SUPREME COURT OF THE STATE OF NEW YORK
NEW YORK COUNTY

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OMAHA LLC and VULCAN CARS LLC,   :

                        :

           Petitioners,   : Index No. _____

                        :

          v.   : Motion Seq. No. _____

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NEW YORK CITY TAXI AND LIMOUSINE   : **EXPERT AFFIDAVIT OF**
COMMISSION and MEERA JOSHI, in her : **STEVEN TENN, PH.D.**
official capacity as Chair, Commissioner, and :
Chief Executive Officer of the New York City :
Taxi and Limousine Commission,   :

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          Respondents.   :

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I. Qualifications

1. I am Steven Tenn, an economist and Vice President in the Antitrust and Competition Economics Practice of Charles River Associates (CRA), an economic consulting firm. I have prepared this affidavit on behalf of Juno USA LLP (Juno).[1] My curriculum vitae is attached as Appendix A.

2. I earned a doctorate degree in economics from the University of Chicago in 2001, a master's degree in economics from the University of Chicago in 1998, and a bachelor's degree in economics from the University of California, San Diego, in 1996.

3. I have authored or co-authored a number of economics articles, which have been published in respected academic journals such as *Review of Economics and Statistics*, *International Journal of Industrial Organization*, and *Journal of Population Economics*.

4. Over the last 17 years, I have analyzed economic incentives in matters across a wide range of industries, including engagements where I consulted or served as an expert witness for a government agency or private companies.

5. I have been employed as a Vice President in the Antitrust and Competition Economics Practice of CRA since January 2015. While at CRA, I have evaluated the competitive impact of proposed transactions. I testified as the Federal Trade Commission's (FTC's) economic expert for competition issues in the FTC's successful court challenge of the

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[1] Neither my nor CRA's compensation depends on my conclusions in this matter.

Advocate-NorthShore merger, a case involving two hospital systems in Chicago. I have also analyzed the competitive impact of non-merger events.

6. Prior to joining CRA in 2015, I was an economist at the FTC for 13 years. While at the FTC, I analyzed numerous proposed transactions for potential anticompetitive effects, among other things. I was the lead FTC economist in investigations across many different industries, including consumer products, retail, healthcare, and industrial inputs.

II. Assignment

7. On December 4, 2018, The New York City Taxi and Limousine Commission (TLC) approved the passage of a minimum pay standard for certain app-based for-hire vehicle (FHV) drivers (the TLC Rule).[2] Juno, one of the FHV companies that will be impacted by the TLC Rule, has asked that I analyze how the TLC Rule will impact competition for app-based FHV trips in New York City (the City).

8. In preparing this affidavit, I have relied on publicly available information from the TLC, a report that the TLC commissioned to analyze the impact of implementing a minimum pay standard for app-based FHV drivers, my own experience and expertise, and academic literature.

III. Executive Summary

9. I conclude that the TLC Rule will have unintended consequences harmful to competition. Specifically, I find that:

- The TLC Rule will harm competition by making it more difficult for smaller FHV companies and new entrants to compete.

- The TLC Rule will likely have unintended consequences that are harmful to consumers and their communities. It will incentivize FHV companies to set higher prices and reduce service availability in lower-volume areas that have traditionally been underserved. The TLC Rule will also incentivize FHV companies to increase service availability in high-volume areas, worsening congestion in those areas.

- The reduction in competition between FHV companies will likely have harmful effects on drivers.

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[2] See, TLC's Notice of Promulgation (December 4, 2018), available at: http://www.nyc.gov/html/tlc/downloads/pdf/driver_income_rules_11_29_2018.pdf.

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IV. Industry Background

10. On December 4, 2018, the TLC voted to approve the passage of a minimum pay standard for app-based FHV drivers. The TLC's stated objective is to "significantly increase the earnings of more than 80,000 For-Hire Vehicle (FHV) drivers who work for large app companies."[3]

11. The TLC's minimum payment formula will apply to "high-volume" FHV companies that dispatch at least 10,000 trips per day in the City. Currently, four companies meet this threshold: Uber, Lyft, Juno, and Via. Among these four providers, Uber is the largest and accounted for 66.5% of trips in 2017.[4] Lyft accounted for approximately 20% of trips, followed by significantly smaller competitors Juno (approximately 10% of trips) and Via (approximately 5% of trips).[5]

12. The TLC's minimum driver pay formula is a function of trip miles, trip minutes, whether the trip is a shared ride, whether the trip is in a wheelchair accessible vehicle (WAV), and each FHV company's specific driver "utilization rate" (as the TLC has used the term).[6] Each company's utilization rate is calculated as its drivers' total trip minutes divided by its drivers' total on-duty time. These utilization rates will be calculated on a regular basis by the TLC for each FHV company to which the TLC Rule applies. The TLC used utilization rates for the period February 2018 through June 2018 to calculate company-specific utilization rates for trips taken from February through June 2019.[7] According to the TLC, the utilization rates calculated based on log-on/log-off times for this period are 58% for Uber, 56% for Lyft, and 53% for Juno.[8] For an initial period of 12 months, the TLC will calculate driver pay based on an industry-wide utilization rate

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[3] See, TLC press release (December 4, 2018) at 1, available at: http://www.nyc.gov/html/tlc/downloads/pdf/press_release_12_04_18.pdf.

[4] See, James A. Parrott and Michael Reich, "An Earnings Standard for New York City's App-Based Drivers, Economic Analysis and Policy Assessment," Report commissioned by the TLC (July 2018) at 42-43, hereafter referred to as the Parrott and Reich Report. Reported shares are based only on trips provided by the four largest app-based FHV companies (Uber, Lyft, Juno, and Via).

[5] Unlike the others, Via's service is focused on ridesharing. See, Parrott and Reich Report, ft. 39. Via also offers drivers the option of receiving an hourly payment, regardless of whether they are transporting a passenger, through its "Blue Mode." For a description of Via's Blue mode, see https://nyc.drivewithvia.com/push/20180312_nyc_bluemode. Because Via's service offering differs from traditional app-based FHV companies, I focus primarily on Uber, Lyft, and Juno in this affidavit.

[6] See, TLC's Notice of Promulgation (December 4, 2018) at 2-4.

[7] See, December 21, 2018 email from Ryan Wanttaja, Deputy General Counsel, Assistant Commissioner for Legal Affairs, New York City Taxi and Limousine Commission.

[8] Id.

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of 58%, but a company with a higher utilization rate can opt out and use its own, higher utilization rate during that period.[9]

13. When a driver is logged in to more than one app at the same time, the TLC assigns the idle time equally to each of the apps the driver is logged in to when calculating utilization rates.[10] For example, if a driver is simultaneously logged in to three apps, then one third of his idle time is allocated to each of the three FHV companies.

14. Following the initial period of twelve months during which the TLC intends to use an "aggregate" utilization rate for all companies subject to the TLC Rule,[11] the minimum driver pay formula will be inversely related to each FHV company's specific utilization rate. In other words, as a company's utilization rate decreases, the minimum amount it must pay its drivers under the TLC Rule increases (and vice versa).

15. For example, an FHV company with a 58% utilization rate will face a minimum pay standard of $23.00 for an unshared, non-WAV trip that is 7.5 miles and 30 minutes long.[12] But, an FHV company with a higher utilization rate of 70% will face a lower minimum pay standard of $19.06 for the exact same trip (17% less than $23.00).

16. For trips that end outside the City, the TLC rule assigns a 50% utilization rate for all companies for the miles and minutes spent outside the City on these rides.[13] In addition, the TLC Rule sets a different minimum pay for shared trips.[14]

V. The TLC Rule Will Harm Competition by Making it More Difficult for Smaller Providers and New Entrants to Compete

17. First, I consider how the TLC Rule will impact competition between the FHV companies. I conclude that it will reduce competition by limiting the competitiveness of smaller FHV companies with lower utilization rates. The TLC Rule will also deter the entry of new FHV companies because it will make it more difficult for new entrants to compete.

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[9] See, TLC's Notice of Promulgation (December 4, 2018) at 30.

[10] See, December 21, 2018 email from Ryan Wanttaja, Deputy General Counsel, Assistant Commissioner for Legal Affairs, New York City Taxi and Limousine Commission.

[11] See, TLC's Notice of Promulgation (December 4, 2018) at 30.

[12] See, TLC's Notice of Promulgation (December 4, 2018) at 3.

[13] See, TLC's Notice of Promulgation (December 4, 2018) at 4.

[14] For shared rides, the minimum payment formula provides for a Shared Ride Bonus. That is, minimum driver pay is higher for shared trips compared to unshared trips (all else equal). The TLC has not yet set the Shared Ride Bonus value. See, TLC's Notice of Promulgation (December 4, 2018) at 4.

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a. **The TLC Rule Imposes Different Costs on Competitors Offering the Same Service**

18. The app-based FHV industry is an example of what is referred to as a "two-sided" market in the economics literature, in which a "buyer" and a "seller" interact through an intermediary.[15] In this case, an FHV company acts as the intermediary, matching "seller" drivers to "buyer" customers who require their services. For drivers, it is important that they participate in an FHV network that has a good supply of customers. Similarly, for customers it is important that their FHV network has a sufficient number of drivers so that a nearby driver is available when needed.

19. In two-sided markets, it is more likely that the intermediary can find a good match between a given "buyer" and "seller" when there is a larger number of potential buyers and sellers from which the intermediary can pick to find the best match.[16] For example, when an app-based FHV company has only a small number of drivers and customers, it becomes less likely that a driver is located near a given customer when the customer requests that a driver be dispatched. As a result, wait times are likely to be longer for an FHV company with fewer drivers and customers. In contrast, if an FHV company has a larger number of drivers and customers, then it becomes more likely that a driver is located near a given customer when the customer requests that a driver be dispatched. Wait times are therefore likely to be shorter for an FHV company with many drivers and customers, resulting in a better customer experience. Thus, FHV companies benefit from "scale economies" that allow larger providers to better match customers to nearby drivers.[17]

20. Prior to the TLC Rule's implementation, FHV companies faced relatively low costs from having a large number of drivers in their networks. This likely lessens the importance of scale economies, *i.e.*, the benefits of having a larger number of drivers and customers as described above, because an FHV company with a smaller number of customers can improve its driver-customer match quality by constructing a driver network that is large compared to the size of its customer base so that at any given time there is a driver close to a customer who needs a ride. However, a consequence of the TLC Rule is that it will make scale economies more important, as companies will be penalized for having a larger network of drivers with significant idle time.

21. Accordingly, it seems likely that a larger FHV company will be better positioned to maintain a large number of drivers while maintaining or increasing its specific utilization rate. Specifically, because such a company currently has both a large number of drivers and a large number of existing customers seeking its services, it likely has a

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[15] See, Marc Rysman (2009), "The Economics of Two-Sided Markets," *Journal of Economic Perspectives.*

[16] See, David S. Evans (2003), "The Antitrust Economics of Multi-Sided Platform Markets," *Yale Journal on Regulation* at 334.

[17] See, Parrott and Reich Report at 41 and 44.

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greater ability to optimize its driver-customer network in a way that allows it to maintain both low wait times and relatively high driver utilization.

22. In contrast, the TLC Rule makes it costly for smaller FHV companies, like Juno, to enroll the number of drivers necessary to offer a competitive product. This is because additional drivers using a company's app, even if these drivers are already driving for other companies, lower the company's utilization rate as calculated by the TLC (as discussed in more detail in the following subsection). This leads to higher minimum driver costs per trip (all else equal) for smaller companies offering the same service as larger competitors.

23. Smaller companies will likely have a more difficult time competing under the TLC Rule, as it will become more costly for them to offer a network of drivers with breadth comparable to larger companies. If a small FHV company continues to maintain a large driver network, then its driver pay costs will rise and it will likely struggle to compete against FHV companies with lower costs. Alternatively, if a small FHV company attempts to scale back the number of drivers in its network, average match quality between its drivers and customers will likely deteriorate, incentivizing its customers to switch to other providers that can offer higher-quality service (*e.g.*, shorter wait times).

24. Due to the TLC Rule's asymmetric impact across competitors, a potential outcome is that one large FHV company will gain customers over time, while smaller firms such as Juno will lose customers. Such a trend could start a cycle in which the larger company's scale economies continue to improve, while those of companies like Juno continue to deteriorate, possibly to the point where they are no longer viable competitors.

25. The authors of the report commissioned by the TLC point out that scale economies in two-sided markets often result in competitive outcomes with only one or two very large firms.[18] In two-sided markets, even seemingly small changes can cause competition to "tip" into a winner-take-all outcome.[19] The TLC Rule may inadvertently encourage such a result by making it harder for smaller firms to compensate for their more limited scale economies by developing driver networks that are large relative to their customer base.

26. If smaller FHV firms such as Juno are unable to effectively compete under the TLC Rule, then both consumers and drivers are likely to suffer from the reduced competition. The elimination of competition may result in higher prices, lower product or service quality, and less innovation.[20] Similarly, drivers may be worse off when fewer firms are

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[18] See, Parrott and Reich Report at 41.

[19] See, Marc Rysman (2009), "The Economics of Two-Sided Markets," *Journal of Economic Perspectives* at 134; and David S. Evans (2003), "The Antitrust Economics of Multi-Sided Platform Markets," *Yale Journal on Regulation* at 349.

[20] See, Department of Justice and Federal Trade Commission, "Horizontal Merger Guidelines," August 2010, available at http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf.

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competing to hire them, as I describe in Section VII. While it is presumably not the TLC's intent to put the current competitive process at risk in this manner, it may inadvertently be doing so by making it harder for smaller firms such as Juno to compete.

b. The TLC Rule Punishes Smaller FHV Companies That Seek to Increase Overall Driver Utilization While Rewarding Larger Companies

27. Currently, it is common for FHV drivers to enroll with multiple FHV companies to receive ride requests.[21] Nonetheless, when the TLC Rule was approved, the TLC did not take this into account when it defined how each FHV company's specific utilization rate would be calculated.[22] Similarly, the report commissioned by the TLC to analyze the impact of implementing a regulation similar to the TLC Rule also sidestepped how company-specific utilization could be measured when drivers enroll with multiple FHV companies.[23] While the TLC belatedly tried to fix this deficiency in the TLC Rule on December 21, 2018,[24] the TLC's new approach for dealing with multi-app drivers is likely to result in anticompetitive effects, as discussed below.

28. I understand that when Juno entered the City, the drivers it enrolled generally were already enrolled with either Uber or Lyft.[25] Even though Juno had a relatively smaller customer base when it first entered the City, drivers who were already enrolled with other companies may have decided to enroll with Juno due to benefits offered and as a secondary source of passengers to fill the times when the larger companies were not sending ride requests to the driver.

29. In recruiting already-existing FHV drivers, Juno was able to provide coverage for a wide geographic area, despite having a comparatively smaller customer base, by accounting for a smaller fraction of on-duty time for a larger number of drivers. Customer wait times likely would have suffered had Juno not been able to employ this approach, and instead had relied on a smaller number of drivers that were exclusive to its driver network. Additionally, by offering a supplemental source of potential trips to existing drivers for other companies (and without adding new FHV drivers or vehicles to the

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[21] See, Parrott and Reich Report, Exhibit 19, which shows that nearly half of drivers work on multiple platforms as of October 2017, with this fraction increasing over time; and December 21, 2018 email from Ryan Wanttaja, Deputy General Counsel, Assistant Commissioner for Legal Affairs, New York City Taxi and Limousine Commission.

[22] See, TLC's Notice of Promulgation (December 4, 2018) at 22-23.

[23] Parrot and Reich Report at 21.

[24] See, December 21, 2018 email from Ryan Wanttaja, Deputy General Counsel, Assistant Commissioner for Legal Affairs, New York City Taxi and Limousine Commission.

[25] Prior to Juno beginning passenger service in the City, it paid drivers of existing FHV apps $25 per week to carry a Juno device while driving for incumbent providers. See, https://therideshareguy.com/could-juno-change-the-rideshare-world-for-the-better.

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pool of drivers in the City), Juno's approach likely *increased* the overall utilization of the existing driver pool in the City.

30. The TLC Rule attempts to account for drivers using multiple FHV apps by equally splitting drivers' idle times across all apps that a driver is logged in to when not driving a passenger. When utilization is calculated in this way, a competitor seeking to grow by offering additional rides to drivers already enrolled with an established FHV app, like Juno has done in the City, will likely have its costs increased well above those of incumbent companies.

31. As an example, suppose a representative driver was logged in to a large incumbent FHV company for 40 hours a week, but had a passenger in his vehicle only for 30 hours. The TLC would arrive at a 75% utilization rate attributable to that company, calculated as 30 hours with a passenger divided by the sum of 30 hours with a passenger plus 10 idle hours. Now suppose that the driver also enrolled with a smaller company or new entrant in an attempt to gain additional rides to fill his 10 hours of idle time, and that new entrant provided the driver with two additional hours where he was transporting a passenger. The TLC would equally divide the now eight idle hours for the driver between the larger incumbent company and the new entrant, leaving the incumbent company with a utilization rate of 88% for the driver (calculated as 30 hours with a passenger divided by the sum of 30 hours with a passenger plus 4 idle hours) while the new competitor would have a utilization rate of 33% for the driver (calculated as 2 hours with a passenger divided by the sum of 2 hours with a passenger plus 4 idle hours).

32. Although the new entrant was responsible for *reducing* the overall idle time of the driver (in other words, *increasing* the overall utilization of that driver), the new entrant is penalized with a relatively lower utilization rate, and therefore a higher minimum pay standard under the TLC Rule. At the same time, the TLC Rule rewards incumbent companies under this scenario by increasing their specific utilization where the driver is concurrently logged into a competitor app.

33. Consequently, an unintended consequence of the TLC Rule is that it discourages FHV apps from employing Juno's efficient approach for providing service by "filling in" available time of the other FHV companies' drivers.

VI. The TLC Rule Will Likely Have Unintended Consequences That are Harmful to Consumers and their Communities

34. Next, I consider how the TLC Rule will impact the FHV companies' incentives when designing and pricing their service offerings. Because the TLC's minimum pay is inversely related to each company's calculated utilization rate, it will create an incentive for companies to reduce services that lead to lower calculated utilization rates, even if these services are valuable to consumers and the communities in which they live.

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35. In response to the TLC Rule, an FHV company may set higher prices in areas of the City that typically have lower driver utilization. An FHV company will have an incentive to do so for two reasons, as described below.

36. First, doing so internalizes the "negative externality" such trips have on the company. That is, drivers serving low utilization areas reduce the overall utilization rate and ultimately result in higher minimum driver pay under the TLC Rule, thereby increasing the cost of driver pay to the company for trips in all parts of the City, even areas of the City with higher utilization. This means that offering services in low-utilization areas makes it less profitable for companies to provide all services, even in areas of the City with higher utilization. A profit-maximizing company will take this additional cost into account, charging higher prices for rides in lower-utilization routes because those trips have a negative impact on the company's utilization rate, and therefore increase its costs.

37. Second, higher prices for trips in lower utilization areas will limit consumer demand for such trips. In response, drivers will have an incentive to spend less of their on-duty time in such areas and instead switch to locations with higher expected utilization. This would be a poor outcome for individuals in such areas of the City, who currently benefit from the availability of FHV services. In the past, the TLC has made efforts to increase service availability in underserved areas of the City.[26] An unintended consequence of the TLC Rule is that it incentivizes *increases* in prices and a *reduction* in service availability in such areas.

38. FHV companies may undertake similar pricing strategies by time of day. For example, during time periods where driver utilization is expected to be low, FHV companies may find it optimal to set higher trip prices in response to the TLC Rule, to the detriment of customers.

39. Conversely, FHV companies may set lower prices when driver utilization is expected to be high in order to increase average utilization and thereby reduce minimum pay to drivers. It is worth noting that this incentive to set lower prices may worsen traffic congestion by encouraging even more FHV rides during peak periods. This is presumably an unintended consequence of the TLC Rule, as it is exactly the opposite of how "peak-usage" pricing strategies are used to limit, rather than increase, consumer demand during peak periods.[27]

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[26] See, for example, http://www.nyc.gov/html/tlc/html/passenger/shl_passenger.shtml, which describes the TLC's use of Boro Taxis to increase access in underserved areas of the City.

[27] See, for example, the explanation on Uber's website of how "surge pricing" is used in periods of high consumer demand, available at: https://www.uber.com/drive/partner-app/how-surge-works.

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VII. The Loss of Competition between FHV Companies Will Likely Have Harmful Effects on Drivers

40. In a two-sided market, such as the app-based FHV industry, companies respond to competitive pressures on both sides of the market. FHV companies not only compete for passengers, but also to attract and retain drivers. To entice drivers to provide more rides for passengers on its platform, a company may offer bonus payments to drivers who meet a minimum number of rides threshold.[28] Companies also compete for drivers by offering non-monetary benefits, such as in-person support centers,[29] and by making changes to their apps, such as when Uber added the ability for passengers to pay driver tips within the app.[30] Competition between FHV companies can also pressure companies to process driver payments faster.[31]

41. Competitive pressure that the FHV companies exert on each other, and that new entrants exert on incumbent companies, likely leads to better compensation for drivers. By raising barriers to new entrants, and making smaller FHV companies less effective competitors, the TLC Rule will likely soften this competition for drivers. While the TLC Rule sets minimum driver pay per the utilization-based formula, it does not regulate (or even consider) other forms of payment, such as performance bonuses. Reduced competition for drivers would be expected to reduce driver earnings along this and potentially other forms of payment not considered by the TLC.

42. Currently, drivers have some ability to decline rides assigned by the FHV companies.[32] For example, a driver may decline a long trip offered near the time when he intends to go off-duty. Under the TLC Rule, however, declining rides may lead to lower utilization and therefore higher minimum pay. As a consequence, FHV companies may respond by providing drivers with less flexibility to decline rides. This is obviously a poor outcome for drivers, and is yet another demonstration of how the TLC Rule may hurt the very drivers it intends to help.

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[28] See, for example, https://therideshareguy.com/new-weekly-ride-challenge.

[29] See, https://www.nytimes.com/2017/03/18/nyregion/nyc-taxi-center-uber.html.

[30] See, https://www.nytimes.com/2017/06/21/technology/uber-gratuity-changes-what-you-need-to-know-about.html.

[31] See, for example, https://www.nytimes.com/2016/10/02/technology/granting-shares-for-fares-an-uber-rivals-play-for-drivers.html, which mentions "instant-pay" options that apps have introduced to compete for drivers by making payments more frequently.

[32] For example, drivers for some companies can decline 10 to 20 percent of rides before being deactivated from the platform. See Parrott and Reich Report at 47.

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Signed: January 22, 2019.

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Steven Tenn, Vice President
Charles River Associates

Acknowledgment

WASHINGTON   )

                                 ss.:

DISTRICT OF COLUMBIA   )

On January 22, 2019, before me, the undersigned, personally appeared Dr. Steven Tenn personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

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Notary Public, District of Columbia

CORLIS C. CARTER
NOTARY PUBLIC DISTRICT OF COLUMBIA
My Commission Expires June 14, 2019

Printed Name: Corlis C. Carter

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PRINTING SPECIFICATIONS STATEMENT

1. Pursuant to N.Y.C.R.R. § 202.70(g), Rule 17, I hereby certify that the foregoing affidavit was prepared on a computer using Microsoft Word. A proportionally spaced typeface was used as follows:

   Name of Typeface: Times New Roman
   Point Size: 12 (Footnotes: 10 point)
   Line Spacing: Double

2. The total number of words in the foregoing affidavit, inclusive of point headings and exclusive of the caption, the signature block and the certificate of compliance is 4,265 words.

Dated: New York, New York

January 22, 2019

/s/ George A. Zimmerman

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Tenn Affidavit, Appendix A

CRA Charles River Associates

Steven A. Tenn
Vice President

PhD, Economics
University of Chicago

MA, Economics
University of Chicago

BA, Economics
University of California, San Diego

Dr. Steven Tenn has significant experience evaluating antitrust and competition matters, specializing in merger investigations involving complex econometric analysis. He has analyzed competition matters across a range of industries including consumer products, health care, retail, and intermediate goods. His health care expertise includes pharmaceuticals, hospitals, physician practices, pharmacy benefit management, group purchasing organizations, and medical equipment.

Prior to joining CRA, Dr. Tenn was an economist with the Federal Trade Commission (FTC) for 13 years, where he conducted economic and econometric analyses in high profile merger investigations and other antitrust matters. His work at the FTC involved designing and implementing empirical studies to test anticompetitive theories, evaluating efficiency claims, providing litigation support, and formulating settlements.

Dr. Tenn has conducted research on a variety of competition matters. His research has been published in academic journals that include *Review of Economics and Statistics*, *International Journal of Industrial Organization*, *Journal of Health Economics,* and *Quantitative Marketing and Economics*.

Professional history

2015–Present   *Vice President*, Charles River Associates, Washington, DC

- Provided economic analysis related to proposed acquisitions in a range of industries, including consumer products, hospitals, pharmaceuticals, pharmacy benefit management, group purchasing organizations, and industrial products and services.

2001–2015   *Economist*, Federal Trade Commission, Washington, DC

- Evaluated for potential anticompetitive effects and efficiencies mergers collectively valued at $150 billion. Lead economist in high-profile investigations in a wide range of industries, including consumer products (recorded music, breath fresheners, pickles), retailing (supermarkets, casinos, hardware stores), health care (pharmaceuticals, pharmacy benefit management, hospitals, physician practices, institutional pharmacy, medical equipment), and industrial inputs (nylon fiber, batteries).

- Designed and implemented empirical studies to test anticompetitive theories, and wrote memoranda to the Commission analyzing the relevant economic issues.

- Provided litigation support in Whole Foods/Wild Oats, Libby/Anchor Hocking, and other matters where the Commission prepared for litigation.

- Helped formulate settlements and analyzed whether they were likely to resolve anticompetitive concerns.

- Performed self-directed research on topics relevant to the Commission that ultimately led to publication in academic journals.

1998–2001 *Research Assistant to Professor Sam Peltzman*, University of Chicago, Chicago, IL

- Used SAS and Matlab to perform econometric analysis for two research projects.

Testimony

Co-authored economic expert reports to Departments of Insurance in 13 states on behalf of CVS Health Corporation and Aetna, Inc., regarding CVS's proposed acquisition of Aetna. Reports submitted between 4/25/18 and 10/19/18.

Affidavit submitted 10/5/18 on behalf of Inova Health Care Services in Certificate of Public Need (COPN) Request No. VA-8300 before the Virginia Department of Health.

Economic expert in *Federal Trade Commission et al. v. Advocate Health Care Network et al.* Reports submitted 2/26/16 and 3/21/16. Deposition testimony 3/29/16. Trial testimony 4/13/16, 4/14/16, and 5/6/16.

Econometric expert commissioned by the New Zealand Commerce Commission, pertaining to the proposed transaction between Reckitt Benckiser and certain assets of Johnson and Johnson. Reports submitted 3/3/15 and 4/20/15.

Awards and achievements

2009   Outstanding Scholarship Award, Federal Trade Commission

2008   Francis Walker Award, Federal Trade Commission

2000–2001   Fellowship, H.B. Earhart Foundation

1996–2000   Fellowship, Division of the Social Sciences, University of Chicago

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Steven A. Tenn

Charles River Associates

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Publications

"Introduction to the Economic Analysis of Hospital Mergers." Newsletter for the Economics Committee of the ABA Section of Antitrust Law, Forthcoming.

"Geographic Market Definition in Urban Hospital Mergers: Lessons from the Advocate-NorthShore Litigation." With Sophia Vandergrift. *Antitrust Source*, 2017.

"A Semiparametric Discrete Choice Model: An Application to Hospital Mergers." With Devesh Raval and Ted Rosenbaum. *Economic Inquiry*, 2017.

"Key Takeaways from the Advocate-NorthShore Merger Litigation." *CPI Antitrust Chronicle*, 2017.

"A Deeper Dive Into Merger Remedies." *Law360*, 2017.

"Horizontal Merger Analysis In Retail Markets." With Daniel Hosken. *Handbook on the Economics of Retailing and Distribution*, 2016.

"Entry Threats and Pricing in the Generic Drug Industry." With Brett Wendling. *Review of Economics and Statistics,* 2014.

"The Price Effects of Hospital Mergers: A Case Study of the Sutter-Summit Transaction." *International Journal of the Economics of Business,* 2011.

"The Success of Divestitures in Merger Enforcement: Evidence from the J&J-Pfizer Transaction." With John M. Yun. *International Journal of Industrial Organization,* 2011.

"Mergers when Firms Compete by Choosing both Price and Promotion." With Luke Froeb and Steven Tschantz. *International Journal of Industrial Organization,* 2010.

"The Relative Importance of the Husband's and Wife's Characteristics in Family Migration, 1960–2000." *Journal of Population Economics,* 2010.

"The Role of Education in the Production of Health: An Empirical Analysis of Smoking Behavior." With Douglas A. Herman and Brett Wendling. *Journal of Health Economics,* 2010.

"Demand Estimation under Limited Product Availability." *Applied Economics Letters,* 2009.

"Biases in Demand Analysis due to Variation in Retail Distribution." With John M. Yun. *International Journal of Industrial Organization,* 2008.

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