

# Switching costs and network effects in competition policy

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“In traditional industries with network effects, high switching costs are often an important compounding factor. Consider the case of operating systems, where switching costs can be relatively high for individual users and for firms with large computer inventories. But what do we know about the relationship between switching costs and network effects? That is, using multiple platforms or operating systems. That is, one can show that lock user and try Twitter. At least in some cases, the combination of low switching costs and low costs to creating new platforms might mitigate traditional concerns about lock-in and dynamic inefficiency.”

## Three themes

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No two sidedness!

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## ☞ Network effects

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- ☞ Trying to say things about the whole set of equilibria.
  
- ☞ Our solution: strong non-coordination.

# Efficiency issues revisited

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# Efficiency issues revisited

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- ☞ With switching costs: consumers pay  $\sigma - \varepsilon$ . Efficiency is preserved.
- ☞ With network effects: consumers pay  $\nu - \varepsilon$ . Inefficient equilibrium.
  - ➡ Note that we can have inefficiency without discrimination.

## Elementary repeated games with homogenous consumers

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You do not become rich on switching costs (or network effects) alone.

## Heterogeneity of consumers: static model

Some consumers with switching costs equal to zero (or with no value for network effect).

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Remark: With heterogeneous consumers a no discrimination rule can be costly in terms of social welfare

Dynamics  
with  
heterogeneous consumers

With an  $\infty$  horizon, the profit is not equal to the one period profit,  $\alpha\sigma$ .

$$\begin{aligned}\Pi &= \alpha(-\delta\Pi + \sigma) + \delta\Pi \\ \Rightarrow \Pi &= \frac{\alpha\sigma}{1 + \alpha\delta - \delta}.\end{aligned}$$

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Profit is greater than one period profit ...

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Profit is smaller than discounted flow of one period profit.



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Adding zero switching cost customers increase the profit of the incumbent.

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When  $\delta \rightarrow 1$ ,  $\Pi \rightarrow \sigma$ .

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Same results hold with network effects.

$$\frac{\alpha\sigma}{1 + \alpha\delta - \delta}$$

$$\sigma_L > 0$$

is different from

$$\nu_L > 0.$$

Two periods:  $\sigma_L > 0$  and  $\alpha\sigma_H > \sigma_L$

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1. incumbent charges  $(1 - \alpha\delta)\sigma_H$  (this requires some work);
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a proportion **strictly** between 0 and 1 of  $\sigma_H$  consumers will purchase from an entrant.

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$(-\delta\sigma_L + \sigma_H)$  High switching cost customers try to “hide” among low switching cost customers.  $\sigma_H$

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The dynamics of erosion of market share are very different with switching costs and network effects.

$\sigma_H$

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Network effects  
+  
switching costs

## $\sigma$ and $\nu$ — static

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- ☞ In static model with only network effects, incumbent charges  $\nu$ ;
- ☞ In static model with only switching costs, incumbent charges  $\sigma$ .
- ☞ Focal equilibrium with both effects: incumbent charges  $\sigma + \nu$ .
- ☞ Profits are the sum of the profits in the pure network model and in the pure switching cost model.

## More interesting

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- Then, the  $\sigma$  switching cost customers will also switch.

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- ☞ With both effects present, if the incumbent charges  $\nu + \varepsilon$ , the 0 switching cost customers switch.
  - ☞ Then, the  $\sigma$  switching cost customers will also switch.
- ⇒ The focal equilibrium has the incumbent charge  $\nu$ .  
*Additivity disappears.*

An illustrative story

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Some have argued that once a consumer purchases a body of music from one of the proprietary music stores, they are forever locked into only using music players from that one company.

Or, if they buy a specific player, they are locked into buying music only from that company's music store. . .

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... On average, that's 22 songs purchased from the iTunes store for each iPod ever sold. Today's most popular iPod holds 1000 songs, and research tells us that the average iPod is nearly full. This means that only 22 out of 1000 songs, or under 3% of the music on the average iPod, is purchased from the iTunes store and protected with a DRM.

It's hard to believe that just 3% of the music on the average iPod is enough to lock users into buying only iPods in the future."

# John Lech Johansen

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If you've only bought 10 songs, the lock-in is obviously not very strong. However, if you've bought 100 songs (\$99), 10 TV-shows (\$19.90) and 5 movies (\$49.95), you'll think twice about upgrading to a non-Apple portable player or set-top box.

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# Conclusions

- Distribution of switching costs/network effects is important.
- Even consumers to which the incumbent/dominant firm does not sell can influence the outcome.
- There are still many things we do not understand at the fundamental theoretical level about the dynamics of markets with switching costs and/or network effects.
- Identifying anti-competitive behavior requires close attention to the specific of the case.