

Winner-Takes-All Dynamics

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Most platforms operate in contexts which are typically winner-takes-all (WTA markets). The primary conditions of WTA markets include the presence of strong network effects, high multi-homing costs, and the lack of special preferences for any side of users. Given these conditions, it is imperative to evaluate why certain markets would remain WTA and would be dominated by one or at most a few platforms, with very little competition. At the end of this chapter, you would have learnt the dynamics of WTA markets, risks and opportunities, as well as issues in regulating WTA markets.

Some markets are inherently dominated by one or few platforms. These markets are characterized by what is popularly known as, “winner takes all” (WTA) dynamics. It may not always be due to conventional first mover advantages or classic economies of scale—these traditional sources of advantages may result in oligopolies or monopolistic competition. In network markets WTA dynamics manifest itself through the power of network effects, and the switching/multi-homing costs associated with the same. In this chapter, we will discuss the conditions for evolution of WTA markets, and persistence of WTA dynamics; its implications for platform firms; and the policy challenges of regulating these markets.

What Are WTA Markets?

Winner-takes-all markets are characterized by three conditions (Eisenmann, Parker, and Van Alstyne, 2006): the network effects are strong and positive, users experience multi-homing costs, and users have no special preferences for specific

features. These markets, when the three conditions are met, may be dominated by one or very few platform competitors.

Strong and Positive Network Effects

These network effects ensure that more and more users join a specific platform and derive value from their affiliation and continued engagement. As these network effects are positive, the value derived exponentially increases, with the number of users engaged. And in some markets, platform competitors that manage to acquire more than the threshold of users (critical mass), not only continues to attract more and more users, but also manages to retain them on the platform.

Take for example, a peer-to-peer social networking platform like Facebook. As users affiliate with these platforms, they seek and connect with their friends and family, and share content with each other. In some cases, these platforms provide an opportunity to track and reconnect with friends with whom they may have lost personal connects, long ago. The positive network effects greatly aid this discovery of friends and connections, and their continued engagement. The breadth of people to connect and the effort expended in the discovery and subsequent engagement enables high willingness to join (WTJ) and platform loyalty (willingness to stay or WTS).

High Multi-homing Costs

In certain product-markets, users experience high multi-homing costs. Multi-homing are distinct from switching costs: while switching costs are costs incurred by users in leaving on platform and joining another, multi-homing costs are costs incurred by users in joining and staying engaged with multiple platforms at the same time, simultaneously. These multi-homing costs are typically variable costs that are incurred continuously through the period of engagement. And these variable costs across multiple platforms might outweigh the benefits derived from such multi-homing.

Take for example, drivers on ride-hailing platforms like OLA and Uber. In markets like India, where multiple such platforms compete, it is important for the drivers to choose a specific platform. These platforms incentivize drivers based on the number of rides they undertake on that platform, per day/week depending on the specific city. For instance, in larger and high-density cities like Mumbai, these incentives may be provided on a weekly basis, whereas in smaller cities like Trichy, where the market may not have matured (and the total number of rides may not be very high), these incentives may be calculated on the basis of number of daily trips. The multi-homing costs of affiliating across platforms manifest in the form of having to undertake a minimum number of rides per day or week in each of the platforms to keep their affiliation alive and maximize incentive-earning potential. Platforms may also penalize drivers with long periods of inactivity on

the platform to dissuade multi-homing and attract serious committed driver partners. Apart from this, these platforms may require that only their App is installed in a specific device, requiring multi-homing drivers to invest in multiple phones and connections as well. Plus, the drivers need to ensure that when they are riding on one of the platforms, they do not attract rides on the other platform. Such issues lead to complex scheduling problems, like predicting which platform will provide more rides during the specific time of the day on weekdays/weekends; and making commitments to that platform for that time window. In markets with intense competition, competing platforms continue to increase driver multi-homing costs through a combination of strategies—penalties for periods of inactivity, device exclusivity, incentive structures, and other pricing schemes.

For the riders though, there may not be any multi-homing costs, as they can install multiple Apps on their phones and use those specific platforms when they need. Rider pricing is based on their variable use of these platforms, and there are no fixed costs; nor are there any opportunities lost through multi-homing.

User Preference for Special Features

The third condition for the existence and prevalence of winner-takes-all markets is the lack of user preference for special features on the platforms. If users preferred a special feature, there may be an opportunity for a platform, that provides just that value. In such cases where the users prefer a special feature, the network effects may not be broad, and users might want to engage with only a subset of the platform features/users. And that allows for the market to be split across multiple platforms providing specific services to their specific user segments.

Take for example, user preferences in social networking. There may be users who would value sharing (and consuming) pictures and videos only, and therefore there is a niche for services like Instagram and Pinterest to sustain their network effects along with the generic Facebook. Similarly, the same user might want to share different content with their family and friends, and with their professional colleagues, and therefore create a market for a professional networking platform, like LinkedIn. For instance, if I went to Hawaii to receive a professional award, my award ceremony pictures would go to the professional networking platform, whereas my visits to the beaches and resorts would be shared in the social network platform.

Economics of WTA Markets

Even though WTA markets are dominated by one or few competing platforms, it cannot be safely assumed that the platforms that operate in these markets will be highly profitable. The users may have high multi-homing costs that prohibit users being affiliated with multiple platforms simultaneously; but it may be possible for users to switch platforms. That is, they could leave one and join another. These

markets may also not guarantee first mover advantages. It is possible that a new platform could enter the market, rapidly acquire users on both (or all) sides of the platform, and challenge the incumbent platforms.

It is imperative for incumbent platforms, even in WTA markets, to stay update with both technological and consumer changes in order to remain competitive. Disruptive innovators¹ could enter WTA markets through targeting a small niche, an ignored consumer segment that valued specific features. Through market entry as a niche player, disruptors could then move up-market and start providing a wide-range of services targeting the entire market. And such disruptors have displaced incumbents in a variety of industries, including in WTA markets.

For example, when Facebook entered the social networking market, it did not enjoy first mover advantage. There were many competitors like Orkut, MySpace and Friendster already in the market. Nor was Facebook the latest to enter the market; even Google entered the market with Google + subsequently. Users switched from one platform to another, based on a variety of considerations, including but not limited to, specific features and brand name. Apart from these entry strategies, Facebook opened its social graph to third party complements, enabling them to produce a variety of complementary products like games and events, attracting more and more users.

Impact of WTA Markets on Complementors

The presence and evolution of WTA markets has multiple implications for users (demand side) and complementors (supply-side).²

Coordination Problems

Coordination problems arise when demand side users cannot signal their intent of joining the platform unless the supply-side has made specific investments in platform affiliation. The supply-side complementors need specific assurances of the demand-side users and the kicking-in of network effects to make specific investments. Even though this is a common problem across all multi-sided platforms with network effects, this gets accentuated in a WTA market. As the multi-homing costs are high, there is no opportunity to evaluate multiple platforms prior to the decision to affiliate.

Platforms operating in WTA markets need to signal their commitment to solving these problems in order to attract users and complementors, especially those who are expected to make significant asset-specific investments in platform affiliation.

¹ <https://hbr.org/2015/12/what-is-disruptive-innovation>.

² Church and Gandall (2004) citation here. Church, J., & Gandall, N. (2004). Platform Competition in Telecommunications (CEPR Discussion Paper No. 4659). C.E.P.R. Discussion Papers. Retrieved from <http://ideas.repec.org/p/cpr/ceprdp/4659.html>.

Tipping/Standardization

In WTA markets, there is an apprehension that once the complementors have made their asset-specific investments in joining the platform, there is a risk of hold up by the platform. That is, the platform can leverage its power over the complements and extract disproportionate rent from them, in terms of higher prices or even changing the terms of doing business. Due to this apprehension, some complements postpone adoption till such time the markets tip, and/or technical standards evolve. On the other hand, joining the platform early allows these complements to partake in the tipping process and gain significant advantage by shaping the market/technical standards, rather than only adopting the standards if they joined late.

Another related issue is the adoption of inferior standards by the market. Buoyed by the power of network effects, these inferior standards might become dominant designs and might not serve the needs of the complements. When products with inferior technologies become standards in WTA markets, both users and complements are forced to adopt those, and this widespread adoption could hinder innovation and new market development.

Multiple Equilibria

On the contrary, some markets may take a long time to tip and for standards to evolve and be widely adopted. While competing platforms might be fighting to set standards, it would be a significant dilemma for users and complementors to either wait for standards to evolve or to commit to one standard or the other. Till such time, there might be multiple standards operating in the market, and some complements might choose to incur multi-homing costs to have a head-start in every standard, for the fear of losing out when one of them becomes widely adopted as an industry standard.

Lock-In Costs

Lock-in costs represents the risk of hold-up by the platform once the standards war has been won. The winning platform typically intends to recoup the costs of the standards battle from its users, through either of the three means—increased prices, higher switching costs, and lack of investment in upgradation/improvement of technical standards. This lack of competition might restrict improvements in technology development, market orientation, as well as general deterioration in product and service quality.

Thus, there are three dilemmas for users complementors in WTA markets:

- (a) To join or not to join (will the network effects kick-in)?
- (b) When to join (will the market tip, and to which standard)?

- (c) To focus affiliation with one platform (hold up risks) or multiple platforms (incur multi-homing costs)?

Evolution of WTA Markets

Given the prevalence of penguin problems (experienced by the platform) and the consequent dilemmas for users and complements in WTA markets, there are six issues to consider in the evolution of WTA markets.

Pioneer's Dilemma and Penguin Problems

Platform businesses do suffer from pioneer's dilemma like most other businesses do. Pioneer's dilemma refers to the timing of launch of a technologically superior product/service by a start-up. If the start-up launches too early, it should invest in development of network effects, solving the penguin problems, and achieving critical mass of users and complements. If it launches too late, it should invest resources in differentiating its products/services from the incumbents (who had entered the market earlier) and acquiring users and complementors. In markets with high switching costs, this may be very expensive and may work only when the start-up adopts a significant superior technology and/or provides an improved product/service offering. In WTA markets, with the need for an undifferentiated product/service offering for the entire market (users do not value any special features) and the existence of multi-homing costs (platform users incur additional costs affiliation across multiple platforms), these costs may be very high and significant.

Take the example of cloud-based consumer email services. The market was dominated by Hotmail (the pioneer) and Yahoo Mail (a service provided by a diversified internet company). These two competitors had significantly grown the market and resolved all the issues faced by the pioneers—solving the penguin problem (by subsidizing the users), generated critical mass required to monetize the other side (advertisers), and had erected significant switching and multi-homing costs (by making it a habit for users to share their email addresses as part of their visiting cards, as an electronic way of reaching them). In this market, the new entrant had to enter with a disruption, which is what Google did with its Gmail service. Gmail provided users with significantly large storage space, and effectively captured market share from the incumbents. The switching costs were worth incurring considering the benefits of the storage that Gmail offered. Plus, Gmail had successfully incorporated all the technological features of any cloud-based email service. Users switched *en masse*; some did multi-home for some time, but eventually Hotmail was acquired by Microsoft, and Yahoo Mail stopped growing. Gmail integrated tightly with the search engine Google.com and other products (to provide contextual advertising within Gmail) and monetized its mail service. Gmail

disrupted the market and changed the dynamics of a WTA market. While Hot-mail and Yahoo Mail (as well as numerous other similar email service providers) did their best to provide best quality cloud-based consumer email services, Gmail erected switching and multi-homing costs through its tight integration with other complementary products and services, including Google Drive (and other cloud storage driven products like Photos), Google Duo and Meet (peer-to-peer video calling and meetings), as well as with the Google Play Store (an applications market place on its shared mobile operating system—Android).

In summary, the way the pioneers solve the penguin problems does pave the way for evolution of the WTA markets. Additionally, strategies adopted by disruptive innovators may significantly shift the dynamics of WTA markets, in shaping switching & multi-homing costs, building preference for specific attributes, and the strength of network effects.

Subsidization and Monetization

One of the common strategies adopted by platforms for network mobilization is to subsidize one set of users. The choice of subsidizing a set of users has implications for three outcomes—network growth (on all the sides of the platform), platform viability and its ability to invest in continued development/quality improvements, and the economics of complementors. The choices and implications of which side to subsidize and which side to monetize on network growth has been elaborated in detail in Chap. 5 on pricing.

While subsidies help the platform attract users, it may pose significant stress on the economic viability of the platform. Till such time the cross-side network effects kick-in and the platform on-boards adequate numbers of users on the money-side (who are willing to pay), the platform may have to keep investing money. Not every platform start up might be able to afford such upfront investments unless they are adequately funded. Such need for up front investments restricts entrepreneurship to either large corporations or diversifying entrepreneurship (leveraging cash flows from another business to grow the platform). And therefore, we may not have very innovative start-ups entering the ecosystem, as these large (multi-business) organizations might have already invested in certain technologies and standards. In WTA markets, such differences between well-funded platforms and others might result in an increased influence of incumbents and large corporations setting the standards/boundaries of growth.

Take for example, the evolution of ecommerce marketplaces across the globe. Given that these are typically winner-takes-all markets for the sellers on the platform (strong and positive cross-side network effects: sellers value the large numbers of buyers on the marketplace; high multi-homing costs: sellers invest in specific capabilities and processes for affiliating with each platform; and no special preferences: most sellers value large number of buyers in the market more than specialized and curated segments offered by specialized ecommerce sites as a

means of growth and diversification), they have evolved to attract only large competitors like Amazon and Walmart. In setting up such marketplaces, the costs of attracting, curating (the seller/product quality and process compliance) and retaining sellers mandate that there needs to be sufficient investments in building the supply-side before attracting the demand side (buyers). Given the low switching and multi-homing costs for buyers, one should subsidize buyers to attract them in large numbers. Given that buyers also value variety in such marketplaces, it becomes extremely difficult for focused ecommerce firms to compete in these markets. Hence, one can observe that in most markets, ecommerce marketplaces are dominated by large/diversified global firms like Amazon and/or well-funded ecommerce operations of large retail corporations (like Flipkart by Walmart).

Pivot Dilemma

As we saw in the previous section, in WTA markets, large & diversified platforms sustain their advantage over smaller focused start-ups. This presents a critical dilemma for platform start-ups on the timing of diversification and the extent of product breadth. It might be beneficial for the start-up to diversify early in terms of their ability to subsidize some users through revenue earned from other businesses. Such revenue streams could be accrued through other business models as well, say traditional pipeline businesses, like selling a product or providing something-as-a-service. Such revenue streams might provide the start-up enough headway to invest in subsidies for attracting new users. However, if the start-up diversified too early, it might lose focus and expend its energies on serving those markets. In WTA markets, such loss of focus might encourage entry of other platform competitors, who may be able to scale faster and therefore capture significant market share/value.

Remora Strategy

Some platforms with an intent to speed up its network mobilization follow a Remora strategy.³ The Remora is a fish that attaches itself to a larger fish, like a shark, or a boat. While it is carried around the waters by the host (larger fish/shark/boat), it feeds on whatever it can get. It can swim on its own, but they prefer to attach themselves to the larger fish to hitch a ride to the deeper reaches of the ocean, saving precious energy. Their relationship with the Shark is unique—they do not draw blood or nutrients from the Shark like a Leech. They feed on the food

³ Don Dodge first used this phrase “Remora Business Model” to highlight this strategy: https://don.dodge.typepad.com/the_next_big_thing/2007/05/widgets_the_rem.html. For a more detailed analysis of Remora strategies and their implications for platform start-ups, read: <https://r-srini.in/2020/03/18/remora-strategies/>.

scraps of the larger fish by keeping their mouths open. While the Remora benefits from its attaching to the Shark, it does not significantly benefit or harm the Shark.

Let us first understand the Remora strategy. A platform startup could piggy-back on a larger platform to access its initial set of users, with no costs to the larger platform. Let us consider an example. A dating start-up struggles to get its first set of users. While it needs rapid growth of numbers, it should ensure that the profiles on the platform are of good quality (like avoiding bots and fake profiles). It has two options: developing its own validation algorithm or integrating with larger platforms like Twitter or Facebook for profile validation. It could create its own algorithms if it needs to validate specific criteria, though. It could use a Remora strategy, by attaching itself to a larger Shark in the form of Twitter or Facebook. This has no costs to Twitter or Facebook, and if at all, contributes to marginal addition of traffic to Facebook/Twitter. However, for the start-up, this saves significant costs of developing and testing its own user validation algorithms (swimming down the depths of the ocean).

By leveraging the users on a larger established platform, the first set of users could be sourced easily *en masse*. However, just having users is not sufficient—there is an issue of coordination: getting not just sign-ups but driving engagement. It is important that registered users begin engaging with the platform. Some platforms need more than just engagement, they are stuck with a real-time problem: like in a multi-player gaming or a food-delivery platform, we need gamers to be engaged with each other real-time. Some other platforms need users in specific segments, or the transferability problem: that users are looking for others within a specific segment, like in a hyperlocal delivery platform, a matrimony platform, or a doctor-finding platform. Such platforms need to have sufficient users in each of these micro-segments.

A Remora strategy could potentially help a platform start-up overcome these issues. By porting users from the larger platform, one could acquire sufficient users, and through tight integration with the content/algorithms of the Shark platform, the Remora (start-up) could get the engagement going. The decision to adopt a Remora strategy presents five trade-offs: (a) holdup risk; (b) ceding monetization control; (c) access to user data; (d) risk of brand commoditization; and (e) exit costs.

Hold-up risk: There is a significant risk of the established platform (host) holding the start-up adopting the remora strategy (or just remora) to a ransom, partly arising out of the start-up making significant asset-specific investments to integrate. For instance, the dating start-up would need to tightly integrate its user validation processes with that of Facebook or Twitter, as the need may be. It may have to live with the kind of data Facebook provides it through its APIs. It may be prone to opportunistic behaviour when Facebook decides to change certain parameters. For example, Facebook may stop collecting marital status on its platform, which may be a key data point for the dating start-up. Not making asset-specific investments to integrate with the host platforms might not provide the start up with the full benefits of its remora strategy.

Monetization control: A significant risk faced by Remora start-ups is that of conceding the power to monetize to the Shark. For example, when a hyper-local restaurant discovery start-up follows a Remora strategy on Google, it is possible that Google gets all the high-value advertisements, leaving the discovery start-up with only low-value local advertisements. There is also a risk of the larger platform defining what could be monetized on the start-up platform as well. For example, given that users have gotten used to search for free, even specialized search like locations (on maps) or specialized services like emergency veterinary care during off-working hours, may not be easy to monetize. Such platforms may have to cede control on which side to monetize and subsidize, and how much to price to the larger platform. To avoid conceding monetization control to larger platforms, Remora start-ups need to provide additional value over and above the larger platform. For instance, in the local search business, a platform start-up would possibly need to not just provide discovery value (which may not be monetizable) but include matching value as well.

Access to user data: This is the biggest possible risk of following a Remora strategy. Given that user data is the primary lever around which digital businesses customize and personalize their services and products, it is imperative that the start-up has access to its user data. It is likely that the larger platform may restrict access to specific user data, which may be very valuable to the start-up. For instance, restaurant chains who could have run their own loyalty programmes for its clients, may adopt a Remora on top of food delivery platforms like Swiggy or Zomato. When they do that, the larger platform may run a loyalty programme to its clients, based on the data it has about the specific user, which is qualitatively superior to the one that local restaurants may have. In fact, in the context of India, these delivery platforms do not even pass on basic user profiles like demographics or addresses to the restaurants. The restaurants are left with their limited understanding of their walk-in customers and a set of nameless/faceless customers in the form of a platform user, for whom they can generate no meaningful insights or even consumption patterns. It is imperative that platform start-ups define what data they require to run their business model meaningfully, including user data or even operations. It could be in the form of specific contracts for accessing data and insights, and/or cocreating analytical models.

Risk of brand commoditization: A direct corollary of the user data ownership risk is that the Remora start-up could be commoditized, and their brand value might be subservient to the larger platform's brand. It could end up being a sub-brand of the larger start-up. For user generation and network mobilization, the Remora start-up would possibly need to get all its potential users to affiliate with the larger platform, even if may not be most desirable one. On a delivery start-up, hungry patrons may be loyal to the aggregator and the specific cuisine, rather than to a restaurant. Given that patrons could split their orders across multiple restaurants, it could be the quality and speed of delivery that matters more than other parameters. Restaurants might then degenerate into mere "kitchens" that have excess capacity, and when there is no such excess capacity, these aggregators have known to set up "while label" or "cloud kitchens". It is important that Remora

start-ups step up their branding efforts and ensure that the larger brand does not overshadow their brand. The standard arguments or relative brand strengths of complements in user affiliation decisions need to be taken into consideration while protecting the Remora's brands.

Exit costs: The last of the Remora's costs is that of exit costs. Pretty much similar to the exit costs from an industry, platform start-ups need to be clear if their Remora strategy is something temporary for building up their user base and mobilizing their networks in the early stages, or it would be relatively permanent. In some cases, the platform's core processes might be integrated with the larger platform, like the API integration for user validation, and therefore may provide significant exit costs. In some other cases, the platform may have focused on their core aspects of their business during the initial years and would have relegated their non-core but critical activities to the larger platform. At a time when the start-up is ready to exit the larger platform, it may require large investments in non-core activities, which may lead to disruptions and costs. Add to this, the costs of repurposing/rebuilding asset-specific investments made when joining the platform. Remora start-ups, therefore, need to have a clear strategy on what is the tenure of these Remora strategies, and at what point of time they would exit the association with the larger platform, including being prepared for the costs of exit.

Remora strategies allow for platform start-ups an alternative to scale their businesses very fast. However, it is imperative to understand the benefits and costs of such strategies and make conscious choices. These choices are at three levels—timing of Remora, what processes to Remora, and building the flexibility to exit. Some platforms may need to attach themselves right at the beginning of their inception to larger platforms to even get started; but some others can afford to wait for the first users to start engaging with the platform before integrating. What processes to integrate with the larger platform is another critical choice—much like an outsourcing decision, core and critical processes need to be owned by the start-up, while non-core non-critical processes may surely be kept out of the platform. While making these decisions, platform start-ups need to consciously decide the tenure and extent of integration with the larger platform, and therefore make appropriate asset-specific investments.

Integration Dilemma

Integration dilemma refers to the decision by platforms to integrate certain product features from outside their core into their core offering. The platform sponsor might vertically integrate (either backward in the providing of complements or forward in taking on certain intermediating roles) that may either be hard to develop by independent complementors. This difficulty could arise due to the need for its tight integration with the platform core, or high investments required by the complementor to create and capture value. Such features may have been hitherto provided by complementors, albeit with loose integration or with lower quality standards; and when these features become highly valued by the users, it presents

a dilemma for the platform. Integrating these complements into the core allows for more value creation and capture by the platform by broadening its offering; but it risks spoiling the relationship it has with its complementors. If these complements were really valued by the users, the potential for value capture is higher with those complementors that produced and offered them to the users through the platform. And this may result in increasing complementors' bargaining power with reference to the platform. In this game for brand value between the platform and its complementors, it is tempting for the platform to integrate such complements. Such integration hurts the complementors significantly in WTA markets, where they may have limited choice if the users (on the other side) also have high multi-homing costs. In this competition between the platform and its own competitors, the platforms may also have the power to restrict the product features offered by the complements (by closing access to their core), set prices, and impose norms of engagement with end-users (like payment processes and customer service norms).

For instance, when Apple launched iPhone, it had a lot of Google products as part of its ecosystems, including Google search, YouTube, and Google Maps. As the Apple ecosystem matured, it launched its own versions of search, videos, and maps.⁴ In this market, users of iPhone could easily multi-home (as Google used Open API, allowing for even third parties to make Apps for these products) and download these Apps on their phones. However, when ecommerce platforms like Amazon launch their own white label products (like Amazon Basics) and house brands (like Solimo), it can hurt the sellers on the platform who compete in these categories.⁵ For small sellers, who experience significant switching and multi-homing costs on the ecommerce marketplace, it can reduce greater value if Amazon's algorithm prioritized its own brands/private labels against that of independent sellers (as some claims have been made⁶).

Relationship Dilemma

Relationship dilemma refers to the abuse of bargaining power by the platform over its complementors. In WTA markets with low multi-homing costs for complementors, the terms of the agreement between the platform and the complementors may be highly skewed in favour of the platform. For instance, the question of who owns the consumer data is a debate between the platform and complementors. In a typical marketplace platform, the sellers might have access to only transaction data that is relevant to their products and services, whereas the platforms may have full access to the buyers' search history and selection preferences. In performing their role as a sponsor, the platform might own the discovery/matching/transaction/evaluation algorithms. The dilemma in front of the platform in a WTA market is

⁴ <https://www.businessinsider.com/youtube-iphone-2012-8>.

⁵ For more details, see <https://the-ken.com/story/amazon-private-labels/> (inside a paywall).

⁶ See <https://www.europeanceo.com/industry-outlook/regulators-push-back-as-amazon-expands-private-label-offering/>

whether to use the data and build robust algorithms (based on descriptive, predictive, and prescriptive analytics of user data) to exponentially grow the market; or to share this data with the complements and allow them to monetize the same.

The additional risk for the complementors is that of the platform to monetize the data to cross-sell other products and services. Such monetization opportunities are disproportionately available with the platform, in comparison to the complementors. For instance, a platform with access to aggregate data on, say sales of a particular category of products, can intensify its marketing efforts and on-board more and more sellers on the platform. Such increase in sellers might also lead to congestion, and when these products are undifferentiated, cause negative same-side network effects. And motivate a few competitors (most likely those that are differentiated) to leave the market.

Take for example, the Indian doctor-finding platform, Practo. Practo entered the market with a clinic management solution, called Practo Ray. Practo Ray was sold as a Software-as-a-service (SaaS) to clinics to manage their end-to-end operations. One of the modules in Practo Ray was appointment management, and that was extended out as Practo.com, with patients seeking to discover doctors/clinics could use. Practo has the potential to use the data on clinics' performance to shape their ranking algorithm that prioritizes search results for users. This algorithm may be opaque to the users, and this could result in discontent and attrition of doctors from the platform. However, it is imperative for the platform to use "some" ranking algorithm to rank these results, else the search users may not find the platform easy to use. Given that the multi-homing and switching costs for the search users is lower, it is likely that they would leave the platform if they were confronted with congestion (too many options with too few parameters to discriminate amongst them).

Regulating WTA Markets

Traditional economic analyses of competitive markets provide us with a continuum between monopolies on one end and perfect competition on the other end. Democratic countries with capitalistic policies and open markets have almost always preferred perfect competition over other forms of competition. And have had significant regulatory control and oversight on markets that could even become monopolistic. Given the economics of platform competition favours one or a few competitors in winner-takes-all markets, governments and regulators are exploring ways to regulate these markets as well. However, before we proceed further, we need to distinguish between traditional monopolies and WTA markets.

A traditional monopoly is formed on the basis of either of three conditions—a natural monopoly (like roads or electricity distribution where infrastructure duplication is meaningless), advantages derived out of scale economies, and control over key resources (including government regulation). In other words, the barriers to competitive entry in monopolistic markets are high due to either of these conditions—control over infrastructure, key resources (including licences),

or high minimum economies of scale. However, in the context of winner-takes-all (WTA) markets, the source of advantage is through network effects; and consumer stickiness is due to their multi-homing costs.

In pipeline businesses, monopolies result in increased prices for the consumers, as the monopolist extracts rent based on the firm's dominant bargaining power over customers. There are WTA markets that are categorized by positive same-side network effects (also known as scale effects)—the more the number of users, the more valuable it is for other users on the same side. For instance, in a search engine like Google, more the number of users search on the platform, the more the machine learning algorithm running behind Google search learns about user search and preferences, and therefore returns much better search results to everyone else as well. In other words, more the users search on Google, more everyone else also benefits. In such WTA markets, users are provided the services for free (or at very low prices), and even if they are one of the few competitors in the market, scale economies are beneficial to the consumers as well.

It is not just that platforms competing in WTA markets provide their services for free. In the context of some WTA markets that charge prices based on variable costs, any increase in prices (beyond a threshold) might upset the network effects. Take for example, a WTA ride-hailing platform market. If the platform continued increasing the prices for riders, it would not only decrease the number of riders on the platform, but it may also attract more and more cab drivers as they would benefit more due to high prices. And such changes in the network structure with more drivers chasing less riders will lead to negative same-side network effects amongst the drivers (competing directly with each other), and eventually the weaker drivers (those that could not afford to compete) will exit the market. The market will correct itself to another equilibrium at lower volumes. This effectively provides an insurance for the riders against sustained price increases by the platform.

Predatory Pricing

Economists and policy makers concerned about market efficiencies and fair competition have been obsessed with the concept of predatory pricing for a long time. The most common definition of predatory pricing is through the application of the conventional Areeda–Turner test.⁷ The Areeda–Turner test is based on two basic premises. The **recoupment premise** states that the firm indulging in predatory pricing should be able to predict and be confident of its ability to recoup the losses through higher profits as competition exits the market. The assumption is that the firm could reasonably anticipate the (opportunity) costs of predatory pricing, as well as have an estimate of the future value of monopoly profits; and the net present value of such predatory pricing to push competition out of the market

⁷ For more details, see: <https://heinonline.org/HOL/Page?handle=hein.journals/jrepale10&div=4&collection=journals>.

should be positive and attractive. In other words, the firm should be able to project the effect of lower prices in terms of lower competition and higher profits in the future.

How low can this predatory price be? That is the subject of the second premise—the **AVC premise**. The firm's prices (at business-as-usual volumes) should be below its average variable costs (AVC), or marginal costs in the short run. If the prices were indeed above the AVC, the firm would argue that they are indeed more efficient than competition, due to any of their resources, processes, or organizational arrangements. It is when the price falls below the AVC that the question of unfair competition arises—the firm might be subsidizing its losses. Take for instance, a start-up that is piloting an innovative technology. It may price its products/services at a price below the AVC to gain valuable feedback from its lead users, but in the absence of a recoupment premise such pricing might not qualify as predatory pricing. On the other hand, imagine a new entrant with superior technology who can bring costs down to a level where the prices fall below the marginal costs of the competitors but stay well above the firm's AVC, it is just disrupting the market. Only when both the conditions are met, i.e., when the predator's prices are below the AVC and the firm could project the extent of recoupment due to monopoly profits as competition exits the market, that we call it predatory pricing.

As we have seen before, subsidies are common in multi-sided platforms, and their prices may seem to reflect predatory pricing.

- Platforms may resort to subsidies to solve the penguin problems in the early days of their growth, and sometimes may offer their services for free as well.
- The platform might subsidize one side of users and make money from the other side, while incurring costs of providing services to both sides, depending on the relative price elasticities and willingness to affiliate with the other side of the platform. And the prices for the subsidy side would surely be below costs for that side. It is imperative that the overall costs and prices are considered while analysing these pricing strategies.
- These cross-side network effects will force the platforms to price their services most efficiently across both the sides. Even for the money side, the platform might not be able to charge extraordinary prices as such prices would themselves act against the sustenance of these cross-side network effects. It is likely that these extra-normal profits would evaporate through subsidies on the other side to keep the network effects active. Imagine a situation where a B2B marketplace charged the sellers higher than normal prices. Only large (and possibly desperate) sellers would affiliate with the marketplace, leading to buyers (the subsidy side) leaving the platform. To keep the buyers interested, the marketplace might either have to broaden the base of sellers by optimizing the prices or provide extraordinary subsidies to the buyers to keep them interested. So, to maintain the equilibrium, the platform would have to price both the sides efficiently.

- Finally, in a competitive situation, not all competitors might follow the same price structure. So, a reduction of prices by one competitor for one side of the market may not force all other competitors to reduce prices; they may just encourage multi-homing (allowing users to use competitive products simultaneously) or manipulate the price on the other side of users.

Therefore, a direct application of the Areeda–Turner test might not be appropriate while studying predatory pricing in the context of MSPs. Let us imagine a market for home tutors supporting school students. The market is inherently geographically constrained; it is very unlikely that either the teacher or the student would travel across cities for this purpose. For the time being, let us assume that there is no technology (like video conferencing) being used. This market is apt for the entry of a multi-sided platform. Let us assume that the platform monetizes the students by charging a commission apart from the fee payable to the tutors (irrespective of which side the platform monetizes the analysis would be the same). Supposing it is faced with a competitive entry at lower prices. The new entrant sustains the same fees for the tutors (else they would not switch), while lowering the student prices. This could lead to temporary losses that the new entrant may be willing to cope with. Anticipating a larger surge in student numbers (at the same tutor fees), more tutors switch/multi-home to the new entrant; and seeing the number and quality of tutors on the new entrant’s platform, students first start multi-homing, and some of them begin switching. The incumbent has four possible responses to this threat.

1. The incumbent can reduce the prices for the student-side as well as tweak the incentives for the tutor’s side to match that of the new entrant. This is surely cost-enhancing and profit-squeezing strategy, and the battle becomes one of who has bigger pockets to sustain this price war.
2. Increase multi-homing costs for either or both sides, like providing either a multi-product bundle for students; and volume/exclusivity-based incentives for tutors. That is, tutors may earn exclusivity bonuses if they did not multi-home and engaged in a specified number of activities on the platform (designed in a manner to ensure that they have no time left for multi-home). Another means of increasing multi-homing costs is through increasing contract tenures—switch from monthly billings to annual billings, and therefore lock-in users for the whole year.
3. Increasing penetration: the incumbent can increase the overall size of the market by increasing the penetration of its services and target hitherto unaddressed niche markets. In the process, allow for a variety of niches to emerge and break the WTA dynamics in the market.
4. Perpetual matching: the incumbent platform can transform itself into a pure discovery and matching platform providing perpetual matches between tutors and students and highlight the value of such contracts to charge high upfront discovery charges.

Given the differences in the economics, tests like Areeda–Turner test would not be directly applicable in the context of platforms as they do in pipeline business models. Regulators should, therefore, ensure that they treat WTA markets and regulating platforms operating in WTA markets different from monopolies.