Livestream Promotions and B2C E-Commerce Food Sales

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Background

Business-to-consumer (B2C) food sales have increased steady through e-commerce platforms, particularly following the pandemic (Montagner 2020; Chang and Meyerhoefer 2021). B2C companies increasingly utilize social media platforms for marketing, but little is know about how these promotions affect sales or product variety (Penn State Extension 2021).

We analyze social media livestream promotions using business transaction data from *Ubox*, the largest agri-food e-commerce platform in Taiwan:

- Weekly sales transactions for January 2016 – December 2019
- 6 product categories (frozen food, fresh fruits & vegetables, whole grains, non-alcoholic drinks, other foods , non-foods)
- N = 1,247

Livestream (LS) promotion model:

- LS promotions are cooking shows or product demonstrations
- Products are sold directly by farmers at a discounted price during the promotion
  - *Ubox* applies their usual 10%-15% margin, but subtracts shipping & storage costs
- After the promotion ends, customers can order product on *Ubox* at the regular price

Determinants of livestream sales

Model w/ product category and month*year fixed effects estimated using data on products with LS promotions:

$$\log(LS\ sales_{it}) = \alpha + \gamma \cdot Z_{it} + \beta' X_{it} + c_i + u_{month*year} + \varepsilon_{it}$$

Regressor	Coeff.	IV
Promotion cost (NT $10K/min.)	-0.019**	X
Internet celebrity (0/1)	1.947**	X
Length of promotion (min.)	0.010**	X
Maximum audience	<0.001	X
Product type	0.095***	X
Orders per min.	0.961*	
Number of likes	0.003***	

- Five variables identified as potential IVs

Ubox social media livestream

Implications for *Ubox* sales

OLS & IV models for Ubox sales (excl. promotion sales), profits and product variety w/ product category, month*year fixed effects and controls for seller type:

$$Y_{it} = \alpha + \gamma \cdot LS\ sales_{it} + \beta' X_{it} + c_i + u_{month*year} + \varepsilon_{it}$$

Dependent var.	OLS (γ)	IV (γ)
Ubox sales (excl. promo)	24,149*	86*
Ubox total profit	9,007***	19*
No. of items sold on *Ubox*	179**	18***
No. of products sold on *Ubox*	3.85	0.51
Ubox product variety	0.06*	0.02

Notes: (1) Product variety is 1 – HHI_p, where HHI_p is calculated from the squared shares of the quantity of individual products sold within each category *p*; (2) First stage F-stat = 4,211 w/ month-level clustering

- After addressing reverse causality, a $1 increase in LS sales increases *Ubox* sales by $86, profits by $19, and the number of items sold by 18 per week
- No evidence that LS promotions increase product variety

References

- Chang, H-H., and C. Meyerhoefer. 2021. COVID-19 and the Demand for Online Food Shopping Services: Empirical Evidence from Taiwan, *American Journal of Agricultural Economics*, 103(2):448-465.
- Montagner, M. 2020. Food and Drinks Companies Shifting to D2C Models. Forward Fooding. September 28. Available at: https://forwardfooding.com/blog/
- foodtech-trends-and-insights/direct-to-consumer-food-industry/
- Penn State Extension. 2021. Social e-Commerce for Ag and Food Businesses. February 20. Available at: https://extension.psu.edu/social-e-commerce-for-ag-and-food-businesses