

Chapter H.2 – Vertical Restraints

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English Version of my 2020 lecture

Vertical Restraints – Background Information

- Types of vertical restraints (101(1) TFEU)
 - Selective distribution
 - Exclusive dealing
 - Resale price maintenance, RPM
 - Quantity forcing
- Possible anti-competitive effects:
 - Reduction of competition between brands – interbrand competition; e.g., collusion on manufacturer-level
 - Reduction of competition “within” a brand – intrabrand competition; e.g., collusion on retail-level
 - foreclosure, entry barriers, ...
- Possible pro-competitive effects:
 - Reduction of free-riding (horizontal or vertical)
 - Elimination of double marginalization
 - Realize economies of scale or scope

Vertical Restraints – Background Information

- Free-riding along value chain (Telser, L. G. (1960). Why should manufacturers want fair trade? *The Journal of Law and Economics*, 3, 86-105.)
 - Costly service provision by retailers
 - Advertisement
 - Expert advice
 - Physical inspection
 - Service provision of retailer *A* benefits retailer *B* – positive externality
 - Free-riding
 - Service provision is costly (hire experts, showrooms, etc.)
 - Non-excludibility: service provision offered by *A* benefits *B*
 - Market failure possible: no more service
 - Online vs. offline retailers:
 - Service provision offline
 - Online retailers have cost-advantage (economies of scale, no service provision)
 - Consumer uses services offered by offline retailer and buys online
 - Vertical restraints can condemn this problem
 - ASICS and COTY (https://www.bundeskartellamt.de/SharedDocs/Publikation/DE/Schriftenreihe_Digitales/Schriftenreihe_Digitales_4.pdf?__blob=publicationFile&v=2).

Vertical Restraints – Service Externalities

- Cf. Motta (2004: 316–321)
 - Upstream manufacturer U with marginal cost c and wholesale price w
 - Two downstream retailers 1 and 2 sell good and choose service provision e_i , $i \in \{1, 2\}$
 - Consumer demand $q = (v + e) - p$, with $e = e_1 + e_2 \Rightarrow$ Service provision of i increases perceived “quality”, irrespective of whether purchased from i or $-i$
 - Cost function downstream
 - Price competition downstream $C(q, e_i) = wq + \frac{\mu e_i^2}{2}$, $\mu > 1$.
- We analyze different scenarios:
 - Vertical separation (S).
 - Vertical integration (VI).
 - Exclusive territories and franchise fees (ET).
 - RPM and franchise fees (RPM).
 - RPM and quantity forcing (QF).

Vertical Restraints – Service Externalities

- Vertical separation (S)
 - Bertrand competition: $p_1 = p_2 = w$.
 - Service provision firm i :

$$\max_{e_i} \pi_i = (p_i - w) \underbrace{(v + e - p)}_{q(e,p)} - \frac{\mu e_i^2}{2} \stackrel{p_i=w}{\Rightarrow} \frac{d\pi_i}{de_i} < 0.$$

- No investment in service provision, $e_i = 0 \forall i$:
 - Service provision benefits both retailers
 - Bertrand competition leads to profits of zero, i.e., no incentive for service provision
- U anticipates $p_i = w$ and $e_i = 0$, such that demand reads $q = v - w$
- Ensuing wholesale price

$$w_S = \arg \max_w (w - c)(v - w) = \frac{v + c}{2}.$$

- We have $\Pi_S = \pi_U = \frac{(v-c)^2}{4}$, $CS_S = \frac{(v-c)^2}{8}$, $W_S = \frac{3(v-c)^2}{8}$.

Vertical Restraints – Service Externalities

- Vertical integration (VI)
 - Vertically integrated firm maximizes joint profits

$$\max_{p, e_1, e_2} \pi_g = (p - c)(v + e_1 + e_2 - p) - \frac{\mu(e_1^2 + e_2^2)}{2}.$$

- Optimality condition for service provision,

$$\frac{\partial \pi_g}{\partial e_i} = p - c - \mu e_i = 0 \quad \forall i,$$

- and optimality condition for price,

$$\frac{\partial \pi_g}{\partial p} = v + e_1 + e_2 - 2p + c = 0.$$

- In equilibrium, we have $e_{VI} = \frac{v-c}{2(\mu-1)}$, $p_{VI} = \frac{\mu(v+c)-2c}{2(\mu-1)}$ and $q_{VI} = \frac{\mu(v-c)}{4(\mu-1)}$ for each retailer
- Accordingly, $\Pi_{VI} = \pi_g = \frac{\mu(v-c)^2}{4(\mu-1)}$, $CS_{VI} = \frac{\mu^2(v-c)^2}{8(\mu-1)^2}$, $WS_{VI} = \frac{\mu(3\mu-2)(v-c)^2}{8(\mu-1)^2}$.

Vertical Restraints – Service Externalities

- Vertical integration increases welfare $W_{VI} > W_S$
- Competition downstream chokes incentives to invest in services (externality not internalized)
- To foster investments in service provision, competition downstream needs to be softened
- This can be achieved by vertical integration
- Consumers benefit here as $CS_{VI} > CS_S \Leftrightarrow \mu > \frac{1}{2}$, which is satisfied by assumption
- VI optimal, however, probably not achievable (merger control, Chapter G)
- Effects of vertical restraints?

Vertical Restraints – Service Externalities

- Exclusive territories and franchise fees (ET)
 - Territories are assigned such that each retailer serves half the consumers
 - Fixed fee T and per unit price w with $w = c$.
 - Profit maximization of retailer i :

$$\max_{p_i, e_i} \pi_i = (p_i - c) \underbrace{\frac{v + e_1 + e_2 - p_i}{2}}_{\frac{q(e, p)}{2}} - \frac{\mu e_i^2}{2} - T.$$

- Optimality condition for service provision of retailer $i \in \{1, 2\}$, $i \neq j$,

$$\frac{\partial \pi_i}{\partial e_i} = \frac{p_i - c}{2} - \mu e_i = 0,$$

- and optimality condition for prices,

$$\frac{\partial \pi_i}{\partial p_i} = v + e_i + e_j - 2p_i - c = 0.$$

Vertical Restraints – Service Externalities

- Exclusive territories and franchise fees (ET)

- In equilibrium, we have $e_{ET} = \frac{v-c}{2(2\mu-1)}$ and $p_{ET} = \frac{\mu(v+c)-c}{2(\mu-1)}$.

- With ET, we have higher service provision than with S but less than with VI.

- Still 50% of investment not internalized

- We have $\Pi_{ET} = \frac{(c(-\mu)+c+\mu v)(c(-2\mu^2+\mu+1)+\mu(2\mu-3)v)}{2(\mu-1)^2(2\mu-1)}$, $CS_{ET} = \frac{(c(-2\mu^2+\mu+1)+\mu(2\mu-3)v)^2}{8(2\mu^2-3\mu+1)^2}$, $WS_{ET} = \frac{(\mu(10\mu-7)v-c(\mu-1)(10\mu-3))(c(-2\mu^2+\mu+1)+\mu(2\mu-3)v)}{8(2\mu^2-3\mu+1)^2}$.

- Even if one retailer serves all customers, we have lower service provision due to increasing marginal cost, $\frac{\mu e_I^2}{2}$.

Vertical Restraints – Service Externalities

- RPM and franchise fees (RPM)
 - U fixes retail price at first-best level p_{VI}
 - Profit maximization downstream,

$$\max_{e_i} \pi_i = (p_{VI} - w) \frac{v + e_1 + e_2 - p_{VI}}{2} - \frac{\mu e_i^2}{2} - T,$$

- yields FOC:

$$\frac{\partial \pi_i}{\partial e_i} = \frac{p_{VI} - w}{2} - \mu e_i = 0 \Leftrightarrow e_i(w) = \frac{p_{VI} - w}{2\mu}$$

- To achieve optimal service provision, we must have $e_i(w) = e_{VI}$, such that

$$\frac{p_{VI} - w}{2\mu} = \frac{v - c}{2(\mu - 1)}.$$

- This is satisfied if $w_{RPM} = \frac{3\mu c - 2c - \mu v}{2(\mu - 1)} < c$.

Vertical Restraints – Service Externalities

- RPM and franchise fees (RPM)
 - RPM allows for replication of first-best solution (e_{VI}, p_{VI})
 - With $(p, e, w) = (p_{RPM}, e_{RPM}, w_{RPM})$ for $p_{RPM} = p_{VI}$ and $e_{RPM} = e_{VI}$, equilibrium values for profit, consumer surplus and welfare identical to VI
 - Manufacturer supplies good below marginal cost, $w_{RPM} < c$
 - Fixed fees T compensate for ensuing losses
 - Allocation of surplus along value chain bargaining problem, disagreement points/outside options as in scenario S

Vertical Restraints – Service Externalities

- RPM and quantity forcing (QF)
 - As in case of RPM, first best prices $p_{QF} = p_{VI}$
 - U “forces” i 's quantity to be (at least) $q_{QF} = q_{VI}$, instead of 2PT (w_{RPM}, T)
 - Retailer i chooses service provision based on (exogenous) prices and minimal quantities:

$$\max_{e_i} \left\{ \pi_i = \frac{(p_{VI} - w)(v + e_i + e_j - p_{VI})}{2} - \frac{\mu e_i^2}{2} : \frac{v + e_i + e_j - p_{VI}}{2} = q_{VI} \right\}.$$

- Using Lagrangean \mathcal{L} with multiplier λ , we get

$$\frac{\partial \mathcal{L}}{\partial \lambda} = \frac{v + e_i + e_j - p_{VI}}{2} - q_{VI} = 0.$$

- Symmetry on retail-level, $e_i = e_j$ in equilibrium, such that $e_{QF} = \frac{2q_{VI} + p_{VI} - v}{2}$, which equals e_{VI} .
- Wholesale price w does not affect (p_{QF}, q_{QF}, e_{QF}) (incentive neutrality).
- U can use wholesale prices to extract surplus:

$$\frac{(p_{VI} - w_{VI})(v + 2e_{VI} - p_{VI})}{2} - \frac{\mu e_{VI}^2}{2} = 0 \Leftrightarrow w_{QF} = \frac{v + c}{2}.$$

- U 's profit reads $(w_{QF} - c)q_{QF} \equiv \pi_{VI}$, such that welfare as with VI.

Vertical Restraints – Service Externalities

- Guidelines on RPM in EU: 2010/C 130/01, Rn. 223ff
- RPM under 101(1) TFEU, application of 101(3) possible
- Notable exceptions: fixed book price systems, prescription drugs
- Anti-competitive effects of RPM
 - Elimination of price competition downstream, effects on interbrand and intrabrand competition
 - Eases collusion, e.g., by improving market transparency/monitoring
 - Foreclosure, e.g., by retailers shifting sales to goods under RPM with higher margins

Vertical Restraints – Exclusivity Clauses

- Potential effects of exclusivity clauses on interbrand competition
 - Monopolistic incumbent produces homogeneous product at constant marginal cost c_I
 - Monopoly profits with linear price $p_M = \frac{a+c_I}{2}$: $\pi_M = \frac{(a-c_I)^2}{4}$
 - Consumer surplus reads $CS_M = \frac{(a-c_I)^2}{8}$.
 - More efficient entrant with marginal cost $c_E < c_I$.
 - Bertrand competition upon entry, i.e., entrant would choose $p_E = p_I - \epsilon$, $\epsilon \rightarrow 0$ and incumbent is driven out of the market
 - Consumer surplus with entry $CS_E = \frac{(a-c_I)^2}{2}$.
 - Incumbent could deter entry by offering long-term contract/exclusivity clause such that buyer(s) only from incumbent
 - Buyer(s) must benefit from contract to accept it. Upon entry, consumer surplus increases by $\Delta CS = CS_E - CS_I = \frac{3(a-c)^2}{8}$.
 - Incumbent's monopoly profit not sufficient to compensate buyer(s) $\Delta CS > \pi_M$. Here, exclusivity clause cannot be implemented.