Follow the money: The flow of funds in the pharmaceutical distribution system

Neeraj Sood
Director of Research, USC Schaeffer Center
Vice Dean for Research and Professor, USC Price School of Public Policy
Disclosures

Support for the research cited in this presentation was provided by the Schaeffer Center for Health Policy & Economics and by Amgen through a contract with Precision Health Economics.

The views expressed herein are mine and do not represent the views of the funders; the sponsors had no role in the research.
Today’s talk

• How do drugs reach from manufacturers to consumers?
• Who makes how much money?
Pharmacies may be mail order or retail, and may be integrated with PBM. Plan sponsors may include employers, unions, managed care orgs, among others.
Conceptual framework: Flow of money

Pharmacies may be mail order or retail, and may be integrated with PBM. Plan sponsors may include employers, unions, managed care orgs, among others.
Pharmacies may be mail order or retail, and may be integrated with PBM. Plan sponsors may include employers, unions, managed care orgs, among others.
How do we estimate the flow of money?

1. Identify top publicly traded firms for each market segment: manufacturers, wholesalers, retailers, pharmacy benefit managers, & health plans

2. Use SEC filings of these firms to estimate:
   - Gross profits: Revenue less cost of goods/services sold
   - Net profits: The profits returned to owners after operating expenses

3. Use the conceptual framework and financial data to illustrate the flow of funds for a drug purchased by an insured consumer at a retail pharmacy
Gross profit margins

All gross margins are US sales-weighted averages based on data from 2015 SEC 10K filings and annual reports.
Flow of $100 spent on pharmaceutical drugs, overall industry
Flow of $100 spent on pharmaceutical drugs, overall industry

**Insurers** provide prescription drug coverage and contract with PBMs.
Flow of $100 spent on pharmaceutical drugs, overall industry

PBM $5

Insurer $19

PBM manage claims and set up networks of pharmacies, create drug formularies and negotiate discounts and rebates with drug makers.
Pharmacies purchase drugs from wholesalers and dispense them to patients.
Flow of $100 spent on pharmaceutical drugs, overall industry

Wholesalers purchase drugs from manufacturers and distribute them to pharmacies.
Manufacturers conduct R&D, produce and market the drug.
Gross profit margins: Brands versus generics

- **Health Plan**: Generic 22%, Brand 22%
- **PBM**: Generic 8%, Brand 2%
- **Pharmacy**: Generic 43%, Brand 4%
- **Wholesaler**: Generic 19%, Brand 1%
- **Manufacturer**: Generic 50%, Brand 76%
Gross profit margins: Brands versus generics

- Generic manufacturers margins are high even though lower than brands.
Pharmacies, PBMs and wholesalers have higher margins on generics.
PBM’s capture $7 on every $100 spent on generics, compared to $2 on brands.

Pharmacies capture $32 on every $100 spent on generics, compared to $3 on brands.

Wholesalers capture $8 on every $100 spent on generics, compared to $3 on brands.
Net profit margins

Overall
- Manufacturer: 26.30%
- Pharmacy: 4.00%
- PBM: 2.30%
- Wholesaler: 0.50%
- Health Plan: 3.00%

All net profit margins are US sales-weighted averages based on data from 2015 SEC 10K filings and annual reports.
Net profits, overall industry

Net Profits
$23 of $100 by industry

Insurer: $3
PBM: $2
Pharmacies: $3
Wholesalers: $0.32
Manufacturers: $15
Is any player making excessive profits?

1. Compare profits to what each player does and the risks they take
2. Compare profits to other “similar” industries
3. Evaluate level of competition or concentration in these markets
Risk borne by market players

Net Profits
$23 of $100 by industry

R&D risk
Sales risk

Medical risk

$3
$2
$3
$0.32

Insurer
PBMs
Pharmacies
Wholesalers
Manufacturers

Inventory risk

$15
Net profits, by industry: Manufacturers

Average sector net margins for players in the pharmaceutical supply chain and comparable industries

- Manufacturers -- Brand
- Tobacco
- Beverage (Alcoholic)
- Manufacturers -- Generic
- Software (Entertainment)
- Semiconductor
- Computers/Peripherals
- Software (Internet)
- Beverage (Soft)
- Telecom. Equipment
- Chemical (Diversified)
- Semiconductor Equip
- Software (System & Application)
- Household Products
- Paper/Forest Products
- Aerospace/Defense
- Electrical Equipment
- Machinery
- Furn/Home Furnishings
- Electronics (General)
- Chemical (Specialty)
- Auto Parts
- Construction Supplies
- Packaging & Container
- Chemical (Basic)
- Rubber& Tires

Comparable Industry (Damadoran Online)
Pharma Supply Chain Participant (Source: Authors’ Calculations)
Net profits, by industry: Wholesalers

Average sector net margins for players in the pharmaceutical supply chain and comparable industries

- Comparable Industry (Damadoran Online)
- Pharma Supply Chain Participant (Source: Authors' Calculations)
Net profits, by industry: Insurers

Average sector net margins for players in the pharmaceutical supply chain and comparable industries

- **Reinsurance**: 7.45%
- **Insurance (Life)**: 7.36%
- **Insurance (Prop/Cas.)**: 7.20%
- **Insurance (General)**: 4.30%
- **Health Insurers**: 2.96%

Comparable Industry (Damadoran Online)
Pharma Supply Chain Participant (Source: Authors' Calculations)
Net profits, by industry: PBMs

Average sector net margins for players in the pharmaceutical supply chain and comparable industries

- Comparable Industry (Damadoran Online)
- Pharma Supply Chain Participant (Source: Authors' Calculations)
Net profits, by industry: Pharmacies

Average sector net margins for players in the pharmaceutical supply chain and comparable industries
- Comparative Industry (Damadoran Online)
- Pharma Supply Chain Participant (Source: Authors' Calculations)
Some market segments are highly concentrated

- Top 3 PBMs control more than two-thirds market share
  1. Express Scripts
  2. CVS Health
  3. Optum Rx

- Top 3 wholesalers control more than 80% market share
  1. McKesson
  2. AmerisourceBergen
  3. Cardinal Health

- Top 3 pharmacies control roughly 50% market share
  1. CVS
  2. Walgreens
  3. Express Scripts

- Manufacturing is less concentrated but have government granted market exclusivity and patents
Pricing strategies are under scrutiny

• Manufacturers
  – Copay coupons to circumvent plan design
  – Aggressive promotion of drugs

• Health Plans
  – Copays for generics can exceed acquisition costs
  – Prices are high in the deductible phase or doughnut hole

• Pharmacies
  – Price variation even within local area
  – Significant margins on generics

• PBMs
  – Hidden rebates
  – Rebates even when patient pays entirely out-of-pocket
What are the policy solutions for making drug distribution more efficient?

Will Amazon solve all the problems?

If policy interventions are required, what are they?
# Top Manufacturers, by Market Share

<table>
<thead>
<tr>
<th>Company</th>
<th>All&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Brands&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Generics&lt;sup&gt;13&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gilead Sciences (Brand)</td>
<td>6.9%</td>
<td>10.9%</td>
<td>--</td>
</tr>
<tr>
<td>J&amp;J (Brand)</td>
<td>5.9%</td>
<td>9.4%</td>
<td>--</td>
</tr>
<tr>
<td>Roche (Brand)</td>
<td>5.7%</td>
<td>9.0%</td>
<td>--</td>
</tr>
<tr>
<td>Merck &amp; Co (Brand)</td>
<td>5.7%</td>
<td>9.0%</td>
<td>--</td>
</tr>
<tr>
<td>Amgen (Brand)</td>
<td>5.3%</td>
<td>8.5%</td>
<td>--</td>
</tr>
<tr>
<td>Pfizer (Brand)</td>
<td>4.7%</td>
<td>7.4%</td>
<td>--</td>
</tr>
<tr>
<td>Fresenius Kabi (Generic)</td>
<td>4.6%</td>
<td>--</td>
<td>3.1%</td>
</tr>
<tr>
<td>AbbVie (Brand)</td>
<td>4.4%</td>
<td>6.9%</td>
<td>--</td>
</tr>
<tr>
<td>Sanofi (Brand)</td>
<td>4.3%</td>
<td>6.8%</td>
<td>--</td>
</tr>
<tr>
<td>Novartis (Brand)</td>
<td>3.3%</td>
<td>5.3%</td>
<td>--</td>
</tr>
<tr>
<td>Astrazeneca (Brand)</td>
<td>3.1%</td>
<td>4.8%</td>
<td>--</td>
</tr>
<tr>
<td>Allergan (Brand)</td>
<td>3.0%</td>
<td>4.7%</td>
<td>--</td>
</tr>
<tr>
<td>GlaxoSmith Kline (Brand)</td>
<td>2.6%</td>
<td>4.2%</td>
<td>--</td>
</tr>
<tr>
<td>Pfizer-Hospira (Generic)</td>
<td>2.3%</td>
<td>--</td>
<td>3.6%</td>
</tr>
<tr>
<td>Teva (Brand)</td>
<td>2.1%</td>
<td>3.3%</td>
<td>--</td>
</tr>
<tr>
<td>Mylan (Generic)</td>
<td>1.6%</td>
<td>--</td>
<td>8.8%</td>
</tr>
<tr>
<td>Teva (Generic)</td>
<td>1.5%</td>
<td>--</td>
<td>12.2%</td>
</tr>
<tr>
<td>Novartis-Sandoz (Generic)</td>
<td>1.1%</td>
<td>--</td>
<td>11.5%</td>
</tr>
<tr>
<td>Allergan-Actavis (Generic)</td>
<td>1.1%</td>
<td>--</td>
<td>8.9%</td>
</tr>
<tr>
<td>Aspen (Generic)</td>
<td>0.4%</td>
<td>--</td>
<td>4.1%</td>
</tr>
<tr>
<td>Lupin (Generic)</td>
<td>0.3%</td>
<td>--</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

| Total                    | 70%             | 90%              | 55%                   |
# Top PBMs, by Market Share

<table>
<thead>
<tr>
<th>Company</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Express Scripts</td>
<td>29%</td>
</tr>
<tr>
<td>CVS Health</td>
<td>24%</td>
</tr>
<tr>
<td>Optum Rx</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>66%</strong></td>
</tr>
</tbody>
</table>

11 Share refers to the percentage of the market share.
## Top Wholesalers, by Market Share

<table>
<thead>
<tr>
<th>Wholesalers</th>
<th>Share&lt;sup&gt;10&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>McKesson</td>
<td>32.7%</td>
</tr>
<tr>
<td>AmerisourceBergen</td>
<td>31.6%</td>
</tr>
<tr>
<td>Cardinal Health</td>
<td>20.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>85%</strong></td>
</tr>
</tbody>
</table>
# Top Pharmacies, by Market Share

<table>
<thead>
<tr>
<th>Pharmacies</th>
<th>Share\textsuperscript{12}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walgreens</td>
<td>14.9%</td>
</tr>
<tr>
<td>CVS Retail</td>
<td>13.8%</td>
</tr>
<tr>
<td>Express Scripts Mail Order Pharmacy</td>
<td>11.0%</td>
</tr>
<tr>
<td>CVS Mail Order</td>
<td>9.0%</td>
</tr>
<tr>
<td>Walmart</td>
<td>5.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>54%</strong></td>
</tr>
</tbody>
</table>

\[\text{Share\textsuperscript{12}}\]
## Top Insurers, by Market Share

<table>
<thead>
<tr>
<th>Insurers</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>UnitedHealth Group</td>
<td>11.4%</td>
</tr>
<tr>
<td>Anthem</td>
<td>9.2%</td>
</tr>
<tr>
<td>Aetna</td>
<td>4.1%</td>
</tr>
<tr>
<td>Cigna</td>
<td>4.5%</td>
</tr>
<tr>
<td>Humana</td>
<td>8.7%</td>
</tr>
<tr>
<td>Centene</td>
<td>3.4%</td>
</tr>
<tr>
<td>HealthNet</td>
<td>2.6%</td>
</tr>
<tr>
<td>WellCare</td>
<td>2.1%</td>
</tr>
<tr>
<td>Molina</td>
<td>2.0%</td>
</tr>
<tr>
<td>Magellan</td>
<td>0.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49%</strong></td>
</tr>
</tbody>
</table>
Neeraj Sood
Nsood@usc.edu

Kukla Vera
kuklaver@healthpolicy.usc.edu