

# Quantifying Medco's Business Model

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4/5/2005

## Abstract

In an effort to make its business model more transparent to investors and customers, Medco Health Solutions, Inc. released new detail on drug manufacturer rebate receipts during the third quarter of 2004. Based on these new disclosures, we have derived the following statistics that further illuminate the Medco business model:

Quantifying Medco's Business Model - 3Q2004	
Derived Statistics	Amount
Rebate-retention rate	40.5%
Retained rebates as % of gross profits	71.0%
Reimbursement margin ("The Spread")	< 1%
Mail order margin	< 2%
Mail Order Margin Considering Rebate Recoupment	7.2%
Gross rebates as % of brand ingredient cost	10.9%
Gross rebates as % all ingredient costs	8.7%
Medco Supplied Statistics	
Generic drug utilization rate	46.8%
Mail order share of Rx fulfillment	45.9%

Based on a theory of market share rebates as exclusionary, rather than share-shifting, devices, we have estimated that Medco has a rebate negotiation competitive advantage over smaller entities equal to 4.8% of all ingredient costs. That figure is an estimate of the cost to clients of switching to entities with more transparent business models. In order to offset that loss, smaller entities would have to manage formularies aggressively and produce a generic utilization rate that is 4.8 percentage points greater than Medco's current 46.8%

## **Introduction**

The management of the drug benefit portion of healthcare plans has become the domain of contracted specialists called pharmacy benefit managers (PBMs). The three largest, independent PBMs --Medco Health Solutions, Inc, Express Scripts, Inc., and Caremark Rx, Inc., (known as "The Big 3") -- have come under attack in the past few years for not acting in the best interest of their clients. The source of the problem is attributed to a business model that lacks transparency and is too dependent on rebates retained from brand name drug manufacturers. PBMs are also criticized for earning a spread on reimbursements and under-pricing their own mail order services in order to siphon business away from retail pharmacies. Many of the solutions to this conflict of interest problem involve switching to entities with different business models. This includes creating PBM operations in-house or switching to PBMs professing a "flat fee" business model with 100% pass-through of rebates. For self-insured Fortune 500 companies, it includes forming a "group preference organization" (GPO) to negotiate rebates on their behalf.

For all of the talk about GPOs and transparent PBMs, there is very little acknowledgement that the Big 3 may have a competitive advantage in rebate management. Smaller competitors may have to focus on other managed care techniques to offset this competitive advantage. For all the criticism about the PBM business model, there is very little publicly available, quantitative information about the sources of PBM profitability. While there is antidotal information about "the spread" and some evidence that a single PBM engaged in predatory pricing to win a federal mail order pharmacy contract, there does not exist estimates of these margins based on official financial statements.<sup>1 2</sup> Until recently, PBMs disclosed only the most aggregate of information in their financial statements filed with the Securities and Exchange Commission (SEC). Gross and net rebates were never broken out from other reimbursements. Mail order revenue was reported as a separate line item, but not mail order costs or mail order margins.

The purpose of this paper is to make Medco's business model more transparent by disaggregating gross profits by revenue sources and, more appropriately, by revenue "driver".

We will present an estimate of Medco's rebate negotiating power as measured by gross rebates received as a percentage of ingredient costs. This statistic becomes relevant in cost-benefit discussions of choosing providers other than the Big 3.<sup>3</sup> Also, the results can be useful in evaluating the claim that low mail order pharmacy margins offset by rebate retention is an anti-competitive device employed by the Big 3 to exclude independent mail order pharmacies from the marketplace.<sup>4</sup>

An estimate of the average of rebate rates only reveals part of the story about the use of rebates by drug manufacturers. It is generally known that PBMs receive two types of rebates from drug manufacturers: volume rebates and market share rebates. Recent Medco disclosures have provided the first publicly available information about the relative magnitude of these two types of rebates. We use this new data and theories about the functions of such rebates to estimate the distribution of rebate rates across brand drug ingredient spending. This distribution is key in estimating Medco's competitive advantage in rebate management. It is also central to our efforts to shed light on the impact of recalculating Medicaid "best price" and average manufacturer price (AMP) using PBM rebate data.<sup>5</sup>

### **Recent PBM Disclosures**

On March 28, 2003, Express Scripts, Inc. made a change in the way it accounted for rebates. Instead of accounting for rebates on a net basis, it accounted for them as a reduction in costs. This required them to revise their financial statements for the past three fiscal years by reducing revenue and cost of sales by gross rebates received. Express Scripts stated that:<sup>6</sup>

Therefore, our 2002, 2001 and 2000 revenues have been reduced by \$926,750,000, \$740,782,000, and \$810,393,000, respectively. Cost of revenues has been reduced by the same amounts. These amounts represent the gross amount of rebates and administrative fees received from pharmaceutical manufacturers. Our client's portion, a majority of such amounts, which represents in excess of 50%, will continue to be classified as a reduction of revenues. Our consolidated gross profit was not impacted as a result of this adoption.

Express Scripts' statement is noteworthy for the fact that it was the first official disclosure of what we consider is the key to understanding the PBM business model. We have named that statistic the "the rebate-retention rate" – the percentage of drug manufacturer rebates received that was retained by PBMs as gross profits.<sup>7</sup> The secrecy of this rate was viewed as vital to the competitiveness of a PBM. Without it, customers had no benchmark to use in contract negotiation with PBMs. Without it, no one could breakdown gross profits by line of business to reveal pricing strategy. Knowledge of the rebate-retention rate is the key to replacing antidotal information about "the spread" and industry gossip about mail order predatory pricing with aggregate, quantitative, and verifiable information about the PBM business model. Unfortunately, the first public disclosure by Express Scripts that its rebate-retention rate was less than 50% was so vague that any financial analysis based on this fact was clouded with uncertainty.

On October 28, 2004, Medco Health Solutions, Inc. disclosed to the public for the first time the percent of rebates from drug manufacturers that it retained.<sup>8</sup> Chief Financial Officer, Jo Ann Reed, announced in a conference call to investors that Medco retained 40.5% of \$754 Million in gross rebates received from pharmaceutical manufacturers during the 3<sup>rd</sup> quarter of 2004. She stated that this disclosure was initiated in an effort to make Medco's business model more transparent to the public and that it would become a standard feature of all future quarterly statements. Based on that disclosure, it is possible to derive with certainty, as will do in the next section, that 71.7% of Medco's gross profits in 3<sup>rd</sup> quarter of 2004 came from retained rebates. It is also possible to derive with certainty that 11.7% of gross profits came from claim processing and data management. Retail network management and captive mail order operations contributed the remaining 16.5% of Medco's gross.

### **A Margin Analysis of Medco's Financial Statements**

While we cannot at this time say with certainty what Medco's retail network "spread" margin is or what its mail order gross profit margin is, we establish some upper limits on both. Assuming no

spread, then Medco's mail order gross profit margin can be no greater than 2.1%. Similarly, Medco's spread margin can be no greater than 1.8%, assuming no margin on mail order. The full margin analysis for the 3<sup>rd</sup> quarter of 2004 is presented in Table 1 of the Appendix. The disaggregation of Medco's gross profits by revenue source is summarized in the top portion of Table 2 below:

<b>Table 2: Summary of Margin Analysis of Medco Health Solutions, Inc 3Q2004</b>			
<b>Medco Gross Profit By Revenue Source, 3Q2004</b>			
	Billions \$	% of	Gross
		Gross Profit	Profit Margin
Retail Network ("The Spread")	0.020	4.7%	0.5%
Rebate Retention ("Rebate Retention Rate")	0.305	71.7%	40.5%
Mail Order Pharmacy	0.050	11.8%	1.5%
Claims and Data Service	0.050	11.7%	62.5%
<b>Total Gross Profits</b>	<b>0.426</b>	<b>100.00%</b>	<b>4.9%</b>
<b>Portioning Out of Rebates, Claims, and Fees</b>			
	Retail Network	Mail Order	Total
Reimbursements By Channel (Billions \$s)	4.013	3.400	7.413
Proportion of Reimbursements by Channel	54.1%	45.9%	
Estimate of Proportion of Brand Reimbursement	51.0%	49.0%	
Estimate of Proportion of Brand Rebates taking into account a formulary compliance synergy	45.0%	55.0%	
Rebates Gross Profits by Driver	0.137	0.168	0.305
Claims and Data Gross Profits by Driver	0.023	0.028	0.050
<b>Total Rebates, Claims, and Fees by Driver</b>	<b>0.160</b>	<b>0.195</b>	<b>0.355</b>
<b>Medco Gross Profit By Driver, 3Q2004</b>			
		% of	Gross
		Gross Profit	Profit Margin
Retail Network	0.020		
Retail-Driven Rebates, Claim, and Fees	0.160		
<b>Total Retail-Driven Gross Profits</b>	<b>0.180</b>	<b>42.3%</b>	<b>4.5%</b>
Mail Order Pharmacy	0.050		
Mail Order-Driven Rebates, Claim, and Fees	0.195		
<b>Total Mail Order-Driven Gross Profits</b>	<b>0.245</b>	<b>57.7%</b>	<b>7.2%</b>
<b>Total Gross Profits</b>	<b>0.426</b>	<b>1.000</b>	<b>4.9%</b>
Sources: 3Q2004 10-K SEC Report Available at <a href="http://www.medco.com/medco/corporate/home.jsp">http://www.medco.com/medco/corporate/home.jsp</a> 3Q2004 Medco Conference Call -- replay at 800-642-1687 Conference ID: 178047			

## **The Matching Principle As Applied to Medco's Financials**

Generally accepted accounting principles dictate that, to the extent possible, sources of revenue should be "matched" with the costs that "drive" that revenue. This matching should be done when accounting by time period and by line of business. The major weakness of the analysis presented so far is that it fails to fully align revenue with cost drivers. We believe that the primary reason why PBMs choose to assume the role of principal, rather than agent, in managing network providers, is to claim ownership of the transaction. This gives them the right to receive rebates and data fees. It is ownership of the transaction that distinguishes PBMs from pharmacy benefit administrators (PBAs). Rebates and data fees are driven by retail and mail order transactions. In the spirit of the matching principle, these revenue sources should not stand alone in a financial statement. It might be argued that formulary management is a separate business driver deserving a separate line on a financial statement. But, formulary management without concurrent ownership of the transaction would only merit management fees from clients. It is the coupling of formulary management with ownership of the transaction that causes brand name drug companies to deal directly with PBMs.

The lower portion of Table 2 divides Medco's gross profits into two basic business drivers: (1) retail transactions, and (2) mail order transactions. We start out by distributing total reimbursements by channel as reported by Medco. Next, we refine that by considering only the distribution of brand name drug transactions by channel. This focus is based on our contention that 100% of the rebates received by Medco are from brand manufacturers. Brand name manufacturers target rebates at that point in the pharmaceutical supply chain where demand for their product is discretionary. They know that brand drug procurement by pharmacies is derived and non-discretionary. Brand pharmaceutical manufacturers negotiate price concessions with PBMs, not pharmacies, because only PBMs have discretion in influencing choices among therapeutic equivalents through formulary design and compliance.

On the other hand, pharmacies do have the power to choose one generic manufacturer's product over another's as they are near perfect substitutes. As a result, generic drug manufacturers' efforts to sway demand are channeled into substantial charge-back credits posted to pharmacies' accounts at distributors.

It has been documented that a disproportionate share of brand name drugs flow through the mail order channel. Sales of drugs used to treat chronic illnesses such as high cholesterol, hypertension, diabetes, acid reflux disease, and arthritis tend to be dominated by on-patent brand name drugs. Furthermore, patients with chronic illnesses can be served well by mail order pharmacies because immediate availability is rarely an issue. As a result, we revised the initial distribution of rebates to take into account drug mix by channel.

We further revised this distribution to take into account what we believe is a special synergy between formulary compliance and captive mail order operations. It is rare in the health care market where the payor is also the provider. Ownership of mail order operations by insurance companies with captive PBMs suggests that there is a powerful economic synergy between mail order operations and the parent PBM. The preference for captive mail order pharmacies by independent PBMs with rebate retention suggests that the synergy is in the area of discretionary, formulary compliance. Furthermore, the fact that both independent PBMs and captive PBMs of insurance companies prefer to own their own mail order operations suggests that the discretionary, formulary compliance is of the "win-win" variety – beneficial to both the payor and the provider. Our effort to quantify the financial impact of this synergy is in process. For now, we estimate that this powerful synergy causes as much as a 6-percentage points swing in rebates into the mail order driver column.

Even though only 45.9% of Medco's reimbursements come from captive mail order pharmacy operations, we have estimated that 55% of its gross rebate receipts are attributable to that business driver. The other key result of this exercise is that Medco's mail order driver margin—

mail order margin adjusted by rebates driven by this business -- is at a pro-competitive 7.2%. This estimate has relevance for antitrust concerns about mail order pharmacy pricing by large PBMs.<sup>9</sup>

### **Quantifying Medco's Rebate Negotiating Power**

One month after Medco first disclosed its rebate-retention rate, officers of the company presented graphs at two separate investors conferences that revealed that it received two types of rebates -- "formulary" and "market share" -- and that the distribution of receipts between the two was 54% and 46%, respectively.<sup>10 11</sup> Based on that information, it is possible to derive an estimate of Medco's rebate negotiating power as measured by gross rebates received as a percentage of all drug ingredient costs. The derivation is presented below in Table 3. The basic result is that, on average, Medco is able to negotiate rebates equaling 10.9% of brand ingredient cost and 8.7% of all ingredient costs.

We believe that these estimates are based on reasonable assumptions. The rest is simple arithmetic. In order to convert the dollar rebates received into percentages, we had to make assumptions about Medco's ingredient costs before rebates. We assumed that generic and brand prescription ingredient costs, paid by Medco's clients, across all fulfillment channels, average \$22 and \$75, respectively. We also assume that the gross and net rebate figures Medco reported did not include charge-back credits from generic drug manufacturers. These credits should be applied to mail order pharmacy costs and not included in gross rebate receipts. There is antidotal evidence from industry analysts that generic drug manufacturers do not pay rebates to PBMs. This has not been explicitly confirmed by PBMs. In any case, there is a solid rationale, presented earlier, for assuming that the rebate numbers disclosed by Medco only includes rebates from brand name drug manufacturers.

**Table 3: An Estimate of the Rebate Negotiating Power of Medco Health Solutions, Inc**

Row #	Description	Amount	Source
R1	Gross rebates received 3Q04	\$ 754 Million	Medco Presentation
R2	% formulary rebates	54%	"
R3	% market share rebates	46%	"
R4	Rebate per Adj brand Rx	\$ 8.20	"
R5	Generic Rx utilization rate	46.8%	"
R6	Formulary rebate per Adj brand Rx	\$4.43	= R4 * R2
R7	Market share rebate per Adj brand Rx	\$3.77	= R4 * R3
R8	Generic drug cost to plan per Rx	\$ 22.00	estimate
R9	Brand drug cost to plan per Rx	\$ 75.00	estimate
R10	Total Drug cost to plan per Rx	\$ 50.20	= R5 * R8 + ( 1- R5 ) * R9
R11	Generic drug costs as % of total drug cost	20.5%	= (R5 * R8) / R10
R12	Brand drug costs as % of total drug cost	79.5%	= ((1 - R5) * R9) / R10
R13	Formulary rebates as a % of brand drug costs	5.9%	= R6 / R9
R14	Market share rebates as a % of brand drug costs	5.0%	= R7 / R9
<b>R15</b>	<b>Gross Rebates as a % of brand drug costs</b>	<b>10.9%</b>	= R13 + R14
<b>R16</b>	<b>Gross Rebates as % of all drug costs</b>	<b>8.7%</b>	= R12 * R15

Source: Medco Health Solutions, Inc Presentation  
Merrill Lynch Health Services Investors Conference, November 20, 2004  
Available at [http://media.corporate-ir.net/media\\_files/nys/mhs/presentations/Merrill113004.pdf](http://media.corporate-ir.net/media_files/nys/mhs/presentations/Merrill113004.pdf)

### The Distribution of Drug Costs by Substitutability

Now that we have our first reliable estimate of the rebate negotiating power of one of the Big 3 PBMs, there are a myriad of follow-on questions. Does PBM size matter? This question is relevant to analysis of the cost and benefits of switching to smaller PBMs or GPOs with fee-based business models. Another question revolves around comparisons of PBM rebate agreements versus rebate agreements negotiated by the Federal government for Medicaid and other welfare programs. On the surface, it appears Medco's average rebate rate of 10.9% falls short of the Medicaid "best price" formula of the greater of 15.1% or the best price rate. But, is this true?

Finally, most of the explanations of why drug companies grant rebates revolve around formulary access and preference. This suggests that rebates are offered for all brand drugs. But, economists have another view market share rebates. They see such rates as exclusionary because PBMs would only concede market share to new entrants at rebate rates that would drive the entrants' margins below zero. This implies that manufacturers who view their patent position as unassailable by potential entrants with "me to" drugs do not pay rebates. Is this the case? If so, then there may be a large share of brand drugs where no rebates are paid, thereby greatly weighing down the 10.9% average reported earlier.

All of the above questions require a further look into the distribution of rebates rates as informed by a theory of drug rebate use. A government report in 2000 presented some antidotal information about the variability of rebate rates:<sup>12</sup>

Various sources produce estimates of rebates ranging from 2 percent to 35 percent of drug sales prices. These rebates are not reflected in retail prices, but are instead paid directly to insurers and other organizations that manage drug benefits after they have already reimbursed the pharmacy.

Because there is a wide variation in rebate rates negotiated between PBMs and drug companies, the 10.9% figure does not adequately reflect Medco' rebate negotiating power. What is needed is an estimate of the components parts and associated weights that roll up into the 10.9% average.

The key to this exercise is a theory of why drug manufacturers give rebates to PBMs in the first place. Why give rebates to PBMs and not pharmacies or plan sponsors? Volume rebates are a fairly common occurrence in business. The use of market share rebates by manufacturers is fairly rare. We believe that the dual use of volume rebates and market share rebates is extremely rare in American business. Is this dual occurrence complementary or coincidental? The language currently found in industry literature describes rebates in terms of their role in influencing formulary placement and preference in order to shift market share among existing brand drugs that are therapeutic equivalents. We have become dissatisfied with the current view of market share rebates as share-shifting view of market share rebates devices. In too many instances, we see two or more brand name drugs given "tier 2" preference in the national formularies developed by large PBMs. If market share rebates are designed to induce competition for market share, why

do we observe both Zocor and Lipitor or both Nexium and Protonix, being preferred in national formularies as indicated in Table 4. Our investigation has not been systematic and has been limited to 4 of the top 10 selling therapeutic classes – statins, proton pump inhibitors, COX-2 inhibitors, and second generation antihistamines. Yet, the existence of two brand name drugs in “tier 2” therapeutic classes is highly inconsistent with the current language use to describe the role of market share rebates. To us, the evidence suggests that the incentives for exclusive preference in a formulary are weak.

**Table 4: " Tier 2" Preferences in 2 Therapeutic Classes of National Formularies of PBMs, 2004**

PBM	Proton Pump Inhibitors				HMG-CoA Reducase Inhibitors			
	Aciphex	Prevacid	Protonix	Nexium	Lipitor	Zocor	Crestor	Pravachol
ESI National Formulary	.	x	.	x	x	x	x	.
ADvPCS National Formulary	x	.	.	x	x	.	x	x
Medco National Formulary	.	.	x	x	x	x	.	.
Caremark National Formulary	.	x	x	.	x	.	.	x

We have adopted a completely different language to describe the use of rebates. It is based on recent theoretical work of economists on the exclusionary role of market share rebates.<sup>13</sup> The function of both types of rebates has little to do with competition for market share between existing therapeutic equivalents, but everything to do with creating barriers to entry by “me-too” drugs. The patent system protects only chemical novelty in drugs not therapeutic novelty. This flaw in the patent system has been exploited by the rise of combinatorial chemistry. This approach to new drug development makes it more cost-effective for pharmaceutical companies to channel scarce R&D dollars into developing “enantiomeric” permutations of existing blockbuster drugs rather than trying to develop drugs with truly novel therapeutic effects.<sup>14</sup> Even if market

share rebates are exclusionary and limit competition, they probably are welfare enhancing overall because they shore up a weak patent system that is failing to protect true innovators from copiers. The development of the theoretical welfare economics of drug market share rebates will come in time. Our interest now is simply figuring out how drug rebates work as exclusionary devices. If we assume they are exclusionary, what does this imply for the distribution of rebate rates? What kinds of evidence would support or refute this hypothesis?

Our attempt to construct a distribution of rebate rate can be viewed as an update of a key element in a path-breaking study by Anna Cook of the effect of “substitutability” on brand name drug prices.<sup>15</sup> The study was based on data from 1994. The focus of Cook’s study was generic substitution, as the Hatch-Waxman Bill has just recently been passed. The study required that drug expenditures be classified into three categories: (1) single source innovative (equivalent to today’s on-patent brand drugs); (2) multiple source innovative (equivalent to today’s off-patent brand drugs); and (3) generic drugs. Based on sample data, she found that 17.3% of sales represented generic drugs, 27.2% represented off-patented brand drugs, and 55.5% represented on-patent brand drugs. The focus of Cook’s study was on the 27.2% market share of off-patent brand name drugs. Today, most estimates peg this share at less than 5%, which is indicative of how far we have since the passage of Hatch-Waxman. The focus today has shifted to therapeutic interchange—substitution of both generics and on-patent brands for other therapeutically equivalent on-patent brands. This requires a more refined subdivision of brand name drugs by substitution possibilities.

We start with our previously estimated 79.5% for brand name drugs’ share of Medco’s ingredient costs. Published reports place off-patent brand’s share of total expenditures at less than 5% and we use a 4.5% figure, leaving a round 60 percentage points to subdivide. The subdivision of that percentage is presented in Table 5 below:

**Table 5: Distribution of Medco's Drug Expenditures by Substitutability**

Single source innovator	single source innovator	Single source innovator	multi-source innovator	generic
On-patent brand	on-patent brand	on-patent brand	off-patent brand	generic
therapeutic equivalents	therapeutic equivalents	no therapeutic equivalents	generic substitutes	generic substitutes
oligopoly	Oligopoly	monopoly	Competition	perfect competition
cost effective	questionable cost effectiveness	no substitutes	close substitutes	perfect substitutes
25.0%	10.0%	45.0%	4.5%	20.5%
brand drug mfg formulary rebates market share rebates	brand drug mfg formulary rebates market share rebates	brand drug mfg no rebates set price	brand drug mfg no rebates price taker	generic drug mfg charge-back credits

Trying to divide on-patent drugs into two classes – with, and without, therapeutic equivalents—is speculative enough. But, we further subdivide on-patent drugs with therapeutic equivalents into those where the equivalents are lower cost generics and those where the equivalents are other brand name drug of near equal cost. We do this in preparation of our analysis of the cost-benefits of switching to entities with business models less focused on unit drug prices and more focused on overall drug costs. The only saving grace in this speculative exercise is that a substantial portion of drug costs are concentrated in 10-15 therapeutic classes so the subdivision can be determined on a class-by class basis. Using data available of sales by top therapeutic class for 2003, we performed the following subdivision presented below in Table 6. The first group represents three of the top 10 therapeutic classes where cost-effectiveness is most questionable.

**Table 6: Top 10 Therapeutic Classes by 2003 US Sales**

Rank	Therapeutic Class	2004 Sales (\$ B.)	%
2	Proton Pump Inhibitors	12.9	
7	Cox 2 Inhibitors	5.3	
9	2nd generation antihistamines	3.5	
		21.7	10.0%
1	Statins	13.9	
3	SSRI/SNRI	10.9	
4	Anti-psychotics	8.1	
5	Erythropoietins	7.4	
6	Seizure Disorder Agents	6.9	
8	Calcium channel blockers	4.4	
10	Codeine and codeine combo's	3.2	
		54.8	25.4%
	Top Ten Therapeutic Classes	76.5	35.4%
	All Other Drugs	139.5	64.6%
	Total 2003 US Sales	216.0	100.0%

Drug Benefit Trends, June 17, 2004

Available at <http://www.medscape.com/viewarticle/479952>

### Estimating Medco's Distribution of Received Rebate Rates

Now that we have a distribution of ingredient costs by substitution possibilities, we need to link that to a theory of drug market rebates. The basic idea is that both market share rebates and volume, or formulary rebates, are only paid by brand name drug manufacturers to PBMs and more specifically, only paid for drugs in order to create a barrier to "enantiomeric" entry. They are not paid in cases where it is felt that patent protection is sufficient, at the other extreme, in cases where the patent has expired and the manufacturer faces intense competition from generics that are near perfect substitutes. We believe that the share of sales in the top 10 selling therapeutic classes – 25.4% in 2004 – is a good proxy for the share of brand name drugs requiring protection from potential new entrants. First of all, on-patent brand name drugs dominate sales in these

therapeutic classes. Second, these “blockbuster” classes attract competition. It may be that one class -- erythropoietins --- can never be threatened by an “enantiomeric” variation because of the biotechnological, rather than traditional chemical, nature of the drug class. Still, there are enough classes ranked 10 through 20 that can replace this class so that we still feel that the 25.4% figure is still a good estimate of the share of the drug market threatened by new entrants. A theory of why pharmaceutical companies pay volume rebates and market share rebates concurrently is still very much in development. We believe that the concentration of power in the PBM industry is the reason for the existence for volume rebates being paid. We believe that drug companies would only pay market share rebates if the PBM industry featured many buyers with no dominant firms.

### **Competing with Medco**

Drug benefit costs are the product of “three U’s” – usage, utilization mix, and unit prices. In the following statement from a recent 10-K statement to the SEC, Medco acknowledges that its core competency is in managing unit prices:<sup>17</sup>

Our business model is designed to reduce this level of drug trend, primarily by obtaining competitive discounts and rebates from pharmaceutical manufacturers, obtaining competitive discounts from retail pharmacies and efficiently administering prescriptions filled through our mail order pharmacies 1 10-K SEC Fiscal year ending Dec 27, 2003

Critics say there will be benefits to reclaiming PBM functions from large independent PBMs, but there is little recognition that these PBMs have a rebate negotiating advantage over smaller entities. It is important to obtain quantitative estimates of this cost advantage in order to understand what it would take for smaller entity has to offset this advantage with an aggressive plan to increase the generic utilization rate.

The basis approach to is start with our disaggregation of Medco’s weighted average rebate rate and inquire what would it look like if rebates were managed by smaller entities focused on “managed care not managed price”™. This switch would not affect the distribution of substitutability, but it would affect the rates received in two classes. First, we believe that size matters with respect to volume rebates received. Medco has the power to influence the transaction of over 60 million lives through discretionary formulary design and compliance.<sup>18</sup> The

GPO that Hewitt Associates is proposing is expected to cover 5 million lives.<sup>19</sup> Medco can offer drug companies 12 times the market. We believe that Medco's coverage represents a major advantage over small entities in terms of drug companies' willingness to pay volume rebates. We place that difference at around 9 percentage points --a rate of 13.5% versus a rate of 4%.

Second, we do not believe that size matters with respect to transactions involving market share rebates. They are exclusionary devices offered to all entities with the power to make discretionary formulary design and compliance decisions. We assume that any switch will not affect the rates received. But, it will affect the share of expenditures garnering rebates.

Aggressive therapeutic interchange in three therapeutic classes -- proton pump inhibitors, COX-2 inhibitors, and 2<sup>nd</sup> generation antihistamines -- is the best hope smaller entities have to offset Medco's "managed price" advantage. But there is a cost -- rebates from 3 of the top ten selling therapeutic classes goes to zero. We estimate that the result of switching to a smaller entity with a different business model is a decline of an average 4.8 percentage points in rebate rates. The calculations yielding this result are presented in Table 7 and 8 below. This loss is due to a combination of lower volume rebate rates and a loss of all rebate dollars in three therapeutic classes.

At this point we introduce a recent estimate from Express Scripts, Inc that a 1% increase in the generic utilization rate would result in a 1% reduction in client per member per year (PMPY) costs.<sup>22</sup> This figure seems to pop up elsewhere in industry literature. What this means for our analysis is that the 4.8 percentage point decline in rebate rates, or in other words a 4.8 percentage increase in PMPY, can be neutralized by a 4.8 percentage point increase in the generic utilization rate.

	Market Share - All		25.0%	10.0%	40.0%	4.5%	20.5%
	Market Share - Brand		31.4%	12.6%	50.3%	5.7%	
<b>Table 7: Estimate of the Medco's Distribution of Rebate Rates (Managed Price Emphasis)</b>			On Patent Brand Therapeutic Sub	On Patent Brand Therapeutic Sub Questionable C-Effectiveness	On-Patent Brand No Substitutes	Off-Patent Brand Generic Sub	Generic
	Weighted Ave. All ingredients	Weighted Ave. Brand	Rebate Rate	Rebate Rate	Rebate Rate	Rebate Rate	Rebate Rate
Formulary rebates	4.7%	5.9%	13.5%	13.5%	0.0%	0.0%	0.0%
Market share rebates	4.0%	5.0%	11.4%	11.4%	0.0%	0.0%	0.0%
Total rebate	8.7%	10.9%	24.9%	24.9%	0.0%	0.0%	0.0%

	Market Share - All		15.0%	10.0%	50.0%	4.5%	20.5%
	Market Share - Brand		18.9%	12.6%	62.9%	5.7%	
<b>Table 8: Estimate of Smaller PBMs Distribution of Rebate Rates (Managed Care Emphasis)</b>			On Patent Brand Therapeutic Sub	On Patent Brand Therapeutic Sub Questionable C-Effectiveness	On-Patent Brand No Substitutes	Off-Patent Brand Generic Sub	Generic
	Weighted Ave. All ingredients	Weighted Ave. Brand	Rebate Rate	Rebate Rate	Rebate Rate	Rebate Rate	Rebate Rate
Formulary rebates	1.0%	1.3%	4.0%	0.0%	0.0%	0.0%	0.0%
Market share rebates	2.9%	3.6%	11.4%	0.0%	0.0%	0.0%	0.0%
Total rebate	3.9%	4.8%	15.4%	0.0%	0.0%	0.0%	0.0%
<b>Medco's Rebate Competitive Advantage</b>	<b>4.8%</b>						

**Notes:**

(1) For a study of “the spread”, see Robert I. Garis, and Bartholomew E. Clark, “The Spread: Pilot Study of an Undocumented Source of Pharmacy Benefit Manager Revenue,” *Journal of American Pharmacists Association*, 2004 Vol. 44, No 1. pp. 15-21.

(2) For an analysis that uncovers Medco’s mail order pricing of the Federal Health Employee Benefit Plan, see L. Abrams, “ The Monopolization of The Mail Order Pharmacy Business,” November 2003, Available at <http://www.nu-retail.com> .

(3) There is little acknowledgement of the costs to plans of breaking away from the Big 3 PBMs in order to form their own group to negotiate rebates with drug manufacturers, See Lisa Samalonis. Large employers unite to negotiate drug prices. *Drug Topics* Aug. 23, 2004; 148.

(4) LW Abrams, “ Exclusionary Practices in the Mail Order Pharmacy Market,” Working Paper, April 2005

(5) LW Abrams, “ Recalculating Medicaid ‘Best’ Price and AMP Using PBM Rebate Data,” Working Paper, April 2005.

(6) Securities and Exchange Commission, Express Scripts, Inc., Form 10-K for the Year ending December 31, 2003.

(7) LW Abrams, “Estimating the Rebate-Retention Rate of Pharmacy Benefit Managers,” April 2003. <http://www.nu-retail.com>

(8) Medco Health Solutions, “2004 Analyst Day Presentation,” November 11, 2004, slide show available at [http://media.corporate-ir.net/media\\_files/NYS/MHS/presentations/MHS111104.pdf](http://media.corporate-ir.net/media_files/NYS/MHS/presentations/MHS111104.pdf)

(9) LW Abrams, “ How PBMs Price: Evidence from the Medicare Drug Card Program,” Submitted for publication, March 2005.

(10) Medco Health Solutions, “Credit Suisse First Boston Healthcare Conference, “ November 18, 2004. available at [http://media.corporate-ir.net/media\\_files/NYS/MHS/presentations/CSFB\\_111804.pdf](http://media.corporate-ir.net/media_files/NYS/MHS/presentations/CSFB_111804.pdf)

(11) Medco Health Solutions, “Merrill Lynch Health Services Investor Conference” , November 30, 2004 Available at [http://media.corporate-ir.net/media\\_files/nys/mhs/presentations/Merrill113004.pdf](http://media.corporate-ir.net/media_files/nys/mhs/presentations/Merrill113004.pdf)

(12) Department of Health & Human Services, *Report to the President: Prescription Drug Coverage, Spending, Utilization, and Prices*. Chapter 3. April 2004. Available <http://aspe.hhs.gov/health/reports/drugstudy/c3.pdf>

(13) See for example LM Marx & G Shaffer, “Rent Shifting, Exclusion, and Market Share Discounts,” June 2004 Available at

(14) M Goozner, *The \$800 Million Pill*, Berkeley, CA:University of California Press, 2004.Chapter 8.

(15) Anna Cook, How Increased Competition from Generic Drugs Has Affected Price and Returns In the Pharmaceutical Industry, July 1998, CBO Chapter 3, p 15 Available at <http://www.cbo.gov/ftpdocs/6xx/doc655/pharm.pdf>

(16) Drug Benefit Trends, "Cholesterol Agents Lead All Therapeutic Classes in Prescription Drug Sales, June 17, 2004, Available at <http://www.medscape.com/viewarticle/479951>

(17) Securities and Exchange Commission, Medco Health Solutions, Inc. 10-K SEC Fiscal year ending Dec 27, 2003

(18) Robert F. Atlas, "The Role of PBMs in Implementing The Medicare Prescription Drug Benefit," Health Affairs, October 28, 2004 Web exclusive

(19) See Lisa Samalonis. Large employers unite to negotiate drug prices. *Drug Topics* Aug. 23, 2004; 148. "Employer Coalition Seeks to Circumvent PBMs, Directly Contract for Drug Rebates," Drug Cost Management Report, July 2, 2004 available at <http://www.aishealth.com/DrugCosts/DCMREmployer.html>

(20) Express Scripts, Inc., "Geographic Variation in Generic Fill Rate" Available at <http://www.express-scripts.com/ourcompany/news/outcomesresearch/onlinepublications/>

## Appendix

**Table 1: Margin Analysis:  
Medco Health Solutions, Inc  
Income Statement for the Third Quarter Ending September 30, 2004**

Column A	Column B	Column C	Column D	Column E	Column F
Row	Source of Column D	Line Item Description	Billions \$s	% of Revenue	
1	Conference Call	<b>Rebate-retention rate</b>	<b>40.5%</b>		
		Revenue:			
2	D6-sum(D3:D5) 10-Q Data	Rx Reimbursement From Clients	4.034	46.4%	
		Member Co-payments	1.631	18.8%	mail order share
3	(100%-D1)* D8	Less: Rebates Remitted	-0.449	-5.2%	45.7%
4	Conference Call	Mail Order Revenue	3.400	39.1%	
5	10-Q Data	Claims and Data Service Revenue	0.080	0.9%	
6	10-Q Data	Total Revenue	8.696	100.0%	
		Costs and expenses:			
7	D11-sum(D8:D10) 10-Q Data	Rx Reimbursement to Retailers	4.013		
		Member Co-Payments	1.631		
8	Conference Call	Less: Rebates Received	-0.754		
9	D4-D15	Mail Order Costs	3.350		
10	10-Q Data	Claims and Data Service Costs	0.030		
11	10-Q Data	Total Cost of Sales	8.270	95.1%	
12	10-Q Data	Gross Profit	0.426	4.9%	6.0% GP Without Co-Pay
		Gross Profit		% of Gross Profit	Profit Margin
13	<b>Estimate: .05%</b>	Retail Network	0.020	4.7%	0.5% "The Spread"
14	-D3-D8	Rebate Retention	0.305	71.7%	40.5% "RebateRetentionRate"
15	D17-D13-D14-D16	Mail Order	0.050	11.8%	1.5%
16	D5-D10	Claims and Data Service	0.050	11.7%	62.5%
17	10-Q Data	Total Gross Profits	0.426	100.00%	4.9%

Sources: 3Q2004 10-K SEC Report Available at <http://www.medco.com/medco/corporate/home.jsp>  
3Q2004 Medco Conference Call -- replay at 800-642-1687 Conference ID: 178047