Retailers' advertisement strategies towards competitors

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Motivation

- January 2007: TV available for retailers' ads (end of a 1968 prohibition act protecting revenues of the local press and commodity stores).
- Meantime, Private Labels (PL) represent 25% of retailers' revenues and Agrofood firms mainly advertise on TV (75%).
- So we observe a PL ads increase through TV by retailers on equal terms (Auchan, ITM, Leclerc).

Media (%)	2006	2010		Evolution
	Retailing	Retailing	Agrofood firms	(Retailing only)
PRESS	37.6	29	7.2	- 8.6
RADIO	34.2	34	6.1	- 0.2
TV	2.6	19.7	72.8	+ 17.1
EXT. DISPLAY	22.6	12.1	6.7	- 10.5
INTERNET	2.5	5.1	6.7	+ 2.6
CINEMA	0.5	0.1	0.5	- 0.4

Introduction

- In the retailing industry, 2 kinds of advertising are observed:
  - Retailer Ad. : general communication about the fascia;
  - Product Ad. : specific communication about private labels.
- Questions:
  - How retailer's store format does influence the choice of advertising?
  - Is there any anticompetitive effect of advertising in the retailing industry?

Retailers' advertising strategies

- 3 kinds of advertising:
  - Informative Ad. (Milgrom & Roberts, 1986) : Provides information to consumers about the product ➔ demand more elastic, competition increased, welfare-increasing.
  - Persuasive Ad. (Braithwaite, 1928): alters consumers' tastes, increases the wtp ➔ demand less elastic (higher prices, entry more difficult), welfare-reducing (anticompetitive role).
  - Complementary Ad. (Becker & Murphy, 1993): ad. is an argument of the consumer's utility ('social image'), Welfare?
- Karray and Martín-Herrán (2008, 2009) show the ambiguity of persuasive advertising (increases product differentiation but lowers total demand) and pernicious effects of store advertising (increasing interbrand competition leading to lower store revenues).
- In our framework, advertising is mainly persuasive (changes preferences across retailers) but can be informative (when the ad. concerns the store).

Retailers' advertising: empirical studies

- Ackerberg (Rand, 2001 & Inter. Eco. Review, 2003): ads giving consumers product information primarily affect consumers who never tried the brand. Empirical study: confirmed by consumer-level data on purchases of a newly introduced brand of yogurt.

- Simester *et al*. (Economic Inquiry, 2009): dynamic ad. effects for women's clothing → current ads. does affect future sales but for the firm's best customers, the long-run outcome may be negative according to brand switching and intertemporal substitution.

- Lewis and Riley (2011): Empirical study on VOD sales: Yahoo! retail advertising increases VOD sales and is very profitable (factor 11). Besides, sales effects remain persistent for weeks.

Retailers' supply

- Retailer 1 sells two goods: PL (q_{PL}) and NB (q_1) with $q_{PL} < q_1$.
  - The alternative to the NB is a PL because R1 defines its quality according to the existing competing goods characteristics (q_1, q_2).
- Retailer 2 sells only one good of quality q_2. Two cases:
  - Retailer 2 is a **Hard Discounter (HD)**.

    Quality levels are such that $q_2 < q_{PL} < q_1 = 1$
  - Retailer 2 is a **Commodity Store (CS)**.

    Quality levels are such that $q_{PL} < q_1 < q_2 = 1$. R1 & R2 sell the same NB good but the quality perceived depends on the store's characteristics (NB1/R2)
- Retailer 1 can implement an advertising campaign resulting into an increase of perceived quality μ, and a fix-cost $\frac{\mu^2}{2}$ (TV Campaign).
- R1 faces two kinds of ad. messages: **store (R1)** vs **product (PL).**

Consumers' preferences

- Consumers buy at most one unit of either good (NB1, PL or R2): $U_i = \theta . q_i - p_i$ for $i = \{NB1, PL, R2\}$ and $\theta \sim U[0,1]$. Utility is zero if neither good is bought.

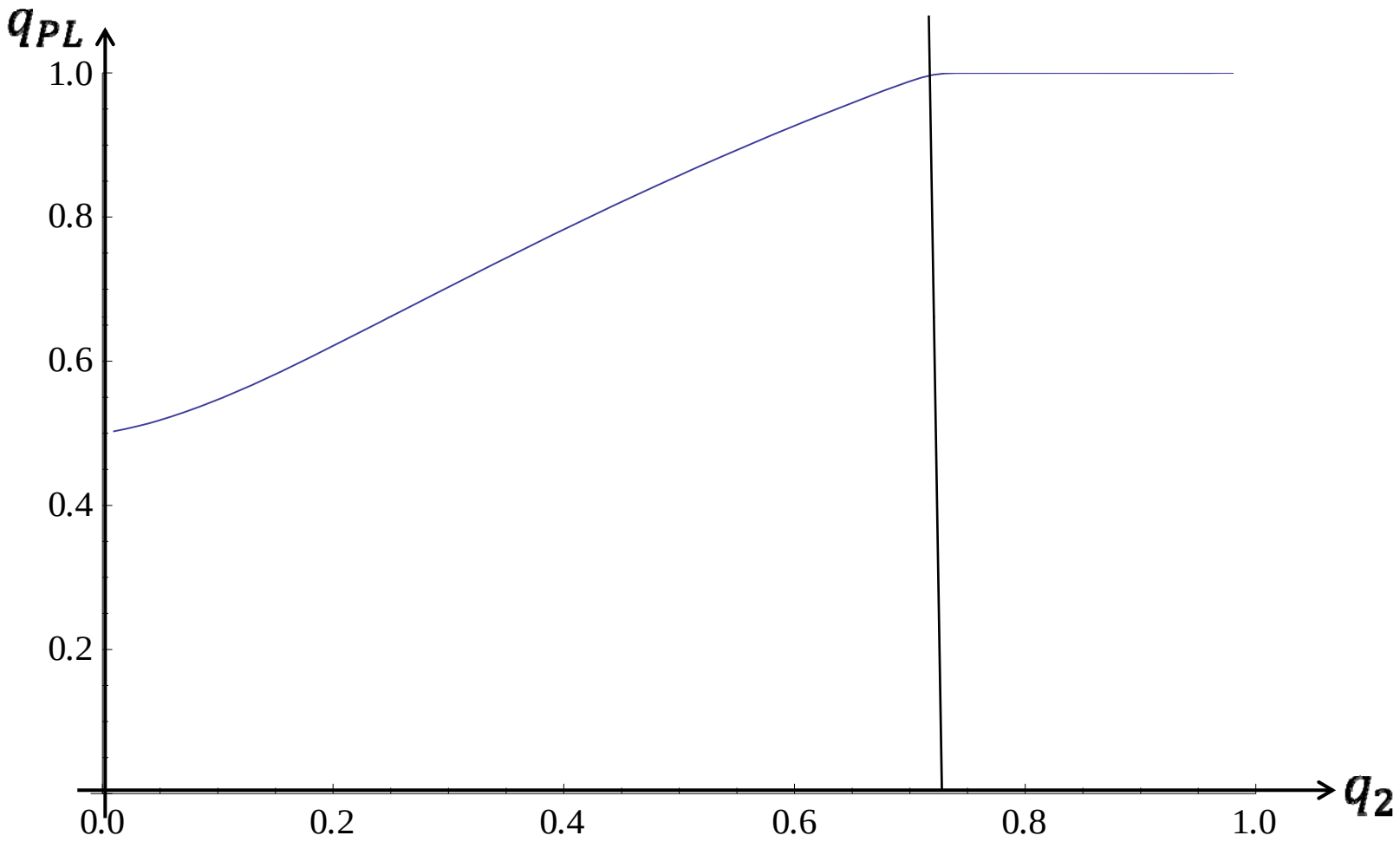
- Advertising impacts on consumer's utility:
  - **Store advertising:** consumers' utility increases when buying at store R1 by $\theta . \mu$ (whatever the good).
  - **Product advertising:** quality perceived increases ***for PL only***. It translates into $q_{PL} \rightarrow q_{PL} + \mu$.

Timing of the game

- According to the irreversible degrees of R1 strategies, the timing is the following:

  - Step 1: Retailer R1 chooses the PL quality according to the quality of the competing products;
  - Step 2: R1 chooses its advertizing style as well as its intensity;
  - Step 3: Competition in prices takes place.

Mass retailer *vs* Hard-Discounter
PL quality choice at step 1 (without ad.)



- PL quality increases with competitor's product characteristics ;
- When $q_2 > 0.75$, demand of NB1 becomes nil (no differentiation).

Mass retailer *vs* Hard-Discounter

$$q_2 < q < q_1 = 1$$

- Store Ad. (R1)

$$\tilde{\theta}.\mu + \tilde{\theta}.1 - p_1 = \tilde{\theta}.\mu + \tilde{\theta}.q - p$$
$$\hat{\theta}.\mu + \hat{\theta}.q - p = \hat{\theta}.q_2 - p_2$$

$$D_1 = 1 - \tilde{\theta} = 1 - \frac{p_1 - p}{1 + \mu - (q + \mu)}$$

$$D_{PL} = \tilde{\theta} - \hat{\theta} = \frac{p_1 - p}{1 + \mu - (q + \mu)} - \frac{p - p_2}{(q + \mu) - q_2}$$

$$D_2 = \frac{p - p_2}{(q + \mu) - q_2} - \frac{p_2}{q_2}$$

$$D_0 = \frac{p_2}{q_2}$$

- Product Ad. (PL)

$$D_1 = 1 - \frac{p_1 - p}{1 - (q + \mu)}$$

$$D_{PL} = \frac{p_1 - p}{1 - (q + \mu)} - \frac{p - p_2}{(q + \mu) - q_2}$$

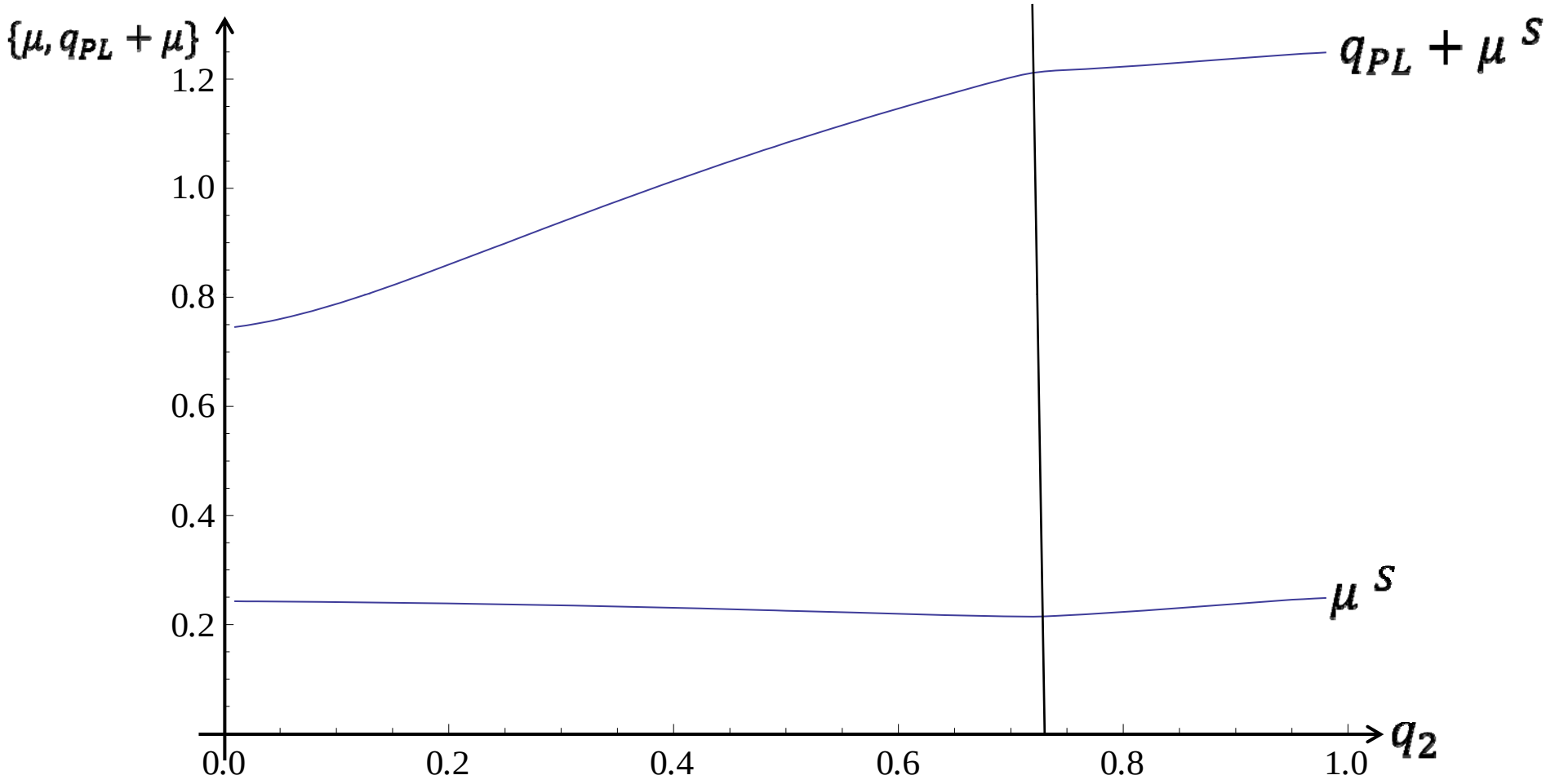
$$D_2 = \frac{p - p_2}{(q + \mu) - q_2} - \frac{p_2}{q_2}$$

$$D_0 = \frac{p_2}{q_2}$$

with $q + \mu < q_1 = 1$

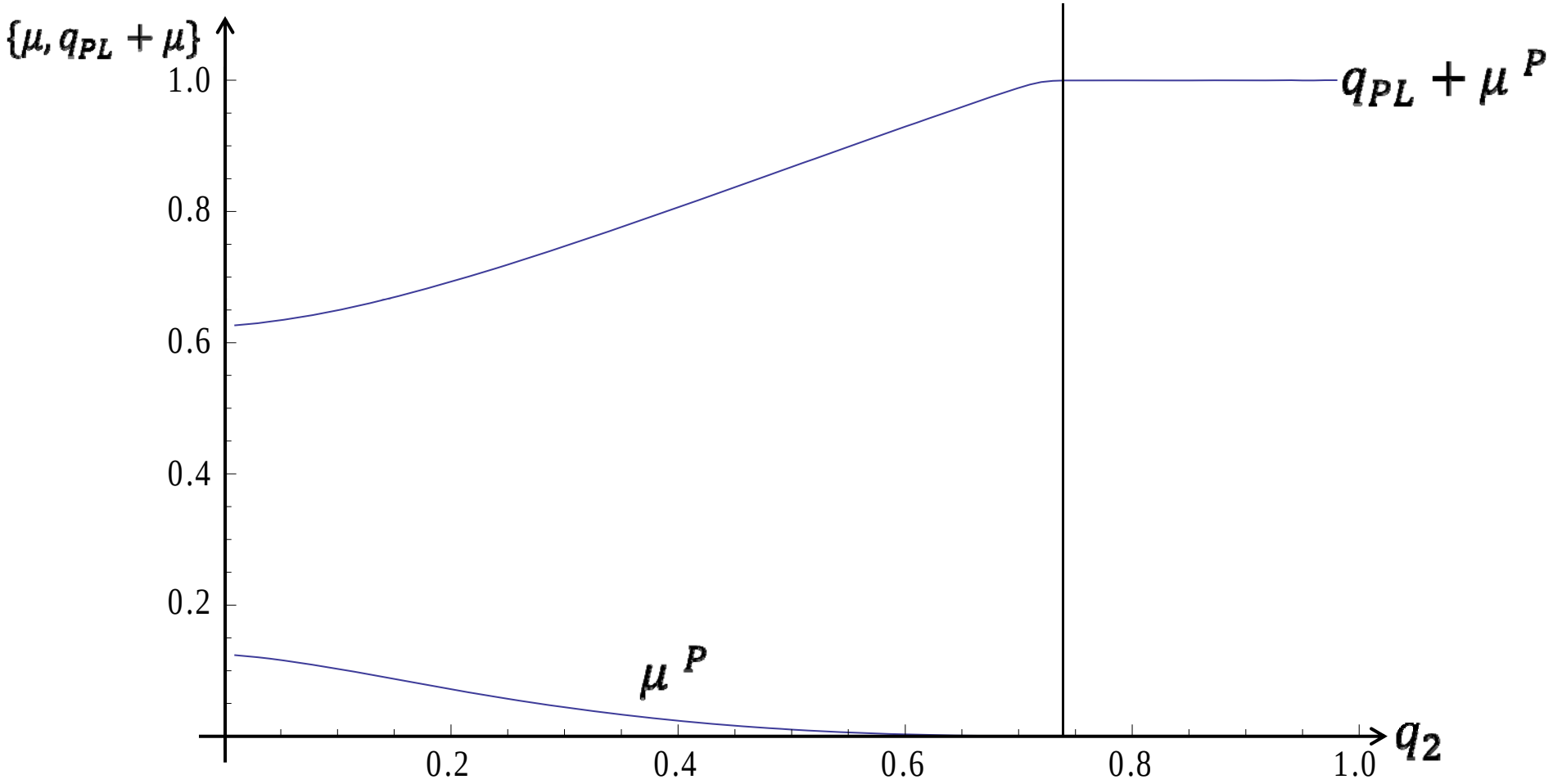
$$\Pi_1 = (p_1 - \frac{1}{2})D_1 + (p_{PL} - \frac{q^2}{2})D_{PL} - c(\mu) \text{ and } \Pi_2 = (p_2 - \frac{q_2^2}{2})\, D_2$$

Mass retailer *vs* Hard-Discounter
Store advertising intensity



- As q_2 increases, product differentiation decreases generating less rents to finance more store advertising (even if it would relax competition in prices).

Mass retailer *vs* Hard-Discounter
Product advertising intensity

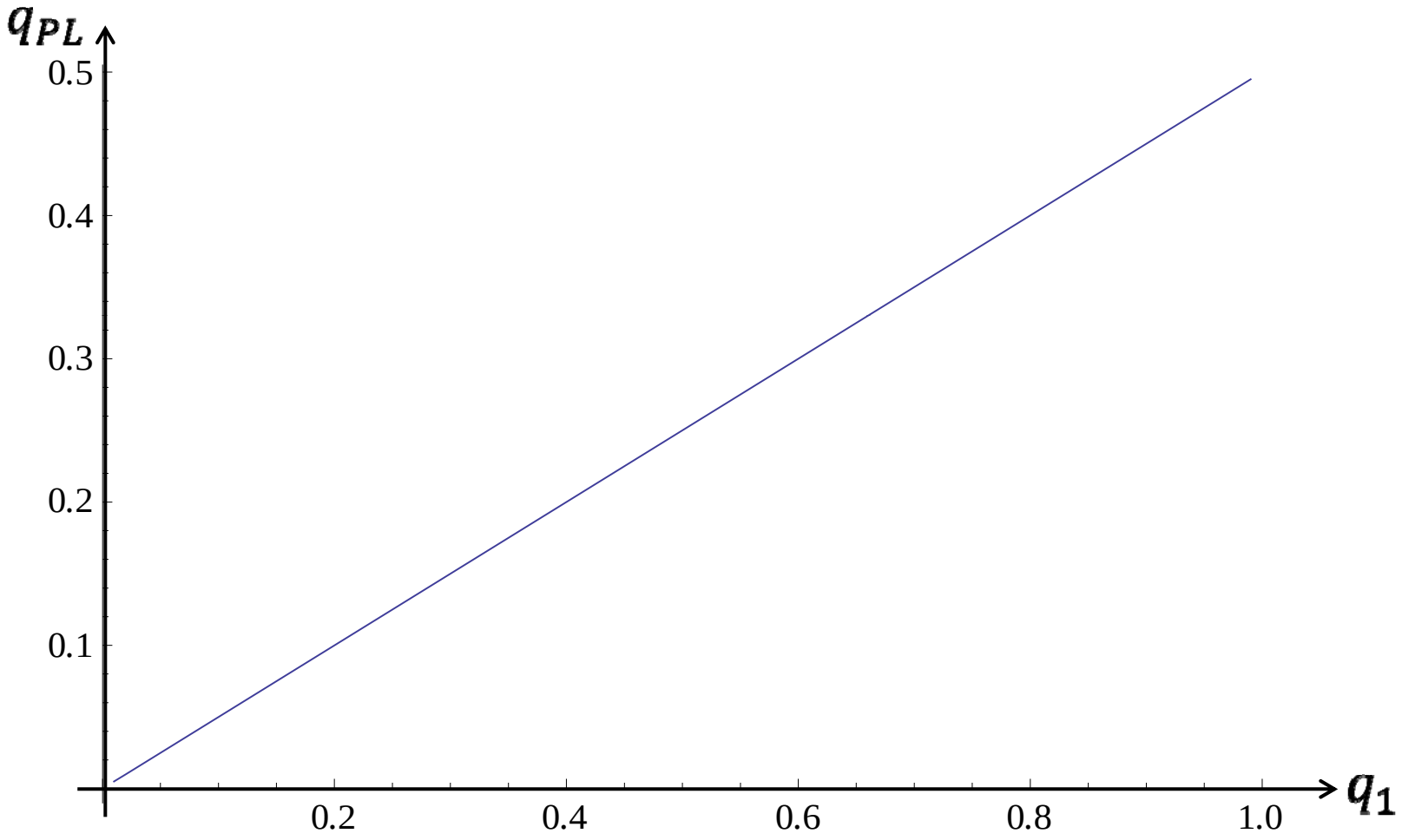


- As q_2 increases, same effect due to product differentiation than store ad.
- However, for a given q_2, $\mu^P < \mu^S$ because when $\mu^P \nearrow$ it results into a lower differentiation between NB and PL and thus a lower discrimination cost

Mass retailer *vs* Hard Discounter: advertising strategy equilibrium

- Whatever the ad. strategy (store vs product):
  - R2 demand ↘ while R1 demand ↗ (due to the rise of differentiation between R2 and PL) ;
  - Market coverage ↗ (pro-competitive effect of publicity that lower R2 price) ;
- R1 always prefers to use **« store advertising »**:
  - In the product ad. , PL demand ↗ at the detriment of NB demand (which has higher margin);
  - In our model, for store ad. , NB demand does not change.

Mass retailer *vs* Commodity Store
PL quality choice at step 1 (without Ad.)



PL quality increases with competitor's product characteristics,

Mass retailers vs Commodity Store

$$q < q_1 < q_2 = 1$$

- Store Ad. (R1)

$$D_2 = 1 - \frac{p_2 - p_1}{1 - (q_1 + \mu)}$$

$$D_1 = \frac{p_2 - p_1}{1 - (q_1 + \mu)} - \frac{p_1 - p}{(q_1 + \mu) - (q + \mu)}$$

$$D_{PL} = \frac{p_1 - p}{(q_1 + \mu) - (q + \mu)} - \frac{p}{q + \mu}$$

$$D_0 = \frac{p}{q + \mu}$$

with $q_1 + \mu < q_2 = 1$

- Product Ad. (PL)

$$D_2 = 1 - \frac{p_2 - p_1}{1 - q_1}$$

$$D_1 = \frac{p_2 - p_1}{1 - q_1} - \frac{p_1 - p}{q_1 - (q + \mu)}$$

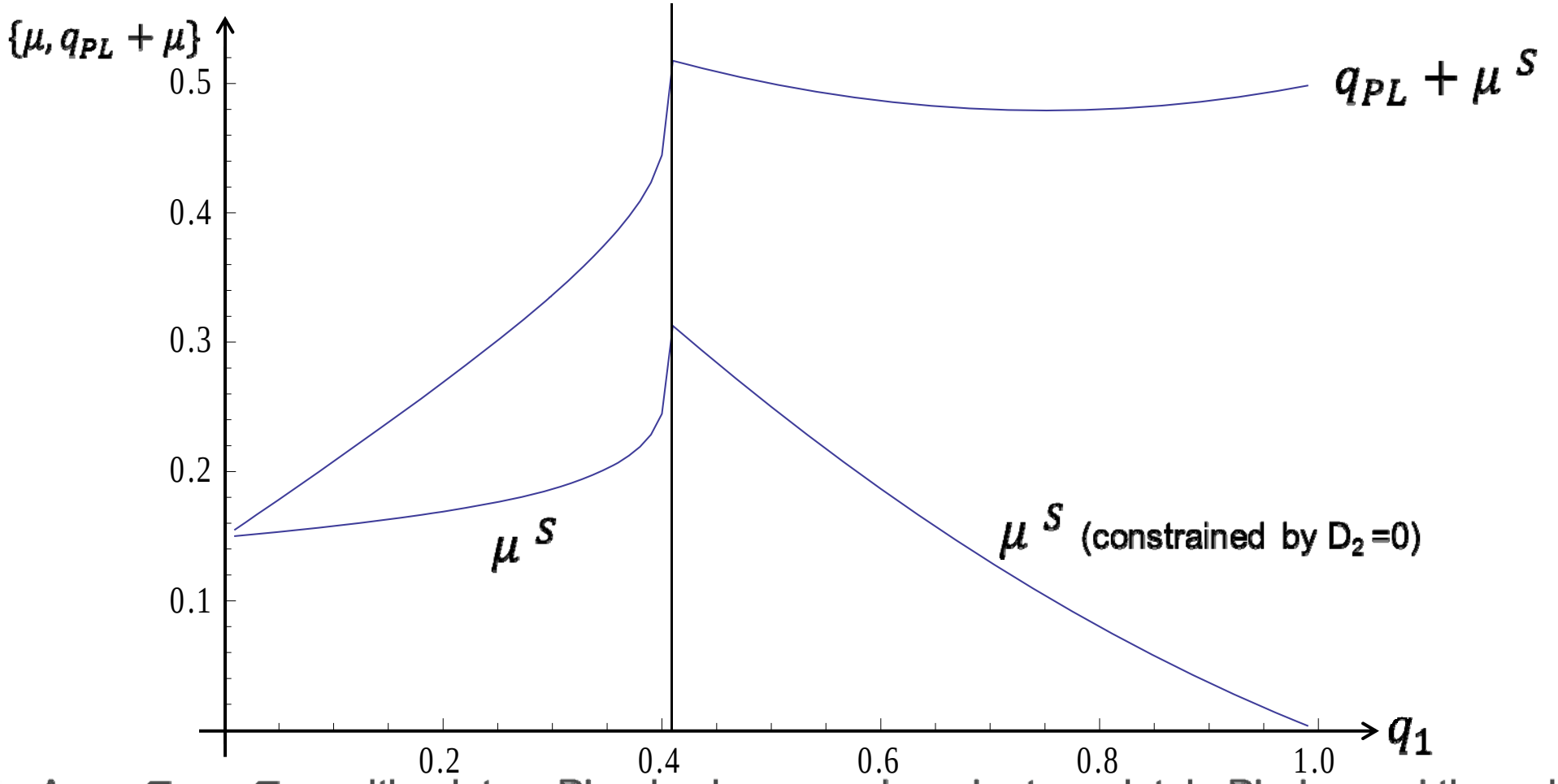
$$D_{PL} = \frac{p_1 - p}{q_1 - (q + \mu)} - \frac{p}{q + \mu}$$

$$D_0 = \frac{p}{q + \mu}$$

with $q + \mu < q_1$

$$\Pi_1 = (p_1 - \frac{q_1^2}{2}) D_1 + (p_{PL} - \frac{q^2}{2}) D_{PL} - c(\mu) \text{ and } \Pi_2 = (p_2 - \frac{1}{2}) D_2$$

Mass retailer *vs* Commodity Store: store advertising intensity



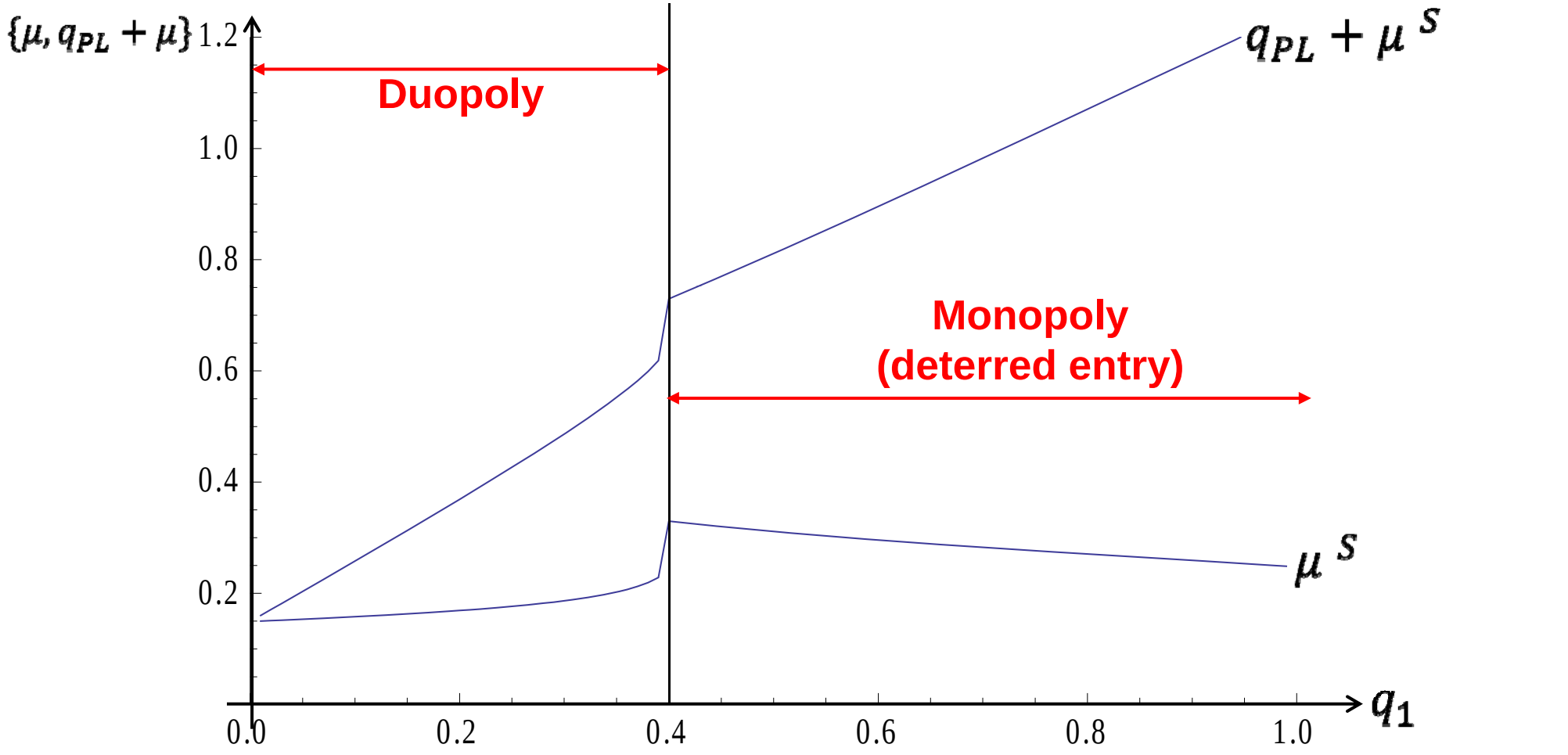
- As $q_1 \nearrow$, $q_{PL} \nearrow$ resulting into a PL price increase. In order to maintain PL demand through a good quality/price PL ratio, R1 chooses to rise its store advertising μ^S.
- When the constraint $D_2 = 0$ is binding, an increase of q_1 leads to a lower μ^S.

Mass retailer *vs* Commodity Store: store advertising intensity

- Note that for a sufficiently high q_1, R1 is able to maintain R2 out-of-the market by selecting an appropriate μ^S such that $D_2 = 0$. R1, in this regime, behaves as a monopoly.

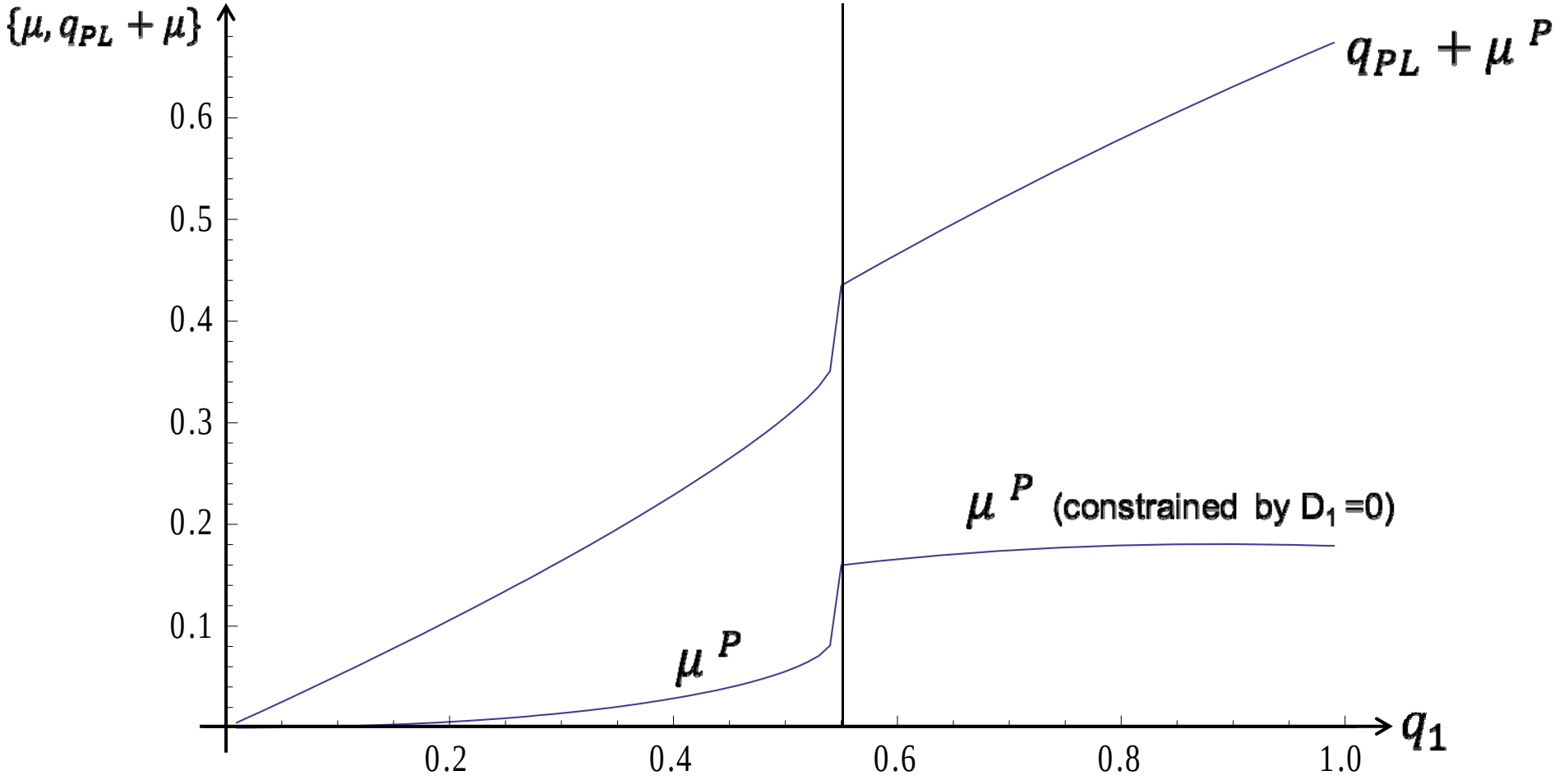
- We computed the new equilibrium taking into account that there exists a limit price for the NB deterring R2 sales:
  - $\tilde{p}_1(\mu^S)$ such that $D_2(\tilde{p}_1, p_2^*, \mu^S) = 0$;
  - In monopoly, μ^S results to be higher (NB demand consumers extraction);
  - Market coverage classically decreases (due to market power).

Mass retailer *vs* Commodity Store: store advertising intensity



- In the monopoly case, as $q_1 \nearrow$, μ^S decreases because R1 does not care anymore about maintaining differentiation in quality with his rival.

Mass retailer *vs* Commodity Store: product advertising intensity



- As q_1 ↗, $(q_{PL}+\mu^P)$↗ resulting into a too small differentiation between R1's products. This leads to $D_1 = 0$.

Mass retailer *vs* Commodity Store: product advertising intensity

- We then consider the case where R1 behaves as a single product firm selling only his private label good:
  - Optimized μ^P results to be higher in PL only equilibrium (the NB does not refrain anymore the high-quality WTP extraction);
  - Note that the final PL quality perceived ($q_{PL}+\mu^P$) is higher than the intrinsic quality of the NB product (NB still being sold at R2's) for low values of q_1.
  - Market coverage classically decreases (due to less variety offered to consumers).

Mass retailer *vs* Commodity Store: advertising strategy equilibrium

- Whatever the ad. strategy (store vs product):
  - R2 demand ↘ while R1 demand ↗ (due to the rise of differentiation between R2 and R1 closer product) ;
  - Market coverage ↗ (pro-competitive effect of publicity that increase the PL quality/price ratio) ;
- R1 always prefers **« store advertising »**:
  - NB demand ↗ generating higher profit (NB has higher margin);
  - Whereas in the product ad. , PL demand ↗
  - Store ad. allows R1 to become a monopoly when product differentiation is small (high rents generated through market power).

Social Welfare considerations

- Whatever the framework, Consumers' Surplus and Social Welfare are higher with advertising "store strategy". This is due to:
  - Advertising is quality improving for consumers;
  - R1 market power effect on prices (more differentiation) is overridden by the quality effect ($q_i + \mu^S$);
  - Market coverage increases because either R2 price falls (HD) or either because quality/price ratio rises (CS).
- Only R2 is worse-off.

Conclusions

- Allowing retailers to « mass advertise » may result into:
  - The exclusion of commodity stores (anti-competitive outcome) but not to the exclusion of HDs. TV ad. may had fasten the decline of commodity stores (30 % in 1980 to 4%in 2009) while in the same period, HD did gain 11 % of market shares.
  - Exclusion of CS arises when PL quality is high enough;
  - More market coverage through the increase of the PL quality/price ratio;
- We do observe “product advertising” on TV, whereas it is not chosen at the equilibrium in our framework:
  - This may be because margins on the PL may be higher than margins on the NB in real life.

Next to be done…

- There does not exist pure « product advertising » in the sense that the retailer's image may also be enhanced, benefiting therefore also to other products sold through retailer's image.
- The impact of « store advertising » may not be the same for both products (NB and PL).
- Since the majority of NB manufacturers use TV ads, R2 may also benefits from it. It should be tackled in a vertical relationship framework.
- The ad. strategies of the retailer may differ from the one the manufacturer would choose (aimed to increase NB demand).

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