The Information Economy

Switching Costs and Lock-in

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Switching costs

▶ Switching costs are ubiquitous

  ▶ Between brands (e.g. credit card companies)

  ▶ Between technologies (e.g. operating systems)

▶ Example: Bell Atlantic and AT&T

  ▶ In mid-1980s Bell invest in $3bn of AT&T switches

  ▶ Proprietary technology, so needed AT&T for upgrades and fixes

  ▶ Introducing '888' numbers cost Bell $8m for software

  ▶ Annual upgrades cost $100m/year plus peripheral sales

▶ Other examples

  ▶ Changing cell phone providers

  ▶ Changing server software

  ▶ Changing email address, internet service provider, phone company…

On switching costs

- Switching costs are two-sided
  - Customer switching costs: searching for new firm, learning new system, losing complementary investments etc.
  - Firm switching costs: setting up new account, hiring personnel
  - Total switching cost matters.
- Switching costs can be endogenous
  - Depend on compatibility decisions (e.g. number portability).
  - Can impose costs on departing customers (e.g. disruption)
  - Depends on users actions (e.g. queue in Netflix).
- Lock-in also faced by suppliers
  - Supplier lock-in: iPhone app maker and Apple.
  - Two-sided lock-in: coal mine and electricity plant

Why switching costs matter I

▸ **The Valuation Principle:**

  ▸ In homogenous good market, the discounted present value of a customer to firm = customers total switching costs.

▸ **Model**

  ▸ Competitive market has price $p^m=c$

  ▸ Firm A has N loyal customers with one-off switching cost k

  ▸ Time $t\in\{1,2,\ldots\}$ with discount rate δ.

  ▸ Customer willing to pay $p=c+k(1-\delta)$, otherwise will quit.

  ▸ This means profits equal $\pi=kN$.

▸ **Hence switching costs tell you how much firm is worth**

  ▸ Ignoring differentiation and costs differences.

Why switching costs matter II

- How much should you invest in installed customer base?
  - Promotions to acquire customers
  - Bribing customers to join you (e.g. credit cards)
- Idea: Firm A is trying to lure a new customer
  - Verizon makes profit $20/user/month.
  - Retain p=98% of customers per month. Discount rate δ=0.99
  - Lifetime Value (LTV) of customer is $20/(1-p\delta)$ = 671/user.
  - Switching cost for customer is $300; cost to firm is $50, so total customer acquisition cost (CAC) is $350.
  - Can buy customer $400 iPhone and make profit.
  - What about Sprint, where profit $15 and p=96%?
- Other decisions affect levels of switching costs
  - Product design, compatibility.

Lock-in cycle

▸ **Four stages of lock-in**

  ▸ Important to anticipate entire lock-in cycle from the start
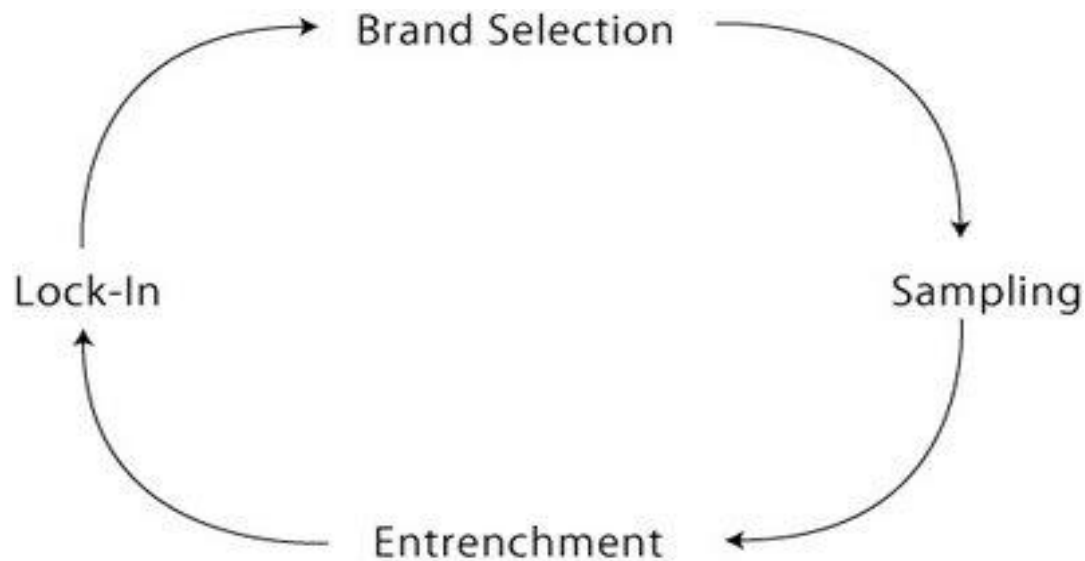
  ▸ Holds true for both buyers and sellers.

Figure : The Lock-In Cycle

Classifying Switching Costs

Classifying switching costs I

1. **Contractual commitments**
   - Examples: Employments contracts, Cell-phone contracts
   - Anticipate switching costs after contract terminates
2. **Complimentary Investments**
   - Durable purchases (e.g. Xbox, printers),
   - Brand specific training (e.g. learning software, fixing airplane),
   - Complimentary purchases (e.g. Intel and IBM)
   - Make money from complements (e.g. games, ink)
   - SC determined by: durability of assets/training, ease of resale, scale of investments, ease of leasing.

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Classifying switching costs II

3. **Transactions costs**
   - ▸ Time and effort to make changes
   - ▸ Changing bank account or web browser.

4. **Search Costs**
   - ▸ Examples: Credits cards, online blogs
   - ▸ Consumer search costs: time and effort to find good deal, evaluating product, risk of new seller (experience good)
   - ▸ Seller side: promotion, adverse selection (e.g. credit cards)

5. **Loyalty Programs**
   - ▸ Examples: Frequent flyer miles, supermarket cards, iDine
   - ▸ Loyalty benefits may increase (e.g. "gold" status)
   - ▸ Cooperate with other firms (e.g. win miles with credit card)

What type of switching costs?

▸ Google search

  ▸ Change settings in computer (complimentary investment)

  ▸ Unknown quality of other engines (search costs)

  ▸ Learning how to search effectively (training)

▸ Facebook

  ▸ List of friends (complimentary investment)

  ▸ Learning the interface (training)

▸ Apple iPhone

  ▸ Durable equipment (software)

  ▸ Learning the interface (training)

  ▸ Mac sales (complementary investment)

Buyers Strategy

Bargain Before Being Locked In

- Look for introductory offers
  - Sign-up bonus, extended warranties, support in switching over
- Increase ex-ante bargaining power
  - "My current system is fine"
  - "I'll make lots of follow-on purchases"
- Beware of being held-up after committing
  - Have price and quality carefully specified
  - Seek long-term protection: service guarantees, free upgrades, most favored customer treatment
  - Beware of non-contractible elements
- Be wary of vague commitments to being "fair" and "open"

A Little Bargaining Theory

- Firm 0 want to do deal with firm A
  - Value of relationship: $V(x_A)$, where 0 invests x_A in relationship
- Firm 0 has outside option to do deal with B
  - Value of outside option: $W(x_B)$, where 0 invests x_B in option
- Socially optimal investment, assuming $V>W$
  - Investment in A: $V'(x_A)=c'(x_A)$, where $c(.)$ is cost of investment.
  - Investment in B: $W'(x_B)=0$
- Negotiation: suppose firms A and 0 split gains 50:50
  - Profits: $\pi_0=\frac{1}{2}[V(x_A)-W(x_B)]+W(x_B)$, $\pi_A=\frac{1}{2}[V(x_A)+W(x_B)]$
  - Under invest in A: $\frac{1}{2}V'(x_A)=c'(x_A)$.
  - Over invest in B: $\frac{1}{2}W'(x_B)=c'(x_B)$.

After Lock-in

- Dual sourcing
  - Use two companies to reduce hold-up (i.e. ex-post opportunism)
  - Toyota policy of two suppliers
  - AMD creation benefited both IBM and Intel.
- Beware of creeping lock-in from complementary purchases
  - Try to avoid completely committing
- Acquire information to help ex-post bargaining
  - Seller's suppliers.
  - Seller's cost information.
  - Details of production process.
- Use bond to help ex-post bargaining
  - E.g. "getting the factory knocked up" when outsourcing.

Seller Strategy

Investing in Installed Base I

- May have to fight hard for "free" customers.
- Consider model from earlier
  - Competitive market with marginal cost c.
  - N free customers at time t=0. Switching costs k after join firm.
  - Discounted profits: if win customers π_1=kN; if lose π_1=0.
- What is the equilibrium price in period 0?
  - Each firm will price p_0=c-δk and make profits π_0=0.
  - Called "rent dissipation postulate".
  - Examples: fewer ads at starts of movie, student discounts for computers, low profits on bottom line cars.
- Profits ultimately determined by
  - Costs, differentiation and first-mover advantages.

Investing II: Sell to Influential Customers

- Gladwell's classification of key customers:
  - Connector – people who have lots of "weak ties"
  - Maven – people who accumulate knowledge
  - Salesmen – people who can persuade others
- Selling to A may lead to sales from B
  - Network effects (e.g. selling to division A within firm)
  - A has reputation for being informed (e.g. Walmart)
  - A may provide industry contacts (e.g. importer into the US)
- Agency problems
  - Professor, publisher and students
  - Businessman, airline and employer
  - Doctors, pharma firms and insurance company

Encourage Entrenchment

- Design products to entrench
  - Open vs. closed system.
  - Mixed: basic version is free; advanced version is not.
- Loyalty programs
- Stagger contracts/sales
  - Minimal lock-in: when most contracts/equipment near end
  - Stagger contracts to strengthen weak link.
  - Example: Pitch product B when A halfway through life.
  - Example: Offer new phone contract after 20 months.
- Forward sales
  - Sell customer stock of black toner (but not color)

Minimal lock-in

▸   With single contract switching cost falls from 'k' to 0.

▸ With two contracts:

Simultaneous Contracts

Staggered Contracts
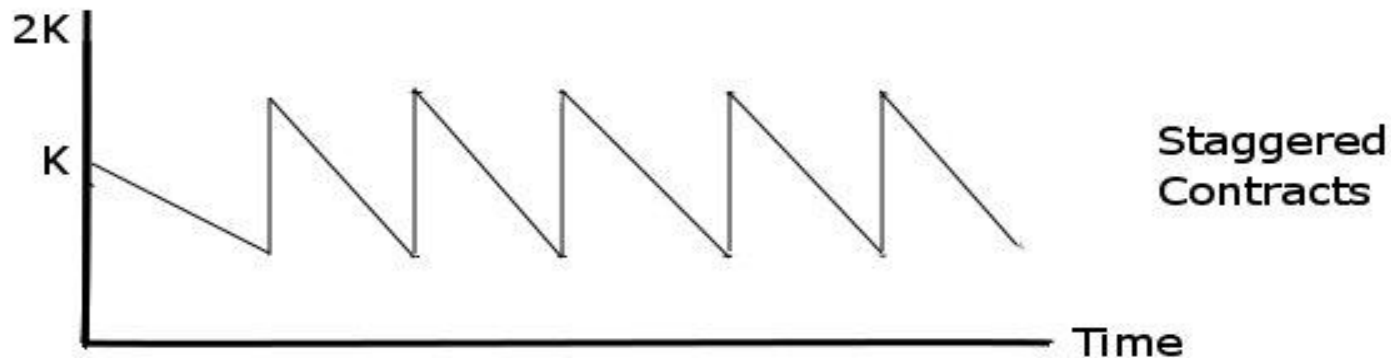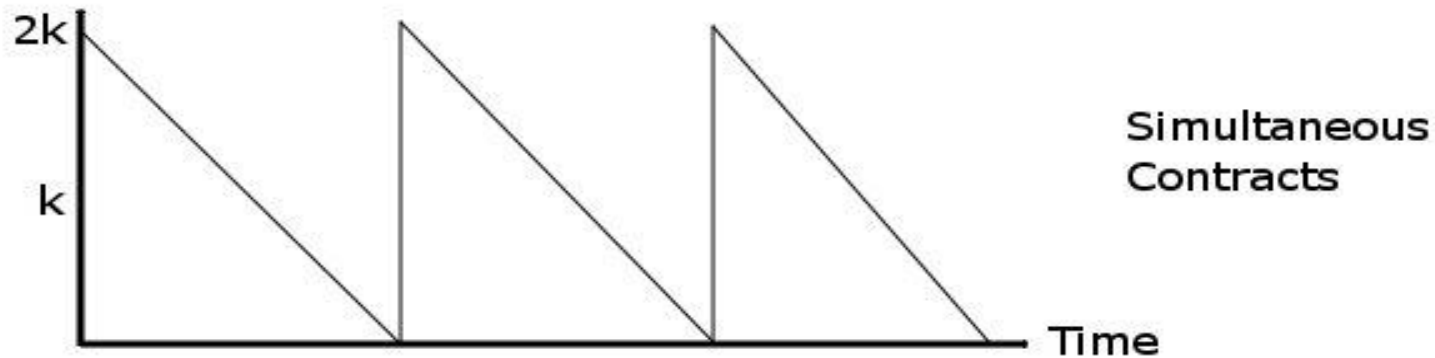
Leveraging Installed Base I: Pricing

▸ Two firms (not competitive market, as before)

  ▸ Some consumers locked-in, others are free.

▸ Lowering price…

  ▸ reduces profits from loyal customers.

  ▸ increases profits from free agents.

  ▸ increases installed base and increases future profits.

▸ Expect switching costs to raise prices and profits

  ▸ Fattening effect: If A lowers price, then B's market share falls and B's prices falls, increasing competition.

  ▸ Skeptical consumer effect: if A lowers price expect A's market share to rise and A's future prices to rise, reducing elasticity.

Leveraging Installed Base II: General

- ▸ Have full range of products

  - ▸ Means consumers can stay within brand (e.g. car range)

- ▸ Sell complementary products

  - ▸ Increases lock-in (e.g. MS Office) and is money-spinner (e.g. ink)

- ▸ Early contract renewal

  - ▸ Keep agent locked in (e.g. football contracts, phone contracts)

- ▸ Sell access to installed base

  - ▸ Adverts (e.g. Google) or endorsement (e.g. AAA)

- ▸ Price discriminate between "free" and "loyal"

  - ▸ Lower price to free (e.g. magazines). Version to reduce arbitrage.
  - ▸ Higher price to free (e.g. software upgrades)

Leveraging Installed Base III: Entry

- Limit pricing
    - Build up market share to avoid entry.

- Creating switching costs
    - Benefits incumbents but harms entrants.

- Beware overestimating switching costs (and customer value)
    - New entrants try to reduce SC
    - Example: MS Word mimicked WordPerfect controls.
    - Example: can honor other firms loyalty points.

Search Costs

- ## Search costs can be especially insidious
    - Can destroy the entire market system

- ## Diamond Paradox
    - Suppose all firms changing price p.
    - Cost k to visiting new firm.
    - Then firm A could raise price to p+k/2 and lose no customers.
    - Ultimately, prices rise to monopoly levels