Salience and Online Sales: The Role of Brand Image Concerns

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Research Question And Contribution

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- This may induce two inefficiencies: a *quality* or a *participation distortion*.

- A ban on online sales, **RPM**, and dual pricing eliminate both distortions
  $\rightarrow$ vertical restraints on online sales can be socially desirable.

Online Sales Are Important, But Restraints Are Widespread

Online stores are on the rise:

- Online sales account for \$395 billion (11.7% of overall sales) in the US or about \$1900 billion (8.7% of total retail spending) worldwide in 2016.
- **Advantages:** (1) reduce retail costs, and (2) may expand customer base.

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- In 2012, *adidas* banned the sale of its products via open online marketplaces.
- In 2017, *Samsonite* has obliged retailers in Germany to give up online sales.

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Legal assessment of vertical restraints on online sales:

- EU Guidelines: critical view due to potential restrictions of (intra-brand) competition.

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Legal assessment of vertical restraints on online sales:

- EU Guidelines: critical view due to potential restrictions of (intra-brand) competition.
- **But:** Judgement of the ECJ on Dec 6, 2017, allows producers of luxury brands to prohibit retailers to sell their products on internet platforms.

Brand Image: A Multi-Layered Concept

The business dictionary defines brand image as the *"impression in the consumers' mind of a brand's [...] real and imaginary qualities and shortcomings."*

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$\longrightarrow$ brand image reflects both: a brand's **objective** and its **perceived** quality.

In our approach, online discounts affect both components of brand image:

- contrast effect $\rightarrow$ perceived quality decreases due to price disparities;
- in response the manufacturer also provides a lower objective quality.

Related Literature On Industrial Organization

Justifications for Vertical Restraints on Online Sales:
- Service externalities: Telser (1960, JLE), Mathewson and Winter (1984, RAND), Hunold and Muthers (2017, WP).
- Different demand/cost characteristics across channels: Miklos-Thal and Shaffer (2017, WP), Dertwinkel-Kalt et al. (2015, EJLE).
- Price as signal of quality: Inderst and Pfeil (2016, WP).

Further reasons for vertical restraints (in particular RPM):
- Alleviate intra-brand competition (Hart and Tirole 1990).
- Private information among retailers (Rey and Tirole 1986, AER).
- Facilitate collusion among manufacturers (Jullien and Rey 2007, RAND).
- Prevent retailers from price discriminating based on consumers' abilities to switch retailers (Chen 1999, RAND).
- Salience effects distort retailers' incentives (Helfrich and Herweg 2017, WP; Inderst and Obradovits 2017, WP).

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Related Literature On Salience And The Contrast Effect

Theoretical Models: The contrast effect is the central ingredient of Tversky (1969, PsyRev), Rubinstein (1988, JET), and the salience models by Kőszegi and Szeidl (2013, QJE) and Bordalo et al. (2012, QJE; 2013, JPE).

Empirical Relevance: The contrast effect ...

- unifies many choice anomalies in one coherent framework:
  - choice under risk: Allais paradox and skewness preferences;
  - consumer choice: attraction and compromise effects;
  - intertemporal choice: present bias and annuity puzzle.
- is empirically well-established in purchase decisions (similar to our setup):
  - the larger the difference between current and past prices the more likely consumers switch to lower-quality gas (Hastings and Shapiro 2013, QJE);
  - if price expectations are optimistic (rather than correct), price is salient and subjects buy a low quality in the lab (Dertwinkel-Kalt et al. 2017, JEEA).

Vertical Market Structure
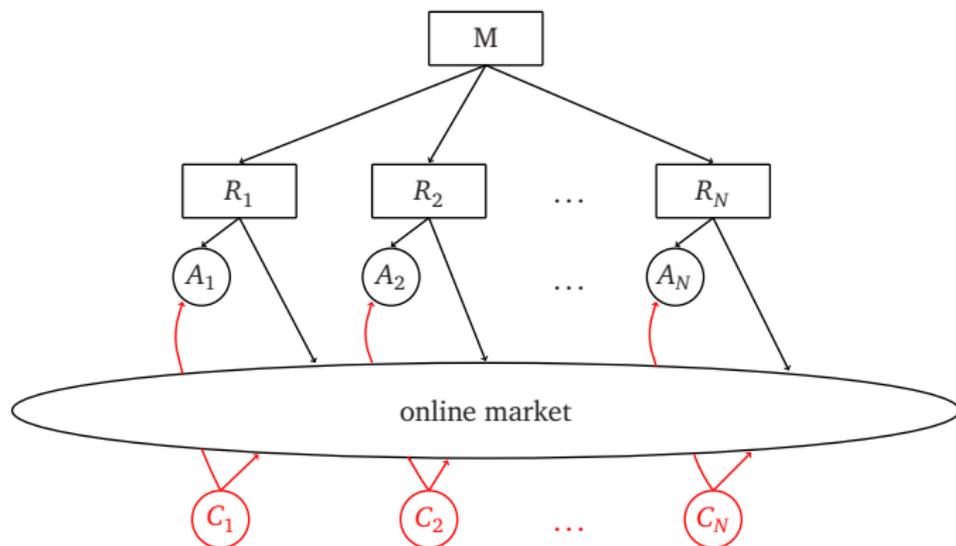
Figure: *The manufacturer M produces a good of quality $q \in [\underline{q}, \overline{q}]$ at unit cost $c(q)$ and sells it to N retailers at $w \geq 0$. The consumers in area A_i (i.e., the group C_i) can buy in all on- and offline stores. Offline retail costs are $r > 0$ and online retail cost are zero.*

Two Groups Of Consumers That Differ w.r.t. Their Shopping Preferences

- Unit mass of consumers who value the good at $v(q)$ with $v' > 0$ & $v'' \leq 0$.
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- Two types of consumers (both are equally distributed across areas):
  - *Offline consumers*, a share $1 - \alpha$, incur disutility $l > r$ when buying online.
  - *Online consumers*, a share α, have the same utility on- and offline.
- The outside option of not buying gives utility zero.

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- The outside option of not buying gives utility zero.
- Consumers observe all on- and offline offers.
- Online competition is perfect while we allow for some market power offline.

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The Game

Timing:

1. Stage: M sets a quality $q \in [\underline{q}, \overline{q}]$ and a linear wholesale price $w = w(q) \geq 0$.

2. Stage: Given q and w, the retailers simultaneously choose which distribution channel(s) to operate. For each channel $k \in \{\text{on}, \text{off}\}$ that retailer i operates she chooses a retail price $p_{i,k} \geq 0$.

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Solution Concept: Subgame-perfect Nash Equilibrium (SPNE).

Price Sensitivity Depends On The Set of Product Offers

We assume that consumers are **salient thinkers**:

- A salient thinker evaluates an option within the set of all offers.
- *Contrast effect:* whatever attribute—price or quality—varies less in this set, is less salient and discounted by some parameter $\delta \in (0, 1)$.

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- Since the manufacturer offers a single quality, the product's price is salient if on- and offline prices differ.

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- Since the manufacturer offers a single quality, the product's price is salient if on- and offline prices differ.
- Salience-weighted utility at the local store:

$$u(q,p) = \begin{cases} \delta v(q) - p & \text{if price is salient,} \\ v(q) - p & \text{otherwise.} \end{cases}$$

- We restrict the strength of salience effects: δ is assumed to be not too small.

Efficient Production And Distribution

We assume that *consumer surplus* is independent of salience effects.

Definition 1 (Efficient Quality)

Quality provision is efficient if and only if $q = \arg \max_q [v(q) - c(q)]$.

Definition 2 (Efficient Distribution)

All consumers are served efficiently if and only if online consumers buy online and offline consumers buy offline.

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Benchmark: No Adverse Effect Of Online Sales With Rational Consumers

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Proposition 1 (Equilibrium with Rational Consumers)

Quality provision is efficient and there exists some $\alpha_R \in (0, 1)$ such that:

a) *If the share of online consumers is small (i.e., $\alpha < \alpha_R$), all consumers are served efficiently.*

b) *If the share of online consumers is large (i.e., $\alpha \geq \alpha_R$), only the online consumers are served (via the online channel).*

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In particular, the manufacturer earns (weakly) more if online sales are feasible.

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Preview: Equilibrium With Salient Thinkers

Unlike in the classical model, three types of equilibria can arise under salience:

- Online Equilibrium: only online consumers buy and quality provision is efficient (as in the rational benchmark);

- Price Salient Equilibrium: all consumers buy, price is salient, and the provided quality is inefficiently low;

- Excessive Branding Equilibrium: all consumers buy, price is non-salient, and the provided quality is inefficiently high.

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$\rightarrow$ The share of online consumers determines the subgame-perfect equilibrium.

Properties Of An Online Equilibrium

Lemma 1

In an online equilibrium, the following holds:

- *only the online consumers are served (via the online channel),*
- *no attribute is salient,*
- *and quality provision is efficient.*

Intuition: If the manufacturer induces an online equilibrium, then he optimally charges $w = v(q) \to$ there is no room for price variation, so that the outcome is the same as in the classical model.

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Properties Of A Price Salient Equilibrium

Lemma 2

In a price salient equilibrium, the following holds:

- *all consumers are served efficiently,*
- *the product's price is salient,*
- *and quality provision is inefficiently low.*

Intuition: If the manufacturer induces a price salient equilibrium, he optimally charges $w = \delta v(q) - r \rightarrow$ a price variation across distribution channels renders prices salient and lowers the manufacturer's incentive to provide a high quality.

Properties Of An Excessive Branding Equilibrium

Lemma 3

In an excessive branding equilibrium, the following holds:

- *all consumers are served efficiently,*
- *no attribute is salient,*
- *and quality provision is inefficiently high.*

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$\rightarrow$ The manufacturer lowers w and distorts q upward. Why?

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$\rightarrow$ The lower w the higher a retailer's margin on offline sales.

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$\rightarrow$ The manufacturer lowers w and distorts q upward. Why?

$\rightarrow$ The lower w the higher a retailer's margin on offline sales. The higher q, the less attractive it is for the retailer to induce price salience, as the corresponding reduction in WTP, $(1 - \delta)v(q)$, increases in q (excessive branding).

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$\rightarrow$ The retailers are incentivized to set $p_{i,\text{on}} = p_{i,\text{off}}$, and earn positive profits.

Unique Subgame-Perfect Equilibrium With Salient Thinkers

Proposition 2 (Equilibrium with Salient Thinkers)

There exist threshold values $0 < \alpha'_S \leq \alpha''_S < \alpha_R$ so that the following holds:

a) *For any $\alpha \in [\alpha''_S, 1)$, an online equilibrium arises.*

b) *For any $\alpha \in [\alpha'_S, \alpha''_S)$, a price salient equilibrium arises.*

c) *For any $\alpha \in (0, \alpha'_S)$, an excessive branding equilibrium arises.*

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Inefficiencies due to salience effects:

Quality distortion: For any $\alpha \in (0, \alpha''_S)$, the provided quality is inefficient.

Participation distortion: For any $\alpha \in [\alpha''_S, \alpha_R]$, offline consumers are excluded.

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$\longrightarrow$ How does the equilibrium change if different vertical restraints are feasible?

A Direct Ban On Online Sales

Proposition 3

The manufacturer imposes a direct ban on online sales if and only if $\alpha < \alpha_R$.

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A direct ban on online sales has two countervailing welfare effects:

(1) a ban eliminates both the quality and the participation distortion (positive),

(2) but online consumers are forced to inefficiently purchase offline (negative).

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(2) but online consumers are forced to inefficiently purchase offline (negative).

$\rightarrow$ the welfare effect depends on which effect prevails: (1) prevails in the case of the participation, but (2) can prevail in the case of the quality distortion.
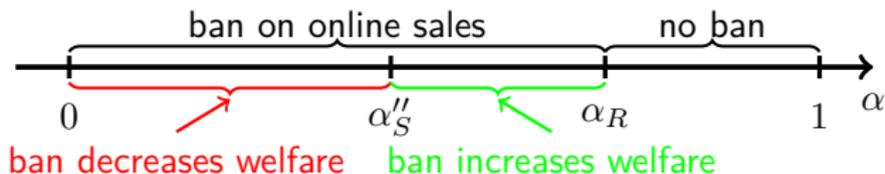
Resale Price Maintenance (RPM)

Proposition 4

The manufacturer uses RPM if and only if $\alpha < \alpha_R$, i.e., if and only if it strictly increases social welfare.

Intuition: RPM prevents a price variation across distribution channels and thus adverse salience effects (i.e., quality and participation distortion) without forcing online consumers to inefficiently purchase offline.

Robustness

Our insights are robust with respect to several extensions of our basic model:

- Two-part tariffs and retailer-specific contracts.
- Manufacturer-owned online store.
- Online Retailer.
- Continuous salience distortions.
- Retailer-region-specific transportation costs.
- Decision utility is welfare relevant.
- Offlines see only local & online offers and/or onlines see only online offers.
- Online consumers have a slight, but strict preference for either channel.
- Additional minority of rational consumers.
- Aggregate channel-demand is downward sloping.
- Other context effects such as a specific store environments.
- Horizontally differentiated manufacturers.
- Asymmetric regions.

Conclusion

- We provide a novel theoretical foundation for the claim that online sales can harm brand image (i.e., both components of brand image).
- As low online prices draw consumers' attention toward prices, the valuation for high-quality products can decrease if they are sold on- and offline.

Conclusion

- We provide a novel theoretical foundation for the claim that online sales can harm brand image (i.e., both components of brand image).

- As low online prices draw consumers' attention toward prices, the valuation for high-quality products can decrease if they are sold on- and offline.

- If vertical restraints are prohibited, one out of two welfare-decreasing inefficiencies can arise: a quality or a participation distortion.

- Thus, we argue that vertical restraints—bans on online sales/ RPM/ dual pricing—should not be treated as hardcore restrictions of competition as under European competition law.