Vertical Integration and Provider Choice

Preliminary and incomplete. Please do not cite.

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November 25, 2025

Motivation

- Market consolidation draws interest from many institutions
  - DOJ and FTC are heavily involved in regulation
  - McKinsey on "When and When Not to Vertically Integrate"
- Can affect consumers and producers
- Vertical integration is particularly pervasive in healthcare
- Productive efficiency vs. allocative efficiency

Motivation

- Complex landscape $\rightarrow$ difficult to find suitable doctor
- Heterogeneity makes finding the right doctor key
- Ability to switch physicians improves likelihood of good fit

Research Questions

This project: How does vertical integration (VI) between primary care providers and specialist physicians or hospitals and physicians affect switching of specialist physicians? To what extent does switching of specialist physicians contribute to differential health outcomes across VI and non-VI settings?

Today: Differences in likelihood of switching across VI and non-VI settings. Ideas to address identification challenges related to VI, switching, and health outcomes.

Future: Comparison with other conditions.

How Might VI Affect Likelihood of Seeing or Switching Specialists

- If a patient's PCP works with endocrinologists in a VI setting, the patient may be more likely to visit an endocrinologist
- VI PCPs may be more likely to refer internally (similar to Brot-Goldberg and de Vaan, 2019)
- Why might VI induce ...
  - Less switching: VI PCPs may make better referrals (more knowledge of which providers are the right fit)
  - More switching: internal referrals may not maximize match quality between patients and specialists

Overview

1. **Background**
2. **Related Literature**
3. **Data**
4. **Empirical Strategy**
5. **Next Steps**

Background: Vertical Integration

- Healthcare value chain: PCPs $\rightarrow$ (referrals) $\rightarrow$ specialists
- What is vertical integration in this context?
- Types: hospital-physician, PCP-specialist, etc.

Background: Diabetes

- Chronic illness affecting the body's ability to use glucose
- **Why study this setting?**
  - CDC: 11.3% of US population has diabetes
  - Need for medical monitoring
  - Wide range of potential complications
  - Can be a medical emergency if not properly treated
- **Potential challenge:** specialist visit is often not necessary

Related Literature

Vertical Integration: Capps, Dranove, and Ody (2018); Brot-Goldberg and de Vaan (2019); Baker et al. (2020); ...

- Impacts in healthcare are ambiguous

Provider Choice: Zeltzer (2020); Agha et al. (2020); Agha et al. (2022) ...

- Homophily and organizational boundaries

Switching Costs: Raval and Rosenbaum (2018); Anell et al. (2021); Dahl and Forbes (2021) ...

- Little work on doctor choice

Data

Medicare Claims (Carrier), 2008-2016

- 5% sample of Fee-for-Service claims
- Focus on: diabetes patients, claims for physician services
- Key feature: patient identifiers
- 1,211,471 diabetes patients in our sample

Medicare Data on Provider, Practice, and Specialty (MD-PPAS)

- Specialty, employer details, billing
- Key feature: Tax IDs

Measuring Vertical Integration and Switching

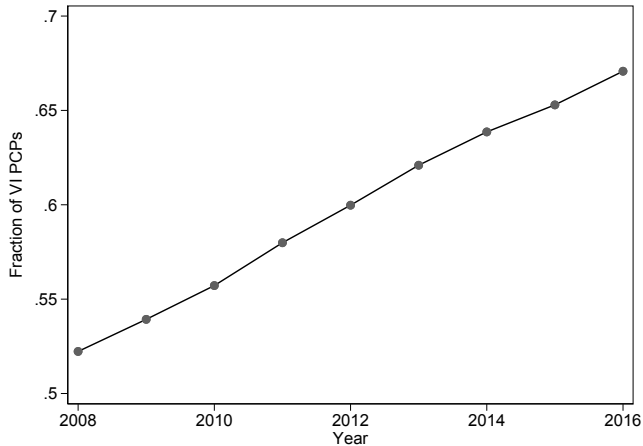
- Vertical Integration:
  - Challenge: do not directly observe VI status
  - Taxpayer IDs (TIN): shared administrative and financial setting
  - VI = generalist + specialist (Endocrinologist)
- Switching:
  - Switch = I see a different physician than I did last time
  - Defined within specialties

Measuring Vertical Integration and Switching: Next Steps

- Next steps for measuring vertical integration:
  - Robustness to physicians billing in multiple location
  - Specialty granularity
  - Institutions that have multiple VI status changes
  - Alternative VI definitions

- Next steps for measuring switching:
  - Account for moves (physician and patient)
  - Switching back, oscillating between physicians
  - Seeing multiple physicians
  - Time between switches

Fraction of Vertically Integrated Primary Care Physicians over Time



Discussion of Magnitude

Number of beneficiaries: 1,211,471

Percentage who visit an Endocrinologist: 16.4% (diabetes related: 11.3%)

Percentage of visitors who switch: 28.9% (diabetes related: 29.3%)

Percentage of total who switch: 4.7% (diabetes related: 3.3%)

Theoretical Framework (Planned)

- Model provider choice and referral decision across time periods
- PCPs and patients jointly maximize utility
- Switch occurs due to new information after visiting a given specialist
- **Goals:**
  - Formalize intuitions about switching
  - Generate theoretical predictions to inform empirical analysis

Empirical Strategy: Overview

Part 1: Does VI affect likelihood of visiting a specialist and switching specialists?

- 3 planned specifications
- Identification challenges, proposed solutions, possible mechanisms
- TWFE results
- Discussion of magnitudes

Specification 1 - Two Way FE/DiD

$$Y_{biyst} = \beta VI_{it} + \phi_y + \gamma_t + X_{bst} + PCP_{ist} + \epsilon_{biyst} \quad (1)$$

Y_{biyst} - outcome for bene. b, with PCP i (VI change in year y), state s, and year t

ϕ_y - year of VI change FE (Next step: PCP FE)

γ_t - year FE

VI_{it} - VI status of PCP i (based on majority of b's claims) in year t

X_{bst} - beneficiary controls

PCP_{ist} - PCP controls

TWFE Results: Visits and VI

	Diabetes Claims	All Claims
VI (with Endo)	0.027***	0.039***
	(0.002)	(0.004)
Age	-0.002***	-0.002***
	(0.0002)	(0.0002)
Male	-0.002***	-0.019***
	(0.0003)	(0.001)
Charlson Index	-0.006**	-0.010***
	(0.002)	(0.003)
Male PCPs	0.015***	0.015***
	(0.001)	(0.001)
Obs	6,026,739	6,026,739

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TWFE Results: Switches and VI

	Diabetes Claims	All Claims
VI (with Endo)	0.010***	0.013***
	(0.001)	(0.001)
Age	-0.002***	-0.002***
	(0.0001)	(0.0002)
Male	0.002	-0.003***
	(0.001)	(0.0004)
Charlson Index	-0.006*	-0.006
	(0.003)	(0.004)
Male PCPs	0.012***	0.010***
	(0.0001)	(0.0001)
Obs	538,389	811,774

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Specification 2 - PCPs who switch VI status (Continuity of Care)

$$Y_{bist} = \beta VI_{it} + \phi_i + \gamma_t + X_{bst} + \epsilon_{bist} \quad (2)$$

Y_{bist} - outcome for beneficiary b, with PCP i, state s, and year t

VI_{it} - VI status of PCP i (based on majority of claims) in year t

ϕ_i - PCP FE

γ_t - year FE

X_{bst} - beneficiary controls

Specification 3 - Match Value vs. Switching Cost

$$Y_{bistge} = \beta VI_{it} + \gamma_g + \eta_e + PCP_{ist} + \epsilon_{bistge} \quad (3)$$

Y_{bistge} - outcome for bene. b, with PCP i, state s, year t, group g, and endo. e

γ_g - group FE

η_e - endocrinologist FE

VI_{it} - VI status of PCP i (based on majority of claims) in year t

PCP_{ist} - PCP controls

Next Steps

- Include time to specialist visit
- Refine VI and switch measures
- Remaining empirical specifications
- Health outcomes analysis