

# Digital Rights Management

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(1) In the age of peer-to-peer (P2P) file sharing, technical protections cannot replicate the music market that existed before.

-- The hacking threat puts downward pressure on prices.

-- Technical protection wastes resources.

These together erode the incentives for artists.

(2) An alternative that has been widely proposed:

Admit defeat, and use compulsory licensing administered through Collective Rights Management Organizations.

Pay by taxing use of the internet. (Try to tax in a way that has no incentive effect.)

# Collective Rights Management Organizations

My main thesis:

CRMOs in the peer-to-peer file-sharing era can increase the participation of artists relative to strict copyright protection.

Argument:

CRMO's create externalities among artists. Artists share the profit. High-earning artists transfer some profit to less popular artists. CRMO reduces profits to *inframarginal* artists, but increases profits to *marginal* artists. This increases the total creative effort.

(The conclusion may be different if there is negative correlation between earnings in an artist's boutique market and the P2P-vulnerable mass market.)

# How ASCAP, BMI work in the U.S.

- Compulsory license
- The CMO's operate under consent decrees.
- There is (something like) free entry of artists into CRM.
- Payments are made to artists according to popularity.
- Each broadcaster pays according to its audience.
- For radio broadcast, payments are made to the music publishers. Under a 1998 special law for digital broadcast, payments must be made to the music producers as well. (There are two copyrights.)

# Can this work for P2P file sharing?

- Gathering information on popularity (downloads) is difficult, and a threat to privacy.
- Hypothesis 1: The revenue is more equally shared in a CRMO than with copyright protection.
- Hypothesis 2: Artists have two markets: a protected “boutique” market and a P2P market. Artists’ revenues may be positively or negatively correlated in the two markets.

# A Simple Model

- Index artists by  $a$ , where the value of  $a$  also indexes the artist's popularity, either positively or negatively
- $B(a)$ : the revenue of the artist in the boutique market. This is not in jeopardy.  
(For example, performance)
- $R(a)$ : the revenue that would be available in the mass market if music sales could be protected.
- $c$ : The opportunity cost of becoming an artist

# Earning power in the two markets: Correlated?

- Label the artists so that earning power in the mass market increases with the label,  $a$ .

$R(a)$  increases with  $a$ .

- Positive correlation is described by

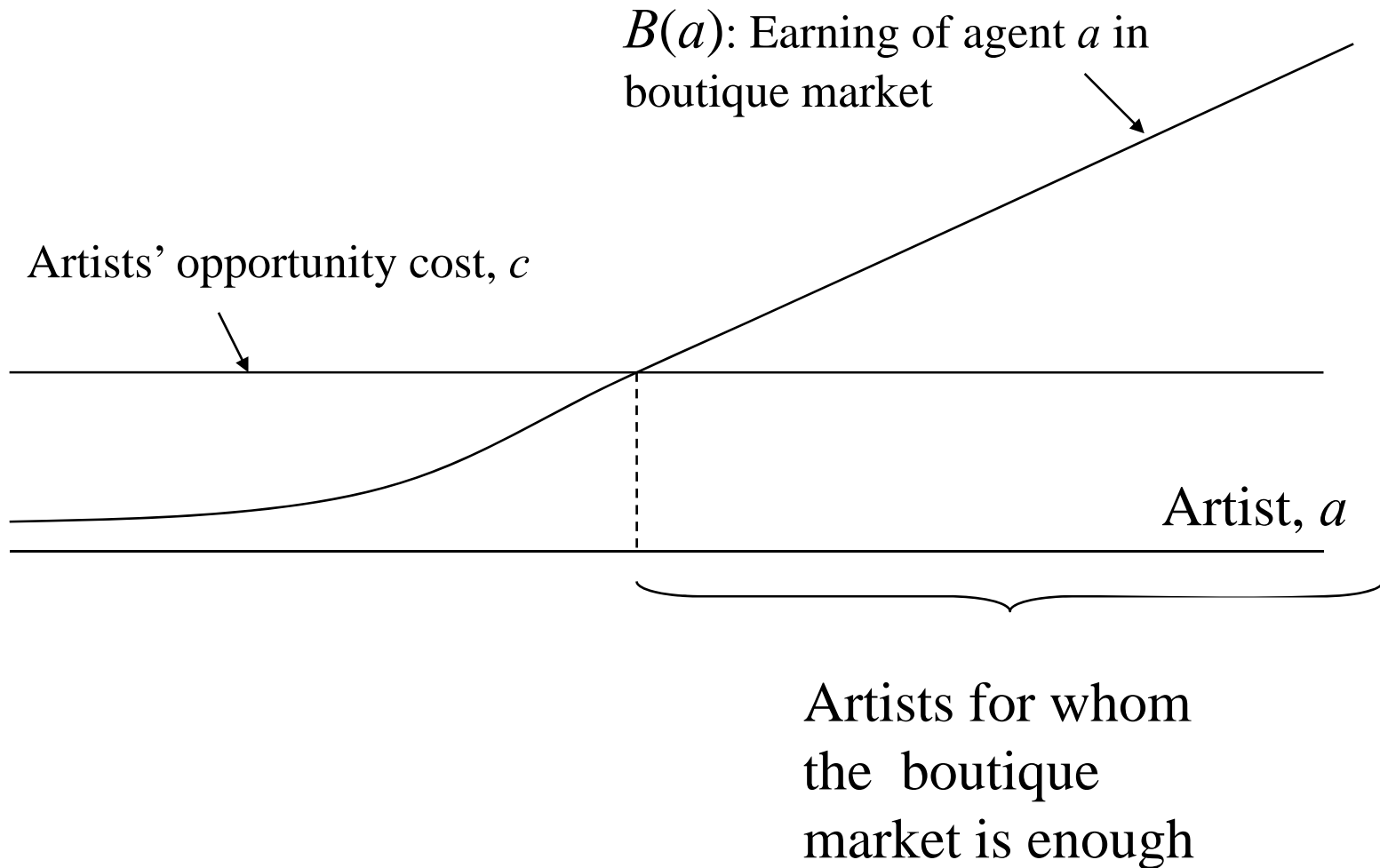
$$B(a) \uparrow \text{ and } R(a) \uparrow$$

- Negative correlation is described by

$$B(a) \downarrow \text{ and } R(a) \uparrow$$

# The case of positive correlation

## The Boutique Market:

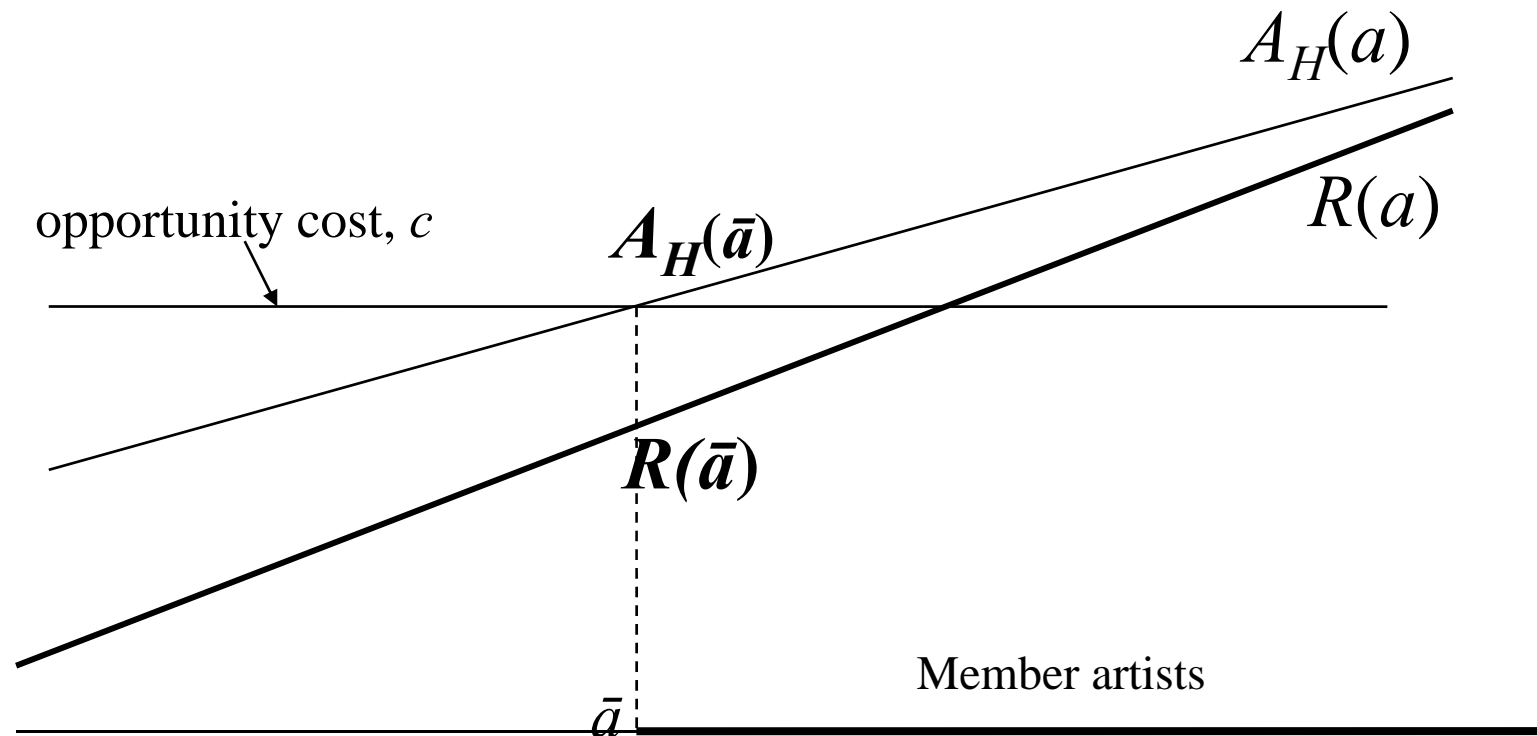




# Revenue Sharing (1) in the CRMO

Average revenue is greater than revenue contributed by marginal artist.

$$A_H(\bar{a}) = \frac{\int_{\bar{a}}^{\infty} R(a) dF(a)}{\int_{\bar{a}}^{\infty} dF(a)} = \text{Average revenue of artists in the mass market}$$



# Observations about revenue sharing:

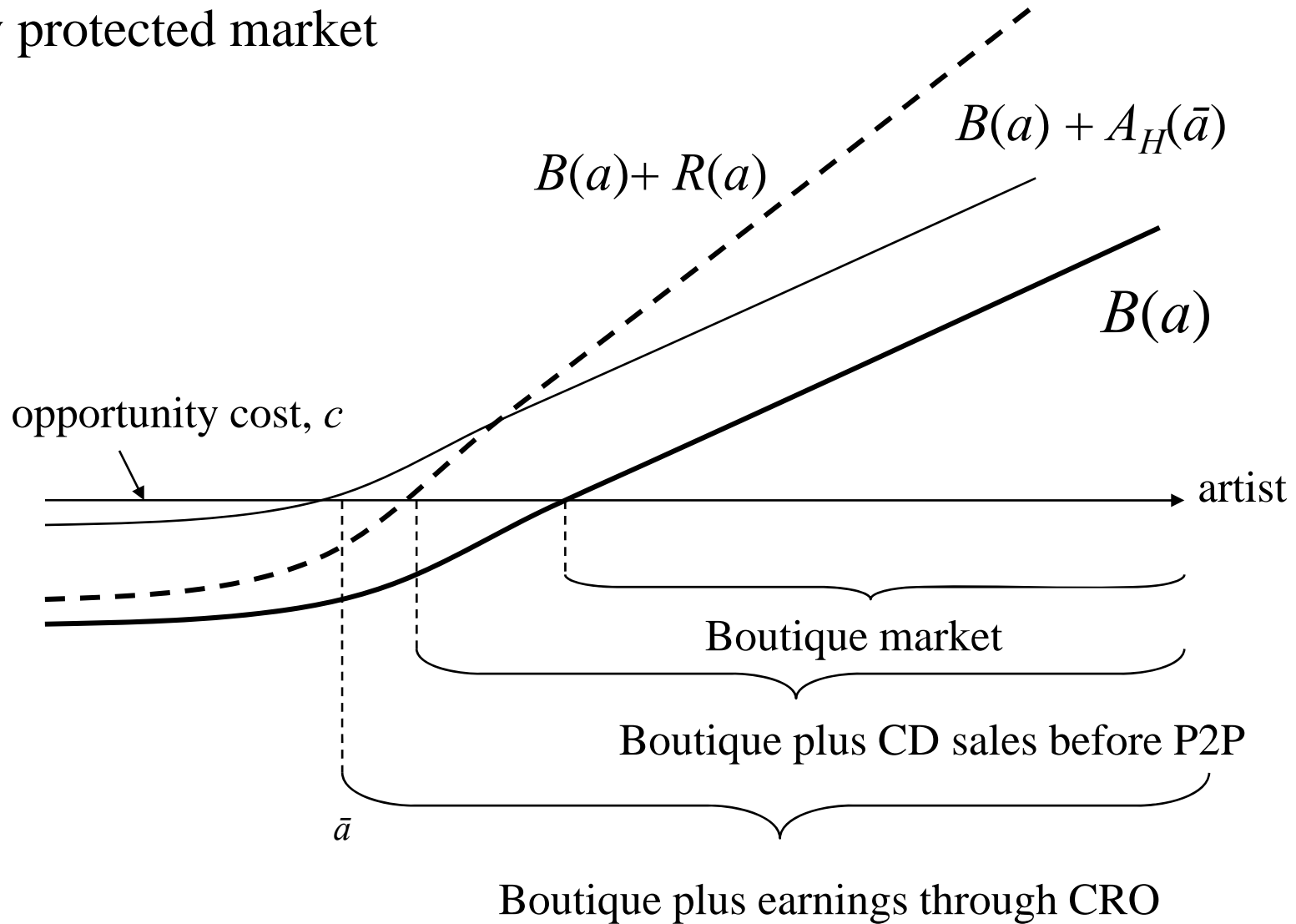
- Equal sharing increases the number of artists.

The reward to the *marginal* artist determines participation. The profit of inframarginal artists decreases, but this does not affect their participation.

- The number of artists can increase even if
  - total revenue is reduced.
  - averaging is partial, so that more popular artists receive more revenue in the CMRO.

# Positive Correlation:

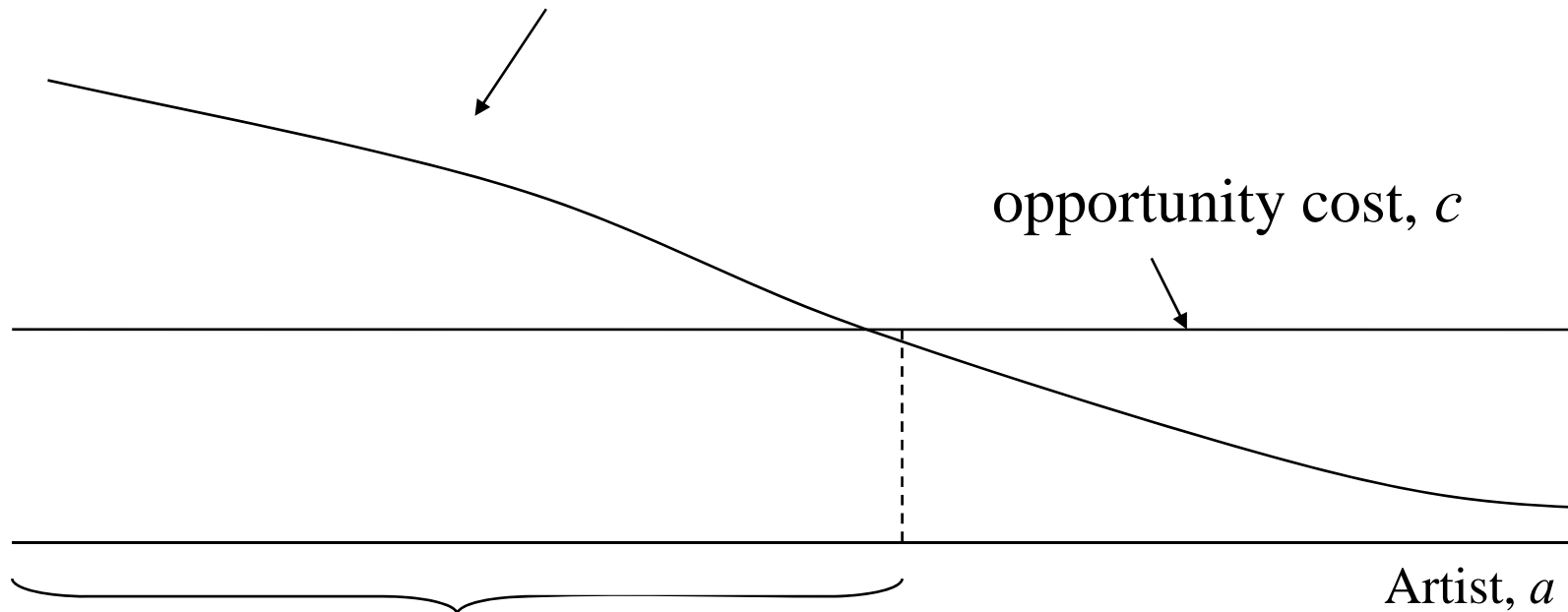
Compare the CRMO with  
a fully protected market



# The case of negative correlation

## The Boutique Market:

$B(a)$ : Earning of artist  $a$  in  
boutique market

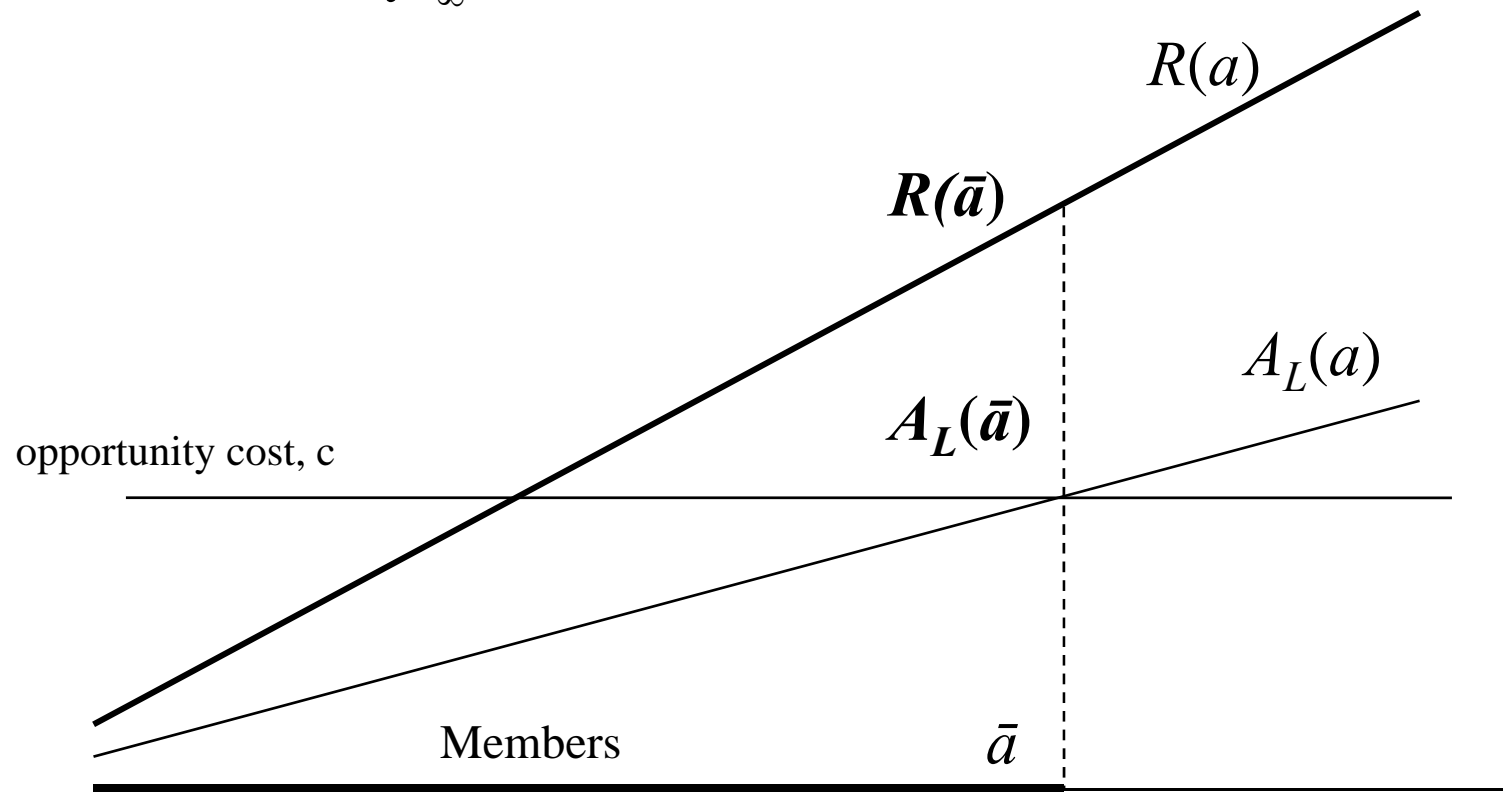


Artists for whom the  
boutique market is  
enough

## Revenue Sharing (2) in the CRMO

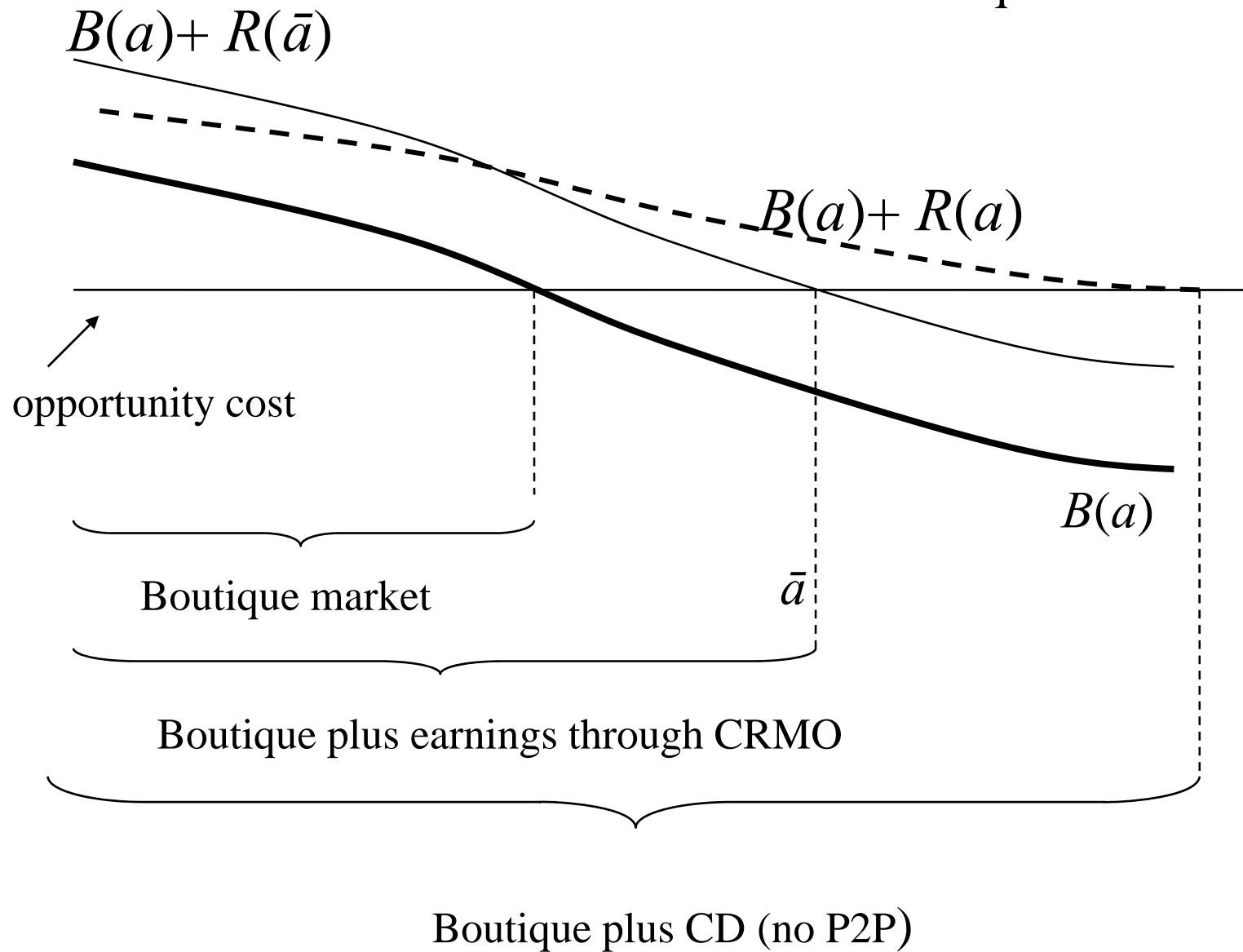
Average revenue is less than value contributed by marginal artist.

$$A_L(\bar{a}) = \frac{\int_{-\infty}^{\bar{a}} R(a) dF(a)}{\int_{-\infty}^{\bar{a}} dF(a)} = \text{Average revenue of artists in the market}$$



# Negative Correlation (1)

Boutique market dominats



# Summary

If (a) earnings in the two markets are positively correlated, and (b) high earners share with low earners in the CRMO, then switching from a fully protected market to CRMO increases the number of artists, and may do so *even if* total music revenues decrease.

If (a) earnings in the two markets are negatively correlated, (b) entry to the market is determined by the boutique market rather than the mass market, and (c) high earners share with low earners in the CRMO, then switching from a fully protected market to CRMO decreases the number of artists.