Common Agent or Double Agent? Pharmacy Benefit Managers in the Prescription Drug Market ASSA Annual Meeting

Rena Conti,¹ Brigham Frandsen,² Michael Powell,³ James B. Rebitzer⁴

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¹Boston University
 ²Brigham Young University
 ³Northwestern University
 ⁴ASSA Annual Meeting

Why PBMs? (and why a model?)

- PBMs are intermediaries that play a central role in the U.S. market for branded drugs
- PBMs are controversial: they bargain on behalf of payers while receiving per-unit rebates from drug makers
- Bold assertion: to understand the U.S. market for branded drugs, you have to understand PBMs
- This paper: propose a theoretical model of this market to understand PBMs and answer the following questions:
 - How do PBMs create and distribute economic value?
 - What are the efficiency consequences of the rebate-formulary-copay institutional arrangement?
 - Do rebates mean PBMs are compromised agents?
 - Why are list prices so high, and do they matter?

Main findings

- Formularies run by intermediaries are an efficiency-enhancing way to allocate drugs
- Surplus from the enhanced efficiency accrues to the intermediary, not drug makers or consumers
- Several features of the market threaten efficiency:
 - MFNs induce contracting externalities among formulary operators, increasing copays and reducing surplus
 - Strategic setting of list prices interacts with formulary incentives, triggering a "race to the top" in list prices

PBMs play a central role in prescription drug market

Main function: operate a formulary on behalf of health plan clients

Tier	Drug Type	Cost to consumer
1	Generics	\$
2	Preferred branded	\$\$
3	Non-preferred branded	\$\$\$

- Branded drug makers compete for favorable position on formulary by offering the PBM rebates
- Key to our approach: rebates are bids in the formulary contest

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Drug Maker

PBM as Intermediary

Payer

Consumer



Payer

Consumer



Payer



Payer























Model setup: Timing

- 1. PBM offers contract to payers that assigns the PBM the right to operate formulary in exchange for a transfer π_0 ; payers accept or reject
- 2. PBM chooses the formulary copays c_L and c_H ;
- 3. drug makers set net prices p_1 and p_2 ;
- PBM assigns drugs to formulary tiers and sets reimbursement prices r₁, r₂;
- 5. payer sets premium p_0
- 6. consumers decide whether to purchase insurance;
- nature chooses the consumer's medical condition, D, and its intensity, V;
- 8. consumers decide whether to purchase their chosen drug

Formularies are efficiency-enhancing contests, but surplus accrues to intermediary

- Preferred copay set at marginal cost (with many drugs, all but one have copay = MC)
- Non-preferred copay set at list price
- Drug-maker expected profit pinned down at "losing" profit
- Premium adjusts to pin down consumer surplus at outside option

Baseline model: graphical intuition

high copay intuition > many dr



MFNs threaten formulary efficiency

Ubiquitous in pharma industry: most favored nation clauses

- net price offered to one payer must be at least as low as what's offered to other payers
- induces contracting externality among payers
- Efficiency consequences in our model:
 - Copays in preferred tier set higher than marginal cost
 - Fewer consumers who need drug receive it
 - Total surplus reduced graphical intuition
- Implications for market
 - Small number of large PBMs can internalize the externality
 - Breaking up large PBMs can hurt efficiency if MFNs are not also dismantled

Setting high list prices distorts the formulary contest

Key assumption: consumers have the option of paying list price out of pocket

Consequences:

- higher list prices means the formulary is more valuable for consumers
- intermediary has an incentive to tilt formulary contest towards drugs with higher list prices
- equilibrium is game in which some drug makers race to set their list prices as high as possible—they become unmoored from economic fundamentals
- gaming the system in this way reduces efficiency of the formulary contest and increases the joint surplus of drug makers and PBMs

Conclusion: Economic insights

- Common agents or double agents? Yes.
 - Common agents: internalize contracting externalities among payers and implement near-efficient formularies
 - Double agents: formulary design can interact with list price setting to inflate list prices at expense of consumers
- Why do drug makers pay rebates to PBMs?
 - as bids in an all pay contest for placement in favorable formulary tiers
 - achieves near-efficiency, but rents accrue to PBMs, not drug makers or consumers
- What role do high list prices play in a pharmaceutical market where relatively few transactions actually take place at list price?
 - High list prices increase the value of participating in the PBMs formulary, which can be extracted by PBMs and drug makers

Conclusion: Think Different (about PBMs and competition policy)

- Rebates
 - Conventional perspective: anti-competitive side payments that should be eliminated
 - Our insight: bids in a potentially efficiency enhancing contest
 - Policy implication: focus on factors that may stop the contest from promoting efficiency, like list prices
- PBM-payer vertical consolidation
 - Conventional perspective: attempt to increase market power and discourage entrants
 - Our insight: efficient response to common agency problems that arise naturally in our model
 - Policy implication: instead focus on the source of the inefficiency driving formation of large PBMs, namely MFNs

Thanks!

Backup

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 p_i^L if placed in generous tier p_i^H otherwise

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• Total drug maker profit $q(c_H) \bar{p}$ as in baseline model!

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 Intermediary's equilibrium copays:

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Equilibrium allocation and payoffs identical to baseline model

Intuition for copays in baseline model

► $c_H = \bar{p}$

- reducing c_H below \bar{p} would increase surplus for less than half of the population . . .
- . . . but would increase profit for both drug makers
- ▶ so intermediary best off with *c*_{*H*} as high as possible
- ► *c*^{*L*} = 0:
 - the more generous, the higher total surplus
 - consumer surplus, drug maker profit unaffected
 - \implies intermediary profit maximized at $c_L = 0$

▶ back

Approximate efficiency of formularies: many drugs Step Equilibrium

1. the payer chooses the formulary copays $c_1 \leq \cdots \leq c_m$; 2. drug makers set net prices p_1, \ldots, p_m ;

3. the payer assigns drugs to formulary tiers and sets the premium, *p*₀;

4. consumers decide whether to purchase insurance;

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Proposition (Formulary equilibrium is approximately efficient)

The symmetric subgame-perfect Nash equilibrium with *m* drugs yields total surplus

$$TS = E[V] - \frac{1}{m}E[1(V \le \bar{p})V].$$



