
ORAL ARGUMENT NOT YET SCHEDULED

**IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

Case Nos. 16-1354, 16-1419

UNITED PARCEL SERVICE, INC.,
Petitioner,

v.

POSTAL REGULATORY COMMISSION,
Respondent.

ON PETITIONS FOR REVIEW OF ORDERS OF THE
POSTAL REGULATORY COMMISSION

**BRIEF FOR AMICUS CURIAE J. GREGORY SIDAK
IN SUPPORT OF PETITIONER**

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CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

A. Parties

Parties and amici appearing in this Court are listed in the Brief for Petitioner United Parcel Service, Inc.

B. Rulings Under Review

The rulings under review are two orders of the Postal Regulatory Commission (PRC): Order Concerning United Parcel Service, Inc.'s Proposed Changes to Postal Service Costing Methodologies (UPS Proposals One, Two, and Three), No. RM2016-2 (P.R.C. Sept. 9, 2016) (*Order*) (JA35–JA102), which modified a methodology for allocating the costs incurred by the Postal Service; and Order Adopting Final Rules on Changes Concerning Attributable Costing, No. RM2016-13 (P.R.C. Dec. 1, 2016) (*Adoption Order*) (JA1193–JA1207), which modified PRC regulations to reflect the Order.

C. Related Cases

The challenged orders have not previously been reviewed by a court. Counsel is not aware of any related proceedings in this Court or any other court.

CORPORATE DISCLOSURE STATEMENT

J. Gregory Sidak is an individual and is not subject to the corporate disclosure requirements of Fed. R. App. P. 26.1 and D.C. Cir. R. 26.1.

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GLOSSARY

Amicus	J. Gregory Sidak, Chairman, Criterion Economics, L.L.C.
Activity-Based Costing	Costing methodology that proceeds by allocating the cost of each of a firm's activities (for example, highway transportation) to the firm's products on the basis of the number of units of each activity that each product consumes
Adoption Order	Order Adopting Final Rules on Changes Concerning Attributable Costing, No. RM2016-13 (P.R.C. Dec. 1, 2016) (JA1193–JA1207)
Attributable Costs	Direct and indirect costs attributable to a product through reliably identified causal relationships
Competitive Products	Postal Service products, such as Parcel Select, that are not market-dominant products
Cost Driver	In activity-based costing, the unit (such as volume or weight) into which the cost of an activity is divided for allocation to products
Cross-Subsidization	When a multiproduct firm subsidizes net losses from its provision of a product using revenues from another product
Economies of Scale	Cost savings that a firm realizes when per-unit costs decrease with higher levels of production volume
Economies of Scope	Cost savings that a firm realizes when per-unit costs decrease as the firm increases the number of products that it produces
Fixed Costs	Costs that do not vary with the firm's level of output
Incremental Costs	Costs that a firm incurs to add a product or set of products
Inframarginal Costs	In Postal Service costing, the difference between total variable costs and "volume-variable" costs

Institutional Costs	Costs of the Postal Service that are not attributed to products; the postal equivalent of common costs
Market-Dominant Products	Products over which the Postal Service has a statutory monopoly or sufficient market power to maintain supracompetitive prices, such as First-Class Mail and Standard Mail
Network Rationalization 2.0	Phase 2 of the Postal Service’s Network Rationalization plan, which aims to consolidate the Postal Service’s mail-processing network
Order	<i>Order Concerning United Parcel Service, Inc.’s Proposed Changes to Postal Service Costing Methodologies (UPS Proposals One, Two, and Three)</i> , No. RM2016-2 (P.R.C. Sept. 9, 2016) (JA35–JA102)
PAEA	Postal Accountability and Enhancement Act of 2006, Pub. L. No. 109-435, 120 Stat. 3198
Petitioner or UPS	United Parcel Service, Inc.
Petitioner’s Brief	Brief for Petitioner United Parcel Service, Inc. (Jan. 27, 2017)
Postal Service	United States Postal Service
PRC or Commission	Postal Regulatory Commission
Shapley Value	Methodology for calculating the average cost that a multiproduct firm would incur from adding a given product across every possible sequence in which the firm could add its various products, based on the work of Nobel laureate Lloyd Shapley

UPS Proposal One	Petition of United Parcel Service, Inc. for the Initiation of Proceedings to Make Changes to Postal Service Costing Methodologies (Oct. 8, 2015) (JA9–JA34), which recommends that the Postal Service attribute all variable costs to individual products
Variable Costs	Costs that vary with the firm’s level of output
Volume-Variable Costs	In Postal Service costing, the product of unit volume and marginal cost evaluated at the last unit of output

**STATEMENT OF IDENTITY, INTEREST IN CASE,
AND SOURCE OF AUTHORITY TO FILE
AS AMICUS CURIAE**

J. Gregory Sidak, Chairman, Criterion Economics, L.L.C. (Amicus), is a scholar on regulatory economics who has written extensively about postal economics. His publications on postal regulation include:

- J. Gregory Sidak & Daniel F. Spulber, *Protecting Competition from the Postal Monopoly* (AEI Press 1996), <https://www.criterioneconomics.com/docs/sidak-spulber-protecting-competition-from-the-postal-monopoly.pdf>;
- J. Gregory Sidak, *Abolishing the Letter-Box Monopoly*, 1 Criterion J. on Innovation 401 (2016), <https://www.criterioneconomics.com/docs/abolishing-the-letter-box-monopoly.pdf>;
- J. Gregory Sidak, *Maximizing the U.S. Postal Service's Profits from Competitive Products*, 11 J. Competition L. & Econ. 617 (2015), <https://www.criterioneconomics.com/docs/maximizing-us-postal-service-profits-from-competitive-products.pdf>;
- David E.M. Sappington & J. Gregory Sidak, *Competition Law for State-Owned Enterprises*, 71 Antitrust L.J. 479 (2003), https://www.criterioneconomics.com/docs/competition_law_for_state-owned_enterprises-11.pdf; and
- David E.M. Sappington & J. Gregory Sidak, *Are Public Enterprises the Only Credible Predators?*, 67 U. Chi. L. Rev. 271 (2000), https://www.criterioneconomics.com/docs/are_public_enterprises_the_only_credible_predators1.pdf.

Mr. Sidak has held academic appointments in law and economics at the American Enterprise Institute, Yale University, Georgetown University, and Tilburg University in The Netherlands. He was Deputy General Counsel of the Federal Communications Commission from 1987 to 1989 and Senior Counsel and

Economist to the Council of Economic Advisers (CEA) in the Executive Office of the President from 1986 to 1987. He has twice served as Judge Richard Posner's court-appointed neutral economic expert pursuant to Federal Rule of Evidence 706. While a lawyer in private practice with Covington & Burling, Mr. Sidak represented an intervenor in a rate case before the Postal Rate Commission.

Mr. Sidak's writings on regulation and antitrust have been cited by the Supreme Court of the United States, the Supreme Court of Canada, the European Commission, the U.S. Court of Appeals for the D.C. Circuit, other federal appellate and district courts, the supreme courts of California and other states, and various federal and state regulatory commissions. He co-edits the *Journal of Competition Law & Economics*, published by the Oxford University Press.

Analyzing this case from an economic perspective, this brief will help the Court to understand the context and implications of the abstruse postal regulations involved in this case. This brief explains how the interpretation of key costing terms by the Postal Regulatory Commission (PRC) violates both the relevant statutory provisions and those terms' accepted meanings in regulatory economics. Mr. Sidak, therefore, has an established interest in the outcome of this case.

Mr. Sidak is filing solely as an individual and not on behalf of any institution. To his knowledge, he is the only amicus filing on the side of Petitioner. *See* D.C. Cir. R. 29(d). All parties have consented to the filing of this brief, subject

to compliance with the word limits in the Joint Motion to Amend Briefing Format approved by Court order dated January 23, 2017. *See* Fed. R. App. P. 29(a)(2); D.C. Cir. R. 29(b).

STATEMENT OF AUTHORSHIP AND FINANCIAL CONTRIBUTIONS

No party's counsel authored this brief in whole or in part. No party or party's counsel contributed money intended to fund the preparation or submission of this brief, and no person other than Amicus and his counsel contributed money intended to fund the preparation or submission of this brief.

STATUTES AND REGULATIONS

Pertinent statutes and regulations are contained in the Petitioner's Brief.

INTRODUCTION AND SUMMARY OF ARGUMENT

The PRC is unusual among American regulatory commissions in that it regulates only one firm. Perhaps that artifact explains why, in the 47 years since the Postal Reorganization Act of 1970 (updated by the Postal Accountability and Enhancement Act of 2006 (PAEA)), neither the PRC nor its predecessor has managed to persuade the Postal Service to produce even minimally transparent or comprehensible cost attribution. As a loosely regulated state-owned enterprise, the Postal Service has both the incentive and the ability to sacrifice profit to expand its scale—particularly with respect to competitive products. Its custom accounting

methods, which both violate the PAEA and inexplicably depart from industry practice, provide it ample opportunity to underprice its competitive products.

The PAEA is clear: competitive products must cover their attributable costs, which are “the direct and indirect postal costs attributable to [a] product through reliably identified causal relationships.” 39 U.S.C. § 3633(a). The PRC’s interpretation of attributable costs in its *Order* flouts the statute by neglecting to attribute indirect costs, which are costs that two or more products cause jointly. Instead, the PRC requires that the Postal Service attribute only costs that *each product individually* causes. Moreover, the PRC’s rejection of the Shapley Value methodology is based on an incorrect understanding of that methodology’s purpose. The Shapley Value—and United Parcel Service (UPS) Proposal One, which yield similar results—comply with the PAEA by supplying a reliably identified causal relationship for assigning indirect attributable costs to the products that jointly cause them. Given these errors on the part of the PRC, the Court should grant the petitions for review.

ARGUMENT

I. THE POSTAL SERVICE HAS THE INCENTIVE TO HARM COMPETITION

As a state-owned enterprise, the Postal Service acts differently from a privately owned, profit-maximizing firm that is subject to public utility regulation. The Postal Service has the incentive to sacrifice profit to expand its scale, in part

due to statutory mandates and policy goals that diverge from profit maximization. Sidak, *Maximizing the U.S. Postal Service's Profits from Competitive Products*, *supra*, at 662; *see also* Sappington & Sidak, *Competition Law for State-Owned Enterprises*, *supra*, at 513–17; Sappington & Sidak, *Are Public Enterprises the Only Credible Predators*, *supra*, at 285–86. Moreover, managers of state-owned enterprises often have considerable interest in expanding the scale or scope of their activities, in part, because a manager's abilities may be inferred from the size of the operations that he or she oversees. Sappington & Sidak, *Competition Law for State-Owned Enterprises*, *supra*, at 500. The Postal Service's incentive compensation explicitly rewards managers with bonuses that are tied to measures of scale (not profit), including deliveries per hour and total revenue. *See* Jeffrey C. Williamson, U.S. Postal Serv., *Fiscal Year 2014 Pay for Performance Program 4* (2013), <http://www.napus.org/wp-content/uploads/2013/09/PFP-Prog-FY-2014-31.pdf>; U.S. Gov't Accountability Off., GAO-08-996, U.S. Postal Service New Delivery Performance Measures Could Enhance Managers' Pay for Performance Program (2008), <http://www.gao.gov/assets/290/280446.pdf>. The Postal Service's likely objective is to maximize some weighted average of profit and scale, rather than profit alone. *See* Sappington & Sidak, *Competition Law for State-Owned Enterprises*, *supra*, at 501–05. The impulse to increase scale at the expense of profit even creates the incentive for the Postal Service to cut its prices for

competitive products below the profit-maximizing level and perhaps even below costs. See Sappington & Sidak, *Are Public Enterprises the Only Credible Predators?*, *supra*, at 285–86.

In fact, the Postal Service has a record of chronic losses. It is implausible that a profit-maximizing entity would operate at a loss for nine consecutive years, particularly without any major overhaul of its operations. U.S. Postal Serv., *United States Postal Service FY2016 Annual Report to Congress* 25 (2016), <https://about.usps.com/who-we-are/financials/annual-reports/fy2016.pdf>; U.S. Gov't Accountability Off., GAO-15-290, High-Risk Series: An Update 114 (2015), <http://www.gao.gov/assets/670/668415.pdf>. In the case of the Postal Service, those losses likely derive in part from its incentive to maintain a large scale in response to political and institutional pressure.

Such a pricing strategy could harm competition in the markets for competitive products, to the detriment of consumers. When the Postal Service sets artificially low prices for its competitive products, the profit that other firms anticipate from supplying those products decreases. The incentives of the Postal Service's competitors and potential entrants to invest in developing innovative products and to enter delivery markets (most plausibly through vertical integration) consequently decrease. The magnitude of the potential loss in consumer surplus from this reduction in dynamic competition cannot be overstated. *Cf.* Jerry A.

Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, 1997 Brookings Papers on Econ. Activity: Microeconomics 1, 13–24 (1997).

II. THE PRC HAS PERMITTED POSTAL REGULATION TO BECOME OPAQUE, THUS GIVING THE POSTAL SERVICE THE ABILITY TO HARM COMPETITORS

To borrow a phrase from Winston Churchill, rate regulation of the Postal Service is “a riddle wrapped in a mystery inside an enigma.” The PRC is unique among American regulatory commissions in that it regulates only one firm.¹ The PRC can perform no benchmarking between other regulated firms and the Postal Service, because it has access to only the Postal Service’s private costing data. Thus, the Postal Service faces virtually no external check on the plausibility of its factual claims.

After 47 years, the Commission (and its predecessor, the Postal Rate Commission) have been unable to get the Postal Service to be transparent in its costing practices. Indeed, the courts have recognized the need for greater postal costing transparency on several occasions. In a concurring opinion for this Court in *Ass’n of Am. Publishers v. Governors of the U.S. Postal Serv.*, 485 F.2d 768 (D.C.

¹ Other regulatory commissions regulate entire industries. The Federal Communications Commission, for example, regulates the radio, television, satellite, cable, and phone industries. Likewise, the Federal Energy Regulatory Commission regulates the natural gas, electric, hydro, and oil industries.

Cir. 1973) (Bazelon, C.J., concurring), Chief Judge Bazelon criticized the Postal Service's accounting methods as being "unstructured," "thinly supported," and "loose." *Id.* at 778. He said that "[the Postal Service] alone . . . is in a position to influence the Postal Service's day-to-day accounting procedures and record keeping," and he predicted that "[o]utsider challenges to the fundamental approach [that the] Postal Service takes to ratemaking are unlikely to meet with stunning success under these circumstances." *Id.* at 779. The Supreme Court's decision in *Nat'l Ass'n of Greeting Card Publishers v. U.S. Postal Serv.*, 462 U.S. 810 (1983), a decade after *American Publishers*, suggests that the Postal Rate Commission made little progress in extracting reliable data from the Postal Service in the interim. The Court said that, for the Postal Rate Commission to identify proper cost-attribution methods, "the Postal Service must seek to improve the data on which causal relationships may be identified." *Id.* at 834.

Postal rate regulation is so insular as to be opaque even to persons with demonstrable expertise in the law and economics of conventional regulated network industries, such as telecommunications and energy. Regulatory concepts that should be familiar seem instead to be discussed in postal rate proceedings in a different dialect. Indeed, former utility regulators have urged the PRC to study other areas of public utility law. *See Comments of Former Utility Regulators, Section 701 Report, Dkt. No. PI2016-3 (Postal Reg. Comm'n, filed June 14, 2016)*

(appending Bryan Tramont, Raymond Gifford & Gregory Sopkin, *Cross-Subsidization: Applying Lessons from Utility Regulation to the United States Postal Service* (June 14, 2016)), <https://www.prc.gov/docs/96/96267/Comments%20of%20Fmr%20Utility%20Regulators.pdf>.

**A. Quirky Lingo and Bespoke Accounting Rules
Obfuscate the Postal Service's True Costs**

The PRC has an idiosyncratic nomenclature that does not mesh—and sometimes directly clashes—with accepted terminology in regulatory economics and in the law of other regulated network industries. For example, the PRC's *Order* contains an entire appendix devoted to explaining postal costing concepts, in which it identifies jargon such as “volume-variable cost,” which it concedes is “unique to postal costing.” *Order*, app. A at 16 (JA998) (Sept. 9, 2016). By articulating its accounting procedures in this quirky lingo, the Postal Service has been able to construct an ornate costing methodology that lacks transparency and is largely shielded from the rigorous economic analysis of outsiders. The process by which the Postal Service assigns costs to different products and product categories is unnecessarily complex and opaque. The costs that the Postal Service attributes to its competitive products are not publicly available in sufficient detail to enable scrutiny of its costing procedures. The Postal Service provides relatively detailed cost data for its market-dominant products, but it releases costs for competitive products only in broad categories. The Postal Service considers costing

information for competitive products to be proprietary. *See, e.g.*, U.S. Postal Serv., *Public Cost and Revenue Analysis Fiscal Year 2015* (2016), <http://about.usps.com/who-we-are/financials/cost-revenue-analysis-reports/fy2015.pdf>. That lack of transparency enables the Postal Service to understate the incremental cost of producing its competitive products and the attributable cost of each individual product.

For example, the Postal Service plans to make large investments that are clearly designed to support competitive products but whose costs are likely to fall principally into the institutional pool (as explained below, it is impossible to know with certainty how the Postal Service will attribute such costs). In September 2016, the Postal Service awarded \$37.4 million in contracts to six companies to produce prototypes for new custom delivery vehicles. Press Release, U.S. Postal Serv., USPS Statement on Next Generation Delivery Vehicles Prototype Selection and Request for Proposal for Commercial Off-the-Shelf Delivery Vehicles (Sept. 16, 2016), <http://about.usps.com/news/statements/091616.htm>. The Inspector General of the Postal Service has said that “given the growth in packages,” the new vehicles will “address the challenges of larger and irregularly shaped items.” Press Release, U.S. Postal Serv. Off. of Inspector Gen., *The Road to a New Delivery Fleet* (July 28, 2014), <https://www.uspsoig.gov/blog/road-new-delivery-fleet>.

The Postal Service has also frequently described large-scale investments in the postal network as a whole as benefiting competitive products. For example, the Postmaster General said in 2014 that the Postal Service “plans to invest \$10 billion over the next four years for improvements, including buying new vehicles, retrofitting old ones and upgrading package-sorting equipment.” Laura Stevens, *For FedEx and UPS, a Cheaper Route: The Post Office*, Wall St. J. (Aug. 4, 2014), <http://www.wsj.com/articles/u-s-mail-does-the-trick-for-fedex-ups-1407182247>.

The Postal Service has also indicated that cost savings from its “Network Rationalization 2.0” will “better position the Postal Service to make needed investment in package processing and other automation equipment, and in [its] delivery fleet, which will help [it] to grow [its] package business.” U.S. Postal Serv., *Our Future Network*, <https://about.usps.com/news/electronic-press-kits/our-future-network/ofn-phase-2-faqs.htm> (last visited June 14, 2017).

Yet the Postal Service’s costing methodology so lacks transparency that even a private consultancy with access to nonpublic data could not determine conclusively how the Postal Service would record such expenditures in its cost measures. Comments of the United Parcel Service on Postal Service’s FY 2014 Annual Compliance Report, Postal Reg. Comm’n Docket No. ACR2014, at 7 (Feb. 2, 2015), <https://www.prc.gov/docs/91/91320/UPS.14.In.pdf>. In effect, the current

costing methodology appears to allow the Postal Service to attribute such investments at its own discretion.

The House Committee on Oversight and Government Reform has expressed its concern that the Postal Service's costing procedures create the opportunity for undetected cross-subsidization. Letter from Jason Chaffetz, Chairman, U.S. House of Representatives Comm. on Oversight and Gov't Reform & Mark Meadows, Chairman, U.S. House of Representatives Subcomm. on Gov't Operations, to Megan J. Brennan, Postmaster Gen. 1–2 (May 13, 2015), <https://oversight.house.gov/wp-content/uploads/2015/05/2015-05-12-JEC-MM-to-Brennan-USPS-competitive-products-due-5-26.pdf>. In May 2015, the Committee directed the Postal Service to provide detailed information about its cost attribution and business plans for its competitive products. *Id.* at 2. The Committee required the Postal Service to submit “[a] list of all capital assets over \$10 million purchased since October 1, 2007, and a depreciation schedule outlining how each purchase was subsequently expensed to market-dominant . . . products.” *Id.* The Committee also directed the Postal Service to explain its cost attribution for other expenses related to competitive products, such as package delivery on Sundays (when market-dominant products are of course not delivered) and new, larger vehicles. *Id.* Tellingly, the Committee requested detailed information on how the

Postal Service attributes costs, given its “heightened . . . concerns about cross-subsidization.” *Id.* at 1.

As the House Oversight Committee clearly recognized, the Postal Service’s accounting procedures provide it ample opportunity to manipulate cost attribution and hide from public view the true cost of producing competitive products. When combined with the PRC’s loose regulatory oversight and the absence of peer benchmarks, the Postal Service’s bespoke accounting rules effectively grant it unconstrained discretion over cost attribution.

B. The Postal Service’s Cost Accounting Should Resemble That of Private Delivery Companies But Does Not

The Postal Service’s unique accounting methods depart from standard industry practice by failing to attribute all of the enterprise’s variable costs. Both UPS and the Postal Service use activity-based costing, a cost-attribution method that allocates the cost of activities (for example, highway transportation) to the firm’s products. *Order*, app. A at 13 (JA995) (Sept. 9, 2016); United Parcel Service, Response to Chairman’s Information Request No. 4, No. RM2016-2, at 1 (JA233) (Jan. 8, 2016) [hereinafter UPS CHIR Response No. 4]. Standard activity-based costing, as described in the scholarly literature and as practiced by UPS, proceeds by determining the average cost of an activity in terms of an appropriate cost driver (for example, cubic-foot-miles). *See, e.g.*, Ralph Adler, *Management*

Accounting 37–39 (Routledge 2011); UPS CHIR Response No. 4 at 1–2 (JA233–JA234). For example, the methodology asks how much a cubic-foot-mile of highway transportation costs on average, and then allocates that cost among products according to the cubic-foot-miles that each requires. Thus, if highway transportation costs an average of \$20 per cubic-foot-mile, a product that requires 100 cubic-foot-miles would have a highway-transportation cost of \$2,000. In this way, product by product and activity by activity, the firm can attribute all variable costs.

But that is not what the Postal Service does. Its bespoke methodology for attributing sortation costs to the same product would ask how much the *last* 100 cubic-foot-miles cost to provide. *See Order* at 125 (JA982) (directing the Postal Service to use incremental costs as attributable costs); *id.* app A. at 21–22 (JA21–JA22) (defining incremental cost in terms of activity-based costing). That distinction is important because of economies of scale and economies of scope: the cost of providing highway transportation likely declines with volume, such that the last 100 cubic-foot-miles are less costly than if one were to multiply the average cost of a cubic-foot-mile by 100.

The net effect of the Postal Service’s deviation from true activity-based costing is to exclude a substantial portion of variable costs from attribution. *See id.* at 15 (JA872) (describing UPS’s proposal as increasing attribution to include all

variable costs); *id.* at 123–24 (JA980–JA981) (adopting a lower level of cost attribution in place of UPS’s proposal). Despite the fact that those costs vary with volume and are jointly caused by some subset of products, the Postal Service’s methodology designates them “institutional.” *See id.* at 10 (JA867). It bears emphasis that institutional costs are effectively allocated between market-dominant and competitive products at the PRC’s discretion. *See id.* at 121–22 (JA978–JA979). The PRC’s claim that such an allocation identifies a stronger causal link between products and the costs that they cause than would a methodology that attributes all variable costs is nonsensical. *See id.* at 51–53 (JA908–JA910). The Postal Service should attribute all its variable costs in accordance with standard business practice and the management finance literature.

III. THE COMMISSION’S INTERPRETATION OF “INDIRECT ATTRIBUTABLE COST” CONTRADICTS THE PAEA

Contrary to the abstruse costing methodologies that the Postal Service has developed, and the PRC has endured, the cost concepts contained in the PAEA are remarkably simple and clear. This contrast between opacity and clarity is a signal that the Commission’s interpretation of “indirect attributable costs” flouts the statutes.

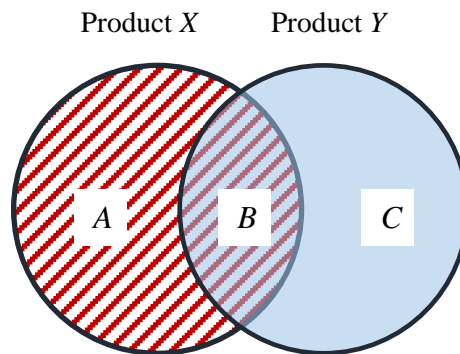
A. Economists and Regulators Divide the Costs of a Multiproduct Firm into Incremental Costs and Common Costs

Gerald Faulhaber originated the incremental cost test and standalone cost test as part of an economic framework for defining and detecting cross-subsidization. Gerald R. Faulhaber, *Cross-Subsidization: Pricing in Public Enterprises*, 65 Am. Econ. Rev. 966 (1975); *see also* Gerald R. Faulhaber, *Cross-Subsidy Analysis with More Than Two Services*, 1 J. Competition L. & Econ. 441 (2005). Under Faulhaber's incremental cost test for cross-subsidies, the incremental cost of product X is the amount by which a multiproduct firm's long-run total costs increase as a result of making product X —in other words, the cost that is added to the firm's total outlays as a result of its supply of the current output of X . Formally, if x, y, z, \dots represents the outputs of the firm's various products, and $TC(x, y, z, \dots)$ is the total cost that the firm must incur to produce that combination of outputs, then the incremental cost of X is $IC_x = TC(x, y, z, \dots) - TC(0, y, z, \dots)$. This definition of incremental cost is a potential candidate for measuring the Postal Service's attributable costs, but it is incomplete. However, as explained below in Section IV, Shapley Value costs are a better measure of the attributable costs of the Postal Service's products.

For example, the incremental cost of producing bulk parcels is the difference between the Postal Service's total cost of producing all products and its cost of

producing all products except bulk parcels. The incremental cost of *X* necessarily exceeds its marginal cost because the former includes all product-specific fixed costs—that is, the costs of producing *X* that do not vary with volume. Figure 1 illustrates incremental costs in a firm that produces two products, *X* and *Y*.

Figure 1: Incremental Costs in a Firm with Two Products



As I explained in *Maximizing the U.S. Postal Service's Profits from Competitive Products, supra* (which UPS reiterated, see Petitioner's Brief at 41–42), the entire figure represents the total cost of producing *X* and *Y*. In other words, the total cost of producing *X* and *Y* is equal to $A + B + C$. Each product's circle represents the standalone cost of producing that product—that is, the cost that the firm needs to incur to produce *X* alone is equal to $A + B$, and the cost to produce *Y* alone is equal to $B + C$. The incremental cost of producing *Y*, however, is only C once the firm has already incurred $B + A$ to produce *X*. The firm does not need to incur B again to produce *Y*. B represents the firm's cost savings from economies of scope (its cost savings from producing the two products together). In practical terms, costs that would fall under B for a firm might include the chief executive's

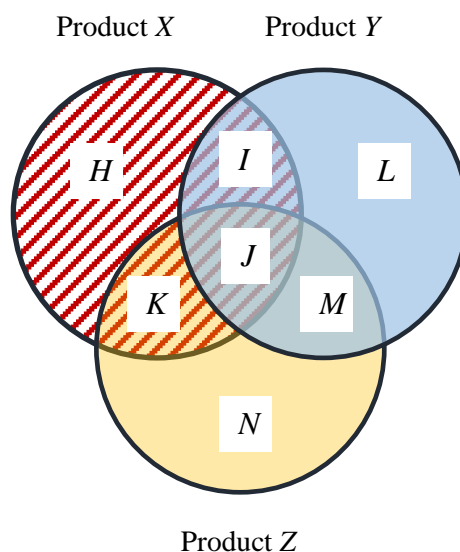
salary, the cost of a plant that can produce both products, and any other shared input. Similarly, the incremental cost of producing X is A once the firm has already incurred $B + C$ to produce Y . The firm does not need to incur B again to produce X .

It bears emphasizing that the incremental cost of producing a given product always depends on the *other* products that the firm produces and the *order* in which the firm introduces those products. In a multiproduct firm like the Postal Service, no single incremental cost of producing product X exists. The number and type of products, and the quantity of those products, that the firm produces determine the firm's economies of scope between product X and the firm's other products.

Critical to this case is an understanding of the incremental cost of *groupings* of products. In a two-product firm, one can divide the total cost of the firm into the incremental cost of each individual product (A and C in the above example) and overhead costs of the firm (B). However, in a firm with three or more products, a new category of costs emerges: costs incurred jointly by some subset of the firm's products. Such costs are neither incremental to the production of a single product nor part of the overhead that all products share. Instead, those joint costs are incremental to the production of a grouping of products. Part III.B, *infra*, explains that the Postal Service's cost attribution methodology erroneously assigns such costs to the pool of institutional (overhead) costs.

To understand joint costs, consider a firm with three outputs, X, Y, and Z. The incremental cost of X and Y together is the additional cost incurred due to the combined production of these two outputs. For example, the incremental cost to the Postal Service of providing delivery services for bulk parcels and priority mail is the additional cost incurred due to the combined production of only those two outputs. Faulhaber, *Cross-Subsidy Analysis with More Than Two Services*, *supra*, at 443. Figure 2 illustrates incremental costs in a firm that produces three outputs: X, Y, and Z.

Figure 2: Incremental Costs in a Firm with Three Products

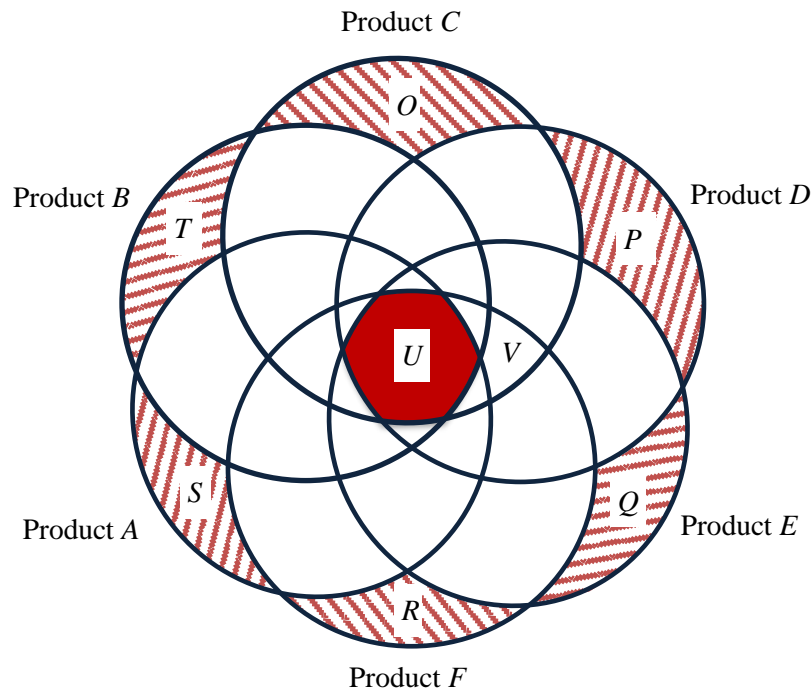


The entire figure represents the total cost of producing all three outputs within a single firm (that is, the firm's total costs are $H + I + J + K + L + M + N$). As in the two-product example, the incremental cost of producing each individual product is the portion of the product's cost that does not overlap with any other product's cost. In other words, the incremental cost is the additional cost that the

firm must incur to produce the product in question (given that the firm already produces the other products). For example, the incremental cost of producing X in the three-product firm is H , the incremental cost of producing Y is L , and the incremental cost of producing Z is N . The incremental cost of producing any *group* of products, however, exceeds the sum of those products' individual incremental costs. The reason is that any two or more products have common costs. For example, to produce Y and Z (given that X is already being produced), the firm must incur $L + M + N$ —not merely the sum of the products' individual incremental costs, L and N . As Figure 2 shows, M is the common cost of producing Y and Z that is not shared with X . Part III.B, *infra*, explains that in this example the Postal Service's costing methodology would assign the joint costs M , K , and I to the pool of institutional costs.

As the number of products increases, the amount of joint costs will typically increase (assuming that the firm derives some cost savings, called economies of scope, from producing each product in combination with others). Figure 3 illustrates individual incremental costs, joint costs, and overhead in a firm with six products.

Figure 3: Costs in a Six-Product Firm



The shaded regions *O*, *P*, *Q*, *R*, *S*, and *T* represent the individual incremental costs of the six respective products. The solid red center area *U* represents the true overhead costs that all six products share. The remaining portions of Figure 3, left unshaded for clarity, are joint costs shared between different subsets (combinations) of the six products. For example, area *V* represents the costs that Product *C*, Product *D*, Product *E*, and Product *F* incur in common (to the exclusion of Product *A* and Product *B*).

This simple visualization shows how joint costs can become very large, and individual incremental costs can become very small, as the number of products that a firm produces increases. The Postal Service produces at least 45 different products. U.S. Postal Serv., *Public Cost and Revenue Analysis Fiscal Year 2016*

(2016); Postal Reg. Comm'n, *Annual Compliance Determination Report (Fiscal Year 2015)* at 24 (Mar. 28, 2016), https://www.prc.gov/docs/95/95462/Final_2015_ACD.pdf. As discussed below, the failure to attribute joint costs for a large multiproduct firm such as the Postal Service is an error that can have substantial consequences.

B. The PAEA Envisions Only Attributable Costs and Institutional Costs

The PAEA specifies that each competitive product must cover its “costs attributable,” which it defines as “the direct and indirect postal costs attributable to [a] product through reliably identified causal relationships.” 39 U.S.C. §§ 3633(a), 3631(b). The Postal Service’s remaining costs—that is, those that are not attributed to products—are designated “institutional costs.” *Order* at 9–10 (JA866–JA867).

The PAEA’s concept of institutional costs is identical to area *J* in Figure 2. Institutional costs are the common costs incurred only when *all* products of the Postal Service are taken together, such as the cost of the Postmaster General’s desk. Only these costs are proximately caused by the existence of the *institution* rather than by its production of individual products or groups of products.

The PRC’s *Order* equates attributable costs to what economists and regulators have long called incremental costs. However, the PRC fails to carry its own logic to its natural conclusion. The PAEA further segregates attributable costs into two subcategories: direct and indirect. 39 U.S.C. § 3631(b). Direct attributable

costs are analogous to the economic definition of incremental costs for a single product. Indirect attributable costs are costs incurred incrementally across any two or more products, but not all products taken together. In other words, indirect attributable costs are all the common costs depicted in Figure 2 *except* area *J* (which is common to all products taken together and thus is the only category of cost driven by the Postal Service as an institution). In the three-product firm example in Figure 2, the indirect attributable costs are areas *I*, *K*, and *M*. Each of those areas represents a cost that two products cause jointly, to the exclusion of the third product.

The Commission erroneously allows the Postal Service to assign indirect attributable costs to institutional costs. This error violates the PAEA and grossly exaggerates the amount of costs that can be attributed only to the Postal Service as an institution. The correct measure of institutional cost—namely, those costs common to all products of the Postal Service—is analogous to area *J* in Figure 2. However, the Postal Service’s methodology erroneously attributes only the individual incremental costs *H*, *L*, and *N*, thus leaving an inflated measure of institutional costs equal to $I + J + K + M$. That omission violates the statutory definition of a product’s attributable costs as “the direct and indirect postal costs attributable to such product through reliably identified causal relationships.” 39 U.S.C. § 3631(b).

IV. THE COMMISSION ERRONEOUSLY REJECTS THE SHAPLEY VALUE

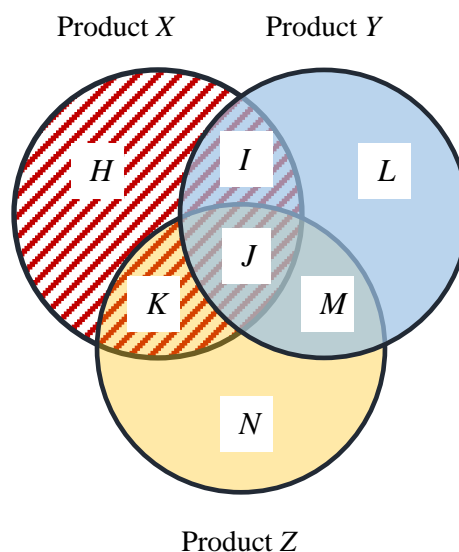
UPS did not claim that Shapley Values for the indirect attributable costs of the Postal Service follow a specific sequence for the simple reason that such a claim would contradict the purpose of the Shapley Value calculation. The criticisms that Amazon and the Postal Service have leveled against the application of the Shapley Value methodology (which earned Lloyd Shapley the 2012 Nobel Prize in Economics) to postal costing are wrong. The Shapley Value cost allocation is economically rigorous, fulfills the PRC's statutory cost-coverage obligations, and protects consumers of market-dominant products from being forced to bear a disproportionate cost burden.

The criticism that Shapley cost allocation is just one of many possible allocations is meaningless. *See* U.S. Postal Service, Initial Comments of the United States Postal Service on UPS Proposals One and Two, at 15 (Jan. 27, 2016) (JA461) (“Shapley values are just one of an infinite number of possible allocations of common costs”). It is certainly true in the most literal sense that the PRC could allocate common costs in an infinite number of ways. For example, the PRC could allocate every dollar that First-Class mail causes jointly with any other product to First-Class mail alone. However, such an allocation would be arbitrary in the extreme. In contrast, the Shapley Value methodology is a reasoned and

economically rigorous method of cost allocation that ensures that the products that jointly cause any cost each bear an equal share of that cost.

Far from arbitrarily selecting a cost allocation, the Shapley Value methodology calculates the *average* of the cost that a firm would incur from adding a given product line across every possible sequence in which the multiproduct firm could add its various product lines. To understand how the Shapley Value allocation proceeds, consider again the three-product firm example from Part III, which Figure 4 replicates.

Figure 4: Incremental Costs in a Three-Product Firm



The Shapley Value cost for a given product—for example, product *X*—is calculated by averaging the increase in total costs from the addition of product *X* for each possible ordering of the firm’s products. Given three products, there are six possible sequences. In two of the six cases, the firm will introduce *X* first, such that the incremental cost of *X* will be equal to $H + I + J + K$ —that is, the

standalone cost of producing X , including the cost common to X and the other products. In two cases, the firm will introduce X last, such that X 's incremental cost will be H —in other words, X will incur no common costs. In the remaining two cases, the firm will introduce X second. When X is the second product after Y , its incremental cost will be $H + K$. When X it is the second product after Z , its incremental cost will be $H + I$. The Shapley cost of product X is the average of the incremental cost of X in each of the six possible sequences. For product X , the Shapley Value cost is

$$\frac{[2 \times (H + I + J + K)] + (2 \times H) + (H + K) + (H + I)}{6},$$

which simplifies to $H + (I / 2) + (K / 2) + (J / 3)$. The Shapley Value cost of product X is therefore equal to the costs caused by X alone (H) combined with one-half of the cost that X causes jointly with Y (I), one-half of the cost that X causes jointly with Z (K), and one-third of the cost that X causes jointly with both Y and Z (J). That pattern holds generally: a product's Shapley Value cost always equals the cost caused by each product combined with its proportional share of common costs. The costs represented by areas I and K are common to two products, such that one-half of those costs is included in the Shapley Value cost of product X . The costs represented by area J are common to three products, such that one-third of those costs are included in the Shapley Value cost of product X .

At this point it is useful to distinguish between the theoretical Shapley Value allocation described here and UPS's proposal. In this theoretical example, all costs—including overhead costs—are attributed to products. UPS's proposal, however, would attribute only variable costs and would exclude true overhead costs caused in common by all products. Thus, in the example above, UPS's proposal would assign overhead cost J to the pool of institutional costs, rather than divide J into thirds to be attributed to each of the firm's three products.

To avoid confusion, the analysis that follows will use an approximation of UPS's proposed methodology—that is, a Shapley Value allocation that excludes true overhead costs from attribution. To understand the difference between that modified Shapley methodology and the Postal Service's current cost attribution, consider the following numerical example. Suppose that the cost that the firm incurs for each individual product (H , N , and L) is 5 percent of the firm's total cost, the cost that product X and product Y incur jointly (I) is 30 percent of the total cost, the cost that product Y and product Z incur jointly (M) is 20 percent of the total cost, the cost that product X and product Z incur jointly (K) is 20 percent of the total cost, and the cost that all three products share (J) is 15 percent of the total cost. Table 1 applies the Postal Service's cost attribution and modified Shapley Value attribution to this simplified example.

Table 1: An Example of Postal Service Attributable Costs and Shapley-Based Attribution in a Three-Product Firm

Product	Postal Service Method	Modified Shapley Attribution
<i>X</i>	$H = 5\%$	$H + (I / 2) + (K / 2) = 30\%$
<i>Y</i>	$L = 5\%$	$L + (I / 2) + (M / 2) = 30\%$
<i>Z</i>	$N = 5\%$	$N + (K / 2) + (M / 2) = 25\%$
Institutional	$I + M + K + J = 85\%$	$J = 15\%$

In this way, the Shapley Value methodology avoids bias with respect to the order in which the firm adds its product lines and would ensure that each competitive product bears a proportionate share of any cost it causes jointly with other products. Similarly, UPS Proposal One allocates the jointly caused costs equally among the products that cause them and yields an economic outcome similar to a Shapley Value analysis.

The Shapley Value methodology complies with the PAEA by supplying a reliably identified causal relationship for assigning indirect attributable costs to the products that jointly cause them. *See* 39 U.S.C. § 3631(b). Requiring competitive products to cover their Shapley Value would partially remedy cost-allocation abuses by dividing joint costs equally among the products that jointly cause them instead of dumping those indirect attributable costs into the pool of institutional costs. Given the Postal Service's allocation of spending to investments in providing competitive products, such a cost allocation is arguably quite conservative with respect to competitive products.

As the example of delivery trucks illustrates, the Shapley Value cost allocation is also more robust to costing errors than is a system that attributes only the individual incremental cost of each product. The difference in cost between the vehicles that the Postal Service would need to deliver only letters and flats (perhaps a modest fleet of cargo vans) and the vehicles that the Postal Service has custom-designed to accommodate parcels is incremental, in economic terms, to parcel delivery. If the Postal Service neglects to attribute that cost to its parcel products, its current attribution would designate those costs as being institutional. A Shapley-based allocation, in contrast, would divide the cost of the trucks equally among the products that cause them. Thus, competitive products would still be required to bear some portion of the cost of the trucks. In this way, the Shapley value disaggregates shared or common variable costs proportionately even in the presence of measurement errors or miscalculations in different cost measures.

CONCLUSION

For the reasons stated herein and in the Petitioner's Brief, the Court should grant the petitions for review.

Respectfully submitted,

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June 16, 2017

CERTIFICATE OF SERVICE

I hereby certify that on June 16, 2017, I electronically filed the foregoing with the Clerk of the United States Court of Appeals for the District of Columbia Circuit by using the appellate CM/ECF system. Participants in the case who are registered CM/ECF users will be served by the appellate CM/ECF system.

/s/ Bryan N. Tramont

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