

DAWEI JIAN

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RESEARCH INTERESTS

Dynamic Incentives, Supply Chain Management, OM-Marketing Interface, Behavioral Operations, E-Commerce Pricing, Sustainable Operations, Dynamic Optimization, Mechanism Design, Information Design.

EDUCATION

University of California, Riverside Sep. 2018 – Jun. 2023 (Expected)
Ph.D. in Operations Management Riverside, CA

University of California, Riverside Sep. 2021 – Jun. 2023 (Expected)
M.S. in Mathematics Riverside, CA

University of California, Riverside Sep. 2014 – Jun. 2015
Master of Finance Riverside, CA

Huazhong University of Science and Technology Sep. 2010 – Jun. 2014
B.S. in Economics Wuhan, China

PUBLICATIONS

1. Zhang, W., Gao, L., **Jian, D.**, Zolghadr, M., El Hafsi, M. 2022. Dynamic Incentives for Sustainable Contract Farming. *Production and Operations Management*, forthcoming.

WORKING PAPERS

2. **Jian, D.**, Gao, L., Gumus, M., Mishra, B. 2022. Managing Channel Profits with Network Effects. Revising for third round review at *Management Science*.
3. **Jian, D.**, Gao, L. 2022. Inside the Subscription Box: Product Line Design with Consumer Habituation. Submitted for first round review at *Management Science*.
4. **Jian, D.** 2022, Salesforce Compensation on Personalized Training. Working Paper.
5. Gao, L., Akcay, Y., **Jian, D.** 2022, Sourcing for Continuous Supplier Improvement. Working Paper.

CONFERENCE PRESENTATIONS

1. "Supply-Chain Contracting for Network Goods", *M&SOM 2022*, Munich, Germany, June 27, 2022.
2. "Product-Line Design with Consumer Habituation", *44th Annual ISMS Marketing Science Conference*, Virtual, June 18, 2022.
3. "Optimal Subscription Box Services Design: Habituation Exploitation and Exploration", *POMS 32nd Annual Conference*, Virtual, April 25, 2022.
4. "Optimal Compensation Design with the Utilization of Training Program: The Benefit of Information and Learning", *7th Biennial Conference on Enhancing Sales Force Productivity*, University of Kansas, April 23, 2022.
5. "Supply-Chain Contracting for Network Goods", *INFORMS 2021*, Anaheim, CA, October 24, 2021.
6. "Optimal Subscription Box Services Design: Habituation Exploitation and Exploration", *POMS 31st Annual Conference*, Virtual, May 4, 2021.
7. "Supply-Chain Contracting for Network Goods", *POMS 31st Annual Conference*, Virtual, May 2, 2021.
8. "Supply-Chain Contracting for Network Goods", *INFORMS 2020*, Virtual, October 24, 2020.

TEACHING EXPERIENCE

Teaching Assistant:

- BUS103: Marketing and Distribution Management, UCR Summer '22
- BUS105: Production and Operations Management, UCR Fall '20 – Winter '22
- BUS104: Decision Analysis and Management Science, UCR Fall '19 – Summer '20

HONORS & AWARDS

- Dissertation Year Program Award, UCR '21, '22
- Timothy R. Greenleaf Endowed Business Scholarship, UCR '20
- George W Du Bois Mem Award – Fdn, UCR '19
- Dean's Distinguished Fellowship Award, UCR '18–'22

SERVICES

Ad-hoc Reviewer:

Journal of the Operational Research Society

Member:

- Institute of Operations Research and Management Sciences (INFORMS)
- Production and Operations Management Society (POMS)

EXTRACURRICULAR

Bank of Communication, Pacific Credit Card Center

Credit Risk Analyst

2017 – 2018

Shanghai, China

Wuxi Clinical Development Services Co., Ltd.

Statistical Programmer

2016 – 2017

Wuhan, China

SELECTED GRADUATE COURSEWORK

Economics

Microeconomic Theory A, B, C
Games and Information Economics
Economics of Contract: Theory and Applications
Econometric Methods I, II, III
Advanced Econometrics
Nonparametric Econometrics

Computer Science

Machine Learning Fundamentals
Machine Learning
Deep Learning

Business Administration

Pricing and Revenue Management
Dynamic Optimization
Inventory & Supply Chain Management
Marketing Analytics

Statistics

Advanced Theory of Probability and Statistics
Statistical Data Mining Methods
Statistical Computing

TECHNICAL SKILLS

R, MATLAB, Python, SAS, Stata, L^AT_EX

REFERENCES

Professor Long Gao (Chair)

Associate Professor of Operations &

Supply Chain Management

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Managing Channel Profits with Network Effects

Many products exhibit network effects. How should manufacturers sell them through retail channels? We formulate this new class of channel contracting problems, and validate its micro-foundation with real data. In our model, the retailer can privately observe and control the evolving market conditions. Our contribution is three-fold. (i) We characterize the optimal contract. It resembles the classic second-best in the short run, but converges to the dynamic first-best in the long run. This structure is driven by the dynamic interplay of persistent network effects and vanishing information friction. (ii) We characterize the dual role of network effects. Although network effects can improve channel surplus by expanding market size, they can also exacerbate information friction by enhancing the retailer's ability to manipulate the market. Ignoring the dark side of the agency cost, previous studies may have overestimated the benefit of network effects. (iii) We provide new practical guidance. We show private information per se need not hurt channel efficiency: the manufacturer can use recursive advance selling to extract new information for free. Ignoring information endogeneity and two-sided learning, however, previous studies may have overstated the harm of information asymmetry. Our results also shed light on when and why manufacturers should overproduce supply, mitigate network effects, prefer long-term contracts, favor incumbent retailers, and improve retailer information capability, despite information asymmetry. By highlighting the dual role of network effects in long-run channel performance, this study sharpens our understanding of channel theory and practice.

Dynamic Incentives for Sustainable Contract Farming

The rise of contract farming has transformed millions of farmers' lives. We study a new class of contract farming problems, where the farmer holds superior information and can invest effort to improve productivity over time. Despite their prevalence, the literature offers little guidance on how to manage such farmers with dynamic incentives. We build a game-theoretic model that captures the dynamic incentives of learning and gaming, with hidden action and information. We characterize the optimal contract: it internalizes both the vertical and intertemporal externalities, with performance pay and deferred payment; the performance pay is to motivate the farmer to invest and improve the relationship-specific productivity; the deferred payment is to ensure that the farmer is willing to share information and behave honestly over time. Even with random yield, the optimal contract can still have a simple implementation of yield-adjusted revenue sharing policy. We find that, once dynamic incentives are considered, private information need not harm efficiency, and optimal production can employ upward and downward distortion at the same time. Using real data, we show that the learning effect is significant. We then quantify when and how contract farming can improve smallholder farmers' productivity and income, creating shared value. We find when buyers have a long-term perspective and can internalize the benefit of farmer improvement, they will pay higher prices to ensure farmers' long-term viability. The resulting long-term policy can remedy both incentive and information deficiencies of spot transactions. Our results inform the policy debate on contract farming: traditional pro-competitive policies (based on spot transactions) can be counterproductive for modern agrifood value chains, hurting both buyers and farmers. By highlighting the critical role of dynamic incentives, this study deepens our understanding of contract farming theory and practice.

Inside the Subscription Box: Product Line Design with Consumer Habituation

Personalized subscriptions allow firms to improve product match, reduce search cost, and capitalize on customer lifetime value. A key challenge for a firm is how to learn customers' evolving preferences and personalize product offerings. We study this new class of product line design problems, where consumers' future preferences are determined endogenously by past purchases, current valuation, and random shocks. (i) We show the optimal design differs substantially from the classic solution of second-degree price discrimination: it resolves a dynamic tradeoff between preventing cannibalization, extracting surplus, and exploiting consumer habituation; depending the nature of consumer habituation, the optimal design may entail upward distortion—even beyond and above the first-best level—to homogenize future consumer preferences for rent control. (ii) Our results shed new lights on product line design: in the subscription context, the classic downward-distortion principle may no longer work, firms can practice first-degree price discrimination after initial sales, and excessive promotions can hurt firm profit and social welfare. (iii) Our study helps explain the rising popularity of personalized subscriptions: they can help firms to leverage consumer uncertainty to relax the cannibalization constraints, internalize the welfare gain from consumer habituation, and improve social welfare by reducing consumer heterogeneity. By providing a dynamic perspective with endogenous consumer preferences, this study deepens our understanding of product line design theory and practice.

Salesforce Compensation on Personalized Training

The fast growing personalized training facilitates salespeople to gain productivity, acquire task information. With the help of personalized training, how should the firm update the compensation scheme and strategically disclose task information? We study this joint design problem with compensation and information, where during the training phase, the heterogenous salesperson who has career concerns can invest to enhance their private working skills; the firm can strategically customize information disclosure about the uncertain outcome-relevant working state. We highlight how customized information disclosure differs from classical compensation design: (i) As an incentive device, strategic disclosure mitigates moral hazard problem, thereby reducing bonus payment; the value of information disclosure triggers additional implicit incentives, thereby increasing the diligence investment. (ii) The salespeople are homogenized: the dispersion of information rent among the heterogeneous salesperson declines. We also emphasize the cost of customized information disclosure: the salesperson has additional options to deviate to benefit from the increase of informativeness, thereby exacerbating the opportunism problem. However, the firm still benefits from higher profit due to better work match. The results inform practice: the firm can use deferred compensation to prevent future opportunism and leverage diligence investment from career concerns; with the implicit incentives, the firm need not monitor the salesperson when training them; instead of fully disclosing the working state, the strategic disclosure leverages salesperson's uncertainty, thereby shifting him from the comfort zone to work.