Launch of CREATe Copyright & Innovation Network

The Economics of Digital Goods

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Outline

Information goods: the basic problem

A simple economic model

Effects of digitization

Recent developments

Directions for future research

Information goods: the basic problem

Information goods

- ‘Information’ = anything that can be digitized
  - Encoded as a stream of 0’s and 1’s.
- ‘Information goods’
  - “Commodity whose main market value is derived from the information it contains” (Wikipedia)
    - Information that is formatted so that it can be exchanged.
    - In digital or in analog format

Nature of information goods

- Information goods are **non-rival**
  - Consumption by one individual doesn't prevent consumption by another individual.
  - At any level of production of the good, the marginal cost of delivering the good to an extra consumer is zero.
    - 'First-copy cost' nature of information goods

- → Risk of **underutilization**
  - Any price above zero creates an inefficient scarcity

Nature of information goods (2)

- Information goods <u>might be</u> **non-excludable**
  - Is it possible to exclude another individual from consuming the good?
  - Depends on the technology for exclusion and/or legal regime

- → Risk of **underproduction**
  - No exclusion → no sales
  - No sales → no production

The fragile balance of IP rights

Incentives
→ Grant exclusive right to creators to encourage *production*

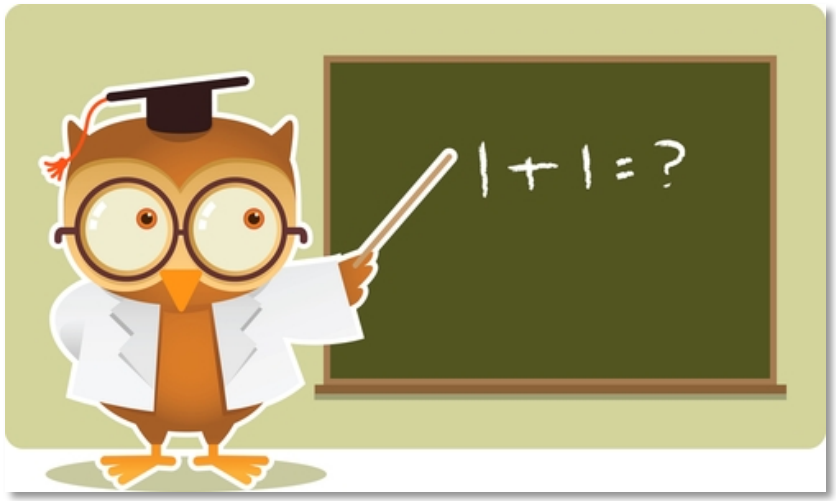
Usage
→ Limit creators' market power to encourage *diffusion*

IP rights for information goods

Incentives → Economic right (*economic exploitation of the work*)

Usage → Limited scope (*protects the expression, not the underlying idea*) & limited time

To organize our thoughts: A simple economic model



A basic economic model

Each consumer is identified by the value s/he attaches to the album.

Potential audience

Buy the album if value $\geq$ price $\rightarrow$ Demand

Costs of creation (mostly fixed)

Creator

Sets p (price per copy) to maximize profits

A basic economic model (2)

Should I produce or not?!?

So, if this profit flow is larger than my cost, I produce!

I'll get some profit as long as I'm protected by copyright and zero afterwards…

Given the copyright length, I can compute the flow of future profits.

Longer copyright is good for me!

A basic economic model (3)

Many potential creators with different costs of creation





Longer copyright
→ more profits
→ **more creation**

A basic economic model (4)

- Consumers' point of view
  - Copyright protection → "monopoly" → inefficient allocation of resources
    - Creator raises the price above the competitive level.
    - The diffusion of the information good is limited.
    - Potential gains of trade are not realized.
  - It is only when copyright protection is over that efficiency is restored.

Longer copyright
→ Diffusion and use of existing creations ↓
→ **Lower welfare**

Effects of digitization

Negative. Piracy

- Piracy (= erosion of copyright protection)
  - Increased competition from consumers making digital copies
    - Very low cost of production and distribution
    - Very high (and non degrading) quality
  - Consumers are only willing to pay up to the additional value that the original brings on top of the copy.
- Empirical estimations
  - Average displacement rate is around 0.11
  - It takes 9 downloads to have one less legitimate sale.

Positive. Lower costs and demand effects

- Lower costs of production and diffusion
  - Once produced, digital information goods can be reproduced at almost zero marginal cost
  - Fixed costs decrease as well
    - Self-publishing becomes easier
  - Lower cost to publish information goods on the Internet
    - Caveat: more intense competition to get consumers' attention
- Piracy may also have positive effects on demand
  - Sampling effect
  - Network effect
  - Indirect appropriability

Net effects of digitization

Larger consumer surplus
Smaller deadweight loss
⬇
Good for *diffusion* (usage)

Lower profit
⬇
Bad for *production* (incentives)

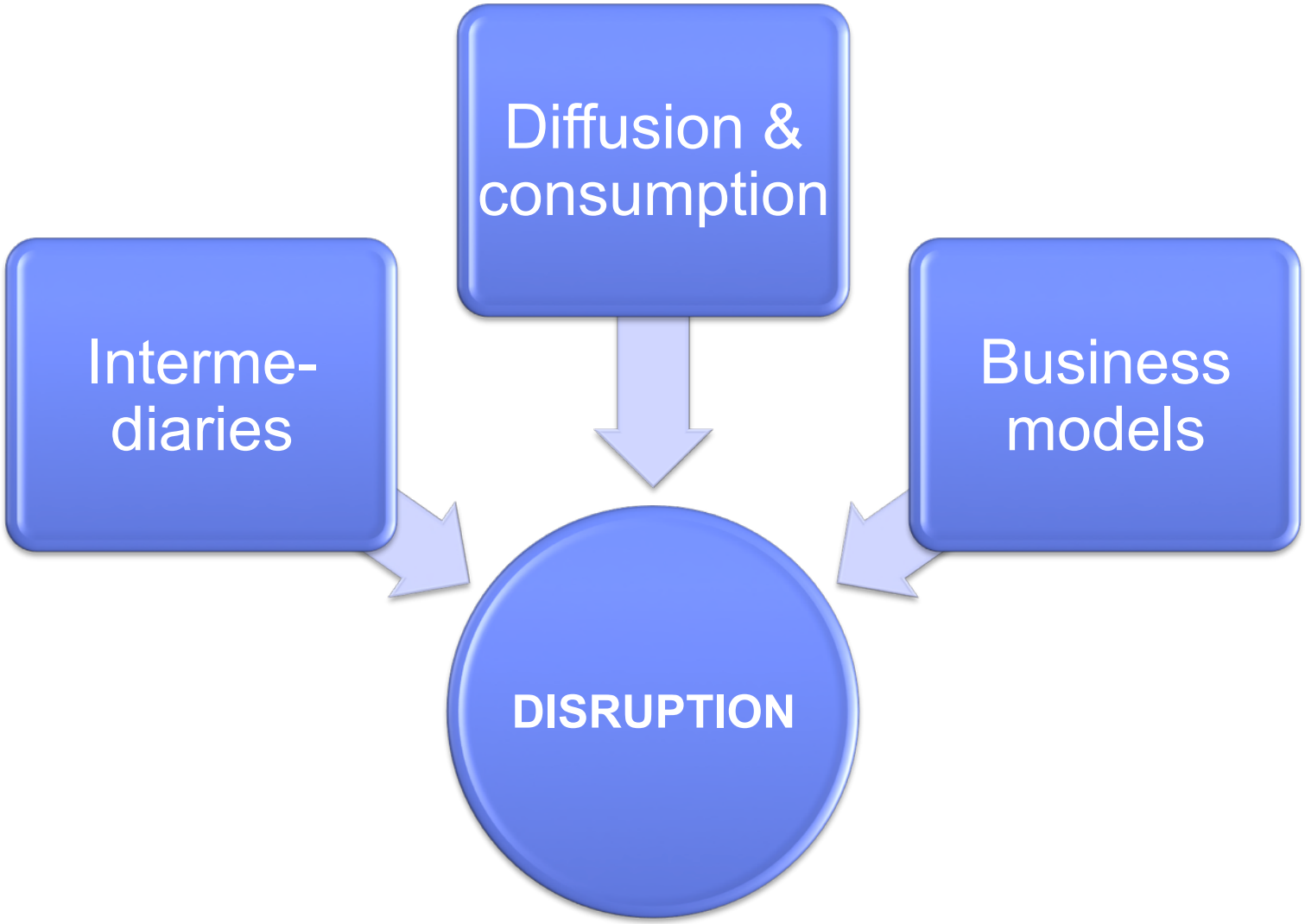
RIAA
REPRESENTING MUSIC

"This theft has hurt the music community, with thousands of layoffs, songwriters out of work and new artists having a harder time getting signed and breaking into the business."

No clear evidence…

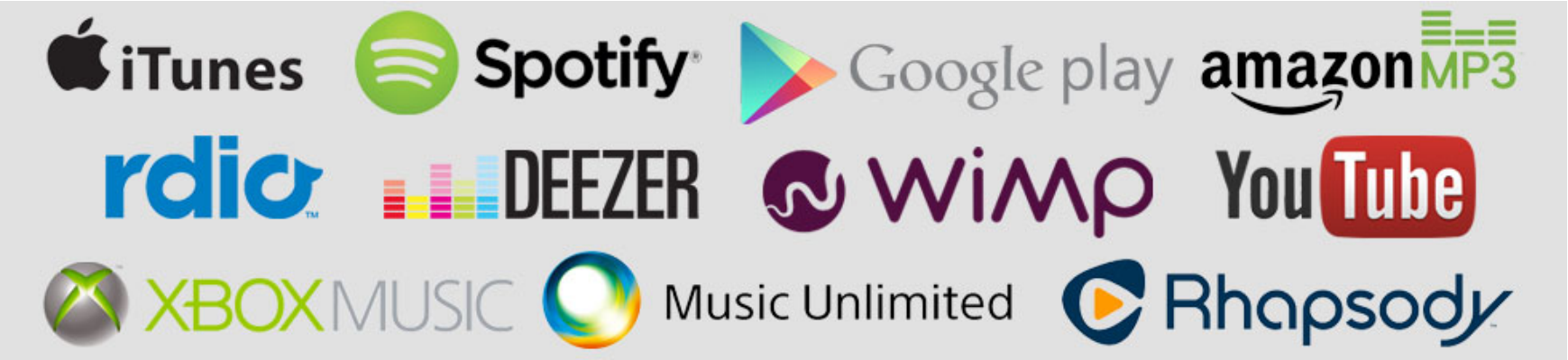
Recent developments

What's new?


Diffusion & consumption
Interme-diaries
Business models
DISRUPTION

New intermediaries

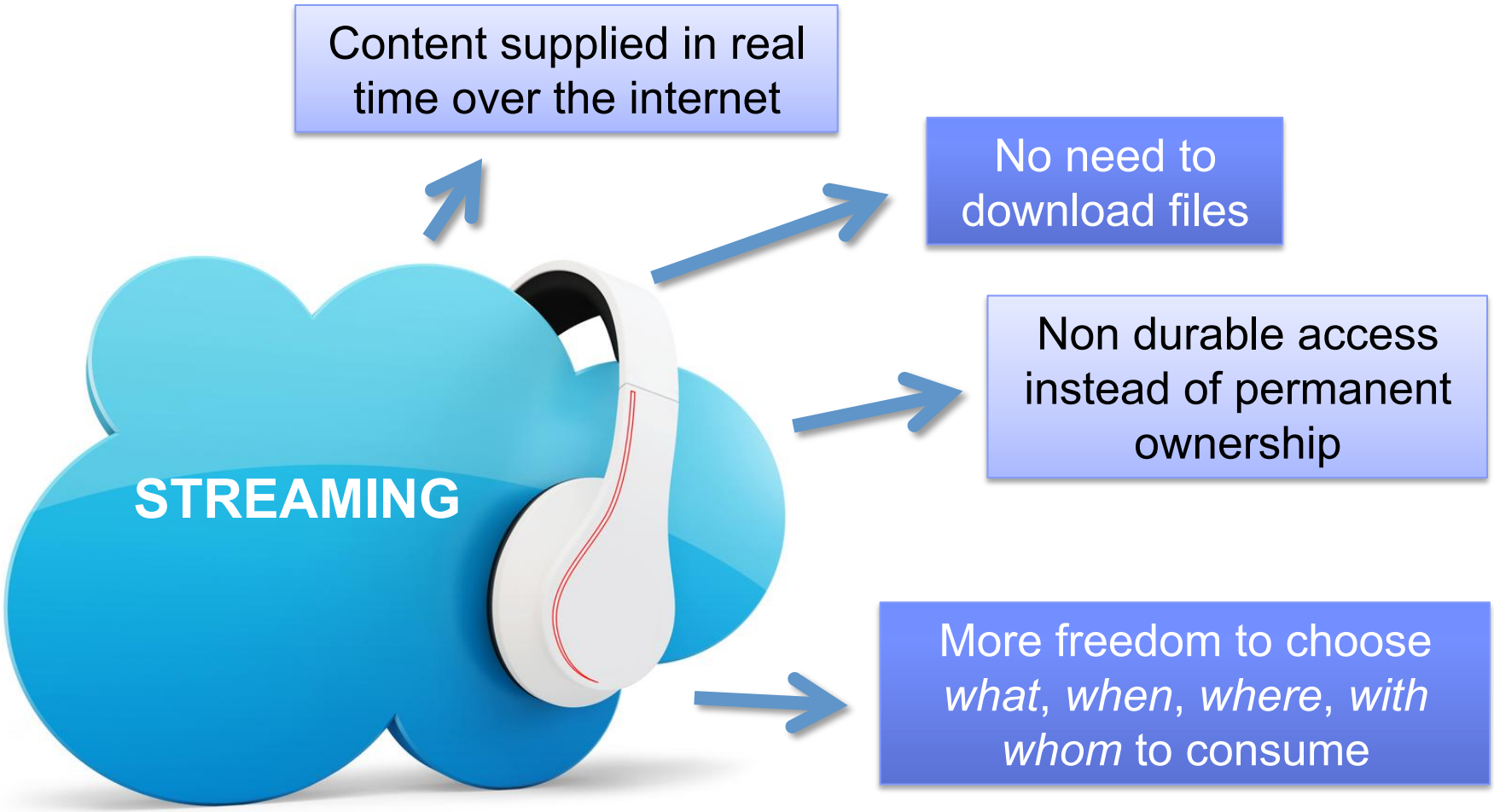
- Digital platforms …



Serve as **intermediaries**…
- Between producers of content and end-users
- + (possibly) advertisers

Combine content with **value-added services**
- Playlists, recommendation systems, synchronisation on mobile, ...

New modes of diffusion and consumption



New business models of streaming platforms

- Subscription
  - Users pay a flat rate for a given period of time.
  - They can consume the content available on the platform on an unlimited basis during that period.

- Embedded advertising
  - Content can be accessed for free but is bundled with advertising.
  - Advertising nuisance = shadow cost of free content

- Freemium model
  - Hybrid of the first two.
  - Choice between free version (with ads) & premium version (no ads, flat fee and premium services)

Directions for future research

Previous models are inadequate

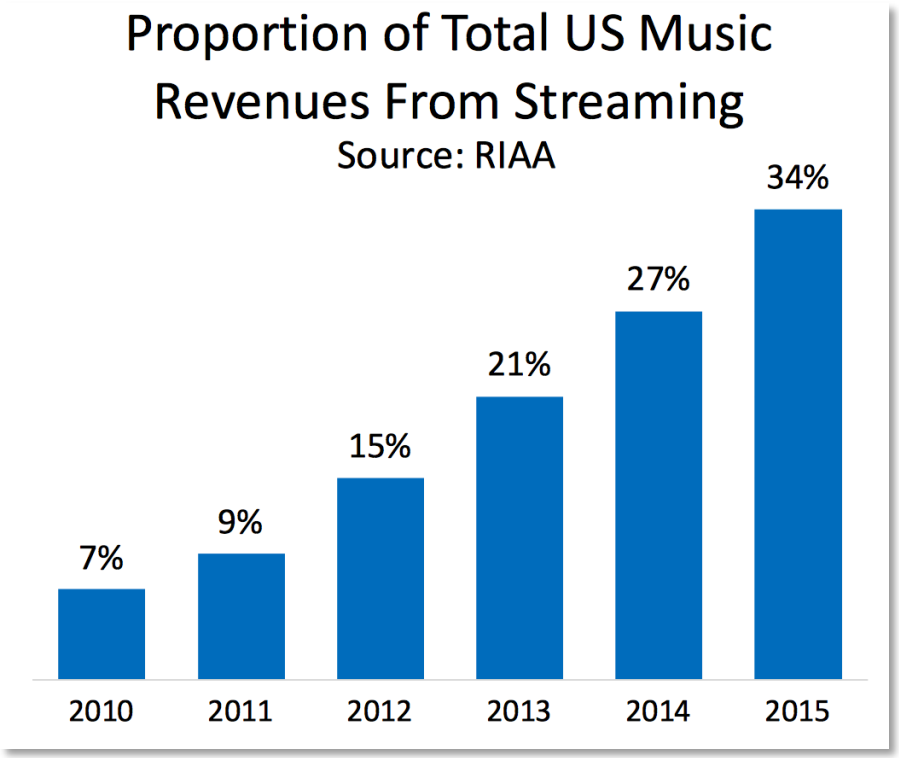
- Creator as unique decision-maker
  - Past → Approximation for 'artist + record company'
  - Now → New intermediaries with increasing bargaining power.
- Single information good sold at uniform price
  - Past → CD as a bundle of songs, sales, no price discrimination
  - Now → Unbundling, subscription, access to catalog, 'renting' of songs
- Utilities from different information goods can be added
  - Past → Implicit assumption behind the monopoly setting
  - Now → Subscription schemes and recommendation systems permit free discovery of new information goods, and revelation of tastes.
- 2 missing pieces
  - Consumer choices & platforms

Understanding consumer choices

- Streaming extends users' consumption possibilities
  - Unit of consumption has changed.
    - Bottomless library of contents instead of addition of individual contents
  - Conditions of access have changed.
    - Temporary (but extended) access replaces permanent ownership.
  - Streaming reduces consumers' search costs for content.
    - Users can discover more easily new content <u>and</u> their own tastes.
    - Follows from subscription model
    - Facilitated by value-added services
      - Recommendation systems
      - Customized channels
      - Content sharing (on the platform itself or on social networks)
- Needs proper modelling

Understanding streaming platforms

- Streaming becomes…
  - a major mode of content consumption
  - a major source of revenues for content producers



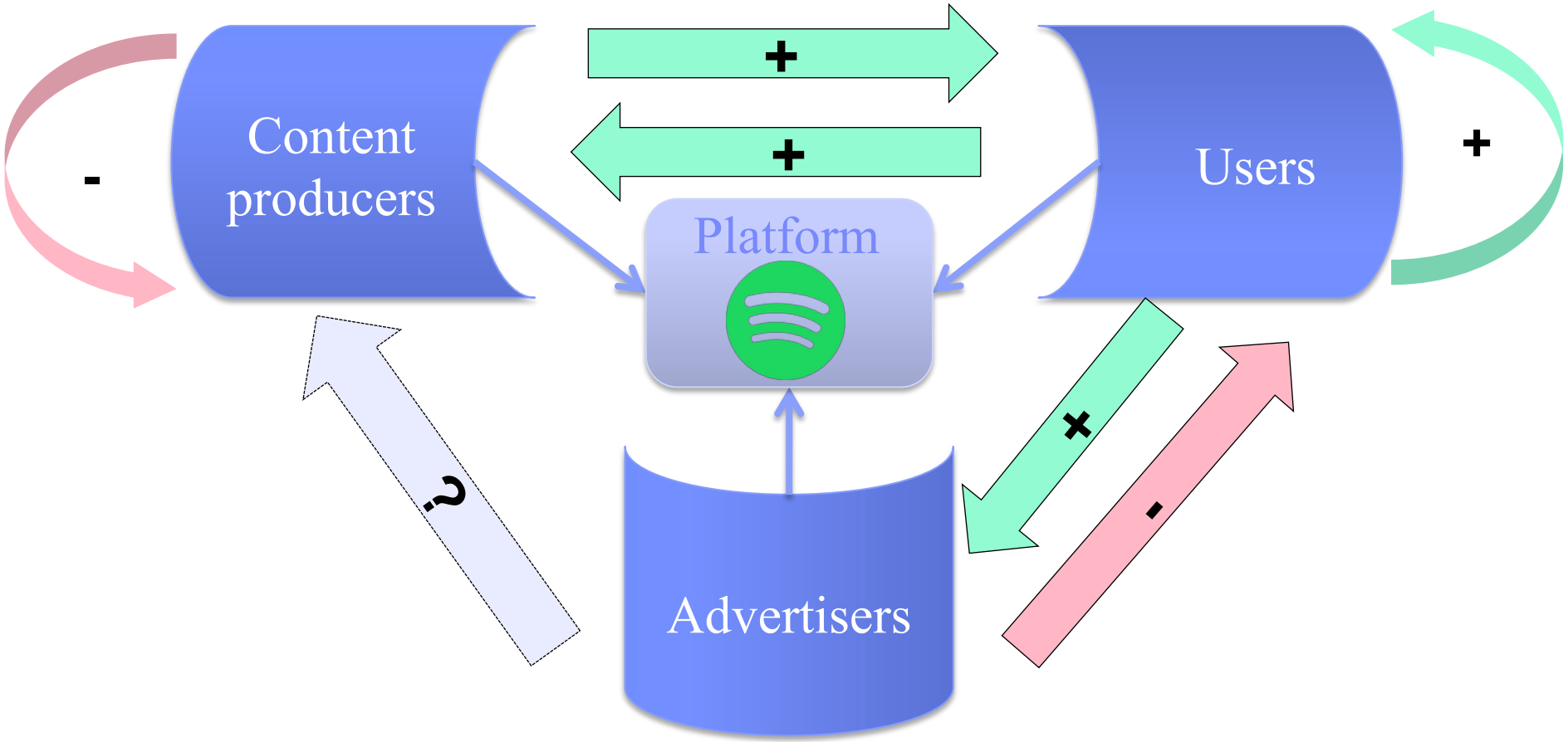
Increasing market power for providers of streaming services

https://www.riaa.com/wp-content/uploads/2016/03/RIAA-2015-Year-End-shipments-memo.pdf

Understanding streaming platforms (2)

- Streaming services = digital platforms
  - **Platforms**: intermediaries that facilitate and manage the interaction between a large number of users.
    - Among them: multi-sided platforms
  - **Digital platforms**: interaction takes place on the Internet and concerns digital goods.
- Where the theory of Industrial Organization can help
  - Identify external effects
  - Analyze platform strategies
  - Understand platform competition

External effects

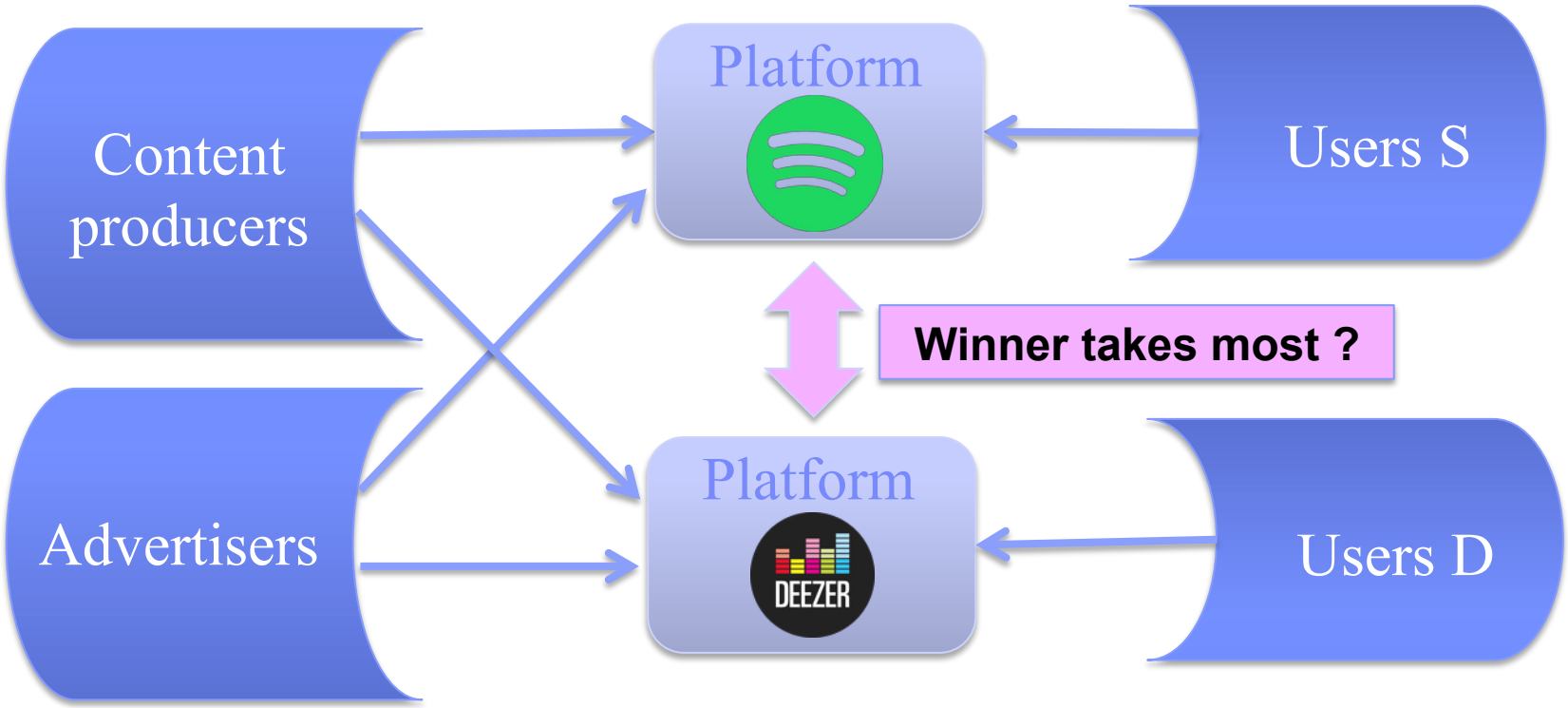


Platform strategies

- How to manage user participation?
  - **Marketplace** or **Reseller**?
    - Let 'suppliers' sell their product directly to 'buyers' <u>or</u> purchase products from 'suppliers' & resell them to 'buyers'?
  - Most streaming platforms **combine the 2 modes**
    - Reseller for content & marketplace for advertising (e.g., Spotify, Netflix)
- Pricing: Subscription, embedded ads or freemium?
- Non-price strategies
  - Value-added services
    - Reinforce positive network effects among consumers
    - Create switching costs if platform specific
  - Exclusivity agreements with content producers
  - Production of own content

Platform competition

- Depends on users' ability to 'multihome' & on external effects



Multihome ⇒ milked?

Singlehome ⇒ courted?

Key takeaways

- Peculiarities of nformation goods
  - Non-rival → if price above zero, then underutilization
  - Non-excludable → if price equal zero, then underproduction
- Copyright strikes a balance between incentives and usage
- Digitization disturbs this balance
  - Piracy increases usage but reduces incentives
  - Cost reductions increase production and usage
  - New intermediaries and new business models deeply affect usage.
- Challenges for economic research
  - Understand better consumer choices
  - Include digital platforms into the picture

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