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Nonbanks in the Payments System: Vertical Integration Issues

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* The Networks, Electronic Commerce, and Telecommunications (“NET”) Institute, <http://www.NETinst.org>, is a non-profit institution devoted to research on network industries, electronic commerce, telecommunications, the Internet, “virtual networks” comprised of computers that share the same technical standard or operating system, and on network issues in general.

Nonbanks in the Payments System: Vertical Integration Issues*

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August 2007

Abstract

We discuss and evaluate the incentives for vertical expansion and vertical mergers in the payments systems industry paying particular attention to the implications of the existence of network effects in this industry. We assess the incentives of large merchants to extend vertically into payments systems, noting that this incentive is maximized when there is significant market power in payments systems and merchants are not sufficiently compensated for the business they bring to the network.

Key words: payments system; credit cards; debit cards; non-banks; vertical integration; market power; monopoly

JEL Classifications: L13, L42, L50, L80

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Nonbanks in the Payments System: Vertical Integration Issues

1. Complementarity Between Merchants and Payment Systems

A well functioning payment systems marketplace must recognize the complementary relationship between merchants and payment systems, and built an efficient market mechanism that utilizes this complementarity. At the completion of a sale, money changes hands. Money changing hands could be in cash or checks, and, for the last few decades, it could also be in electronically-transmitted funds or a guarantee of prompt electronic payment to the merchant. Such electronic payments could come from a company that provides credit to customers (such as a bank organized under the Visa or MasterCard trade names) or from a company that just facilitates transactions (such as American Express) but typically does not provide credit, or directly from the bank where the customer has demand deposits.¹ The “payment system” facilitates the payment to the merchant by guaranteeing that the money is received by the merchant and at the same time can offer a variety of services to the cardholder, ranging from credit services to frequent flyer miles. Irrespective of all these additional services, the main service of a payment system is always complementary to the sale of goods. The left panel of Figure 1 shows a payment platform that is complementary to many merchants. Similarly, a merchant typically accepts many payment systems platforms as shown in the right panel of Figure 1.

¹ Although credit and non-credit cards started as single-store cards or one-type of goods (e.g. travel services) cards, they quickly evolved to payment systems that are used in a large variety of transactions.

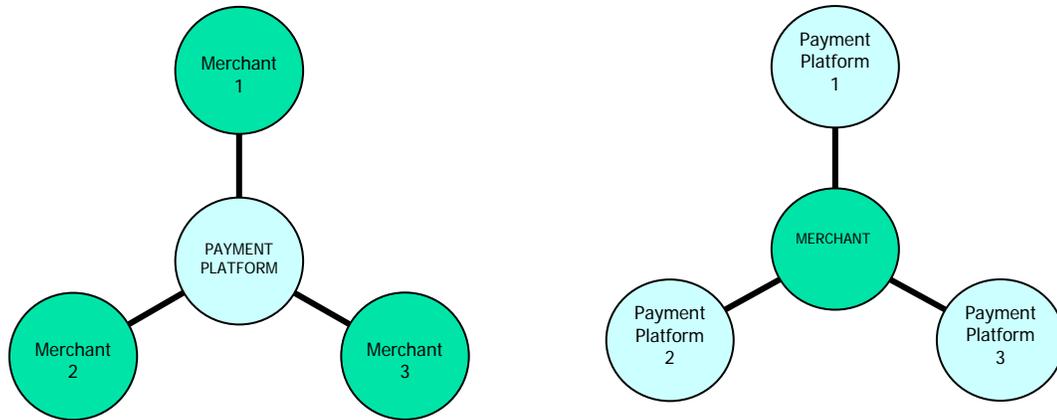


Figure 1: A Payment System is Complementary with Merchant Services

2. **Relative Power in the Relationship Between Merchants and Platforms;**
Markets Within a Payments Platform

The relative power between firms providing complementary components is crucial in determining the way that the surplus created by transactions (sales) is divided between the owners of the complementary components, the market organization of these components, as well as the ownership structure and the extent of integration of ownership. In principle there is no obvious or standard split of surplus in a network of complementary components. What accrues to the payment system and what remains with the merchants is the result of the relative market power between merchants and payment systems (and their associations). In turn, the extent of market power in the market for payments depends on the extent of competition between payment systems. In a multi-party credit card association, such as Visa or MasterCard, merchants deal directly

with “acquirers” that intermediate transactions to “issuers” who issue cards to consumers and who ultimately send bills to customers. The acquirers and the issuers are typically banks playing different roles in facilitating the transactions. Thus, a transaction between a customer and a merchant done through Visa or MasterCard is intermediated by both an acquiring bank and an issuing bank. In principle, there are three markets in each such transaction, and the surplus for each transaction is divided among these markets. The three markets are: (i) between the merchant and the acquirer; (ii) between the acquirer and the issuer; and (iii) between the issuer and the consumer. These are three markets for complementary products where the surplus generated by a transaction will have to be split. The way surplus will be split depends on the relative market power in each of these three markets. The extent of market power in each market depends on competition among firms participating in them. Therefore it would not be surprising to see large merchants negotiate special pricing arrangements with card networks.²

The price in the market between acquirers and issuers (the interchange fee) is set by the association to which issuers and acquirers belong (MasterCard or Visa) and is not negotiated bilaterally between an issuing bank and an acquiring bank. The fact that this fee is set collectively may imply a price floor for the overall fee that merchants pay to the payment system.³

² Additionally, some large merchants might find little value to the services of acquirers and may want to bypass them completely. Michael Cook of Wal-Mart stated at the Kansas Federal Reserve Conference in Santa Fe (May 3, 2007) that Wal-Mart has tried unsuccessfully to bypass acquiring banks and deal directly with credit card issuing banks.

³ This has been a litigation issue. An additional lawsuit by major retailers including Walgreens, Kroger, Safeway, and Ahold alleges that Visa illegally ties payment services (such as the routing and processing of transactions) with various other services (payment guarantee, float, and network marketing, among others).

Additionally, the two-sided aspect of the payment systems market does not imply that antitrust cannot or should not be applied to this market, or that its application should be quite different than in other markets.

3. Incentives for Vertical Mergers

Merchants could extend vertically in payment systems.⁴ See Figure 2. To assess value of a vertical merger between firms or a vertical extension of a firm we need to analyze the pre-merger and post-merger equilibria. There are many possibilities depending on concentration and market power in each market.

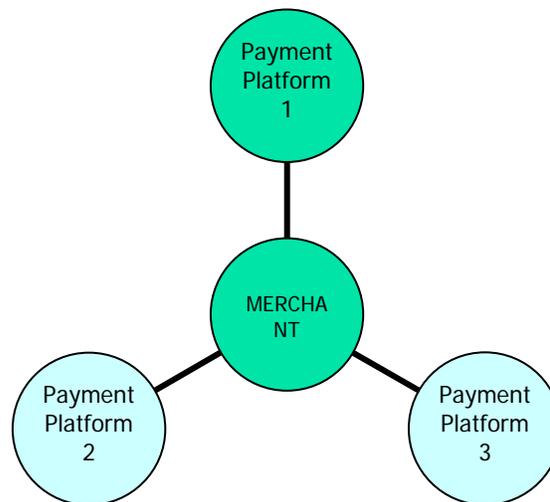


Figure 2: Vertical Merger or Vertical Extension of a Merchant in Payment Platform 1.

3.1 Balanced Market Power

⁴ Wal-Mart has tried to open an industrial-loan bank to be able provide financial services, including issuing credit cards. Wal-Mart withdrew its application after considerable opposition from commercial banks. On June 20, 2007, Wal-Mart announced that it will start selling a Visa debit card under its name. See *Wall Street Journal*, June 20, 2007.

We first focus on a market with balanced market power between merchants and payment systems. For the moment, we assume full compatibility among the components. This means that any component can be combined with any other complementary component. Compatibility implies higher demand for a component (because it can be combined with more complementary components), but it also implies more intense competition between substitute components.⁵

The problem of vertical integration was first discussed by Cournot (1838). He considered two independent monopolists producing two complementary products, A and B respectively, where A and B had no demand on their own but A combined with B was valuable. Alternatively, he considered a single monopolist producing both A and B. He showed that prices are higher when the two complementary goods are produced by independent monopolists. Thus, a vertical merger of A with B results in lower prices, higher consumers' surplus and higher profits, so it is desirable in every dimension. However, the effects of a vertical merger are much more complex when the ownership structure is not monopoly in both goods.⁶

Consider a merchant acquiring a payment platform (or creating its own) and using it preferentially (say offering discounts to customers using it). In the setup shown in Figure 3, the merchants are A_1 and A_2 and the payment systems are B_1 and B_2 . If market power is balanced between merchants and payment systems, Economides and Salop (1992) have shown that prices are always lower in parallel vertical integration than in independent ownership. Additionally, a horizontal merger from parallel vertical integration to joint ownership "J" (where all four components A_1 , A_2 , B_1 , B_2 are owned

⁵ See Economides (1989, 1991) discussing the incentives to be compatible with rivals.

⁶ See Economides and Katsamakas (2006) for a discussion of competition in two-sided markets.

by the same firm) results in *lower* prices if and only if the composite goods are not close substitutes. This is because, in this setup, there is a vertical aspect even in an apparently horizontal merger.

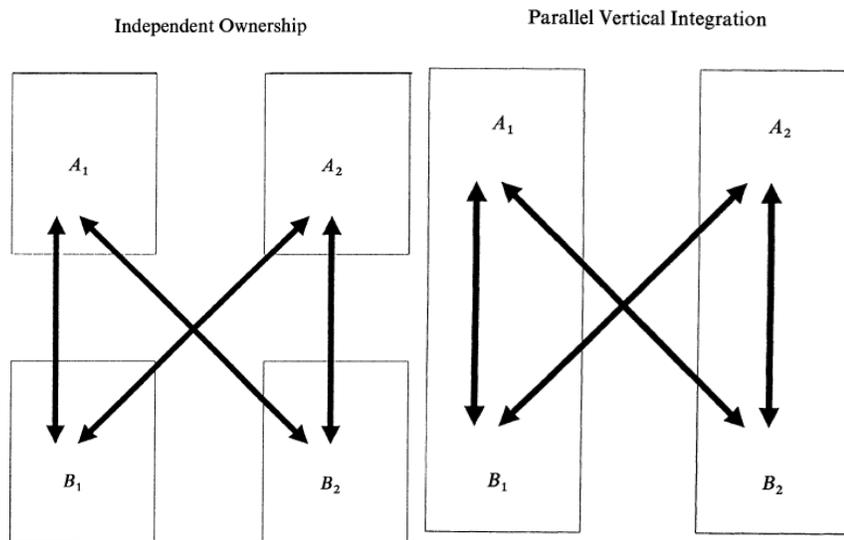
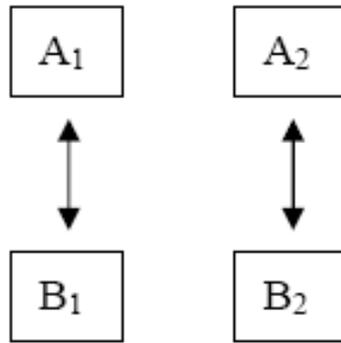


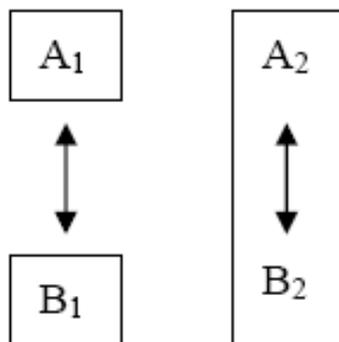
Figure 3: Independent Ownership (“I”) and Parallel Vertical Integration (“PVA”).

Now we assume incompatibility by contract or design, that is, a component is only compatible with one complementary component. That is, A_1B_1 and A_2B_2 are feasible systems, but A_1B_2 and A_2B_1 are unfeasible or unavailable. Figures 4a, 4b and 4c show the various ownership structures under incompatibility.



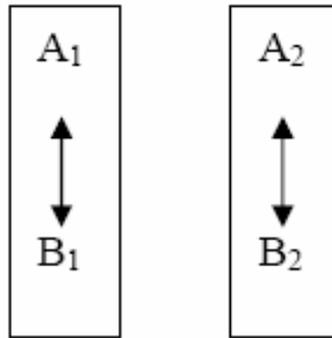
Independent Ownership
“I”

Figure 4a: Independent Ownership Market Structure under Incompatibility.



Partial Vertical
Integration, “PVI”

Figure 4b: Partial Vertical Integration Ownership Market Structure under Incompatibility



Parallel Vertical
Integration, “PLVI”

Figure 4c: Parallel Vertical Integration Ownership Market Structure Under Incompatibility

Economides (2006) shows that starting with independent ownership, firms A_1 and B_1 will find a merger with each other to be profitable if and only if the composite goods A_1B_1 and A_2B_2 are far substitutes. That is, vertical integration is not necessarily desirable for independent owners of complements. Additionally, starting with partial vertical integration of firms A_1 and B_1 while firms A_2 and B_2 are independent, firms A_2 and B_2 find a merger with each other profitable if and only if the composite goods A_1B_1 and A_2B_2 are *not* very close substitutes. Again, vertical integration is not necessarily desirable for independent owners of complements. Table 1 shows the equilibrium ownership structures. In summary, when A_1B_1 and A_2B_2 are close substitutes, firms prefer to stay independent.

Table 1: Equilibrium Outcomes in Potential Vertical Integration Mergers

Non-cooperative Equilibrium Outcomes	Substitution Between Composite Goods A_1B_1 and A_2B_2
Parallel Vertical Integration	Far
Independent Ownership or Parallel Vertical Integration	Intermediate
Independent Ownership	Close

3.2 Unbalanced Market Power

We now consider the incentive for a vertical merger when facing concentration in a crucial complement. As we will see, the incentive for a vertical merger is higher when a firm faces concentration in a crucial complement. However, large merchants may be able to negotiate more favorable terms with payment platforms and therefore have a smaller incentive to get in the payment systems business.

A merchant will see a vertical extension/merger as more profitable if it faces payments systems firms with significant market power which it may bypass through the vertical merger. In general, a large merchant prefers a competitive market in payment systems because competition in payment systems would drive fees that merchants pay to a low level. At the same time, merchants would like compatibility at the network level with all the competing payment systems, even if transactions are done for competing payment systems firms. What merchants, especially large merchants, do not like is the high fees assessed to them as a result of the significant market power that credit card associations have. Faced with significant market power in an adjacent market for

complementary services, large merchants have significant incentives to enter the payment systems market either through a vertical extension or by a vertical merger.⁷ Entering this market would most likely lead to a reduction in payment systems fees even if the majority of transactions are done through the network not owned by the large merchant.⁸ As mentioned earlier, Wal-Mart has faced significant obstacles from banks in issuing a credit card.

3.3 Advantages and Disadvantages of Vertical Extension of a Company

A good example of the advantages and disadvantages of vertical extension comes from Microsoft. Its Windows operating system has 92% market share in operating systems for PCs. Over time, it added functions to the operating system that used to be independent applications or middleware. Among those are (i) the Internet Browser (Internet Explorer); (ii) Windows Media Player (WMA); (iii) Hard disk defragmenter; (iv) Anti-spyware protection; (v) Anti-virus protection. But Microsoft has not entered the PC hardware market because it is aware of its core competencies.

An offensive advantage of extending the firm vertically is in the fact that it takes away value from complementary goods and adds value to its own product. A defensive advantage of extending the firm vertically is in the fact that it avoids complementary goods firms creating a challenge to its own product. For example, the Department of Justice and 20 States Attorneys General sued Microsoft based on the theory that the

⁷ Of course, such incentives are diminished if large merchants are offered special lower fees by payment systems networks.

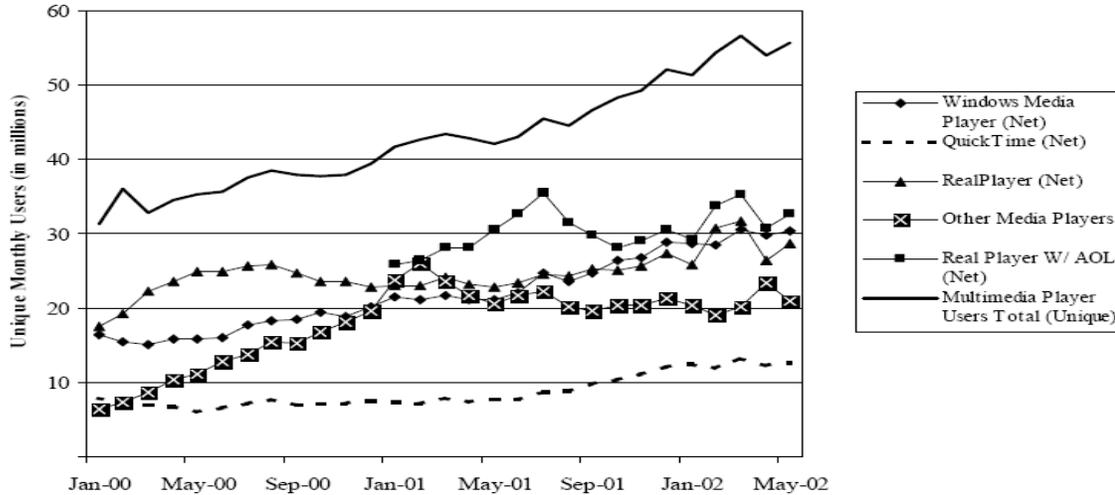
⁸ Similarly, in the secondary market for government bonds which was traditionally dominated by the broker-intermediated exchange of Cantor Fitzgerald with over 70% market share before 9/11/2001, four major clients of Cantor created Liberty as a competing exchange. Very soon transaction fees were reduced to half by Cantor which retained its dominant market share.

Netscape browser together with Java could challenge the dominance of Windows, and therefore Microsoft killing Netscape was an attempt by Microsoft to illegally preserve its monopoly in operating systems for PCs. Eventually Microsoft was found liable, even though it seemed very unlikely that Netscape could ever effectively challenge Microsoft's monopoly.⁹

The main disadvantage of some types of vertical extension is the legal liability it can entail. For example, Microsoft was found liable under antitrust law for monopolization as described above. Additionally, Microsoft was originally found liable by Judge Jackson for bundling of Internet Explorer with Windows but the judgment was reversed on appeal with specific instructions to the District Court for remand. DOJ decided not to pursue the bundling claim under these rules. However, a key claim of the present antitrust case of the European Union against Microsoft is the bundling of Windows Media Player with Windows. Microsoft was found liable on this claim, which is presently under appeal. Thus, some pricing strategies that directly follow from a vertical extension may be illegal, as in the Microsoft cases in the US and EU. However, such strategies are likely to be legal if the market share of the relevant firms is relatively small and there is no conspiracy.

Another problem of a vertical extension is that it could distract from the core competency of the firm. Success of vertical extension varies. For example, Microsoft's vertical extension in Internet browsers was very successful in eliminating Netscape. But Microsoft's bundling of Windows Media Player with Windows has not resulted in elimination of alternative media players, as is evident in Figure 5.

⁹ For a detailed discussion of the Microsoft antitrust case see Economides (2001).



Note: RealNetworks W/AOL estimates for June 2001 through June 2002 are a lower bound, since they do not include RealJukeBox usage.
Source: Media Metrix monthly home usage reports, January 2000 – June 2002.

Figure 5: Market Penetration of PC Media Players

4. Network Effects: Compatibility Issues

Payment systems exhibit network effects. There are special features of markets with network effects. In brief, network effects are increasing returns to scale in consumption. Formally, a market exhibits network effects when the value of an additional transaction is higher when more units change hands, everything else being equal. Network effects arise from availability of complementary goods. For example, Windows is more valuable when there are more applications for Windows, and this availability increases with the market share of Windows. Similarly, the value of a credit card, say Visa, increases as more stores accept the card, and conversely, more stores are likely to accept the card when there are more cardholders of Visa.

There is a crucial dichotomy in markets with network effects. On the one hand we have networks with full compatibility. On the other hand, we have networks with significant incompatibilities. Typical examples of full compatibility networks are:

- (i) Voice telecommunications (imposed by regulation)
- (ii) Internet data communications (from the original design)
- (iii) Fax (by design adhering to common standards)
- (iv) Cars and gasoline (by market evolution)
- (v) Tables and chairs (by market evolution)

Typical examples of networks with incompatibilities are:

- (i) Operating Systems for PCs (Windows, Mac OS X, Linux)
- (ii) Game platforms (Xbox, Sony, Nintendo)
- (iii) Digital audio formats (iPod, Windows Media Player WMA, MP3, RealAudio)
- (iv) High definition DVDs (HD-DVD, Blu-ray)
- (v) Video players (Betamax, VHS)
- (vi) Information servers (Google, MSN, Yahoo, Yellow Pages)
- (vii) Financial and commodity exchanges
- (viii) Payment systems (some partially compatible)

In payments systems, the cards are incompatible (you cannot do a transaction that is one side on the Visa network and on the other on the MasterCard network), but the competing cards often use the same network infrastructure. Additionally, many consumers carry a number of credit cards. Thus, we have multi-homing, and the effects of incompatibility on market structure are reduced.¹⁰

¹⁰ See Economides (2007) for a discussion of public policy issues in network industries.

5. Additional Issues: Pricing in Markets with Network Effects

In markets with network effects, firms can make money from either side of a network or from both sides. In many software markets, a provider can make money from a server or a client. For example, Adobe sells Adobe Acrobat but distributes for free Adobe Reader. Similarly, a telephone company can collect money from a caller (as is typical done on fixed telecommunications networks), a receiver of a phone call (for example in 800 numbers), or from both caller and receiver (for example cellular telephone calls in U.S.). Internet backbones collect money from both parties that send and receive traffic.¹¹

6. In Networks, Price Discrimination Schemes can be Complex

A firm controlling a required component in a network (or a firm with significant market power in a component) could collect a licensing fee from firms in complementary markets. Because a network may have different degrees of market power on different sides of the market, a firm that controls a proprietary platform (i) sets a price strategically for its end-user products; and (ii) collects a fee for complementary products to its platform sold by other firms. For example, game platforms (Sony, Xbox, Nintendo) set the price for their game consoles as well as collect licensing fees or royalties from software developers.

Conversely, Microsoft, besides selling Windows to computer manufacturers and end users, also subsidizes in kind complementary applications to its operating system by

¹¹ The exception in this is when the backbones are not in a peering relationship where, by bilateral agreement, no money changes hands for traffic that originates and terminates in the two peering networks. See Economides (2005).

(i) including in its operating system subroutines that are useful to applications developers but are not useful to end users; and (ii) providing information and resources to application developers.¹² Similarly, in payment systems, firms typically collect money from card holders as well as from merchants. In principle, a payment system could collect money on only one side on the market and subsidize the other side of the market.

7. Network Effects or Network Externalities?

Often the additional subscriber/user/merchant/content provider is not rewarded for the benefit that he/she brings to others by subscribing to or creating a transaction in a network. Hence there may be “externalities,” that is, benefits not fully intermediated by the market. In some cases, externalities are fully intermediated through non-linear pricing (quantity discounts). A good example of this was Cantor Fitzgerald pricing towards Salomon Brothers in the secondary U.S. bonds market before 2001. A typical trader paid \$20 per \$1 million bond face value traded. Salomon paid \$1 per \$1 million bond face value plus a (small) fixed fee. Why? Salomon brought immense liquidity to Cantor’s secondary market because it controlled 40% of the primary market being the largest primary dealer.¹³ This is an example of a strategy to offer discount pricing based on volume to take advantage of network effects. This strategy was very successful for Cantor which kept its dominant position with over 70% market share despite an inefficient trading platform. Similarly, large merchants may be offered better terms because of the liquidity/business they bring to a credit card network.

¹² See Economides and Katsamakas (2006).

¹³ The United States distributes (sells) its debt through a limited number of primary dealers. See Economides (1994).

8. Winner-Takes-Most Markets

Markets with strong network effects where firms can choose to be incompatible exhibit a natural inequality, that is, they are “winner-takes-most” markets. In these markets, there is extreme market shares, prices and profits inequality. The market share of the largest firm can be a multiple of the market share of the second largest, the second largest firm’s market share can be a multiple of the market share of the third, and so on. For example, the equilibrium market shares can be 66%, 22%, 7%, 2.5%, 1%, ... The geometric sequence of market shares implies that, even for small number of firms n , the n th firm’s market share is tiny. Why do we observe the market share, prices and profits inequality? A firm with a large market share has more complementary goods and therefore its good is more valuable to consumers. Why then isn’t monopoly the equilibrium? Why is the equilibrium “winner-takes-most” and not “winner-takes-all”? Because for a firm with a large market share to reach monopoly it requires a cut in its price that is unprofitable. Based its own profit consideration and not on fear of antitrust intervention, a firm with a very large market share will allow smaller firms to survive rather than using aggressive strategies to drive them out of business.

This type of equilibrium is typically observed in (i) the PC operating systems market; (ii) in software applications markets; (iii) in hits in blogs; (iv) in hits in Internet search engines; (v) in market shares of firms in traditional Yellow pages; and (vi) in the size distribution of connections of Internet hosts, among other markets.

Because of natural inequality in the market structure of network industries, there should be no presumption that anti-competitive actions are responsible for the creation of

market share inequality or very high profitability of a top firm. That is, no anti-competitive acts are *necessary* to create this inequality.

In the payments systems market, customers can use a number of credit cards and similarly merchants honor a number of credit cards. This “two-sided multihoming” may mitigate the effects of incompatibility among payment systems networks. However, the lack of pricing flexibility by payment systems in the fees that merchants pay them, reduces competition among these networks.

9. Concluding Remarks

We discussed various aspects of the vertical relationship between merchants and payment systems networks. We discussed the two-sided nature of a payment system, the fact that such systems are incompatible, the existence of network effects, the two-sided multihoming nature of the network where users have typically more than one card and merchants honor more than one card, as well as pricing within a payment systems network, such as the network-wide setting of the interchange fee. We further discussed the incentives of merchants to extend vertically into payments systems, noting that this incentive is maximized when there is significant market power in payments systems and merchants are not sufficiently compensated for the business they bring to the network.

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