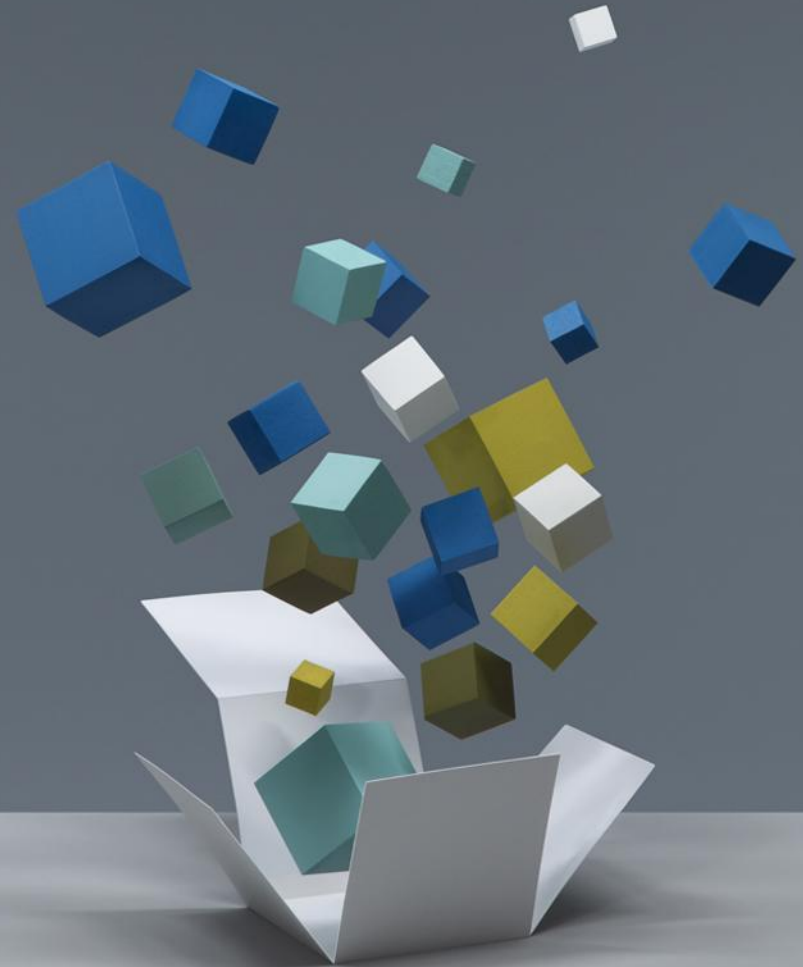


Key Observations on Competition in the Digital Economy

Dr. Elizabeth Xiao-Ru Wang
June 2016

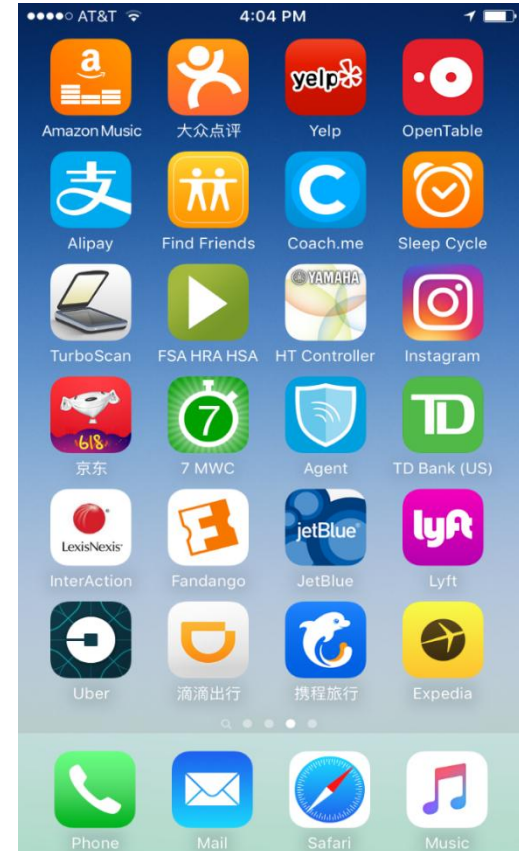


Agenda

1. Multi-homing
2. Switching costs
3. Network effects
4. Entry barriers
5. Big data
6. Implications for competitive analysis in the Digital Economy

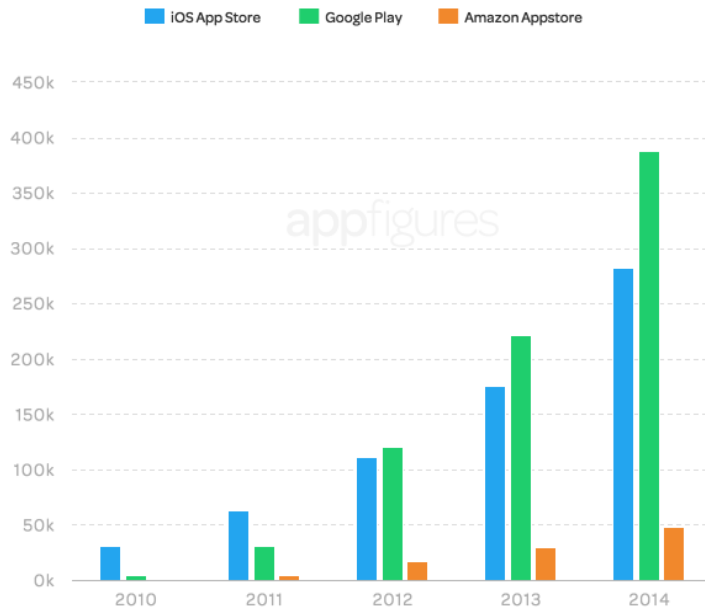
Widespread multi-homing: consumers

- Abundant choices are available to users
 - Roughly 1 billion websites on the Internet
 - Over 2 million apps on Google Play
- Many services have ample major suppliers
 - Shopping services: Amazon, eBay, Gmarket, Coupang, and Ticket Monster
- Many services cost little or are free
- Consumers use multiple services with the same or similar functions, known as multi-homing



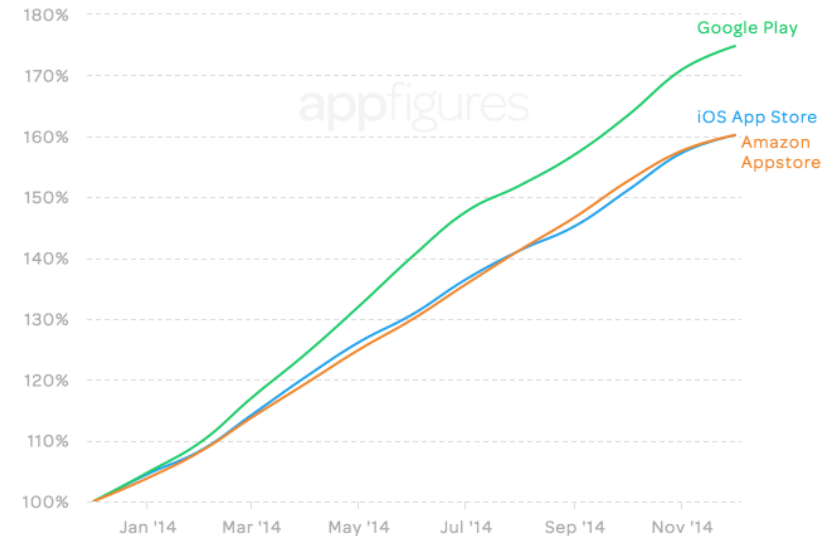
Widespread multi-homing: developers

Total Number of Developers by App Store



2014 App Store Growth

By Number of Developers



- 3% of developers generate 80%+ of installed applications
- Most popular apps are available on all major platforms
- Many cross platform tools (e.g. HTML5) allow developers to write programs across different platforms

No material switching costs

- Users can experiment with multiple services at little or no cost
 - No significant learning costs
 - Downloading an app is easy
- Often, users can easily detect quality differences among competing services
- Historical experience demonstrates that users are not locked into their current services
 - Facebook takeover of MySpace in social media
 - WeChat takeover of QQ in China's online communication space
- “Competition is one click away”

Network effects

- Many Internet businesses have large fixed costs and near zero marginal costs
- Network effects mean that a product becomes more valuable to users as the number of users of the product increases (e.g., social media)
- Positive feedback may occur for certain platforms (e.g. PC operating systems)
- Network effects may pose a barrier which makes it difficult for existing firms to expand and for new firms to enter
- Network effects are important for some services (e.g. Line) but not others (e.g. search engines, mobile phone devices)

Reduced entry barriers

- The Internet and new technologies have lowered the costs of entry **by**:
 - Lowering marketing costs
 - Reducing distribution costs
 - Allowing entrants and smaller firms to rent instead of owning capital intensive infrastructure (e.g. cloud storage)
 - Increasing return on advertising by better targeting potential users
- Entry can be frequent, inexpensive, and often disruptive, especially for Internet based services

Big data



- Data are abundant, easy accessible, and non-exclusive
 - Data are everywhere
 - Cost of collecting, storing and organizing data has decreased dramatically
 - Unlike natural resources, data (e.g. a birthdate) can be available to multiple users
- Ideas/insights on how to use and organize data are more important than control over a vast quantity of data
 - Many successes started with little data: e.g. Uber, Twitter, Yelp
 - Diminishing returns to scale applies to data
- Data security and privacy issues can be dealt with by consumer protection law, not competition law

Implications for Competitive Analysis

- The Digital Economy is dynamic with rapid and sometime disruptive innovations
- Entry analysis and its impact on dynamic competition will be crucial
- Low switching costs and pervasive multi-homing result in little risk of consumer lock-in
- Network effects need to be reviewed case-by-case for individual services
- Big data are unlikely to create competitive harm

Thank you



Elizabeth Xiao-Ru Wang, Ph.D.

王晓茹博士

ewang@crai.com

001-617-425-3596

Charles River Associates

200 Clarendon Street, T-33

Boston, MA 02116, USA

www.crai.com