Resale Price Maintenance and Interlocking Relationships

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Abstract

An often expressed idea to motivate the *per se* illegality of RPM is that it

1 Introduction

The attitude of competition authorities and courts towards vertical restraints varies significantly from one country to another or from one period to another.[1] Still, a consensus emerges against resale price maintenance (RPM), a restraint according to which the manufacturer sets the final price that retailers charge to consumers. While competition authorities are sometimes tolerant towards some variants of RPM such as price ceilings and recommended or advertised prices, they usually treat price floors and strict RPM as per se illegal. For example, when the European Commission adopted a more open attitude towards non-price restrictions, it maintained RPM on a black list – with only one other restraint. In France, price floors are per se illegal and, in Lypobarnceoa5e(v)57(a402.4(m)10.r)58.1i(s higher prices and profits.[7] To achieve this, manufacturers must however give retailers

with non-linear wholesale tariffs, has instead raised concerns in markets where multiple producers distribute their goods through the same retailers. For example, in December 2005, the Conseil de la Concurrence (one of the two French competition authorities) condemned brown goods manufacturers Panasonic, Philips and Sony for "vertical collusion" with their wholesalers and retailers. The Conseil de la Concurrence concluded that there was evidence that these manufacturers were actively monitoring retailers in order to ensure that they were actually following their recommended retail prices (this was especially the case for new lines of products) and were pushing wholesalers to refuse to supply retailers that were cutting prices.[12] In similar cases, the major perfume manufacturers (L'Oréal, Chanel, Guerlain, Dior, ...) and retailers (Nocibé, Marionnaud, Séphora) were fined a total of 44 million euros, and toy manufacturers (Chicco, Lego, ...) and retailers (Carrefour, JouéClub, ...) wee r monopoly level. We then endogenize the market structure. Section 4 studies situations with potential competition downstream for each retail location. Both brands are then always present at both retail locations and the previous analysis applies; in particular, when RPM is allowed, there always exists an equilibrium with monopoly prices and profits. Section 5 turns to the case of retail bottlenecks, where manufacturers cannot bypass established retailers. Manufacturers must then leave a rent to retailers to induce them to sell their products; relatedly, they can attempt to eliminate competitors by convincing retailers to reject their rival's offer. As a result, it can be the case that no equilibrium exists where both manufacturers are present in both retail outlets, even though there is demand for each brand at each store. In addition, while there may exist a continuum of equilibria with RPM, equilibria with higher retail prices now involve larger rents for the retailers and lower profits for the manufacturer – implying that manufacturers favor equilibria with rather "competitive" prices. Section 6 discusses the policy implications of our analysis and concludes.

2 The Basic Framework

distribution unit costs are symmetric and constant, and denote them respectively by c and .[17] The industry profit is thus equal to $\sum_{i \quad A,B} \sum_{j \quad ,} (p_{ij} - c - \quad) D_{ij}(\mathbf{p})$. Throughout the paper, we assume that this industry profit is concave in $\mathbf{p}$, maximal for symmetric prices, $\mathbf{p}^M = (p^M, p^M, p^M, p^M)$ and denote by Π^M this maximum (from now on, we will refer to Π^M as the monopoly profit).

To fix ideas, we assume throughout the paper that the manufacturers have all the bargaining power. We thus consider a two-stage game where at stage 1, manufacturers offer contracts to the retailers, and, at stage 2, retailers compete on the downstream markets.

3 Preliminary Analysis: Intrinsic Double Common Agency

tailers then simultaneously decide whether to accept or reject the offers, and acceptance decisions are public.

$(1 - B)$ If all offers are accepted, the game proceeds to stage 2; otherwise, the market breaks-down and the game ends with all firms earning zero profits.

- Stage 2: Downstream competition

  Retailers simultaneously set retail prices (as imposed by the manufacturer under RPM) for all the brands they have accepted to carry, demands are satisfied and payments made according to the contracts.

The simplifying "market break-down" assumption ensures that manufacturers offer contracts that are acceptable by both retailers, and that retailers never obtain more than their reservation utility, which we normalize to zero.

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3.1 Two-Part Tari s

Let us first suppose that contracts can only consist of two-part tariffs. In the second stage, each retailer $j = 1, 2$ sets its prices p_{Aj} and p_{Bj} so as to maximize its profit, given by $\ _j = \sum_{i \ A,B} (p_{ij} - w_{ij} - \ ) D_{ij} - F_{ij}$. We assume that there exists a unique retail price equilibrium for any vector of wholesale prices $\mathbf{w} = (w_A, w_B, w_A, w_B)$, and denote by $\mathbf{p}^r(\mathbf{w}) = (p^r_A(\mathbf{w}), p^r_B(\mathbf{w}), p^r_A(\mathbf{w}), p^r_B(\mathbf{w}))$ the equilibrium retail prices, and by $D^r_{ij}(\mathbf{w}) = D_{ij}(\mathbf{p}^r(\mathbf{w}))$ the resulting demand for each product.

In the first stage each manufacturer i chooses wholesale prices $w_{i(}$

wholesale and retail prices. The next proposition confirms this intuition under the following regularity conditions:

Assumption 2

i) For $w_h = w_h = w_h$ and $p_h = p_h = p_h$, and $i \neq h \quad \{A, B\}$, the revenue function Π is single-peaked in (p_i , p_i) and maximal for symmetric prices, $\hat{p}_i = \hat{p}_i = \hat{p}(p_h, w_h)$;

ii) $\hat{p}(.,.)$ satisfies $0 < \quad \hat{p} < 1$ and, for any w, the function $p \to \hat{p}(p, w)$ has a unique fixed point.

This assumption first states that retail price responses are well defined and preserve symmetry; in addition, for any symmetric profile of wholesale prices, there exists a unique, stable, "retail equilibrium" (looking at a reduced strategic game where manufacturers would simply choose retail prices, taking wholesale prices as given). We have:

Proposition 2 If RPM is allowed then:

i) There exists a symmetric subgame perfect equilibrium in which wholesale prices are equal to cost ($w^* = c$), retail prices are at the monopoly level $\left(p^* = p^M\right)$, retailers earn zero profit and manufacturers share equally the monopoly profit.

ii) Under Assumption 2, there exists a decreasing function $p^*(.)$ such that, for any w^* there exists a symmetric subgame perfect equilibrium in which wholesale prices are equal to w^*, retail prices are equal to $p^*(w^*)$, and retailers earn zero profit.

Proof. See Appendix B. ■

There is thus a continuum of symmetric equilibria and, within this set of equilibria, retail prices are inversely related to wholesale prices. Retail prices are at the monopoly level when wholesale prices are equal to cost – in this equilibrium, manufacturers thus "eliminate" any competition and achieve monopoly profits – while upstream mark-ups sustain lower retail prices.[23] In essence, with RPM, the situation is one where manufacturers deal with two, non-competing, common agents. Consider for example the polar case where retailers are pure Bertrand competitors (no downstream differentiation). With RPM the manufacturers eliminate retail competition and de facto allocate half of the demand for their products to each retailer; the monopolistic equilibrium then simply mimics the Bernheim and Whinston (1985) common agency equilibrium (without RPM) within each half-market. The above analysis generalizes this insight to the case where retailers are differentiated.

[23] Conversely, negative upstream margins would sustain retail prices above the monopoly level. The range of equilibrium prices depends on the domain of validity of Assumption 2. For example, for the linear demand used in section 5, any retail price from $c + \gamma$ up to the price for which quantities are 0 can be sustained.

- Bilateral bargaining power

While we have assumed here that manufacturers have all the bargaining power and make take-it or leave-it offers to retailers, the analysis is similar if retailers are the ones that propose the contracts in stage 1 − A with the previous situation, manufacturers are no longer indifferent as to the choice of their wholesale prices, since they affect retail efforts. There are no longer more control variables than targets, as a consequence, the multiplicity disappears. To provide adequate

$(1 - B)$ Whenever a manufacturer has an offer rejected by a retailer, it proposes a contract to its relevant alternative retailer. All offers to alternative retailers are again profitable for a manufacturer if retailers keep accepting the rival's offers.[28] However, by deviating and opting for a more aggressive behavior, a manufacturer can now discourage a retailer from carrying the rival brand.[29] In essence, such moves allow the deviating manufacturer to act as a Stackelberg leader: imposing a price below the monopoly level forces the rival to deal with the alternative retailers and therefore to set retail prices that "best respond" to the deviating manufacturer's prices. Such deviations are however unattractive when, as one may expect, Stackelberg profi section 5 as well as when prices are strategic complements and there is strong intrabrand or interbrand competition.[31]

Assumption 4 The revenue function $(p) = (p - c - \ ) D \left(p, p^M, p^M, p^M\right)$ is maximal

p_p

5 Retail Market Power

We now turn to situations where manufacturers cannot bypass the established retailers. The existence of retail bottlenecks raises two issues. First, a manufacturer can now try to eliminate its rivals, by inducing retailers to carry exclusively its own brand; while this might induce more competitive outcomes, we show that it may also prevent the brands from being offered at both stores – despite the fact that there is demand for each brand at each store. Second, retailers now have some market power and manufacturers must therefore share the profits with them. As a result, while RPM may again allow manufacturers to maintain monopoly prices, they may favor an equilibrium with lower retail prices in order to reduce retail rents – that is, they may prefer more competitive prices, and have a bigger share of a smaller pie.

Assuming that only the two established retailers (1 and 2) can reach consumers, we simply remove the part $(1 - B)$ of our game G, i.e., once retailers have decided which contracts to accept, the game always proceeds to stage 2 (downstream competition). In a double common agency sionj/.8(1(o)-bl)-133st20n.9(r(i)-6.9(8(s)--337i5(o)5.7(n)6.2o)-4.5(m)10.1(m352
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possible existence of multiple continuation equilibria for a given set of offers complicates through the fixed fees, but it increases its sales since brand B is not longer carried by one retailer. The deviation is therefore profitable whenever the wholesale margin is positive.

Suppose now that the wholesale margin is non-positive ($w \leq c$) and consider a small (symmetric) deviation by manufacturer A that consists of offering a wholesale price $v = w \pm$ and adjusting its fixed fee to ensure that double common agency is now the unique continuation equilibrium. This can easily be done since the wholesale price (resp. fixed fee) can again be adjusted to break the retailers' indifference towards preferring to carry both brands rather than brand A (resp. brand B) only. Given our linear demand specification, it can be shown that it requires increasing the wholesale price (i.e. $v = w +$, with > 0).

Proposition 5 For any , there exists a threshold $\overline{}^{RPM}(\ )>0$ such that, for any $\leq\ \overline{}^{RPM}(\ )$, there exists a continuum of symmetric equilibria with RPM and double common agency. More precisely, for any $<\ \overline{}^{RPM}(\ )$, there exist $\underline{p}(\ ,\ )\leq p^M$ and $\overline{p}(\ ,\ )\geq$, a0.8(36 TD 0 Tc (p)Tj ET 41(it52 N a0.8(78.76 0.35999 re f 100.86 [(RP)-140.9(M)]T4


0.2
0.4
0.6
0.8
1

However, since $\bar{p} \geq p^M$, there still exists some w^M $[\underline{w}, 0]$

Our analysis thus supports the concerns of the French Conseil de la Concurrence when, as mentioned in the introduction, it condemned (in three separate cases) brown goods, perfume and toy manufacturers for engaging, through RPM, into “vertical collusion” with leading multi-brand retailers. It also supports the ongoing efforts to reform the French law, adopted in 1996, that allowed manufacturers to impose de facto price floors by abusing no-resale-below-cost regulations, and which has been blamed for the important price increases that have taken place in the last decade, especially for national brands in supermarket chains. Our analysis supports this claim and shows that RPM can actually eliminate competition, not only among competing fascias, but also among competing brands. This possibility has been validated by recent empirical studies. Using data about retail prices of food products in French retail chains during the period 1994-1999, Biscourp, Boutin and Vergé (2008) find that the correlation between retail prices and the concentration of local retail markets was important before 1997 and no longer significant after that date. This suggests that the price increases that occurred after 1997 were indeed due to the are fixed (thus closer to the variant we study in section 4).

Our analysis thus suggests a cautious attitude towards price restrictions in situations where rival manufacturers rely on the same competing retailers, even – and possibly more so – in the absence of retail bottlenecks.

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A Proof of Proposition 1

We first show that equilibrium upstream margins are positive ($w^e > c$). The conclusion then follows from the fact that manufacturers fail to account for (and thus "free-ride" on) their rivals' upstream margins. At a symmetric equilibrium of the form ($p_{ij} = p^e, w_{ij} = w^e$), manufacturer i must find it optimal to choose $w_i = w_i = w^e$ when its rival adopts $w_h = w_h = w^e$; $w = w^e$ must therefore maximize:,ww

B Proof of Proposition 2

If manufacturer h adopts $w_h = w_h = w^*$ and $p_h = p_h = p^*$, from Assumption 2, manufacturer i's revenue function Π is single-peaked in (p_i, p_i) and maximal for symmetric prices, $\hat{p}_i = \hat{p}_i = \hat{p}(p^*, w^*)$; this price maximizes $\Pi(p, p^*, p, p^*, w^*, w^*)$ and thus solves:

$$\hat{p}(p^*, w^*) = \arg\max_p f(p, p^*, w^*) \equiv (p - c -) D(p, p^*, p, p^*) + (p^* - w^* -) D(p^*, p, p^*, p).$$

Obviously, $p^M = \hat{p}(p^M, c)$; thus $(w^* = c, p^* = p^M)$ always constitutes an equilibrium. In addition, for any wholesale price w^* there exists a price p^* satisfying $p^* = \hat{p}(p^*, w^*)$; this price is characterized by the first-order equation:

$$D + {}_M (p^* - c -) + \hat{}_M (p^* - w^* -) = 0,$$

with ${}_M$ and $\hat{}_M$ as defined in the previous section. To establish that p^* decreases when w^* increases, note first that $f = -\hat{}_M < 0$. Therefore, a standard revealed preference argument leads to $\hat{p} < 0$. From Assumption 2, $0 < \hat{p} < 1$,

Manufacturer h's o ers have both been accepted

We can easily rule out any such deviation since both retailers j and k would then have accepted to pay $F^c = \frac{\pi^M}{}$ each to the manufacturer h. Since the industry profit cannot exceed ^{M}, and a retailer would never accept an offer that generates losses, manufacturer i will never be able to achieve more than $^M - 2F^c = \frac{\pi^M}{}$.

Manufacturer h's o ers have both been rejected

At stage $1 - B$, manufacturer h

exceed that of the leader of the second Stackelberg scenario minus $\frac{\pi^M}{\ }$. Under Assumption 3, this profit is lower than $\frac{\pi^M}{\ } - \frac{\pi^M}{\ } = \frac{\pi^M}{\ }$.

- Suppose finally that the deviation is such that the offer $i - j$ is rejected. For such a situation to arise at the end of stage $1 - A$, the contracts must be such that retailer j expects its retail profit (on product $h - j$) to cover the franchise to be paid to manufacturer h. This means that the profit generated by product $h - j$ has to be larger than $\frac{\pi^M}{\ }$. However, if this is the case, manufacturer i would rather make an offer to retailer j (rather than distributing the product through the alternative retailer j_i) to recover all the profit generated above $\frac{\pi^M}{\ }$ on product $h - j$. ■

D Proof of Proposition 4

We now focus here on values of the parameters and for which:

$$^r(w, w; w, w) - {}^r(w, \ ; w, w) < {}^r(w, w; \ , w) - {}^r(w, \ ; \ , w). \qquad (8)$$

In the linear demand case, it can be shown that the condition first concentrate on $w > 0$, and consider a deviation where manufacturer A offers the contract (v, G) such that $v = w -$ and $G = {}^{r}(v, ; v, w) - {}^{r}(; w, w; w) + F -$,with , > 0. Note that, when and tend to 0, (v, G) tends to (w, F). Therefore, for and small enough, it is still a best reply for a retailer to accept both contracts whenever the rival retailer has rejected at least one contract. Suppose now that retailer no ...

we have constrained the retail price p^* to be higher than the marginal wholesale price w^*, therefore imposing $w^* \leq w \quad = \frac{}{-\alpha- \ \beta-\alpha\beta}$. Moreover, quantities must be positive, thereby constraining w^* to be such that:

$$q^* = D\left(\mathbf{p}^*\right) \geq 0 \Leftrightarrow w^* \geq w \quad = -\frac{-\alpha}{\alpha \quad -\alpha-\beta-\alpha\beta}.$$

In what follows, we only provide sufficient conditions that guarantee that no deviation by a manufacturer can be profitable. Depending on the contracts C_i

$$\ldots \geq 0 \quad (13)$$

$$\ldots \geq (p^* - w^*) D(p^*, \ , \ , p_{ik}) - F^* \quad (14)$$

$$\ldots \geq (p_{ij} - w_{ij}) D(p_{ij}, \ , p_{ik}, \ ) - F_{ij} \quad (15)$$

and

$$(p_{ik} - w_{ik}) D(p_{ik}, \ , p_{ij}, p^*) - F_{ik} \geq \ldots$$

$$\ldots \geq 0 \quad (16)$$

$$\ldots \geq (p^* - w^*) D(p^*, \ , p^*, p_{ij}) - F^* \quad (17)$$

$$\ldots \geq (p_{ik} - w_{ik}) D(p_{ik}, p^*, p_{ij}, p^*) - F_{ik} + (p^* - w^*) D(p^*, p_{ik}, p^*, p_{ij}) - F^* \quad (18)$$

Wholesale prices w_{ij} and w_{ik} can be set so that constraints (15) and (18) are satisfied. If manufacturer i sets the maximal possible fixed fees, its profit is:

$$\begin{aligned} _S(p_{ij}, p_{ik}) = \ & p_{ij} D(p_{ij}, p^*, p_{ik}, \ ) - \max[0, (p^* - w^*)(D(p^*, \ , \ , p_{ik}) - (1 - \ )q^*)] \\ & + p_{ik} D(p_{ik}, \ , p_{ij}, p^*) - \max[0, (p^* - w^*)(D(p^*, \ , p^*, p_{ij}) - (1 - \ )q^*)] \\ & + (p^* - w^*)[D(p^*, p_{ij}, \ , p_{ik}) - (1 - \ )q^*] \end{aligned}$$

It is now sufficient to compare the maximal value of this profit with $^*_P(w^*)$, that is,