A Trilemma for Asset Demand Estimation

Fuchs, Fukuda & Neuhann (2026)

Discussion by Aditya Chaudhry

The Ohio State University Fisher College of Business

Context: Asset Demand Estimation

Many questions hinge on price impact of demand shocks

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Equivalently: Other investors require large price changes to absorb demand shocks

- Other investors require price to rise by $\approx 2\%$ to decrease holdings by 1%
- Price elasticities of demand are $\approx 1/2$

This Paper (FFN): Identifying Elasticities Without Structure is Hard

The Trilemma (Theorem 3): Cannot jointly maintain

(i) No-arbitrage asset pricing

(ii) Investor preferences over payoffs

(iii) Model-free identification of structural asset demand functions

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Suggests elasticity estimates may capture something far from desired parameter

Intuition

How much does demand for Apple change if only Apple's price changes?

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P_{Apple}

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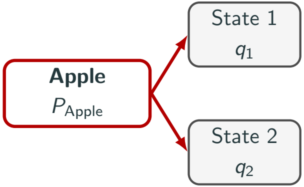

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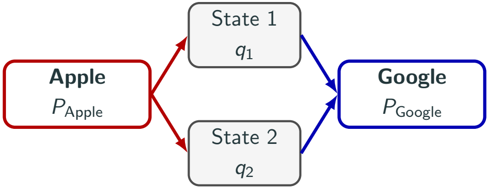

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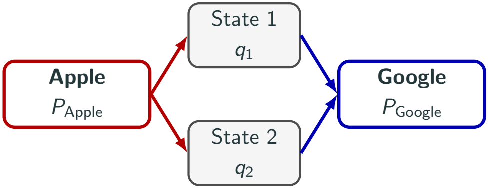

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Theorem 1: A supply shock to Apple does not generate a clean Apple-only price experiment.

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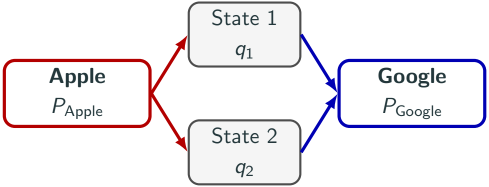

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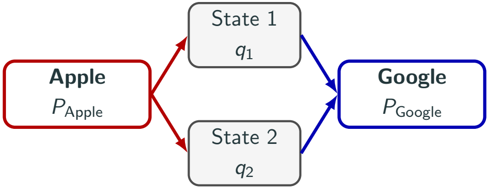

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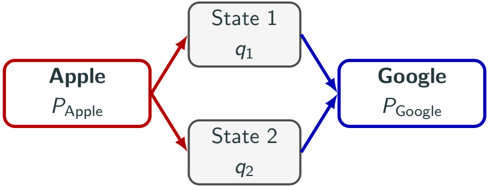

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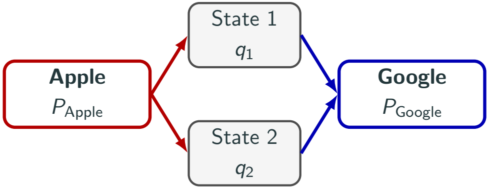

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Theorem 2: Inverting the payoff matrix is latent, hard when there are many assets ($\because$ random matrix theory).

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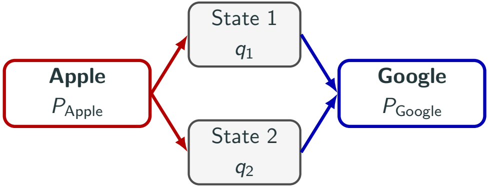

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Theorem 3: Can't isolate an Apple-only price change $\Rightarrow$ Can't identify Apple's demand elasticity.

Overall: Useful Clarifying Framework

Helps clarify under which conditions elasticities can be identified

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3. Empirically: Do elasticity estimates depend a lot on what structure we use?

- Not so much
- Elasticities are model-dependent, but estimates are stable across many specifications

1. Identification Requires a Model

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Classic solution: Impose reasonable structure, see if results are robust to variations

- Previous work on asset demand estimation abandons Leg 3, imposes structure

2. Can We Identify Elasticities Under “Reasonable” Structure?

Yes. Example Using Standard Asset Pricing Structure

Two periods, N stocks, K-factor structure in dividends

$$D_n = \mathbb{E}[D_n] + \boldsymbol{\theta}_n' \boldsymbol{F} + \epsilon_n$$

- Idiosyncratic variance σ^2, risk-free rate $= 0$, orthonormal factor loadings

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Model satisfies Legs 1 (no arbitrage) & 2 (preferences over payoffs)

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Optimal portfolio choice: Mean-variance demand

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Market-clearing: $Q_n = Z_n$

$$P_n = -\gamma\sigma^2 \cdot Z_n + -\gamma \sum_{\text{Stock } m} \underbrace{Cov_{n,m}}_{\equiv \sum_{\text{Factor } k} \theta_{n,k}\theta_{m,k}\mathbb{V}[F_k]} \cdot Z_m + \underbrace{\nu_n}_{\equiv \mathbb{E}[D_n]}$$

Can Identify Elasticities in This Setup

Can identify micro own-price elasticity with cross-sectional 2SLS

$$P_n = \underbrace{M}_{\equiv -\gamma\sigma^2} Z_n + \sum_{\text{Factor } k} \theta_{n,k} \cdot \underbrace{\alpha_k}_{\equiv -\gamma \mathbb{V}[F_k] \sum_{\text{Stock } m} \theta_{m,k} Z_m} + \nu_n \qquad \text{(First Stage)}$$

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Simplified version of microfoundations & identification arguments in previous work

- Koijen & Yogo (2019); Koijen, Richmond & Yogo (2023); Chaudhary, Fu & Li (2025); Haddad, et al. (2026)

Why Does This Work?

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With standard structure (abandon Leg 3), can identify elasticities

3. How Do Elasticity Estimates Vary Across Specifications of Structure?

Existing Stock Elasticity Estimates Are Broadly Stable

Benchmark elasticity from frictionless model $\approx 100s$

- Accounting for realistic price dynamics (Davis, Kargar & Li, 2025; He, Kondor & Li, 2026)

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Estimates vary, but broadly < 10 **across many specifications of structure**

- Strategic investor responses (Haddad, Huebner & Loualiche, 2025)
- Nonlinearity (Chaudhry & Li, 2026)
- Dynamics (van der Beck, 2026; Davis, Kargar, Li, & Silva, 2026)
- More flexible substitution patterns (Haddad, et al., 2026; Chaudhry & Davis, 2026)

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Elasticity estimates generally robust across models (more work to do)

Conclusion: Useful Clarifying Framework

In general in empirical economics, we must impose structure

- Also true in asset demand estimation
- Paper clarifies what problems the structure must solve

Can identify elasticities under standard asset pricing structure

Elasticity estimates are broadly stable across structural assumptions