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## A Tale of Two Games: Membership Versus Usage in Platform Competition

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### I. INTRODUCTION

Demand in platform competition is characterized by a 2-stage game: first, demanders decide whether to adopt a platform, and THEN they decide how much to use the platform. However, with the exception of Bedre & Calvano (2010) and Cantillon & Yin (2010), the distinction between membership demand and demand for usage is typically ignored.<sup>3</sup> Consumers are assumed to make their membership choice only after considering usage. If membership and usage are perfectly correlated and simultaneous, there is no loss from simply treating membership and usage as the same or ignoring membership altogether. However, this article will illuminate the ways in which membership is distinct from usage, leading to important strategic and policy implications from distinguishing between membership and usage in platform competition.

### II. MEMBERSHIP AS A PREDICTOR FOR USAGE

It is understandable that the literature has thus far ignored membership as distinct from usage for the most part. The interesting aspect of competition in network effects is usage. The utility I gain from the network of other demanders utilizing a platform does not come directly from their membership or access to the platform; it comes from their use of the platform. Indeed, the membership provides no utility to other demanders if the members don't actually use the platform.

However, access and membership are pre-requisites for usage. Even in the case where platforms are served by intermediaries, such as brokers, who provide access to non-members, that intermediary must be a member. The recognition that membership precedes usage generates the first advantage of treating membership and usage separately: analysis of membership may in fact be a useful predictor of usage. This is particularly helpful in gaining some insight into when markets tip and to whom. It is likely that membership will tip before usage, since even in the presence of intermediation, the benefits of membership if usage is anticipated to be large will exceed the costs of membership relative to the cost of using an intermediary.

### III. MEMBERSHIP AS A MEASURE FOR USAGE

In empirical applications, the ability to use membership as a predictor of platform tipping has several advantages over studying usage directly. First, usage is not as commonly observed as

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<sup>3</sup> O. Bedre & E. Calvano, *Pricing Payment Cards*, mimeo European School of Management and Technology – Berlin. (2010); E. Cantillon & P. Yin, *Competition between Exchanges: Lessons from the Battle of the Bund*, mimeo MIT Sloan. (2010).

membership/access. We often know who is a member of a platform (e.g., who has bought an iPhone or video game console, is a member of a stock exchange, uses a credit card) but we do not as often observe usage (how much does the user use applications on the iPhone, how much does is a video game played, what is individual volume on a stock exchange, how much is an individual spending on her credit card). Membership may be the only data we have to study platform competition. Second, since membership is not driving the network effects directly, it may also be less affected by endogeneity issues that plague typical studies of industries with network effects. While the causality runs both ways in determining an individual's usage based on others' usage, it is easier to argue that an individual's membership is determined by other people's usage, and not the other way around. For example, traders only care about the volume of trades; they do not directly care about how many members are on an exchange. Membership may be a much easier measure to use when studying platform competition.

#### **IV. MEMBERSHIP AS A DRIVER OF USAGE**

To the extent that membership and usage are correlated, membership becomes a good predictor and substitute for studying usage directly. However, this is not to say that differences between the drivers of membership and the drivers of usage are undesirable. Indeed, a lot can be learned about platform competition by studying the drivers of membership independently from usage. The strength of network effects means that usage is unlikely to be influenced by many other factors besides usage. However, the indirect nature of membership means that many other attributes could drive adoption in addition to the network effects from usage. For example, Cantillon & Yin (2010) found that while liquidity in the Bund future was very important to determining membership on Deutsche Terminboerse ("DTB," the ancestor of Eurex) and the London International Financial Futures and Options Exchange ("LIFFE") during the 1990's, other characteristics of DTB and LIFFE actually explained much more of the membership choice. As a result of this finding, the strategic implication for the entrant in such an environment is not to offer a discount to compensate for lower liquidity, but instead to compete on other dimensions to attract members. Once the members have adopted, it may be much easier to get them to increase their usage, and thus contribute to liquidity on the smaller platform. In this manner, the entrant might be able to eventually compete with the incumbent for usage despite the network effects surrounding the larger usage on the incumbent's platform.

This points to a more general lesson about platform competition: To the extent any complementary asset can drive adoption, an opportunity arises for a challenger to build its installed base by getting new consumers to adopt a product based on the complement, and generate competing usage despite the network effects that might favor an incumbent who currently possesses a larger installed base. A prime example of this strategy was in the tipping of the browser market from Netscape to Internet Explorer through the mass adoption by new computer users of the Windows PC. While Netscape had the most users, an explosion of new users chose to obtain a Windows PC, which favored usage of the Internet Explorer browser (Bresnahan & Yin, 2005).<sup>4</sup>

#### **V. HETEROGENEITY IN MEMBERSHIP**

The study of membership also highlights the heterogeneity of demand. When studying network effects, we often simplify and assume that all agents on a particular side of the market

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<sup>4</sup> T. Bresnahan & P. Yin, *Economic and Technical Drivers of Technology Choice: Browsers*, 79/80 ANNALES D'ECONOMIE ET DE STATISTIQUE, (2005)

are the same. However, agents may have heterogeneous preferences for network effects. They may also contribute heterogeneously to network effects. For example, some traders value liquidity more than others, and would be willing to trade-off a discounted price for a less liquid market. Furthermore, some traders' usage is much higher than others; day traders trade lots of volume every day, while hedgers may only trade on contract expiry days. This means that different members contribute to the network effects differently. Whether heterogeneous preferences for and contributions to network effects are correlated is an empirical question. However, it is clear that given this complexity in the relationship between membership and usage, trying to simply employ a snapshot in time of market shares based on usage will not give a very accurate picture of what one should expect of the market structure in the future. The composition of heterogeneous members on each competing platform will have widely varying implications for the usage on that platform. This, in turn, can create widely different patterns over time for market shares in terms of usage on the competing platforms. Again, the difference between membership and usage means that collapsing these two dimensions could generate misleading predictions about the market outcome of platform competition.

## **VI. IMPLICATIONS**

The importance of distinguishing membership from usage suggests not only that strategy and policy regarding platform competition may benefit from focusing on membership as separate from usage, but also that a study of membership heterogeneity is critical to making the correct inferences about the evolution of market outcomes. Furthermore, the possibility that membership is driven by other factors besides the network effects surrounding usage suggests that firms and regulators need to be aware of complementary markets which may drive membership and thus create competition in usage despite the network effects that tend to favor the incumbent.