When Historical Prices Become Transparent, Must Consumers Be Better Off?

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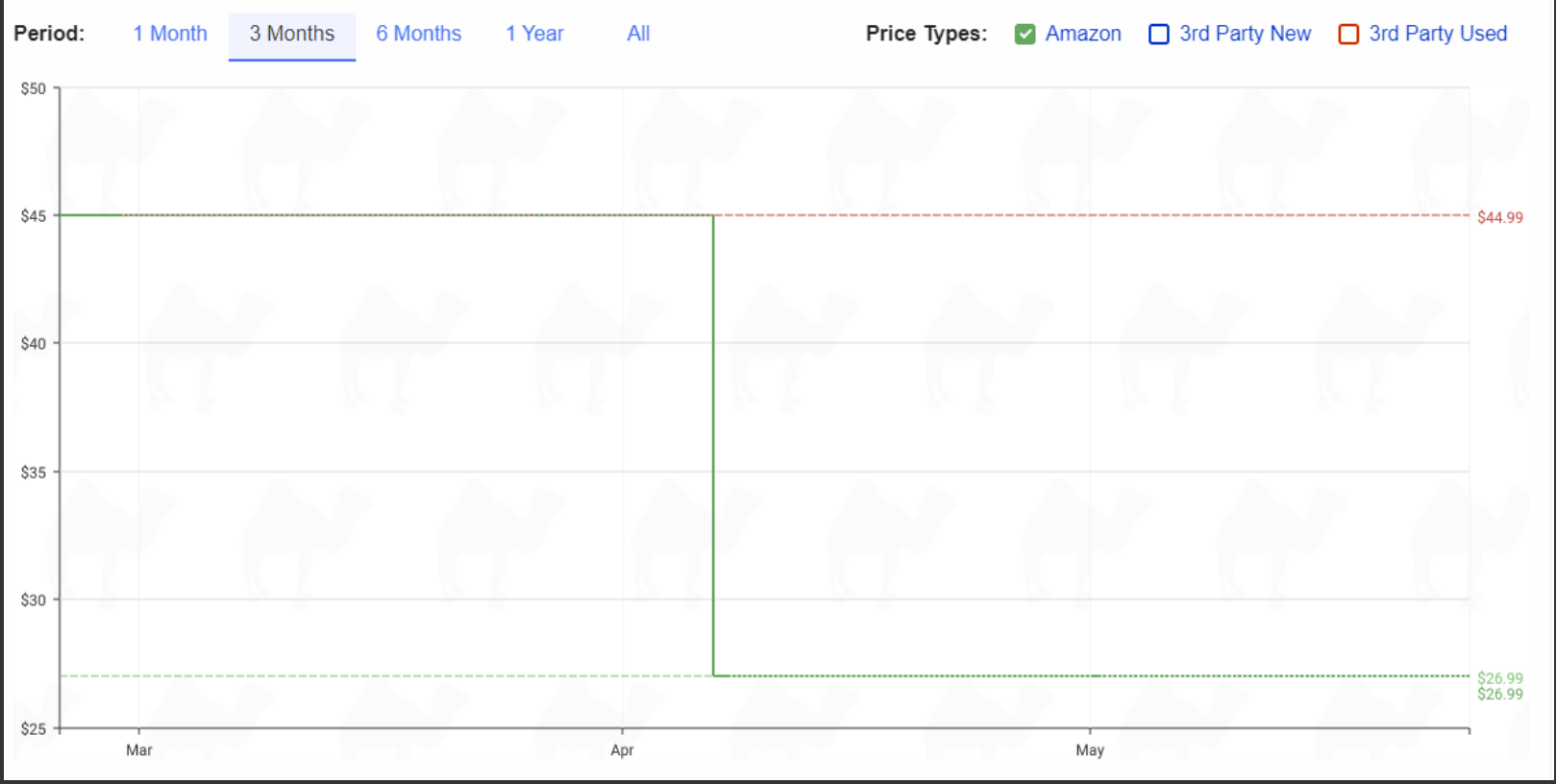
Dynamic pricing is common in online marketplaces.

In the past, we typically do not know the historical prices for the products...

But now...

HKTV Mall


價格動向
日期
16/05/2024
當日最低價格*
$73
$75
$60
$45
$30
$15
$0
27/11
2023
24/02
2024
24/05
2024
顯示:
前 7 天
前 30 天
前 90 天
前 180 天
前 365 天



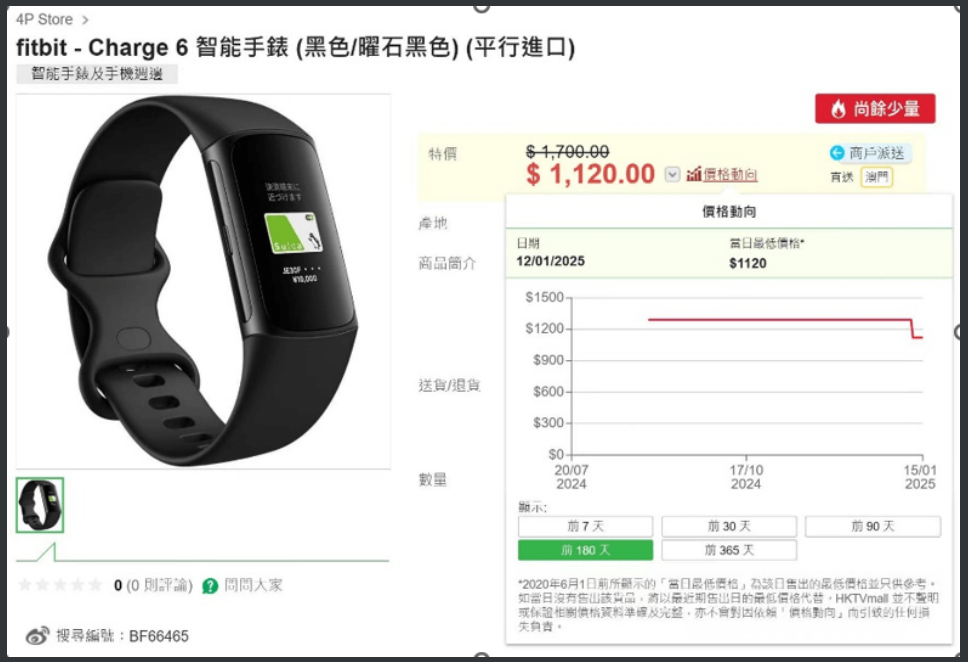
CamelCamelCamel


Pourquoi certains arbres sont si grands
5.0 (1 reviews)
by Kuroneko
Buy Box: $ 6.47 Amazon: $ 6.47 New: $ 6.47 Used: $ 35.23 (last update: just now, last price change: just now)
Amazon Price History
Track product
Data
amazon.com
ebay
→ Find related Deals
$ 40
$ 35
$ 30
$ 25
$ 20
$ 15
$ 10
$ 5
Jul 3
Jul 4
Jul 5
Jul 6
Jul 7
Jul 8
Jul 9
Select area to zoom in. Double-click to reset.
= shipping included
Toggle shown data by clicking on the legend.
Sales Rank
Buy Box
Amazon
New
New, 3rd Party FBM
Used
Used, like new
Used, very good
List Price
Close-up view
Range
Day
Week
Month
3 Months
All (292 days)

Keepa

For the same product, prices are...

Amazon



HKTVMall

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HKTVMall: We are helping consumers!

No.

But why?

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- This gives the seller an opportunistic incentive to charge a low introductory price to boost consumer review and manipulate future consumers' perception of quality.
- This incentive disappears when consumers can observe the historical prices.
- Prices are higher when pice histories are available.

Literature

- Dynamic pricing with online reviews: Jing (2011), Yu et al. (2016), Shin et al. (2023), Li and Hitt (2010).
- Information transparency: Mohan et al. (2020), Allender et al. (2021), Hajihashemi et al. (2022), Li et al. (2021).
- Historical price information: Gong et al. (2022), Gunadi and Evangelidis (2022).

Literature

- Gong et al. (2022) [Theory]: When consumers can observe historical prices, the firm offers sales less often. This is because consumers can strategically time their purchase and wait for product sales. But when they cannot observe historical prices, they cannot correct anticipate the date of future sales.

Literature

- Gunadi and Evangelidis (2022) [CB]: Consumers are more likely to defer purchase when the price of the product has previously increased compared with when the price has decreased.

The boring part...

A monopolist firm selling a new product over two periods, $t = 1, 2$. A single buyer in each period.

The quality of the product is either high or low, which is observed by neither the firm nor the consumers. A consumer uncovers the quality after buying and using the product. A high quality product more likely generates a high valuation.

The first-period consumer writes a review if she made a purchase in that period. The review reflects the "value-to-price" ratio, i.e., the consumer writes a positive review if and only if $v_1 \geq p_1$.

- This is consistent with the empirical evidence that consumer review reflects not only the quality, but also the price consumers paid (Li and Hitt, 2010).

The second-period consumer makes inference of the product quality from the first-period review (if any) and the first-period price (if available), and makes a purchase if and only if the expected value of the product is greater than the second-period price.

Two regimes: A transparency (nontransparency) regime in which the second-period consumer observes (does not observe) the first-period price.

The Transparency Regime

In the transparency regime, the firm can achieve the first-best outcome.

- In the first-period, the firm charges a price $\theta_0 E_H(v) + (1-\theta_0)E_L(v)$. The first-period consumer always makes a purchase.
- Let $\theta_1(p_1, r)$ denote the expected product quality given p_1 and consumer review r.
- The firm charges $p_2 = \theta_1(p_1, r)E_H(v) + (1-\theta_1(p_1, r))E_L(v)$, and the second-period consumer always makes a purchase.
- It is easy to verify that $E(p_2) = \theta_0 E_H(v) + (1-\theta_0)E_L(v)$ for all p_1.

An Illustrative Example

- For a high-quality product: $v = 1$ and $v = 2$ with equal probability.
- For a low-quality product: $v = 0$ and $v = 1$ with equal probability.
- The prior probability of a high-quality product is $\theta_0 = \frac{2}{3}$.
- When historical prices are transparent: the firm charges $p_1 = \frac{7}{6}$ in the first period, and the consumer always purchases. In the second period, the firm charges $p_2 = \frac{3}{2}$ if the review is positive, and $p_2 = 1$ if the review is negative. The firm's expected total profit will be $\pi = \frac{7}{3}$, and consumer surplus is 0.

- However, the above equilibrium does not hold when historical prices are nontransparent!
- The firm can secretly cut the first-period price to $p_1 = 1$ to increase the likelihood of a positive first-period review, which is not observed by consumers. Consumers are still willing to purchase at $p_2 = \frac{3}{2}$ if the review is positive, and $p_2 = 1$ if the review is negative.
- The firm's expected profit will be $\frac{29}{12} > \frac{7}{3}$, and the assumed equilibrium does not hold.

- When historical prices are not transparent, in the unique equilibrium, the firm charges $p_1 = 1$ in the first period, and $p_2 = 1.3$ in case of a positive first-period review, and $p_2 = 0.5$ in case of a negative first-period review.
- In equilibrium, the firm's profit will be $\frac{13}{6} < \frac{7}{3}$, and expected consumer surplus is $\frac{1}{6} > 0$.
- Price transparency hurts consumers but benefits the firm!

Model Extensions

- Mutiple buyers in each period;
- Reviews are continuous (as opposed to binary).

Our main results continue to hold under both extensions.

Takeaways

The transparency of historical prices drives up product prices, which would benefit the firm at the expense of consumers.

Possible Future Work

- Price Alert: Many sellers allow user to set a "price alert." Users can set a target price; if the future price drops to the target price, the sellers will send the user a reminder, inviting the user to come back and make a purchase.
- Competition: Could disclosure serve as a way of differentiation for different platforms (e.g., HKTVMall vs. Amazon)?

Thank you!