

Voluntary Disclosure of Product Information: The Case of E-book Samples

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Context

Fundamental idea in information economics:

- Asymmetric information leads to **inefficiencies** in markets

Common **inefficiencies**:

- Adverse selection
- Moral hazard
- Inefficient allocation



Key question in markets with asymmetric information:

- Will sellers **voluntarily disclose** private information about products?

Prior Research

Theoretical incentives to **disclose** product information:

- Reveal higher **quality** than average non-disclosing seller (e.g. Grossman, 1981; Milgrom, 1981)
- Reveal **horizontal match** to buyers' idiosyncratic **tastes** (e.g. Johnson and Myatt, 2006; Bar-Isaac, Caruana and Cuñat, 2010; Sun, 2011)
- In both cases, sellers **disclose** to earn **higher price**

Empirical evidence shows **less disclosure** in practice than theory predicts:

- Hospitals - quality accreditation (Jin, 2005)
- Restaurants - hygiene grades (Bederson et al., 2015)
- Salad dressings - fat content (Mathios, 2000)
- Lab (Jin, Luca and Martin, 2014; Benndorf, Kübler and Normann, 2015)

Highlights & Research Question

Study **voluntary information disclosure** in **digital market** for **e-books**:

- No entry costs
- No (editorial) quality control
- E-books are experience goods



Disclosure in form of **digital samples**:

- Costless
- Credible

Focus on empirical relationship between **price** and **disclosure**:

- Test** standard theory predicting **higher price** for products where information is **disclosed**
- How does **type of information**, vertical (quality) or horizontal (match), **moderate** empirical relationship between **price** and **disclosure**?

Outlook

Empirical Setting:

- Large-scale** data collection from online self-publishing platform **Smashwords.com**
- Authors choose price and whether to offer **free sample** of e-book
- Distinguish between **known** and **unknown** quality whether rating available for e-book



Results:

- Positive **match-premium**: For e-books **with rating** (known quality), those offering sample set $\approx +18\%$ higher price
- No pooling** at low price: For e-books **without rating** (unknown quality), those offering sample set $\approx -9\%$ lower price
- Less disclosure** when **quality unknown**: Approx. -1% to -4% fewer e-books offer sample when no rating available
- Higher prices** when **quality unknown**: E-books without rating set $\approx +15\%$ to $+29\%$ higher prices than rated e-books

Theoretical Framework (Sun, 2011)

Consumer i 's utility from reading an e-book:

$$u_i = q + \epsilon_i$$

with:

- q : e-book's quality (same for all consumers)
- ϵ_i : consumer i 's personal match-value (taste) $\sim \text{Uniform}[-\bar{\epsilon}, \bar{\epsilon}]$

Two cases of experience good characteristics:

- Unknown quality**: Both q and ϵ_i unknown to consumers (before reading). Sample reveals both q and ϵ_i .
- Known quality**: Only ϵ_i unknown but q known (before reading). Sample reveals ϵ_i only.

Equilibrium - Known Quality

When quality known, offering sample reveals match-value

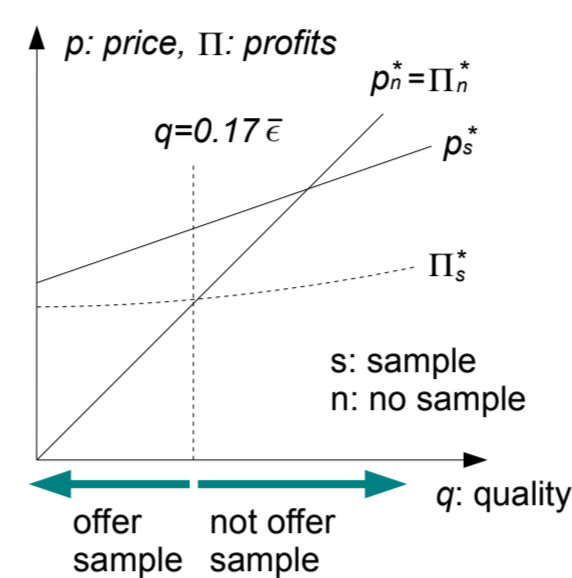
Strategic choice of author (Johnson and Myatt, 2006):

"Niche" strategy:

- Reveal match-value to readers and target readers with high match-value
- Sell few units but earn high price

"Mass market" strategy:

- Keep dispersion of valuations low by not revealing match-value
- Sell many units at price equal quality



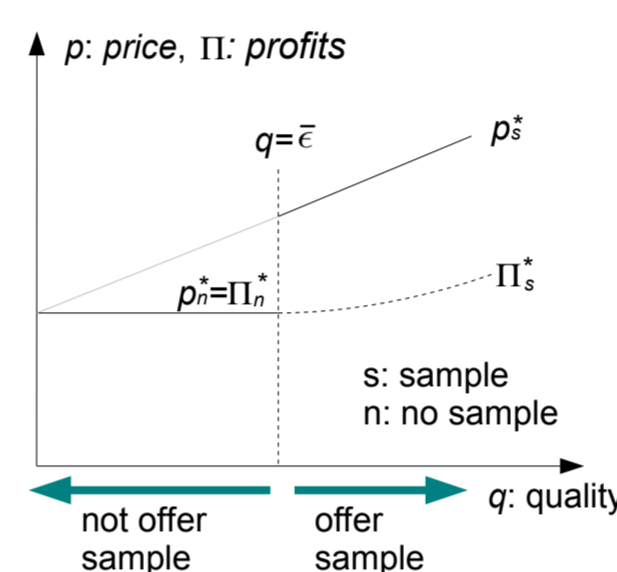
Proposition 1. For any quality known to readers, offering sample is associated with higher price than not offering sample.

Equilibrium - Unknown Quality

When quality not known, offering sample reveals quality and match-value

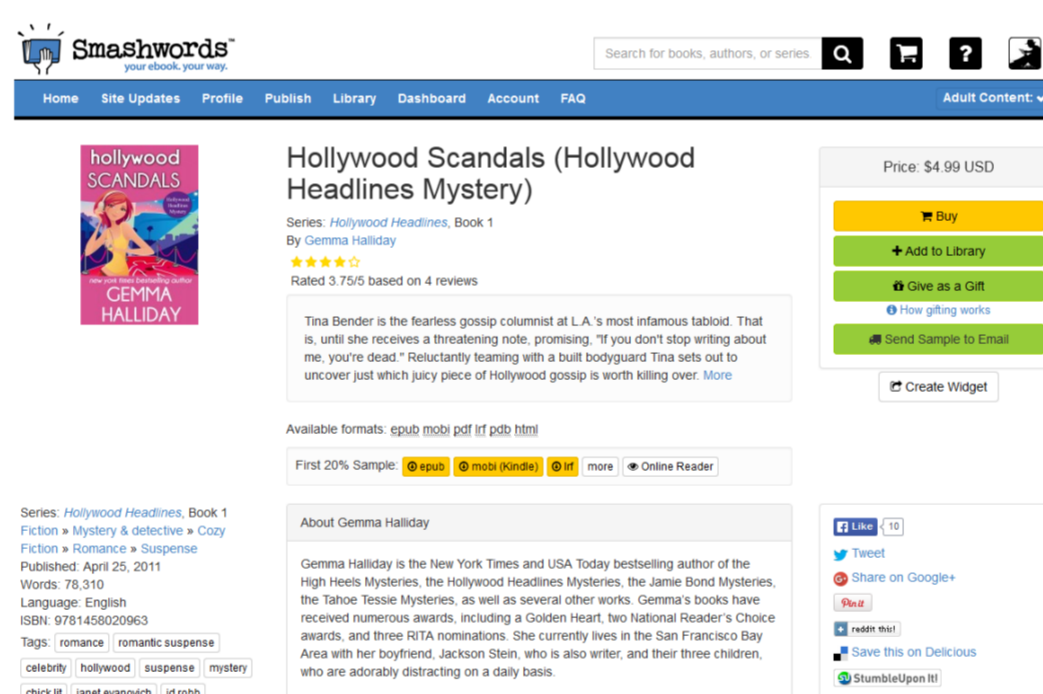
Standard theory (Grossman, 1981; Milgrom, 1981) predicts unraveling in Bayesian equilibrium:

- Rational readers anticipate that low-quality e-books less likely to offer sample
- Market "unravels" such that only low-quality e-books do not offer sample
- E-books not offering sample are pooled at low price equal to their low quality



Proposition 2. When quality is unknown to consumers, authors offering sample set higher prices than authors not offering sample.

Data Collection from Smashwords.com



Dataset with **> 300.000** e-books contains:

- E-books' price
- Whether sample offered
- Ratings
- Additional info (genre, length, language, when published)

E-books Published

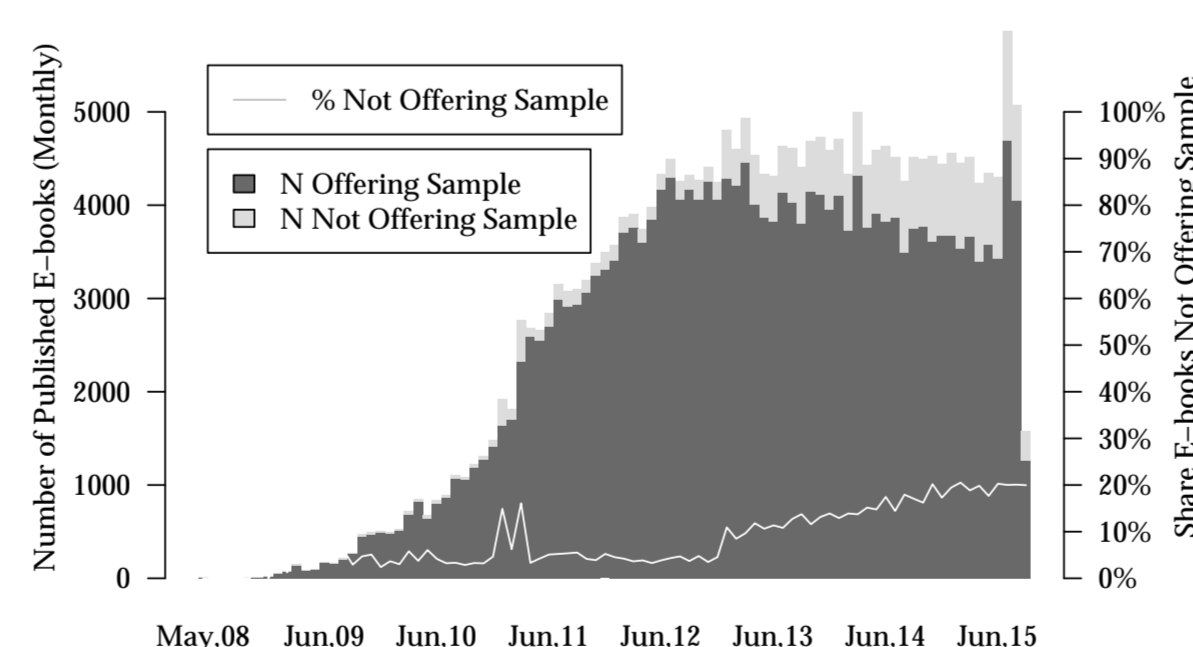


Figure: E-books by month published on *Smashwords*

Results - Graphical

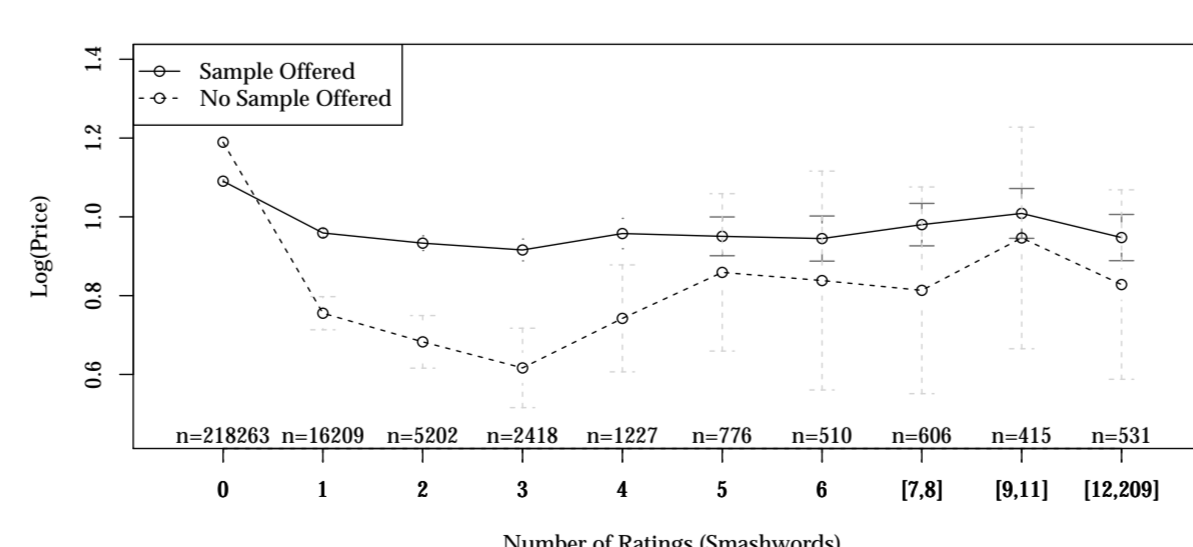


Figure: Price as function of number of ratings

- When rated, higher price for e-books with sample (Prop.1 ✓)
- When not rated, lower price for e-books with sample (Prop.2 ✗)
- Non-rated e-books have higher price than rated e-books

Regression Results - Price

	Dependent variable:	
	Log(Price)	
	(1)	(2)
Sample Offered (Yes=1)	-0.063*** (0.004)	-0.078*** (0.004)
Rating Available (Yes=1)		-0.290*** (0.016)
Log(1 + N Rating)		-0.050*** (0.007)
Rating Available X Average Rating		0.027*** (0.005)
Rating Available X Sample Offered		0.185*** (0.015)
Controls	Yes	Yes
Observations	246,157	246,157
R ²	0.245	0.251

Note: *p<0.1; **p<0.05; ***p<0.01
Robust standard errors in parentheses

Table: Cross-sectional OLS regressions at e-book-level

Regression Results - Sample Offered

	Dependent variable:	
	Sample Offered (Yes=1)	
	(1)	(2)
Log(Price)	-0.013*** (0.001)	-0.013*** (0.001)
Rating Available (Yes=1)		0.009** (0.004)
Log(1 + N Rating)		-0.013*** (0.004)
Rating Available X Average Rating		0.022*** (0.002)
Controls	Yes	Yes
Observations	246,157	246,157

Note: *p<0.1; **p<0.05; ***p<0.01
Coefficients give marginal effects estimates

Table: Cross-sectional Logit regressions at e-book-level.

Robustness of Results

Results qualitatively unchanged when:

- Instrumenting for rating availability**: Using how long e-book on market as instrument for rating availability
- Using alternative sources of ratings**: Using ratings from *Amazon.com* and *Goodreads.com*
- Using alternative measures of knowledge**: Using *previously published e-books* by same author or whether rating available for previous e-books as measures for whether quality known
- Excluding outliers**: Authors with more than 50 e-books or e-books with price above 50\$

Explanations for Theory

"Naive" or "cursed" consumers (Eyster and Rabin, 2005; Esponda, 2008):

- Naive consumers** do not anticipate that **worse-quality** authors select into self-publishing and do not offer sample
- Consistent with lab-evidence from Jin, Luca and Martin (2014)
- Low-quality authors can **exploit** naive consumers with high price
- I have **extended model** to include naive consumers

Inexperienced authors:

- Unrated authors not offering sample are mostly **first-time authors**
- Inexp. authors might fail to account for bad signal of not offering sample
- Consistent with lab-evidence by Benndorf, Kübler and Normann (2015)
- Consistent with low but positive rate of "**learning**" to set sample in data

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