

How Group Purchasing Organizations Reduce Healthcare Procurement Costs in a Highly Competitive Market

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The public policy debate over group purchasing organizations (GPOs)—organizations through which healthcare providers collectively negotiate and purchase medical supplies—goes back more than three decades. In 1986, Congress endorsed GPOs as a powerful tool to inject competition and lower prices into the market for medical supplies. Finding that GPOs “can help reduce health care costs for the government and private sector alike,” lawmakers determined there was “no justification for prohibiting such cost-saving arrangements,” and carved out clear legal protection for payments to these organizations.¹

Sixteen years later, in 2002 and 2003, Congress took another hard look at GPOs in a series of Senate hearings, this time questioning whether GPOs—which one Senator called “the nerve center of our health care system”—were actually beset by conflicts of interest that reduced competition.² Concerns included whether GPOs obtain the lowest prices for their members and whether their contracting practices made it difficult for some suppliers to obtain GPO contracts. Among other witnesses, the Senate heard from a medical supply company that had filed a lawsuit claiming its products had been unfairly excluded from GPO contracts in violation of federal antitrust laws.³

In response to the concerns expressed at the Senate hearings, GPOs adopted an industry-wide code of conduct that aims to achieve high-quality healthcare, cost savings, and competitive purchasing. Congress has not passed new legislation pertaining to GPOs for 30 years. Yet the debate over the effect of GPOs on competition in the American healthcare market continues, with a few critics arguing that the GPO funding model Congress authorized in the 1980s—fees paid by vendors—has given GPOs an incentive to raise healthcare supply costs.

¹ H.R. REP. NO. 99-727, at 72–73 (1986). Without this carve-out, the legality of payments from healthcare suppliers to fund GPOs under the Anti-Kickback Statute was ambiguous, as discussed below.

² *Hospital Group Purchasing: Lowering Costs at the Expense of Patient Health and Medical Innovations?*, Hearing of the Subcomm. on Antitrust, Business Rights, and Competition of the Senate Comm. on the Judiciary, 107th Cong. (2002) (statement of Chairman Herb Kohl); see also *Hospital Group Purchasing: Has the Market Become More Open to Competition?*, Hearing of the Subcomm. on Antitrust, Competition Policy, and Consumer Rights of the Senate Comm. on the Judiciary, 108th Cong. (2003) [hereinafter *Senate Hearing: Has the Market Become More Open to Competition?*].

³ See *Senate Hearing: Has the Market Become More Open to Competition?*, supra note 2, Statement of Thomas J. Shaw, President & CEO, Retractable Technologies, Inc. For lawsuits by medical supply companies, see, e.g., *Third Amended Complaint, Retractable Technologies, Inc. v. Becton Dickinson & Co.*, No. 5:01-CV-036 (E.D. Tex. Jan. 21, 2003); *Applied Med. Resources Corp. v. Ethicon, Inc.*, No. SACV031329JVSM LGX, 2006 WL 1381697, at *7 (C.D. Cal. Feb. 3, 2006); *Masimo Corp. v. Tyco Health Care Group, L.P.*, No. CV 02-4770 MRP, 2006 WL 1236666, at *8 (C.D. Cal. Mar. 22, 2006), *aff'd*, 350 F. App'x 95 (9th Cir. 2009).

Today, the debate over how to stem rising healthcare costs has taken center stage.⁴ Because GPOs play an integral role in the medical supply chain, questions of whether GPOs operate competitively and whether they reduce healthcare costs have greater urgency. In 2014, the General Accountability Office (GAO) examined the impact of GPOs' funding structure on federal healthcare costs, but concluded there was "little empirical evidence to definitively assess the impact of the vendor-fee-based funding structure."⁵ Our article examines empirical evidence and applies economic analysis to assess these questions, including the impact of the vendor-funding model on competition and costs. We reach the following conclusions:

[W]e find evidence

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competitive forces.

(1) *GPOs save money for healthcare providers and patients.* GPOs negotiate contracts between medical supply and services vendors and healthcare providers, including hospitals. In that role, GPOs can lower transaction costs (for example, reducing the number of negotiations) and negotiate lower prices. Customer surveys show that providers realize cost savings of 10 to 18 percent by using GPOs, measured relative to the costs providers would have incurred if they negotiated prices on their own. Providers are likely to pass some of these cost savings on to patients.

(2) *GPOs appear to operate in a vigorously competitive procurement market.* Several factors suggest the medical procurement market is highly competitive. Providers can choose from multiple GPOs and can, and commonly do, use multiple GPOs simultaneously. Providers often own and control their GPOs, and they can, and do, procure supplies directly from vendors.

(3) *The current GPO vendor funding model is consistent with competition and cost savings.* Vendor funding is a more efficient means of funding GPOs in comparison to provider funding, if it leads to reductions in transaction costs. It is equally efficient otherwise. Collecting fees from vendors, a practice that is common in other industries, is likely more efficient for GPOs than alternative funding mechanisms.

Accordingly, as policymakers struggle to contain rising healthcare costs, we find evidence that GPOs improve efficiency and reduce costs in the supply chain, while being constrained by vigorous competitive forces. We also find that vendor funding, which Congress authorized more than three decades ago, likely contributes to the cost savings, and altering that structure would reduce savings.

GPOs and the Regulatory Safe Harbor

GPOs negotiate prices for drugs, devices, and other medical products and services on behalf of healthcare providers, including hospitals, ambulatory care facilities, physician practices, nursing homes, and home health agencies. Often, GPOs are owned by their member providers.⁶ They do not take title to or possession of medical products. Rather, the central purpose of GPOs is to improve efficiency by reducing transaction costs and negotiating lower prices for supplies than

⁴ See, e.g., U.S. GOV'T ACCOUNTABILITY OFF., GAO-15-13, GROUP PURCHASING ORGANIZATIONS: FUNDING STRUCTURE HAS POTENTIAL IMPLICATIONS FOR MEDICARE COSTS 1 (2014) [hereinafter GAO (2014) Report] ("Increases in health care expenditures in recent years have intensified congressional scrutiny of the costs of medical care.")

⁵ *Id.* at 23.

⁶ For example, Vizient, the largest GPO in the United States, is member-owned. Premier, the only publicly traded firm among the four largest GPOs in the United States, is owned in part by members, who control 68% of its voting shares. See Premier, Inc., *2016 Annual Report 35* [hereinafter *Premier 2016 Annual Report*], http://s21.q4cdn.com/577521493/files/doc_financials/2016/2016-Annual-Report.pdf.

providers might otherwise obtain on their own. GPOs also provide a range of additional services to healthcare providers that may lower costs or improve operations.

In 1986, Congress believed that GPOs constrained healthcare costs using their traditional vendor-funding model but also recognized that the legality of this funding stream was ambiguous under the Anti-Kickback Statute (AKS), a law prohibiting the payment or receipt of money to induce referrals for business or purchase orders payable through federal healthcare programs.⁷ As a result, Congress enacted the GPO Statutory Clarification,⁸ which clarified the legality of administrative fees paid by vendors to GPOs.⁹ In considering the bill, the House Budget Committee explained that GPOs could help reduce healthcare costs, and that the bill “creates an exception to the anti-kickback provisions for amounts paid by vendors” to GPOs in order “to assure GPOs and the vendors who contract with them, that they do not risk prosecution as a result of the fees the GPOs collect . . . from the vendors.”¹⁰

In 1992, the Department of Health and Human Services followed up with regulations establishing a safe harbor for vendor payments to GPOs (GPO Regulatory Safe Harbor).¹¹

How GPOs Cut Costs

Recent surveys of healthcare providers show that GPOs reduce healthcare costs.¹² Economic analysis explains why: providers voluntarily decide whether to join a GPO and, after joining, decide whether to purchase any particular item under the GPO contract or under a contract obtained directly from a supplier or another GPO. A healthcare provider would likely have no incentive to become a GPO member or choose to make purchases through a GPO if these strategies increased its costs or inefficiently reduced its supply choices. This incentive structure provides a strong basis to expect that GPOs reduce providers’ costs. This conclusion is supported in the economic literature, which identifies at least two mechanisms through which GPOs could reduce providers’ operating costs and thereby reduce healthcare costs: transaction cost savings and lower prices from larger discounts.

Evidence of Cost Savings. In recent surveys, hospital executives report that GPOs reduce the cost of their healthcare supplies by 10 to 18 percent.

The most recent study is by Lawton Burns and Rada Yovovich, who surveyed hospital executives responsible for supply chain management in their organizations.¹³ One set of questions

⁷ The AKS was enacted in 1972 as an amendment to the Social Security Act. 42 U.S.C. § 1320a-7b(b)(1)–(2).

⁸ The GPO Statutory Clarification, 42 U.S.C. § 1320a-7b(b)(3)(C), has also been referred to as a “safe harbor” provision or as a statutory “exception.” See, e.g., GAO (2014) *Report*, *supra* note 4, at 7 n.13. We do not adopt that terminology in this article.

⁹ See Omnibus Budget Reconciliation Act of 1986, Pub. L. No. 99-509, § 9321(a), 100 Stat. 1874, 2016 (Oct. 21, 1986) (codified at 42 U.S.C. § 1320a-7b(b)(3)(C)); H.R. REP. No. 99-1012, at 309 (1986) (Conf. Rep.).

¹⁰ H.R. REP. No. 99-727, at 73 (1986).

¹¹ In 1987, Congress instructed HHS to establish regulations creating safe harbors from the AKS; see Medicare and Medicaid Patient and Program Protection Act of 1987, Pub. L. No. 100-93, § 14, 101 Stat. 680, 697 (1987). This resulted in the modern GPO Regulatory Safe Harbor; see 42 C.F.R. § 1001.952(j).

¹² We use several terms throughout the article that we define as follows. “Supplies” or “healthcare supplies” refer to non-labor products and services used by healthcare providers in the supply of healthcare services. These include medical products, devices, pharmaceuticals, information technology products, and food products and services. “Transaction costs” refer to the administrative costs in the supply chain associated with sale and purchase of healthcare supplies. “Procurement costs” include both transaction costs and the prices paid for supplies. “Costs” or “operating costs” refer to all expenses associated with operating the relevant business.

¹³ Lawton R. Burns & Rada Yovovich, Hospital Supply Chain Executives’ Perspectives on Group Purchasing: Results from a 2014 National Survey (Working paper, Wharton School, 2014), https://c.ymcdn.com/sites/www.supplychainassociation.org/resource/resmgr/Research/AHA_AHRMM_Wharton_2014_Surve.pdf. The authors report that 1210 executives responded to their survey, a participation rate of 16%. See *id.* at 2.

asked the executives whether their GPOs allowed them to achieve cost savings in various ways. More than 80 percent of the respondents either strongly agreed or agreed that their GPOs generate

- “Savings from lower prices (88%)”
- “Demonstrable cost savings and improvements (86%)”
- “Savings from contract standardization (84%).”¹⁴

Another set of questions in this survey asked the executives whether they were satisfied with various aspects of their GPOs. Eighty-four percent of respondents reported being very satisfied or satisfied that their GPOs achieve “group purchasing and other discounts.”¹⁵

The authors conclude that the respondent hospitals in their survey derive benefits from GPOs in the form of both lower prices and cost savings.¹⁶

Studies commissioned by the GPO industry find evidence of similar cost savings. Eugene Schneller surveyed 429 hospitals in 28 hospital systems for information on the savings they achieved via lower supply prices and reduced labor requirements by purchasing through a GPO rather than directly from suppliers. The estimates from this survey indicate that GPOs lowered hospitals’ supply costs by 18.7 percent.¹⁷ Other surveys report that GPOs reduce hospitals’ supply costs by 10 to 15 percent.¹⁸

Theories of Cost Savings. There are two main mechanisms for the cost reduction reflected in these surveys: lower transaction costs and lower prices through joint negotiation.

Cutting Transaction Costs. One of the roles of GPOs is to reduce transaction costs in the healthcare supply chain. The healthcare supply acquisition process is complex, involving thousands of suppliers selling many more thousands of pharmaceuticals, devices, products, and services to thousands of healthcare providers.¹⁹ Because prices are frequently negotiated and negotiations can be complicated, the scope for transaction cost savings from reducing the number of negotiations is large.

For perspective, imagine that 1000 vendors each sell 10 products to each of 2000 hospitals. If each vendor bargains separately with each hospital, there are 2 million negotiations to determine as many as 20 million prices.²⁰ If the GPO negotiates one price for each product on behalf of its

¹⁴ *Id.* at 7.

¹⁵ *Id.* at 8.

¹⁶ See also Lawton R. Burns & J. Andrew Lee, *Hospital Purchasing Alliances: Utilization, Services, and Performance*, 33 HEALTH CARE MGMT. REV. 203 (2008) (concluding that GPOs reduce healthcare costs by lowering product prices and transaction costs).

¹⁷ Eugene S. Schneller, *The Value of Group Purchasing—2009: Meeting the Need for Strategic Savings 6* (Health Care Sector Advances, Inc. 2009), <https://c.ymcdn.com/sites/www.supplychainassociation.org/resource/resmgr/research/schneller.pdf>.

¹⁸ See David E. Goldenberg & Roland King, *A 2008 Update of Cost Savings and a Marketplace Analysis of the Health Care Group Purchasing Industry 6* (Locus Systems, Inc., July 2009) https://c.ymcdn.com/sites/www.supplychainassociation.org/resource/resmgr/research/goldenberg_king.pdf.

¹⁹ Premier alone—just one of five national GPOs—has approximately 2200 contracts with approximately 1200 suppliers covering a wide range of products and services, including medical and surgical products, pharmaceuticals, laboratory supplies, capital equipment, information technology, facilities and construction, food, and other services. Premier *Annual Report*, *supra* note 6, at 9. There are more than 5000 hospitals in the United States, see Am. Hosp. Ass’n, *Fast Facts on U.S. Hospitals*, <http://www.aha.org/research/rc/stat-studies/fast-facts.shtml> (last visited June 4, 2017), and 96–98% of them use GPOs. Healthcare Supply Chain Ass’n, *A Primer on Group Purchasing Organizations: Questions and Answers*, http://c.ymcdn.com/sites/www.supplychainassociation.org/resource/resmgr/research/gpo_primer.pdf (last visited June 4, 2017). In addition, thousands of other health care providers, such as physician group practices and long-term care facilities, use GPOs.

²⁰ If 1000 vendors negotiate with 2000 hospitals, the number of negotiations is 2,000,000 [1000 x 2000]. If each negotiation involves 10 prices, the number of prices negotiated is 20,000,000 [1000 x 2000 x 10].

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members, then the number of negotiations falls from 2 million to 1000, and the number of prices negotiated falls from 20 million to 10,000.²¹

GPOs provide a range of services for each contract they negotiate, including contract development, negotiation, and management. The 2009 survey by Schneller found that individual hospitals would require a 115 percent increase in labor (about nine full-time equivalents for the typical hospital) to replace the functions performed by their GPOs.²²

Reducing Prices through Joint Negotiation. In addition to savings realized from lower transaction costs, economic literature identifies several ways by which joint purchasing can yield lower prices than buyers can obtain on their own:

- *Stronger bargaining positions.* A healthcare provider's bargaining strength depends in part on the size of the loss it can impose on a vendor by refusing agreement. If a vendor has little to lose from failing to reach an agreement with the provider, then the provider's bargaining position is weak, while if the vendor has a lot to lose, then the provider's position is strong.
- *Volume and other discounts.* GPOs contract for discounts that vary according to the amount of supplies that providers purchase. Volume and other discounts have efficiency properties that are well established in the economic literature. One reason for volume discounts arises when the vendor's cost per unit declines with volume. For example, costs related to marketing, procurement, accounting, and shipping typically do not increase proportionately with the volume sold and therefore are likely to decline on a per unit basis with the volume purchased. A second important efficiency-related reason for discounts arises from vendors' incentives to sell more products or reach more customers. A supplier that has market power (such as a supplier of a differentiated medical device) generally has an incentive to charge a lower marginal price and sell a higher quantity to a buyer when it can offer volume discounts than when it is limited to charging a simple per-unit price.²³ A reduction in a per-unit price reduces the supplier's profit on all units sold, whereas a reduction in the marginal price under a volume discount schedule reduces price only on additional units sold. This motivation for discounts exists even if the supplier's costs do not decline with volume, and such discounts provide an important offset to potential harmful effects from supplier market power.
- *More intense supplier competition.* A recurring theme in the economic literature on procurement is that buyers can sometimes intensify competition among suppliers—and thereby obtain lower prices—by committing in advance to limit the number of supply sources.²⁴ Consistent with this logic, GPOs sometimes employ dual-source or single-source strategies to force suppliers to compete against each other and thereby obtain lower prices. GPOs state that they do this “when it is advantageous to their customers.”²⁵ This strategy works because

²¹ The GPO reduces the number of buy-side negotiations from 2000 to 1. This reduces both the number of negotiations and the number of prices negotiated by a factor of 2000, so the number of negotiations falls to 1000 [2,000,000/2000] and the number of prices negotiated falls to 10,000 [20,000,000/2000].

²² Schneller, *supra* note 17, at 23.

²³ The effective marginal price is the amount the buyer is willing to pay for one additional unit of the product. Under a volume discount, this price determines the amount the buyer purchases.

²⁴ See James J. Anton & Dennis A. Yao, *Split Awards, Procurement, and Innovation*, RAND J. ECON. 538 (1989); Daniel P. O'Brien & Greg Shaffer, *Nonlinear Supply Contracts, Exclusive Dealing, and Equilibrium Market Foreclosure*, 6 J. ECON. & MGMT. STRATEGY 755 (1997); James Dana, *Buyer Groups as Strategic Commitments*, 74 GAMES & ECON. BEHAV. 470 (2012). Of course, an individual healthcare provider that self-procures might also benefit from committing to limit its sources and auctioning supply rights, but a GPO is able to achieve the same result at much lower transaction costs by performing this function for all of its members at once.

²⁵ GAO (2014) *Report*, *supra* note 4, at 13.

limiting the number of sources increases the intensity of bidding at the front end for the right to be one of those limited sources.

Competition in the GPO market

The Nature of GPO Competition. The market for procurement services offered by GPOs is fragmented, with at least five national GPOs,²⁶ many smaller players that operate regionally or locally,²⁷ and active self-supply by providers that also use GPO services. In addition, many GPOs are fully or partially owned by their member providers.²⁸ Both member ownership and the potential for self-supply are factors that increase competition in the market for GPO services.

Both member ownership and the potential for self-supply are factors that increase competition in the market for GPO services.

- **Member Ownership.** Ownership by member providers creates an obvious constraint on a GPO's incentive and ability to engage in anticompetitive behavior that would harm its members. In fact, it likely creates an incentive for GPOs to do the opposite. Providers that are also members are unlikely to benefit from using GPOs to increase their costs. Instead, they stand to benefit from using GPOs to reduce their transaction costs and negotiate lower prices for healthcare products.²⁹ Because member-owned GPOs compete for business with non-member-owned GPOs, the competitive constraint on GPOs imposed by member ownership does not require that all GPOs are member-owned.

- **Self-Supply.** Providers' ability to purchase healthcare products without using GPOs is another important constraint on GPO behavior. Although 96–98 percent of hospitals use GPOs for the majority of their procurement needs, hospitals purchase more than 25 percent of their healthcare products without the services of a GPO.³⁰

Studies show that GPO members sometimes pay lower prices by purchasing from outside their GPOs.³¹ This evidence indicates that a GPO that sought to opportunistically negotiate higher supply prices (to increase the fees it collects) would be constrained by providers' abilities to purchase outside the GPO. The data and economic theory in these studies do not suggest such a price difference is attributable to the GPO funding model. Irrespective of the funding mechanism, GPO members can seek and sometimes find better deals outside their GPOs, and this constrains anticompetitive behavior by GPOs.

Measuring Competitive Intensity. Competitive performance in this type of market depends on the competitive interactions among GPOs, constraints imposed by member ownership, and how providers' use of self-supply responds to changes in price (the "elasticity of self-supply"). We are not aware of any studies that document the effects of member ownership and the elasticity of

²⁶ National players include Vizient, Premier, HealthTrust, Intalere, and Minnesota Multistate Contracting Alliance for Pharmacy (MMCAP). Membership of the first four GPOs listed includes providers in all segments, while MMCAP covers government facilities.

²⁷ The Healthcare Supply Chain Association reports that there are more than 600 GPOs nationwide. Healthcare Supply Chain Association, *supra* note 19.

²⁸ Members of Premier, a publicly traded GPO with a national footprint, own 68% of its voting shares. Premier *Annual Report*, *supra* note 6, at 35.

²⁹ A concern sometimes raised about GPOs by antitrust authorities is that they might have the ability to exercise monopsony power, leading to lower input prices, lower output, and higher output prices. Traditional monopsony concerns are lessened when the vendor is obligated to supply the quantities buyers wish to purchase under the terms of the GPO contract. See Roger D. Blair & Christine P. Durrance, *Group Purchasing Organizations, Monopsony, and Antitrust Policy*, 35 *MANAGERIAL & DECISION ECON.* 433 (2014).

³⁰ Healthcare Supply Chain Association, *supra* note 19.

³¹ See U.S. GOV'T ACCOUNTABILITY OFF., *GROUP PURCHASING ORGANIZATIONS: PILOT STUDY SUGGESTS LARGE BUYING GROUPS DO NOT ALWAYS OFFER HOSPITALS LOWER PRICES*, GAO-02-690T (Apr. 30, 2002); Robert E. Litan, Hal J. Singer & Anna Birkenbach, *An Empirical Analysis of Aftermarket Transaction by Hospitals*, 28 *J. CONTEMP. HEALTH L. & POL'Y* 23 (2011).

self-supply by providers on competition in the GPO market. Therefore, we look for indirect measures of the intensity of competition in this market. As described below, we estimate that the GPO market operates with a level of competition equivalent to what one would expect from an unconcentrated market with more than 10 independent competitors of equal size.

A common indicator of competitive performance that antitrust authorities use is the Herfindahl-Hirschman index of competition (HHI).³² Using the HHI to measure concentration in GPO services is difficult, however, due to the lack of systematic data on GPO sales. Additionally, the HHI would not capture the effects of GPO member ownership and the potential for self-supply by providers.

An alternative approach is the “numbers equivalent” of firms in the market in question.³³ The numbers equivalent represents the number of equally sized competitors that would yield the observed average margin in a market if competitors made independent production decisions.³⁴ A numbers equivalent of 10, for example, means that market performance, as measured by the average margin, is the same as it would be with 10 competitors of equal size making independent production decisions.³⁵

The numbers equivalent provides a way to account for the factors that make the GPO market more competitive than is suggested by standard measures of concentration. The greater the competition resulting from member ownership or self-supply, the higher the numbers equivalent will be. For example, in a market with six competitors, a numbers equivalent of 10 would mean that factors are at work (e.g., member ownership or self-supply) that make the market operate more competitively than it would in the absence of those factors.

The numbers equivalent in a market is calculated using information on margins and the market elasticity of demand. The formula for the numbers equivalent is

$$NE = \frac{1}{[Average\ Margin] \times [Market\ Elasticity]}$$

As the average margin decreases, the numbers equivalent rises. For a given market elasticity, lower margins therefore indicate more competitive behavior, or a higher “numbers equivalent” of competitors.

³² The HHI equals the sum of the squared market shares of all competitors in the market. The Horizontal Merger Guidelines use this index to classify markets as highly concentrated, moderately concentrated, or unconcentrated. U.S. Dep’t of Justice & Fed. Trade Comm’n, Horizontal Merger Guidelines (2010), <http://ftc.gov/os/2010/08/100819hmg.pdf>. Antitrust authorities use this classification to help assess the likelihood of anticompetitive effects from mergers and other behavior that affects competition.

³³ Several papers have used the numbers equivalent to measure competitive performance in many industries, including cigarettes (Daniel Sullivan, *Testing Hypotheses about Firm Behavior in the Cigarette Industry*, 93 J. POL. ECON. 586 (1985)); Orley Ashenfelter & Daniel Sullivan, *Nonparametric Tests of Market Structure: An Application to the Cigarette Industry*, 35 J. INDUS. ECON. 483 (1987)), banking (Sherrill Shaffer, *A Test of Competition in Canadian Banking*, 25 J. MONEY, CREDIT & BANKING 49 (1993)), crude oil (Gary Libecap & Steven Wiggins, *Contractual Responses to the Common Pool: Prorating of Crude Oil Production*, 74 AM. ECON. REV. 87 (1984)), and auditing (Reiner Quick & Matthias Wolz, *Concentration on the German Audit Market—An Empirical Analysis of the Concentration on the German Market for Stock Corporation Audits*, 3 INT’L J. AUDITING 175 (1999)).

³⁴ DENNIS W. CARLTON AND JEFFREY M. PERLOFF, *MODERN INDUSTRIAL ORGANIZATION* 153 (3d ed. 1999).

³⁵ A firm’s margin equals its markup over marginal cost divided by its price. The lower the average margin in a market, the greater the degree of competition, other factors being equal.

For illustration, we construct an estimate of the numbers equivalent for GPOs using margin information from publicly traded GPOs³⁶ and demand elasticity information from the economic literature on healthcare.³⁷ Given the competitive pressures imposed by the number of local and regional GPO competitors, the member ownership of many GPOs, and the ability of providers to engage in self-supply, we might expect a numbers equivalent for GPO services to be above the number of national GPOs (five). Consistent with this expectation, our illustrative estimates yield a numbers equivalent between 22 and 26,³⁸ which indicates that the GPO market is performing as a highly competitive, unconcentrated market.

The GPO Funding Model

Most GPOs are funded by vendor-paid administrative fees that are calculated as a percentage of the sales made pursuant to GPO contracts. While some have suggested that a funding model based on vendor fees contributes to higher healthcare costs and should be altered (presumably in favor of provider funding),³⁹ our analysis suggests otherwise. We analyze how the source of funding—whether fees are collected from suppliers or providers—affects healthcare costs. We find no basis for altering the GPO funding mechanism, and conclude that doing so would likely raise healthcare costs.

The Neutrality Principle. Well-established economic principles indicate that the source of GPO funding is unlikely to have an impact on healthcare costs apart from its effects on transaction costs. That is, the source of funding is unlikely to affect prices, quantities, and the distribution of profit between providers and vendors, but it could affect transaction costs. This reasoning borrows from the economic literature on taxation, which establishes that the burden of a tax, such as an excise tax based on a percentage of the purchase price, generally does not depend on whether the tax is levied on buyers or sellers. We refer to this fundamental economic proposition as the “neutrality principle.” Applied to the GPO funding question, GPOs use market mechanisms to drive prices down through negotiations between buyers and sellers; their ability to reduce prices in these negotiations is unrelated to whether their fees are nominally paid by the buyer or by the seller.

We find no basis for altering the GPO [vendor] funding mechanism, and conclude that doing so would likely raise healthcare costs.

³⁶ The relevant margin for calculating the numbers equivalent is the average long-run margin of all GPOs competing in the market. We do not have access to margin information for all firms, but we can obtain a conservative estimate of the margin from the annual reports of two GPOs: Premier and MedAssets (predecessor to Vizient). These estimates are conservative because Premier and MedAssets were two of the largest GPOs, and larger firms have higher margins in the oligopoly model that motivates the numbers equivalent measure. After removing amortization costs associated with acquisitions, Premier’s 2016 operating margin was 23%, its 2015 operating margin was 27%, and MedAssets’ 2014 operating margin after the same adjustment was 24%. See Premier Inc., *2016 Annual Report*, *supra* note 6; Premier, Inc., *2015 Annual Report*, http://s21.q4cdn.com/577521493/files/doc_financials/2015/PINC-2015_6_30-10K_FINAL.pdf, MedAssets, Inc., *2014 Annual Report*, <https://www.sec.gov/Archives/edgar/data/1254419/000119312515073413/d825932d10k.htm>. (MedAssets’s most recent annual report is from 2014 as it subsequently merged with Vizient).

³⁷ A survey conducted by the RAND Corporation finds that estimates of the elasticity of demand for healthcare center around 0.17. See Jeanne S. Ringel et al., *The Elasticity of Demand for Health Care. A Review of the Literature and Its Application to the Military Health System* xi (Paper No. MR-1355-OSD, RAND National Defense Research Institute, 2002). If we assume that procurement services vary proportionately with the production of healthcare services and make the conservative assumption that healthcare providers pass on no more than 100% of their cost increases to patients, then the elasticity of demand for healthcare is an upper bound on the elasticity of demand for procurement services.

³⁸ Using the formula in the text along with the margins ranging from 23% to 27% (see *supra* note 36) and an elasticity of 0.17 (see *supra* note 37), the numbers equivalent ranges from 22 [= 1/(.17)(.27)] to 26 [= 1/(.17)(.23)].

³⁹ See Litan et al., *supra* note 31, at 37.

As an illustration, consider a medical product sold by a single vendor at a cost of \$100, which includes all production and selling costs. Assume that a GPO negotiates on behalf of providers and incurs a cost of \$2 for its services. Thus, the total cost to the vendor of producing and selling the product, and to each provider acquiring the product, is \$102. To keep the example simple, imagine that the GPO has all the bargaining power. We will show that, except for any transaction cost effects, it does not matter whether administrative fees are levied on the vendor or the providers.

Suppose first that the GPO collects an administrative fee from the vendor, calculated as a percentage of the price paid by providers. To generate the greatest possible value for the providers it represents, the GPO will choose the lowest possible price of supplies: the price will be enough to cover the vendor's cost, \$100, plus an amount sufficient to fund the GPO's own cost, \$2. Thus, the price is \$102. The percentage fee paid to cover GPO costs is thus 1.96% [= $2/102$].

Now suppose that the payment mechanism is altered so that an administrative fee is collected from providers instead. For each unit purchased, providers will pay some purchase price to the vendor and an administrative fee to the GPO. The lowest purchase price that covers the vendor's cost in this case is \$100, and the percentage fee that raises enough revenue to cover the GPO's \$2 cost is 2 percent.

Although pre-fee prices, percentage fee rates, and flow of funds differ, the after-fee prices and total administrative fee paid do not change. This is directly analogous to the standard economic result that tax incidence is neutral with respect to where taxes are levied.⁴⁰

The example just presented assumes that the GPO represents the interests of providers, but the neutrality principle does not depend on whose interests the GPO represents. Suppose we modify the example so that providers are willing to pay \$200 for the product, with the cost of the product and GPO service remaining at \$100 and \$2, respectively. If the GPO collects an administrative fee from the vendor, it will set the highest price consistent with making the sale, which is \$200, and collect \$2 from the vendor to cover its cost. The percentage fee in this case is 1.0 percent [= $2/200$]. Alternatively, if the GPO collects an administrative fee from the provider, the strategy that serves the supplier best is to charge the provider \$198 for the product and a \$2 administrative fee to cover GPO's cost. In this case, the percentage fee is 1.01 percent [= $2/198$]. Although the pre-fee prices, percentage fee rates, and the flow of funds differ depending on who pays the fee, the after-fee prices and total administrative fee paid do not change.

The neutrality principle holds under a wide range of assumptions.⁴¹ The principle implies that the source of funding is unlikely to have consequence beyond its implications for transaction costs, as discussed next.

Funding Model and Transaction Costs. Given the neutrality principle, the prevalent use of vendor-paid fees over provider-paid fees means that vendor-paid fees are likely to be more efficient. The reason is simply that if the source of GPO funding does not affect prices and quanti-

⁴⁰ The neutrality principle is one of the oldest results in the economics of public finance and is prominently featured in virtually every leading public economics textbook. For historical context and a modern treatment, see E. Glen Weyl & Michel Fabinger, *Pass-Through as an Economic Tool: Principles of Incidence under Imperfect Competition*, 121 J. POL. ECON. 528 (2013).

⁴¹ Hu and Schwarz develop a model that explicitly addresses the role of the source of GPO funding. In that analysis, the GPO controls the administrative fee, but competing suppliers choose prices to maximize their profits. The study finds that neutrality holds in that environment too, consistent with the example here and the general validity of the neutrality result. See Qiaohai Hu & Leroy B. Schwarz, *Controversial Role of GPOs in Healthcare-Product Supply Chains*, 20 PROD. & OPERATIONS MGMT. 1 (2011); see also Blair & Durrance, *supra* note 29, at 434 (confirming the neutrality result under "all-or-nothing monopsony," where a GPO negotiates a price for specific supply and purchase commitments).

ties (the neutrality principle), then GPOs have an incentive to choose the method with the lowest transaction costs. GPOs that do not minimize transaction costs are likely to be displaced by GPOs that do. This prediction is particularly strong in light of the competitive nature of the GPO market and in the absence of evidence of collusion, coordination, or other anticompetitive activity.

Thus, the natural inference from the prevalence of vendor funding among GPOs is that this funding mechanism is more efficient than the alternative of collecting these fees from providers. Under this inference, it follows that (1) vendor-paid fees allow GPOs to provide a greater reduction in healthcare costs than would be possible by shifting fees to providers and (2) prohibiting a vendor-fee-based funding model would likely raise healthcare costs.

This inference makes intuitive sense given the structure of the markets for healthcare supplies and services. The Healthcare Supply Chain Association estimates that a national GPO may serve approximately 3000 hospitals and 100,000 non-acute providers and contract with roughly 2500 vendors. Collecting fees from 2500 vendors is likely more efficient than doing so from 103,000 providers. The alternative funding model based on provider fees would likely increase the costs of collecting fees. By analogy with taxation, the transaction costs of collecting sales taxes would likely rise dramatically if consumers rather than merchants remitted sales taxes for all of their purchases.

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Concerns About Vendor Funding. Concerns expressed by commentators regarding vendor-fee-based funding typically fall into three classes: (1) incentive distortions—the current vendor fee structure may discourage GPOs from negotiating lower prices;⁴² (2) exclusion—vendor fees may exclude rival suppliers and raise prices;⁴³ and (3) fraud—providers may fail to report “sharebacks” of administrative fees received from GPOs, potentially leading to excessive Medicare reimbursement.⁴⁴ Ultimately, none of these concerns alters our analysis that vendor fees likely reduce healthcare costs by lowering transaction costs involved in procurement. These three concerns are discussed in turn below.

Incentive Distortions. The incentive distortion concern discussed in the literature appears to be as follows: because administrative fees are proportional to vendors’ sales, a GPO might increase its fee revenue by negotiating higher prices for drugs, devices, and other products and services, rather than the lowest possible prices on behalf of its member providers.⁴⁵ However, as discussed above, GPOs face constraints from three main sources: their members, who often own their GPOs and desire low prices; competition from other GPOs; and member providers’ ability to self-procure supplies. These constraints restrict GPOs’ ability to raise their members’ costs.

Holding aside the competitive nature of the GPO market, the incentive distortion argument appears unrelated to the question of whether GPOs collect fees from vendors or from providers. According to the argument, an incentive distortion would arise whether fees that are proportion-

⁴² See, e.g., Robert E. Litan et al., *supra* note 31, at 36; GAO (2014) *Report*, *supra* note 4, at 19.

⁴³ See *The Effects of Regulatory Neglect on Health Care Consumers: Hearing Before the Consumer Protection, Product Safety and Insurance Subcomm. of the Senate Comm. on Commerce, Science and Transportation*, 111th Cong. (July 16, 2009) (statement of David Balto); Einer Elhauge, *The Exclusion of Competition for Hospital Sales Through Group Purchasing Organizations* (June 25, 2002), http://www.law.harvard.edu/faculty/elhauge/pdf/gpo_report_june_02.pdf.

⁴⁴ See GAO (2014) *Report*, *supra* note 4, at 23.

⁴⁵ Litan et al., write: “If a GPO is receiving an administrative fee equal to a percentage of the proceeds, the GPO’s incentive to seek out the lowest prices for hospitals is weakened.” Litan et al., *supra* note 31, at 25. To a lesser extent the GAO (2014) *Report* echoes this concern: “[T]he GPO funding structure protected under the safe harbor—specifically, the payment of administrative fees by vendors based on a percentage of the cost of the product or services—raises questions about whether GPOs are actually negotiating the lowest prices.” GAO (2014) *Report*, *supra* note 4, at 22–23.

al to sales were paid to GPOs by vendors or providers. If payments from vendors were barred, GPOs would likely require providers to pay their fees based on a percentage of sales, because sales-based fees have many advantages over other types of fees.⁴⁶ Yet, if the incentive distortion concern is valid, the same distortion would exist.

Because vendor fees are likely more efficient to collect than provider fees, the most likely effect of shifting administrative fees from vendors to providers would be an increase in the transaction costs of supply procurement and, ultimately, higher healthcare costs.

Notably, vendor-paid fees based on sales are common in many industries. Examples include online retailers such as Amazon, online auction providers like eBay, and credit card services. We are not aware of any economic studies indicating that vendor-paid fees create unwanted incentives in these industries.

Exclusion. Although exclusive dealing agreements are not inherently anticompetitive, they are sometimes challenged under the antitrust laws if they potentially foreclose competitors from the market. Exclusion concerns surrounding vendor-paid fees boil down to two arguments that such fees enhance the scope for anticompetitive exclusion. One argument is that small manufacturers cannot afford to pay administrative fees, so the fees effectively deny them access to a critical mass of providers to buy their products. A second argument is that vendor-paid fees increase the likelihood of anticompetitive exclusive dealing arrangements. Neither argument withstands scrutiny.

First, the affordability concern ignores the implications of the neutrality principle, which yields a strong presumption that the source of GPO funding will not affect vendors' profits. In particular, the share of the "burden" of administrative fees borne by vendors does not depend on whether the fees are paid by vendors or providers, just as the "burden" of a tax does not depend on whether it is paid by sellers or buyers. The most likely effect of shifting administrative fees from vendors to providers would be an increase in transaction costs, and vendors would likely bear a portion of the increase.⁴⁷ This would make small vendors less likely to participate in sales through GPOs, the opposite of the intended effect.

Second, most GPO contracts with vendors are not exclusive. While GPOs sometimes negotiate sole-source contracts with vendors, GPOs more often provide a schedule of contract opportunities that include multiple vendors for a particular type of product. In addition, providers often purchase through multiple GPOs and make other purchases without the services of a GPO.

Third, economic principles do not support the claim that vendor-paid fees enhance the scope of anticompetitive exclusion. The exclusive dealing concern appears to be based on the idea that buyers require compensation to convince them to agree to exclusive contracts, and vendor fees might constitute such compensation. However, administrative fees are typically proportional to sales, whereas the payments from suppliers to buyers in anticompetitive theories of exclusive dealing are typically upfront fixed payments that do not vary with sales. The economic literature

⁴⁶ Other types of fees include per-unit or "direct" taxes, or flat fees. The taxation literature establishes that ad valorem taxes (sales-based taxes) are generally more efficient than direct taxes. See Simon P. Anderson, Andre De Palma & Brent Kreider, *The Efficiency of Indirect Taxes Under Imperfect Competition*, 81 J. PUB. ECON. 231 (2001); Sofia Delipalla & Michael Keen, *The Comparison Between Ad Valorem and Specific Taxation Under Imperfect Competition*, 49 J. PUB. ECON. 351 (1992). The main problem with flat fees is that they are likely to make it too expensive for smaller providers to use GPOs.

⁴⁷ Higher transaction costs would likely require higher administrative fees to cover the additional costs. It follows from principles of tax incidence (administrative fees are essentially a tax) that sellers (vendors) would likely bear part of the burden of higher fees whether the fees are levied on the sellers (vendors) or the buyers (providers).

does not support the idea that vendor-paid fees proportional to sales are conducive to anticompetitive exclusive dealing arrangements.⁴⁸

Additionally, economic literature explains how individual firms or groups of firms can sometimes intensify supplier competition by committing to purchase from a limited set of suppliers. Exclusion in this context is an effort to induce greater competition among suppliers to obtain lower prices. Consistent with this insight, GPOs sometimes negotiate dual-source and sole-source contracts with vendors “when it is advantageous to their customers.”⁴⁹ As a result of the neutrality principle, the benefits of this strategy exist independently of whether administrative fees are levied on vendors or providers.

The circumstances in which potential harm from exclusion outweighs potential pro-competitive effects in any industry are complex and must be examined on a case-by-case basis. This task is one to which the antitrust process is well suited. For example, courts commonly consider exclusive dealing arrangements under the rule of reason, considering factors such as the defendant’s market power, the degree to which a competitor is foreclosed from the market, barriers to entry, and legitimate business justifications for exclusive dealing.⁵⁰ In the GPO context, the structure of the market (including its relatively high level of competition, provider ownership, and ability of providers to self-procure) would seem to make a finding of anticompetitive exclusion unlikely.⁵¹

Fraud Concerns. Finally, the concern that sharebacks (payments from GPOs to providers negotiated as part of the GPO contract) will not be reported and therefore costs will be overstated is a common one in industries that involve government reimbursement or cost-based price regulation. For example, direct sales to hospitals—sales that are not based on a GPO contract—raise the same concern because sellers often offer rebates or discounts to a buyer that the buyer may fail to report. In addition, if GPO fees were paid by providers, GPOs could still provide sharebacks to the providers, and manufacturers could provide rebates as well. We have not identified anything unique about GPOs or vendor funding that increases the risk of fraud over other types of purchases by providers. As the General Accountability Office has recognized, alleged fraud can be

⁴⁸ Theories in which suppliers make upfront fixed payments to buyers to convince them to agree to exclusive dealing arrangements include the “divide and conquer theories,” see Eric Rasmusen, Mark Ramseyer & John Wiley Jr., *Naked Exclusion*, 81 AM. ECON. REV. 1137 (1991); Ilya Segal & Michael Whinston, *Naked Exclusion: Comment*, 90 AM. ECON. REV. 296 (2000), and the “softening competition” theories, see John Simpson & Abraham Wickelgren, *Naked Exclusion, Efficient Breach, and Downstream Competition*, 97 AM. ECON. REV. 1305 (2007); Jose Miguel Abito & Julian Wright, *Exclusive Dealing with Imperfect Downstream Competition*, 26 INT’L J. INDUS. ORG. 227 (2008). If the payments from the supplier to buyers were proportional to sales in these models, the supplier would likely adjust the price of the product to offset the exclusivity payments. In this case, buyers would no longer have incentives to agree to the contracts, and the theories would break down.

⁴⁹ GAO (2014) *Report*, *supra* note 4, at 13.

⁵⁰ See, e.g., *Eisai, Inc. v. Sanofi Aventis U.S., LLC*, 821 F.3d 394, 403 (3d Cir. 2016) (in applying rule of reason analysis to an exclusive dealing arrangement, primarily considering whether the arrangement implicated a “substantial foreclosure of the market”). In the early 2000s, Retractable Technologies, Inc., a manufacturer of syringes, brought a case in the Eastern District of Texas alleging that a competing manufacturer of syringes and certain GPOs had violated the antitrust laws through sole-source supplier relationships with hospitals and health-care providers that foreclosed Retractable Technologies from the market. See Third Amended Complaint, Retractable Technologies, Inc. v. Becton Dickinson & Co., No. 5:01-CV-036 (E.D. Tex. Jan. 21, 2003). The claims against GPOs were settled before trial.

⁵¹ See, e.g., *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320, 334 (1961) (finding exclusive dealing arrangement did not substantially foreclose competition where there is no “seller with a dominant position in the market”).

addressed by enforcing current law, which requires healthcare providers to report sharebacks along with their costs in Medicare cost reports.⁵²

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Recent Trends

Recent developments in the GPO marketplace further illustrate the competitive nature of the market. As healthcare costs continue to rise, and pressure to reduce patient costs increases, healthcare providers are increasingly seeking new ways to use GPOs to achieve efficiencies, including through the use of regional GPOs and additional GPO services, such as data analytics.

The recent rise of regional GPOs⁵³ not only introduces additional competition to the market, but also highlights the low barriers to entry for new GPOs and the low switching costs enjoyed by healthcare providers. Indeed, many providers are members of multiple GPOs. A regional GPO may be able to negotiate lower prices than national GPOs on particular products for which its member providers can commit to a higher level of utilization than the members of a national GPO.

GPOs have also increasingly sought to differentiate themselves by offering additional services to their members. For example, GPOs offer a growing array of data analytics that aim to help providers reduce procurement costs while improving patient outcomes by integrating supply chain data into their clinical practices.⁵⁴ These additional services have the potential to further reduce provider's costs and also to provide an additional level of competition in the GPO market.

Conclusion

Both evidence and theory support the conclusion that GPOs produce healthcare cost savings and that the market for GPO services is competitive. In addition, economic analysis yields an inference that the vendor fee model is likely to reduce transaction costs compared to other funding models. In other words, the “nerve center of our health care system” appears to be functioning as Congress intended when it protected GPOs' funding model more than 30 years ago. As a result, we find no empirical or economic basis to change this model. ●

⁵² Consistent with this approach, the GAO observed that “hospitals' potential underreporting of administrative fee revenue presents an immediate risk that can be addressed *within the current GPO funding structure*,” GAO (2014) *Report, supra* note 4, at 23 (emphasis added). The GAO recommended that “the Secretary of the Department of Health and Human Services determine whether hospitals are appropriately reporting their administrative fee revenues on their Medicare cost reports and take steps to address any under reporting that may be found.” *Id.* at 23–24.

⁵³ See Thomas Finn, *GPO Market Movement Evidence of Industry's Competitive Vitality*, HEALTHCARE MATTERS (Oct. 24, 2016, 7:49 AM), <https://hcmatters.com/2016/10/gpo-market-movement-evidence-competitive-vitality/>; see also Adam Rubenfire, *Regional and Niche GPOs Gain Popularity*, MODERN HEALTHCARE (July 29, 2016), <http://www.modernhealthcare.com/article/20160729/NEWS/160729883>.

⁵⁴ Healthcare Supply Chain Ass'n, *2017 Annual Value Report* 18.