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Before the
POSTAL REGULATORY COMMISSION
Washington, D.C. 20554

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In the Matter of	)	
	)	
Institutional Cost Contribution	)	Docket No. RM2017-1
Requirement for Competitive Products	)	
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DECLARATION OF ROBERT J. SHAPIRO

April 16, 2018

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Declaration before the Postal Regulatory Commission in the Matter of the Institutional Cost Contribution Requirement for Competitive Products[1]

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Executive Summary

This analysis updates our 2015 study detailing and measuring the special subsidies provided to the U.S. Postal Service (USPS) to support its monopoly, public service operations and our 2016 analysis detailing and measuring how the USPS leverages its subsidized monopoly operations to cross-subsidize its competitive business in package deliveries and express mail. It also reassesses the impact of the USPS's monopoly access to mailboxes and new information from the Postal Regulatory Commission (PRC) about the USPS's payments for its competitive business's use of USPS fixed investments and institutional resources.

- Based on Postal Regulatory Commission (PRC) data, USPS's public service obligations as specified by law and regulation cost the USPS $4.4 billion in FY 2016. To fulfill these obligations, the PRC estimates the USPS received subsidies worth $6.8 billion in FY 2016.

- Our analysis found that the USPS actually received subsidies worth $12.8 billion in FY 2016 or nearly twice the PRC's estimate.

    - We accept the PRC's estimate that the USPS's letter mail monopoly provided a $3.12 billion subsidy in FY 2013 or $4.44 billion in FY 2016 adjusted for inflation.

    - The PRC's estimate that USPS's monopoly access to customers' mailboxes, covering both its monopoly operation and its competitive business, produced an inflation-adjusted $1.24 billion subsidy in FY 2016 is badly understated: Based on the cost for USPS's competitive business to deliver packages to customers' doors as its competitors do, the mailbox monopoly subsidy was $3.9 billion in FY 2016

    - The PRC's estimate that USPS's exemption from real estate and property taxes provided a $428 million subsidy in FY2016 (after adjusting for inflation), is also very understated: Based on the market value of USPS's real estate holdings and average property tax rates, the subsidy came to $2.37 billion in FY 2016. Counting exemptions from other state and local taxes and fees, the subsidy was $3.05 billion.

    - The PRC ignores two subsidies: The USPS's right to borrow from the U.S. Treasury at subsidized rates, and the USPS's right to draw on funds paid in its account at the Treasury, including federal taxes paid on its competitive business's profits. We estimate these subsidies were worth $1.41 billion in FY 2018.

[1] I wish to acknowledge the excellent assistance provided by Matt Jensen and the support for this research provided by United Parcel Service, Inc. The analysis and views are solely mine.

- The USPS leverages its subsidized monopoly operations to cross-subsidize and thereby advantages its competitive business. The purpose is to keep costs and prices low for its competitive products, whose customers can go elsewhere and are thus price-sensitive, and allow prices to rise for its monopoly products, without lack of competition makes its consumers less price sensitive.

- The broadest case of cross-subsidization involves USPS's ability to pick up or drop off packages when it delivers mail to U.S. residences and businesses, at little additional cost. We estimate that the value of this cross-subsidy and others totaled $9.64 billion in FY 2016.

  - USPS and PRC accounting divides USPS costs into those "attributable" to specific monopoly or competitive products, and "institutional" costs that all products share. The costs USPS says can be "attributed" fell from 59.9% in 2007 to 52.8% in 2016.

  - The result: The share of USPS costs treated as institutional has risen, and the USPS has undercharged its competitive business for its share of those fixed costs: In FY 2016, the competitive business bore 16.5 percent of those fixed costs, but accounted for 26.7% of all revenues and 30.7% of attributable costs, for a midpoint of 28.7%.

  - The FY 2016 cross-subsidy in this area is the difference between 16.5% and 28.7% of the USPS's institutional costs of $36.4 billion, $4.45 billion.

    - This cross subsidy is clearly evident during holiday periods: Seasonal demand for package deliveries spikes, but the USPS hires additional workers at one-third the rate, relative to expected additional deliveries, of private competitors such as FedEx or UPS.

  - In addition to this "institutional" cross-subsidy, the direct subsidy from the USPS's monopoly access to customers' mailboxes for its deliveries when it competes with private firms, $3.9 billion in FY 2016, also operates as a cross-subsidy.

  - Other USPS subsidies for its monopoly products similarly operate as cross-subsidies to the extent they also lower costs for its competitive products, including $4.41 billion in subsidies from USPS's exemption from state and local property and other taxes and fees, its subsidized Treasury interest rate, and its ability to draw on tax payments for the competitive business's profits. Applying the competitive business's 28.7% share, these cross-subsidies came to $1.26 billion in FY 2016.

- The USPS has supported its extensive cross-subsidies first by borrowing $15 billion from the U.S. Treasury, authorized by Congress in 2006, from FY 2007 to FY 2012. When the USPS reached the $15 billion legal cap on such loans, it turned to the PRC for postal rate increases, which have been granted in FY 2013, FY 2015, FY 2017 and again in FY 2018.

I. Introduction

In 2015, I conducted a study detailing and measuring the special privileges and subsidies provided to the U.S. Postal Service (USPS) to support its monopoly, public service operations; and in 2016, I conducted a second study detailing and measuring how the USPS leverages its subsidized monopoly operations to cross-subsidize its competitive business in package deliveries and express mail. This Declaration updates the analyses and findings of the previous studies. It also reevaluates the impact of the USPS's monopoly access to mailboxes and takes account of new information regarding payments by the USPS's competitive business for its use of the USPS's fixed investments and institutional resources. This new analysis follows my previous studies in finding that the USPS continues to both receive substantial subsidies and provide large-scale cross-subsidies that artificially support and benefit its competitive business.

Universal postal service in the United States has long been supported by a range of subsidies and special rights, including a monopoly over the delivery of first-class and standard mail, with the right to set prices, within limits, for those deliveries, as well as access to loans from the U.S. Treasury on highly-preferred terms, exemptions from state and local taxes and fees, and exclusive access to residential and business mailboxes. In various ways and to some degree, the USPS leverages these special rights and subsidies to support its competitive package delivery business. Most broadly, the USPS draws on the large economies of scale and scope provided through its monopoly operations to reduce costs in its competitive business.[2] Most notably, the USPS visits most American homes and businesses to deliver mail, supported by a range of subsidies, and can pick-up or drop-off packages at the same time, at little additional cost. This confers a "network advantage" over private competitors, since their costs to pick up and deliver packages exceed the USPS's incremental cost to do the same along with its normal mail service.[3]

The Value of the USPS's Subsidies

The USPS's exclusive rights and subsidies should be considered in the context of the costs of its public-service obligations. Congress requires that the USPS maintain residential deliveries six days per-week; provide discounted mail rates for religious, educational, political and other non-profit organizations; provide a special rate for periodicals; and maintain many sparsely-used and cost-inefficient post offices. Based on data from the Postal Regulatory Commission (PRC), I estimate that the USPS's legal and regulatory requirements raised its costs by $4.4 billion in FY 2016. Since this total corresponds very roughly to USPS reported deficits averaging $5.6 billion per year over the last decade and $6.8 billion in FY 2016, the USPS maintains it is virtually self-sufficient on a financial basis.

I will establish that the PRC's estimates understate the value of the USPS's subsidies by about half: Our analysis finds that the USPS's exclusive rights and special treatment produce effective subsidies worth more than $12.9 billion in FY 2016. I accept here the PRC's $3.12 billion valuation of the USPS's letter mail monopoly in FY 2013, which adjusted for inflation comes to $4.44 billion in FY 2016. However, the PRC's estimate that the USPS's monopoly on access to residential and businesses mailboxes was worth $810 million in FY 2013, or $1.24 billion in FY 2016 once adjusted for inflation, is a serious undervaluation. Exclusive access to mailboxes allows

[2] OECD (2001).
[3] Sidak (2007)

the USPS to leave its deliveries in curbside mailboxes or centralized mailrooms in large residential and commercial buildings, rather than at every customer's door. Based on recent data on the volume and costs of these deliveries to curbside mailboxes and centralized mailrooms, compared to each customer's door, this exclusive right saved the USPS $13.6 billion in FY 2016. Since these savings include both mail under the USPS's monopoly operations and packages by its competitive business line, and those savings are measured relative to the costs for private delivery companies, the subsidy applies only to USPS operations that compete with those private companies. Using the midpoint of the share of USPS revenues generated by its competitive business (26.7 percent) and the share of USPS attributable costs allocated to its competitive business (30.7 percent), I estimate that the USPS's exclusive access to mailboxes provided a subsidy worth $3.9 billion in FY 2016, three times the PRC's estimate.

Further, the PRC has valued the USPS's legal exemption from state and local property and real estate taxes at $315 million in 2006, or $428 million adjusted for inflation. I find that based on the fair market value of the USPS's real estate holdings and average property tax rates, this exemption alone was worth $2.37 billion in 2016. Including the exemptions from other state and local taxes and fees, this immunity provided the USPS a subsidy worth $3.05 billion in 2016. The PRC also omits other subsidies. The USPS has borrowed $15 billion from the U.S. Treasury at highly-preferred interest rates rather than market rates, saving the USPS $60 million in 2016 and $119 million in 2017. The PRC also ignores the special Postal Service Fund (PSF) created to receive federal taxes on the USPS's business profits and other payments, and from which the USPS can withdraw any funds to meet any expense. This arrangement provided an additional $1.4 billion subsidy for the USPS in FY 2016. All told, these subsidies were worth $12.9 billion in FY 2016.

The Value of the USPS's Cross-Subsidies for Its Competitive Business

When a public monopoly leverages its government-based advantages or subsidies to secure an edge in other activities where it competes with private companies, economists call this dynamic "cross-subsidization." For an economist, cross-subsidization is a response to economic incentives: Firms raise prices on products whose customers are relatively price-insensitive and thus willing to pay more, as they try to maintain prices on products whose customers are price-sensitive and so unwilling to pay more. The USPS confronts these precise dynamics: Researchers have found that a one percent increase in the price of USPS's competitive products leads to a drop in demand for those products 6.7 times greater than a comparable increase in the price of its monopoly products.[4] As a result, the USPS regularly raises the prices of its monopoly products and keeps the prices of its competitive products artificially low.

This type of cross-subsidization is widely recognized and, thus far, tolerated by the government: Congress has refused to legally separate the USPS's public and private operations in distinct entities that would not share facilities, equipment or workers, as urged by the President's Commission on the Postal Service. Instead, Congress directed the PRC to limit increases in the prices of the USPS's monopoly products to the rate of inflation (in the absence of "exigent circumstances") and stipulated that the USPS's competitive products cover all costs that can be attributed to them plus their share of the USPS's fixed or institutional costs. In practice, the PRC has allowed the USPS to raise rates on its monopoly products well above inflation on a regular

[4] Thress (2005).

basis, most recently in November 2017. It also has lowered the share of USPS costs that are attributed exclusively to its monopoly or competitive products, from 59.9 percent in FY 2007 to 52.8 percent in FY 2016. By claiming it cannot attribute nearly half of its costs to either of its two "divisions," the USPS treats all of those now-unattributed costs as fixed or institutional expenses.

The USPS and PRC not only inflate the share of costs to be treated as fixed or institutional, they also undervalue the share of those fixed costs that the competitive business should cover. In 2007, the PRC directed the USPS to set aside revenues for 5.5 percent of all USPS fixed or institutional costs from its competitive business as compensation for the value that these institutional resources provide the competitive business. While the PRC never formally raised that 5.5 percent contribution level, it reports that the share of fixed costs charged to the competitive business began to rise in 2009 and reached 16.5 percent in FY 2016.

Nevertheless, these payments seriously undervalue the support that the USPS's competitive business derives from its use of USPS facilities, equipment and workers, and so constitute a cross-subsidy from the monopoly operations to its competitive business. From 2007 to 2016, the share of USPS revenues produced by its competitive products rose from 10.6 percent to 26.7 percent, and the share of all USPS attributable costs allocated to the competitive business rose from 13.4 percent to 30.7 percent. These shares of revenues and attributable costs provide market-based benchmarks for the portion of USPS fixed costs that should be allocated to its competitive business. On this basis, the competitive business's appropriate share of the USPS's fixed costs of $36.4 billion in FY 2016 was $9.4 billion to $11.2 billion, and the PRC's charge of $6.0 billion (16.5 percent) understated its value by $3.4 billion to $5.2 billion. Using the midpoint of 26.7 percent and 30.7 percent, the competitive business's appropriate payment for fixed costs was $10.45 billion ($36.4 x 0.287) and the cross subsidy was worth $4.45 billion in FY 2016.

As we will see, this cross-subsidy is especially large when seasonal demand for package deliveries spikes in the winter holiday season. While competitors such as FedEx and UPS have had to hire additional workers to handle their expected increased demand, at a rate of one new temporary worker for every 7,400 to 7,700 expected seasonal package deliveries, the USPS draws on its surplus workforce from its monopoly operations and hires one additional worker for every 21,400 anticipated seasonal package deliveries.

The USPS's competitive business benefits from other cross-subsidies. In some cases, the direct subsidies for the USPS's monopoly operations also provide cross-subsidies for the competitive business. In the leading instance, the USPS uses its exclusive right to leave deliveries in customers' mailboxes when it delivers regular mail or packages and express mail in competition with private firms. I calculated that the privilege saved the USPS $13.6 billion in FY 2016, of which the $3.9 billion in savings associated with deliveries by its competitive business constituted a subsidy. All of that direct subsidy is also a cross-subsidy for the competitive business. The USPS's competitive business also benefits from the USPS's interest rate subsidy, its exemption from state and local taxes and fees, and its ability to draw on the income tax payments on the competitive business's profits. These three forms of special treatment provided subsidies worth $4.4 billion in FY 2016. Again, based on the competitive business's shares of USPS revenues and attributable costs, they provided another $1.26 billion in cross-subsidies in FY 2016. All told, the USPS provided its competitive business cross-subsidies worth $9.64 billion in 20126.

Finally, the USPS's ability to cross-subsidize its competitive business to such an extensive degree depended, first, on loans from the U.S. Treasury. Once it reached the $15 billion cap on such loans under current law, in FY 2012, the USPS appealed to the PRC for rate increases on its monopoly products. In the PRC granted a rate increase exceeding the inflation in FY 2013, citing "exigent circumstances" which it had rejected previously, which has been followed by additional increases in postal rates in FY 2015, FY 2017 and most recently FY 2018.

Two additional points are notable. First, the PRC's most recent report on the "Institutional Cost Contribution Requirement for Competitive Products," issued February 8, 2018, continues to cite an 11-year old analysis by the Federal Trade Commission to purportedly support the PRC's claim that the USPS's universal service obligations and legal stipulations regarding healthcare coverage produce a "net competitive disadvantage relative to its private competitors."[5] This claim rests equally on miscalculations and misunderstanding. The miscalculations reflect the flawed data and methods on which the PRC and USPS rely to measure the subsidies that offset the costs arising from the obligations and requirements applied to the USPS's monopoly operations. As a result, when the PRC nets out those miscalculated subsidies and costs, the sum is a negative number. In fact, this conclusion also depends on everyone ignoring the PRC's own calculation of the value of the USPS's letter monopoly provided in its FY 2017 Annual Report to Congress.[6] In any case, our analysis will establish those subsidies substantially exceed those costs

The PRC's claim that the USPS operates at a disadvantage *relative to its private competitors* also rests on its determined misunderstanding of the economics of cross-subsidies. After incorrectly calculating a net cost for the USPS's monopoly operations, the PRC proceeds to attribute that net cost to the USPS's competitive business as well as the monopoly operations. Only by approaching these legally separate operations as one entity can the PRC ignore or dismiss the economically irrefutable ways in which the USPS leverages the subsidies for its monopoly operations to confer substantial advantages on its competitive business.

Finally, two other developments enhance the impact of the USPS's cross subsidies and the accompanying downward pressures on package delivery rates and upward pressures on postal rates. In 2011 and 2012, the USPS shifted delivery of lightweight parcels, numbering hundreds of millions of units annually, from its monopoly line to its competitive business, and so lowered its average revenues per delivery. In addition, the USPS's fastest growing product is Parcel Select, the USPS's "final mile" delivery service for Amazon, other online retailers, Fedex and UPS. The rates for this last-mile product also are lower, also reducing average revenues per delivery.

I. The Financial Pressures and Performance of the United States Postal Service

The USPS is the country's oldest, continuously-operating business, created in 1775 by the Second Continental Congress and granted exclusive rights to carry and deliver "letters, packets, and other dispatches" in 1782. Current federal law (18 U.S. Code 1693-1699) continues to impose fines or imprisonment on anyone attempting to deliver mail along postal routes where U.S. mail is regularly carried. In 1934, Congress added another key provision, 18 U.S. Code 1725, establishing

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[5] PRC (2017-A).
[6] *Ibid.*, at 54.

the USPS's monopoly access to residential and business mailboxes and imposing criminal fines on anyone attempting to deliver mail via mailboxes without USPS postage.

By most measures, the USPS is now big business. With 644,000 employees in 2017, the USPS is the nation's second largest civilian employer, behind Wal-Mart. If the USPS were a private firm, its 2017 revenues of $69.6 billion would rank 38th among Fortune 100 companies, between Valero Energy and Target.[7] It offers six major product lines and more than 40 product "subclasses." There are three USPS monopoly products -- first class mail; standard mail-A (bulk circulars, form letters, catalogs, newsletters, direct-mail promotions, and merchandise weighing less than 16 ounces); and periodicals.[8] From 1792 to the present, no other entity can legally deliver mail, unless it also pays the USPS full postage. The USPS also offers other products in direct competition with private firms, including standard mail-B, which includes bulk books and packages weighing between 16 ounces and 70 pounds, Parcel Select and Parcel Select Lightweight for packages weighing 3.5 pounds to 70 pounds tendered to the USPS by other companies, as well as several forms of special package delivery and special priority mail. The USPS also offers certain non-mail services in competition with private firms, including P.O. boxes, money orders, registered and certified return receipt mail, insured mail services, passport application services, photocopy services, and sales of mailing containers and packaging supplies.

Under the Postal Reorganization Act of 1970, the USPS became an independent agency in the Executive Branch run by the presidential appointees, and the right to set postal rights shifted from Congress to the new independent Postal Rate Commission (PRC). The 1970 Act also reaffirmed the USPS's universal service obligation (USO), including uniform prices and services and universal service including service to "rural areas, communities, and small towns where post offices are not self-sustaining." Finally, the 1970 law ended annual appropriations to cover the USPS's public service costs, directing the USPS to fund its operations from its revenues, like a business.[9] The Act did allow Congress to appropriate funds to offset "public service costs incurred … in providing … postal service (to) in communities where post offices may not be deemed self-sustaining." but Congress ended such public service appropriations in 1983.

The 1970 Act created a conundrum: It directed the USPS to operate on the model of a private business but required it to provide public services entailing costs a private firm would be unwilling to bear, including reduced rates for voting materials sent overseas, mailings for blind people, mail from the government, members of armed services non-profit organizations and libraries. The USPS also has less control over labor costs than most private firms: In FY 2017, 92 percent of USPS employees were represented by collective bargaining, and total labor costs accounted for 76 percent of all USPS costs.[10] The law directs that the USPS and its bargaining partners to set those wages at levels equal to those paid for comparable work in the private sector, but analysts have generally concluded that the compensation of USPS workers is higher.[11]

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[7] *Fortune Magazine* (2017) http://fortune.com/fortune500/

[8] In 1979, Congress also exempted "extremely urgent" letters from the full postage requirement and the USPS's monopoly sphere, so long as the charge is at least $3.00 or twice the applicable fee from the USPS; and in 1986, Congress also exempted outbound international mail.

[9] Under Section 3621, "postal rates and fees shall provide sufficient revenues so that the total estimated income and appropriations to the Postal Service will equal as nearly as practicable total estimated costs of the Postal Service."

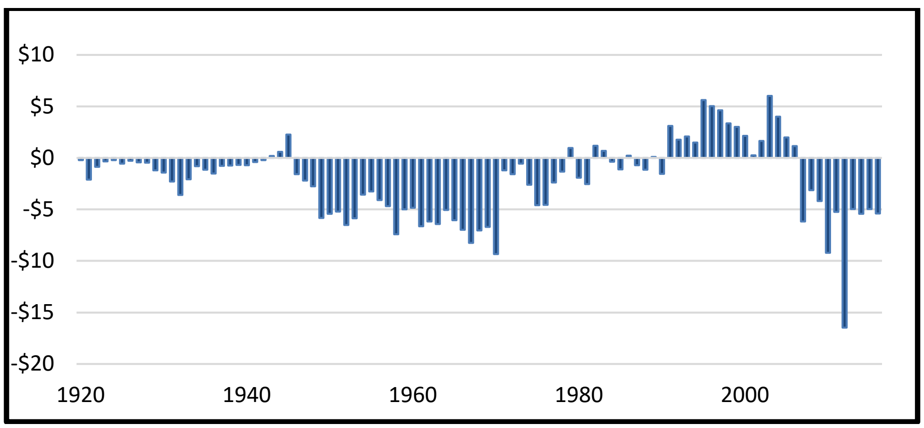
[10] USPS 10-K Financial Statement (2017) at 5, 13.

[11]Wachter. Hirsch and Gillula (2001).

Inevitably, the USPS has lost money through much of the period since 1970. Congress returned to debating postal reform from the mid-1990s to 2006, when it enacted the Postal Accountability and Enhancement Act (PAEA). The law formally divided the USPS's activities into the "market dominant" or monopoly products and "competitive" products described above. The PAEA also reorganized the Postal Rate Commission as the Postal Regulatory Commission (PRC) and directed it to create new rules for setting postal rates and other prices for both USPS monopoly and competitive products. Under the Act, the rates on monopoly products should be stable with increases limited to the inflation rate except in "exigent" circumstances and generate adequate revenues. The PAEA also grants the PRC and the USPS flexibility in setting the rates and prices for the competitive products, provided that they cover the product's direct and indirect "attributable costs" and an "appropriate share" of the USPS system's institutional or fixed costs.

Nevertheless, as Figure 1, below, shows, the USPS has accumulated $62 billion in losses or an average of $5.6 billion per year since PAEA was enacted.

Figure 1: USPS Real Net Income, 1920 – 2015, $ billions (2016 dollars)



Technological advances explain some of the system's recent losses. In the 67 years from 1934 to 2001, the volume of first-class mail declined only four times; from 2001 to 2017, as new telecommunications technologies spread, that volume fell in 15 of 16 years. Moreover, from 2006 to 2017, as most Americans and businesses have come to depend on mobile phones, email, text messaging and social media for much of their communications, first-class mail volume fell 39.8 percent to 58.7 billion pieces.[12] First-class mail is the USPS's most profitable monopoly product, and other products cannot bridge the gap.[13] Thus, while first-class mail revenues declined by $12.7 billion or 33.2 percent from 2007 to 2017, revenues from standard mail and periodicals also declined, respectively, by 20.0 percent and by 37.2 percent. Together, USPS revenues from first-class mail, standard mail, and periodicals dropped from $61.4 billion to $43.6 billion.

Despite falling revenues, the USPS raised average wages and benefits for its employees every year since 2004, and total compensation per employee increased 24.1 percent from 2004 to

[12] USPS 10-K Financial Statements (2007-2017).
[13] From 2006 to 2017, total mail volume declined from 213.1 billion pieces to 149.5 billion pieces or by 29.8 percent. USPS 10-K Financial Statement (2017) at 19

2017. These rising labor costs include the funding of healthcare benefits for current and future retired USPS workers from USPS operating funds, a program the USPS devised and submitted to Congress and eventually mandated by the PAEA. For FYs 2007 to 2016, those mandated payments were set at $5.4 billion to $5.8 billion, but the USPS has failed to make those payments every year since 2011. By 2017, the USPS owed back payments of $33.9 billion. Moreover, the USPS's losses averaging $4.7 billion per year since 2014 [14] would have been worse but for a series of rate increases for most monopoly products, starting with the 2013 "exigent" hike in rates.[15]

The USPS maintains that its financial troubles reflect statutory requirements and regulatory constraints imposed on it by the Congress and PRC. Every annual Appropriations Act since 1984 has barred the USPS from shifting to five days per-week delivery for private residences, a change which the USPS and PRC estimate would generate annual savings of some $2.2 billion.[16] Congress also has prohibited the USPS from closing rural and other small post offices and from consolidating any post office without 60 days' notice for public comment, 30 days for possible appeals, and another 30 days before taking action.[17] The PRC estimates that closing all small, unprofitable post offices would save $245 million per-year.[18] Congress also has directed the USPS to provide discounted rates to religious, educational, charitable, political, and other nonprofit organizations that meet the eligibility requirements, at a cost the PRC estimated at $1.1 billion in FY 2016.[19] In addition, the USPS's universal service obligation includes the Alaska Air Subsidy, and reduced rates on Media and Library Mail, which the PRC estimates cost $864 million in FY 2016. According to the PRC, these various legal and regulatory requirements, all told, cost the USPS cost $4.4 billion in FY 2016. (Table 1, below)

Table 1: Postal Rate Commission Estimates of the Costs of the Main Features of the USPS Universal Service Obligation, 2009-2016, Fiscal Years 2009 - 2016 ($ millions)[20]

	2009	2010	2011	2012	2013	2014	2015	2016
Six-Day Delivery	$2,080	$2,248	$2,250	$2,240	$2,212	$2,080	$2,074	$2,191
Nonprofit Mail	$1,322	$1,284	$1,329	$974	$1,130	$1,114	$1,116	$1,105
Periodicals' Discount	$642	$611	$609	$670	$521	$509	$512	$537
Small Post Offices	$536	$566	$583	$610	$468	$366	$209	$245
Alaska Air Subsidy	$121	$118	$123	$122	$114	$112	$107	$113
Non-zoned First-Class Mail	$81	$78	$122	$117	$109	$93	$86	$78
Media/Library mail	$96	$98	$115	$71	$70	$37	$101	$102
Group-E PO Box Service	$37	$30	$36	$34	$31	$33	$33	$34
Total	**$4,915**	**$5,033**	**$5,167**	**$4,838**	**$4,655**	**$4,344**	**$4,238**	**$4,405**

[14] USPS 10-K Financial Statements(2007-2017).
[15] USPS 10-K Financial Statements(2017) at 15
[16] Postal Regulatory Commission (2017); USPS FACT SHEET (2013). A 2008 survey of 791 households found that 68 percent of respondents said they would accept a reduction in USPS deliveries from six to five days per-week. See PRC (2008).
[17] 39 U.S.C. § 404(d).
[18] PRC FY 2017 Annual Report to Congress at 47.
[19] *Ibid at* 51.
[20] *Ibid at* 47-53.

These PRC's estimates all depend on how efficiently the USPS collects, sorts and delivers the mail in question, and the USPS is dramatically less efficient and productive than private companies carrying out comparable operations. According to the Bureau of Labor Statistics (BLS), the USPS achieved average labor productivity gains of just 0.5 percent per year from 1987 to 2015.[21] BLS also calculates the productivity gains of private "transportation and warehousing" industries, including air transportation, line-haul railroads, truck transportation, and warehousing and storage. While these services do not cover all USPS operations, the USPS relies heavily on all of them to provide basic postal service. The four private industries that correspond to the primary monopoly operations of the USPS achieved average productivity gains of 2.4 percent per year over the 28-year period, almost 4.8 times the annual productivity gains of the USPS. The disparity between the productivity of the USPS and its private-sector counterparts helps explain the USPS's periodic need to raise rates, its large deficits, and its failure to make mandated payments to the health benefits fund for its current and future retirees. Table 2 below presents the BLS productivity estimates as well as changes in output, hours and unit labor costs.

Table 2: Average Annual Productivity Growth, USPS and Associated Industries, 1987-2015[22]

Industry	Productivity	Output	Hours	Unit Labor Costs
USPS ("Postal Service")	**0.5%**	**- 0.7%**	**- 1.2%**	**3.2%**
Private Transport and Warehousing Industries				
Air Transport	3.1%	2.6%	- 0.4%	0.6%
Line Haul Railroads	3.6%	2.0%	- 1.5%	- 0.3%
Truck Transport	0.6%	2.1%	1.5%	0.9%
Warehousing and Storage	2.2%	5.8%	3.5%	0%
Simple Average	**2.4%**	**3.1%**	**0.8%**	**0.3%**

These data show that the USPS's fast-rising unit labor costs account for much of the difference in productivity growth: While USPS output and hours declined steadily with the falling demand for delivery of first class mail, standard mail and periodicals, USPS unit labor costs rose an average of 3.2 percent per year. By contrast, the private industries increased output and expanded average hours while holding their increases in unit labor costs to 0.3 percent per year. If the USPS had achieved comparable productivity gains over this period, it could have produced the same output in FY 2017 with 40.8 percent fewer labor hours.[23] Based on its 2017 labor costs, comparable productivity gains from 1987 to 2015 could have saved the USPS about $20 billion in labor costs in FY 2017. (See Appendix, Table A-1 and A-2 for data on compensation.)

III. The Value of the USPS's Special Subsidies

As I have noted, the costs associated with the USPS's universal service obligations are accompanied by certain monopoly privileges or rights that provide substantial subsidies for USPS operations. These subsidies include the USPS's exclusive right to use residential and business mailboxes, exemptions from state and local real estate and other taxes, its ability to borrow from

[21] Bureau of Labor Statistics (2016).
[22] *Ibid*. I do not include "couriers and messengers," because their services correspond more closely to USPS express mail, which is a competitive product
[23] The reduction in labor hours is calculated as $1 - (1.005^{28}/1.024^{28})$ = 40.8 percent.

the U.S. Treasury at preferential rates, and the arrangements for federal tax on profits from its competitive business.

The Letter and Mailbox Monopolies

In 2008, the PRC commissioned a study to estimate the value to the USPS of its exclusive rights to deliver first-class and standard mail and to use residential and business mailboxes: The study's authors modeled the USPS's net income with and without these monopolies, based on assumptions about a potential competitor's volume of business, delivery costs and discounts.[24] Based on this study, the PRC estimated that the letter and mailbox monopolies were worth $3.9 billion in FY 2013, and the most recent estimate for FY 2016 is $5.7 billion. (Table 3 below)

Table 3: PRC Estimates of the Value of the USPS's Letter and Mailbox Monopolies Fiscal Years 2009 - 2016 ($ millions)[25]

	2009	2010	2011	2012	2013	2014	2015	2016
Mailbox Monopoly	$790	$690	$910	$700	$810	$770	$1,030	$1,240
Letter Monopoly[26]	$2,140	$2,640	$2,430	$2,580	$3,120	$3,840	$4,420	$4,440
Total	**$2,930**	**$3,330**	**$3,340**	**$3,280**	**$3,930**	**$4,610**	**$5,450**	**$5,680**

Our analysis of the mailbox monopoly suggests, first, that it is unjustified. The monopoly covers not only first-class and standard mail, but all "mailable matter." It dates back to 1934; and then and now, the USPS has defended it as a deterrent to the "very serious problem" of mail theft.[27] No other advanced country provides a comparable monopoly to deter such theft and, as Supreme Court Justice John Paul Stevens wrote in 1981, "the general public is at best only dimly aware of (this) law, and numerous otherwise law-abiding citizens regularly violate it with impunity."[28] Prosecutions for violating the mailbox monopoly have been virtually non-existent for many years. Moreover, the USPS has tacitly acknowledged that the restriction persists not to deter theft, but to secure a market advantage over private package delivery companies. A 2008 study commissioned by the USPS called the mailbox monopoly "one of [the USPS's] greatest logistical assets;"[29] and later that year, the USPS wrote that eliminating or relaxing the restriction would have a "devastating impact" on its business and reduce its net income by $1.5 billion to $2.6 billion per year.[30] By its own accounting, therefore, the USPS valued its mailbox monopoly at more than $2 billion in FY 2008, compared to the PRC's estimate of $790 million in FY 2009.

[24] Cohen, McBride (2008). The model assumed, for example, that a competitor would deliver mail three times a week, reduce labor costs by 10 percent compared to the USPS, and provide 10 percent discounts.
[25] Postal Regulatory Commission (2017) at 54. The PRC offers the same $5.68 billion estimate for FY 2017. (Postal Regulatory Commission (2018A)
[26] The value of the letter monopoly has been extrapolated from the value of the mailbox monopoly and the total value of the combined monopolies.
[27] GAO (1997); RAND Corporation (2008).
[28] *United States Postal Service v. Greenburgh Civic Associations* (1981).
[29] ILO Institute (2008).
[30] USPS (2008).

Our analysis indicates that the mailbox monopoly is worth a great deal more. The USPS has three modes of mail delivery. Delivery to a customer's door, including delivery to each apartment in an apartment house and each office in an office building, is the most costly. A second, less-costly mode is curbside delivery, where carriers leave the delivery in mailboxes located on or near curbs on residential streets, without leaving their vehicles. The least expensive mode is centralized delivery, covering delivery to central mailboxes and cluster box units in apartment houses and office buildings, so the mail carrier can deliver mail to many customers at once.

The value of the monopoly is the difference in the cost of leaving mail in a mailbox, compared to delivering it to a customer's door. USPS's delivery costs in FY 2016 came to $33.1 billion, or 46 percent of all operating expenses.[31] According to a May 2014 GAO report, the USPS made five or six-day per-week deliveries to 133.3 million places in 2013, including 55 million deliveries to curbsides, 40.5 million deliveries to centralized locations, and 37.8 million deliveries to customers' doors.[32] Those data have not been updated; but the USPS Inspector General (IG) reports that the volume of "marketing" or standard mail, which accounts for 54.9 percent of mail volume, has been generally stable since 2013, while the volume of first-class single and pre-sorted mail, comprising 45.9 percent of volume, has declined some 6.0 percent per-year.[33] Using changes in volume as proxies for changes in numbers of deliveries, I adjust deliveries for a 2.75 percent annual decline or 9.0 percent over three years. I estimate that in 2016, the USPS made 50.1 million daily curbside deliveries, 36.9 million daily deliveries to centralized locations, and 34.4 million daily deliveries to customers' doors. Finally, the USPS's IG also reported that curbside delivery costs the USPS approximately $224 per-delivery-point per year, centralized delivery costs $160 per-delivery-point per year, and door-to-door delivery costs $353 per-delivery-point per year.[34]

If the USPS had to deliver all mail to customers' doors, as private delivery services have to do under the mailbox monopoly, it would have increased USPS's delivery costs for its 501.1 million curbside delivery points by $129 each or $6.5 billion in 2016 and raised the delivery costs for each of its 36.9 million centralized delivery points by $193 each or $7.1 billion in 2016. Thus, the mailbox monopoly reduced USPS delivery costs by $13.6 billion in FY 2016, compared to its costs if it had to follow the same rules as private delivery services. These savings provide a direct subsidy for the USPS for its package and express mail deliveries, where the USPS competes with private companies. As noted earlier, the USPS's competitive products account for 26.7 percent of all USPS revenues and 30.7 percent of all USPS attributable costs in FY 2016. Using the midpoint of 28.7 percent as a proxy for the share of USPS package deliveries, the mailbox monopoly produced a subsidy worth $3.9 billion in FY 2016 (13.6 x 0.287), three times the PRC's estimate. If one accepts the PRC's estimate of the value to the USPS of its monopoly on mail delivery, $4.4 billion after adjusting for inflation, the two subsidies totaled $8.3 billion in FY 2016.

Borrowing costs

In addition to the letter mail and mailbox subsidies, the USPS is permitted to borrow funds directly from the U.S. Treasury at subsidized rates, a privilege that I estimate provides a subsidy

[31] USPS Cost and Segments Report FY 2016
[32] GAO (2014).
[33] USPS-OIG (2017).
[34] USPS-OIG Audit Report – Modes of Delivery (Report Number DR-AR-11-006) Table 1. Delivery Mode Costs.

worth $60 million in 2016 and $119 million in 2017. This subsidy can be traced to the USPS's authority under the Postal Reorganization Act of 1970 to sell securities backed by the U.S. Government and the Federal Financing Bank Act of 1973, which established the Federal Financing Bank (FFB) and authorized it to borrow from the Treasury and use those funds to purchase the marketable securities of the USPS. In so doing, Congress sharply cut the USPS's borrowing costs.

In 2003 and 2004, Congress considered reforms to require the USPS to borrow at market interest rates, at least for funds used by its competitive operations, but took no action.[35] However, under the Postal Accountability and Enhancement Act (PAEA) of 2006, the USPS was authorized to borrow up to $3 billion per year at subsidized interest rates to finance both capital improvements and its operating expenses, with total debt capped at $15 billion. The USPS reached that debt cap in 2012 and has maintained that maximum level ever since. According to the USPS's 10-K filing for FY 2017, it owes $4.9 billion in long-term debt at fixed interest rates of 2.1 percent to 3.8 percent, and $6.1 billion in short-term debt at fixed rates of 0.895 percent to 1.104 percent. The USPS also has two revolving credit lines -- a short-term line for $3.4 billion with a 1.109 percent interest rate and an overnight credit line of $600 million with a 1.079 percent interest rate. Table 4, below, summarizes these debts and below-market interest rates.

Table 4: Total USPS Debt, September 30, 2017[36]

Maturity	Balance	Interest Rate
Fixed rate notes – current		
October 26, 2017	$4,400,000,000	1.104%
November 9, 2017	$1,000,000,000	0.895%
December 7, 2017	$700,000,000	0.994%
Fixed rate notes – noncurrent		
November 15, 2018	$500,000,000	3.048%
February 15, 2019	$700,000,000	3.296%
May 15, 2019	$1,000,000,000	3.704%
May 15, 2019	$500,000,000	3.513%
August 16, 2021	$1,000,000,000	2.066%
May 17, 2038	$200,000,000	3.770%
February 15, 2039	$1,000,000,000	3.790%
Current revolving credit line		
October 2, 2017	$3,400,000,000	1.109%
Overnight revolving credit line		
October 2, 2017	$600,000,000	1.079%
Total debt	**$15,000,000,000**	

[35] Committee on the Judiciary of the House of Representatives (2004).
[36] USPS 10-K Financial Statement (2017) at 61-62.

As a result of these favorable rates, the USPS paid interest of $222 million in FY 2016, and $226 million in FY 2017, at an average interest rate of 1.4 percent.[37] Even in this period of historically low interest rates, the interest rates paid by the USPS are well below market rates: U.S. Treasury data show that corporate bonds with comparable maturities had weight-averaged yields of 1.88 percent in December 2016 and 2.23 percent in December 2017.[38] If the USPS had to borrow at market rates, Iestimate that its annual interest payments would have been $282 million in 2016 and $345 million in 2017. The USPS's special borrowing status, therefore, provided a subsidy of $60 million in 2016 and $119 million in 2017; and as market interest rates rise, the subsidy becomes larger.

Federal Taxes

The USPS is liable for federal corporate taxes on profits from its competitive operations and has published its accounting for those taxes for FYs 2007 to 2016. [39] (Table 5, below) Over that period, the USPS's revenues from its competitive business grew from $7.9 billion to $18.5 billion, and its net income, after expenses and the required institutional cost contribution also rose from $49 million to $3.9 billion. These data also show that the revenues, net taxable income and federal tax for the USPS's competitive operations increased sharply starting in 2012 and 2013.

Table 5: USPS Gross and Net Income from Its Competitive Operations and Its Federal Tax FYs 2007 – 2014 ($ millions)[40]

	Gross Revenues	Costs	Institutional Cost Payment	Net Taxable Income	Federal Tax
2007	$7,909	$6,123	$1,737	$49	0
2008	$8,382	$6,600	$1,768	$14	$5
2009	$8,133	$6,175	$1,590	$368	$129
2010	$8,678	$6,257	$1,870	$551	$193
2011	$8,997	$6,680	$1,625	$691	$242
2012	$11,426	$8,383	$2,234	$809	$283
2013	$13,669	$9,762	$1,823	$2,083	$729
2014	$15,273	$10,970	$1,880	$2,422	$848
2015	$16,436	$11,913	$1,859	$2,659	$931
2016	$18,497	$12,496	$1,999	$3,998	$1,399

Despite these appearances, the USPS does not actually pay federal taxes on the profits from the competitive business. Instead, the USPS reports its tax liability and transfers the required tax payment to the "Postal Service Fund" (PSF), a revolving fund created the Treasury established to hold all revenues, interest, appropriations, transfers, and other receipts from the USPS's operations. Accordingly, in January 2017, the USPS transferred $1.4 billion to the PSF to cover

[37] USPS 10-K Financial Statement (20142017) at 45.
[38] These estimates draw on U.S. Treasury data for Two-Year HQM Corporate Bond Yield Spot Rates in December 2017. U.S. Treasury (2018).
[39] USPS Calculation of the Assumed Federal Income Tax on Competitive Products FY2007-FY2016
[40] Postal regulatory Commission (2018). USPS Calculation of the Assumed Federal Income Tax on Competitive Products FY2007-FY2016

its 2016 federal tax obligations, at least in a virtual way: By electronic notation, the funds held by the PSF increased by $1.4 billion. Moreover, the PSF is also empowered to use those and other funds to pay expenses incurred by the USPS in carrying out its legal functions.[41] The result is that the USPS draws on its "tax payments" to finance operations in both its monopoly and competitive spheres. Overlooked by the PRC, these tax arrangements constitute another direct subsidy for the USPS, one worth $1.4 billion in FY 2016 and $3.9 billion from FY 2013 to FY 2016.

Additional indirect subsidies

The USPS's enjoys other special subsidies, many also not included in the PRC's accounting. These benefits are based on the Supremacy Clause of the U.S. Constitution, under which federal agencies are seen as immune from state and local taxes. As a result, the USPS is exempt from state and local property and income taxes, sales and use taxes, franchise taxes, license and title fees, registration fees, parking tickets, and tolls. The Congressional Research Service reports that the USPS is also "immune from most forms of regulation, such as zoning, land use restrictions, motor vehicle registration [and] parking tickets,[42] and the House Committee on Oversight and Government Reform found that the USPS also can exercise eminent domain and expect taxpayer backing if its securities default.[43]

In 2006, the Federal Trade Commission (FTC) valued these privileges at $869 million[44] or, adjusting for inflation, $1.1 billion to the USPS in 2017. (Table 6, below)

Table 6: The Value of USPS Exemptions from State and Local Taxes and Fees, ($ millions)[45]

	2006	**2017[e]**
Property Tax and Real Estate Taxes	$315	$428
Sales and Use Taxes	$200	$245
Vehicle Registration Fees	$115	$141
Tolls	$77	$94
State Sales Tax on Gasoline and Diesel Fuels	$62	$76
Business Licensing Fees, Franchise Fees, Business Taxes, etc.	$38	$47
Parking Tickets	$31	$38
State Franchise Taxes	$15	$18
Tax Compliance Costs	$15	$18
Total	**$869**	**$1,105**

[41] 39 U.S. Code § 2003.
[42] Stevens (2006). The CRS report also noted USPS's exemption from anti-trust scrutiny prosecution, but the PAEA ended that particular exemption in 2007. For its part, the USPS insists that it complies with local zoning, planning and building codes "to the extent practical." USPS (2014b)
[43] Committee on Oversight and Government Reform of the House of Representatives (2014).
[44] Federal Trade Commission (2007).
[45] *Ibid.*, author's calculations.

In fact, the value of these implicit subsidies is much greater. In particular, the FTC estimated that the USPS's exemption from property taxes saved $315 million in 2006, or $428 million in 2017 after adjusting for inflation, based on data reported in the USPS's 10-K financial statements. In the USPS's most recent 10-K filing in September 2017, it reported owning 8,448 properties covering 191.7 million square feet[46] and worth $27.8 billion ($25 billion for the structures and $2.8 billion for the land).[47] However, the USPS values its properties on a *cost* basis, not their current market value. In 2012, the Office of the Inspector General for the USPS estimated the fair market value of the USPS's real estate holdings at $85 billion, more than three times the cost basis value in the USPS's 2017 10-K statements.[48] From January 2013 to December 2017, the value of commercial real estate increased 32.8 percent, based on the U.S. Commercial Property Price Index (CPPI).[49] Adjusting the OIG estimate of $85 billion in 2012 for the subsequent gains in the CPPI, I estimate that the USPS's property holdings were worth $112.85 billion in 2017. In 2015, the average property tax on commercial property was between 2.053 percent and 2.147 percent, depending on its value.[50] Using the midpoint of 2.1 percent, I estimate that the USPS's property tax exemption provided a subsidy worth $2.37 billion in 2016. Assuming the FTC's estimates of the value of the USPS's other exemptions from taxes and fees are accurate, these subsidies totaled $3.05 billion in 2017.

Summary of the USPS's Subsidies

The issue examined here is how extensively the USPS is currently subsidized. The USPS and the PRC insist that the subsidies roughly equal and offset the additional costs the USPS bears in providing universal mail service, which in turn roughly equals the USPS's annual deficits of $4.5 billion to $5.1 billion. Most notably, I found that the USPS's monopoly over access to customers' mailboxes reduced its delivery costs by $13.6 billion in 2016, compared to the costs that private firms bear to deliver to their customers' doors; and at least $3.9 billion of those savings applied to deliveries in which the USPS competes with those private firms, and therefore constitute a subsidy. Combined with the USPS's monopoly over letter service, which the PRC valued at $3.12 billion in FY 2013, or $4.44 billion in FY 2016 after adjusting for inflation, these two monopoly rights provided subsidies worth $8.34 billion to the USPS in 2016.

The USPS's legal exemptions from state and local property and real estate taxes, along with many other state and local fees and taxes, also provide substantial subsidies, worth $3.05 billion in FY 2016. In addition, the arrangements under which the USPS "pays" federal corporate income taxes on profits from its competitive operations provide an additional subsidy worth $1.4 billion in FY 2016. The USPS's special access to below-market loans from the Federal Financing Bank at the U.S. Treasury provided an interest rate subsidy worth $60 million in FY 2016 and $119 million in FY 2017. All told, I estimate that the USPS's monopoly rights and arrangements produce special savings and subsidies worth $12.9 billion in FY 2016.

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[46] USPS FY2017 Annual Report to Congress and Comprehensive Statement of Postal Operations at 10
[47] USPS (2017a) at 10.
[48] USPS Office of Inspector General (2012).
[49] Green Street Advisors (2018).
[50] Lincoln Institute of Land Policy (2016).

I also found that the USPS has suffered from chronically low productivity growth for at least 28 years, compared to private companies carrying out similar operations, which has driven up its costs and thereby required heavy subsidies. If the USPS had matched the productivity gains of private shipping and delivery firms over this period, I estimate that its costs would have been $20 billion less in 2017 -- requiring no subsidies. Higher labor costs account for about half of the $20 billion, while the other half reflects the USPS's less innovative and effective management practices, investments, and operating procedures. These costs, while not conventional subsidies, represent an economic burden arising directly from the USPS's monopoly position.

IV. The Basic Elements of USPS Cross-Subsidization

The USPS not only receives huge subsidies for its operations; it also practices "cross subsidization," in which it uses its subsidized, monopoly advantages to artificially reduce costs in its competitive business and so leverage its advantages into the market competition for package shipping and delivery. As just noted, the USPS's advantages are ultimately based on a monopoly position which supports its vast shipping and delivery infrastructure, including some 31,000 retail offices, 231,000 vehicles, 229,180 routes, and 157 million delivery points.[51] This network enables the USPS to draw on the substantial economies of scale and scope created by its institutional investments and so reduce the costs and prices for its competitive products, which depend on the same offices, vehicles, routes and delivery points as letter mail. Private companies such as FedEx and UPS have to cover all of their costs from the revenues from their package-delivery services and products, while the USPS can finance some of its package-delivery costs in direct competition with FedEx, UPS and others through revenues and subsidies derived from its monopoly operations. Beyond the cross-subsidization arising from the USPS's monopoly economies of scope and scale, many of the direct subsidies enumerated above reduce its costs in both its monopoly operations and its competitive business. In this way, the USPS converts part of a direct subsidy into a cross-subsidy so its competitive business can charge lower prices and capture a larger market share.

The USPS has strong internal incentives to cross-subsidize its competitive business. Market pricing generally follows what economists call the "inverse elasticity pricing rule:" A product's markup over its marginal cost is inversely proportional to its price elasticity of demand. Stated simply, the prices that a business charges are based on both the costs of production and the extent to which its customers' demand will be affected by changes in price. As a result, the USPS has an incentive to overcharge its "captive" or monopoly customers in letter mail and mass mailings, because they have no alternatives to the USPS, and undercharge the more price-sensitive customers of its competitive business.

This pricing strategy is evident in the USPS's pricing. Demand for the USPS's monopoly products is relatively price-insensitive or inelastic: A one-percent increase in the price of first class mail reduces demand for first class mail by only 0.18 percent to 0.26 percent, and a one-percent increase in the price of standard mail products produces a 0.30 percent decline in demand.[52] By contrast, demand for the USPS's competitive products is highly price-sensitive or elastic: A one-percent increase in the price of USPS Priority Mail produces a decline in demand of more than

[51] USPS FY 2017 10K Financial Statement at 76, and at 9.
[52] Thress (2006).

one-percent (1.02 percent); and a one-percent increase in the price of the USPS's Express Mail products produces a 1.65 percent decline in demand.[53] (Table 7, below)

Table 7. Estimated Demand Elasticity for Selected USPS Products[54]

Product	Estimated Elasticity
First-Class Single Piece Letters	-0.184
First-Class Single Piece Cards	-0.258
Standard Mail	- 0.296
Priority Mail	-1.023
Express Mail	-1.645

The price elasticity of demand for the USPS's various products has strongly influenced the USPS's pricing. In FY 2016, according to the PRC, the USPS generated $2.24 in revenues for every $1.00 it spent on first class mail services and $1.58 for every $1.00 it spent on standard mail services. By contrast, the USPS generated $1.48 for every $1.00 it spent exclusively on its competitive services, reflecting market competition in those services and customers' greater sensitivity to price changes for its competitive products. (Table 8, below)

Table 8: USPS Revenues, Attributable Costs, and Cost Coverage for Monopoly and Competitive Products, FY 2016 ($ billion)[55]

	Revenues	Attributable Costs	Cost Coverage
First Class Mail	$28.7	$12.8	224%
Standard Mail	$17.7	$11.2	158%
Competitive Services	$18.5	$12.5	148%

This disposition to leverage its monopoly-based advantages to support its competitive business line is not confined to the USPS. In the 1990s, Germany's postal service, Deutsche Post AG, was charged with using revenues from its letter mail monopoly to subsidize its parcel delivery services; and in March 2001, the European Commission (EC) fined Deutsche Post AG €24 million ($26.9 million) for predatory pricing and ordered it to spin off its parcel delivery business. In June 2002, the EC further ordered Deutsche Post AG to repay €572 million ($606.3 million) in subsidies used to undercut private competitors in parcel delivery from 1994 to 1998.

When the Congress set out to reform the USPS in the 1990s and early 2000s, cross-subsidization was a stated concern. In 2003, the President's Commission on the United States Postal Service wrote that, given the USPS's "presence in contested markets, it has a special duty to ensure it does not wield its monopoly and government privileges unfairly against companies that have no such advantages."[56] The Senate Governmental Affairs Committee wrote in 2004 that postal reform should include safeguards to ensure "open and fair competition," provide that "a

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[53] *Ibid.*
[54] *Ibid.*
[55] USPS FY 2016 Cost and Revenue Analysis at 1 and 3.
[56] Report of the President's Commission on the United States Postal Service, July 2003.

level playing field is maintained and that the Postal Service does not unfairly compete," and prevent "the subsidization of competitive products by market-dominant products."[57]

The Postal Accountability and Enhancement Act (PAEA) enacted in December 2006 tried to minimize or at least contain the USPS's monopoly-based advantages and prevent cross-subsidization, but the strategy was unsuccessful. One part of that strategy entailed capping annual price increases for monopoly products (postal rates) at the rate of inflation.[58] The PAEA also prohibits the cross-subsidization of competitive products and tries to back it up by mandating that all USPS competitive products pay for or "cover" both their attributable costs and an "appropriate" share of fixed or institutional costs.[59] In short, the PAEA strategy to prevent cross-subsidization consists of a *price ceiling* on the USPS's monopoly products and a *price floor* for its competitive products. The PAEA, however, did not specify how to measure the "attributable costs" of the USPS's monopoly and competitive operations, or how to determine the "appropriate share" of institutional costs allocated to those operations. Further, in a rulemaking eight months after PAEA's passage, the PRC failed to specify how to measure the costs of the USPS's competitive products.[60] The PRC did suggest that it could review the cost measurement methodology in the future, but it also stated that the standard for doing so would be the USPS's "approved attribution methodologies" dating back to the 1970s, before the USPS competed so directly with private companies. As a result, the PAEA nudged the USPS in the right direction but did not require that it control costs, improve productivity, or forsake predatory pricing based on cross-subsidization.

The PAEA's most critical shortcoming is its failure to approach the USPS's competitive business and monopoly operations as fundamentally separate, distinct entities. In a 2007 report, the U.S. Treasury noted that such a separation is a basic condition for avoiding cross-subsidization.[61] The Federal Trade Commission (FTC) reached a similar conclusion in 2007 and proposed to spin off USPS's competitive products and services in a separate corporate entity.[62] Congress chose to not pursue these recommendations and, instead, merely directed the USPS to divide its assets between the Postal Service Fund (PSF) and the Competitive Products Fund (CPF).[63] While segregating the system's assets in distinct accounts is sensible, it does not establish a meaningful separation between the USPS's monopoly operations and competitive business.

Moreover, while federal law requires that the PSF and CPF maintain strict separation,[64] in practice the two funds co-mingle their assets. For example, the CPF held approximately $1.1 billion at the end of FY 2012, in addition to $808.6 million in pre-tax net income from its competitive operations in FY 2012. On October 12, 2012, soon after the end of FY 2012, the $1.9 billion balance of the CPF was transferred to the PSF "as a prepayment of competitive products'

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[57] U.S. Senate (2004).
[58] Section 3622(d)(1).
[59] Section 3633(a).The PAEA defines attributable costs as "the direct and indirect postal costs attributable to such product through reliably identified causal relationships." Section 361(b).
[60] Postal Regulatory Commission (2007a).
[61] U.S. Department of the Treasury (2007).
[62] Federal Trade Commission (2007).
[63] 39 USC Sections 2003 and 2011.
[64] *Ibid.*

shares of future years' institutional costs."[65] The USPS informed the PRC that in order to cover costs from its competitive business, it also would transfer funds from the PSF to the CPF as needed.

V. USPS Cross-Subsidies Based on Systematically Flawed Accounting

By failing to fully separate the USPS's competitive business from its monopoly operations or to spin off the competitive business, and by failing to create clear standards for measuring costs and incentives for the USPS to operate much more efficiently, the PAEA and the PRC allow the USPS to cross-subsidize its competitive products with revenues and special rights drawn from its monopoly operations. Next, I will analyze the largest factor in this cross-subsidization, arising from the PRC's and USPS's systematic inability or failure to properly attribute costs to specific monopoly or competitive products and properly account for the share and associated cost of USPS institutional or fixed resources used by its competitive business.

Cost Attribution

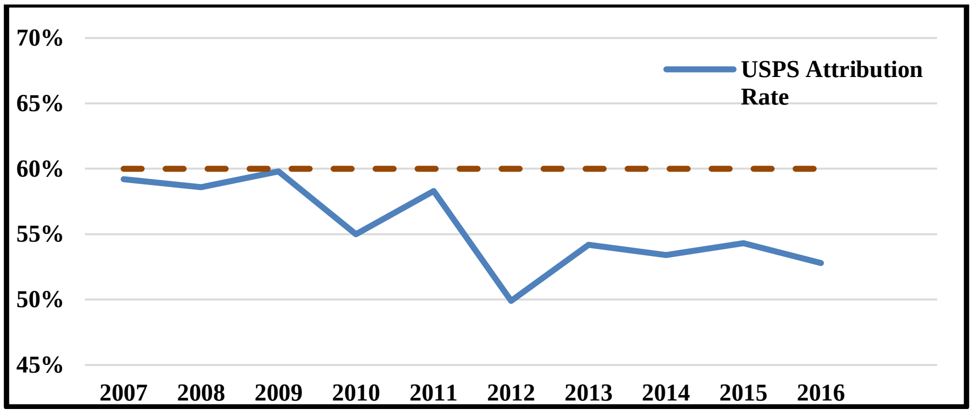
In my 2016 study, I reviewed the USPS's costing methodology in detail.[66] In summary, the USPS allocates its total costs between "attributable" costs and "institutional" costs, at a cost estimated by the Inspector General for the USPS at about $100 million per year.[67] Attributable costs are those which can be directly traced to the products of the USPS's monopoly operations or its competitive business. The USPS reports that its attributable costs represent a little more than half of all of its costs,[68] and divides them into "volume-variable" costs for which a product's unit costs vary with changes in its volume, and "product-specific fixed costs," which are fixed costs that can be attributed to a specific product.[69] Institutional costs here represent general overhead that cannot be attributed to a specific product, including most delivery costs. The USPS also divides these institutional costs into fixed institutional costs which do not vary with volume, and "infra-marginal" or network institutional costs which decline on a unit basis as volume rises. The division between attributable costs and institutional costs is important for understanding USPS cross-subsidization, because attributable costs provide a baseline for determining how fairly the USPS prices its products. If the USPS *overestimates* its attributable costs, the fair and proper price could be seen as unreasonably low; and if it *underestimates* those costs, an unreasonably low price could appear to be fair and proper.

The importance of accurately determining cost attribution is widely recognized. The President's Commission on the United States Postal Service wrote in 2003 that improving the USPS's cost-allocation system should be a "top priority," with the goal of attributing at least 60 percent and up to 100 percent of its costs.[70] Moreover, the lower the percentage of costs that can be attributed to monopoly or competitive products, the more discretion the USPS has in pricing those products and consequently the greater ability it has to cross-subsidize. The Senate Governmental Affairs Committee voiced this concern in 2004, declaring that accurate cost

[65] Postal Regulatory Commission (2013a).
[66] Shapiro (2016).
[67] U.S. Postal Service Office of Inspector General (2013b).
[68] USPS Cost & Revenue Analysis 2016 at 3.
[69] Without providing evidence, the USPS claims that volume-variable costs comprise 99.5 percent of attributable costs, and consequently only 0.5 percent of non-institutional costs attributable to specific products do not vary with volume.
[70] Report of the President's Commission on the United States Postal Service, July 2003.

attribution is "essential to … avoiding inequitable cross-subsidization";[71] and the FTC and the U.S. Treasury reiterated those concerns in 2007.[72] Despite these concerns, the USPS's cost attribution system has deteriorated. Since the 2007 Treasury report, the share of USPS costs attributed to specific products declined from 59.2 percent in FY 2007 to 52.8 percent in FY 2016. To be sure, when USPS prefunding for its retirees' healthcare ceased in FY 2017, the share returned to 57 percent, a level still well below the 60 percent *minimum* attribution rate set by the President's Commission. (Figure 1 below)

Figure 1: USPS Cost Attribution Rates, FY 2007 - 2016[73]



This low attribution rate means that the competitive business's share of the USPS's institutional costs has a larger impact on its total costs and consequently the prices charged for its competitive products to cover those costs. As we will see, the USPS also sharply underestimates the share of those institutional costs that should be allocated to its competitive business.

The PAEA directs that the competitive business must cover an "appropriate share" of all USPS institutional costs,[74] and the responsibility for defining an "appropriate share" fell to the PRC. Allocating too large a share to the USPS's competitive business would unfairly inflate its costs and prices. More pertinently, allocating too small a share of those institutional costs to the competitive business creates a cross-subsidy from the USPS's monopoly operations that provides an improper market advantage by lowering the competitive business's apparent costs and consequent prices. I established that the PRC tolerates an inappropriately low level of attributable costs, increasing the importance and impact of institutional costs on the total costs and prices of USPS competitive and monopoly products. Now, I will demonstrate that the PRC's measure of an appropriate share of institutional costs to be borne by the USPS's competitive business bears little relation to its share of all USPS operations.

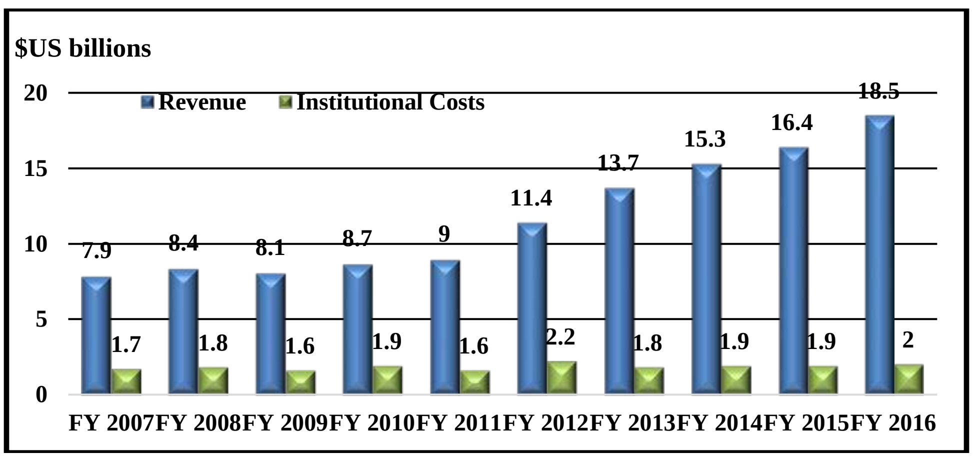
When the PRC first defined this "appropriate share," it considered using the competitive business's share of USPS revenues, which would have been consistent with financial accounting. Instead, the PRC opted for a single number because it would be "more easily understood than the

[71] U.S. Senate (2004).
[72] Federal Trade Commission (2007); U.S. Department of the Treasury (2007).
[73] USPS Cost and Revenue Analysis FYs 2007 - 2016. Total Attributable Costs/Total (overall)*100.
[74] PAEA, Section 3633(a)3.

various alternatives."[75] It set the competitive business's contribution at 5.5 percent of all the USPS's fixed or institutional costs, based on its own assessment that its competitive products accounted for 5.4 percent of institutional costs in FY 2005 and 5.7 percent of those costs in FY 2006.[76] The PRC noted that it retained the option of using revenues or "physical measures such as volume or weight" as metrics to estimate the appropriate share of institutional costs in the future.[77] In practice, the PRC has never used an alternative measure nor ever formally raised the 5.5 percent contribution share from the USPS's competitive business.[78]

In fact, the USPS supported by Amazon and others argued recently for a *zero* share.[79] In short, its competitive package delivery business could draw on the USPS's heavily-subsidized labor, vehicles, equipment and other facilities at *no* cost, a virtual paradigm of cross-subsidization. Yet it should be clear as an economic matter that the 5.5 percent share is too low, given the rapid growth of the USPS's competitive business. Since FY 2007, when the PRC first set the 5.5 percent requirement, revenues from the USPS's competitive products have increased from $7.9 billion to $18.5 billion in FY 2016, for growth of 134.2 percent and average annual growth of 9.9 percent. As a result, the competitive business's share of all USPS revenues increased from 10.6 percent in FY 2007 to 26.7 percent in FY 2016, or 144.3 percent. Over the same decade, 5.5 percent contributions to the USPS's institutional costs would have meant payments rising from $1.7 billion in FY 2007 to $2 billion in FY 2016, up 17.6 percent or 1.8 percent per year. These disparities have been especially large since FY 2012 as the growth of revenues from USPS's competitive operations has accelerated. (Figure 2 below)

Figure 2. The USPS's Competitive Business's Revenues and Its Contributions to USPS Institutional Costs, FY 2007-2016 ($ billions)

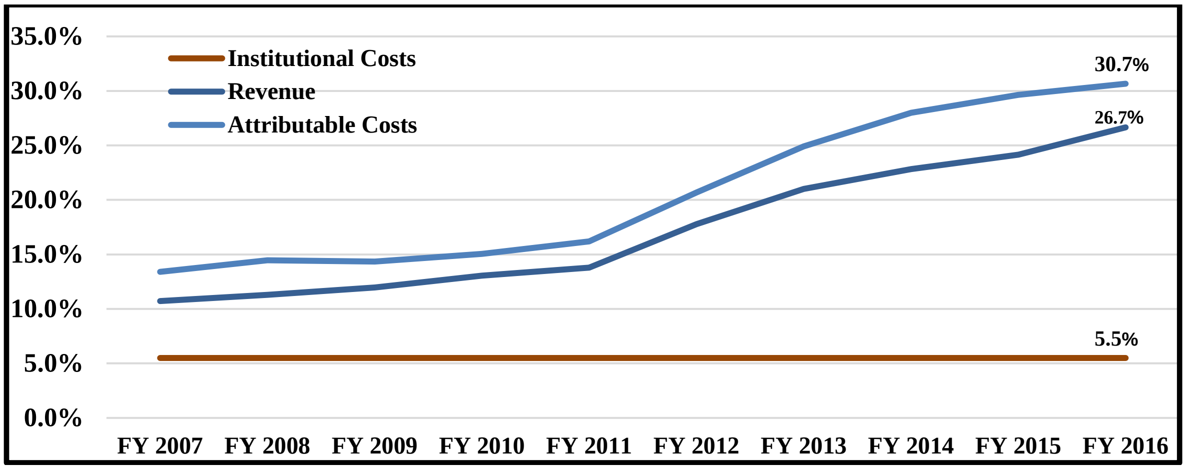


As an alternative measure also consistent with financial accounting, the PRC could have used the costs attributable to the competitive business as a share of all USPS attributable costs. The data show an increase roughly equivalent to the increase in the competitive business's share

[75] Postal Regulatory Commission (2007a).
[76] Postal Regulatory Commission (2008). Section 3015.7(c).
[77] Postal Regulatory Commission (2008).
[78] On February 8, 2018, the PRC issued a Notice of Proposed Rulemaking proposing a formula for calculating the appropriate share requirement. RM 2017-1
[79] PRC RM 2017-1

of USPS revenues: The attributable costs of the competitive increased from 13.4 percent of all USPS attributable costs in FY 2007 to 30.7 percent in FY 2016, an increase of 129.1 percent. Yet, the PRC has never changed the standard of a flat 5.5 percent of total USPS institutional costs to be paid by its competitive business. (Figure 3 below)

Figure 3. The Competitive Business's Share of All USPS Revenues, Its Share of All Attributable Costs, and Its Designated Share of USPS Institutional Costs, FY 2007 – FY 2016



The PRC has acknowledged that in order to ensure a "level playing field in the competitive marketplace," the appropriate share requirement must capture "the fixed costs of the competitive enterprise," including use of retail offices, vehicles, and other infrastructure, "and should reflect the ways in which institutional resources are spent on the competitive enterprise."[80] The PRC also acknowledges that the appropriate share requirement is "an important safeguard to ensure fair competition on the part of the Postal Service."[81] Yet, the PRC has barely acknowledged the implausibility that an organization providing standard products could increase its revenues by 134 percent over nine years while its fixed costs rise much less. Economists have noted that such underestimation and misallocation of costs are central to many cases of cross-subsidization.[82]

Estimating the Associated Cross Subsidy

In practice, the USPS has been unable to sustain payments by its competitive business of only 5.5 percent of all USPS institutional costs. While the 5.5 percent measure remains formally in place, the PRC reports that the competitive business's contribution for its share of those institutional costs has risen since 2009 and reached 16.5 percent of total fixed costs in FY 2016.[83] By our accounting, the competitive business's appropriate share in FY 2016 was considerably higher, and the difference constitutes a cross-subsidy to the competitive business by lowering its costs and consequently its prices.

[80] Postal Regulatory Commission (2012).
[81] *Ibid.*
[82] Burton, Kaserman and Mayo (2009).
[83] PRC (2017-C).

I begin by reviewing in detail the USPS's revenues and attributable costs in FY 2016 for its six major competitive products -- priority mail, ground delivery, international shipping, first class packages, priority mail express, and other domestic services. I propose two alternatives for establishing bounds on the appropriate share of institutional costs that should be assigned to the USPS's competitive business. The first approach posits that the appropriate share should broadly reflect the business's share of USPS revenues, because its share of those revenues should reflect the extent to which it draws on the USPS's fixed investments and the costs of maintaining them. The second approach posits that the appropriate share of institutional costs to be assigned to the competitive business should broadly reflect its share of all of the USPS's attributable costs.

Using these two market-based benchmarks, I can generate estimates of the institutional costs associated with each competitive product by multiplying each product's share of all USPS revenues by the USPS's total institutional costs, and then, alternatively, by multiplying each product's share of all USPS attributable costs by the USPS's total institutional costs. Next, I will calculate the net income earned from each competitive product by subtracting the product's attributable costs as reported by the USPS and our estimates of its institutional costs from the total revenues generated by the product. In this last calculation, a negative net income signifies that the product benefits from a cross subsidy, and I can derive its effective rate of cross-subsidy by dividing its net income by its total revenues, or alternatively, dividing its net income by its total attributable costs. Finally, I will estimate the USPS's total cross subsidy by adding up the net income calculations for the six products. The results are presented in Tables 9-A and 9-B, below.

Table 9-A: Estimated USPS Cross Subsidies for Its Competitive Products Based on Their Contributions to Total USPS Revenues, FY 2016 ($ millions)[84]

Products	Revenues	Attributable Costs	Share of All Revenues	. Institutional Costs (Est.)	Net Income	Subsidy
Priority Mail	$7,785	$6,128	11.2%	$4080	-$2,443	31.1%
Ground Shipping	$5,192	$3,055	7.5%	$2721	-$584	11.3%
International	$1,801	$1,062	2.6%	$944	-$205	11.4%
1st Class Package	$2,056	$1,469	3.0%	$1,088	-$481	23.2%
Priority Mail Express	$809	$357	1.2%	$424	$29	- 3.5%
Other Domestic Services	$833	$426	1.2%	$437	-$29	3.5%
All Competitive	**$18,495**	**$12,496**	**26.7%**	**$9,693**	**-$3,693**	**20%**
All Mail & Services	**$69,389**	**$40,758**	**100.0%**	**$36,363**		

84 USPS FY 2016 Cost and Revenue Analysis.

Table 9-B: Estimated USPS Subsidies for Its Competitive Products Based on Their Shares of All USPS Attributable Costs, FY 2016 ($ millions)

Products	Revenues	Attributable Costs	Share of All Attributable Costs	Institutional Costs (Est.)	Net Income	Subsidy
Priority Mail	$7,785.	$6,128	15%	$5,467	-$3,810	62.2%
Ground Shipping	$5,192	$3,055	7.5%	$2,726	-$590	19.3%
International	$1,801	$1,062	2.6%	$948	-$209	19.7%
1st Class Package	$2,076	$1,469	%	$1,310	-$703	47.9%
Priority Mail Express	$809	$357	0.9%	$318	$134	- 37.7%
Other Domestic Services	$833	$426	1.0%	$80	$28	- 6.6%
All Competitive	**$18,495**	**$12,496**	**30.7%**	**$11,149**	**-$5,150**	**41.2%**
All Mail & Services	**$69,389**	**$40,758**	**100.0%**	**$36,363**		

This analysis shows that the USPS's systemic undervaluation of the institutional resources drawn on or relied upon by its competitive business provides a large cross-subsidy. Priority Mail products receive the largest cross-subsidies from the USPS's accounting of fixed costs, with cross subsidies of $2.4 billion to $3.8 billion in FY 2016, followed by First Class Packages with cross-subsidies of $481 million to $703 million and Ground Shipping service with cross-subsidies of $584 million to $590 million in in FY 2016. Priority Mail services also received the highest rates of cross-subsidy, 31.1 percent to 62.2 percent in FY 2016, followed by First Class Packages with subsidy rates of 23.2 percent to 47.9 percent. Notably, competitive products with small markets were not cross-subsidized – "other domestic services" based on the revenue-share measure, and priority mail express under both measures.

The analysis also shows that based on the share of USPS revenues generated by its competitive business as the proxy for its share of USPS institutional costs, this cross subsidy in FY 2016 totaled $3.7 billion for the six competitive products. (Table 9-A above). Using the share of the USPS's total attributable costs allocated to its competitive business as the proxy for its share of USPS institutional costs, the cross-subsidy in FY 2016 totaled nearly $5.2 billion. The midpoint of this range of estimated cross-subsidy is $4.45 billion.

This analysis also tells us that the competitive business accounts for 26.7 percent of all USPS revenues and 30.7 percent of all USPS attributable costs, with a midpoint of 28.7 percent that represents the competitive business's appropriate share of all USPS institutional costs. The PRC reports that those institutional costs totaled $36.4 billion in FY 2016,[85] which suggests that the competitive business's proper share was $10.45 billion. As noted above, the PRC also claims that the competitive business covered 16.5 percent of all USPS institutional costs in FY 2016, which would come to $6.0 billion. On this basis, the cross-subsidy is the difference between its appropriate share (28.7 percent or $10.45 billion) and its actual paid share (16.5 percent or $6.0 billion), which again comes to $4.45 billion.

Even so, our $4.45 billion estimate could be considered extremely low, given the way the payments from the competitive business are handled. Those payments are actually bookkeeping

[85] PRS (2017-C).

transfers within the USPS's special fund at the U.S. Treasury, which the USPS can access to cover any expense. In this light, the $10.45 billion appropriate share could be considered a cross-subsidy.

VI. Additional Cross-Subsidies

Earlier, I examined and measured the range of direct subsidies that the USPS receives to carry out its monopoly responsibilities.[86] The largest such subsidy arises from the USPS's exclusive access to mailboxes, which allows the USPS to leave mail in curbside mailboxes or centralized mailrooms in residential and commercial buildings, rather than deliver the mail to every customer's door. Based on analysis of the volume and costs of delivering mail to curbside mailboxes and centralized mailrooms, compared to delivering it to each customer's door, I found that this exclusive right saved the USPS $13.6 billion in FY 2016, relative to its costs if like private delivery companies, it had to deliver mail to customers' doors. Those savings apply to both the USPS's monopoly mail operations and its package delivery business, so the direct subsidy covers the share of the USPS's deliveries in which it competes with the private delivery business. I found that 26.7 percent of all USPS revenues in 2016 and 30.7 percent of all USPS attributable costs were associated with deliveries in which it competed directly with private companies. Using the midpoint of 28.7 percent as a proxy for the share of USPS deliveries of packages by its competitive business, I estimate that the mailbox monopoly produced a subsidy for the USPS worth $3.9 billion. All of these USPS savings from the mailbox monopoly constitute a cross-subsidy, since all of it artificially lowers the costs and prices for the USPS's competitive business.

Similarly, I found that the USPS's special ability to borrow $15 billion from the U.S. Treasury at highly preferential interest rates saved the USPS $60 million in FY 2016 (and $119 million in FY 2017). Similarly, its formal exemption from state and local property, sales and other taxes and fees, especially the real estate taxes, saved the USPS about $3.05 billion in FY 2016; and its ability to draw on its own federal tax payments held in a Treasury revolving fund was worth some $1.4 billion in 2016. Like the mailbox monopoly, the savings arising from the interest rate subsidy on the $15 billion borrowed from the U.S. Treasury benefit the competitive business as well as the monopoly operation; and the USPS exemptions from state and local taxes and fees cover real estate facilities, equipment and vehicles used by the USPS's competitive business as well as its monopoly operations. Similarly, the USPS's ability to reclaim the federal income taxes it pays on the net earnings from its competitive business can be used to offset costs in either branch of USPS operations or costs arising from their shared facilities or equipment.

To estimate the extent to which the USPS uses these subsidies from its monopoly operations to support its competitive business, I again apply the competitive business's share of USPS revenues and its share of USPS attributable costs to the value of these three subsidies in 2016. This approach is necessarily very conservative, since the USPS understates the attributable costs of its competitive operations, and the cross-subsidies artificially depress revenues from the USPS's competitive business. Nevertheless, since the USPS's competitive business accounted for 26.7 percent of all USPS revenues and 30.7 percent of all attributable costs, so I will apply the midpoint value of 28.7 percent. Using this approach, I estimate that the cross-subsidies derived from these three direct subsidies for the USPS's monopoly operations total $1.29 billion.

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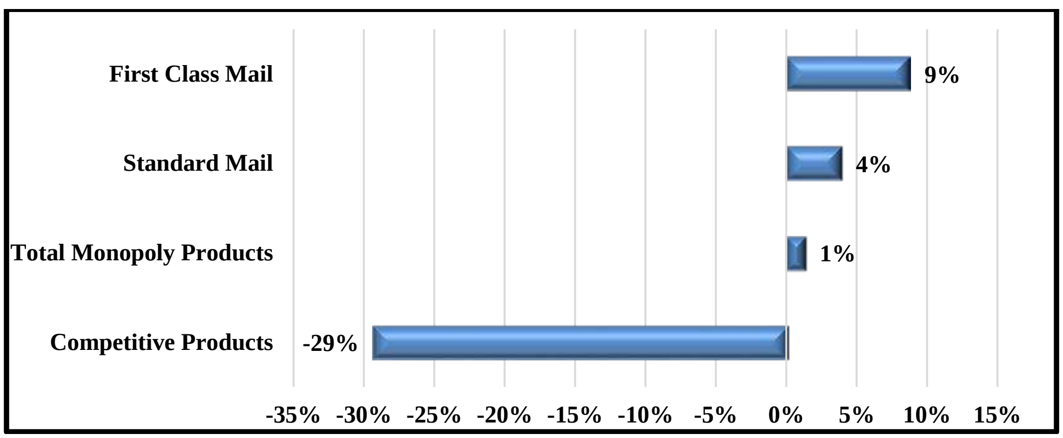
[86] Shapiro (2015).

*Therefore, I further estimate the total value of the USPS's cross-subsidies for its competitive business was **$9.64 billion** in FY 2016:*

> *$4.45 billion (institutional costs) + $3.9 billion (mailbox monopoly) + $1.29 billion (interest rate subsidy, exemption from state and local taxes and fees and access to income tax payments) = $9.64 billion.*

Finally, other analysis provides support for this estimate of USPS cross-subsidies, including analysis of the per-unit product revenues of the USPS's monopoly operations compared to its competitive business. Cross-subsidization typically entails raising the price of products with relatively price-insensitive demand and cutting the price of products with more price-sensitive demand. As one would expect, USPS revenues per-unit from its monopoly operations rose an average of just 1.0 percent over the seven years from FYs 2009 to 2016, led by a 9.0 percent increase in per-unit revenues from first-class mail; by contrast, the per-unit revenues from the USPS's competitive products fell 29 percent over that period. (Figure 4 below) Some of this disparity may reflect the USPS's decision to shift lightweight First Class Parcels from its monopoly operations to its competitive business, but the larger factor lies in the cross-subsidies.

Figure 4: Growth in USPS Revenues Per-Unit, Monopoly and Competitive Products, FY 2009-FY 2016



Since the USPS's monopoly and competitive products use many of the same facilities, equipment and labor, I can derive another estimate of USPS cross-subsidies by applying the percentage-increases in revenues per-unit from its monopoly operations (with an upper bound of 9.0 percent and a lower bound of 1.0 percent) to the revenues per-unit from the competitive business. If I multiply the revenues per-unit for the USPS's competitive business by the number of units produced by its competitive operations in FY 2016, the difference between that total and the actual revenues of the USPS's competitive business in FY 2016 should roughly represent the cross subsidy. Using this approach, I would estimate that the USPS's competitive business received cross-subsidies from the USPS's monopoly operations totaling $7.5 billion to $9.5 billion in FY 2016, as compared to our $9.61 billion estimate of the total value of the USPS's cross-subsidies for its competitive business in FY 2016.

VII. Cross-Subsidization and Seasonal Demand

The USPS's ability to leverage its monopoly advantages into the contiguous, competitive market in package deliveries is clearly demonstrated when seasonal demand for package deliveries increases. This "seasonality" -- seasonal shifts in demand for particular goods or services, or seasonal shifts in the supply of a critical factor to produce those goods or services – can present serious logistical challenges when the extent of a coming shift is uncertain. Retail businesses prepare for increased seasonal demand during the November/December holiday season, but its' magnitude is unknown until it unfolds. As a result, many retailers over-supply and cut prices from early-December through the holidays and into January. The package delivery business shares this seasonal uncertainty with retailers.

The increasing volume of online holiday purchases has aggravated this uncertainty, because annual growth in online holiday purchases has also been highly unpredictable. Table 10, below, shows the annual growth from 2013 to 2016 in the value of e-commerce in the fourth quarter of each year compared to the preceding three quarters, the ratio of fourth quarter e-commerce growth to its average growth in the preceding three quarters, and annual real GDP growth. There are no statistical relationships among these variables to help package delivery firms forecast with confidence the expected growth in seasonal e-commerce sales in any year.

Table 10: Various Measures of the Growth of E-Commerce and the U.S. Economy[87]

Year	E-Commerce Growth, Q4	Average E-Commerce Growth, Qs 1-3	Ratio, E-Commerce Gains, Q4 vs Qs 1-3	Annual GDP Growth
2013	3.6%	2.9%	1.24	1.8%
2014	2.5%	3.6%	0.69	2.0%
2015	2.8%	3.6%	0.78	2.7%
2016	1.7%	3.9%	0.44	1.8%

These data show, for example, that e-commerce sales rose sharply in the fourth quarter of 2013 despite a slow economy; and many package delivery companies found themselves short-staffed and unable to deliver millions of packages before Christmas. In response, delivery companies in 2014 and 2015 invested billions of dollars in new technologies and facilities and hired tens of thousands of additional seasonal workers. UPS alone spent $1.8 billion to purchase a major logistics firm with new technologies that helped ensure that its delivery trucks had fewer empty spaces, and helped their truck drivers identify the fastest, most fuel-efficient routes.[88] These investments and large numbers of newly-hired seasonal workers enabled the major shippers to avoid widespread late deliveries in 2014 and 2015.[89] However, these investments and new hires also reduced their earnings.[90] The director of MIT's Center for Transportation and Logistics,

[87] U.S. Census Bureau (2017); Bureau of Economic Analysis (2017).
[88] Terfis Team (2015.
[89] *Ibid.*
[90] *Ibid.*

Yossa Sheffi, noted at the time, "You cannot build a shipping network to operate 365 days a year based on a spike in packages three days before Christmas."[91]

The USPS's competitive business faces the same seasonal demand pressures, but it draws on its cross subsidies to ameliorate them. In 2016, UPS hired 95,000 seasonal employees to help the company deal with estimated holiday demands of more than 700 million packages, and FedEx hired 50,000 short-term employees to help with an estimated 385 million holiday deliveries.[92] By contrast, the USPS hired just 35,000 seasonal employees to help deliver an estimated 750 million packages in the holiday season. Therefore, the USPS hired one additional worker for every 21,428 expected seasonal packages, compared to UPS which hired one additional worker for every 7,369 expected seasonal package deliveries, and FedEx which hired one additional worker for every 7,700 expected seasonal packages. This disparity cannot be explained by USPS productivity advantages, since I established earlier that productivity growth by private delivery companies has far outpaced the USPS for more than a quarter-century. Rather, the disparity shows that the USPS manages its personnel needs to handle the seasonal spike in demand for package deliveries largely by drawing on a surplus labor force supported by its monopoly operations and leveraging those surplus workers to the advantage of its competitive business.

Additional data support this conclusion. The USPS reports that from 2010 to 2016, its workforce declined from 583,908 persons to 508,908 persons or by 12.8 percent,[93] while the volume of monopoly, first class mail handled by those workers fell from 77.6 billion pieces to 61.2 billion pieces or 21.1 percent.[94] I use first-class mail as the measure here, because like package deliveries, the volume of first class mail peaks in the holiday season while the volume of standard mail and periodicals fall sharply during the same period.

If the USPS had reduced its workforce at a rate comparable to the decline in the volume of the first-class mail it handled, it would have shed 123,205 workers instead of just 75,000. The difference of 48,205 USPS workers helps to explain how the USPS could hire just 35,000 seasonal employees to assist with an estimated 750 million holiday deliveries -- while UPS hired 95,000 seasonal employees to assist with an estimated 700 million holiday deliveries, and FedEx hired 50,000 seasonal workers to help with an expected 385 million seasonal deliveries. If the USPS drew on a labor surplus of 48,205 workers from its monopoly operations, its effective seasonal workforce was 83,205 workers (35,000 + 48,205). By that accounting, the ratio of additional workers to expected seasonal deliveries falls from one worker for every 21,428 expected deliveries to one worker for every 9,014 such deliveries, more closely in line with the ratios of seasonal hires and expected seasonal demand at UPS (one worker for every 7,369 expected seasonal deliveries) and FedEx (one for every 7,700 expected seasonal deliveries).

VIII. How the USPS Finances Its Large Cross-Subsidies

A final issue involves how the USPS finances these large cross-subsidies. As noted earlier, the PAEA caps annual increases in the prices of the USPS's monopoly products at the overall rate

[91] Carey (2014).
[92] Linder (2016).
[93] U.S. Postmaster General (2010-2016).
[94] USPS (2017c); USPS (2010); USPS (2011-2016).

of inflation, absent exigent circumstances.[95] This cap was designed to discourage the USPS from cross-subsidizing its competitive business by imposing a ceiling on the revenues from its monopoly operations. In the early years following the PAEA's enactment, as the cap limited the USPS's ability to extract more revenues from its monopoly, the USPS turned to borrowing from the U.S. Treasury. The USPS's Treasury debt, capped by law at $15 billion, rose from $2.1 billion in FY 2006 to $7.2 billion in FY 2008, $12.0 billion in FY 2010, and $15 billion in FY 2012.

With additional borrowing from the Treasury prohibited, the USPS turned to the "exigent rate" provision of the PAEA.[96] This provision allows the PRC to approve USPS postal rate increases that exceed the cap provided that the increase is "reasonable and equitable and necessary" and reflects "extraordinary or exceptional circumstances."[97] In July 2010, the USPS filed its first PRC request for an exigent rate increase, arguing that losses during the 2008-2009 recession should be offset by a 5.6 percent increase in the prices of USPS monopoly products. The PRC rejected the request, holding that the USPS failed to show that the proposed increase was justified by the "extraordinary or exceptional circumstance" of the recession, and that the exigent rate provision was a narrowly-drawn exception to the price cap that "may not be invoked simply by demonstrating a need for revenues."[98]

In September 2013, USPS filed another request for an exigent rate increase of 4.3 percent for its monopoly products, again citing its losses during the 2008-2009 recession. This claim contradicted both the USPS's most recent Five-Year Business Plan, released in February 2012, which held that "electronic diversion is the primary driver of first-class mail volume decline," as well as the USPS's forecast in its 2005 Strategic Transformation Plan of a large decline in mail volume due to "increased electronic diversion."[99] Nevertheless, the PRC granted the request in December 2013 on a temporary basis. The Commission found that the recession had depressed USPS mail volume by an estimated 25.3 billion pieces from 2008 to 2011, purportedly costing the USPS $2.8 billion in foregone profits. On this basis, the PRC authorized the USPS to apply a surcharge on its monopoly products sufficient to raise an additional $3.2 billion in revenues.

To be sure, the PRC order granting the exigent rate increase included dissenting opinions from PRC commissioner Mark Acton and PRC vice chairman Robert Taub, with Commissioner Acton noting,

> "The Postal Service in this docket endeavors to use an exigent rate request, not as a precise and tailored instrument to make it whole for a discrete set of extraordinary or exceptional circumstances, but as a panacea to ameliorate underlying costs related to fundamental ongoing structural problem." [100]

Mass mailers appealed the rate increases to the U.S. Court of Appeals, where the USPS not only defended it but argued that the increase should be permanent. The Court rejected both

[95] Section 3622.
[96] Section 3622.
[97] Postal Accountability and Enhancement Act (2006).
[98] Postal Regulatory Commission (2010).
[99] U.S. Postal Service (2012a); U.S. Postal Service (2005).
[100] Postal Regulatory Commission (2013b).

arguments, criticized the USPS's accounting, and directed the PRC to roll back the rate increases once the USPS had recovered $2.8 billion.[101]

Since then, the USPS has continued to press for more rate increases, and the PRC has continued to approve them. In mid-2015, the USPS put in place a 9.5 percent increase in the charge for a three-ounce packaged material, and a 2.9 percent increase in postcard rates. In FY 2016, the first-class mail rate (first ounce) fell from $0.49 to $0.47 based on the Appeals Court ruling; but in January 2017, the rate went back up to $0.49. Most recently, the USPS proposed in 2017 to raise rates in 2018 above the rate of inflation for first-class mail, postcards and every form of monopoly priority mail. The PRC approved the request as part of its 10-year review of postal rates.[102] This time, PRC chairman Taub endorsed the rate increases, despite the terms of the PAEA, citing the USPS's long-term structural challenges arising from the falling mail volume and rising pension and healthcare costs. [103]

This shift to regular, substantial rate increases for the USPS's monopoly operations not only provides a stream of additional revenues to help maintain the USPS's large-scale cross-subsidization of its competitive business. It also tacitly accepts the USPS's continuing substandard productivity and efficiency performance which generate much of its annual deficits.

IX. Conclusions

The United States today maintains a hybrid model in postal service. The USPS operates a monopoly service in the delivery of letter mail, mass mailings and periodicals, and competitive services for delivering packages and express mail. This approach has created strong incentives to use resources from its monopoly operations to cross-subsidize its competitive business, distorting the competitive delivery market. These incentives arise from the two business lines' different market conditions: Customers for the USPS's monopoly mail services have few alternatives and therefore are less sensitive to price increases than customers for the USPS's competitive services, who can switch to numerous private companies if the USPS's prices for those services rise. As a result, the USPS has managed its hybrid organization in ways that shift costs to its monopoly operations in order to keep the costs and prices for its competitive services artificially low.

The main vehicles for these cross-subsidies are the large tax and regulatory-based subsidies provided to support the USPS's universal service obligations, and which also tacitly support the USPS's competitive operations. All told, I found that these subsidies provided the USPS some $12.9 billion in support in FY 2016, with much that support tacitly benefitting its competitive business. Most notably, the USPS's competitive business uses facilities, equipment, vehicles and workers paid for and maintained by the extensive subsidies for the monopoly operation and compensates the USPS for their use at a fraction of their value. With the approval or at least acceptance of its regulator, the PRC, the USPS shifts some costs that could be attributed to specific USPS activities and products to the alternative category of institutional or fixed costs, and then charges its competitive business about half of its real share of those fixed costs. I found that this maneuver saved the USPS's competitive business $4.45 billion in FY 2016.

[101] Alliance of Nonprofit Mailers, *et al.*, *versus* Postal Regulatory Commission (2015).
[102] Stamps.com (2017); Postal Regulatory Commission (2017).
[103] Yen (2017)

This basic form of cross-subsidy is evident in how the USPS's package delivery business and its competitors manage seasonal spikes in demand for their services. As the 2016 Christmas season approached, UPS hired 95,000 seasonal employees to help with its expected flow of 700 million holiday packages, or one temporary worker for every 7,369 expected seasonal packages. Similarly, FedEx hired 50,000 short-term employees to help with an expected 385 million holiday deliveries, or one temporary worker for every 7,700 expected seasonal packages. By contrast, the USPS hired just 35,000 seasonal workers to help with an expected 750 million holiday deliveries, or one short-term worker for every 21,428 expected packages. Higher productivity cannot explain the difference, since the Bureau of Labor Statistics has found that over the last 28 years, productivity among private delivery companies grew at 4.8 times the rate of productivity at the USPS. The difference is the USPS's ability to draw on surplus workers, equipment and vehicles from its subsidized monopoly operations to increase the cross-subsidies for its competitive business during the holidays.

The USPS's competitive business as well as its monopoly operations also share an exclusive right to leave their deliveries in customers' mailboxes, while private companies have to take their deliveries to the customers' doors. Similarly, both the USPS's monopoly operation and its competitive business are exempt from state and local property, real estate, sales, energy and other fees and taxes; and both benefit from the USPS's subsidized interest charges on $15 billion in loans from the U.S. Treasury. The USPS also comingles the financial assets and resources of its two parts at the U.S. Treasury, including tax payments on the competitive business's profits, despite the mandate under the PAEA to maintain transparency by segregating the accounting of the USPS's monopoly and competitive products and operations. The PRC has simply failed to enforce those accounting requirements. I found that these various cross-subsidies provided $9.64 billion in benefits to the USPS's competitive business in FY 2016. Preventing large-scale cross-subsidies was a primary goal of the PAEA, so in this regard the statutory terms of its reforms and the PRC's implementation of them have both failed.

These large cross-subsidies distort the prices and returns of private delivery services by diverting demand to the USPS's less efficient competitive business. The cross-subsidies also discourage both new investments by those private firms and new companies entering this market. As a result, the USPS's largescale cross-subsidies ultimately harm American consumers. I concur with the President's Commission on the Postal Service and the Federal Trade Commission that the best way to end these cross-subsidies and promote a more efficient and innovative marketplace is to reorganize the USPS so its monopoly operations and competitive business become separate entities that do not share facilities, equipment, workers, vehicles or financial assets.

Without structural reforms, we should expect our mail service to continue to manifest the lagging productivity and general inefficiencies that characterize most monopolies. Further, as the largescale USPS cross-subsidies of its competitive delivery business continue to put downward pressure on prices in that market, its private competitors will have less incentive to undertake the new investments and innovations demanded by the rapid growth of e-commerce deliveries. Ultimately, this path could have serious, unforeseen consequences for the development of this major aspect of America's Internet-based economy.

Appendix

Table A-1: Average Compensation Costs, USPS, 2006-2017 ($ million) [104]

Year	Salaries/Wages	Retirement	Health	Other Benefits	Total
2006	$40,577	$7,006	$5,345	$458	$53,386
2007	$41,695	$5,737	$5,401	$473	$53,306
2008	$40,633	$5,899	$5,376	$450	$52,358
2009	$39,208	$5,917	$5,294	$512	$50,931
2010	$37,545	$5,809	$5,141	$414	$48,909
2011	$36,821	$5,879	$5,222	$388	$48,310
2012	$36,279	$5,854	$5,187	$369	$47,689
2013	$35,639	$5,738	$4,951	$380	$46,708
2014	$35,113	$5,758	$4,804	$325	$46,000
2015	$35,931	$6,239	$4,774	$334	$47,278
2016	$36,634	$6,509	$4,972	$326	$48,441
2017	$37,026	$6,604	$5,163	$315	$49,108

Table A-2: Total Labor Costs, USPS, 2006-2017[105]

Year	Average Total Compensation	Total Employees	Total Labor Costs ($ billions)
2006	$67,051	796,199	$53.4
2007	$67,825	785,929	$53.3
2008	$68,434	765,088	$52.4
2009	$71,524	712,082	$50.9
2010	$72,815	671,687	$48.9
2011	$74,789	645,950	$48.3
2012	$75,814	629,028	$47.7
2013	$75,614	617,714	$46.7
2014	$74,434	618,000	$46.0
2015	$76,366	622,000	$47.5
2016	$76,093	640,000	$48.7
2017	$76,242	644,000	$49.1

[104] USPS 10K Financial Statements FY2006-2017
[105] *Ibid.*

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