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Postal Regulatory Commission
Washington, D.C. 20267-0001

INSTITUTIONAL COST CONTRIBUTION	**)**	**Docket No. RM2017-1**
REQUIREMENT FOR COMPETITIVE PRODUCTS	**)**	

DECLARATION OF DENNIS W. CARLTON

MARCH 3, 2017

I. Qualifications

1. I am the David McDaniel Keller Professor of Economics at the Booth School of Business of The University of Chicago. I received my A.B. in Applied Mathematics and Economics from Harvard University and my M.S. in Operations Research and Ph.D. in Economics from the Massachusetts Institute of Technology. I have served on the faculties of the Law School and the Department of Economics at The University of Chicago and the Department of Economics at the Massachusetts Institute of Technology.

2. I specialize in the economics of industrial organization. I am co-author of the book Modern Industrial Organization, a leading text in the field of industrial organization, and I also have published over 100 articles in academic journals and books. In addition, I serve as Co-Editor of the Journal of Law and Economics, a leading journal that publishes research applying economic analysis to industrial organization and legal matters; serve on the Editorial Board of Competition Policy International, a journal devoted to competition policy; and serve on the Advisory Board of the Journal of Competition Law and Economics. I have also served as an Associate Editor of the International Journal of Industrial Organization and Regional Science and

Urban Studies, and on the Editorial Board of Intellectual Property Fraud Reporter. I was designated the 2014 Distinguished Fellow of the Industrial Organization Society.

3. In addition to my academic experience, I served as Deputy Assistant Attorney General for Economic Analysis in the Antitrust Division of the U.S. Department of Justice from October 2006 through January 2008. I also served as a Commissioner of the Antitrust Modernization Commission, created by Congress to evaluate U.S. antitrust laws. I have served as a consultant to the Department of Justice and Federal Trade Commission on the Horizontal Merger Guidelines, as a general consultant to the Department of Justice and Federal Trade Commission on antitrust matters, as a member of the American Bar Association advisory Committee that advises the next President on antitrust policy, and as an advisor to the Bureau of the Census on the collection and interpretation of economic data.

4. I also am a Senior Managing Director of Compass Lexecon, a consulting firm that specializes in the application of economics to legal and regulatory issues and for which I served as President (of Lexecon) for several years. I have provided expert testimony before various U.S. state and federal courts, the U.S. Congress, a variety of state and federal regulatory agencies and foreign tribunals. My curriculum vitae, which includes a list of my testifying experience in the last four years, is attached as Exhibit A to this report.

II. Background and Overview

5. I have been asked by counsel for UPS to respond to and comment on economic issues raised in recent submissions to the Postal Regulatory Commission regarding the "appropriate share" of USPS institutional costs that should be attributed to competitive products in determining the floor price that USPS can charge for these products in competition with

private carriers. In particular, I have been asked to respond to economic issues raised in the Declaration of John Panzar.[1]

6. The Postal Accountability and Enforcement Act (PAEA) gives USPS considerable flexibility in selling competitive parcel products. However, PAEA also attempts to prevent USPS from using its status as the monopoly provider of "market dominant products" (letter mail) to cross-subsidize its provision of "competitive products" (parcels).[2] PAEA also attempts to preserve competition in the provision of parcel products and avoid distortions that can result when a government entity competes with, and threatens to displace, more efficient private firms.

7. As a safeguard against potential distortions, USPS' competitive products are required to generate revenue that covers the "attributable costs" of competitive products and an "appropriate share" of USPS' "institutional costs."[3] "Attributable costs" and "institutional costs" have specific definitions in USPS cost accounting.[4]

- "Attributable costs" are defined by USPS as costs determined to have "causal relationships" to providing market dominant or competitive products. This includes certain variable costs as well as certain fixed costs that USPS determines to be specific to the provision of either type of product.[5] As discussed further below, USPS' estimates of incremental costs are based on a regulatory cost

1. Declaration of John C. Panzar for Amazon Fulfillment Services, Inc. (January 23, 2017), hereafter "Panzar Report."
2. Although I use the terms "parcels" and "competitive products" interchangeably, I understand that parcels are not strictly synonymous with competitive products, in that competitive mail can be the shape and size of letters, and there are some market dominant parcel products.
3. See 39 U.S.C. § 3633(a)(2) and 39 U.S.C. § 3633(a)(3).
4. USPS' approach to determining attributable and institutional costs is discussed in more detail below.
5. Federal Register, Vol. 81, No. 235, Wednesday, December 7, 2016, Rules and Regulations.

attribution methodology that is not equivalent to "incremental costs" as the term is defined in the economic literature.[6]

- "Institutional costs" are defined by USPS as all costs incurred by USPS that are not attributed to either competitive or market dominant products. Institutional costs include both (i) fixed costs that USPS does not consider to be used exclusively in the provision of either competitive or market dominant products, and (ii) certain variable costs that USPS' accounting framework does not attribute to either USPS' competitive or market dominant products. For example, most costs associated with rural carriers as well as the street activity of city delivery carriers are treated as "institutional" by USPS, presumably reflecting the fact that carriers deliver multiple products.[7]

8. The Postal Regulatory Commission (PRC) notes that "the appropriate share requirement is an important safeguard to ensure fair competition on the part of the Postal Service."[8] The PRC further notes, "[T]he 'appropriate share' requirement could be said to represent the fixed costs of the competitive enterprise and should reflect the ways in which institutional resources are spent on the competitive enterprise."[9] The PRC has previously set the appropriate share at 5.5 percent, so USPS' competitive products are required to generate revenue equal to at least their "attributable costs" plus 5.5 percent of USPS' "institutional" costs.

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6. In the current context, the incremental cost to USPS of providing competitive products is the difference between (i) costs faced by USPS for providing both market dominant and competitive products, and (ii) the costs USPS would face if it provided market dominant products alone. More generally, a 2-product firm's cost function is expressed as $C = C(Q_1, Q_2)$ where $Q_i$is the firm's production of good i. The incremental cost of producing good 2 is expressed as $IC_2 = C(Q_1, Q_2) - C(Q_1, 0)$. See: G. Faulhaber, "Cross-Subsidization: Pricing in Public Enterprises," 65 American Economic Review 966 (1975), and G. Faulhaber, "Cross-Subsidy Analysis with More than Two Services," 1 Journal of Competition Law and Economics 441 (2005), p. 443.
7. USPS Public Cost Segments and Components, Fiscal Year 2015.
8. PRC Order 1449, at 13.
9. Ibid.

9. Prof. Panzar argues that "the Commission should eliminate the minimum contribution requirement,"[10] reducing to zero the "appropriates share" of institutional costs used to determine USPS' floor price for its competitive products. Prof. Panzar argues that a price floor for competitive products based solely on attributable costs for these products (as defined by USPS) is "sufficient to prevent cross-subsidization" and that a higher share would "unnecessarily raise this floor [price], likely reducing the efficiency of the postal sector."[11] The proposal reflects Prof. Panzar's view that USPS' framework for determining the attributable costs of providing competitive products is reliable and accurate, and fully reflects all <u>incremental</u> costs incurred by USPS' in providing competitive products. Finally, Prof. Panzar also claims that other arguments in favor of setting a non-zero appropriate share requirement make "no economic sense whatever (sic)."[12]

10. I conclude that Prof. Panzar has failed to show that the current "appropriate share" of 5.5 percent of USPS institutional costs would prevent cross-subsidization. Moreover, he has failed to refute that such a share would promote the inefficient expansion of USPS' competitive products, as well as harm innovation and the dynamic efficiency of the parcel delivery industry. The proposal by Prof. Panzar and others to reduce this share to zero would exacerbate these undesirable effects. Estimation of the incremental costs to USPS of providing competitive products is a complex analytic exercise. While USPS' cost attribution framework may yield reliable estimates of certain elements of this incremental cost, the approach suffers from important limitations. These limitations result in estimates that systematically understate the true incremental cost to USPS of providing competitive products. Modification of the "appropriate

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10. Panzar Report, p. 2.
11. Panzar Report, p. 2.
12. Panzar Report, p. 8.

share" requirement is an appropriate mechanism for offsetting some of the systematic biases that arise under USPS' current approach.

11. Section III below discusses how USPS' historical inefficiency and excess facilities and underutilized labor enable it to provide competitive products at an incremental cost that is likely to be below that which would be faced by an efficient firm. This creates the risk that USPS' competitive products will displace those provided by more efficient and innovative private firms, and adversely affect the long-term dynamic efficiency of the sector.

12. Section IV shows that USPS' estimates of the incremental costs of providing competitive products based on its cost attribution framework understate the actual incremental costs (as the term is defined in the economics literature) of USPS' provision of these products. This section also reviews available data which highlight some apparent limitations of USPS cost attribution framework. Under these circumstances, the PRC's current 5.5 percent "appropriate share" rule is likely to be insufficient to prevent cross-subsidization of USPS' competitive products by its market dominant products and, again, Prof. Panzar's proposal to eliminate the appropriate share requirement would make matters worse.

13. Section V shows that UPS proposal to modify the "appropriate share" criterion addresses the conceptual and practical limitations associated with determining the incremental costs of providing competitive products based on the USPS' cost attribution framework. While Prof. Panzar characterizes UPS' proposal to raise the appropriate share as an example of "rent seeking" behavior, he ignores that the proposal is a reasonable remedy to address the distortions that result from estimating incremental costs based on USPS' cost attribution framework (without adjustment) in setting the floor price for USPS' competitive products.

14. I conclude in this section that in the absence of analysis that reliably approximates USPS' true incremental costs of providing competitive products, UPS' proposal to set the

"appropriate share" at 29 percent of USPS' institutional costs is likely to promote economic efficiency and innovation. The UPS proposal reflects competitive products' share of USPS' attributable costs. The 29 percent figure may be conservative, especially in the future, given available data indicating that the share of total USPS revenue attributed to competitive products is growing faster than the share of total USPS costs attributed to competitive products – a pattern which suggests that distortions from USPS' cost attribution framework may be becoming more important over time.

III. USPS' status as a government enterprise and its historical inefficiency, contribute to its ability to displace more efficient rivals.

15. As noted above, Prof. Panzar's proposal to exclude consideration of institutional costs in setting set the floor price for USPS' competitive products reflects his view that USPS' cost attribution framework generates reliable estimates of incremental costs. This section shows that the economic logic of the incremental cost test breaks down when firms (such as USPS) have operations characterized by inefficiency and excess capacity. I discuss various aspects of the incremental cost test for cross-subsidy developed by Faulhaber (1975) in more detail below. However, here it is imporant to stress that Faulhaber's analysis that established the incremental cost test for cross-subsidy applies only when the mutliproduct firm at issue operates efficiently.[13] Prof. Panzar does not address the implications for his analysis of violation of this assumption.

A. USPS and other government agencies face weak incentives to minimize costs, maximize profits and innovate.

16. As a government agency and monopoly provider of regular mail products that is protected from competition, USPS faces incentives that differ fundamentally from those faced by

13. G. Faulhaber (1975), note 4 ("We assume throughout that the enterprise operates efficiently, and is regulated or managed to just earn its cost of capital.").

private firms. In particular, USPS (and other government enterprises) face no pressure to earn a return on their capital assets, and can remain in operation even if they lose money on a sustained basis. Moreover, its managers also do not necessarily benefit when their operations are profitable, or suffer when they are unprofitable. Thus, government enterprises face weaker incentives than private firms to minimize costs, use capital assets wisely, maximize profits, and innovate. As noted by Mankiw (2017):

> "Private owners have an incentive to minimize costs as long as they reap part of the benefit in the form of higher profit. If the firm's managers are doing a bad job of keeping costs down, the firm's owners will fire them. By contrast, if the government bureaucrats who run a monopoly do a bad job, the losers are the customers and taxpayers, whose only recourse is the political system."[14]

17. Given these incentives, it is no surprise that USPS has a long track record of inefficiency and excess capacity. In discussing inefficiency at USPS and other government enterprises more generally, I do not mean to suggest that employees and managers at USPS or other government entities somehow fail to perform their required responsibilities or that they have inadequate skills or training. Nor do I intend to suggest that there is no role for government activity. As a former government official, I recognize that despite the sometimes distorted incentives of government agencies, there is a positive and important role for government activity.

18. Nonetheless, the economic literature recognizes that government enterprises face weaker incentives to minimize cost and that competition does not necessarily drive inefficient or unprofitable government enterprises from the market. USPS, for example, had a cumulative operating deficit of $14.3 billion between FY2007 and FY2016, due in part to declining mail

14. N.G. Mankiw (2017), Principles of Economics, 8th edition, p. 311.

volumes.[15] However, USPS also has failed to meet its stautory obligations to pre-fund certain Postal Service retiree health benefits over the period, which amount to $33.9 billion.[16]

19. It is widely recognized that inefficiency at government enterprises is also due, at least in part, to the influence on operations of political factors rather than ordinary business considerations. Bernheim and Whinston (2013) note:

> "The owners of a privately owned firm are concerned mainly with profit, as are the firm's managers…This focus on profit drives owners and managers to produce their products efficiently. In a publicly owned firm, however, the politicians and bureaucrats who control the firm may have many other incentives."[17]

20. The impact of politics on USPS operations decision-making is well documented. To cite just one example, according to a study from the Center for Effective Public Management at the Brookings Institution, after the Post Master planned to close 82 mail-processing facilities in 2014, 50 senators sent a letter asking USPS to modify its plans.[18] As the same study noted, "[t]o no one's surprise, in May 2015 the USPS announced it would not resume the second phase of its 'network rationalization' plan and close facilities […] Similar interventions have happened over the years with regard to other cost saving measures…"[19]

21. USPS also faces a variety of constraints on its ability to adjust to reduce its workforce in responses to declining demand for market dominant products or otherwise to improve workforce utilization. As Geddes (2005) notes:

> "On the cost side, the Postal Service's ability to adapt quickly to declining mail volume is limited. […] The Postal Service faces strong political pressure to leave

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15. Calculations made using USPS' 10K statements between FY2007 and FY2016 and excludes "workers compensation (prior)" and "annuitant health benefits – pre-funded (prior)" reported on USPS' Public B cost reports for FY2007-16 (cost centers 203 and 205).
16 USPS 10K (FY 2007-16).
17. D. Bernheim & M. Whinston (2013), Microeconomics, 2nd edition, p. 619.
18. E. Kamarck, "Delaying the inevitable: Political stalemate and the U.S. Postal Service," Center for Effective Public Management at Brookings, August 2015, p. 7.
19. Ibid.

unneeded mail distribution centers and underutilized post offices open, and to use outdated, labor-intensive technologies."[20]

22. These factors result in USPS operating an inefficiently large number of post offices, distribution units and processing facilities, creating excess capacity in USPS' network. USPS employment has adjusted slowly to changes in demand, which can contribute to excess capacity in USPS' network. As noted above, USPS has previously proposed a wide range of facility closures that have not been completed, and a wide range of examples of USPS inefficiencies are documented in reports from USPS' Office of Inspector General.[21] More generally, USPS was rated in the least efficient tier of postal services worldwide in a 2013 Accenture study.[22] The study evaluated 24 national postal services and two commercial parcel companies and ranked USPS among the bottom five.[23]

B. USPS' inefficiency and excess capacity likely facilitates its ability to expand into the provision of competitive products if price floors are based on USPS calculated incremental costs alone.

23. USPS' excess capacity and inefficiency is likely to facilitate its ability to expand its provision of competitive products, and likely enables it to provide competitive servcies at a lower incremental cost than it would face if USPS was efficiently run. Specifically, USPS' otherwise underutilized resources, including both facilities and labor, can be readily deployed in the provision of competitive products. By contrast, if USPS operated efficiently and did not have underutilized resources, it likely would face higher incremental costs of expanding its provision of competitive products.

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20. R. R. Geddes (2005), "Reform of the U.S. Postal Service," *Journal of Economic Perspectives*. Vol 19 (3), p. 217.
21. https://www.uspsoig.gov/document-category/delivery-mail-processing?&field_doc_date_value[value]&order=field_doc_date&sort=desc.
22. https://newsroom.accenture.com/news/postal-agencies-diversify-to-fight-volume-decline-24-country-accenture-study-shows.htm
23. The bottom tier included USPS and postal organizations of Sweden/Denmark, Hungary, Japan and Spain. The two top rated firms were Singapore Post and UPS.

24. The low incremental costs of providing competitive products due to its excess capacity increases USPS' incentive and ability to expand its provision of competitive products relative to the incentives it would face if it operated efficiently. This expansion displaces activities by USPS' rivals, which like other private firms, face strong incentives to operate efficiently.

25. As noted above, the economic logic of the incremental cost test breaks down when firms do not operate efficiently. Due to the inefficiency-related distortion of incremental costs, the price charged by USPS for competitive products may exceed the (distorted) measure of incremental cost. However, USPS' provision of competitive products will nonetheless harm economic efficiency because products provided by a firm (USPS) that operates inefficiently as a whole displaces activities by efficient rivals and this can lead to the continual expansion of USPS and displacement of more efficient firms. For example, if USPS has excess facilities then capacity in these facilities can be used to expand the provision of competitive products at an incremental cost lower than it would face if if USPS operated efficiently.

26. More generally, there are many circumstances in which firms face choices between technology with different levels of fixed and variable costs. For example, if a firm anticipates high production volume, it may choose to build a facility that requires high fixed cost that enables it to realize lower marginal costs. A firm with smaller production volume may choose to build a facility with lower fixed costs and higher marginal costs. The USPS faces related decisions, but it has the ability to choose technologies that may not be economically efficient because it does not face the same competitive constraints and incentives faced by a private sector firm.

27. For example, USPS has the incentive and ability to maintain an inefficiently large number of facilities in the face of a declining volume of letter mail in order to preserve jobs. As noted above, the excess network capacity can reduce the marginal cost to USPS of providing competitive services and can thereby enable expansion into those products. Similarly, USPS may be able to choose mail processing technologies with an inefficiently high level of fixed costs that enable it to provide competitive products at a low marginal cost. Because price floors for competitive products are based on incremental cost estimates, which in turn are based in substantial part on marginal cost estimates, USPS' inefficient choice of technologies with relatively low marginal costs enable it to further its goals of maintaining pricing flexibility that can encourage the long-term growth of its competitive products business.

28. As this suggests, USPS' incentive and ability to choose inefficient technologies can reduce the incremental costs of providing competitive products that USPS would face compared to those that would be faced by an efficient firm. Application of an incremental cost standard under these circumstances has the perverse implication that it would justify expansion of an inefficient firm with excess capacity into a broad range of wholly unrelated activities. For example, if USPS staff lawyers are underutilized, would economic efficiency be enhanced if USPS were allowed to compete with private sector law firms and drive them out of business? Similarly, if USPS has excess capacity in its vehicle maintenance facilities, would economic efficiency be enhanced if USPS offered repair services in competition with private sector auto mechanics and drive them out of business?[24]

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24. These are not just hypothetical questions – it is interesting to note that USPS is currently engaged in test marketing grocery delivery services, an activity that would appear to yield little in the way of economies of scope with letter delivery services, at least compared to USPS' provision of parcel services. (PRC, Order Number 3543, Order Authorizing Extension of Customized Delivery Market Test and Updating Data Collection Plan, September 28, 2016.)

29. In each case, the presence of underutilized resources would enable USPS to compete in private sector activities at low (or perhaps zero) incremental cost. However, there is no general basis to conclude that economic efficiency would be promoted by enabling USPS to compete with private sector firms under such circumstances. To do so would displace, and discourage investment, by more efficient and innovative private sector firms. The expansion of government through misapplication of the incremental cost test in such circumstances would likely be the source of ever expanding displacement of private sector activity by government entities, encouraging government entities with excess capacity to expand into new commercial activities as long as revenue exceeds (distorted) estimates of incremental cost. The expanding role of government entities in commercial activities would be further reinforced by political pressure created to protect the jobs of USPS employees who provide the inefficient activities.

30. This does not imply that economic efficiency requires USPS to be prohibited from providing competitive products if it were efficient to do so. However, USPS' inefficiency and excess capacity implies that naïve application of the incremental cost standard for setting floor prices can harm, not promote, economic efficiency and distort competition. As discussed further below, the size of such distortions and inefficiencies grow over time as less efficient government enterprises displace more efficient and innovative ones.

31. The "appropriate share" of institutional costs applied in setting the floor price of USPS' competitive products should be set at a level that reduces the risks of such distortions. As discussed further below, the current 5.5 percent "appropriate share" standard is likely to be inadequate to reduce risks that result from application of the incremental cost test based on USPS' current framework in the presence of USPS' excess capacity and inefficiency. The 5.5 percent "appropriate share" is also likely to be inadequate for purposes of remedying other

limitations of USPS' cost attribution framework in approximating incremental cost, an issue I also discuss further below. The proposal by Prof. Panzar to set the "appropriate share" to zero would be certain to exacerbate these risks of harm to economic efficiency and competition. Prof. Panzar does not address these risks.

C. Inefficient expansion of USPS harms dynamic efficiency by reducing private firms' incentives to innovate.

32. Prof. Panzar's proposal to eliminate consideration of institutional costs in setting the floor price for USPS' competitive products fails to consider the impact of this proposal on innovation and dynamic efficiency in the postal sector. In setting the appropriate share of institutional costs used in setting the floor price for USPS' competitive products, it is necessary to consider the consequences of potential errors in setting this rate on innovation in the industry.

33. As discussed above, USPS' inefficiency and excess capacity enables it to displace activities by more efficient rivals, but perhaps more importantly, threatens the dynamic efficiency of the parcel industry. Inefficient expansion of USPS reduces private firms' incentives to invest in research and development that can lead to new services, higher quality services and cost reductions. Moreover, USPS has demonstrated a poor track record of innovation compared to private sector firms.

34. The same economic factors that explain inefficiency of USPS and other government entities also explain their limited role in developing innovations. Specifically, unlike private firms, USPS' incentives to innovate are limited because management generally does not benefit from profits generated by new products or cost-reducing productivity improvements, and does not face penalties for failing to improve efficiency. To the contrary, political pressures often inhibit USPS' ability to introduce innovations that enhance productivity and lower cost.

35. The parcel industry provides a stark lesson about the superior ability of the private sector to generate innovations that enhance consumer welfare relative to government entities. Historically, USPS' letter monopoly extended to the provision of "extremely urgent letters" requiring next day delivery. In 1974, changes in USPS regulations expanded the ability of private firms to provide overnight delivery services and USPS' monopoly on "extremely urgent letters" was eliminated by Congress in 1979.[25] These developments spurred the rapid growth of Federal Express (now FedEx) and the development of similar capabilities by UPS.[26] USPS could have, but did not, exploit the opportunity to expand the provision of overnight delivery services while it was the monopoly provider of these services. FedEx earned over $50 billion in revenue in FY2016[27] (compared to $18.5 billion for USPS' competitive products[28]) and today averages 12 million daily shipments.[29]

36. USPS' financial statements confirm its limited investment in research and development, with its 2016 Form 10K acknowledging that, "[w]hile research and development activities are important to our business, these expenditures are not material to our results of operations or financial position."[30] In contrast, in 2016 UPS announced the construction of a new technology development center that will house 1,000 workers, including software developers, designers, and other technology professionals.[31] According to Juan Perez, UPS senior vice president of technology, UPS invests approximately $1 billion dollars every year in

25. USPS, "Universal Service and the Postal Monopoly: A Brief History," October 2008. https://about.usps.com/universal-postal-service/universal-service-and-postal-monopoly-history.pdf.
26. http://about.van.fedex.com/our-story/history-timeline/history/ and https://www.ups.com/content/cn/en/about/history/1990.html?WT.svl=SubNav.
27. http://about.van.fedex.com/our-story/company-structure/corporate-fact-sheet (accessed March 1, 2017).
28. USPS Public Cost and Revenue Analysis Report FY 2016 (library reference in the ACR 2016 docket).
29. http://about.van.fedex.com/our-story/company-structure/corporate-fact-sheet (accessed March 1, 2017).
30. 2016 Report on Form 10-K, United States Postal Service, p. 4.
31. https://pressroom.ups.com/pressroom/ContentDetailsViewer.page?ConceptType=PressReleases&id=1459196282760-408.

technology.[32] UPS also recently completed implementation of its ORION vehicle routing technology. This project required development of hardware and software and is reported to include 700 dedicated employees.[33]

37. The work of Nobel Laureate Robert Solow established that improvements in social welfare are primarily driven by gains in technical and dynamic efficiency. In awarding the prize, the Nobel committee noted that Solow's work "demonstrated that only a small proportion of annual growth could be explained by increased inputs of labor and capital" with the rest attributable to innovation and technical progress.[34] As this suggests, policy actions that slow innovation can have significant adverse long-term effects on social welfare.

38. The incremental cost test for cross subsidy developed by Faulhaber does not explicitly consider elements of dynamic efficiency. However, inefficient expansion of USPS into the provision of competitive products and displacement of more innovative rivals can have important adverse long-term effects on innovation and dynamic efficiency of the delivery sector. In order to preserve competition and dynamic efficiency, the PRC's "appropriate share" determination must consider the adverse impact on innovation incentives that would result from inefficient expansion of USPS and displacement of activities by private firms. The current 5.5 percent "appropriate share" standard appears to have been established by the PRC without regard to dynamic efficiency concerns.[35] The proposal by Prof. Panzar to set the "appropriate share" to

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32. Ibid.
33. D. Ivanov, A. Tsipoulanidis, and J. Schonberger, Global Supply Chain and Operations Management , Springer International Publishing, Switzerland, 2017 (pp. 410-411).
34. http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1987/press.html
35. The 5.5% level was set by the PRC in 2007 and left unchanged by the PRC in 2012. In 2012, the PRC stated that "the lack of evidence of a Postal Service competitive advantage; the market share analysis; changes to the market and competitors; historical competitive contribution levels; changes to competitive product offerings and the mail mix and uncertainties" led to its conclusion to leave the appropriate share unchanged. PRC Order 1449, p.24)

zero would be certain to exacerbate the potential harm to industry innovation. Prof. Panzar does not address the potential impact of his proposal on innovation.

D. Risks of harm to competition due to provision of commercial products by government entities are widely recognized.

39. Risks that government entities providing commercial service will interfere with competition and displace more efficient and more innovative firms (similar to those identified for USPS above) are well documented in the economic literature. Specifically, the economic literature highlights concerns that government entities face incentives to sacrifice profit by expanding beyond the economically efficient size. While private firms have strong profit-driven incentives not to grow beyond efficient scale, government entities are not subject to a profit constraint and thus have the ability to over-expand either by setting a low price or furthering the political objectives of those that oversee the organization.

40. In a 2012 study, the Organization for Economic Cooperation and Development (OECD) stressed that member countries need to closely monitor provision of commercial services by government entities to ensure "competitive neutrality." The OECD notes that "[t]he importance for competitive neutrality derives from that fact that, if government businesses were not required to earn a commercial ROR [rate of return], while also benefiting from favourable government support, then they would be able to undercut competition by factoring lower profit margins into their pricing."[36]

41. Incentives for government entities involved in commercial activities to sacrifice profit by expanding beyond the efficient size are highlighted by David Sappington and J. Gregory Sidak, who observe that, unlike private firms, government entities have the incentive

36. OECD, "Competitive Neutrality: Maintaining a Level Playing Field between Public and Private Business," (2012), p. 27.

and ability: (i) to credibly commit to setting prices below marginal cost, while private sector firms do not;[37] (ii) to misclassify or misstate costs in order to avoid requirements that price exceeds an established measure of costs,[38] and (iii) to "operate with an inefficient technology that secures a relatively low marginal cost at the expense of a particularly high overhead (fixed) cost of production."[39]

42. More generally, the economic literature highlights that inefficiency in government is often the unavoidable consequence of weak incentives for profit maximization as well as political influence over operational decisions. In reviewing the economic literature comparing private ownership versus state ownership, Shleifer (1998) concludes:

> "The weak incentives of government employees with respect to both cost reduction and quality innovation underlie the basic case for the superiority of private ownership, a case that has been confirmed by the variety of empirical studies and general observation. It does not make sense for the government to own firms -- be they steel mills, airlines, or grocery stores -- when private firms can deliver the same, or even superior, quality of goods at a lower cost. Indeed, with few exceptions, the evidence on privatization points to both cost reductions and quality improvements in private relative to public firms."[40]
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> "...[s]tate firms are inefficient not just because their managers have weak incentives to reduce costs, but because inefficiency is the result of the government's deliberate policy to transfer resources to supporters. A large body of observation and research is consistent with this view of public production…"[41]

43. As the economic literature recognizes, the provision of commercial services by government entities carries risks of broader harm to the competitive process and economic efficiency. Such risks are heightened in the parcel industry because private firms face an artificial marginal cost disadvantage relative to USPS due to USPS' "mailbox monopoly," which

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37. David M. Sappington and J. Gregory Sidak, "Incentives for Anticompetitive Behavior by Public Enterprises," 22 *Review of Industrial Organization* 183 (2003), p. 193
38. Ibid, p. 193.
39. Ibid, p. 195.
40. A. Shleifer (1998), "State vs. Private Ownership," *Journal of Economic Perspectives*, Vol 12(4), p. 138.
41. Ibid, p. 142.

prevents private firms from using customers' mailboxes. The inability of USPS' rivals to use a customer's mailbox may necessitate return trips if a customer is not home as well as additional time and effort on the part of the rival firms. According to the FTC, perhaps 20 percent or more of competitive mail products fit into a customer's mailbox.[42]

44. For practical purposes, the marginal cost of accessing a customer-owned mailbox appears to be zero, and I am unaware of any efficiency rationale for USPS' mailbox monopoly. Nor does Prof. Panzar discuss any. Thus, the principal effect of the mailbox monopoly would seem to be raising the cost faced by USPS' rivals. Failure by PRC to account for this artificial cost advantage enjoyed by USPS through the "appropriate share" mechanism can lead to USPS displacing activities of more efficient firms, thereby harming competition.

IV. USPS' framework for estimating the incremental costs of providing competitive products systematically understates incremental cost of competitive products.

A. USPS' incremental cost framework understates incremental costs as defined by economists.

45. As discussed above, a multiproduct firm's incremental cost of providing a given service is the cost to the firm incurred to provide that service over and above the costs the firm incurs to provide its other products.[43] Based on this standard economic definition, the incremental cost reflects all additional costs associated with providing an additional product or service, including those that vary with the level of the firm's output of the given service, and those that do not. In the context of USPS' provision of competitive products, the incremental cost to USPS of providing competitive products reflects the difference between (i) the costs to USPS of providing both market dominant and competitive products, and (ii) the costs that USPS would have incurred to provide market dominant products alone.

42. See Federal Trade Commission, "Accounting for Laws That Apply Differently to the United States Postal Service and its Private Competitors," December 2007.

43. Faulhaber (1975) and Faulhaber (2005).

46. In this framework, a multiproduct firm is considered to be free of cross-subsidy if the revenue generated by a given product exceeds the incremental cost of providing that product (assuming that the firm at least breaks even over its entire operation). More specifically, a firm is considered "subsidy free" if revenue for each product (or set of products) exceeds the incremental cost of the product (or set of products), and the firm (at least) breaks even by generating total revenue in excess of its total costs.[44]

47. The incremental cost test applied by USPS is an effort to identify the incremental cost of providing competitive products, but USPS' approach to estimating incremental cost is incomplete. To briefly summarize, USPS classifies costs as incremental to the provision of competitive products based on (i) extrapolations of estimates of marginal cost (i.e., the costs of producing one additional unit of output) [45] and (ii) fixed costs (i.e., costs that do not vary with output) that USPS classifies as being used exclusively in the provision of competitive products.

48. As noted, the incremental costs for competitive services calculated by USPS are based in substantial part on estimates of marginal cost, which is defined as the cost incurred to generate a one unit increase in output. For example, one element of USPS' marginal cost reflects the cost of transporting a given volume of letters or parcels a given distance. Marginal costs of providing various elements of postal products are often estimated through econometric analysis of how USPS costs vary over time with changes in the volume of mail and parcels shipped. Similarly, I understand that the marginal cost of letter delivery is estimated by analyzing how the

44. See Faulhaber (1975), note 5.

45. I understand that USPS has started to include certain inframarginal volume variable costs in their calculation of incremental cost based on econometric estimates of how marginal costs change with volume. However, the volume of inframarginal costs that USPS classifies as incremental to the provision of competitive services is expected to be small. Prof. Panzar noted "The Role of Costs for Postal Regulation," (2014), "[f]or relevant parameter values (i.e., cost elasticity values greater than 0.5), this percentage understatement [of attributable costs due to omission of relevant inframarginal costs] decreases with the level of cost elasticity and increases with the product's share of driver activity. However, this understatement is less than 3% of component variable cost […]."

time and effort required for delivery changes in response to changes in volume with much of the variation in volume corresponding to differences between high- and low- volume days of the week.

49. Costs that USPS classifies as being incremental to competitive products are then determined based on an extrapolation of estimated marginal costs (using a constant elasticity assumption) along with information on the underlying volume of competitive products. The resulting set of costs that USPS defines as incremental are distinct from (and generally understate) incremental costs as defined by economists. As noted above, the economic literature defines incremental costs to include <u>all</u> additional costs incurred by a multiproduct firm in providing a given product or service. In the USPS context, the incremental costs of providing competitive services should reflect the difference between all costs incurred due to USPS' provision of both competitive and market dominant products, less the costs USPS would face it if only provided market dominant products. USPS' incremental cost framework does not appear to account for all costs that would be avoided if USPS did not provide competitive products. By failing to account for all costs incurred as the result of USPS' decision to provide competitive products, USPS' estimates will systematically understate true incremental costs, as defined in the economic literature.

50. It is easy to see how the incremental costs of providing a given product or service could exceed incremental costs as defined by USPS across a range of USPS activities. For example:

- If USPS did not provide competitive products, then presumably USPS could reduce certain headquarters expenses relating to administration and management. However, USPS' incremental cost framework would not fully reflect savings that would be likely to result. In 2015, publicly available data indicate that USPS incurred roughly $767 million in headquarters expenses that were classified as institutional, and the USPS incremental cost framework reflects the assumption that none of these costs would be reduced if USPS ceased providing competitive services. No headquarters expenses were attributed to domestic competitive products and approximately $12 million in headquarters expenses was attributed to "International Mail and Services."[46]

- If USPS did not provide competitive products, then presumably USPS' could reduce expenses for data processing supplies and services. Again, USPS' incremental cost framework would not fully reflect savings likely to result. In 2015, publicly available data indicate that USPS incurred roughly $680 million in such expenses that were classified as institutional, and the USPS incremental cost framework reflects the assumption that none of these costs would be reduced if USPS did not provide competitive services. No expenses associated with this cost component were attributed to domestic competitive products.[47]

51. There are numerous similar examples of large USPS expenses for which it would be reasonable to expect that costs would be reduced if USPS were not to provide competitive products that are fully (or nearly fully) classified as institutional. For example, in 2015, USPS incurred $479 million in expenses for Inspection Service Field Support. These reflect expenses for protection and headquarters and field offices, and expenses for internal audits and special investigation. None of these costs were attributed to competitive services.[48] In 2015, USPS

46. FY 2015, Public B Cost Matrix USPS-FY-15-31. Data reflect Cost Segment 18, Component Number 191 (Headquarters).
47. Ibid. Data reflect Component Segment 16, Component Number 174 (ADP Supplies & Services).
48. Ibid. Data reflect Cost Segment 18, Cost Number 195.

incurred another $219 million in Building Projects Expenses. These reflect building occupancy costs, equipment costs, and costs for facilities improvements. None of these costs from either of these categories were attributed to competitive services.[49]

52. More generally, to the extent that the USPS methodology does not fully account for costs that would be avoided if USPS did not provide competitive products – including certain costs not currently attributed to competitive products – then its estimates of the incremental cost of competitive products will be understated. As described above, USPS' incremental cost methodology is constructed in substantial part from estimates of marginal costs, which reflect estimates of changes in costs associated with small changes in volume. As noted earlier, I understand that USPS estimates of marginal costs for the delivery of letters and parcel are estimated by comparing the time and effort required on days with high and low delivery volumes. As noted earlier, I understand that the marginal cost of transporting mail is estimated econometrically based on variations in costs and volume over time and at various distances.

53. In each case, however, this methodology does not fully attempt to evaluate how costs would change if USPS modified the structure of its network in response to dropping provision of competitive products, as is necessary for estimating incremental costs. In such circumstances, an efficient firm would be likely to reconfigure its network – perhaps by, among other things, modifying delivery carriers' routes and/or by changing the number and location of processing facilities. In fact, if USPS stopped providing competitive products it would be expected to make significant changes to its network that would be likely to result in significant reductions in cost. USPS' incremental cost test, however, would fail to fully account for the extent of savings due to changes in network structure and thus understate incremental costs.

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49. Ibid. Data reflect Cost Segment 15, Component Number 169.

Econometric estimates based on the relationship between cost and volume based on cross-section data and/or data covering a limited over a limited period of time are unlikely to fully capture the discrete impact on costs that would be expected to result if USPS did not provide competitive products. The relatively long period over which any such adjustments further complicates econometric analysis of this issue.

54. USPS might argue that its econometric estimates of marginal cost reflect how the cost of operating USPS network changed as volume changed in recent years and thus, at least in part, approximates the costs that USPS would avoid if it did not provided competitive products. While I have not undertaken a detailed analysis of the econometric models used by USPS to estimate marginal cost, it is likely that estimates of marginal cost based on these models would understate the costs that USPS would avoid if it did not provide competitive products. In particular, as a government enterprise, USPS would be likely to realize a smaller and/or slower reduction in its network costs in response to a decline in volume compared to a private firm. In the context of an econometric model, this would translate to an estimate of marginal cost that is smaller than which would be realized by a private firm. If the resulting estimate of "marginal cost" is too small, then USPS' estimate of the incremental cost of competitive service would be understated.

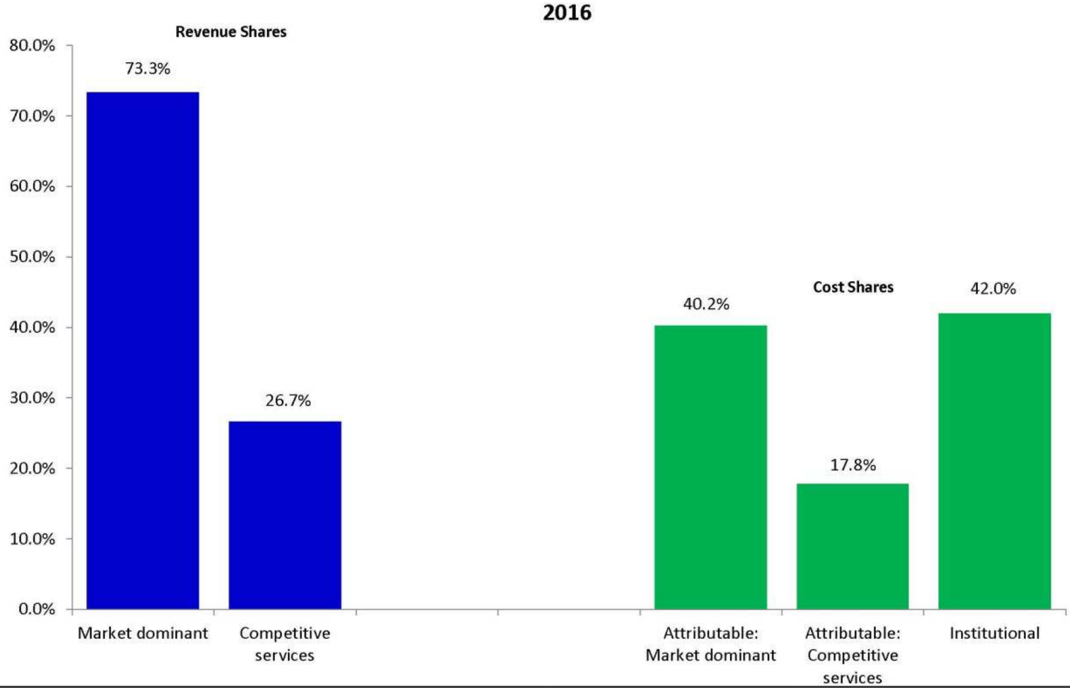
B. Limitations of USPS' incremental cost framework are reflected in public USPS cost data.

55. USPS' approach to cost attribution is complex. However, available evidence suggests that USPS' approach to identifying incremental costs could result in classification of a variety of USPS costs as institutional even if they would be avoided if USPS did not provide competitive products. While I have not undertaken a comprehensive review of the USPS' framework for identifying incremental costs, my review of (i) the trends in revenue from

competitive products, (ii) trends in costs attributed to competitive products, and (iii) trends in costs classified by USPS as institutional, raises questions about the reliability of USPS' framework for identifying incremental costs.

56. As shown in Figure 1, fully 42 percent of all USPS costs in 2016 were classified as institutional, while roughly 18 percent of total costs were attributed to competitive products and 40 percent of total costs were attributed to market dominant products.[50] Competitive products accounted for 27 percent of USPS revenue in 2016.

Figure 1
USPS Revenue and Cost Shares by Category
2016



Notes: Prior year Workers Compensation and Annuitant Health Benefits - Pre-Funded for Cost Centers 203 and 205 subtracted from cost shares. For purposes of this figure, costs are classified as "Attributable" according to the definition of attributable costs between 2008-2015 (volume variable costs plus product-specific fixed cost). Total revenue equals revenue from all mail and services for 2016.
Sources: USPS Public Cost & Revenue Analysis Report FY 2016 (library reference in the ACR 2016 docket); USPS Public B Cost Report 2016.

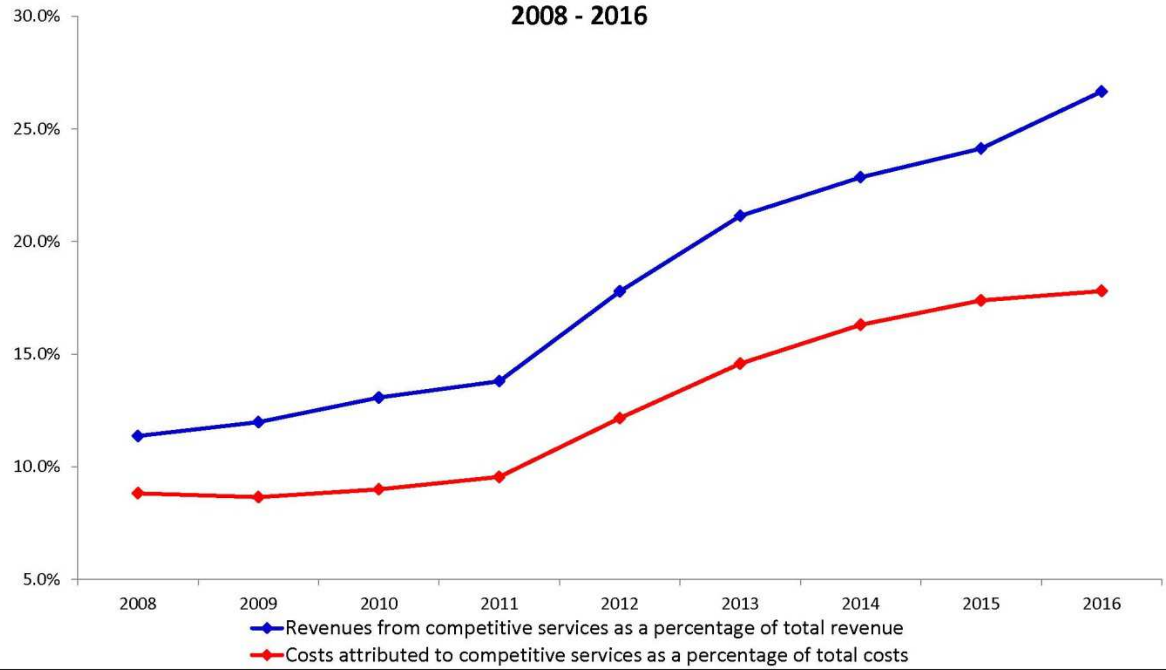
50. Estimates by McBride indicate that roughly half of USPS FY2013 institutional costs were inframarginal costs, with common fixed costs also accounting for about half. See Charles McBride, "The Calculation of Postal Inframarginal Costs." (2014).

57. USPS recognizes that product-specific fixed costs need to be considered in evaluating incremental costs. However, only a small amount of fixed costs are identified as "product-specific" by USPS. For example, USPS data show that only 0.5 percent of all attributable costs (including those for competitive and market dominant products) identified by USPS in 2015 were product-specific fixed costs.[51] As this suggests, nearly all fixed costs identified by USPS are considered institutional, and thus contribute to the floor price for competitive products only through the appropriate share calculation.

58. The growth in USPS costs attributed to competitive products lags behind the growth in revenue from competitive products, a result that is surprising given USPS' increasing efforts to modify its network to better provide competitive products. As shown in Figure 2, as recently as 2008, USPS competitive products accounted for 11 percent of USPS revenue from all mail and products, and costs attributed to competitive products and products accounted for 9 percent of total USPS costs. By 2016, competitive products and products accounted for 27 percent of USPS revenue, while costs attributed to competitive products accounted for 18 percent of the USPS total. The growing divergence between (i) the share of USPS' revenues from competitive products and (ii) the share of attributable costs from competitive products suggests that USPS' institutional costs are increasingly used in the provision of competitive products. If so, this would imply that the incremental costs of competitive products are understated by USPS' approach.

51. USPS Public Cost and Revenue Analyst Report, FY 2015. Group-specific fixed costs, which are also included in the incremental cost test, reflect a similarly small amount. In FY 2015, they amounted to $34 million, or less than 0.3% of the $12.2 billion in incremental costs for the group of competitive products. (USPS FY 2015 Annual Compliance Report, p. 65.)

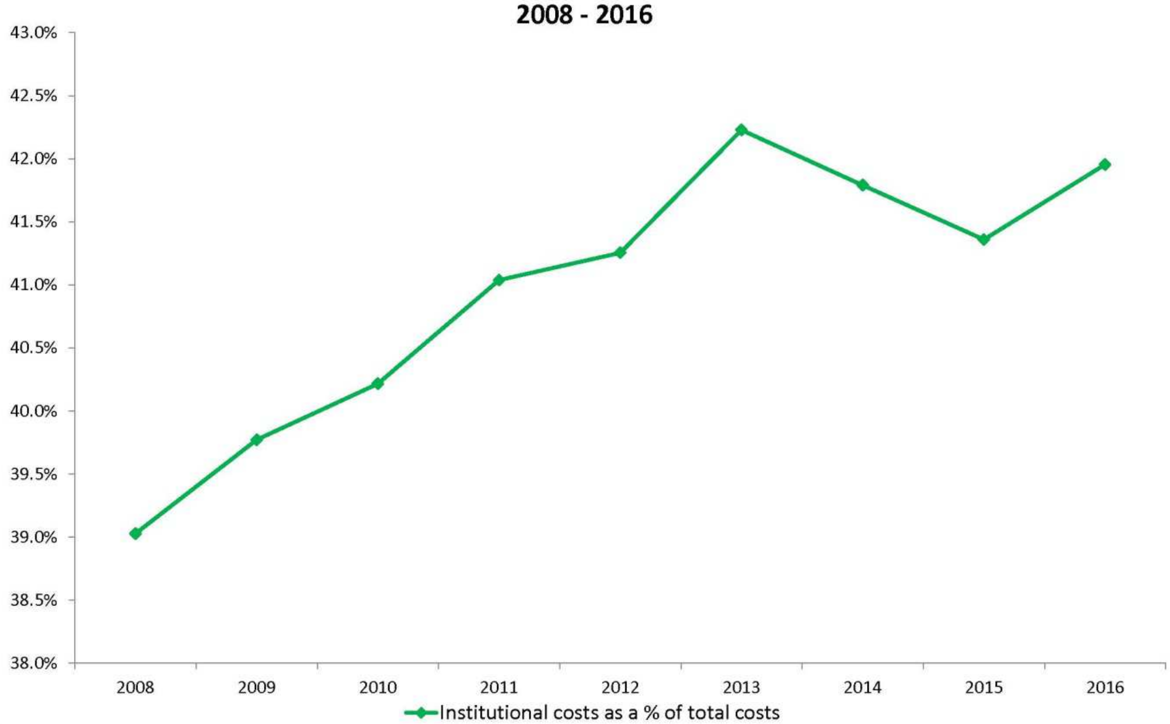
Figure 2
Competitive Products' Share of USPS Revenues and Costs
2008 - 2016



Notes: Prior year Workers Compensation and Annuitant Health Benefits - Pre-Funded for Cost Centers 203 and 205 subtracted from cost shares. For purposes of this figure, costs are classified as "Attributable" according to the definition of attributable costs between 2008-2015 (volume variable costs plus product-specific fixed costs.) Total revenue equals revenue from all mail and services for appropriate year.
Sources: USPS Public Cost & Revenue Analysis Reports FY 2008-2015; USPS Public Cost & Revenue Analysis Report FY 2016 (library reference in the ACR 2016 docket); USPS Public B Cost Reports 2008-2016.

59. Figure 3 shows that USPS institutional costs expressed as a share of total USPS costs grew from roughly 39 percent in 2008 to roughly 42 percent in 2016, coinciding with the rapid growth in competitive products' share of total revenue. Again, to the extent that this reflects costs that were incurred to support USPS provision of competitive products, then the incremental costs of competitive services identified by USPS would be understated.

Figure 3
USPS Institutional Costs as a Percentage of Total Costs
2008 - 2016



Note: Prior year Workers Compensation and Annuitant Health Benefits - Pre-Funded for Cost Centers 203 and 205 subtracted from cost shares.
Sources: USPS Public Cost & Revenue Analysis Reports FY 2008-2015; USPS Public Cost & Revenue Analysis Report FY 2016 (library reference in the ACR 2016 docket); USPS Public B Cost Reports 2008-2016.

60. In recent years, USPS has often stressed its goal of expanding its provision of competitive products. To the extent that USPS' cost attribution framework understates the incremental costs of providing competitive products, it facilitates the inefficient expansion of competitive products.

C. USPS receives a variety of valuable implicit subsidies that are not recognized in its framework for calculation of incremental costs.

61. Apart from advantages that accrue to USPS due its monopoly in the provision of letter products and its mailbox monopoly, USPS realizes a variety of implicit subsidies due to its status as a government entity. These implicit subsidies impose real costs on society, and therefore they need to be considered in evaluating the incremental cost to USPS of providing

competitive servcies. For example, if USPS did not provide competitive products it would avoid various implicit subsidies, just as it would avoid other costs. The USPS' cost framework does not account for implicit subsidies to competitive products, thus resulting in a further understatement of the incremental costs of providing competitive products. Prof. Panzar does not discuss this issue.

62. Examples of potential subsidies received by USPS as the result of its status as a government agency include:[52]

- Exemptions from state and local taxes and fees, including property taxes, taxes on income earned by USPS, sales taxes on purchases, gasoline taxes, and vehicle licensing fees.
- Access to funds at interest rates slightly above the U.S. Treasury's cost of borrowing (and thus below rates available to private firms).
- Immunity from state regulation, such as land use regulation.
- Immunity from liability for various types of conduct including claims relating to shipments that are delayed or destroyed.
- Power of eminent domain.
- Supplemental funding from the Department of Homeland Security to meet security requirements.

63. These subsidies generate costs borne by taxpayers. For example, USPS' tax exemptions impose costs on taxpayers, and the ability of USPS to borrow from the Treasury at below-market rates transfers risks to taxpayers that would otherwise be borne by USPS creditors.

64. Faulhaber stresses that a firm can be considered "subsidy free" only if each of a firm's products cover its incremental costs (appropriately defined) <u>and</u> the firm as a whole covers all of its costs. Any such analysis requires evalation of the implicit subsidies received by USPS,

52. See Federal Trade Commission, "Accounting for Laws That Apply Differently to the United States Postal Service and its Private Competitors," December 2007.

but such subsidies are not considered in USPS' cost attribution framework. While a comprehensive review of USPS financial performance is beyond the scope of this report, USPS historically has often run operating deficits in the past and may do so in the future. Under such circumstances, USPS as a whole cannot be considered subsidy free even if revenue generated by competitive products exceeds the incremental cost of providing these products identified by USPS.

V. UPS'S PROPOSAL TO RAISE THE APPROPRIATE SHARE REQUIREMENT TO 29 PERCENT WOULD LIKELY ENHANCE ECONOMIC EFFICIENCY

65. Prof. Panzar dismisses arguments that the "appropriate share" requirement can or should be used to offset limitations of USPS' cost attribution framework in approximating incremental costs, claiming any such arguments "make no economic sense whatever (sic)."[53] He further asserts that UPS' efforts to discuss the limitations of the USPS' approach to estimating the incremental costs of competitive products "are a classic example of regulatory rent-seeking, which the Commission should not accommodate."[54]

66. Prof. Panzar's report, however, does not address the concerns discussed above that (i) USPS' incremental cost are distorted due to USPS inefficiently large number of facilities, and amount of capacity, (ii) USPS' approach fails to reliability identify all costs that are incremental to the provision of competitive products; and (iii) risks of harm to innovation and dynamic efficiency resulting from USPS' displacement of private sector activity. The appropriate share requirement gives the PRC the ability to remedy, at least approximately, some of these distortions.

67. Prof. Panzar claims that UPS' proposal to increase the "appropriate share" requirement reflects "rent seeking" behavior. While there is no question that UPS is harmed by

53. Panzar Statement, p. 8.
54. Panzar Statement, pp. 2-3.

the use of application of a small (or zero) share of USPS institutional costs in setting the floor price for competitive products, Prof. Panzar ignores that UPS' actions are a reasonable attempt to address the limitations of USPS' cost attribution framework that are likely to understate the incremental costs to USPS of providing competitive products and harm innovation. If a policy improves economic efficiency, it is inappropriate to characterize it as "rent seeking" even if certain parties benefit from the policy and others do not.

68. Modification of the appropriate share requirement is necessary because estimates of the incremental costs to USPS of providing competitive products are distorted by the problems discussed above. More reliable estimation of incremental costs that, for example, included savings from network reconfiguration or reducing administrative and overhead functions would require an analysis that goes beyond USPS' current framework. Such estimates would also require analysis of costs savings achievable over the longer term as the result of reconfiguring the postal network to provide market dominant products alone. Neither Prof. Panzar nor I has done this analysis, and it is not clear that it is feasible under USPS' current methodology.

69. Given the lack of reliable estimates of the incremental costs to USPS of competitive products, and given the risks of harm to competition and economic efficiency from USPS' inefficient expansion in the provision of competitive products, it is necessary for the PRC to use a reasonable proxy in setting the "appropriate share" requirement. UPS' proposal to set this requirement at 29 percent of USPS' institutional costs appears reasonable and would be expected to improve economic efficiency. The proposed 29 percent figure reflects competitive products' share of USPS' attributable costs as currently, albeit imperfectly, measured.

VERIFICATION

I, Dennis W. Carlton, declare under penalty of perjury that the foregoing is true and correct.

Executed on March 3, 2017.

Dennis W Carlton

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COMPASS LEXECON (formerly Lexecon), (2008 – present) Senior Managing Director; LEXECON INC., (1977 – 2006), President 1997 – 2001, Senior Managing Director 2003 - 2006

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U.S. DEPARTMENT OF JUSTICE, Washington, District of Columbia (2006 – 2008) Deputy Assistant Attorney General for Economic Analysis, Antitrust Division

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, Massachusetts, Department of Economics (1975 – 1976) Instructor in Economics

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HARVARD UNIVERSITY, Public Policy Summer Course in Economics (1977), Professor

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JOINT CENTER FOR URBAN STUDIES OF M.I.T. AND HARVARD UNIVERSITY, Cambridge, Massachusetts (1974 - 1975)

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FIELDS OF SPECIALIZATION

Theoretical and Applied Microeconomics
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ACADEMIC HONORS AND FELLOWSHIPS

Best Academic Economics Article in Antitrust - 2016 Antitrust Writing Awards, given by Concurrences and George Washington University Law School for the article "Rethinking Antitrust in the Presence of Transaction Costs: Coasian Implications" (with B. Keating) in *Review of Industrial Organization*.
Keynote Address, Federal Trade Commission, Auto Distribution: Current Issues and Future Trends, January 19, 2016
Award for Antitrust Litigation Consultants of the Year 2015, awarded by Corporate Vision
Keynote Address, International Industrial Organization Conference, 2014
The 2014 Distinguished Fellow, Industrial Organization Society
Award for Best Antitrust Economist, Global Competition Review, 2014
Keynote Address, Sixth Annual Federal Trade Commission Microeconomics Conference, 2013
Heath Memorial Lecture, University of Florida, 2013
Award (w. Mark Israel) for Best Antitrust Analysis in Litigated Cases, Global Competition Review, 2013
Keynote Address, 21st Annual Workshop of the Competition Law & Policy Institute of New Zealand, 2010
Keynote Address, Japanese Symposium on Competition, sponsored by Japan Fair Trade Commission, 2009
Recipient of Inaugural Robert F. Lanzilotti Prize, awarded by the Industrial Organization Society for Best Paper in Antitrust Economics, 2008
Keynote Address to Israel Antitrust Conference, 2008
Lewis Bernstein Memorial Antitrust Lecture, Washington, D.C., 2006
Distinguished Visitor, University of Melbourne, April 2005
Milton Handler Lecture, New York, 2004
Keynote Address to the International Competition Network, Mexico, 2004
Alexander Brody Distinguished Lecture, Yeshiva University, 2000
Ph.D. Thesis chosen to appear in the Garland Series of Outstanding Dissertations in Economics
Recipient of the 1977 P.W.S. Andrews Memorial Prize Essay, best essay in the field of Industrial Organization by a scholar under the age of thirty
National Science Foundation Grant, 1977 - 1985
Recipient of Post-doctoral Grant from the Lincoln Foundation, 1975
National Science Foundation Fellowship, 1972 - 1975
Phi Beta Kappa, 1971
John Harvard Award, 1970
Detur Book Prize, 1969
Edwards Whitacker Award, 1969
M.I.T., National Scholar Award, 1968

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Member, U.S. Chamber of Commerce International Competition Policy Experts Group for report on International Trade and Competition, 2017
Appointed Member of the ABA Presidential Transition Task Force, Antitrust Law, 2016
Appointed Member of the ABA Presidential Transition Task Force, Antitrust Law, 2012
Advisory panel to the Department of Justice and the FTC on the merger guidelines, 2010
Co-editor, Journal of Law and Economics, 1980 - present
Visiting Committee, MIT, Department of Economics, 1995 - 2011

Member, Advisory Board, Economics Research Network, 1996 - present
Member, Advisory Board of Antitrust and Regulation Abstracts, Social Science Research Network, 1998 - present
Advisory Board, Massachusetts Institute of Technology, Department of Economics, 1999 - present
Editorial Board, Competition Policy International (CPI), 2010 – present, Co-Editor, Competition Policy International (CPI), 2004 – 2009
Member, Economic Task Force – Antitrust Division, American Bar Association, 2010 – present
Advisory Board, Journal of Competition Law and Economics, 2004- present
Adjunct Scholar, American Enterprise Institute for Public Policy Research, 2007 – present
Deputy Assistant Attorney General for Economic Analysis, Antitrust Division, U.S. Department of Justice, 2006 – 2008
Presidential Appointment to the Antitrust Modernization Commission, 2004 – 2007
Invited Panelist at Public Hearing on the Retail Banking Sector Inquiry: Payment Cards, before the European Commission in Brussels, Belgium, July 17, 2006.
Consultant on Merger Guidelines to the FTC, 2003
Professor, George Mason Institute for Judges, October 2001
Chairman, FTC Round Table on Empirical Industrial Organization (September 11, 2001)
Participant in the Round Table on the Economics of Mergers Between Large ILECS before the Federal Communications Commission, February 5, 1999
Member, Steering Committee, Social Science Research Council, Program in Applied Economics, 1997 - 1999
Participant in roundtable discussions on "The Role of Classical Market Power in Joint Venture Analysis," before the Federal Trade Commission, November 19, 1997 and March 17, 1998.
Participant in meetings with Committee of the Federal Reserve on Payment Systems, June 5, 1997
Associate Editor, Regional Science and Urban Economics, 1987 - 1997
Resident Scholar, Board of Governors of the Federal Reserve System, Summer, 1995
Accreditation Committee, Graduate School of Business, Stanford University, 1995
Associate Editor, The International Journal of Industrial Organization, 1991 - 1995
Editorial Board, Intellectual Property Fraud Reporter, 1990 - 1995
Consultant on Merger Guidelines to the U.S. Department of Justice, 1991 - 1992
Member, Advisory Committee to the Bureau of the Census, 1987 - 1990
National Bureau of Economic Research, Research Associate
Member, American Economics Association, Econometrics Society

BOOKS

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RESEARCH PAPERS

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“The Economics of Gray-Market Imports,” (with C. DeMuth), written for the Coalition to Preserve the Integrity of American Trademarks (COPIAT), (May 1985).

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