

Who Benefits from Supplier Encroachment in the Presence of Cost Learning?

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Motivation: Encroachment

India's Largest Apple Premium Reseller

Delhi | Gujarat | Haryana | Maharashtra | Punjab | Uttar Pradesh | Uttarakhand

Step into our world; we look forward to your visit.



Unicorn: Apple Reseller in India

Apple Store in India
(launched in 2020)

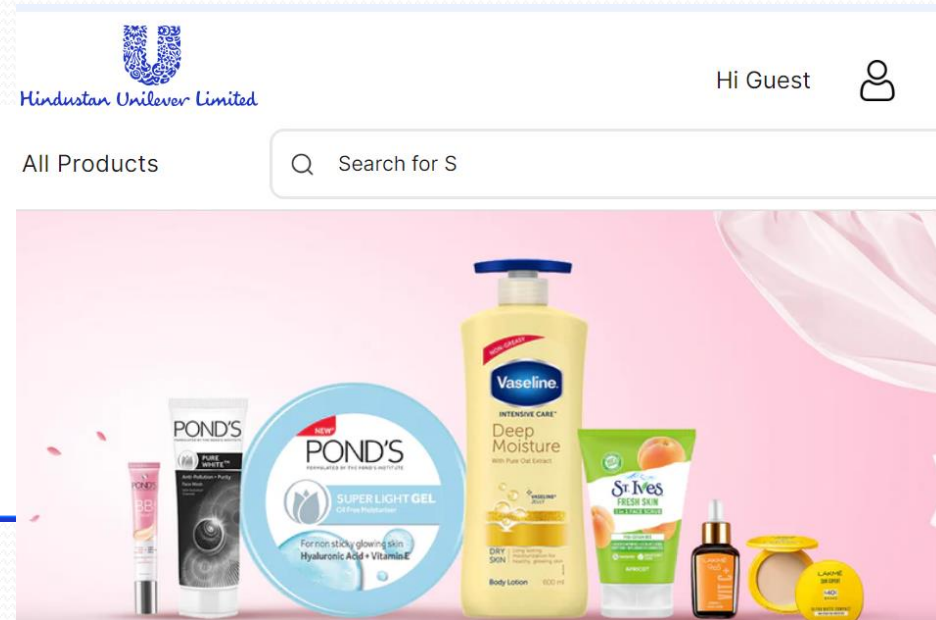
Encroachment: Opening an alternative direct channel to sell one's products, which competes with one's own supply chain retailers.

Motivation: Encroachment



Hindustan Unilever Limited

HUL: traditionally sold through
retailers

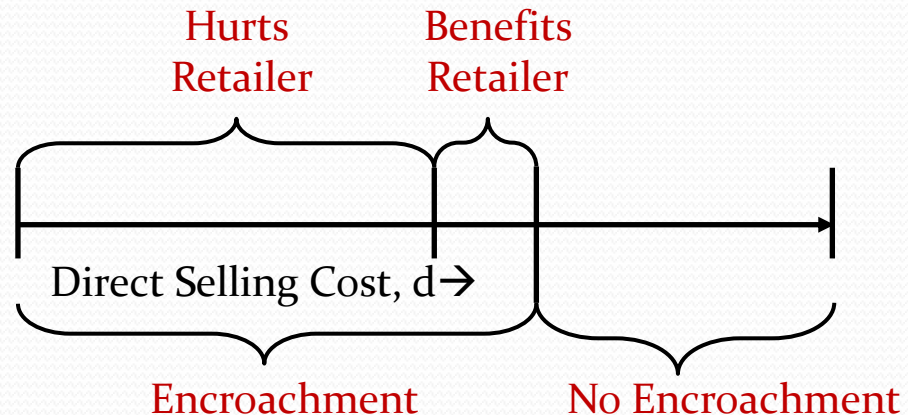
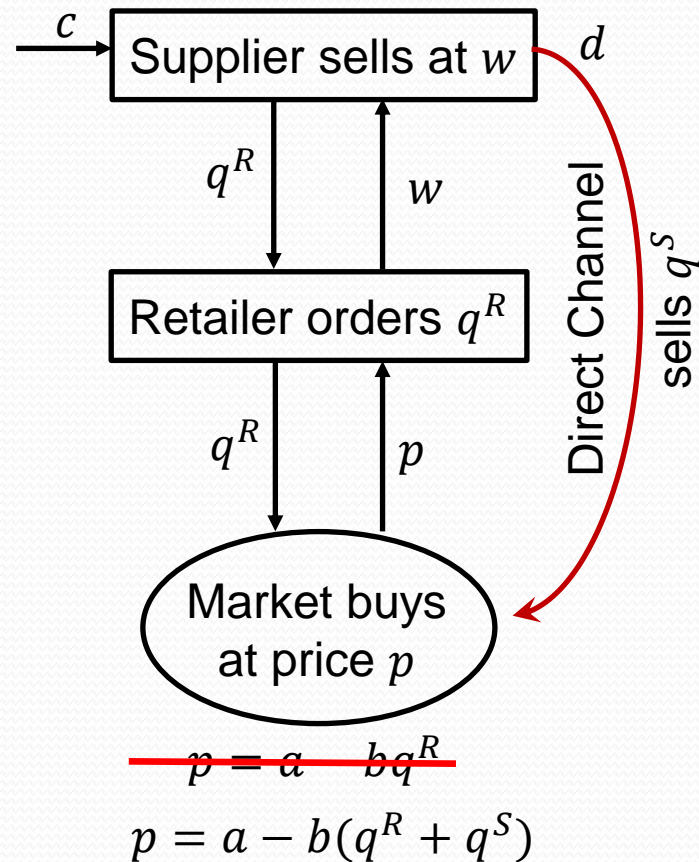


<https://www.theushop.in/>

Can encroachment **Benefit a Retailer?**

Research Questions

- Can encroachment **Benefit a Retailer**?
 - Yes (under certain conditions) – Bright Side of Encroachment (Arya, et al., 2007)



Encroachment \Rightarrow Competition \uparrow

Encroachment $\Rightarrow w \downarrow$

Research Questions

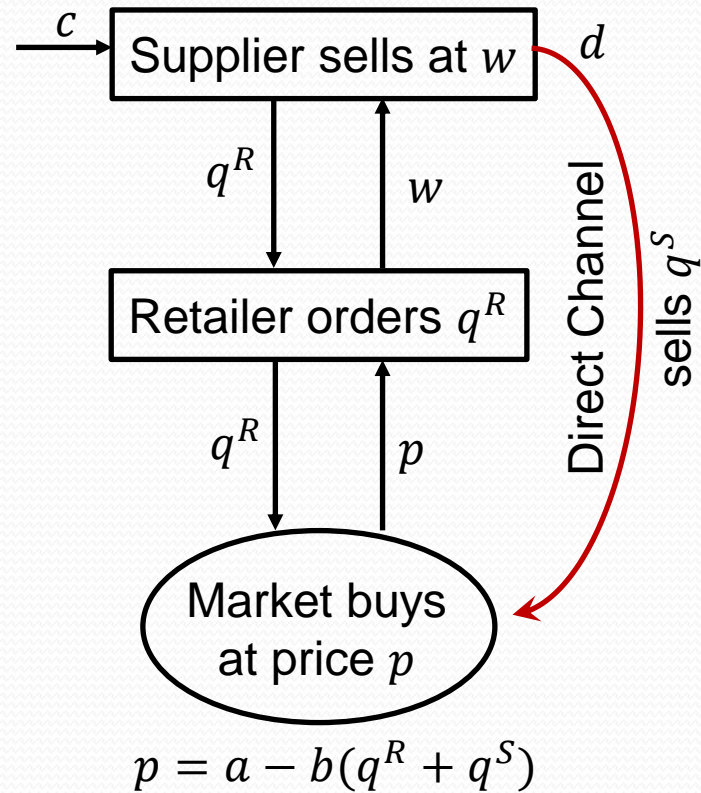
Can encroachment **Benefit a Retailer?**

- Yes! (under certain conditions) – Bright Side of Encroachment (Arya, et al., 2007)

Can encroachment **Hurt a Supplier?**

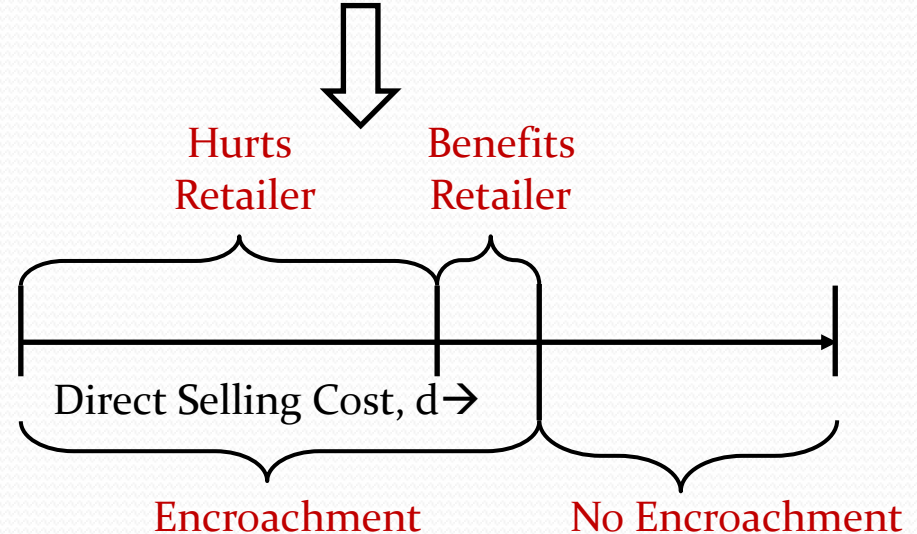
- Existing Literature: **No!**
- Our Study: **Yes**, in the presence of cost learning!

Modeling Assumptions



□ Literature:

- Manufacturing Cost, $c = 0$

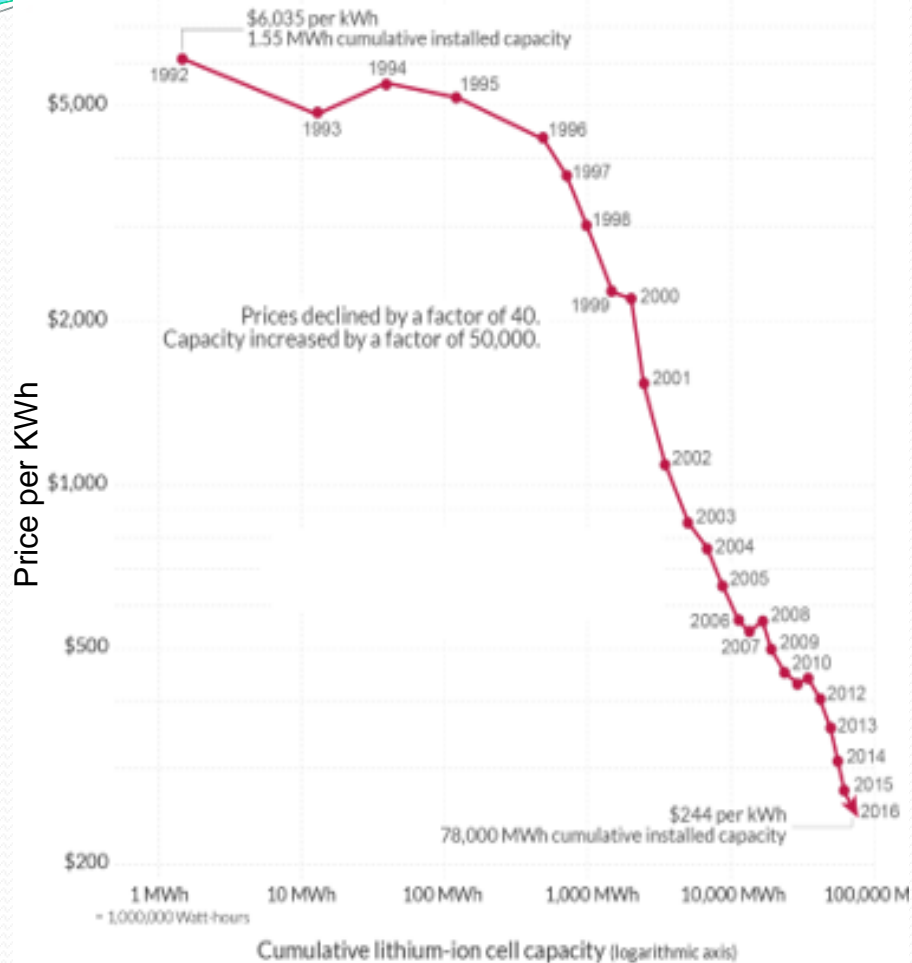


□ Our Study

- Manufacturing Cost, $c \neq 0$

- $c + d > p \Rightarrow$ Encroachment not profitable

Motivation: Cost Learning



According to an MIT study, costs of lithium-ion batteries dropped by 20%-31% (depending on the shape) with every doubling of the production (Ziegler and Trancik, 2021).

Cost learning in manufacturing industries is common, whereby **opportunities for improvements leading to a reduction in the manufacturing cost are identified and implemented.**



$$c_2 = c_1 - \delta q$$

Motivation: Cost Learning

Cost learning in manufacturing industries is common, whereby opportunities for improvements leading to a reduction in the manufacturing cost are identified and implemented.



Ziegler and Trancik, 2021



Bollinger, B., & Gillingham, K. (2019)

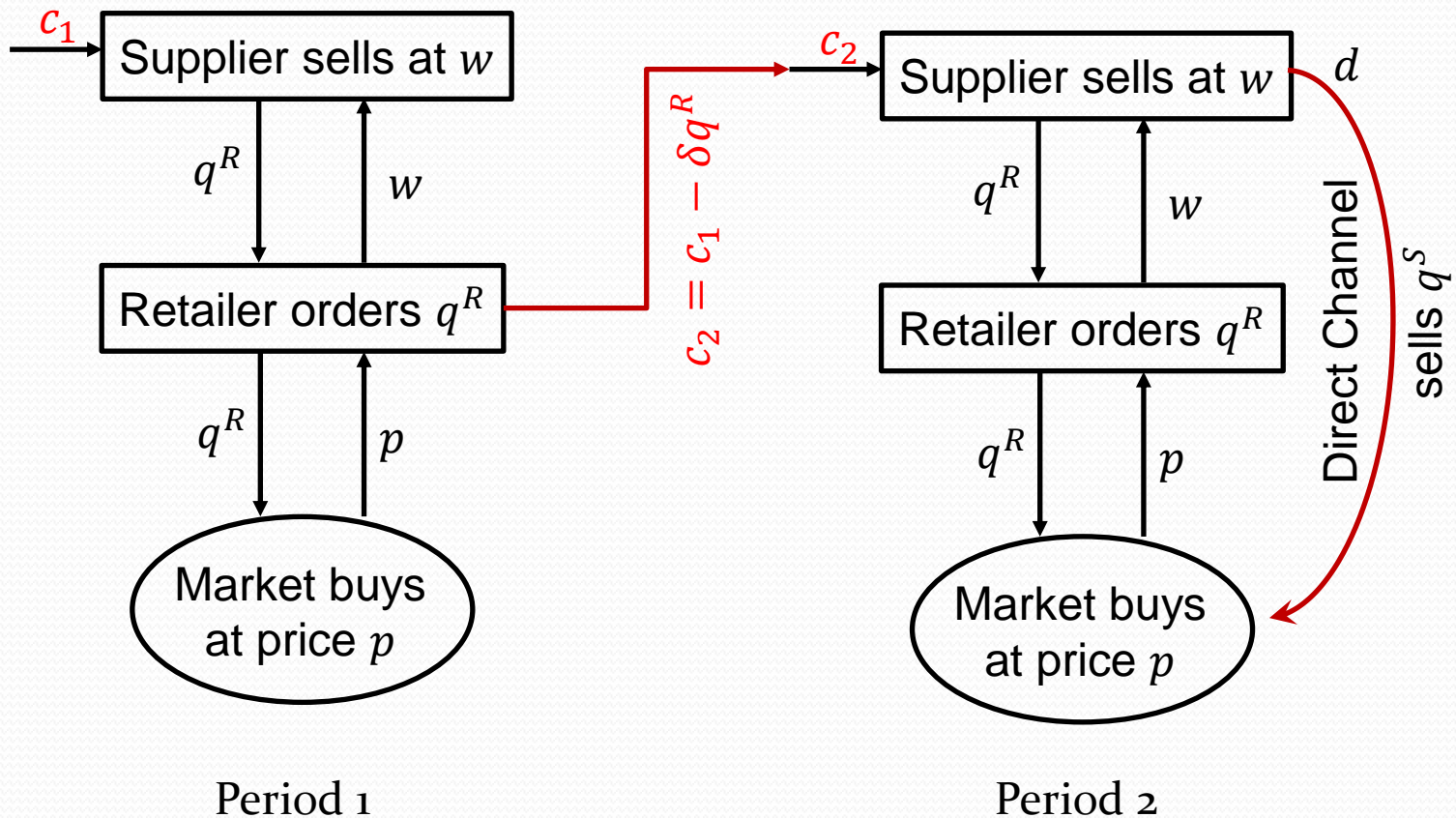


Akkaya et al., 2021

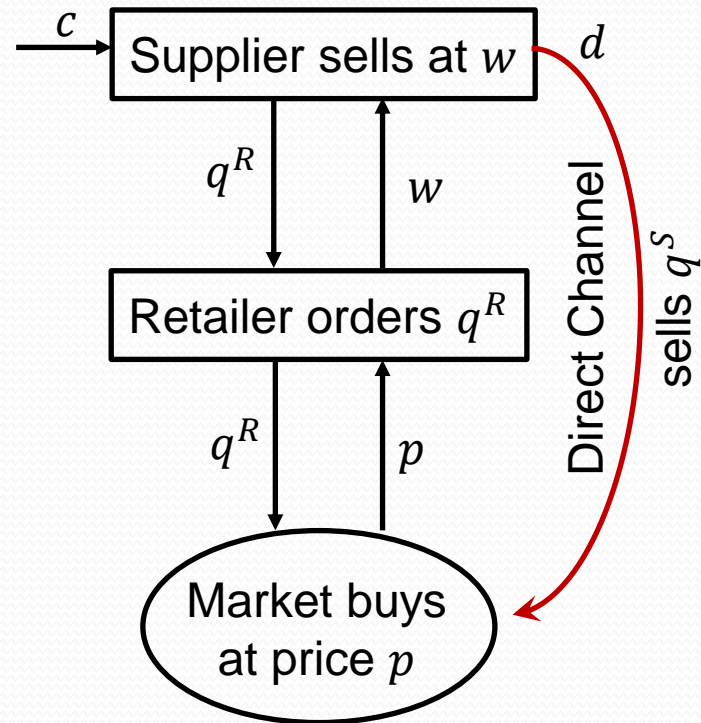


Levitt et al., 2013

Model: Encroachment with Cost Learning



Modeling Assumptions

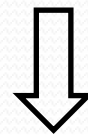


□ Literature:

- Manufacturing Cost, $c = 0$
- No Cost Learning, $\delta = 0$
($c_2 = c_1 - \delta q^R$)

□ Our Study

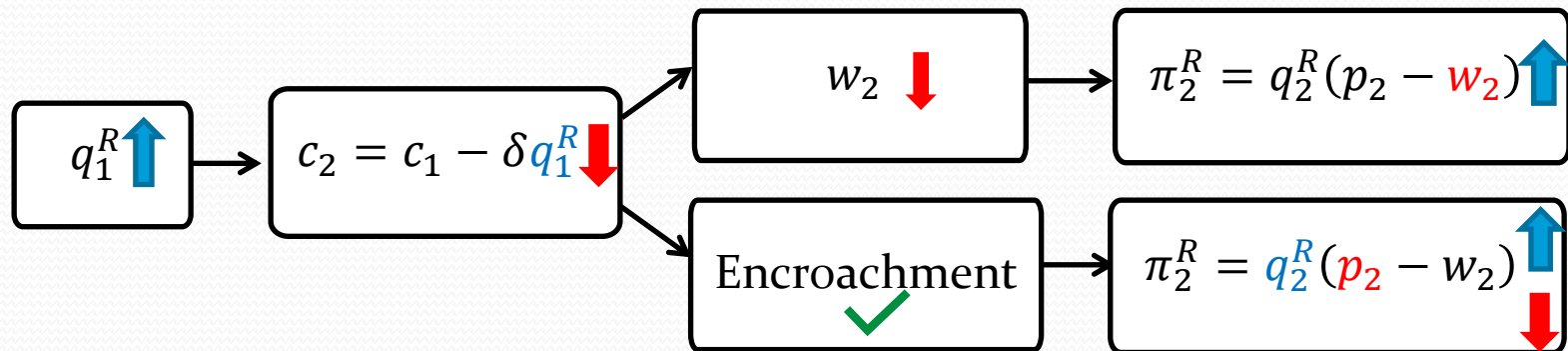
- Manufacturing Cost, $c \neq 0$
- Cost Learning, $\delta \neq 0$ ($c_2 = c_1 - \delta q^R$)



- $c_1 + d > p \Rightarrow$ Encroachment not profitable
- $c_1 + d > p$ initially but $c_2 + d < p$ later with cost learning \Rightarrow Encroachment profitable

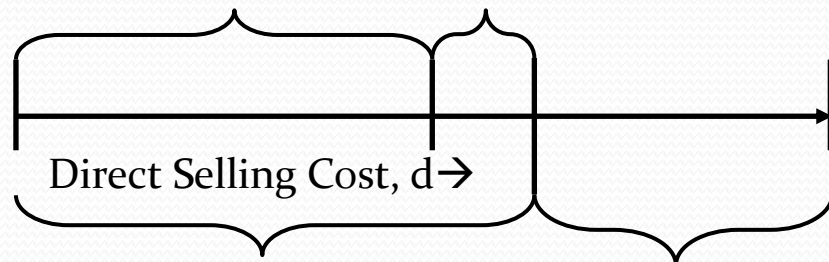
Research Questions

Retailer's Dilemma



Hurts
Retailer

Benefits
Retailer



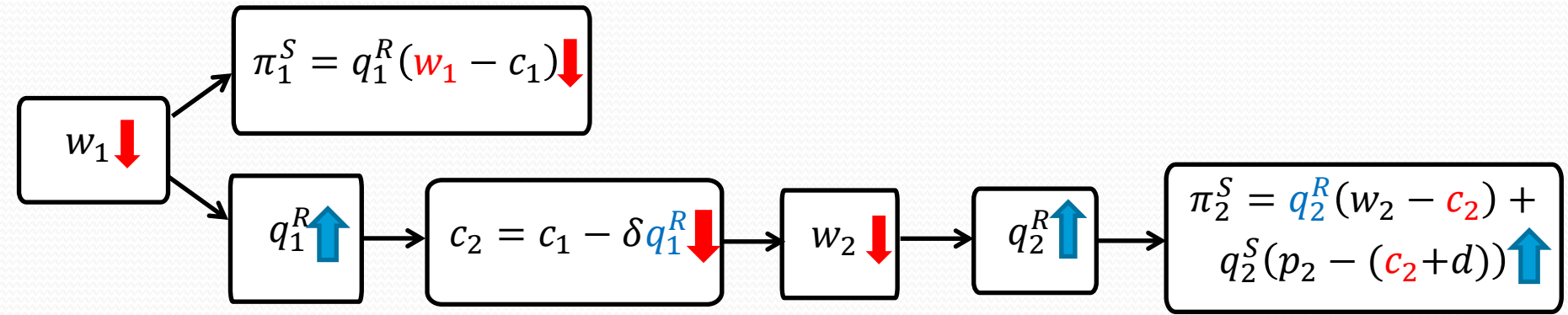
Encroachment

No Encroachment

Should the Retailer Increase or Decrease q_1^R ?

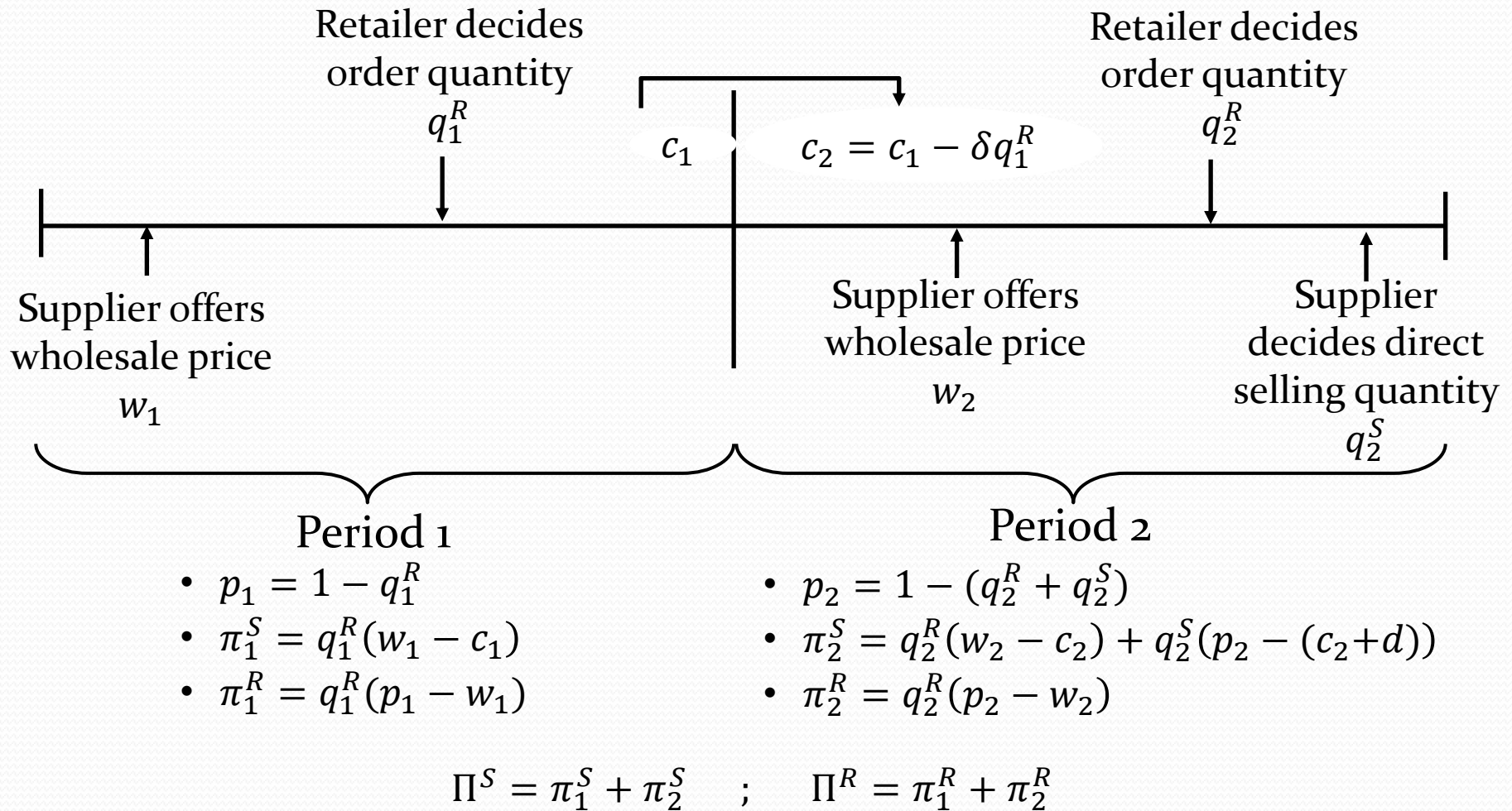
Research Questions

Supplier's Dilemma



Should the Supplier Decrease or Increase w_1 ?

Model

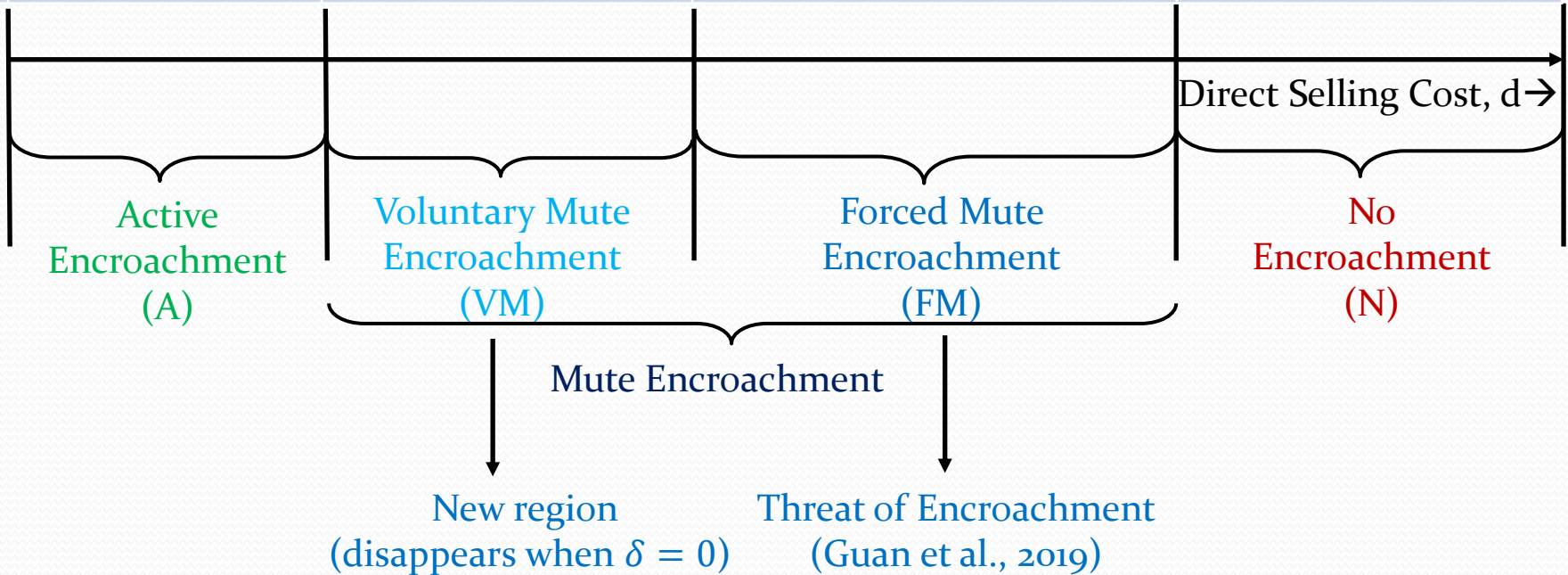


Timeline for Decisions

Results

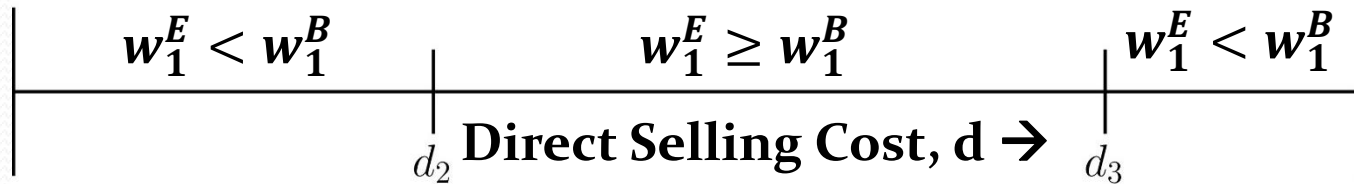
$$p_2 = 1 - (q_2^R + q_2^S)$$

w_2	$(3 + 3c_2 - d)/6$	$(3 + 3c_2 - d)/6$	$(3d + 3c_2 - 1)/2$	$(3 + 3c_2)/6$
q_2^R	$2d/3$	$2d/3$	$1 - (c_2 + d)$	$(1 - c_2)/4$
q_2^S	> 0	0	0	0
p_2	$< 1 - 2d/3$	$1 - 2d/3 (> c_2 + d)$	$c_2 + d$	$c_2 + d$

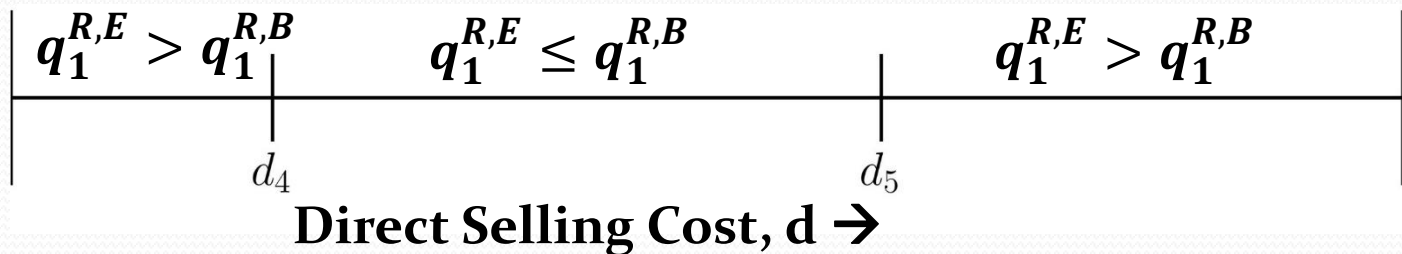


Results

Should the Supplier Increase or Decrease w_1 ?

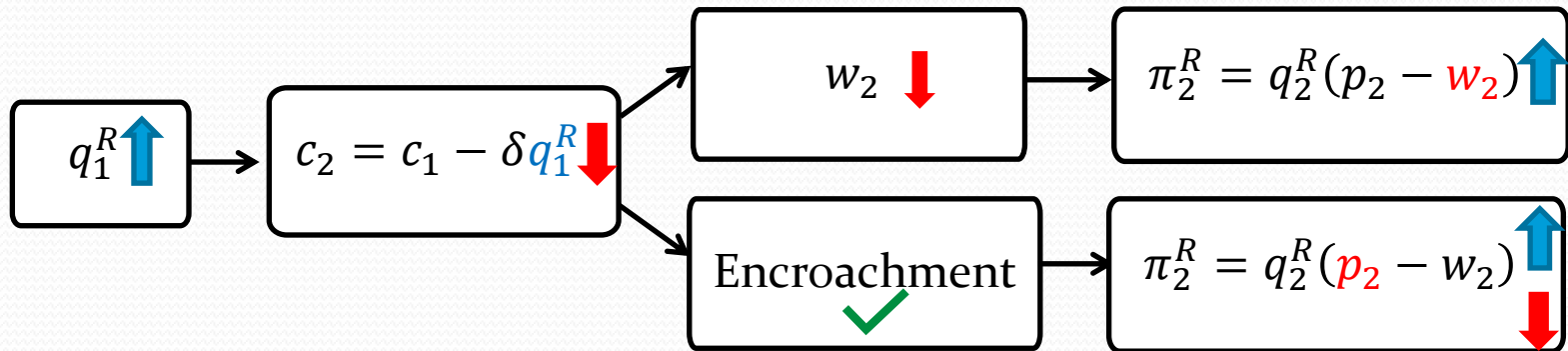
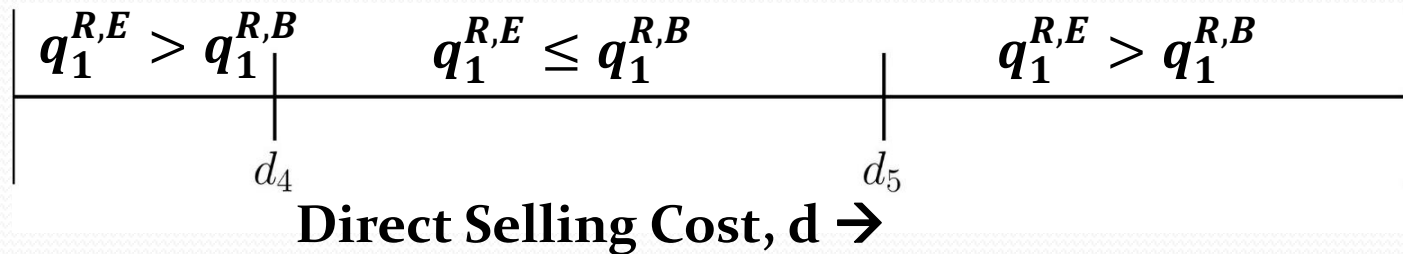


Should the Retailer Increase or Decrease q_1^R ?



Results

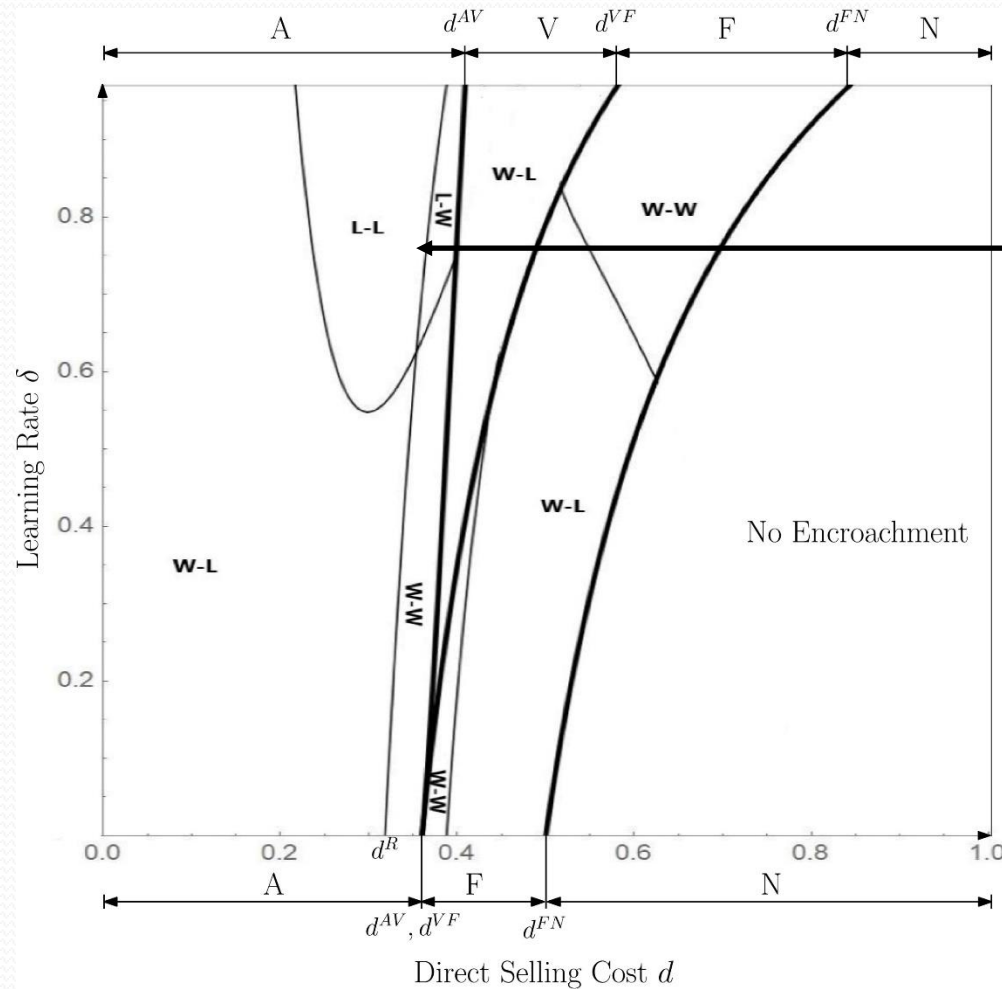
Impact of Encroachment on First Period Sales q_1^R



What is the Impact of Encroachment on the Retailer's and the Supplier's Profits ?

E : Encroachment B : Benchmark₁₆

Who Benefits from Supplier Encroachment?



Can it **Hurt a Supplier?**

- Yes, in presence of cost learning!

W-W: Supplier Wins, Retailer Wins

W-L: Supplier Wins, Retailer Loses

L-W: Supplier Loses, Retailer Wins

L-L: Supplier Loses, Retailer Loses

Anecdotal Support

❑ Can Encroachment Hurt a Supplier?

- When Compaq (now acquired by HP) opened web stores, it experienced a **12% drop** in commercial PC revenues as a result of **retaliation from retailers** who objected to the manufacturer's online selling (encroachment) (Tedeschi, 2000).

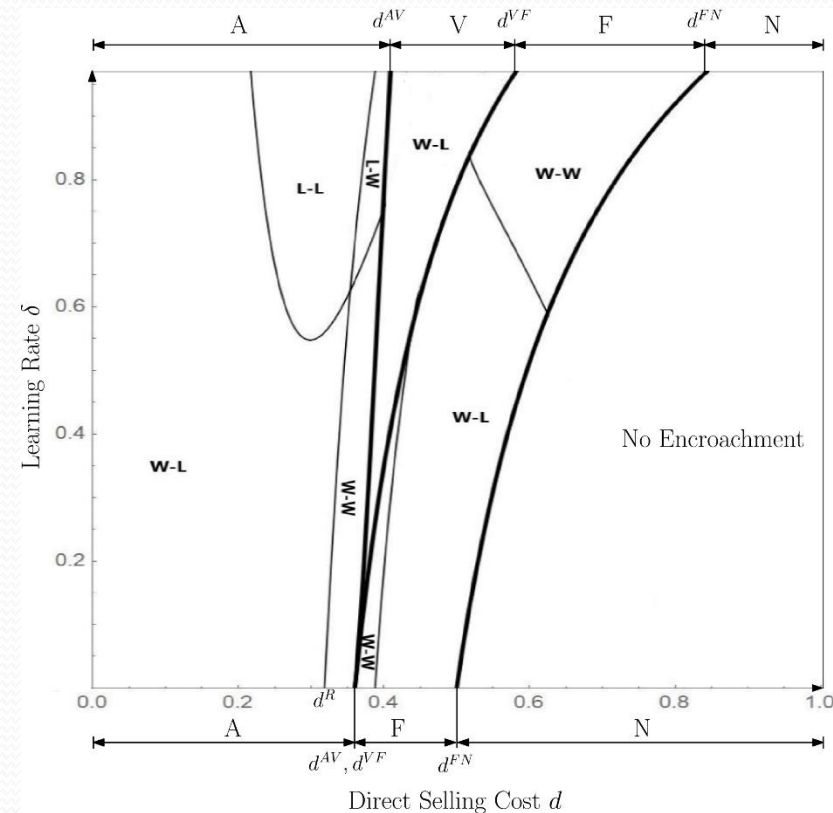
Anecdotal Support

❑ Can Encroachment Hurt a Supplier?

- Letter from Home Depot to its vendor

Dear Vendor, It is important for you to be aware of Home Depot's current position on its' [sic] vendors competing with the company via e-commerce direct to consumer distribution. We think it is short-sighted for vendors to ignore the added value that our retail stores contribute to the sales of their products... We recognize that a vendor has the right to sell through whatever distribution channels it desires. However, we too have the right to be selective in regard to the vendors we select and we trust that you can understand that a company may be hesitant to do business with its competitors.

Managerial Implications



The Learning rate, the direct selling cost, or both are low

Encroach

The Learning rate is high and the direct selling cost is intermediate

Credibly commit to No-Encroachment

Questions

