The Antitrust Treatment of Vertical Restraints: Beyond the Possibility Theorems

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U.S. Federal Trade Commission
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The views expressed herein do not reflect the views the FTC or any Commissioner.
Outline

- Vertical IO and Its Many Possibility Theorems
- Applicability? – Choosing Among Possibility Theorems
- Science and Antitrust
- History of Science Regarding Vertical Restraints/Integration Under Fixed Proportions (Focusing on RPM, ET, VI, and Nonlinear pricing).
  - Fundamental Theorem of Antitrust
  - Literature through the Circa 1984 Synthesis
  - The last 25 years
- Implications of Scientific Literature for Antitrust Policy
- Conclusions
Vertical IO and Its Many Possibility Theorems

- **Examples:**
  - Differentiated Bertrand retailers, upstream competition, unobservable wholesale prices, observable retail prices that are the only strategic variables, no uncertainty/risk implies anticompetitive RPM with partial coverage. (Shaffer, 1991)
  - Differentiated Bertrand manufacturers, competitive retailers, linear or observable two-part tariff input contracts, and retail prices that are the only strategic variables, no uncertainty/risk implies ET is anticompetitive when it is profitable. (Rey & Stiglitz, 1995)
  - Upstream market power, unobservable nonlinear contracts that form contract equilibrium or PBE with passive beliefs, and retail prices that are the only strategic variables, no uncertainty/risk implies restraints/integration reduces ex post welfare by allowing the upstream firm to commit not to compete with itself and thereby exploit its market power. (Hart & Tirole, 1990; O'Brien & Shaffer (1992), Rey & Verge (2004).
  - Upstream monopoly, observable wholesale prices that form a subgame perfect equilibrium to the take-it or leave-it game, no uncertainty/risk implies restraints/integration typically increase ex post welfare. (Mathewson & Winter, 1984).

- Such is the nature of theoretical results in models of vertical control.
On Sorting Through the Possibility Theorems

- Which possibility theorems are applicable?

- Applicability is rarely discussed in the literature.
  - To the extent it is discussed, it is often via unjustified policy prescriptions in conclusions of papers that examine highly stylized models.

- Applicability needs more critical attention. But how?

- My position is that applicability should be determined via established principles of science.
Science and Antitrust - 1

- **Scientific Method**
  - Theorize, test, refine, repeat.
  - Retain an accepted theory until another is found to do better.

- **Primary criterion for assessing a theory:** consistency with the phenomena it seeks to explain (empirical criterion).

- Relevant science for antitrust is economics.
Science and Antitrust - 2

- For a variety of reasons, the empirical criterion is hard to apply in economics.
  - Empirical literature is underdeveloped.
  - The best theory may be depend on institutional details that haven’t been incorporated into previous empirical work.

- Implication: substantial uncertainty in choosing the best theory.
In a world of uncertainty, Bayesian Decision Theory is a useful, accepted scientific approach.

1. Start with priors about the likelihood a practice is anticompetitive.
   - Priors should be guided by scientific literature.

2. Update priors based on evidence.

3. Make policy decision by weighing losses from Type I and Type II errors.
Two types of evidence are relevant in step 2 (updating):

- *Case-specific empirical evidence.*
  - Natural experiments.
  - Clear evidence that practice is likely to cause negative effects, e.g., rival exit, or a price increase with no offsetting benefit.

- *Reasonableness* of different modeling assumptions.

Other relevant factors in assessing theories:

- *Robustness*, especially across the set of assumptions that seem reasonable.

- *Occam’s Razor* (principle of parsimony); other factors equal, simpler is better.
Scientific Developments – 1776-1838: Fundamental Theorem of Antitrust

- Theorem: “Combining substitutes is bad and combining complements is good, unless demonstrated otherwise.”
  - Cournot’s (1838) two models imply this theorem.

- Cournot’s Fundamental Insight:
  - Horizontal and vertical pricing externalities.
    - Former implies horizontal integration raises price.
    - Latter implies the integration of complements lowers price.
Scientific Developments – 1838-1950s: Basic Vertical Relationships

- **Successive Monopoly (Spengler, 1950)**
  - Linear contracts yield double-marginalization.
  - VI, Two-part tariffs, and max RPM eliminate vertical externality and achieve the fully integrated outcome, lowering price.
  - Isomorphic to Stackelberg variant of Cournot complements.

- **“One Monopoly Rent” – Original (Director; Comment; Bork, 1954)**
  - Upstream monopoly/downstream competition.
  - Linear contracts achieve fully integrated outcome.
  - Only motivation for integration or restraints is to reduce costs.

“One Monopoly Rent” – Modern (Dixit, M&W, others)
- Upstream monopoly/downstream oligopoly.
- Linear contracts yield double-marginalization.
- Observable two-part tariffs or max RPM balance the vertical and horizontal externalities so as to achieve fully integrated outcome, lowering price.

Retailer Non-Price Decisions (Telser, M&W, many others).
- Upstream monopoly/downstream oligopoly/competition; non-contractible, non-price retailer decisions.
- Absent restraints, retail margins are too low to induce the fully integrated level of retailer effort.
- RPM and/or ET induce or come closer to inducing the fully integrated outcome, typically bringing efficiency benefits.
Summary of the Circa 1984 Synthesis

- Fundamental theorem of antitrust remained intact. Post Cournot developments:
  - Qualitative equivalence between Cournot complements and successive monopoly.
  - Downstream oligopoly.
  - Observable non-linear contracts.
  - Incorporation of non-contractible retailer non-price decisions.
  - Recognition of potential for integration/restraints to foster collusion, deter entry, and evade regulation.

- Literature combines:
  - Horizontal and vertical externalities in price (Cournot), and
  - Horizontal and vertical externalities in non-price retail decisions.

- Key insights driven by the interaction of horizontal and vertical externalities.
Scientific Developments – 1984-Present: Theory

- Uncertainty/Risk (Rey & Tirole)
- Strategic Motives for VI (Salinger, OSS, Reiffen & Vita)
- Strategic Motives for Vertical Restraints (Shaffer, Rey & Stiglitz)
- Contracting Externalities I (Hart & Tirole, O’Brien & Shaffer, McAfee & Schwartz, Rey & Verge, Rey & Tirole)
- Double Moral Hazard (Romano)
- Mitigate Distortions from Price Discrimination (Chen)
Scientific Developments – 1984–Present: Theory

- Contracting Externalities II – RPM (Dobson & Waterson)
- Contracting Externalities II – VI (O’Brien)
- Collusion – Mfgr Cartel (Jullien & Rey)
- Collusion – Dealer Cartel (Nemo*)
- Non-price Retailer Effort and Mfgr Oligopoly (Nemo*)
- Successive Oligopoly with Observable Nonlinear Contracts (Nemo*)

* “Nemo” means there is no formal literature.
### Scientific Developments – 1776-Present: Theory

<table>
<thead>
<tr>
<th>Theory</th>
<th>Market Structure</th>
<th>Contracts</th>
<th>Services</th>
<th>Info Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Successive Monopoly</td>
<td>Upstream: Monop.</td>
<td>Linear</td>
<td>Retailer: None</td>
<td>No uncertainty Symmetric info.</td>
</tr>
<tr>
<td></td>
<td>Downstream: Monop.</td>
<td>Observable</td>
<td>Mfgr: None</td>
<td></td>
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<tr>
<td></td>
<td>Downstream: Comp.</td>
<td>Observable</td>
<td>Mfgr: None</td>
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<tr>
<td></td>
<td>Downstream: Oligop.</td>
<td>Observable</td>
<td>Mfgr: None</td>
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<td></td>
<td>Downstream: Oligop.</td>
<td>Observable</td>
<td>Mfgr: None</td>
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<td>Downstream: Oligop.</td>
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<td>Mfgr: None</td>
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<tr>
<td></td>
<td>Downstream Oligop.</td>
<td>Observable</td>
<td>Mfgr: None</td>
<td></td>
</tr>
<tr>
<td>5. Cost and Demand Uncertainty/Retailer Risk Aversion</td>
<td>Upstream Monop.</td>
<td>2 Part</td>
<td>Retailer: None</td>
<td>Cost/dem uncertainty at contract Retailer risk aversion</td>
</tr>
<tr>
<td></td>
<td>Downstream Oligop.</td>
<td>Observable</td>
<td>Mfgr: None</td>
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<td></td>
<td>Downstream Oligop.</td>
<td>Observable</td>
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<td></td>
<td>Downstream Oligop.</td>
<td>Obs/Unobs</td>
<td>Mfgr: None</td>
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# Scientific Developments – 1776-Present: Theory

<table>
<thead>
<tr>
<th>Category</th>
<th>Upstream</th>
<th>Downstream</th>
<th>Nonlinearity</th>
<th>Privacy</th>
<th>Dem Info</th>
<th>Exog. Uncertainty</th>
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</thead>
<tbody>
<tr>
<td>7. Contracting Externalities I</td>
<td>Mon/Olig</td>
<td>Olig.</td>
<td>Nonlinear</td>
<td>No</td>
<td>Sym</td>
<td>No exog. uncertainty</td>
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<tr>
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<td></td>
<td>Unobservable</td>
<td>private</td>
<td>cost/dem</td>
<td>sym cost/dem info</td>
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<td></td>
<td>info</td>
<td>info</td>
<td>Private contract info</td>
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<td>8. Double Moral Hazard</td>
<td>Monop.</td>
<td>Monop.</td>
<td>Linear</td>
<td>Retail: Effort</td>
<td>Effort</td>
<td>No uncertainty</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>Observable</td>
<td>Mfr: Effort</td>
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<td>Symmetric info</td>
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<tr>
<td>9. Distortions from Retail Price Discrimination</td>
<td>Monop.</td>
<td>Monop.</td>
<td>2 Part</td>
<td>Retail: None</td>
<td>Mfr: None</td>
<td>No uncertainty</td>
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<td>Observable</td>
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<td>Ret Priv Inf Re disc</td>
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<td>Observable</td>
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<tr>
<td>11.a. Collusion – Manufacturer Cartel</td>
<td>Oligop.</td>
<td>Oligop.</td>
<td>2 Part</td>
<td>Retail: None</td>
<td>Mfr: None</td>
<td>Dem uncert at contract</td>
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<td>Unobservable</td>
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<td>Ret obs dem bef pricing</td>
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<td>Observable</td>
<td>Mfr: None</td>
<td></td>
<td>Symmetric info</td>
</tr>
<tr>
<td>13. Manufacturer Oligopoly and Retailer Oligopoly</td>
<td>Oligop.</td>
<td>Oligop.</td>
<td>Nonlinear</td>
<td>Retail: None</td>
<td>Mfr: None</td>
<td>No uncertainty</td>
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<td>Observable</td>
<td>Mfr: None</td>
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<td>Symmetric info</td>
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</tbody>
</table>
Which are Viable Antitrust Theories?

- “Principle-agent” theories (1, 2, 3, 4a-c, 5, 7, 8, 9, 10a-b) are not good antitrust theories.
  - Antitrust should not punish firms for attempting to extract the area under their demand curves (i.e., for maximizing profits).

- Viable anticompetitive theories:
  - Strategic Motives (6a-b).
  - Collusion (11a-b).
  - Regulatory evasion and entry deterrence, which are not topics of this paper.
Scientific Developments – 1984-Present: Empirical Literature

- Cooper et al. (2005) review of 24 papers.
  - Almost no support for anticompetitive theories.
  - Support for integration/restraints to eliminate double mark-ups generate cost savings.
  - Indirect evidence that restraints are used to motivate retailer non-price decisions.

- Lafontaine & Slade (2005) review 15 papers on RPM/ET/VI.
  - Voluntary restraints tend to raise quality and service.
  - Government-imposed restraints tend to harm consumers.

- Recent papers
  - Nonlinear pricing used to mitigate double mark-ups (Villas-Boas, 2007).
  - Revenue sharing used to mitigate double mark-ups (Mortimer, 2008).
  - ET used to induce dealer services (Zanarone, 2009).
Implications of Literature – Bayesian Decision Methodology

- Form priors guided by empirical literature.
- Update priors from case-specific evidence.
- Decide by minimizing a loss functions that accounts for Type I and Type II errors.
Priors Based on Literature

- Empirical literature overwhelmingly fails to reject the Circa 1984 Synthesis.
- Empirical criterion suggests fairly strong priors that vertical integration/restraints are unlikely to harm competition.
Updating Priors with Evidence

- Case-specific Empirical Evidence
  - Natural experiments.
  - Other compelling predictive evidence.

- Reasonableness of Assumptions
  - Difficulties:
    - Which assumptions are most reasonable?
    - What is the relevant benchmark?
    - What about factors the models leave out?
      - Should we make antitrust policy based on models developed during an investigation?
  - Bottom line is that “reasonableness” doesn’t take us very far.
Updating Priors with Evidence - 2

- Robustness and Simplicity
  - Literature through the Circa 1984 Synthesis focuses on horizontal and vertical externalities.
    - Models are relatively simple.
    - Models yield tight, intuitive predictions.
    - Models are not rejected by empirical work done to date.
  - Literature since the Circa 1984 Synthesis adds contracting externalities and strategic agency effects.
    - Models are complex.
    - Predictions are sensitive to:
      - Nature of input contracting, including assumptions about out-of-equilibrium beliefs.
      - Nature of extensive form.
      - Nature of oligopoly.
Conclusions

- Literature through the Circa 1984 Synthesis suggests a largely benign view of vertical restraints.

- Empirical literature of the past 25 years does not reject the Circa 1984 Synthesis.

- The introduction of contracting externalities and strategic agency effects offers insights, but so far the predictions are not robust.

- A scientific approach suggests challenging vertical practices based on
  - Direct evidence of likely harm.
  - A belief that type II errors are large relative to type I errors.
    - No basis for believing that this is the case (though I suppose there could be a basis in a specific case).

- A Hippocratic philosophy ("do no harm") suggests intervening only when there is direct evidence of harm.