium in which the monopolist sells individual products.

Intuition is that because monopolist receives a positive share of the surplus tying is not optimal.

Result is similar to Whinston's (1990) result concerning essential products.

- when the primary product is essential all the potential profits can be captured through sales of the primary good and thus there is no return to tying
- this result continues to hold even though tying here is reversible
- although result would not hold without our surplus sharing assumption

- Changing the sharing rule Assumption
  - Suppose =0
    - then the monopolist ties whenever >c_C and this is inefficient whenever V^M+ <V^A

  - Suppose = +>0 when the monopolist sells individual products but =0 when the monopolist ties
    - there would still be two parameter ranges associated with inefficient tying

IV.　Analysis

' Heterogeneous consumers

  ' in the paper we show similar results hold when there is a second group characterized by $V^A=V^M$

  ' elsewhere, we show similar results hold when there is a second group that strictly prefers the monopolist's complementary good

V. R & D Distortions

A) Monopolist's R&D decisions

- ' New assumptions

1. Added functionality of tied product can be either high or low.

2. Probability it is high is positively related to R&D investment.

   - $= {}^H$ with probability $p(R)$
   - $= {}^L$ with probability $(1-p(R)$
   - ${}^H > {}^L$, $p(0)=0$, $p'(.)>0$, $p''(.)<0$

3. We want to focus on inefficient tying in which the monopolist's complementary product is not used.

   - $V^M + {}^H V^A - c_C$ and $(1-) {}^H c_C$

Proposition 4: If $V^M +$ $V^A - c_C$ and $(1-$ $)$ ^{H} c_C, then R>0 and the following hold.

i. If $(1-$ $)$ ^{L} c_C, then the monopolist ties whether or not the R&D investment is successful and consumers purchase the tied product and the alternative producer's complementary product.

ii. If $(1-$ $)$ $^L < c_C$ and the R&D investment is successful, then the monopolist ties and consumers purchase the tied product and the alternative producer's complementary product.

V. R & D Distortions

iii. If (1-) L< cC and the R&D investment is unsuccessful, then the monopolist sells individual products and consumers purchase the monopolist's primary product and the alternative producer's complementary product.

Now there are two distortions.

as before, the monopolist sometimes ties even though its complementary product is not used in equilibrium

V. R & D Distortions

B) Alternative producer's R&D decisions

' New assumptions

1. Alternative producer's complementary product is the outcome of an R&D investment that may or may not be successful.

2. Probability the R&D investment is successful is p(R), where p(0)=0, p (.)>0, and p (.)<0.

3. We again focus on inefficient tying which means the monopolist's complementary product is not used when the alternative producer's investment is successful.

$$- \qquad V^M+ \quad V^A-c_C \text{ and } (1- \;) \qquad c_C$$

V.   R & D Distortions

R : investment level assuming the monopolist is not allowed to tie when the product is not used in equilibrium (when the alternative producer's investment is successful)

R*: first best optimal investment level

Proposition 5: If V^M+ $V^A - c_C$ and $(1-$ $)$ c_C, then the following hold.

i.   If the R&D investment is unsuccessful, then the monopolist (efficiently) ties and consumers purchase the tied product.

V. R & D Distortions

ii. If the R&D investment is successful, then the monopolist ties and consumers purchase the tied product and the alternative producer's complementary product.

iii. R<R <R*

R < R* because the alternative producer only receives a share of the surplus associated with successful R&D investment

R<R <R* because tying aggravates the underinvestment problem since when the monopolist ties the alternative producer gets even a smaller share of the surplus

VI. Antitrust Perspectives

' Our views on optimal antritrust policy for tying are spelled out in Carlton and Waldman (2005) and Carlton, Greenlee, and Waldman (2008).

  ' The hurdle for antitrust intervention should be very high because of possible efficiencies of tying and difficulty of both identifying motivation and welfare implications when tying is strategic.

  ' Hurdle should be lower for contractual ties rather than physical ties because this does not require interfering in the internal workings of the firm.

  ' Safe Harbors should be based on main theories concerning the harmful effects of tying.

VI.   Antitrust Perspectives

' Implications of current paper.

  ' Related to first point above, hurdle should be especially high for cases based on our argument because the argument requires that there be a plausible alternative based on tying efficiencies.

  ' In types of settings we consider, optimal tying and merger policies are interlinked.

VII. Conclusion

- Most previous analyses of tying have focused on efficiency, price discrimination, and exclusionary rationales for the practice.

- We provide a new rationale in which tying is used to shift profits from a rival but does not exclude the rival.

- Our explanation has the following distinctive features.

  - in contrast to most of the existing literature, we realistically allow tying to be reversible

  - we are the first (to our knowledge) to explain why a firm might tie a product that is not used in equilibrium

  - we show that Whinston's "essential" result is not robust to reversible ties when there are potential efficiencies associated with tying

VII. Conclusion

- Although the tying we describe is socially inefficient, we feel it provides a weak justification for antitrust intervention because of