

Expert report of Professor Dr. Frank Verboven and Dr. Gregor Langus
November 25, 2021

Contents

I. THE SUBJECT OF THIS REPORT	3
II. SUMMARY OF CONCLUSIONS	4
III. QUALIFICATIONS	7
IV. DECLARATIONS AND RESTRICTIONS	8
V. INDUSTRY BACKGROUND	10
A. THE INTERNET DOMAIN NAME SYSTEM	10
B. REGISTRARS AND REGISTRIES	11
C. TYPES OF TLDS	11
D. ESTABLISHMENT OF ICANN AND ITS MISSION TO PROMOTE COMPETITION	13
E. ICANN TOOK UP ITS ROLE IN MANAGING THE DNS SPACE.....	14
F. EVOLUTION OF THE DNS.....	15
1. <i>Vertical separation of the registry and registrar functions and entry of registrars</i>	15
2. <i>Expansion of TLD space through the three rounds of introduction of new gTLDs</i> <i>and entry of ccTLDs.....</i>	16
G. REMOVAL OF PRICE CAPS.....	17
VI. ANALYSIS OF QUESTION I: ICANN HAS BEEN ACTING AS AN ECONOMIC REGULATOR IN THE DNS	17
VII. FRAMEWORK FOR THE ANALYSIS OF QUESTIONS II, III AND IV AND OUR METHODOLOGY FOR ANALYZING THE LIKELY ECONOMIC EFFECTS OF PRICE CAPS	19
A. KEY TRADEOFFS IN THE APPLICATION OF PRICE CAPS	19
1. <i>Price caps are not warranted in markets with good prospects for effective competition because they may hinder an effective competitive process</i>	19
2. <i>When set at the right level, price caps can bring substantial benefits in markets where the prospects for effective competition are limited.....</i>	20
B. METHODOLOGY FOR THE ANALYSIS OF ECONOMIC EFFECTS IN THE DNS SPACE OF PRICE CAPS ON .ORG, .INFO AND .BIZ	23
C. METHODOLOGY FOR THE ANALYSIS OF THE ECONOMIC EFFECTS OF PRICE CAPS ON .ORG, .INFO AND .BIZ ON INDEPENDENT REGISTRARS.....	24
VIII. PRICE CAPS ON LEGACY GTLDS AND OTHER REGULATION OF ACCESS TO REGISTRY SERVICES HAVE LIKELY IMPROVED THE ECONOMIC OUTCOMES IN THE DNS SPACE IN THE PAST	24
A. VERTICAL SEPARATION OF THE REGISTRY AND REGISTRATION FUNCTIONS AND PRICE CAPS ON REGISTRIES ENABLED THE INTRODUCTION OF COMPETITION AT THE REGISTRAR LEVEL AND RESULTED IN A REDUCTION OF REGISTRATION FEES.....	25
B. THROUGHOUT THE THREE EXPANSION ROUNDS, CERTAIN GTLDS CONTINUED TO HOLD MARKET POWER; THIS PROVIDED THE RATIONALE FOR THE MAINTENANCE OF PRICE CAPS ON THESE GTLDS.....	29

1. <i>The first two rounds of gTLD expansion have not introduced effective competition to original gTLDs.....</i>	29
2. <i>While the third round of gTLD expansion saw the introduction of many new gTLDs, it failed to introduce effective competition to legacy gTLDs</i>	31
IX. THE SCOPE FOR PRICE CAPS ON .ORG, .INFO AND .BIZ TO IMPROVE ECONOMIC OUTCOMES IN THE DNS SPACE IS SIGNIFICANT BECAUSE THESE GTLDS CONTINUE TO HOLD MARKET POWER	32
A. CHARACTERISTICS OF gTLDs THAT MAY CREATE CONDITIONS FOR THEIR PERSISTENT MARKET POWER: DIFFERENTIATION, FIRST-MOVER ADVANTAGE, COMPLEMENTARITY, AND SWITCHING COSTS	33
1. <i>TLDs are differentiated semantically and are not generally good substitutes....</i>	33
2. <i>Large legacy gTLDs have been benefitting from network effects.....</i>	34
3. <i>Many registrants view new gTLDs and ccTLDs as complementary, rather than substitutable, to legacy gTLDs.....</i>	35
4. <i>Switching a TLD often entails substantial costs for the registrant and the more intense ex-ante competition is unlikely to compensate for the resulting loss of ex-post competition</i>	36
B. EVOLUTION OF PRICES, MARGINS AND VOLUMES AS INDICATORS OF MARKET POWER	41
1. <i>Prices</i>	41
2. <i>Margins</i>	42
3. <i>Volumes</i>	42
4. <i>Market shares</i>	43
C. ANALYSIS OF MARKET POWER AND OF EFFECTIVENESS OF PRICE CAPS FOR .ORG, .INFO AND .BIZ	44
1. <i>.ORG holds substantial market power which the price caps have likely constrained it in the past.....</i>	44
2. <i>Analysis of the market power of .INFO.....</i>	52
3. <i>Analysis of market power of .BIZ.....</i>	57
D. INTERIM CONCLUSIONS	61
X. THE SCOPE FOR PRICE CAPS TO WORSEN THE ECONOMIC OUTCOMES IN THE DNS SPACE IS LIMITED.....	62
A. THERE IS NO SIGNIFICANT RISK THAT PRICE CAPS WOULD RESULT IN DEMAND RATIONING	62
B. THE SCOPE FOR PRICE CAPS TO HINDER THE ENTRY OF NEW gTLDs IS LIMITED	63
C. PRICE CAPS ARE UNLIKELY TO LEAD TO A REDUCTION IN QUALITY OF REGISTRY SERVICES	64
D. PRICE CAPS ARE UNLIKELY TO FACILITATE TACIT COORDINATION	65
XI. CONCLUSIONS: ANSWERS TO QUESTIONS II AND III POSED BY THE COUNSEL.....	67
XII. CONCLUSIONS: ANSWER TO QUESTION IV POSED BY THE COUNSEL.....	69
APPENDIX I. SCOPE OF REVIEW	72
APPENDIX II. CURRICULUM VITAE OF PROFESSOR DR. FRANK VERBOVEN.....	73
APPENDIX III. CURRICULUM VITAE OF DR. GREGOR LANGUS	85

I. THE SUBJECT OF THIS REPORT

1. This report has been prepared by Professor Dr. Frank Verboven and Dr. Gregor Langus of E.CA Economics for Namecheap, Inc. ('Namecheap' or the 'Claimant') in connection with a dispute with the Internet Corporation for Assigned Names and Numbers ('ICANN' or the 'Respondent') administered by ICDR ('International Centre for Dispute Resolution') (the 'Proceedings'). The Claimant and the Respondent are collectively referred to as the 'Parties' in this report.
2. We have been asked by PETILLION ('Counsel'), on behalf of the Claimant, to provide our independent expert opinion on the following issues:
 - i. Has ICANN been acting as an economic regulator in the domain name system (DNS) space?
 - ii. Can it be reliably expected that the removal of price caps on .ORG, .INFO and .BIZ will improve the economic outcomes in the DNS space in the foreseeable future?
 - iii. Can it be reliably excluded that the removal of price caps on .ORG, .INFO and .BIZ will worsen the economic outcomes in the DNS space in the foreseeable future?
 - iv. What economic effects can be expected of the removal of price caps on .ORG, .INFO and .BIZ on independent registrars in the foreseeable future?
3. In addressing these issues, we have structured our report as follows:
 - i. In **Section II**, we provide an executive summary of the conclusions we were able to make following our analysis.
 - ii. In **Section V**, we describe the DNS space, identify key players in this space and describe how they interact.
 - iii. In **Section VI** we explain why, in our opinion, ICANN has been acting as an economic regulator in the DNS space, i.e. we answer Question i.
 - iv. In **Section VII** we provide the framework (**Section VII.A**) and methodology (**Section VII.B and VII.C**) for our analysis of the economic effects of the removal of price caps that we later apply to respond to Questions ii., iii., and iv., mentioned above.
 - v. In **Section VIII** we show that market power of certain legacy gTLDs, including .ORG, .INFO, and .BIZ provided the rationale for price caps on these gTLDs which likely led to a reduction in wholesale and retail fees, thereby improving economic outcomes in the DNS space. We also review past reports and assessment by various qualified parties, which indicates that the introduction of many new gTLD has failed to introduce robust competition in relation to certain legacy gTLDs.
 - vi. In **Section IX** we show that today, in spite of introduction of large number of new gTLDs, the registries of ORG, .INFO and .BIZ persistently hold considerable market

power. Because of this, there is a substantial scope for price caps on these gTLDs to improve economic outcomes.

- vii. In **Section X** we discuss why the scope for the price caps to worsen the economic outcomes in the DNS space is limited.
- viii. In **Section XI** we explain that it cannot be reliably expected that the removal of price caps will improve the economic outcomes in the DNS space, and that it cannot be reliably excluded that the removal of price caps will worsen the economic outcomes, i.e. we answer Questions ii and iii.
- ix. In **Section XII** we explain that the removal of price caps can be expected to harm independent registrars, i.e. we answer Question iv.

II. SUMMARY OF CONCLUSIONS

- 4. When ICANN was established in 1998, the DoC passed its policy-making responsibility in relation to the functioning and the development of the DNS system onto ICANN. Henceforth, ICANN has been coordinating the development of the economic regulation and enforcing it in the DNS space. In other words, ICANN has been acting as the economic regulator in the DNS space.
- 5. Vertical separation of the registry and registrar functions in legacy gTLDs, non-discrimination, and minimum service performance provisions imposed by ICANN enabled the development of a vibrant competition at the registrar level.
- 6. Throughout the three gTLD expansion rounds that ICANN oversaw, original and legacy gTLDs .COM, .NET, .ORG, .INFO, and .BIZ held market power. This market power provided the rationale for ICANN to maintain caps on wholesale registry fees and other price control provisions on these gTLDs. The price caps limited the extent to which registry operators of these gTLDs could exercise their market power, thereby keeping price closer to competitive levels and likely improving the economic outcomes in the DNS space.
- 7. The available evidence indicates that, .ORG, .INFO and .BIZ continue to hold persistent market power today, where .ORG likely holds most. This is due to several characteristics in the supply and demand for domain name registrations: (1) TLDs are semantically differentiated, (2) the demand for legacy gTLDs benefits from positive network effects, and (3) registrants face substantial switching costs. Data on registry fees, registration volumes and information on margins support this conclusion. Because .ORG, .INFO, and .BIZ hold market power, the scope is significant for price caps on these gTLDs to improve the economic outcomes in the DNS space.
- 8. In principle, price caps can hinder the competitive process in markets with good prospects for effective competition, which means they can worsen the economic outcomes in such markets. This could occur if price caps led to inefficient demand rationing, hampered entry of efficient rivals, stifled the incentives for investment in quality of registry services, or if price caps

facilitated tacit coordination. However, when properly set, price caps for .ORG, .INFO, and .BIZ are unlikely to have such negative effects. Moreover, there is no evidence that price caps on these gTLD had such an effect in the past.

- i. Price caps were set well above the costs of registry services provision, which would prevent demand rationing and leave ample scope for entry of efficient registries with new gTLDs. Entry of many new gTLDs between 2012 and 2019 also indicates that price caps have not deterred entry.
 - ii. ICANN regulates minimum registry service performance levels, which ensures a proper level of quality regardless of whether price caps are in place or not. Moreover, there are several independent back-end registry operators that compete for the provision of back-end registry services. These independent back-end registry operators retain the incentive to continue improving the quality of their services irrespectively of whether price caps on .ORG, .INFO, and .BIZ were in place or not.
 - iii. Tacit coordination is primarily a concern in markets where the products are relatively good substitutes because in such conditions firms must coordinate their pricing to set prices above the levels in a competitive benchmark. Firms that hold market power do not need to coordinate their pricing to profitably set high prices and have little interest in doing so. .ORG, .INFO, and .BIZ hold market power, are not good substitutes for each other, and are not generally good substitutes for new gTLDs or ccTLDs which makes it unlikely that they would coordinate pricing. Moreover, the considerable amount of price dispersion across gTLDs observed today and in the past indicates that legacy and new gTLDs have not been tacitly coordinating their prices.
9. Because .ORG, .INFO, and .BIZ hold considerable market power, the scope for price caps to improve the economic outcomes in the DNS is significant. At the same time price caps on these gTLDs, if set enough above the unit costs of registry services, are unlikely to worsen materially the economic outcomes in the DNS space. We cannot, therefore, reliably expect that the removal of price caps on .ORG, .BIZ and .INFO will improve the economic outcomes in the DNS space. Moreover, we cannot reliably exclude that the removal of price caps will worsen these outcomes, as the .ORG, .BIZ and .INFO gTLDs are likely to continue to hold considerable market power in the future.
10. The removal of price caps on .ORG, .BIZ and .INFO will likely harm independent registrars. Price caps were effective in the past, and could be effective in the future, in keeping wholesale fees for these gTLDs closer to competitive levels. Therefore, it can be expected that the wholesale prices will increase with the removal of price caps. Accordingly, the costs for independent registrars in servicing registrants will increase. Because independent registrars have no ability to pass on the increased costs without losing some customers, the removal of price caps can be expected to reduce the profits of independent registrars. It can also be expected to reduce registrars' profits and incentive to invest in complementary services as the removal of price

caps may lead to a reduced ability of the registrars to appropriate value that they generate by providing these services.

III. QUALIFICATIONS

11. This report has two authors, Prof. Dr. Frank Verboven and Dr. Gregor Langus. Our qualifications are set out briefly below and our CVs are attached in Appendix 2 and 3, respectively.

Prof. Dr. Frank Verboven

12. My name is Frank Verboven. I am professor of economics at the KU Leuven, and a Research Fellow of the Centre for Economic Policy Research (London). I obtained my PhD in Economics at the University of Toronto in 1993. I am currently a Managing Editor of the International Journal of Industrial Organization. I have been a member of the Economic Advisory Group of Competition Policy at DG-Competition of the European Commission during 2003-2019. I was Editor of the Journal of Industrial Economics during 2003-2008 and holder of the Chair of Innovation and Regulation at Telecom ParisTech during 2012-2015. I served as chairman of the Department of Economics of KU Leuven during 2013-2017.
13. My research focuses on Industrial Organization, in particular the econometric analysis of market power, with applications to competition policy and regulation. Among other things, I have developed tools for merger simulation and for evaluating these tools; I introduced a unified framework for evaluating cartel damages, showing how to account for passing-on effects under imperfect competition; I have empirically evaluated the impact of vertical restraints such as exclusive territories and exclusive dealing; I also developed empirical models to study the impact of entry on market performance. My research covered a variety of industries, including the European automobile market (vertical restraints and mergers), the telecommunications industry (global and individual countries), pharmaceuticals, health care professions, local service sectors and liberal professions. My work has been published in various top international journals, including the American Economic Review, American Economic Journal: Applied Economics, American Economic Journal: Policy, RAND Journal of Economics, Review of Economic Studies and the Review of Economics and Statistics.
14. I teach industrial organization, micro-economics and empirical methods for competition policy.
15. I have advised the European Commission, national competition authorities in several European member states, and many leading companies on various cases, including mergers, cartels and exclusionary practices, and damages from cartels and abuses.
16. I currently work together with E.CA Economics in advice on competition policy.

Dr. Gregor Langus

17. My name is Gregor Langus. I am a Director at E.CA Economics in Brussels. I have 13 years' experience as a competition economist, split between the Chief Economist Team at the European Commission, and economic consultancies E.CA Economics, CRA and Compass Lexecon.

18. I have advised clients and submitted written testimony in a number of antitrust investigations and damage disputes as well as merger reviews in multiple jurisdictions, involving the European Commission, the U.S. authorities, and the competition authorities of several European Union member states. I am recognized as a leading expert in competition policy by 2021 Who's Who Legal - a publication by Law Business Research Limited.
19. I earned my PhD degree in Economics from the European University Institute and have published on competition policy and economics in journals such as the Journal of Industrial Economics, International Journal of Industrial Organization, Economics Letters, the Journal of Competition Law and Economics, and Concurrences.

IV. DECLARATIONS AND RESTRICTIONS

20. In preparing this report, we have been assisted by staff from E.CA Economics working under our direction, supervision, and review. We have discussed issues relevant to the matter with Counsel and the Claimant. However, the opinions expressed in this report are our own.
21. We have acted independently and objectively in the preparation of this report and no portion of our compensation is contingent on any action or event resulting from the use of this report.¹
22. In the preparation of this report, we have relied upon the documents set forth in Appendix 1. To the extent any additional information is produced by any party, we reserve the right to incorporate such additional information into our report.
23. This report must not be construed as expressing opinions on matters of law, which are outside our expertise.
24. This report has been prepared solely for use in this matter. It should not be used for any other purpose without prior written authorization. We understand that it will be made available to the Respondent, its Counsel, the Panel, and any witnesses and experts in these Proceedings. We also understand that this report may be posted on ICANN's website in accordance with Section 4(3)(u) of the ICANN Bylaws. As this report contains confidential, proprietary, or private information for which special protection from public disclosure and from use for any purpose other than prosecuting this IRP may be warranted, we have been asked by the Claimant to submit both a redacted version of the report that may be posted on ICANN's website and a non-redacted version, containing information that is designated by the Claimant as 'CONFIDENTIAL' or 'HIGHLY CONFIDENTIAL - OUTSIDE ATTORNEYS' EYES ONLY' within the meaning of the Stipulated Protective Order, executed by the Parties on 29 October 2020, a copy of which was shared with us. We agree to be bound by the Stipulated Protective Order. Neither we nor E.CA Economics accept any responsibility to third parties for breaches of any confidentiality

¹ We are being compensated at our standard rates Redacted - Confidential Informant respectively for time spent performing work on this engagement.

obligations or for any opinions expressed or information included within this report. No liability is accepted to any person other than the Claimant except as far as any liability arises to the Panel from the giving of evidence.

25. This report must be considered as a whole. Selecting portions of our analyses, without considering all factors and analysis together, could create a misleading view of the process underlying our conclusions.

V. INDUSTRY BACKGROUND

26. In this section we provide a summary of our understanding of the background of the Internet domain name system (DNS) and of ICANN's role in that system. First, we describe the hierarchical structure of the Internet domain name system, the entities that are currently involved in its management, and provide an overview of the different types of Internet top-level domains (TLDs) that exist. Second, we describe how ICANN acquired its authority to coordinate the management of the Internet domain name system. Third, we describe how the domain name system has evolved since ICANN acquired its authority. Fourth, we describe how ICANN has been coordinating the development of the policies of economic regulation in the domain name system and how it has been deploying these policies.

A. The internet domain name system

27. Internet Protocol ("IP") addresses provide a unique identity to resources on the Internet. The IP addresses are used in the routing of messages sent over the Internet to their destinations, including browser requests to load websites. They comprise numbers separated by periods, which are difficult for users to remember. The domain name system ("DNS") solves this problem by linking the numbers comprising the IP addresses to domain names made up of common words or phrases.

28. The DNS is constructed as a hierarchy, starting from a unique root domain (TLD), each TLD being further divided into second-level domains (SLDs). In a domain name, like 'icann.org', the rightmost label (.org) is the TLD, whereas the label to the left (icann) is the SLD.²

29. The unique root distinguishes the Internet from alternative networks, such as a company's intranet. The root contains the root zone file and thirteen clusters of root name servers. The root zone file is the list of TLDs, which references to the name servers for each TLD. The root name servers are specialized computers that provide connections between physical networks. They operate as the place where the query for a unique IP address starts. A query will only resolve if the TLD is taken up in the root zone file (and if subsequently the TLD name servers correctly resolve to an active SLD name server).³

30. Smooth functioning of the Internet requires global coordination of the top level in the DNS hierarchy (DNS Root), IP addressing, and certain other functions. These functions are commonly referred to as the "Internet Assigned Numbers Authority" (IANA) functions based on the name of the entity which was originally responsible for the functions. The IANA functions are administrative functions of the Internet that keep track of IP addresses, domain names, and protocol parameter identifiers that are used by Internet standards. The IANA functions must

² A domain name can also refer to MX-records (e-mail) or to other applications and online documents.

³ See Mueller, M. (2004). Ruling the root: Internet governance and the taming of cyberspace. Cambridge, Mass.: Mit Press, p. 47.

manage and ensure the global uniqueness of three types of Internet identifiers: (i) Protocol parameters, (ii) Internet Protocol (IP) addresses, and (iii) Internet domain names.⁴ Since 1998, these functions are performed by ICANN. Until October 2016, ICANN performed the IANA functions.⁵ NTIA is an agency within the U.S. Department of Commerce (DoC). As of 1 October 2016, the IANA functions contract between the U.S Government and ICANN expired and ICANN became the sole controller of the IANA functions. As controller of the IANA functions, ICANN determines which TLDs are added to the Internet’s unique Root.

B. Registrars and registries

31. The system for registering SLDs and the management of the TLD registries currently comprises two separate types of entities: “registrars” and “registries.” However, at the time of ICANN’s founding the functions of registrars and registries used to be performed by a single entity (*infra* Section V.F.1).
32. Registries keep the master database of all domain names registered in their TLDs and generate each TLD’s “zone file”.⁶ A zone file contains the name of each SLD in the relevant TLD and each SLD’s corresponding IP number, allowing computers to route Internet traffic to and from TLDs anywhere in the world. By ICANN’s exclusive appointment, a single registry is responsible for maintaining each TLD’s zone file.
33. Registrars act as an intermediary between domain-name holders—“registrants”—and registries. They submit to the relevant registry information (including contact information) for each of their customers to be included into the appropriate registry zone file. Registrars may also provide other value-added services to registrants, like web hosting.⁷ The price that a registrant pays for a name registration includes the wholesale fee set by the registry and a surcharge set by the registrar. In contrast to the exclusive provision of registry services in relation to a TLD, registration is typically provided by several, often many, registrars.

C. Types of TLDs

34. TLDs can be categorized in several ways. It is useful to distinguish between generic TLDs (gTLD) and country-code TLDs (ccTLD).
35. gTLDs typically serve a general purpose and are managed by a registry operator approved by ICANN. Besides approving registry operators, ICANN coordinates the allocation and assignment

⁴ Internet Society. (2014). *IANA Functions: The Basics*. [online] Available at: <https://www.internetsociety.org/resources/doc/2014/iana-functions-the-basics/> [Accessed 1 Nov. 2021].

⁵ IANA is one of the oldest Internet institutions, whose functions date back to the 1970s. Today the IANA services are provided by Public Technical Identifiers (PTI), a purpose-built organization for providing the IANA functions to the community. PTI is an affiliate of ICANN. (see e.g. <https://www.iana.org/>)

⁶ www.icann.org. (n.d.). *Welcome Registry Operators - ICANN*. [online] Available at: <https://www.icann.org/resources/pages/registries/registries-en>. [Accessed 9 Oct. 2021].

⁷ *Improvement of Technical Management of Internet Names and Addresses; Proposed Rule* | National Telecommunications and Information Administration (Green Paper), p. 8829. [online] Available at: <https://www.ntia.doc.gov/federal-register-notice/1998/improvement-technical-management-internet-names-and-addresses-proposed>. [Accessed 9 Sep. 2021].

of names in the root zone of the DNS (the IANA functions) and the policy development and implementation concerning the registration of SLDs in gTLDs.

36. ccTLDs are reserved for a country (or another territory) identified with a two-letter country code. For ccTLDs, ICANN delegates the responsibility for administration to an organization designated by the relevant government or a public authority. The delegee manages the ccTLD within the framework established by the public authority responsible for the policy in relation to the ccTLD and may be subject to global policies related to ccTLDs as developed by the country-codes Names Supporting Organization (ccNSO).⁸
37. gTLDs can be further divided into sponsored and unsponsored. For sponsored gTLDs there is a community or sponsoring organization to which ICANN delegates certain level of responsibilities for policy-formulation in relation to the sponsored gTLD.⁹ For example, .AERO is a sponsored gTLD as it serves only the air-transport community, which also acts as its custodian, whereas .NET or .ORG do not have such custodianship of established community.¹⁰
38. Both gTLDs and ccTLDs can be restricted or unrestricted. Restricted TLDs are available only to registrants that satisfy certain criteria.¹¹ For example, until recently .BIZ was only available to businesses.¹² .EU is only available to entities within the European Community.¹³ Other TLDs, like .COM or .ORG, are unrestricted, as is the ccTLD .CO.¹⁴
39. In recent years, ICANN also introduced a category of community TLDs whose purpose is to operate for the benefit of a clearly delineated community.¹⁵ For example .NYC is a community TLD for New Yorkers and .SCOT is a community TLD for Scottish people. A community-based gTLD registry can impose restrictions on characteristics of registrants' websites, types of entities allowed to register a SLD and the nature of content.¹⁶

⁸ archive.icann.org. (2000). *ICANN Principles for Delegation and Administration of ccTLDs Presented by Governmental Advisory Committee*. [online] Available at: <https://archive.icann.org/en/committees/gac/gac-cctldprinciples-23feb00.htm> [Accessed 9 Oct. 2021]. See also *Bylaws for Internet Corporation For Assigned Names And Numbers*. [online] Available at: <https://www.icann.org/resources/pages/governance/bylaws-en> [Accessed 3 Nov. 2021], Article 10.

⁹ archive.icann.org. (2000). *ICANN | New TLD Application Process Overview*. [online] Available at: <https://archive.icann.org/en/tlds/application-process-03aug00.htm> [Accessed 10 Sep. 2021]. and www.iana.org (n.d.). *IANA – Glossary*. [online] Available at: <https://www.iana.org/glossary> [Accessed 10 Sep. 2021].

¹⁰ www.iana.org. (n.d.). *IANA – Glossary*. [online] Available at: <https://www.iana.org/glossary> [Accessed 10 Sep. 2021].

¹¹ archive.icann.org. (2000). *ICANN | New TLD Application Process Overview*. [online] Available at: <https://archive.icann.org/en/tlds/application-process-03aug00.htm> [Accessed 10 Sep. 2021].

¹² Due to removal of .BIZ Agreement Appendix 11 .biz Registration Restrictions. [online] Available at: <https://www.icann.org/en/registry-agreements/biz/biz-registry-agreement--registration-restrictions-8-12-2006-en> [Accessed 3 Nov. 2021] .BIZ is no longer a restricted TLD.

¹³ Regulation (EC) No 733/2002 of the European Parliament and of the Council of 22 April 2002. [online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002R0733&from=EN> [Accessed 1 Nov. 2021].

¹⁴ archive.icann.org. (2000). *ICANN | New TLD Application Process Overview*. [online] Available at: <https://archive.icann.org/en/tlds/application-process-03aug00.htm> [Accessed 10 Sep. 2021].

¹⁵ www.icann.org. (n.d.). *Acronyms and Terms*. [online] Available at: <https://www.icann.org/en/icann-acronyms-and-terms/community-based-generic-top-level-domain-en> [Accessed 15 Oct. 2021].

¹⁶ icannwiki.org. (n.d.). *Community TLD - ICANNWiki*. [online] Available at: https://icannwiki.org/Community_TLD [Accessed 10 Sep. 2021].

D. Establishment of ICANN and its mission to promote competition

40. The hierarchical structure of the DNS was first implemented in 1985.¹⁷ Initially, all TLDs as well as SLDs had to be registered directly with Network Information Center (NIC) at the Stanford Research Institute; the funding was provided by the U.S. Department of Defense.¹⁸ The original TLDs introduced with the creation of DNS were .GOV, .EDU, .COM, .MIL, .ORG and .NET.
41. In the early 1990's, the U.S. National Science Foundation (NSF) assumed responsibility for coordinating and funding the management of the non-military portion of the Internet infrastructure. Effective from 1 January 1993, the NSF entered into a cooperative agreement with a private corporation, Network Solutions, Inc. (NSI), for the provision of domain name registration services.¹⁹ NSI received reimbursement for its costs plus a fixed fee, while the registration was free for registrants. An amendment to the contract signed in September 1995 specified that NSI could impose a user fee of USD 50 per year per SLD in .COM, .NET and .ORG, where 70% of the fees thus collected would go to NSI, while the remaining 30% would go to the special fund for the preservation and enhancement of the "Intellectual Infrastructure" of the Internet.²⁰
42. On July 1, 1997, the U.S. President Bill Clinton directed the Secretary of Commerce to "privatize, increase competition in, and promote international participation in the domain name system."²¹ At the start of 1998, the National Telecommunications and Information Administration (NTIA), an agency of the Department of Commerce (DoC), issued "A Proposal to Improve the Technical Management of Internet Names and Addresses" (the Green Paper).²² The NTIA invited the interested public to provide comments on the Green Paper.
43. A revised policy statement—referred to as the "White Paper"—that took account of the comments received on the Green Paper was issued on June 5, 1998. The White Paper outlined the policy for DNS management and proposed the creation of a private, not-for-profit "new corporation" (which later became ICANN), that would take over the responsibilities for coordinating DNS functions from NTIA. The White Paper also outlined a gradual introduction of new gTLDs under the criteria that would be set out by the new corporation. The Internet Corporation for Assigned Names and Numbers (ICANN) was created on 30 September 1998.

¹⁷ See IETF. (1984). *Domain requirements*. [online] Available at: <https://datatracker.ietf.org/doc/html/rfc920>. [Accessed 3 Aug. 2021].

¹⁸ Justia Law. (1999). *PGMedia, Inc. v. Network Solutions, Inc.*, 51 F. Supp. 2d 389 (S.D.N.Y. 1999). [online] Available at: <https://law.justia.com/cases/federal/district-courts/FSupp2/51/389/2497202/>. [Accessed 17 Sep. 2021].

¹⁹ *Cooperative Agreement Between NSI and U.S. Government*. [online] Available at: <https://archive.icann.org/en/nsi/coopagmt-01jan93.htm> [Accessed 17 Sep. 2021].

²⁰ *Amendment 4 to Cooperative Agreement Between NSI and U.S. Government*. [online] Available at: <https://archive.icann.org/en/nsi/coopagmt-amend4-13sep95.htm> [Accessed 20 Oct. 2021]. The 30% was later repelled by judgment in *Thomas v. Network Solutions* as "unconstitutional tax".

²¹ www.ntia.doc.gov. (1998). *Improvement of Technical Management of Internet Names and Addresses; Proposed Rule | National Telecommunications and Information Administration*. [online] Available at: <https://www.ntia.doc.gov/federal-register-notice/1998/improvement-technical-management-internet-names-and-addresses-proposed-> [Accessed 17 Sep. 2021].

²² Ibid.

44. ICANN’s authority to coordinate the management of the DNS was established in a Memorandum of Understanding (MOU) between the US Commerce Department (DoC) and ICANN in November 1998. The MOU set out four principles, one of which is promotion of competition, as follows:²³

This Agreement promotes the management of the DNS in a manner that will permit market mechanisms to support competition and consumer choice in the technical management of the DNS. This competition will lower costs, promote innovation, and enhance user choice and satisfaction.

E. ICANN took up its role in managing the DNS space

45. ICANN signed its first registry agreement with NSI in November 1999, for the operating of the registry for .COM, .NET, and .ORG “according to requirements stated in the agreement as well as those that would be developed in the future through the ICANN consensus-based process.”²⁴ The agreement specified that NSI would make access to the Shared Registration System available on equal terms to all ICANN-accredited registrars subject to the terms of the “NSI-Registrar License and Agreement”.²⁵ The Registrar License and Agreement fixed registry fees of USD 9.00 for the period between 28 September 1999 and 15 January 2000 and a fee of USD 6.00 afterwards, although it allowed NSI to adjust the fees prospectively, subject to ICANN’s approval.²⁶
46. In May 2001, ICANN signed new RAs for .COM, .ORG and .NET with Verisign that had acquired NSI in March 2000 thus becoming the registry operator for these gTLDs. The RAs contained non-discrimination, quality of service, and price cap provisions.²⁷ The RAs for .INFO and .BIZ—also signed in 2001—also contained such provisions.²⁸ Subsequent RAs for these TLDs maintained those provisions. Since June 2019, the RAs for .ORG, .INFO and .BIZ no longer include price cap provisions but maintain certain provisions on the access terms to registry services.

²³ See www.icann.org. (1998). MEMORANDUM OF UNDERSTANDING BETWEEN THE U.S. DEPARTMENT OF COMMERCE AND INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS. [online] Available at: <https://www.icann.org/resources/unthemed-pages/icann-mou-1998-11-25-en> [Accessed 3 Aug. 2021].

²⁴ ICANN-NSI Registry Agreement. [online] Available at: <https://www.icann.org/en/registry-agreements/multiple/icann-nsi-registry-agreement-10-11-1999-en> [Accessed 20 Oct. 2021].

²⁵ NSI-Registrar License and Agreement. [online] Available at: <https://archive.icann.org/en/nsi/nsi-rla-04nov99.htm> [Accessed 20 Oct. 2021].

²⁶ See NSI-Registrar License and Agreement. [online] Available at: <https://archive.icann.org/en/nsi/nsi-rla-04nov99.htm#5> [Accessed 4 Oct. 2021].

²⁷ See *.com Registry Agreement from 2001*. [online] Available at: <https://www.icann.org/en/registry-agreements/com/com-registry-agreement-25-5-2001-en> [Accessed 4 Oct. 2021]. *.net Registry Agreement from 2001*. [online] Available at: <https://www.icann.org/en/registry-agreements/net/net-registry-agreement-25-5-2001-en> [Accessed 4 Oct. 2021]. *.org Registry Agreement from 2001*. [online] Available at: <https://www.icann.org/en/registry-agreements/org/org-registry-agreement-25-5-2001-en> [Accessed 4 Oct. 2021].

²⁸ See *.biz Registry Agreement - Signed 11 May 2001, amended 18 June 2003*. [online] Available at: <https://www.icann.org/en/registry-agreements/biz/biz-registry-agreement---signed-11-may-2001-amended-18-june-2003-18-6-2003-en> [Accessed 4 Oct. 2021] and *.info Registry Agreement signed 2001*. [online] Available at: <https://www.icann.org/en/registry-agreements/info/info-registry-agreement-11-5-2001-en> [Accessed 4 Oct. 2021].

F. Evolution of the DNS

47. The DNS evolution since ICANN's founding has been characterized by (i) the vertical separation of registry and registrar functions and the entry of a large number of registrars as intermediaries between registries and registrants, and (ii) the introduction of new gTLDs in three rounds of gTLD expansion.
 1. Vertical separation of the registry and registrar functions and entry of registrars
48. At ICANN's formation, the registry and registrar functions for gTLDs .COM, .NET, and .ORG were operated exclusively by NSI. The cooperative agreement with the NSF under which NSI was providing registration services for these gTLDs expired on the day ICANN was established—30 September 1998.²⁹
49. To facilitate the introduction of competition into the DNS space and enable smooth transition of responsibilities for DNS management from the U.S. Government to ICANN, the NTIA extended the agreement until 30 September 2000,³⁰ while imposing additional conditions on NSI. The NTIA thus required that NSI develops a protocol and associated software that would permit multiple registrars to provide registration services with the gTLDs for which NSI acted as the registry ("*Shared Registration System*"). It also required NSI to separate its registry and registration activities and to ensure equal access to registry services to all accredited registrars. Moreover, the NTIA announced that a price cap would be in force for the period of transition, limiting NSI's prices for registry services to NSI's incremental costs plus a reasonable return on its investment. Finally, the NTIA required that NSI recognizes ICANN's authority in relation to DNS management as described in the White Paper.³¹
50. The introduction of an operational firewall between NSI's registry and registrar functions, and of the Shared Registration System, enabled ICANN to begin opening the registrar function to new companies shortly after its founding.³² In April 1999, a test period with a group of five registrars began and by the end of 1999, 93 registrars were accredited by ICANN.
51. ICANN has been enforcing the principles of functional vertical separation between the registry and registrar functions and regulating access to registry services by including in registry agreements provisions that prohibit registries from discriminating between registrars in terms

²⁹ *Cooperative Agreement Between NSI and U.S. Government.* [online] Available at: <https://archive.icann.org/en/nsi/coopagmt-01jan93.htm> [Accessed 17 Sep. 2021].

³⁰ *Amendment 11 to Cooperative Agreement Between NSI and U.S. Government.* [online] Available at: <https://archive.icann.org/en/nsi/coopagmt-amend11-07oct98.htm> [Accessed 5 Nov. 2021].

³¹ *DOC-NSI Amended Agreement 10-06-98.* [online] Available at: <https://www.ntia.doc.gov/legacy/ntiahome/domainname/proposals/DOCNSI100698.htm> [Accessed 17 Sep. 2021].

³² See e.g. CRA International (2008). *Revisiting Vertical Separation of Registries and Registrars* (Prepared For ICANN). [online] Available at: <https://www.icann.org/en/topics/new-gtlds/crai-report-24oct08-en.pdf> [Accessed 18 Oct. 2021] for a detailed review of ICANN's policy in relation to vertical separation between registry and registrar functions.

of pricing and service performance levels. ICANN also introduced price caps into RAs for .COM, .NET, and .ORG in 1999;³³ as well as .INFO and .BIZ when they were introduced in 2001.³⁴

52. The regulation of registry function—along with the continued growth of the Internet use and the expansion of the TLD space as new gTLDs and ccTLDs were introduced—fostered further entry of new registrars. Thus, in February 2008 there were 872 registrars and domains in .COM, .NET, .BIZ, .INFO, and .ORG could be registered with at least 200 registrars each.³⁵ In September 2021, ICANN’s website listed over 2500 registrars accredited with ICANN.³⁶

2. Expansion of TLD space through the three rounds of introduction of new gTLDs and entry of ccTLDs

53. ICANN oversaw the expansion of gTLDs in three rounds between its founding and today. The first round began in 2000 and saw ICANN delegate seven new gTLDs by 2002, four of them unsponsored. .BIZ, .INFO, .NAME and .PRO were made generally available (albeit with certain restrictions on registrants for .BIZ, .NAME and .PRO) through all interested ICANN-accredited registrars.³⁷

54. In the second round of new gTLD introductions that started in 2003,³⁸ ICANN granted seven more gTLDs which were all sponsored.³⁹ By 2005, there were 21 gTLDs, of which 7 were unsponsored. In addition to that (in April 2006) there were 245 ccTLDs.⁴⁰ In line with an economic report commissioned by ICANN, we consider the gTLDs introduced before 2012 as legacy gTLDs.⁴¹

55. During the third gTLD expansion round, the number of gTLDs went from 22 before the delegation of the first new gTLD at the end of 2013, to over 400 in March 2015;⁴² by March 2016 there were 955 new gTLDs available for registration.⁴³

³³ As above, footnote 26.

³⁴ As above, footnote 28.

³⁵ CRA International (2008). *Revisiting Vertical Separation of Registries and Registrars* (Prepared For ICANN). [online] Available at: <https://www.icann.org/en/topics/new-gtlds/crai-report-24oct08-en.pdf> [Accessed 18 Oct. 2021].

³⁶ www.icann.org. (n.d.). *List of Accredited Registrars*. [online] Available at: <https://www.icann.org/en/accredited-registrars?sort-direction=asc&sort-param=name&page=1> [Accessed 17 Sep. 2021].

³⁷ The other three new TLDs (.aero, .coop, and .museum) were sponsored TLDs, i.e. specialized TLDs that are restricted to customers of a specific community.

³⁸ www.icann.org. (2004). *ICANN: Progress in Process for Introducing New Sponsored Top-Level Domains*. [online] Available at: <https://www.icann.org/en/announcements/details/icann-progress-in-process-for-introducing-new-sponsored-top-level-domains-19-3-2004-en> [Accessed 1 Nov. 2021].

³⁹ .ASIA, .CAT, .JOBS, .MOBI, TEL, .TRAVEL and .XXX were sponsored TLDs. .XXX was approved in 2011.

⁴⁰ See Seppia, G. (2006). *An overview of the ccTLDs scenario*. [online] Available at: <https://www.icann.org/en/system/files/files/new-overview-ccTlds-30may06-en.pdf> [Accessed 4 Oct. 2021].

⁴¹ Rafert, G. and Tucker, C. (2015). *Phase I Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-one-assessment-28sep15-en.pdf>, p. 1.

⁴² Rafert, G. and Tucker, C. (2015). *Phase I Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-one-assessment-28sep15-en.pdf>, p. 1.

⁴³ Rafert, G. and Tucker, C. (2016). *Phase II Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-two-assessment-11oct16-en.pdf>, p. 3.

G. Removal of price caps

56. On 30 June 2019, ICANN entered into new RAs with the registry operators of .ORG, .INFO and .BIZ. These new RAs no longer include price caps.
57. ICANN provided the following explanation for this decision:⁴⁴

There are now over 1200 generic top-level domains available, and all but a few adhere to a standard contract that does not contain price regulation. Removing the price cap provisions in the [.ORG, .INFO and .BIZ] Registry Agreement[s] is consistent with the Core Values of ICANN org as enumerated in the Bylaws approved by the ICANN community. These values guide ICANN org to introduce and promote competition in the registration of domain names and, where feasible and appropriate, depend upon market mechanisms to promote and sustain a competitive environment in the DNS market.

Aligning with the Base gTLD Registry Agreement would also afford protections to existing registrants. The registry operator must provide six months' notice to registrars for price changes and enable registrants to renew for up to 10 years prior to the change taking effect, thus enabling a registrant to lock in current prices for up to 10 years in advance of a pricing change. Enacting this change will not only allow the [.ORG, .INFO and .BIZ] renewal agreement[s] to conform to the Base gTLD Registry Agreement, but also takes into consideration the maturation of the domain name market and the goal of treating the Registry Operator equitably with registry operators of new gTLDs and other legacy gTLDs utilizing the Base gTLD Registry Agreement.

VI. ANALYSIS OF QUESTION I: ICANN HAS BEEN ACTING AS AN ECONOMIC REGULATOR IN THE DNS

58. The OECD defines a regulator “as an entity that is authorized by statute to use legal tools to achieve policy objectives, imposing obligations through functions such as licensing, permitting, accrediting, approvals, inspection and enforcement.”⁴⁵ In turn, according to the OECD, economic regulators “seek to address market failures and promote competition where possible. To address these market failures, Economic regulators generally seek to put in place

⁴⁴ See *Staff Report of Public Comment Proceeding, Proposed Renewal of .org Registry Agreement*. (2019). [online] Available at: <https://itp.cdn.icann.org/en/files/registry-agreement/report-comments-org-renewal-03jun19-en.pdf> [Accessed 3 Nov. 2021]; *Staff Report of Public Comment Proceeding, Proposed .info Renewal Registry Agreement*. (2019). [online] Available at: <https://itp.cdn.icann.org/en/files/registry-agreement/report-comments-info-renewal-03jun19-en.pdf> [Accessed 3 Nov. 2021] and *Staff Report of Public Comment Proceeding, Proposed .biz Renewal Registry Agreement*. (2019). [online] Available at: <https://itp.cdn.icann.org/en/files/registry-agreement/report-comments-biz-renewal-03jun19-en.pdf> [Accessed 3 Nov. 2021].

⁴⁵ OECD (2014). *OECD Best Practice Principles for Regulatory Policy: The Governance of Regulators*. [online] Paris: OECD Publishing. Available at: https://read.oecd-ilibrary.org/governance/the-governance-of-regulators_9789264209015-en#page1 [Accessed 1 Nov. 2021], p. 17.

arrangements to facilitate competition where possible, or alternatively seek to address the market failure by making decisions on price and non-price terms for the services provided by the regulated businesses.”⁴⁶

59. ICANN has been carrying out the following functions of economic regulation in the DNS space:
- i. specifying and enforcing the criteria for the introduction (entry) of new gTLDs,
 - ii. specifying and enforcing the requirements that registries and registrars must fulfil to qualify for ICANN accreditation,
 - iii. restricting vertical integration of registries into registrar function, and
 - iv. setting terms of access to registry services such as non-discrimination, price caps on wholesale registration fees, and other price controls in RAs.
60. In sum, ICANN has been coordinating the development of various rules in the DNS space which have the purpose and/or effect of modifying certain aspects of the economic behavior of registries and registrars in the DNS space. ICANN also oversaw the application of these rules in the DNS space, notably via its registry agreements (RAs).⁴⁷ The imposition and enforcement of such rules is commonly referred to in economics as “economic regulation”.⁴⁸
61. The DoC and DoJ have endorsed ICANN’s authority for economic regulation in the DNS space. In a letter to ICANN’s Board in December 2008, the DoC thus called on ICANN to consider:⁴⁹

revising the gTLD approval process, the applicant guidebook and the proposed registry agreement to: (1) consider, allow objections for, and retain authority to address any adverse competition welfare effect that may arise during the approval of new gTLDs applications or the renewal of subsequent contracts; (2) employ mechanisms such as competitive bidding whereby prospective gTLD operators would compete by proposing registry terms, including price and quality commitments, that provide consumer benefits; and (3) impose maximum price caps or other terms that would redound to the benefit of consumers in those cases where competitive bidding mechanisms will not adequately limit the ability of registry operators to exercise market power;

62. The DoJ took the position that it was ICANN’s responsibility to ensure that registries with market power could not abuse it.⁵⁰ The DoJ motivated this position by observing that ICANN could not

⁴⁶ OECD (2017). *The role of economic regulators in the governance of infrastructure*. [online] Paris: OECD. Available at: https://read.oecd-ilibrary.org/governance/the-role-of-economic-regulators-in-the-governance-of-infrastructure_9789264272804-en#page1 [Accessed 1 Nov. 2021], p. 16.

⁴⁷ “Regulation policy” refers to how regulations in practice are made, maintained, and evaluated.

⁴⁸ OECD (1993). *Glossary of industrial organisation economics and competition law*. [online] Paris: OECD Publishing. Available at: <https://www.oecd.org/regreform/sectors/2376087.pdf> [Accessed 1 Nov. 2021].

⁴⁹ Department of Justice (2008). *ICANN’s Draft RFP for New gTLDs*. Accessible from: <https://www.icann.org/en/system/files/files/baker-to-dengate-thrush-18dec08-en.pdf> [Accessed 14 Oct. 2021].

⁵⁰ Market power refers to “the ability of a firm to raise prices above some competitive level - the benchmark price - in a profitable way.” See Motta, M. (2004). *Competition Policy: Theory and Practice*. Cambridge University Press. Chapter 2.

rely on antitrust authorities to intervene to protect consumers and the public at large from supra-competitive prices for registry services because “the antitrust laws generally do not proscribe a registry operator’s unilateral decisions made under the processes established by ICANN - such as, for instance, pricing decisions. [...] (“The mere possession of monopoly power, and the concomitant charging of monopoly prices, is not ... unlawful”) .. Accordingly, ICANN should create rules fostering a competitive environment to the greatest extent possible.”

VII. FRAMEWORK FOR THE ANALYSIS OF QUESTIONS II, III AND IV AND OUR METHODOLOGY FOR ANALYZING THE LIKELY ECONOMIC EFFECTS OF PRICE CAPS

63. The application of price caps triggers certain economic tradeoffs. Depending on the characteristics of demand and supply, these tradeoffs may lead to price caps either improving or worsening the overall economic outcomes. We identify such key tradeoffs and explain their economic effects in A.
64. We next explain, in B, our methodology for analyzing the likely effects of price caps on .ORG, .INFO, and .BIZ on the economic outcomes in the DNS space.

A. Key tradeoffs in the application of price caps

1. Price caps are not warranted in markets with good prospects for effective competition because they may hinder an effective competitive process
65. Effective competition serves the society in several ways. First, it replaces inefficient (high-cost) firms with more efficient (low-cost) rivals, minimizing the waste of productive resources. Second, it forces sellers to keep prices low such that the total output produced and consumed is not far below the socially optimal level. Third, it enhances the incentives for firms to innovate or otherwise improve the quality of their products, to escape neck-to-neck competition or avoid being replaced by their more innovative rivals.⁵¹
 66. In competitive markets or in markets where the prospects for effective competition are good, freely moving prices facilitate the competitive process. They are an important part of the mechanism by which goods and services are allocated to their most efficient (valuable) uses. Freely moving prices also act as an indicator of the strength of demand and supply for various products and thereby serve as entry and exit signals for firms, or as a signal for output expansion or reduction. Prompt entry and exit mediated by freely moving prices, ensures that high-cost firms are quickly replaced by more efficient ones and that output expansion in response to a

⁵¹ Recognizing these potential benefits of introducing competition in the DNS space, the DOC White Paper stated that “competitive systems generally result in greater innovation, consumer choice, and satisfaction in the long run” and that “the pressure of competition is likely to be the most effective means of discouraging registries from acting monopolistically.”

price hike minimizes inefficient demand rationing.⁵² By allowing firms that successfully improve the quality of their products or services to set higher prices and realize higher margins, free prices also play a role in maintaining incentives for quality improvement or innovation at optimal levels.⁵³

67. If set too low, price caps may hinder the effective competitive process. Because of the risk that the regulator would set them too low, price caps are therefore generally not desirable in competitive markets or in markets where the prospects for effective competition are good.⁵⁴
68. Some authors have expressed the concern that price caps may facilitate tacit coordination and thus lead to higher prices. For coordination to succeed, firms need to achieve three main objectives: find a price structure that is acceptable to all the participants, detect promptly firms that deviate—cheat—by undercutting the coordinated price level, and promptly punish any such deviations.⁵⁵ Tacit coordination does not involve explicit communication. Therefore, firms may find it difficult to reach a common understanding of the price level to be set. Lack of a common understanding about the level of the coordinated price makes it difficult for each of the firms individually to properly detect and punish deviations. Accordingly, conditions necessary for achieving tacit coordination are often not met. Price caps could provide a natural (i.e. "focal") price point, increasing the likelihood that firms find a common understanding of price targets and thus helping in the implementation of tacit coordination.⁵⁶
69. For these reasons, economists are generally skeptical about the use of price caps in well-functioning markets. On the other hand, in markets where there is no effective competition and prospects of effective competition are limited, price caps can be a useful regulatory tool for improving the economic outcomes. This is discussed in the next section.

2. When set at the right level, price caps can bring substantial benefits in markets where the prospects for effective competition are limited

70. Price caps can bring substantial benefits in markets where the prospects for effective competition are limited because they can result in an increase in demand and output. Additionally, in markets with a vertical structure, where upstream firms supply production inputs to downstream firms—who, in turn, supply final products or services to consumers—price caps on upstream firms with market power may promote entry and innovation downstream. The

⁵² Such rationing could occur if some potential registrants were willing to pay the registration fee higher than a price cap, but the registry would not find it profitable to provide registry services to them at the capped price.

⁵³ In the DNS space, when considering potential effects of price caps on registry services for new gTLDs in the third round of ICANN's gTLD expansion, Prof Dennis Carlton opined that price caps could limit the registry's ability to experiment with different pricing models and thus their ability to attract new registrations.

⁵⁴ If set too high, price caps are simply less effective or, in the extreme case, not effective at all, i.e. they do not fulfil their intended role and are therefore redundant.

⁵⁵ Massimo Motta (2009). *Competition policy: theory and practice*. Cambridge: Cambridge University Press, pp. 139 - 140.

⁵⁶ See e.g. Rey, P. and Tirole, J. (2019). Price Caps as Welfare-Enhancing Cooperation. *Journal of Political Economy*, 127(7), pp.3018-3069. or Knittel, C.R. and Stango, V. (2003). Price Ceilings as Focal Points for Tacit Collusion: Evidence from Credit Cards. *American Economic Review*, 93(5), pp.1703-1729.

DNS space, with upstream registries and downstream registrars, features such vertical structure.

71. In markets where the prospects for effective competition are limited, incumbent firms with market power have the ability and incentive to set prices higher than in the competitive benchmark. At such high prices, demand and output are below their socially optimal levels. Therefore, price caps can improve economic outcomes by bringing prices to a lower level, closer to a competitive benchmark, where the demand and output are higher.⁵⁷
72. The case for price caps is strongest where the incumbent firm or firms acquired their market power via a grant of an exclusive right to provide a service, or because of their first mover's advantage, rather than through higher investments in innovation, superior quality, or lower operating cost. This is because, when firms acquire market power by being more innovative or offering superior quality, it is more likely that such market power is of a transitory nature. This mode of market power acquisition indicates that potential rivals may be able to eventually catch up with incumbents by also innovating or otherwise increasing the quality or decreasing the cost of their service.
73. To minimize the risk that price caps would hinder the competitive process, they are typically set at a certain limited amount above the costs of the provision of service.⁵⁸ The markup over costs is meant to provide the supplier with an incentive for continued investments in service provision. As such, the existence of such markup also leaves scope for entry of efficient entrants.⁵⁹
74. Where the value chain has two or more levels, competition at the downstream level can only deliver efficient market outcomes if the input is also supplied competitively.⁶⁰ However, when upstream suppliers have market power, they set prices above the competitive benchmark. This means that downstream firms bear higher costs and will, in turn, set higher prices to final consumers. This again results in a reduction in demand and worse economic outcomes compared to the competitive benchmark.⁶¹

⁵⁷ Jean-Jacques Laffont and Tirole, J. (2010). *A theory of incentives in procurement and regulation*. Cambridge, Mass. Mit Press, p. 154 - 155.

⁵⁸ Generally, the first price cap is set with reference to a reasonable profit (See e.g. Gunnar Niels, Jenkins, H. and Kavanagh, J. (2016). *Economics for competition lawyers*. Oxford, United Kingdom: Oxford University Press, p. 374). Subsequently, the price caps are adjusted by a predetermined formula which reflects the general growth in prices and technological progress (See e.g. Jean-Jacques Laffont and Tirole, J. (2010). *A theory of incentives in procurement and regulation*. Cambridge, Mass. Mit Press, p. 17 - 18). A firm under price cap has, therefore, incentives to decrease its cost as it is allowed to retain the benefits of any cost reduction (Gunnar Niels, Jenkins, H. and Kavanagh, J. (2016). *Economics for competition lawyers*. Oxford, United Kingdom: Oxford University Press, p.374). In other words, a firm under price caps has incentives to decrease its costs as it leads to an increase of its margins.

⁵⁹ Gunnar Niels, Jenkins, H. and Kavanagh, J. (2016). *Economics for competition lawyers*. Oxford, United Kingdom: Oxford University Press, p. 374.

⁶⁰ Registrars cannot avoid TLDs with market power by only offering, or strongly favoring, registration in TLDs with competitive registry fees. By doing so, a registrar would, first, be forgoing some profitable sales of registrations in the TLD with market power. Second, the registrar would be forgoing some opportunities for sale of profitable value-added services, like webhosting or email service to the extent these are attached to the new domains in the TLD with market power.

⁶¹ Theoretically, an exception to this would be a case with zero pass-on of registrars' costs. However, this may only happen in an extreme and highly unrealistic case of perfectly elastic aggregate demand for SLDs.

75. Moreover, market power in the supply of critical inputs may reduce the incentives of the downstream firms to enter the market, offer complementary products, and innovate. Suppliers with market power can appropriate a share of the additional value that the downstream firms create by raising wholesale prices in response to an increase in the value created by downstream firms.
76. In markets where incumbents are shielded from competition by strong economies of scale or other entry barriers, competitive tenders for service contracts may be used as an alternative to ex-post price caps. The idea is to create ex-ante competition “for the market”, where the tender winner is the firm that offers the lowest price for the—often exclusive—contract to provide the service. Such tenders are sometimes used in the provision of certain public services, like transport, garbage disposal and electric transmission.⁶²
77. The tendered contract is typically for a limited time only, after which it is put up for a tender again. The retendering allows more efficient or innovative firms to displace less efficient incumbents. The economic theory predicts that in competitive tenders, the tender winner will bid a price that is not too far away from the long-run average costs of the most efficient bidder.⁶³ In this way, competitive tenders remove the need for the regulator to estimate the costs of an efficient firm and an appropriate markup over that cost when setting a price cap.
78. Competitive tenders are being used with good results in the DNS space for registry services in relation to some ccTLDs.⁶⁴ ICANN has also implemented a competitive process to allocate the registry rights for .ORG in 2002 (11 proposals have been submitted of which ICANN has selected Internet Society / PIR) and for .NET in 2005 (five proposals were submitted of which incumbent VeriSign was selected). Since then, however, to the best of our knowledge ICANN has not used competitive tenders, resorting instead to presumptive renewals of the registry rights for .NET

⁶² See e.g. COMPETITION FOR-THE-MARKET - Contribution from the United States. (2019). [online] Available at: <https://www.justice.gov/atr/page/file/1313106/download> [Accessed 5 Nov. 2021] or *S.C. Pub. Serv. Auth. v. Fed. Energy Regulatory Comm’n* [2014] (United States Court of Appeals FOR THE DISTRICT OF COLUMBIA CIRCUIT) Available at: https://casetext.com/case/sc-pub-serv-auth-v-fed-energy-regulatory-commn?_cf_chl_jschl_tk_=jFQzhm1L9WJim6F3ihlBmuNi7QoptLzY6fALq2VR7a0-1636125606-0-gaNycGzNCGU [Accessed 5 Nov. 2021].

⁶³ W Kip Viscusi, Joseph Emmett Harrington and Edward, D. (2018). *Economics of regulation and antitrust*. Cambridge, Massachusetts London, England The Mit Press, pp- 467 - 469.

⁶⁴ For example, the .EU registry is selected by the European Commission based on an open bid for a five-year period. The latest selection process for .EU registry began earlier this year (2021) and four applicants (including EURid who has been the registry for .EU since its inception) have been accepted as eligible to participate in the next stage of the tender. Importantly, the tender specification requires the applicants for the .EU TLD registry to provide “an accurate description of how they intend to pursue operational excellence and ensure a high quality of service at competitive prices in the management of the .eu TLD” (emphasis added by E.CA). A recent example where the tender procedure has resulted in change of the registry operator is the .AU ccTLD. The .AU registry was operated by Neustar who became an .AU registry by acquiring Bombora Technologies Pty Ltd. However, in 2017, by way of an open tender process, Afiliias was appointed the .AU registry operator. According to the press reports Afiliias managed to win the tender by offering significantly lower registry fees in the bidding process. Yet another example, according to the press reports in 2016, Neustar made an aggressive bid for Afiliias’ .ORG (back-end) registry agreement, which had been put up for re-tender by PIR. While Neustar’s attempt was unsuccessful in this case and Afiliias has managed to retain the contract with PIR, the competition for the contract has reportedly reduced the fees by as much as one third. PIR said it received and evaluated more than 20 potential service providers representing 15 countries in the process. Other examples of ccTLDs where the provider of the registry services has been determined by the tender include .IN and the popular .CO domain, which—because of its spelling similarity—is frequently used as a common replacement to the popular .COM gTLD.

and .ORG and other registries. We do not further assess the likely effects of such tenders on economic outcomes in the the DNS space in this report.

B. Methodology for the analysis of economic effects in the DNS space of price caps on .ORG, .INFO and .BIZ

79. Given the relatively short period of time that has passed since the removal of price caps (meaning that the full effects of such removal may not yet have materialized) and lack of complete and perfect information about the characteristics of demand and supply, we have chosen to assess the likely economic effects of price caps indirectly by assessing the economic relevance of the key factors as identified in Section A that either favor the positive or negative effects of a removal of the price caps for each of the gTLDs under scrutiny. This approach has the advantage that it allows to draw informed conclusions about the likely future state of the industry. Having first analyzed the possible positive and negative effects of a removal of the price caps for each of the TLDs, we can then carry out the balancing of tradeoffs to arrive at an informed view on how plausible the positive or negative effects on the overall economic outcome are.
80. We have complemented our analysis with an assessment of the past experiences with the use of price caps. We benefit from a long period during which price caps on .ORG, .INFO, and .BIZ were in place. Indeed, price caps for these gTLDs existed between at least 2001 and June 2019. During this period, the rationale for price caps has been scrutinized by ICANN and competent U.S. authorities. Thus, in addition to our own examination of the evolution of price caps and their economic effects, we first analyze the rationales that ICANN and the competent U.S. authorities have put forward for the use of price caps, and then we analyze whether these rationales are still valid today. Examining past experiences can be informative to understand the dynamics of the industry and to assess the economic effects of a removal of price caps on future outcomes.
81. We carry out our analysis in 3 steps:
- i. We examine the rationale for and the likely past effects of price caps on legacy gTLDs, including .ORG, .INFO and .BIZ in the period between 2001 and June 2019. Through this analysis, we establish that the primary rationale for price caps was the substantial degree of market power persistently held by the registries of relevant TLDs. We also establish that price caps have likely improved the economic outcomes in the DNS space in these conditions. We implement this step of the analysis in **Section VIII**.
 - ii. We assess whether .ORG, .INFO and .BIZ still hold substantial market power—as the key rationale for price caps—and whether they are likely to continue to hold it in the foreseeable future. We do this by analyzing (1) the characteristics of competition among gTLDs and (2) the indicators of market power such as prices, margins and volumes. We also verify that price caps were likely effective in curbing the exercise

of market power by the registries in relation to these gTLDs. We implement this step of the analysis in **Section IX**.

- iii. We assess to what extent the key factors that may favor the removal of price caps on .ORG, .INFO, and .BIZ are relevant to these gTLDs; in particular, we assess whether the scope for price caps to hinder the competitive process and thereby worsen the economic outcomes is significant. We implement this step of the analysis in **Section X**.

C. Methodology for the analysis of the economic effects of price caps on .ORG, .INFO and .BIZ on independent registrars

82. In our First Report in these Proceedings, we have established that a removal of a price cap on wholesale registry fees in relation to .ORG, .INFO, and .BIZ can be expected to harm independent registrars, including Namecheap. We reached this conclusion because we found indications that .ORG, .INFO and .BIZ hold significant market power as well as that price caps were likely effective in curbing the exercise of this market power. In such circumstances, the removal of price caps created the potential for a prospective increase in wholesale registration fees. Other things being equal, an increase in wholesale registration fees increases registrars' costs, reduces their margins and/or sales, and ultimately reduces their profits. While registrars may pass-on a significant fraction of the cost increase by increasing retail registration fees—thus fully or partially protecting their margins—they cannot do that without losing some customers, which again involves a loss of revenue and profits for registrars.
83. In **Section IX** of this report we provide additional evidence, compared to the evidence in the First Report, that each of .ORG, .INFO, and .BIZ persistently hold substantial market power. In the same section we also verify that price caps were likely effective in the past in relation to these gTLDs. This additional evidence reinforces the conclusion of our First Report that the removal of the price caps can be expected to harm independent registrars.

VIII. PRICE CAPS ON LEGACY GTLDS AND OTHER REGULATION OF ACCESS TO REGISTRY SERVICES HAVE LIKELY IMPROVED THE ECONOMIC OUTCOMES IN THE DNS SPACE IN THE PAST

84. ICANN was founded in a situation of a vertically integrated economic monopoly in the registration of domains in legacy gTLDs. As we explain in VIII.A, the rationale for the introduction of price caps was market power held by gTLDs. Vertical separation of the registry and registrar functions combined with non-discrimination and level-of-service provisions of registry services enabled competitive entry of many registrars. At the same time, price caps likely brought the wholesale—and thus retail—registration fees closer to competitive levels, thereby likely improving economic outcomes in the DNS space.

85. In VII.B, we analyze past economic studies and assessments of qualified U.S. authorities of the state of competition among gTLDs. The studies indicate that during the three expansion rounds certain gTLDs continued to hold substantial market power. This was the case despite the introduction of hundreds of new gTLDs. The persistent market power provided the economic rationale for maintaining price caps on .COM, .NET, as well as .ORG, .INFO and .BIZ throughout this period.
- A. Vertical separation of the registry and registration functions and price caps on registries enabled the introduction of competition at the registrar level and resulted in a reduction of registration fees
86. At ICANN’s formation, the registry and registrar functions for .COM, .NET, and .ORG were operated exclusively by NSI. The introduction of an operational firewall—the first step towards a full vertical separation—between NSI’s registry and registrar functions and of the Shared Registration System enabled ICANN to begin opening the registrar function to new companies shortly after its founding.⁶⁵ In April 1999, a test period with a group of five registrars began and by the end of 1999, 93 registrars were accredited by ICANN.
87. ICANN has recognized that registries may possess “attributes of monopoly power” and the need to address the potential for its exploitation.⁶⁶ If registries were allowed to exploit their market power by setting high registry fees, this would limit the extent to which competition among registrars could improve the economic outcomes in the DNS space.⁶⁷ For that reason, ICANN introduced price caps into RAs for .COM, .NET, and .ORG.
88. The first Registrar License and Agreement with NSI fixed registry fees of USD 9.00 for the period between 28 September 1999 and 15 January 2000 and a fee of USD 6.00 afterwards.⁶⁸ When .INFO and .BIZ were introduced in 2001, ICANN also included price cap provisions in the respective RAs.⁶⁹
89. With price caps in place, an integrated registry/registrar may have an incentive to exclude unaffiliated registrars, either by denying them access to service or by degrading the service quality.⁷⁰ Such denial of service or reduced service quality would impede the ability of

⁶⁵ For a detailed review of ICANN’s policy in relation to vertical separation between registry and registrar functions see e.g. CRA International (2008). *Revisiting Vertical Separation of Registries and Registrars* (Prepared For ICANN). [online] Available at: <https://www.icann.org/en/topics/new-gtlds/crai-report-24oct08-en.pdf> [Accessed 18 Oct. 2021]

⁶⁶ Touton, L. (2001). *General Counsel’s Analysis of .name SLD E-mail Forwarding Service*. [online] <https://www.icann.org/>. ICANN. Available at: <https://www.icann.org/resources/unthemed-pages/report-name-tld-2001-07-31-en> [Accessed 15 Sep. 2021].

⁶⁷ See Section VIII.

⁶⁸ See *NSI-Registrar License and Agreement*. [online] Available at: <https://archive.icann.org/en/nsi/nsi-rla-04nov99.htm#5> [Accessed 4 Oct. 2021]. The agreement allowed the NSI to adjust the fees prospectively, subject to ICANN’s approval.

⁶⁹ ICANN also introduced a price cap in RAs for .NAME and .PRO since at least 2003 (see *.name Registry Agreement*. [online] Available at: <https://www.icann.org/en/registry-agreements/name/unsponsored-tld-agreement-appendix-g-name-8-8-2003-en> [Accessed 4 Oct. 2021] and *.pro Registry Agreement*. [online] Available at: <https://www.icann.org/en/registry-agreements/pro/unsponsored-tld-agreement-appendix-g-pro-23-4-2004-en> [Accessed 4 Oct. 2021])

⁷⁰ CRA International (2008). *Revisiting Vertical Separation of Registries and Registrars* (Prepared For ICANN). [online] Available at: <https://www.icann.org/en/topics/new-gtlds/crai-report-24oct08-en.pdf> [Accessed 18 Oct. 2021].

unaffiliated registrars to compete effectively downstream and thus would potentially allow the integrated registry/registrar to extend its market power from the registry to the registrar level. The integrated registry/registrar could then exploit this newly acquired market power at the registrar level, because there are no price caps at the retail level to keep that market power in check.

90. ICANN acknowledged the risk that a registry could use “control over the exclusive registry function to make itself the sole registrar and thereby wipe out the registrar-level competition.”⁷¹ Accordingly, to prevent such an anticompetitive outcome, ICANN took active steps to regulate access to registry services, by including in RAs provisions like:

- requiring registry operators to deal with all registrars passing ICANN's independently administered accreditation process;
- prohibiting registry operators from bypassing those registrars through direct offerings or captive reseller networks;
- stating minimum defined performance levels and service functionality that will be delivered through the accredited registrars; and
- prohibiting the registry operator from favoring particular registrars.

91. ICANN’s approach to the regulation of registries worked. In late 2003 there were already over 151 ICANN-accredited registrars contributing to ICANN’s budget. In 2004, Summit Strategies International prepared a study evaluating the effects of newly introduced gTLDs. The study noted that registrars were fiercely competing on price, with at least 19 of them offering registration for \$15.00 or less, while some were charging prices at \$5 or \$6—below registry costs at the time—in the hope to profit from value-added services, such as web hosting and email.⁷² This is much lower than the price of \$35.00 that registrants were paying for a registration in .COM, .NET or .ORG to NSI before ICANN’s founding.⁷³ It is likely that intense competition among registrars together with ICANN’s price caps on wholesale registration fees both played an important role in reducing retail registration fees closer to competitive levels, thereby improving economic outcomes in the DNS space.

92. According to the 2008 CRA report commissioned by ICANN to revisit the vertical separation of registries and registrars, by February 2008 there were 872 registrars, and domains in .COM, .NET, .BIZ, .INFO, and .ORG could be registered with at least 200 registrars each.⁷⁴ The CRA

⁷¹ Touton, L. (2001). *General Counsel’s Analysis of .name SLD E-mail Forwarding Service*. [online] [https://www.icann.org/](https://www.icann.org/.). ICANN. Available at: <https://www.icann.org/resources/unthemed-pages/report-name-tld-2001-07-31-en> [Accessed 15 Sep. 2021].

⁷² Summit Strategies International (2004). *Evaluation of the New gTLDs: Policy and Legal Issues*. [online] Available at: <https://archive.icann.org/en/tlds/new-gtld-eval-31aug04.pdf> [Accessed 4 Oct. 2021], pp. 105f.

⁷³ www.nsf.gov. (1998). NSF and NSI End Internet Intellectual Infrastructure Fund Portion of Domain Name Registration Fees. [online] Available at: https://www.nsf.gov/news/news_summ.jsp?cntn_id=102875 [Accessed 2 Nov. 2021].

⁷⁴ CRA International (2008). *Revisiting Vertical Separation of Registries and Registrars* (Prepared For ICANN). [online] Available at: <https://www.icann.org/en/topics/new-gtlds/crai-report-24oct08-en.pdf> [Accessed 18 Oct. 2021].

report further found that “on the whole, the gTLD registrar industry appears unconcentrated, with a Herfindahl-Hirschman Index⁷⁵ of 952”; elsewhere, the report described registrar services as a “highly competitive industry”.

93. Today, intense competition among registrars is even more certain. In September 2021, ICANN’s website listed over 2500 registrars accredited with ICANN.⁷⁶ Furthermore, in December 2020, the ten largest registrars accounted for 58% of the domains and the Herfindahl-Hirschman Index was still below 1000.

⁷⁵ Herfindahl-Hirschman Index (HHI) is an indicator of industry concentration. It is calculated using the sum of squares of market shares. For example, if there is only one firm in a given industry, it has 100% market share and the HHI will be 10.000. On the other hand, if there are 100 firms with 1% market share, HHI will be 100. Higher value of HHI correspond to more concentrated markets. It is considered that industries with HHI below 1.000 are unconcentrated (see e.g. Davis, P. and Garcés E. (2010). *Quantitative techniques for competition and antitrust analysis*. Princeton; Oxford: Princeton University Press, Cop, pp. 288 - 289.

⁷⁶ www.icann.org. (n.d.). *List of Accredited Registrars*. [online] Available at: <https://www.icann.org/en/accredited-registrars?sort-direction=asc&sort-param=name&page=1> [Accessed 17 Sep. 2021]. We note that of these registrars some are under common control; nevertheless, competition among registrars remains intense.

Table 1: Registrar share based on number of Domains under management, December 2020

Registrar	Domains	Share of Total Domain Names
GoDaddy.com, LLC	64,555,090	29.4
NameCheap, Inc.	11,672,861	5.3
Tucows Domains Inc.	10,571,575	4.8
Network Solutions, LLC	7,029,939	3.2
HiChina Zhicheng Technology Limited	6,516,283	3.0
Google Inc.	5,677,211	2.6
PDR Ltd. d/b/a PublicDomainRegistry.com	5,153,965	2.4
eNom, LLC	5,054,165	2.3
1&1 IONOS SE	4,878,307	2.2
GMO Internet, Inc. d/b/a Onamae.com	4,758,048	2.2
Alibaba Cloud Computing Ltd. d/b/a HiChina (www.net.cn)	4,708,643	2.1
NameSilo, LLC	3,663,090	1.7
Wild West Domains, LLC	2,873,923	1.3
West263 International Limited	2,615,371	1.2
TurnCommerce, Inc. DBA NameBright.com	2,529,337	1.2
Fast Domain Inc.	2,373,190	1.1
OVH	2,349,614	1.1
Chengdu West Dimension Digital Technology Co., Ltd.	2,231,723	1.0
Dynadot, LLC	2,208,357	1.0
Name.com, Inc.	2,170,248	1.0
Xin Net Technology Corporation	2,112,488	1.0
<i>All other</i>	63,591,226	29.0
TOTAL	219,294,654	

Source: E.CA Economics based on ICANN Registry Monthly Reports, December 2020.

- B. Throughout the three expansion rounds, certain gTLDs continued to hold market power; this provided the rationale for the maintenance of price caps on these gTLDs
94. Registry services for each TLD must be provided exclusively by a single registry “due to technical impracticality of having more than one operator”.⁷⁷ Absent competitive bidding for obtaining the right to provide registry services in a specific TLD⁷⁸, any competition at the registry level must therefore come from independently operated substitute TLDs.⁷⁹ To promote such competition, and to expand the choice of TLDs for registrants, ICANN introduced new gTLDs in three expansion rounds since its founding.
95. However, while the new gTLDs enlarged the gTLD space, they did not effectively compete with original gTLDs and likely with some more popular gTLDs introduced in the first round of gTLD expansion. Indeed, the economic studies carried out in parallel with the introduction of new gTLDs in several rounds did not find robust evidence of effective competition.
96. This lack of competition is a valid economic reason for maintaining price caps, which likely also served as the economic rationale for ICANN to maintain price caps in RAs for .COM, .NET, .ORG, .INFO and .BIZ.⁸⁰
1. The first two rounds of gTLD expansion have not introduced effective competition to original gTLDs
97. The first round of gTLD expansion began in 2000 and saw ICANN delegate seven new gTLDs by 2002, four of them unsponsored. .BIZ, .INFO, .NAME and .PRO were made generally available (albeit with certain restrictions on registrants for .BIZ, .NAME and .PRO) through all interested ICANN-accredited registrars.⁸¹ In the second round of new gTLD introductions that started in 2003,⁸² ICANN granted seven more gTLDs which were all sponsored.⁸³ By 2005, there were 21 gTLDs, of which 7 were unsponsored. In addition to that (in April 2006) there were 245 ccTLDs.⁸⁴

⁷⁷ Touton, L. (2001). *General Counsel’s Analysis of .name SLD E-mail Forwarding Service*. [online] [https://www.icann.org/](https://www.icann.org/.). ICANN. Available at: <https://www.icann.org/resources/unthemed-pages/report-name-tld-2001-07-31-en> [Accessed 15 Sep. 2021].

⁷⁸ *I.e.*, competitive tenders for the registry services in relation to a TLDs where the wholesale registration fee is part of the selection criteria.

⁷⁹ An exception is when competitive tenders where the wholesale registration fee is part of the selection criteria are organized for the registry services in relation to a TLDs.

⁸⁰ In our understanding, ICANN sets the price caps in negotiations with Verisign but these price caps need to be approved by the DoC.

⁸¹ The other three new TLDs (.aero, .coop, and .museum) were sponsored TLDs, *i.e.* specialized TLDs that are restricted to customers of a specific community.

⁸² www.icann.org. (2004). *ICANN: Progress in Process for Introducing New Sponsored Top-Level Domains*. [online] Available at: <https://www.icann.org/en/announcements/details/icann-progress-in-process-for-introducing-new-sponsored-top-level-domains-19-3-2004-en> [Accessed 2 Nov. 2021].

⁸³ .ASIA, .CAT, .JOBS, .MOBI, TEL, .TRAVEL and .XXX were sponsored TLDs. .XXX was approved in 2011.

⁸⁴ See Seppia, G. (2006). *An overview of the ccTLDs scenario*. [online] Available at: <https://www.icann.org/en/system/files/files/new-overview-cctlds-30may06-en.pdf> [Accessed 4 Oct. 2021].

98. The new gTLDs introduced in the first two rounds of expansion have not resulted in effective competition to the .COM, .NET and .ORG registries. The 2004 study by Summit Strategies International, commissioned by ICANN, noted that new gTLDs had a limited success in attracting new registrations. By mid-2004, only two new gTLDs, .INFO and .BIZ, that were introduced in 2001 had managed to gain over 2% of domains under management (DUMs), whereas the registries of .COM (VeriSign), .NET (VeriSign) and .ORG (Afilias at the time), collectively held over 93% of DUMs among gTLDs. The same study noted that “[d]emand among existing registrants is likely to remain relatively inelastic⁸⁵ at most imaginable price points because of the lock-in effect,” and that “[i]ronically, the relatively high wholesale and resale prices of sponsored TLDs, which they justify by their eligibility and verification requirements, make price competition against... unrealistic for those TLDs.”
99. An OECD report also assessed the competitive effects of the first round of gTLD expansion.⁸⁶ The report acknowledged that introduction of new gTLDs could enhance competition among registries. At the same time, it noted that registries operating original gTLDs may nevertheless continue to hold significant market power. The report identified the need for a single registry to manage each TLD, and substantial cost of switching TLDs for the existing users as the main hurdles to effective competition in relation to legacy gTLDs. The OECD warned that the introduction of new gTLDs may not alleviate the need for ongoing contractual oversight of original gTLDs by ICANN:⁸⁷

One challenge has been for the new gTLDs to win recognition and acceptance by users. The Domain Name System’s need to have unique identifiers, and a consequent need for there to be a single registry for each name, means that any registry can exercise a degree of monopoly power over the domain for which it has responsibility. To some extent this can be addressed by competition between registries, but it will also require ongoing contractual oversight by ICANN. The extent to which such a requirement may be lightened depends on the future success of ICANN’s reform process, in terms of the acceptance of new gTLDs by the market. However, the large investment many users have in their domain name makes the cost of transfer between registries, and therefore a change of top level name, prohibitive for them.

⁸⁵ The term “inelastic demand” refers to a situation in which the demanded quantity responds only slightly to changes in the price (Varian, H.R. (2014). *Intermediate microeconomics: a modern approach*. 9th ed. New York: W. W. Norton & Company, Inc., pp. 275 - 276). In other words, if a demand for given product is inelastic, majority of the customers will continue buying it even after the price increases.

⁸⁶ OECD (2004). Generic Top Level Domain Names: Market Development and Allocation Issues. www.oecd-ilibrary.org. [online] Available at: https://www.oecd-ilibrary.org/science-and-technology/generic-top-level-domain-names_232630011251 [Accessed 24 Nov. 2021].

⁸⁷ OECD (2004). Generic Top Level Domain Names: Market Development and Allocation Issues. www.oecd-ilibrary.org. [online] Available at: https://www.oecd-ilibrary.org/science-and-technology/generic-top-level-domain-names_232630011251 [Accessed 24 Nov. 2021], p. 4.

100. In its comments on ICANN’s draft policy for the third gTLD expansion round, the DoJ also considered that legacy gTLDs held substantial market power and might continue to hold it in the future.⁸⁸ Drawing on its competition policy experience and its analysis of the revised .COM RA in 2006, the DoJ stated that “some new gTLDs likely would have market power” and that “the creation of additional gTLDs is unlikely to constrain the exercise of market power by existing TLDs, especially the .com registry operated by VeriSign.” In that regard, the DoJ explained that its investigation of the .COM agreement “found that VeriSign possesses significant market power as the operator of the .com registry because many registrants do not perceive .com and other gTLDs (such as .biz and .info) and country code TLDs (“ccTLDs,” such as .uk and .de) to be substitutes.” Finally, the DoJ highlighted that its investigation found “that other gTLD registry operators may possess a degree of market power. The market power inherent in other gTLDs is less than the market power in .COM, but is still material.”⁸⁹

101. The DoC echoed the DoJ’s views calling on ICANN to retain the authority to address the risk of adverse competitive effects that may arise during the approval of new gTLDs applications or the renewal of subsequent contracts.⁹⁰ Both the DoJ and DoC also called on ICANN to carry out, before introducing new gTLDs, an economic study that would consider, among other issues, to what extent registrations in different TLDs are substitutable and whether each TLD functions as a separate market and what are the effects of switching costs on TLD pricing.⁹¹

2. While the third round of gTLD expansion saw the introduction of many new gTLDs, it failed to introduce effective competition to legacy gTLDs

102. During the third gTLD expansion round, the number of gTLDs went from 22 before the delegation of the first new gTLD at the end of 2013, to over 400 in March 2015;⁹² by March 2016 there were 955 new gTLDs available for registration.⁹³

103. ICANN commissioned two economic reports to assess the impact of new gTLDs on competition. The reports were prepared by Dr. Rafert and prof. Tucker. The first—phase I—report published

⁸⁸ Department of Justice (2008). *ICANN’s Draft RFP for New gTLDs*. Accessible from: <https://www.icann.org/en/system/files/files/baker-to-dengate-thrush-18dec08-en.pdf> [Accessed 14 Oct. 2021].

⁸⁹ Ibid.

⁹⁰ The DoJ has called upon ICANN to complete, before the introduction of new gTLDs, an economic study which would address questions like the scope of the relevant market (does each TLD function as a separate market), the effects on consumer and pricing behavior of the switching costs involved in moving from one TLD to another, the effects of the market structure and pricing on the new entrants as well as whether there are other markets with similar issues and how are these issues addressed and by whom?

⁹¹ We understand that ICANN never carried out such study. ICANN nevertheless commissioned two economic reports to consider, first, whether price caps on prices charged to registrars of new gTLDs are necessary to insure the potential competitive benefits of the new gTLDs; second, the likely impact of new gTLDs on consumer welfare. Both reports were prepared by Prof. Dennis Carlton and published in 2009. Neither of the reports considered whether established legacy gTLDs held market power and, if so, to what extent the new gTLDs were likely to reduce it. The reports also did not consider whether removing the price caps on any of the legacy gTLDs would likely result in more effective competition or be otherwise justified. We nevertheless analyzed these reports and assess some of Prof. Carlton’s findings in detail in Section VIII, insofar they relate to the likely effects of price caps on legacy gTLDs.

⁹² Rafert, G. and Tucker, C. (2015). *Phase I Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-one-assessment-28sep15-en.pdf>, p. 1.

⁹³ Rafert, G. and Tucker, C. (2016). *Phase II Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-two-assessment-11oct16-en.pdf>, p. 3.

in 2015, set out a baseline description of metrics (as of November 2014) useful for assessing competitive conditions in the DNS space. The second—phase II—report updated those metrics after a year (as of March 2016). Neither the phase I nor phase II report found robust evidence that the introduction of new gTLDs increased competition at the registry level.

104. In relation to competition among *new* gTLDs, on the one hand, the phase II report identified the following metrics as potentially indicative of increased competition: (i) the reduction in the share of new gTLD registrations attributable to the four or eight largest TLDs, (ii) the significant volatility of registration shares held by registry operators in new gTLD registrations since the phase I report, and (iii) the fact that entry of new gTLDs within a given interest area was often associated with a decline in registration shares of other new gTLDs within the same interest area. On the other hand, the report found no decrease in registry fees for new gTLDs, which is not consistent with increased competition among the new gTLDs.
105. Neither phase I nor phase II report found robust evidence that new gTLDs effectively competed with legacy gTLDs. In that regard, the phase II report noted that there was “no aggregate (worldwide) effect of new gTLD entry or registrations on legacy TLD registrations.” The report concluded that “this is consistent with new gTLDs generally not being treated as substitutes for legacy TLDs.”
106. Similarly, an academic study of the early registration patterns in new gTLDs by Halvorson et al. (2015)⁹⁴ concluded that “[o]verall, the introduction of the new TLDs had only minimal impact in the rate of registration of the old TLDs. The new TLDs generally increase the total number of registrations rather than shift focus from old to new TLDs. However, the new TLDs see far fewer registrations than the old TLDs, largely because .com continues to dominate.”

IX. THE SCOPE FOR PRICE CAPS ON .ORG, .INFO AND .BIZ TO IMPROVE ECONOMIC OUTCOMES IN THE DNS SPACE IS SIGNIFICANT BECAUSE THESE GTLDS CONTINUE TO HOLD MARKET POWER

107. In Section VIII we established that the rationale for ICANN’s maintenance of price caps on certain gTLDs was market power of these gTLDs during the three gTLD expansion rounds.
108. In this section we establish that .ORG, .INFO, and .BIZ hold persistent market power today. Price caps could curb the exercise of market power of these gTLDs, thereby improving the economic outcomes in the DNS space.
109. To analyze whether .ORG, INFO and .BIZ hold market power, we proceed in three steps:
 - i. In IX.A we identify the characteristics of demand for registrations that may create conditions for market power in the DNS space.

⁹⁴ Halvorson, T., Der, M.F., Foster, I., Savage, S., Saul, L.K. and Voelker, G.M. (2015). From .academy to .zone: An Analysis of the New TLD Land Rush.

- ii. In IX.B we identify potential indicators of market power in the DNS space: wholesale registration fees, registration volumes, and registry margins.
- iii. In IX.C we verify whether each of .ORG, .INFO and .BIZ possess the characteristics, identified in IX.A, that may lead to market power. We then verify that the indicators identified in IX.B are consistent with market power for each of these gTLDs. In this step we also verify that price caps were likely effective in the past for each of these gTLDs.

110. In Section X we assess the risk that price caps on .ORG, .INFO, .BIZ may worsen economic outcomes by hindering the efficient competitive process.

A. Characteristics of gTLDs that may create conditions for their persistent market power: differentiation, first-mover advantage, complementarity, and switching costs

111. The following characteristics of the supply and demand for domain name registrations may create conditions for market power of a TLD:

- i. TLDs are differentiated semantically.
- ii. Certain legacy gTLDs benefit from first-mover advantage and positive network effects. New gTLDs are therefore not close substitutes for these legacy gTLDs.
- iii. An important share of registrants view new gTLDs as complementary to legacy gTLDs.
- iv. An important share of existing registrants would experience substantial costs when switching between different TLDs.

1. TLDs are differentiated semantically and are not generally good substitutes

112. TLDs are differentiated semantically, and registrants do not generally perceive them as close substitutes. TLDs are thus often “imbued with a particular meaning and identity”.⁹⁵ In this spirit, legacy gTLDs were designed to each cover a thematic field, providing a clear frame of reference for websites. For example, .COM was intended for commercial organizations, .ORG for nonprofits, .NET for internet service providers. While today these gTLDs are not restricted to their initial specific purpose, they still carry a certain frame of reference in the minds of internet users. Based on a TLD’s identity, internet users form expectations about the content of websites in a TLD, and may not trust a TLD that does not match these expectations.⁹⁶ In turn,

⁹⁵ Summit Strategies International (2004). *Evaluation of the New gTLDs: Policy and Legal Issues*. [online] Available at: <https://archive.icann.org/en/tlds/new-gtld-eval-31aug04.pdf> [Accessed 4 Oct. 2021], p. 108.

⁹⁶ A 2016 Nielsen survey of over 5000 internet users, commissioned by ICANN, reported that around 80% of users expected either “a very clear” (55%) or “some relationship” (25%) to the gTLD under which it is registered. (ICANN Global Consumer Research, Wave 2, Nielsen, June 2016) A more recent online survey of 350 U.S. and 300 Australian internet users by the search engine optimization company “Moz” confirmed that users form expectations about website content based on the TLD. For example, when the users were asked which of the websites “www.Stopbullying.org”, “www. Stopbullying.com” is most likely to be the domain for a registered non-profit organization, close to 100% of respondents identified a TLD ending with .org as the one most likely to be used by a non-profit. (<https://moz.com/blog/cc-tld-domain-study>)

the registrants' choice is limited to TLDs that create expectations that match their online content.

113. New gTLDs are often purposefully differentiated from each other and from legacy gTLDs. As ICANN community's CCT&CC Review Team (2018) noted, "[w]ith the exception of a few new strings such as .xyz, .online, .site and .space, the new gTLDs are meant to be more semantic and specific than the legacy generic TLDs. So while *bridal.photography* is a reasonable substitute for *bridalphotography.com*, *plumbing.photography* is not a substitute for *plumbing.com*."⁹⁷ This purposeful differentiation further limits the degree to which new gTLDs are substitutable among each other, and how intensely they compete with legacy gTLDs.⁹⁸
114. Finally, many gTLDs are restricted to a specific category of registrants, like in the case of .NAME,⁹⁹ and some ccTLDs are restricted to nationals of the country or a region to which they refer, like .US or .EU.¹⁰⁰ Restricted gTLDs and ccTLDs can only compete with non-restricted gTLDs for a subset of potential registrants.¹⁰¹

2. Large legacy gTLDs have been benefitting from network effects

115. Multiple parties have stated that certain gTLDs may benefit from positive network effects, which become a source of market power for their registries. For example, both the DoJ and the CCT&CC Review Team have identified positive network effects of legacy gTLDs as a potential impediment to the growth of new gTLDs.¹⁰²
116. Positive network effects may arise in the following way. Users tend to find TLDs that they often encounter and are therefore most familiar with more trustworthy than TLDs they encounter less often. As the number of domains containing valuable content in a TLD increases, internet users will get more opportunities to get familiar with the TLD. This will result in the TLD gaining higher overall levels of trust. The increase in trust will, in turn, increase the TLD's value to registrants.

⁹⁷ COMPETITION, CONSUMER TRUST, AND CONSUMER CHOICE REVIEW (2018). [online] Available at: <https://www.icann.org/en/system/files/files/cct-rt-final-08sep18-en.pdf> [Accessed 18 Oct. 2021], p. 40.

⁹⁸ In that regard, the Government Advisory Committee--the voice of Governments and Intergovernmental Organizations (IGOs) in ICANN's multistakeholder structure--stated that "In the interest of consumer confidence and security, new gTLDs should not be confusingly similar to existing TLDs. To avoid confusion with country-code Top Level Domains no two letter gTLD should be introduced. (GAC Principles Regarding New gTLDs, letter to ICANN presented by the Governmental Advisory Committee, March 28, 2007) [Microsoft Word - GAC PRINCIPLES REGARDING NEW gTLDs final 280307.doc (icann.org)]

⁹⁹ See *.name Registry Agreement Appendix 11*. [online] Available at: <https://www.icann.org/en/registry-agreements/name/name-registry-agreement-appendix-11-1-12-2012-en> [Accessed 4 Oct. 2021]

¹⁰⁰ Further, unlike generic top-level domains, ccTLDs may influence search engine results by giving geotargeting preferences to local domains as their content is seen as more relevant to the searcher. A registrant targeting global audiences may therefore prefer to choose a gTLD instead.

¹⁰¹ Further, a subset of TLDs are never made available for public registration and the only intended registrant is the registry itself, frequently to protect its brand.

¹⁰² Department of Justice (2008). *ICANN's Draft RFP for New gTLDs*. Accessible from: <https://www.icann.org/en/system/files/files/baker-to-dengate-thrush-18dec08-en.pdf> [Accessed 14 Oct. 2021] and COMPETITION, CONSUMER TRUST, AND CONSUMER CHOICE REVIEW (2018). [online] Available at: <https://www.icann.org/en/system/files/files/cct-rt-final-08sep18-en.pdf> [Accessed 18 Oct. 2021].

117. In contrast, network effects do not occur, or can even be negative, if a TLD contains a large share of domains with little value to users or even potentially harmful content. In such event, the users will either not become very familiar with the TLD, or they will trust it less, as the number of low quality or harmful domains in it increases. Indeed, the demand for such a TLD may even suffer from a reputation that it should be avoided.

118. A 2016 survey by Nielsen commissioned by ICANN confirmed the relationship between user awareness and trust levels for TLDs. The survey found that the top responses to the question of what makes a gTLD trustworthy focused around the TLD “being a recognizable or well-known gTLD or being from a group, agency or a place that inspires trust.”¹⁰³ Consistent with the presence of network effects, the survey found much higher user awareness of legacy gTLDs compared to new gTLDs, with .COM, .NET and .ORG taking three top places in terms of size, user awareness, and trust.

3. Many registrants view new gTLDs and ccTLDs as complementary, rather than substitutable, to legacy gTLDs

119. Significant fraction of registrants in new gTLDs or ccTLDs view their registrations in these TLDs as complementary, rather than substitute, to their primary registrations in legacy gTLDs. A complement domain is one that a registrant tends to purchase *in addition to* its primary domain. In contrast, a substitute domain would be registered *instead of* the primary domain.

120. One reason for registering complement domains in new gTLDs and ccTLDs is to make search and navigation easier for users. Amazon has, for example, registered complement domains in hundreds of TLDs. “Amazon.dentist” thus points to the dental supplies category page on Amazon.com, whereas “Amazon.news” points to Amazon’s download page for news from various outlets. Similarly, Apple’s primary domain is “apple.com”, while “apple.news” redirects to Apple’s news subscriptions services in the “apple.com” domain. Amazon, Apple and many other registrants use ccTLDs for the localized versions of their online resources.

121. Another reason for complementarity between legacy and new gTLDs is the need, real or perceived, of some registrants to protect their trademarks or prevent abusive behavior such as cybersquatting. Cybersquatting involves bad faith registration or use of another company’s trademark in a domain name, without having legal rights or legitimate interest in that domain name.¹⁰⁴ To prevent it, trademark owners register domains in multiple TLDs.¹⁰⁵ Such “defensive” registrations are also made in addition to the registration in the primary TLD and the associated domains are thus complementary to primary domains.¹⁰⁶ In this sense, defensive registrations

¹⁰³ Nielsen (2016). *ICANN Global Consumer Research, Wave 2*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/phase2-global-consumer-survey-23jun16-en.pdf> [Accessed 4 Oct. 2021].

¹⁰⁴ www.icann.org. (2013). *About Cybersquatting - ICANN*. [online] Available at: <https://www.icann.org/resources/pages/cybersquatting-2013-05-03-en> [Accessed 15 Oct. 2021].

¹⁰⁵ Kende, M. (2009). *Assessment of ICANN Preliminary Reports on Competition and Pricing*. [online] Available at: <https://forum.icann.org/lists/competition-pricing-prelim/pdf2m9kAd0xph.pdf> [Accessed 4 Oct. 2021].

¹⁰⁶ Besides their defensive role, such registrations have little economic value.

are socially harmful. The perceived necessity of defensive registrations for trademark holders was considered one of the main arguments against introduction of new gTLDs in the first place.

122. Precise quantification of the economic significance of defensive domain registrations is impossible because suitable data is not readily available. Nevertheless, several studies provide indications that the phenomenon is economically important. One is the academic study of the demand for new gTLDs by Halvorson et al. (2015).¹⁰⁷ The authors of the study crawled each domain in the zone files of 290 new gTLDs that were available to the general public for domain name registration in February 2015 (excluding internationalized domains). They were able to classify domains into those (1) hosting valid content, defensive (redirecting to a different domain name), (2) unused (returning content that is not consumer ready, like empty pages or PHP errors), (3) free (domains given out as part of a promotion), and (4) parked (for sale or only returning ads). The study found that "only 15% of domains in the new TLDs showed characteristics consistent with primary registrations, while the rest were promotional, speculative or defensive in nature." Among those, the category of defensive registrations is complementary to primary registrations. Consistent with the findings of Halverson et al. (2015), ICANN community's Competition, Consumer Trust, and Consumer Choice (CCT&CC) Review Team (2018) reported that over two third (68%) of all the new gTLD registered domains were parked,¹⁰⁸ (among others for defensive purposes) based on the December 2016 data provided by website nTLDstats.¹⁰⁹

123. Hence, the available data indicates that many registrants view new gTLDs and ccTLDs as complementary, rather than substitutable, to legacy gTLDs.

4. Switching a TLD often entails substantial costs for the registrant and the more intense ex-ante competition is unlikely to compensate for the resulting loss of ex-post competition

124. Switching costs are another factor that may limit the degree to which TLDs compete for registrants because they bind—lock-in—buyers to sellers on repeat purchases.

125. When switching costs are high, sellers may have an incentive to compete more intensely for new buyers. Sometimes this more intense "ex ante" competition can adequately compensate for the softer "ex post" competition for sales to locked-in customers, but this is typically not the case as we explain in section IX.A.4.b) below.

¹⁰⁷ Halvorson, T., Der, M.F., Foster, I., Savage, S., Saul, L.K. and Voelker, G.M. (2015). From .academy to .zone: An Analysis of the New TLD Land Rush.

¹⁰⁸ I.e. "domains that have been registered but are not yet being used".

¹⁰⁹ The nTLDstats appears to no longer publish the data that would allow to update the analysis to current figures.

- a) Registrants face significant switching costs which may soften ex-post competition for locked-in registrants

126. Switching costs may create an incentive for the registry to act opportunistically by raising wholesale registration fees above levels that would prevail in the absence of switching costs.¹¹⁰

127. Registrants face switching costs to the extent they would have to replicate their investments—both tangible and intangible—into a domain name if they switched to a new TLD.¹¹¹ ICANN has acknowledged that switching costs are often significant in the following analysis by ICANN’s general counsel in 2001:¹¹²

Mr. Abril is correct that TLD registry operators will inevitably acquire some attributes of monopoly power. This is a necessary consequence of (a) the technical impracticality of having more than one operator of the core registry function for a given TLD and (b) the economic "lock-in" that consumers undergo when they establish web sites and other services at a registered domain name within the TLD. Without protective provisions about how they operate, TLD operators will have incentives to use this sole-source position in abusive ways.

128. The CCT&CC Review Team (2018) report notes that switching costs could be “fairly mundane, such as the costs of repainting trucks or issuing new business cards. But they can be significant—for example costs of assuring that customers and others are made aware of the change—and may well exceed any direct costs related to the registration of a domain name.”¹¹³

129. To assess the potential for switching costs to stifle effective competition among registries, a relevant metric is the magnitude of switching costs relative to the registration fee that one could expect without switching costs.¹¹⁴ Even the “fairly mundane” switching costs that many registrants would face can be substantial compared to their current registration fee. These switching costs arise from, among other things, disruption in client communication and TLD-specific investments in brand marketing or search engine optimization. If one were to assume that a difference between current price and competitive price for a 10-year registration would be 100 USD, it is clear that switching costs for many registrants could easily be much higher

¹¹⁰ Massimo Motta (2009). *Competition policy: theory and practice*. Cambridge: Cambridge University Press, pp. 443 - 444.

¹¹¹ Summit Strategies International (2004). *Evaluation of the New gTLDs: Policy and Legal Issues*. [online] Available at: <https://archive.icann.org/en/tlds/new-gtld-eval-31aug04.pdf> [Accessed 4 Oct. 2021], pp. 105.

¹¹² ICANN General Counsel’s Analysis of .name SLD E-mail Forwarding Service of 30 July 2001 <https://www.icann.org/resources/unthemed-pages/report-name-tld-2001-07-31-en> [Accessed 6 Oct. 2021]

¹¹³ COMPETITION, CONSUMER TRUST, AND CONSUMER CHOICE REVIEW (2018). [online] Available at: <https://www.icann.org/en/system/files/files/cct-rt-final-08sep18-en.pdf> [Accessed 18 Oct. 2021], p. 38.

¹¹⁴ With switching cost, the registrant chooses the cheapest option of (1) continuing with his current registration and (2) switching and thus incurring the switching cost and paying a (lower) registration fee of the new domain. As long as the switching costs are higher than the registration fees currently paid, the second option (i.e. switching) is the more costly and the first option is chosen (i.e. switching does not take place).

than that.¹¹⁵ It follows that many registrants would not switch to a new gTLD even if it offered a substantially lower registration and renewal fees.

¹¹⁵ See Verboven, F. and Langus, G. (2020). *Expert report of Professor Dr. Frank Verboven and Dr. Gregor Langus*. [online] Available at: <https://www.icann.org/en/system/files/files/irp-namecheap-claimant-prima-facie-expert-report-professor-verboven-langus-21dec20-en.pdf> [Accessed 8 Nov. 2021].

- b) A more intense competition for new registrants in the presence of switching costs is unlikely to compensate for the loss of ex-post competition in relation to legacy gTLDs

130. In a report prepared for ICANN in 2009, where he considered whether price caps should be imposed on new gTLDs, prof. Carlton acknowledged that registrants face considerable switching costs.¹¹⁶ Nevertheless, he argued that imposing price caps on new gTLDs would not bring significant consumer benefits. Prof. Carlton provided the following reasons for this:

- i. First, in the presence of switching costs, new gTLDs will compete more intensely with legacy gTLDs and ccTLDs for new registrants. The more intense ex ante competition may partly or fully compensate for the softer ex post competition in the presence of switching costs.
- ii. Second, because of the ample choice for registrants, the new gTLDs would not be successful in attracting many new registrants if they engaged in opportunistic behavior that harms their reputation. The loss of reputation would be particularly harmful in a rapidly growing space like the DNS has been. This is because in a growing market an opportunistic firm risks greater future losses than do similar firms in stable or declining markets. The concern with switching costs is further limited to the extent that new gTLDs provide services using existing registrars who could recognize gTLDs who behave opportunistically and shift potential customers away from them.
- iii. Third, prof. Carlton argued that availability of long-term contracts may further limit the risk of opportunistic behavior of registries.

131. While prof. Carlton argued against price caps on *new* gTLDs, his arguments are potentially relevant to the analysis of the likely effects on economic outcomes of price caps on legacy gTLDs. However, the extent to which those arguments apply in such context is limited for the following reasons:

- i. Each of the arguments assumes that new registrants can choose between sufficiently close substitute TLDs. However, TLDs are differentiated from one another, and thus not generally close substitutes. Legacy gTLDs are further differentiated from new gTLDs in that—due to their first mover advantage and network effects—they enjoy high levels of recognition and trust. Because of this, pricing of new gTLDs may have a weak effect on pricing decisions of the legacy gTLDs.¹¹⁷
- ii. Moreover, even if new gTLDs were close substitutes for the legacy gTLDs, a more intense ex ante competition would unlikely compensate for the softer ex post

¹¹⁶ Carlton, D.W. (2009). *REPORT OF DENNIS CARLTON REGARDING ICANN'S PROPOSED MECHANISM FOR INTRODUCING NEW gTLDs*. [online] Available at: <https://archive.icann.org/en/topics/new-gtlds/carlton-re-proposed-mechanism-05jun09-en.pdf> [Accessed 18 Oct. 2021].

¹¹⁷ Our analysis in Section IX indicates that this is indeed the case for .ORG, .INFO and .BIZ.

competition. This phenomenon is established in economic literature. Economists Joseph Farrell and Paul Klemperer state in that regard:¹¹⁸

Ex ante competition often fails to compete away ex post rents: switching costs typically raise oligopoly profits and proprietary network effects often do, especially if expectations fail to track relative surplus. And even when ex ante competition dissipates ex post rents, it may do so in unproductive ways such as through socially inefficient marketing: at best it induces “bargain-then-ripoff” pricing (low to attract business, high to extract surplus) that normally distorts buyers’ quantity choices, gives consumers wrong signals about whether to switch, and (in the case of network effects) provides artificial incentives to be or appear pivotal.

- iii. Further, ex ante competition between new gTLDs and legacy gTLDs .ORG, .INFO and .BIZ would not effectively protect registrants that purchased their domains before the third round of gTLD expansion. Because they would have to incur switching costs, those registrants could not fully benefit from low fees for new registrations, even if such fees resulted from a more intense ex ante competition once new gTLDs are introduced.
- iv. It is also not clear that the fear of gaining reputation for opportunistic behavior would prevent gTLDs from acting opportunistically. A significant amount of time may have to pass before registrants can infer whether a change in the fee structure of a gTLD took place because the gTLD has started acting opportunistically or because it has just engaged in procompetitive experimentation with the fee structure in the face of intense ex-ante competition. It is therefore not clear that registrants would be able to promptly shift their demand away from registries behaving opportunistically and that this would deter such conduct in the first place.
- v. Moreover, it is not clear that registrars would be able to promptly identify opportunistic registries for the same reason that this is not clear in relation to registrants. And even if they could promptly identify such registries, it is not clear that registrars could effectively shift registrants away from them. First, registrars will have little guarantee that the—now trusted—registry to which they are shifting customers would not be tempted to act opportunistically sometime in the future, once it has acquired enough registrants.¹¹⁹ Second, as outlined earlier, the registrars’

¹¹⁸ Joseph Farrell and Paul Klemperer “Coordination and Lock-In: Competition with Switching Costs and Network Effects” *Handbook of Industrial Organization* Volume 3, 2007, Pages 1967-2072

¹¹⁹ In the presence of switching costs, registries with a higher number of DUMs can be expected to have a stronger incentive to act opportunistically. Legacy gTLDs are well established and over time they have gained large customer bases. As of December 2020, .COM was by far the largest TLD in terms of domains under management (DUMs), with over 157 million registrations worldwide. The second largest gTLD was .NET, with 13.6 million DUMs. The prospect of competition between .COM and .NET is a priori limited, as both TLDs are managed by Verisign. Independently managed .ORG had more than 10 million registrations, while .INFO had some 4.5 million and .BIZ nearly 1.5 million registrations.

ability to shift consumers from legacy gTLDs to new gTLDs would be limited by the fact that new gTLDs are not generally close substitutes for legacy gTLDs.

- vi. Finally, while the availability of long-term contracts may alleviate the concern that switching costs could soften competition, such contracts imply long term commitments and may be costly to enter in for both registries and registrants. This could be a key reason for why long-term contracts today represent a very small share of registrations.¹²⁰

B. Evolution of prices, margins and volumes as indicators of market power

132. In this section we describe the metrics we use in the assessment of market power of .ORG, .INFO, and .BIZ: levels and evolution of (i) prices, (ii) margins, and (iii) volumes. These metrics are useful as potential indicators of market power because they evolve differently in situations of intense competition compared to situations where competition is not effective. Another potential commonly used indicator is the market shares of registry operators. However, for the reasons set out below in Section IX.B.4, we do not use market shares as an indicator of market power.

1. Prices

133. A persistent and significant difference in the level of registry fees between two distinct TLDs may indicate that they do not intensely compete.¹²¹ In conditions of effective competition, a TLD will not be able to set its registry fee significantly and persistently above the fee set by a close substitute TLD without losing many registrants.¹²² Indeed, a necessary condition for effective competition is that (i) informed registrants have the incentive and ability to promptly direct their demand away from the high-price TLD to the low-price TLD and that (ii) the latter can serve the additional demand it receives.¹²³

134. A constant fee or a stable pattern of regular increases in a TLD's wholesale registration fee—when potential rival TLDs do not exhibit similar stable fee patterns—may also indicate that the TLD holds market power. Such stability suggests that the TLD lacks an interest in prices of—i.e.,

¹²⁰ In December 2020, registrations of 10 year contracts made for 0.3 % of all registrations. According to ICANN data.

¹²¹ See e.g. Rafert, G. and Tucker, C. (2016). *Phase II Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-two-assessment-11oct16-en.pdf> p. 2 and p. 10 and Massimo Motta (2009). *Competition policy: theory and practice*. Cambridge: Cambridge University Press, p. 109.

¹²² Persistent price differences between two products can also be observed in markets where competition is effective if products differ in terms of their quality levels. If it is more costly to produce the product of higher quality, the prices for the two products could differ yet still each be close to its respective unit costs (which would mean that competition is effective). When interpreting prices as indicators of market power we assume that the unit costs for a registry service do not differ much across the scrutinized TLDs which we believe is a reasonable assumption. The application of dynamics of fees to the assessment of market power that we discuss in the next paragraph does not require such an assumption. This is because when competition is effective, we expect a TLD to respond to a price change of a rival TLD irrespectively of any quality differential.

¹²³ Wholesale fees for a price-capped TLD that are persistently above the fee level of TLDs that are not price-capped may also indicate that a tighter (lower) price cap could further improve the economic outcomes by bringing the fees closer still to a competitive benchmark level.

does not competitively interact with—other TLDs. The TLD therefore sets its fees disregarding other TLD’s fees and their price response. Such TLD has market power in economic terms.

135. Similarly, a lack of response in a TLD’s fee to entry of new TLDs may indicate that the incumbent TLD and entering TLDs are not sufficiently close substitutes to warrant a competitive price response.¹²⁴

2. Margins

136. A TLD’s wholesale registration fee that is significantly above costs—i.e. high margins in registry services—may indicate that the TLD has market power. Effective competition ensures that prices do not rise too far above unit costs and that margins are thin.¹²⁵ Persistently high margins on a price capped TLD may indicate that a tighter (lower) price cap could further improve the economic outcomes.

137. Margins that increase over time may indicate a decline in competition and an increase in market power. This is straightforward when margin increases are driven by price increases. But even when margin increases are driven by cost reductions, unless short-lived, these increases indicate market power gain. This is because, in competitive markets, a firm only enjoys the benefits of a cost reduction for a limited time as rivals will figure out relatively quickly how to cut their costs and prices, driving the margins in the industry to ‘normal’ levels.

3. Volumes

138. Stable volumes for incumbents, while potential rivals enter the market, may also indicate lack of effective competitive constraint by entrants on the incumbents.¹²⁶

139. When an entry of one or more new TLDs does not result in a reduction of the number of registrations in a legacy gTLD, this may indicate that little switching of customers from the gTLD to the new TLD took place. Especially when the legacy gTLD does not change its wholesale fee upon entry of new TLDs, such stable volumes are a strong indication that the new TLDs do not directly compete with it.¹²⁷

140. This lack of competition could be because the new TLDs are not sufficiently close substitutes to the legacy gTLD or because the switching costs are sufficiently high to prevent existing customers from switching away from the incumbent to new TLDs.

¹²⁴ Comp. Rafert, G. and Tucker, C. (2016). *Phase II Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-two-assessment-11oct16-en.pdf> p. 34.

¹²⁵ Massimo Motta (2009). *Competition policy: theory and practice*. Cambridge: Cambridge University Press, p. 109.

¹²⁶ Rafert, G. and Tucker, C. (2016). *Phase II Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-two-assessment-11oct16-en.pdf>, p. 50.

¹²⁷ Comp. Rafert, G. and Tucker, C. (2016). *Phase II Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-two-assessment-11oct16-en.pdf> p. 34.

4. Market shares

141. Economists and antitrust authorities often regard market shares as a preliminary indicator of the level of market power.¹²⁸ However, market shares are only meaningful when the market is correctly defined. When the product market is defined too broadly (including too distant substitutes on both supply and demand sides) or too narrowly (excluding close substitutes), market shares are uninformative of market power.
142. Similarly, market share dynamics may be misleading when markets are defined too broadly or too narrowly. For example, a reduction of market share in a too broadly defined product market may be mistakenly interpreted as intensification of competition when instead a new adjacent, potentially even complementary, market is created. The constant volumes of a firm with market power would automatically imply lower market share due to the inclusion of the volumes satisfying new demand even when these new volumes exert no competitive constraint.¹²⁹
143. The ICANN Board has in the past considered commissioning an economic study that would analyze the question of proper market definition in the DNS space; specifically, “whether the domain registration market is one market or whether each TLD functions as a separate market”, and relatedly “whether registrations in different TLDs are substitutable.”¹³⁰ The DoC and DoJ have urged ICANN to carry out such a study. As far as we know, however, ICANN has not yet commissioned such a study. We do not attempt to define proper antitrust markets in the DNS space for this report. Instead, we directly analyze information on price and registration dynamics and factors of substitutability among TLDs.¹³¹
144. At the same time, it is worth noting that existence of a large number of different products available in the marketplace—in particular if the relevant product market has not been properly defined—should not be interpreted as an indicator of effective competition. While usually each additional product introduced into the marketplace brings consumer benefits in the form of increased choice (although there might be rare exceptions, e.g. when too much choice creates consumer confusion or when consumers are not able to properly compare various products), it is not necessarily indicative of substantially increased competition. Specifically, competitive interactions between different products introduced could be so weak that they could belong to different relevant product markets.

¹²⁸ Massimo Motta (2009). *Competition policy: theory and practice*. Cambridge: Cambridge University Press, p. 117.

¹²⁹ This problem is similar to the one we describe in paragraph 105 in relation to Rafert and Tucker’s use, in their Phase II report, of the share of registrations attributable to top 4 or 8 gTLDs.

¹³⁰ [www.icann.org. \(2006\). Special Meeting of the Board Minutes - ICANN.](https://www.icann.org/resources/board-material/minutes-2006-10-18-en) [online] Available at: <https://www.icann.org/resources/board-material/minutes-2006-10-18-en> [Accessed 18 Oct. 2021].

¹³¹ To find the relevant market, the antitrust authorities usually use so called SSNIP test (Small but Significant Non-transitory Increase in Prices) (See Massimo Motta (2009). *Competition policy: theory and practice*. Cambridge: Cambridge University Press, p. 102.). The rationale of SSNIP test is to identify the smallest set of products or services for which it is profitable to jointly increase prices if monopolized by a hypothetical monopolist (i.e. set of products that is worth monopolizing). This is usually done by uniformly increasing prices by 5 - 10% and subsequently analysing whether such increase would be profitable for the hypothetical monopolist (See Commission Notice on the definition of relevant market for the purposes of Community competition law, 1997).

C. Analysis of market power and of effectiveness of price caps for .ORG, .INFO and .BIZ

145. Like other gTLDs, .ORG, .INFO, and .BIZ are characterized by switching costs which tend to reduce competition as explained in Section A.4 above. In this section, we verify whether these gTLDs also possess certain other characteristics described in Section A above that may give rise to market power.

146. We also verify whether the indicators identified in Section IX.B are consistent with market power of these gTLDs. Moreover, we verify whether price caps on .ORG, .INFO, and .BIZ were likely effective in constraining prices in the past.

1. .ORG holds substantial market power which the price caps have likely constrained it in the past

147. Our analysis shows that .ORG holds market power because many registrants of domains in .ORG would face substantial switching costs if they registered the domain in a different TLD. Moreover, .ORG holds market power because:

- i. It is distinguished from other TLDs as the TLD of trust, in particular for domains related to organizations dedicated to serving the public interest.
- ii. It likely benefits from positive network effects as one of the largest gTLDs.

148. In addition, information on the level and evolution of .ORG wholesale registration fees and domain volumes indicates that .ORG holds substantial market power.

149. Finally, the evolution of wholesale fees for .ORG indicates that prices caps were likely effective in constraining the extent to which .ORG was able to exercise its market power in the past.

- a) .ORG is semantically differentiated from other gTLDs and ccTLDs and enjoys high levels of user trust

150. .ORG was originally designed for non-profit organizations. With 10.4 million DUMs, .ORG is the 3rd largest gTLD. It is the 7th largest TLD overall in terms of DUMs, behind .COM (157 million), .TK (24.7 million),¹³² .CN (20.7 million), .DE (17.0 million), .NET (13.6 million), and .UK (11.0 million). It is differentiated from other TLDs, enjoys high levels of trust among users and registrants, and likely benefits from positive network effects.

151. Today, .ORG is open to all registrants. However, the TLD creates a strong expectation among internet users that the domains registered in .ORG relate to content or activity that serves

¹³² .tk is the Internet country code top-level domain (ccTLD) for Tokelau, a territory of New Zealand in the South Pacific. According to VeriSign .TK "is a free ccTLD that provides free domain names to individuals and businesses. Revenue is generated by monetizing expired domain names. Domain names no longer in use by the registrant or expired are taken back by the registry and the residual traffic is sold to advertising networks. As such, there are no deleted .tk domain names.

certain public interest. Indeed, .ORG is probably one of the best examples of a TLD-specific meaning and identity. GoDaddy, currently the largest registrar, says the following about .ORG:¹³³

A .org domain name helps you become a well-established brand of trust and integrity. One of the original top-level domains (TLDs), it became the choice for organizations dedicated to serving the public interest. Today, .org domains are considered some of the most trusted on the internet and tailor-made for non-commercial entities like:

- *Non-profits*
- *Foundations*
- *Cultural institutions*
- *Religious organizations*

If you're operating one of these, people expect to find you in the .org community. However, commercial organizations can also benefit with a .org domain linked to the business' charitable arm while other domain names protect the brand.

152. Many other registrars similarly position .ORG as distinguished from other TLDs.¹³⁴ And its registry, Public Interest Registry (PIR), advertises it as “a powerful signal that your site serves a greater good—rather than just a bottom line.”¹³⁵ One would be hard-pressed to find a similar and credible characterization for another TLD, among more than a thousand that are available for registration.

153. Potentially semantically close to .ORG are domains .NGO (which is an acronym for “non-government organization”) and .ONG (which is an acronym for a non-government organization in languages such as French, Italian, Spanish, Romanian and Portuguese). These TLDs are managed by .ORG registry operator, PIR. The two domains are sold in a bundle and were introduced in 2014.¹³⁶ The domains, however, despite being semantically similar, do not appear to be good substitutes for .ORG.¹³⁷ Indeed, by 2017, they generated about 4000 registrants each and have remained at this level until today.

¹³³ uk.godaddy.com. (n.d.). *.org Domain | Get a .org Domain Name Today - GoDaddy UK*. [online] Available at: <https://uk.godaddy.com/tlds/org-domain> [Accessed 3 Oct. 2021].

¹³⁴ See, for example, www.namecheap.com. (n.d.). *.org Domain Registration | Buy .org Domain Name - Namecheap*. [online] Available at: <https://www.namecheap.com/domains/registration/gtld/org/> [Accessed 20 Oct. 2021] or EuroDNS (2021). *.ORG: a trusted domain for organisations, but not only*. [online] www.eurodns.com. Available at: <https://www.eurodns.com/blog/org-a-trusted-domain-for-organisations-but-not-only> [Accessed 20 Oct. 2021].

¹³⁵ .ORG. (n.d.). *Why .ORG?* [online] Available at: <https://thenew.org/choose/why-org/> [Accessed 15 Oct. 2021].

¹³⁶ *.NGO Registry Agreement*. [online] Available at: <https://itp.cdn.icann.org/en/files/registry-agreements/ngo-agmt-pdf-06mar14-en.pdf> [Accessed 20 Oct. 2021] and *.ong Registry Agreement*. [online] Available at: <https://itp.cdn.icann.org/en/files/registry-agreements/ong/ong-agmt-pdf-06mar14-en.pdf> [Accessed 20 Oct. 2021].

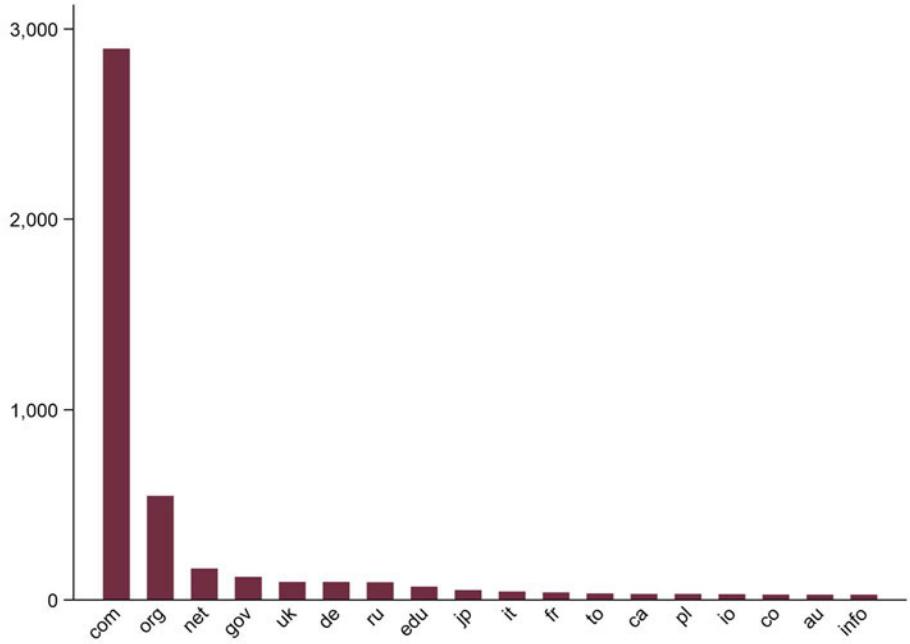
¹³⁷ Substitutes or not, we do not expect these gTLDs to intensely compete with .ORG because they are managed by the same registry, PIR.

154. Some registrants with primarily a commercial orientation, like Amazon or Google, have registered domains in .ORG. These registrations are often complementary to a primary domain in another TLD to which the domains automatically redirect (like in the case of amazon.com). Alternatively, these domains may point to web resources featuring non-profit activities of the registrant (in the case of Google). Both use cases are consistent with the analysis in Section A.1 where we have established that (1) TLDs often create expectations of internet users about the content of domains in the TLD, and (2) registrants generally have an incentive to match these expectations.
155. Moreover, its 30-plus-year legacy, a large number of domains registered in .ORG, and its connotation to content or activity serving a public interest together mean that it also enjoys higher levels of recognition and trust worldwide compared to most other TLDs.¹³⁸ We have described, in Section IX.A.2, how the relationship between user familiarity and trust can lead to positive network effects. Its position of a trusted TLD, long legacy, and the substantial number of registered domains in it suggest that .ORG also benefits from network effects.
156. The high frequency with which domains in .ORG appear among the top 5000 in the “Open Page Rank” by Domcop provides an indication of its high relevance relative to many other TLDs.¹³⁹ The Open Page Rank ranks websites, or associated domains, according to the number and quality of websites that provide a link to the website. It is thus a rough estimate of websites’ importance. The domains in .ORG are the second most frequently found among the top 5000 domains, substantially ahead of all other TLDs except for .COM.

¹³⁸ .ORG. (n.d.). *Why .ORG?* [online] Available at: <https://thenew.org/choose/why-org/> [Accessed 15 Oct. 2021].

¹³⁹ www.domcop.com. (n.d.). *Download list of top 10 million domains based on Open data from Common Crawl & Common Search.* [online] Available at: <https://www.domcop.com/top-10-million-domains> [Accessed 4 Oct. 2021].

Figure 1: Frequency of TLDs among top 5000 Internet websites

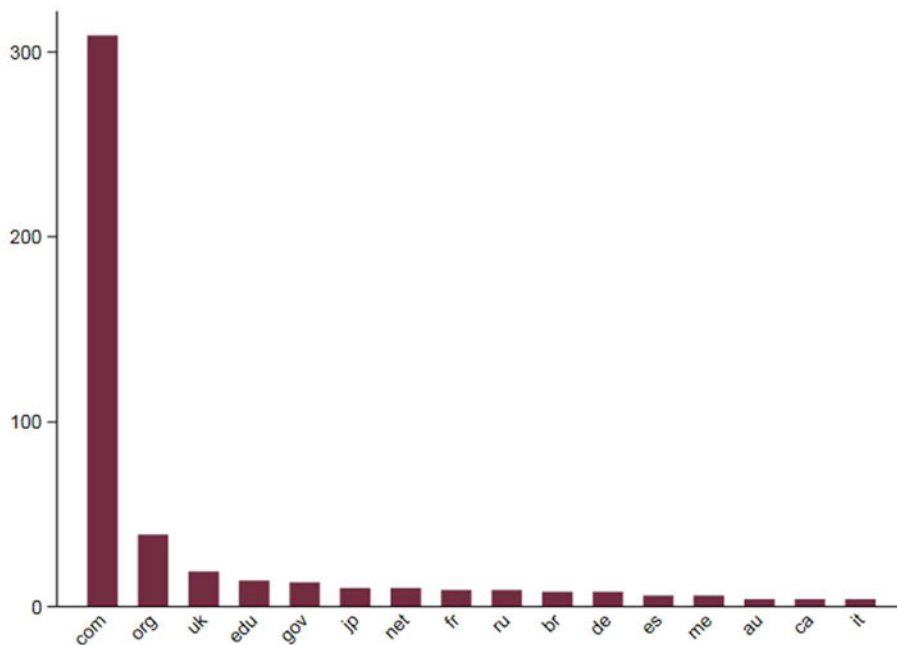


Source: E.CA Economics based on Domcop data.

157. Data for top 500 websites published by the SEO company MOZ confirms that .ORG is highly visible. MOZ ranks websites based on their likelihood that they will appear higher in a search engine results page.¹⁴⁰ .ORG websites are listed in the top 500 more frequently than .NET, .EDU, .GOV and any of the ccTLDs. At the same time, no new gTLD appears on the list more than once.

¹⁴⁰ Moz. (2019). *Domain Authority | 2019 SEO Best Practices*. [online] Available at: <https://moz.com/learn/seo/domain-authority> [Accessed 5 Oct. 2021].

Figure 2: Frequency of TLDs among 500 “most popular” internet websites



Source: E.CA Economics based on data by Moz.com.
Note: TLDs with 3 or fewer occurrences are not pictured.

- b) Data on DUMs and .ORG fees indicate that price caps were effective in the past and that new gTLDs and ccTLDs do not present an effective competitive constraint on .ORG

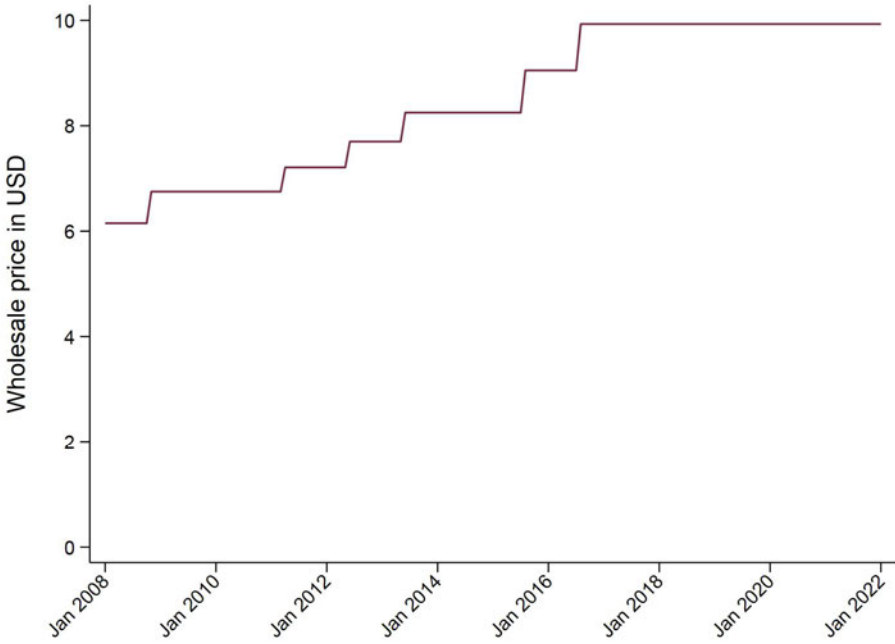
158. .ORG has been increasing its headline wholesale fees¹⁴¹ before and during the introduction of new gTLDs, until 2016, often up to the level allowed by the price cap implemented in .ORG RA.¹⁴² This indicates that price cap was effective in the past.¹⁴³

¹⁴¹ By headline wholesale fee we refer to the fee for domain name registration, renewal and transfer notified to ICANN by registry operators. See e.g. Raad, A.A.S. (2008). *Notice of Fee Increase (.org)*. [online] Available at: <https://www.icann.org/en/system/files/files/raad-to-twomey-01may08-en.pdf> [Accessed 12 Nov. 2021]; Raad, A.A.S. (2010). *Notice of Fee Increase (.org)*. [online] Available at: <https://www.icann.org/en/system/files/files/raad-to-beckstrom-07sep10-en.pdf> [Accessed 12 Nov. 2021]; or Maher, D. (2012). *Notice of Fee Increase (.org)*. [online] Available at: <https://www.icann.org/en/system/files/correspondence/maher-to-chehade-24dec12-en.pdf> [Accessed 12 Nov. 2021].

¹⁴² The .ORG Registry Agreements generally allowed an increase of the wholesale headline fee by 10% (See e.g. *.ORG Registry Agreement (2006)*). [online] Available at: <https://www.icann.org/en/registry-agreements/org/org-registry-agreement---8-dec-2006-amended-16-july-2008-16-7-2008-en>). The wholesale headline fee thus increased only by up to 10%. For example, in April 2011 from USD 6.75 to USD 7.21 (see Raad, A.A.S. (2010). *Notice of Fee Increase (.org)*. [online] Available at: <https://www.icann.org/en/system/files/files/raad-to-beckstrom-07sep10-en.pdf> [Accessed 12 Nov. 2021]) or from USD 7.7 to USD 8.25 in July 2013 (see Maher, D. (2012). *Notice of Fee Increase (.org)*. [online] Available at: <https://www.icann.org/en/system/files/correspondence/maher-to-chehade-24dec12-en.pdf> [Accessed 12 Nov. 2021]).

¹⁴³ As we noted in our First Report, the fact that a registry under price controls did not price its services at the cap level in some years does not necessarily indicate that price caps were not effective in those years. This is because ICANN had the possibility to review the evolution of prices and periodically, on every cycle, adjust the relevant price cap. The periodic review may have deterred the relevant registries from fully displaying their market power in the hope to avoid triggering a corrective action and tightening of the price controls in the next round of ICANN’s review.

Figure 3: Evolution of the wholesale headline fee for .ORG

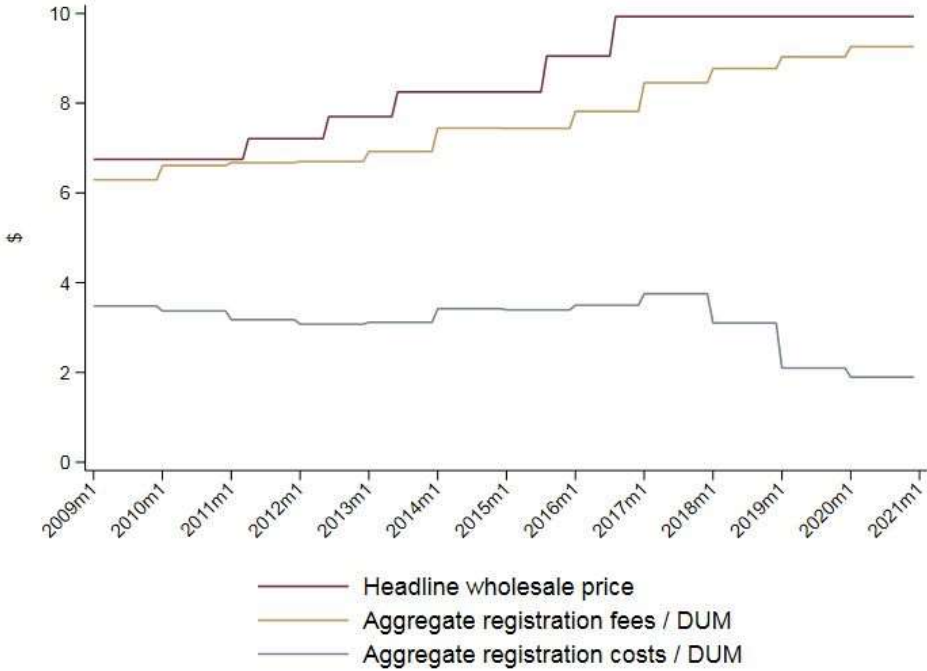


Source: E.CA Economics based on collected public wholesale price.

159. While the headline wholesale registration fee for .ORG has been flat at USD 9.93 since January 2016, the financial data from .ORG’s registry, Public Internet Registry (“PIR”), indicates that .ORG has continued to increase effective registry fees throughout the whole period of introduction of new gTLDs, between 2012 and 2021. The average effective fee can differ from the headline fee e.g. because of discounts and rebates that are not reflected in the headline wholesale registration fee. Figure 4 below depicts the average revenues per .ORG domain under management.¹⁴⁴

¹⁴⁴ For the average revenue per domain of PIR, the total registration fees of PIR in a calendar year are divided by the “Accredited” .ORG domains under management in January of the same year. Data on PIR’s registration fees is taken from its annual “Return of Organization Exempt From Income Tax” (also known as “Form 990”), a financial statement that contains - among other information - its annual revenues and expenditures (See .ORG. (n.d.). *990 and Annual Report*. [online] Available at: <https://thenew.org/org-people/about-pir/resources/990-annual-report/> [Accessed 1 Nov. 2021].). Data on domains under management is taken from ICANN data on DUMS as provided by Namecheap.

Figure 4: Average revenues per domain under management of PIR



Source: E.CA Economics based on Forms 990 of PIR and data from ICANN as provided by Namecheap.

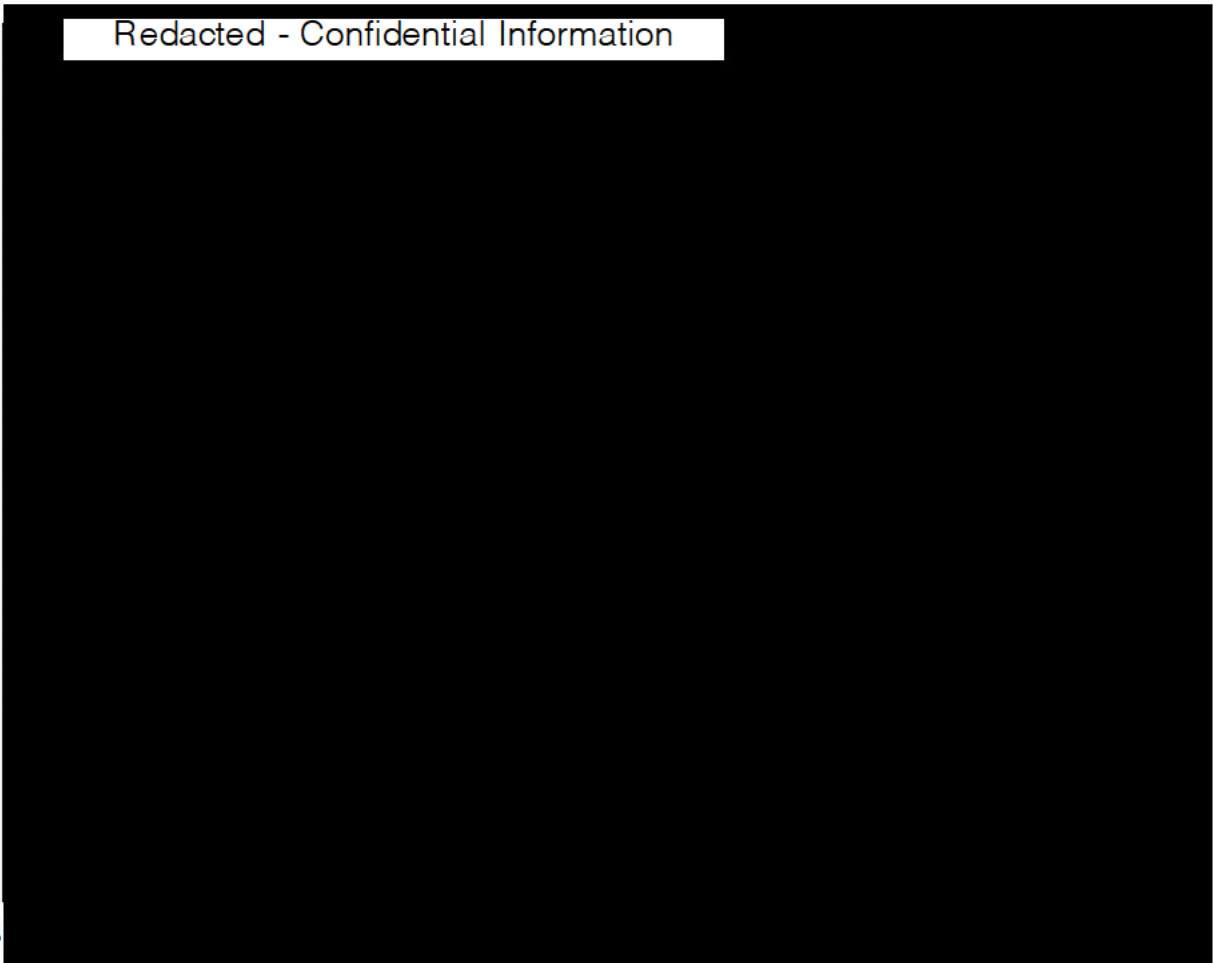
160. The actual wholesale fees for registrations and renewals—as charged to Namecheap—are also higher for .ORG compared to other large new gTLD and ccTLDs as shown in Figure 5.¹⁴⁵ For example, on average in 2021,¹⁴⁶ Namecheap paid USD 9.93 for renewal of the .ORG domains, while for the renewal of the .XYZ, .ICU and .TOP (the three largest new gTLDs by DUMs) it paid only USD 8.13, USD 4.98 and USD 3.43, respectively. This made the registry fee for .XYZ renewal about 20% cheaper and that of the .TOP renewal about 65% cheaper. The wholesale fees for new registrations paid by Namecheap were also substantially lower for the new gTLD as it paid on average only USD 0.20, USD 0.90 and USD 0.93 for .XYZ, .ICU and .TOP respectively, compared to USD 6.93 for .ORG.

161. Compared to .ORG, Namecheap also paid lower wholesale fees for registrations and renewals of many ccTLDs. For example, on average in 2021, Namecheap was paying for new registrations of .EU a wholesale registration fee amounting to USD 2.11, while for renewal USD 4.46; for .DE the wholesale new registration fee was 4.35 and for renewal 4.88; while for .UK the wholesale registration fee was 4.76 and wholesale renewal fee was USD 5.40.

¹⁴⁵ Given the non-discrimination provisions in RAs, the wholesale fees charged to Namecheap are a good indication of the wholesale fees more generally.

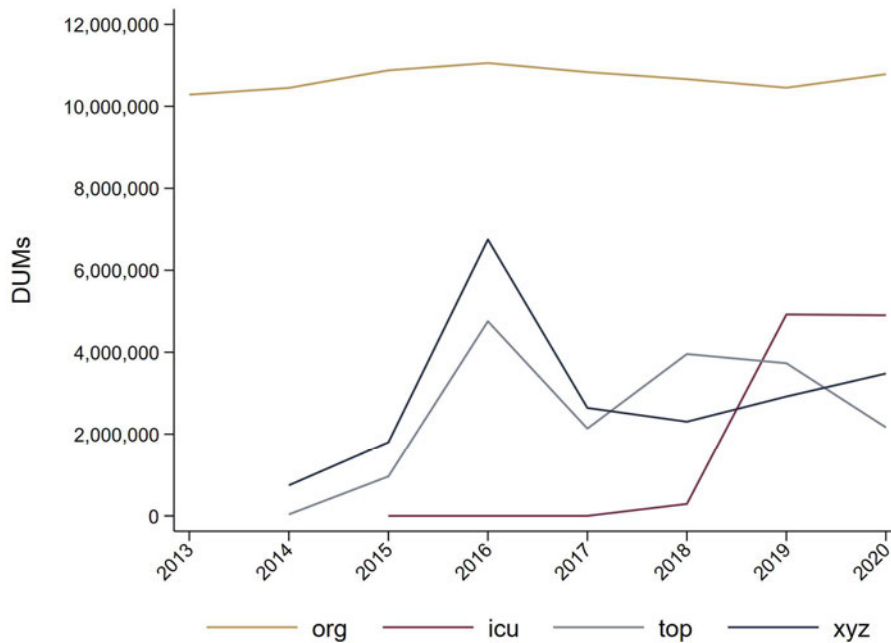
¹⁴⁶ The actual wholesale fees for 2021 throughout the report are calculated based on the period between 1st January 2021 and 20th November 2021.

Figure 5: Comparison of wholesale fees in 2021 - .ORG vs new gTLDs and ccTLDs



162. At the same time, while keeping wholesale fees at a relatively high level, the number of domains in .ORG has been stable, hovering between 10.4 and 11.1 million since at least 2013, while many of the larger new gTLDs have been fluctuating widely, as the following figure illustrates (the graph depicts only the three largest new gTLDs as of December 2020):

Figure 6: Domains under management - .org and largest ngTLDs



Source: E.CA Economics based on data by ICANN as provided by Namecheap.
 Note: The graph shows the value in December of each year.

163. The fact that the number of domains in .ORG has remained stable at the level at which it was before the introduction of new gTLDs, despite .ORG’s higher wholesale fees compared to many of the largest new gTLDs and ccTLDs, indicates that new gTLDs and ccTLDs have not presented an effective competitive constraint on .ORG.

164. Meanwhile, PIR’s costs per .ORG domain have decreased since 2018, as shown in Figure 4. Public reports attribute this to a new, more favorable contract for back-end services that PIR has been able to secure by running a competitive tender for registry back-end in late 2016. According to The Register, “PIR said it received and evaluated more than 20 potential service providers representing 15 countries.”¹⁴⁷ The new contract went into effect in January 2018. Lower registry costs mean that PIR’s margins were increasing. Its increasing wholesale margins are an indication that .ORG’s holds persistent market power.

2. Analysis of the market power of .INFO

165. Our analysis shows that .INFO holds a material degree of market power although likely to a lesser degree than .ORG. .INFO holds market power because many registrants of domains in

¹⁴⁷ McCarthy, K. (2016). *PIR saves millions in .org rebid*. [online] www.theregister.com. Available at: https://www.theregister.com/2016/11/14/pir_saves_millions_in_org_rebid/ [Accessed 15 Oct. 2021].

.INFO would face substantial switching costs if they registered the domain in a different TLD. Moreover, .INFO holds market power because:

- i. it is distinguished from other TLDs,
- ii. It likely benefits from positive network effects.

166. In addition, information on the level and evolution of .INFO wholesale registration fees and domain volumes also indicates that .INFO holds material market power and that price caps were likely effective in the past in constraining the extent to which .INFO was able to exercise its market power in the past.

a) INFO advertises itself as differentiated from other gTLDs and ccTLDs

167. .INFO advertises itself as aiming at a particular set of use cases, including to complement a domain in a different TLD. As .INFO is presented on INFO.INFO, section “Tips on Choosing a Domain Name”:¹⁴⁸

When you use a .INFO domain, you're telling the world that your website has information about a concept, an idea, a place or your business. A .INFO site can be a stand-alone one or can complement an existing commercial site. For example, the Overstock company uses a .com to sell items, but has "o.info" as a site that offers product information.

168. And in a section “why .INFO”, .INFO writes:¹⁴⁹

Fast access to information. That's the goal of Internet users all over the world. The .INFO domain is the logical choice for people creating informational websites and for people searching for information online.

169. This .INFO’s differentiation from other TLDs reduces the extent to which it competes with them.

170. Further, while the number of domains in .INFO is substantially lower than .ORG, it was nevertheless the fifth largest gTLDs with over 4.4 million domains under management in December 2020. This suggests that .INFO has been benefiting from a certain degree of positive network effects, although likely to a lesser extent than .ORG.

171. Although .INFO had only 25 websites among the top 5000 in the “Open Page Rank” by Domcop (Figure 1 above), it is still ahead of any new gTLD. In that regard, we note that .TK, which is the second most popular domain overall, is not among the top 18 TLDs as ranked by the Open

¹⁴⁸ .Info. (n.d.). Tips on Choosing a Domain Name. [online] Available at: <https://info.info/get-info/tips-choosing-domain-name> [Accessed 18 Oct. 2021].

¹⁴⁹ .Info. (n.d.). Why .INFO? [online] Available at: <https://info.info/why-info> [Accessed 18 Oct. 2021].

Page Rank, which is an indication that the number of DUMs is only one, not necessarily the most important, indicator of the 'importance' of a TLD.¹⁵⁰

- b) Data on DUMs and .INFO wholesale registration fees indicate that new gTLDs and ccTLDs do not present an effective competitive constraint and that price caps were effective in the past

172. The .INFO registry has been increasing its headline wholesale fee¹⁵¹ before and during the introduction of new gTLDs up to the level allowed by the .INFO RA.¹⁵² This indicates that the price cap on .INFO was effective in the past.¹⁵³

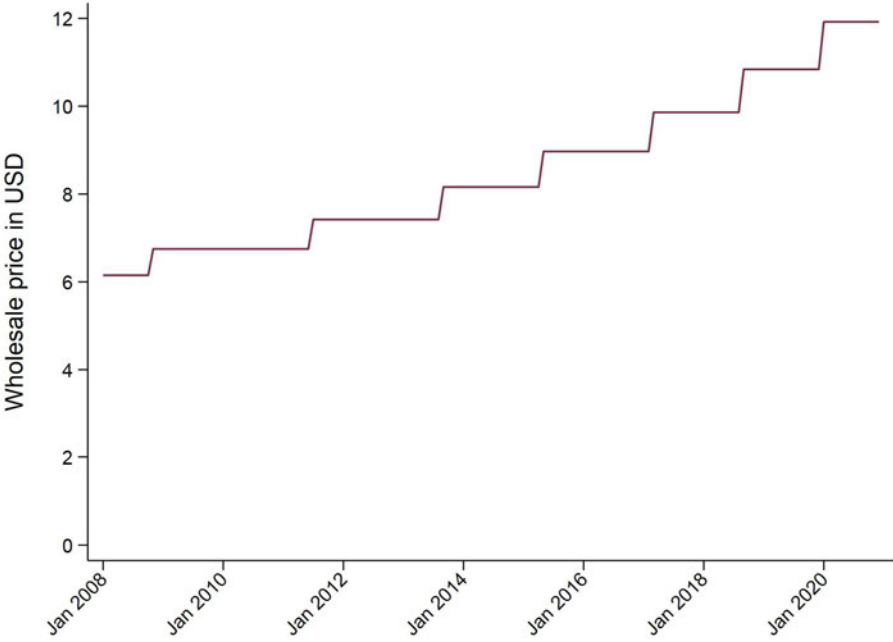
¹⁵⁰ .TK is the Internet country code top-level domain (ccTLD) for Tokelau, a territory of New Zealand in the South Pacific. According to VeriSign .TK "is a free ccTLD that provides free domain names to individuals and businesses. Revenue is generated by monetizing expired domain names. Domain names no longer in use by the registrant or expired are taken back by the registry and the residual traffic is sold to advertising networks. As such, there are no deleted .tk domain names." Thus .TK is a perfect example of high volume, but low quality TLD.

¹⁵¹ By headline wholesale fee we refer to the fee for domain name registration, renewal and transfer notified to ICANN by registry operators. See e.g. LaPlante, R. (2008). *Notice of Fee Increase (.info)*. [online] Available at: <https://www.icann.org/en/system/files/files/laplante-to-twomey-29apr08-en.pdf> [Accessed 12 Nov. 2021]; Heflin, S. (2010). *Notice of Fee Increase (.info)* [online] Available at: <https://www.icann.org/en/system/files/files/heflin-to-beckstrom-22nov10-en.pdf> [Accessed 12 Nov. 2021]; LaPlante, R. (2013). *Notice of Fee Increase (.info)*. [online] Available at: <https://www.icann.org/en/system/files/correspondence/laplante-to-chehade-26feb13-en.pdf> [Accessed 12 Nov. 2021].

¹⁵² The wholesale headline fee was from for example from November 2008 USD 6.75 (See LaPlante, R. (2008). *Notice of Fee Increase (.info)*. [online] Available at: <https://www.icann.org/en/system/files/files/laplante-to-twomey-29apr08-en.pdf> [Accessed 12 Nov. 2021]; from July 2011 USD 7.42 (See Heflin, S. (2010). *Notice of Fee Increase (.info)* [online] Available at: <https://www.icann.org/en/system/files/files/heflin-to-beckstrom-22nov10-en.pdf> [Accessed 12 Nov. 2021]); and from September 2013 USD 8.16 (See LaPlante, R. (2013). *Notice of Fee Increase (.info)*. [online] Available at: <https://www.icann.org/en/system/files/correspondence/laplante-to-chehade-26feb13-en.pdf> [Accessed 12 Nov. 2021]).

¹⁵³ e.g. the wholesale headline fee for .INFO increased in July 2011 from USD 6.75 to USD 7.42, while the .INFO Registry Agreement allowed increased by 10% (See *.INFO Registry Agreement (2006)*. [online] Available at: <https://www.icann.org/en/registry-agreements/info/info-registry-agreement---8-december-2006-amended-26-may-2010-amended-15-september-2010-15-9-2010-en> [Accessed 4 Oct. 2021].) or the wholesale headline fee increased in September 2013 from 7.42 to 8.16, while the price cap allowed increase by 10% (see *.INFO Registry Agreement (2013)*. [online] Available at: <https://www.icann.org/en/registry-agreements/info/info-registry-agreement---22-august-2013-22-8-2013-en> [Accessed 4 Oct. 2021].)

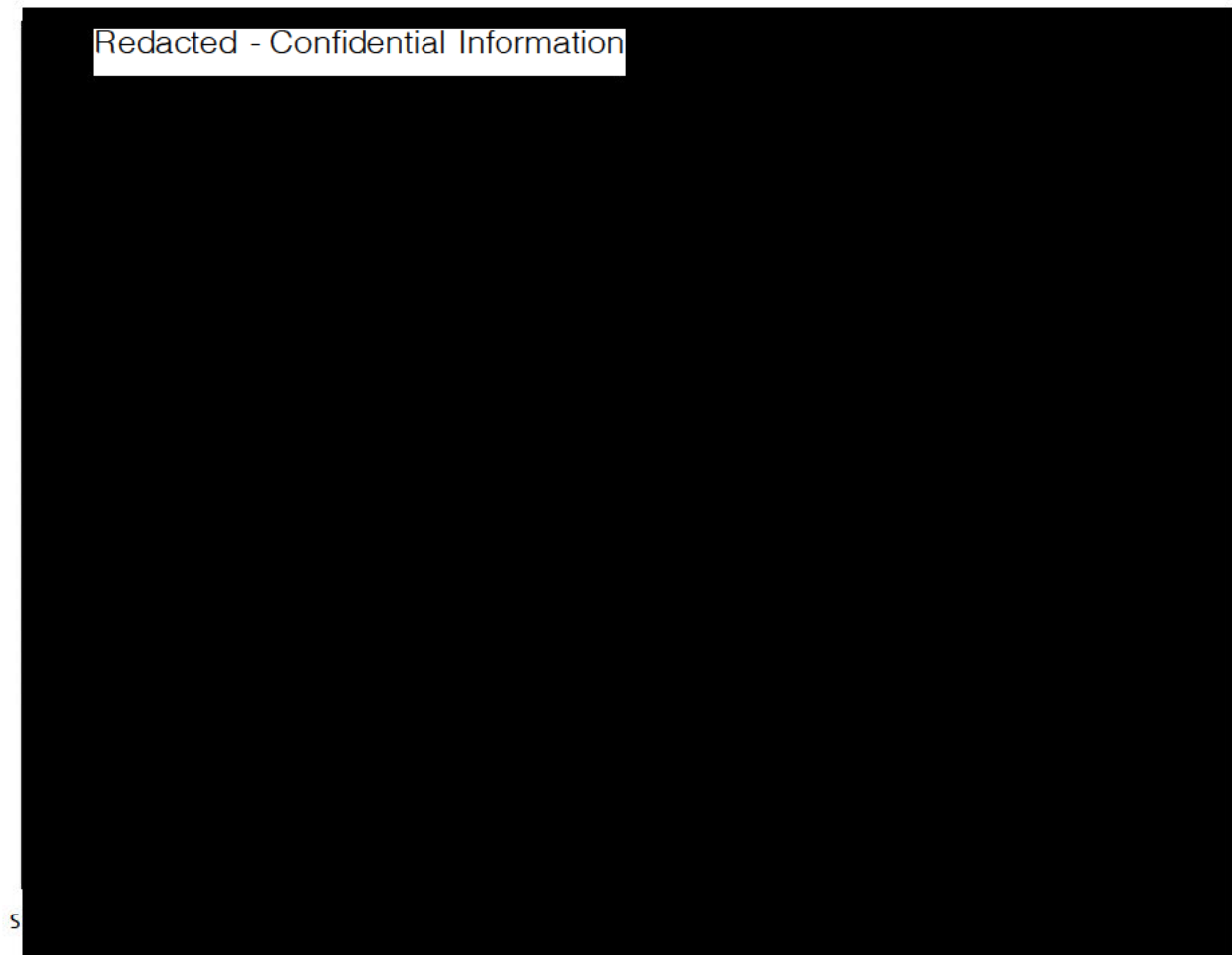
Figure 7: Evolution of the wholesale headline fee for .INFO



Source: E.CA Economics based on collected public wholesale price.

- 173. The actual .INFO wholesale fees for registrations and renewals—as charged to Namecheap—have also been increasing as shown in Figure 8. In 2018 Namecheap paid on average a wholesale registration fee of USD 1.32, while in 2021 it was USD 3.22. The average wholesale renewal fee for .INFO has also grown from 10.19 in 2018 to 13.12 in 2021.
- 174. The .INFO actual wholesale registration and renewal fees have been generally increasing despite the fact that some of the new gTLDs actual wholesale registration and renewal fee has been significantly below .INFO’s. For example, in 2021, for renewal of .XYZ, .ICU and .TOP (the three largest new gTLDs by DUMs) Namecheap paid on average wholesale renewal fees of USD 8.13, USD 4.98 and USD 3.43, respectively. Similar applies also to the wholesale renewal fee for some larger ccTLD as shown in Figure 8.

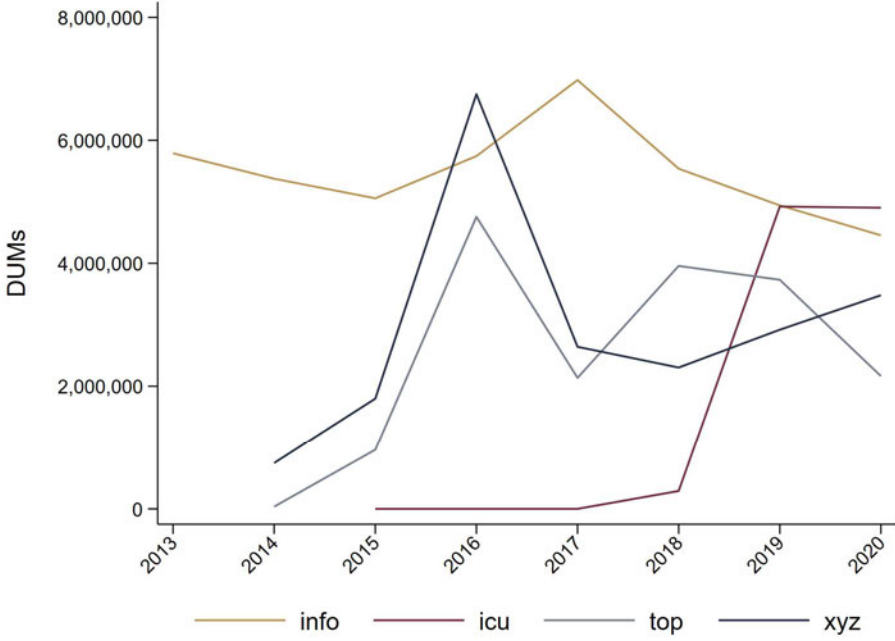
Figure 8: Comparison of wholesale fees in 2021 - .INFO vs ngTLDs and ccTLDs



175. .INFO's DUMs have only moderately (by about 10%) decreased in the period of fastest expansion of new gTLDs between 2014 and 2020, from 5.1 million to 4.5 million as illustrated in Figure 9.¹⁵⁴

¹⁵⁴ The period of "fastest expansion" of new gTLDs was until 2016/2017, and this is also when .INFO peaked.

Figure 9: Domains under management - .INFO and largest ngTLDs



Source: E.CA Economics based on data by ICANN as provided by Namecheap.
 Note: The graph shows the value in December of each year.

176. The fact that .INFO was able to (1) keep fees well above some of the large new .gTLDs and ccTLDs, and (2) increase the fees since the introduction of new gTLDs, without losing a significant share of customers indicates that new gTLDs have not presented a highly effective competitive constraint on .INFO.

177. It is reasonable to assume that the costs of providing registry services for .INFO have remained stable, or even decreased, over the period 2010-2020, similarly to .ORG registry costs per DUM presented in Figure 4.¹⁵⁵ Together with increasing wholesale registry fees, this implies that .INFO's margins were likely increasing in the period, indicating persistent market power of .INFO.

3. Analysis of market power of .BIZ

178. Our analysis shows that .BIZ holds a certain degree of market power, although potentially less than .INFO. .BIZ holds market power because many registrants of domains in .BIZ would face substantial switching costs if they decided to register their primary domain in a different TLD. Moreover, .BIZ is differentiated from other TLDs and may benefit from positive network effects.

179. Information on the level and evolution of .BIZ wholesale registration fees and domain volumes are consistent with market power of .BIZ. This information also confirms that price caps were

¹⁵⁵ This assumption is reasonable because the registry of .INFO has available similar options, and every incentive, to reduce costs of registry services per DUM as .ORG has.

likely effective in the past in constraining the extent to which .BIZ was able to exercise its market power in the past.

a) .BIZ is differentiated from other gTLDs and ccTLDs

180. Like .INFO, .BIZ was created in 2001 in the first batch of new gTLDs approved by ICANN. Until recently, .BIZ was a restricted domain in that the registrations in the .BIZ TLD were intended primarily for bona fide businesses or commercial purpose.¹⁵⁶ While this restriction has been removed, .BIZ is still advertised as the domain for businesses.

181. GoDaddy thus says the following about .BIZ:¹⁵⁷

Show the world you're a business with a distinctive website URL. Not only will a .biz domain name attract more prospects, it will raise your visibility with the media and investors. .biz means you're all business! Open to registration by anyone.

182. And Google Domains writes:¹⁵⁸

Used by millions of businesses in over 200 countries and territories, .biz is the domain of choice for hardworking businesses looking to establish their online presence and take advantage of greater opportunities. From the corner bakery to international corporations, .biz is the domain of choice.

Available since 2001, .biz is a tried and true digital presence that can help your business succeed. People everywhere recognize .biz as a trusted domain for their business.

183. .BIZ's focus on businesses reduces the extent to which .BIZ competes with TLDs with a different focus, for example .ORG or .INFO.

184. While .BIZ's DUMs have decreased moderately since 2012 .BIZ is still among the top 10 largest gTLDs with almost 1.5 million DUMs and may therefore also benefit from positive network effects.

b) Data on DUMs and .BIZ registry fees are consistent with market power of .BIZ

185. .BIZ has been increasing the headline wholesale fee before and during the introduction of new gTLDs as illustrated in Figure 10.¹⁵⁹ The price increases of .BIZ were generally equal to the

¹⁵⁶ .BIZ Agreement Appendix 11 .biz Registration Restrictions.[online] Available at: <https://www.icann.org/en/registry-agreements/biz/biz-registry-agreement--registration-restrictions-8-12-2006-en> [Accessed 20 Oct. 2021].

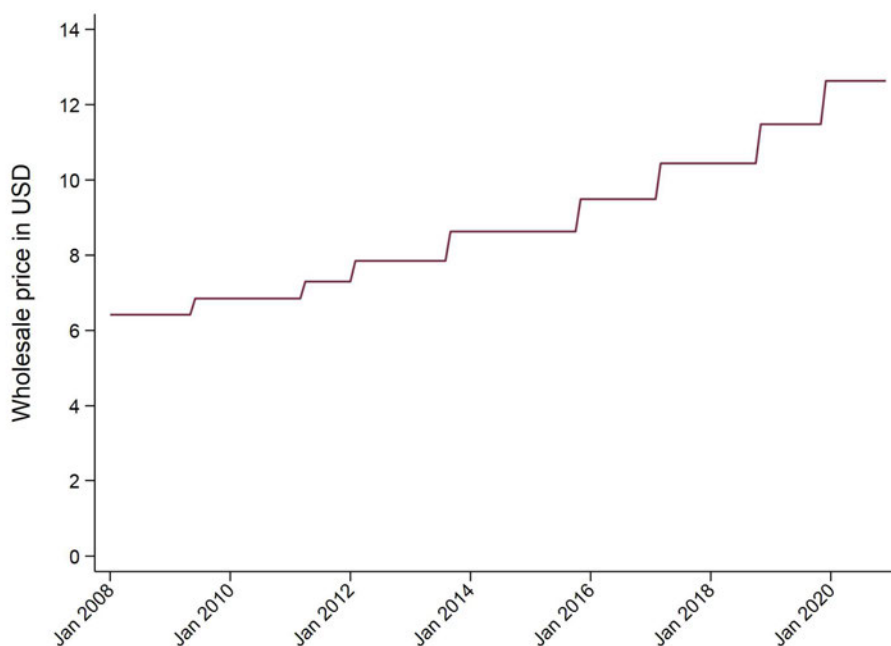
¹⁵⁷ uk.godaddy (2021). .biz Domain Name. [online] Available at: <https://uk.godaddy.com/tlds/biz-domain#> [Accessed 12 Nov. 2021].

¹⁵⁸ Google Domains. (n.d.). .biz means business. [online] Available at: <https://domains.google/tld/biz/> [Accessed 4 Nov. 2021].

¹⁵⁹ By headline wholesale fee we refer to the fee for domain name registration, renewal and transfer notified to ICANN by registry operators. See e.g. Switzer, T. (2010). Notice of Fee Increase (.biz). [online] Available at:

maximum increases allowed by the .BIZ RA, i.e. by up to 10% per year.¹⁶⁰ This means that the price constraint on .BIZ was likely effective in the past.

Figure 10: Evolution of the wholesale headline fee for .BIZ



Source: E.CA Economics based on collected public wholesale price.

186. The wholesale registration fees for .BIZ—as charged to Namecheap—were higher than many of the larger new gTLDs and some ccTLDs. Specifically, the more significant new gTLDs have kept both registration and renewal fees at levels much lower than .BIZ’s (e.g. in terms of renewal fees .TOP was about 60% cheaper in 2018 and is now 70% cheaper, .XYZ is about 35% cheaper and .ICU around 60% cheaper). While .BIZ in 2020 and 2021 set its wholesale new registration fees below of some of the larger ccTLDs, .BIZ continues to set wholesale renewal fees much higher than these ccTLDs.

<https://www.icann.org/en/system/files/files/switzer-to-beckstrom-29sep10-en.pdf> [Accessed 12 Nov. 2021]; Neuman, J. (2011). *Notice of Fee Increase (.biz)* [online] Available at: <https://www.icann.org/en/system/files/files/neuman-to-beckstrom-29jul11-en.pdf> [Accessed 12 Nov. 2021]; Neuman, J. (2013). *Notice of Fee Increase (.info)*. [online] Available at: <https://www.icann.org/en/system/files/correspondence/neuman-to-chehade-22feb13-en.pdf> [Accessed 12 Nov. 2021].

¹⁶⁰ The .BIZ Registry Agreements allowed generally an increase of the wholesale headline fee by 10% (See e.g. *.biz Registry Agreement (2006)*. [online] Available at: <https://www.icann.org/en/registry-agreements/biz/biz-registry-agreement---signed-11-may-2001-amended-18-june-2003-18-6-2003-en> [Accessed 4 Oct. 2021]). The wholesale headline fee thus increased only by up to 10%. For example, from USD 6.85 to USD 7.30 in April 2011 (see Switzer, T. (2010). *Notice of Fee Increase (.biz)*. [online] Available at: <https://www.icann.org/en/system/files/files/switzer-to-beckstrom-29sep10-en.pdf> [Accessed 12 Nov. 2021]; from USD 7.30 to USD 7.85 in February 2012 (see Neuman, J. (2011). *Notice of Fee Increase (.biz)* [online] Available at: <https://www.icann.org/en/system/files/files/neuman-to-beckstrom-29jul11-en.pdf> [Accessed 12 Nov. 2021]); and from USD 7.85 to USD 8.63 in September 2013 (see Neuman, J. (2013). *Notice of Fee Increase (.info)*. [online] Available at: <https://www.icann.org/en/system/files/correspondence/neuman-to-chehade-22feb13-en.pdf> [Accessed 12 Nov. 2021]).

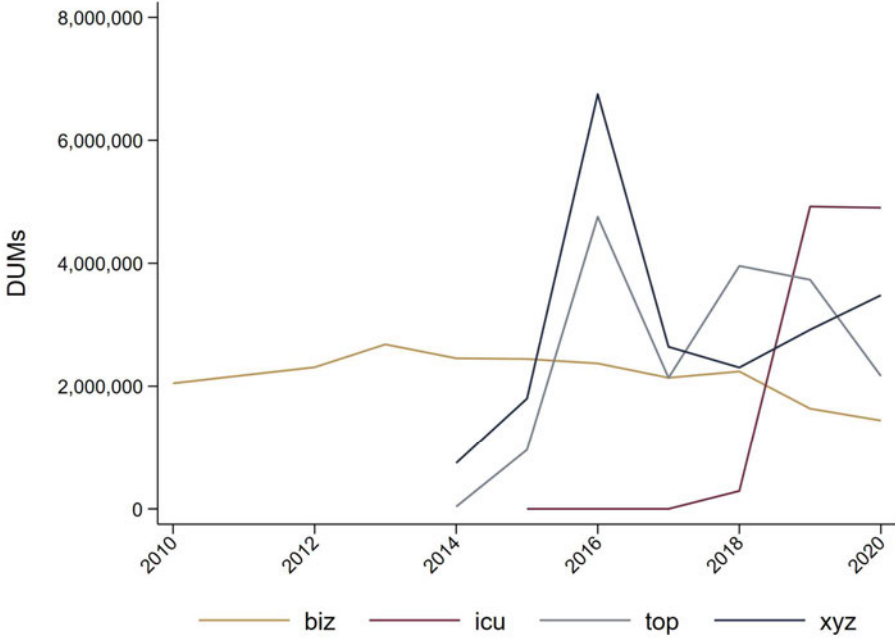
Figure 11: Comparison of wholesale fees in 2021 - .BIZ vs ngTLDs and ccTLDs

Redacted - Confidential Information

187. The fact that .BIZ was able to keep fees well above some of the large new .gTLDs and ccTLDs, indicates that new gTLDs and ccTLDs have not presented an effective competitive constraint on .BIZ.
188. It is reasonable to assume that the costs of providing registry services for .BIZ have remained stable or even decreased over the period 2010-2020, similarly to .ORG registry costs per DUM presented in Figure 4.¹⁶¹ Together with its increasing wholesale registry fees, this implies that .BIZ's margins were likely increasing in the period, indicating persistent market power of .BIZ.
189. Moreover, .BIZ DUM figures are relatively stable compared to the larger new gTLDs, as Figure 12 illustrates. The stable demand for registrations in .BIZ also indicates that .BIZ holds market power.

¹⁶¹ This assumption is reasonable because the registry of .INFO has available similar options to reduce costs of registry services per DUM as .ORG has.

Figure 12: Domains under management - .BIZ and largest new gTLDs



Source: E.CA Economics based on data by ICANN as provided by Namecheap.
 Note: The graph shows the value in December of each year.

D. Interim conclusions

- 190. We have established that .ORG, .INFO, and .BIZ hold considerable persistent market power, where .ORG likely holds most. These gTLDs hold market power because (i) the registrants in these gTLDs face significant switching costs, (ii) the gTLDs are differentiated from other TLDs, and (iii) they may benefit from positive network effects.
- 191. Various metrics are consistent with market power of these gTLDs: prices, margins and volumes. Specifically, despite setting higher wholesale registration fees than certain other large new gTLDs, .INFO, .BIZ, and especially .ORG, did not lose a significant share of customers since 2012. Moreover, .ORG’s margins were increasing throughout the period 2010-2020, which indicates that .ORG maintained or even increased market power. It is likely that .INFO and .BIZ’s margins have also been increasing throughout the period.
- 192. We also established that price caps were likely effective in curbing the exercise of market power of these gTLDs in the past. Because .ORG, .INFO and .BIZ hold persistent market power, price caps could continue to curb the exercise of market power of these gTLDs in the future, thereby improving the economic outcomes in the DNS space.

X. THE SCOPE FOR PRICE CAPS TO WORSEN THE ECONOMIC OUTCOMES IN THE DNS SPACE IS LIMITED

193. In this section, we assess the risk that price caps on .ORG, .INFO, and .BIZ would worsen economic outcomes by hindering the efficient competitive process in the DNS space. Specifically, we consider the risk that price caps would:

- i. lead to inefficient demand rationing;
- ii. limit efficient entry of new gTLDs;
- iii. lead to a reduction in quality of registry services; or
- iv. facilitate tacit coordination.

194. We find that price caps on .ORG, .INFO and .BIZ did not, and do not, present a significant risk of any of these potential adverse effects.

A. There is no significant risk that price caps would result in demand rationing

195. A potential negative effect of price caps on .ORG, .INFO or .BIZ is that they may lead to inefficient rationing of demand for registrations in these gTLDs. Such rationing could occur if some potential registrants were willing to pay the registration fee higher than a price cap, but the registry would not find it profitable to provide registry services to them at the capped price. Such demand rationing may arise if the costs of providing registry services for an additional domain in a TLD (i) were above the level of the price cap, or (ii) would rise above that level as the number of registrations in the TLD increases or decreases in the future.¹⁶²

196. The risk that price caps have caused or would cause such an adverse outcome in relation to either .ORG, .INFO or .BIZ is low. First, like with many largely automatized IT-based services, which the critical functions of a gTLD registry are, it is reasonable to assume that the costs of providing registry services for an additional domain in a TLD are relatively low and likely do not respond strongly to a change in the number of domains in a gTLD.¹⁶³ Second, the price cap on each of these gTLDs was—and would likely in the future be—set above these costs.¹⁶⁴ In Section IX, we have established that this was the case for .ORG (see e.g. Figure 4). Because .ORG, .INFO and .BIZ use essentially the same (or very similar) technology for backend registry services, it is reasonable to assume that .INFO and .BIZ have had comparable costs to .ORG for providing registry services to an additional registrant. At the same time, price caps for .INFO and .BIZ were set at comparable levels to the price cap for .ORG, as shown in Figure 3, Figure 7 and

¹⁶² Such situation occurs for example in the context of price caps on rent or rent control provisions. The introduction of rent control provisions usually lead to a shortage of housing as landlords are not willing to rent the apartments for prices below their costs. Furthermore, landlords are also not willing to build new apartments or maintain the existing ones as they are not incentives with higher rents that would cover their costs (See e.g. Gregory Mankiw (2020). *Principles Of Economics*).

¹⁶³ ICANN defined the functions that are critical to the operation of a gTLD registry: (1) DNS resolution, (2) DNSSEC properly signed zone (if DNSSEC is offered by the registry), (3) Shared Registration System, (4) Registration Data Directory Services, and (5) Registry Data Escrow. (See [www.icann.org](https://www.icann.org/resources/pages/transition-processes-2013-04-22-en). (n.d.). *Registry Transition Processes - ICANN*. [online] Available at: <https://www.icann.org/resources/pages/transition-processes-2013-04-22-en> [Accessed 8 Nov. 2021]). We understand that these critical functions are automatized using IT hardware and software.

¹⁶⁴ As explained in section VIII, regulators usually set price caps some amount above unit costs.

Figure 10 in Section IX. An additional indication that the price caps for .INFO and .BIZ were set substantially above the costs of providing an additional unit of registry service for these gTLDs is that both the registration and renewal fees for these legacy gTLDs were set substantially above the fees of many of the larger new gTLDs and ccTLDs, as shown in Section IX, in Figure 5, Figure 8 and Figure 11.

197. Because price caps were set above the costs of registry services for an additional domain registration, it was profitable for the registries of the scrutinized gTLDs to provide registry services to all interested registrants.¹⁶⁵ This would remain the case in the foreseeable future, if price caps were set at comparable levels as in the past, for any plausible increase or decrease in domains under management in .ORG, .INFO and .BIZ. This is because the cost for an additional domain do not change much with changes in the number of domains. In other words, the risk that price caps have led, or would have led, to inefficient rationing is low.

B. The scope for price caps to hinder the entry of new gTLDs is limited

198. Another potential concern with price caps on legacy gTLDs is that they could deter the entry of efficient new gTLDs. Such argument would have to assume a sufficiently close competition between legacy gTLDs and new gTLDs upon successful entry. In this case, one might argue that low profits—due to price caps—made by an incumbent gTLDs indicate limited opportunities to gain profitability for the new gTLDs. By bringing profits to low levels, price caps could therefore deter entry.

199. However, as we have established in section IX.A.1, gTLDs are differentiated. Because of that, and because registrants face switching costs, there is limited substitution between each of the legacy gTLDs (specifically .ORG, .INFO and .BIZ) and new gTLDs. Accordingly, the profitability at prevailing registration fees—irrespective of whether they are subject to price caps or not—for .ORG, .INFO and .BIZ is not a good proxy for the likelihood of a success of a new gTLD. The new entrants must come up with a distinct gTLD to generate material new demand as their potential to attract the existing customers of legacy gTLDs is relatively low.

200. Moreover, even if there were effective competition between legacy and new gTLDs and, accordingly, a close relation between the profitability of the two groups of gTLDs, price caps as were in place on .ORG, .INFO and .BIZ would have been unlikely to hinder efficient entry. This is because, as we have argued in X.A, price caps were set well above the unit cost levels, leaving ample scope for entry of efficient competitors.

201. Consistently with that, with price caps in place, and no indication that ICANN would remove them before 2018, ICANN had over 1,900 applications for new gTLDs during the three expansion

¹⁶⁵ Consistent with that, we are not aware of any rationing of registry services by any of the scrutinized TLDs in the past.

rounds. The majority of these applications were open gTLDs. This strong demand for entry with new gTLDs also indicates the price caps were no deterrent for new market entrants.¹⁶⁶

202. For these reasons, price caps were unlikely to limit an efficient entry and would be unlikely to do so in the foreseeable future. To the contrary, their removal creates a risk of registry fee increases without triggering additional entry.

C. Price caps are unlikely to lead to a reduction in quality of registry services

203. Price caps may also limit the ability of firms that successfully improved the quality of their products or services to set higher prices and realize higher margins. In principle, price caps could therefore hamper the incentives for registries to improve the quality of their registry services.¹⁶⁷ However, price caps on .ORG, .INFO, and .BIZ were unlikely to have had a significant such adverse effect.

204. First, we are not aware of any reports that registry services for .ORG, .INFO or .BIZ were systematically inferior in terms of quality compared to the quality of registry services of uncapped larger TLDs during more than 17 years when these gTLDs were subject to price caps.¹⁶⁸ There are no reasons for this to be any different today and in the foreseeable future if price caps were in place. We are also not aware of any reports that the registry services for .COM and .NET, which have been and remain price-capped, were inferior in terms of quality compared to registry services for uncapped TLDs. This past experience indicates that price caps have not had a significant adverse effect on the quality of registry services and that they are not likely to have it in the future.

205. Second, ICANN has been defining minimum performance levels and service functionalities that registries must provide through accredited registrars as part of its considerations when granting rights to operate the registry through an RA. These provisions are important for equal access of unaffiliated registrars to registry services and thus for effective competition at the registrar level, whether price caps are in place or not. The provisions can ensure that registry services are provided at proper level of quality even when price caps are in place.

206. Third, registries today have a number of back-end registry operators available for critical functions of a TLD registry. These are organizations contracted by a registry to run one or more of the critical functions of a TLD registry.¹⁶⁹ Such independent back-end operators would retain the incentive to continue improving the quality of services irrespectively of whether price caps were in place on .ORG, .INFO, and .BIZ because they compete with one another for the provision

¹⁶⁶ newgtlds.icann.org. (n.d.). *New gTLD Reveal Day - Applied-for Strings | ICANN New gTLDs*. [online] Available at: <https://newgtlds.icann.org/en/announcements-and-media/announcement-13jun12-en> [Accessed 12 Nov. 2021].

¹⁶⁷ Price caps, however, generally do not hamper the incentives for firms to reduce their costs. This is because the firm that reduces its costs can appropriate the gains in the form of higher margins with price caps in place.

¹⁶⁸ These gTLDs were subject to price caps between at least 2001 and 2019.

¹⁶⁹ www.icann.org. (n.d.). *Registry Transition Processes - ICANN*. [online] Available at: <https://www.icann.org/resources/pages/transition-processes-2013-04-22-en> [Accessed 12 Nov. 2021].

of their service to registries. In fact, the registry of .ORG, PIR, uses a third-party back-end operator which it has contracted after holding a competitive tender for these services.

207. Finally, ICANN may allow a registry to ask for price caps to be increased in situations where they are unable to profitably maintain the high quality of the service (e.g. because of increased costs of providing the service) due to price caps. For example, in the .COM registry agreement there is an option to increase the wholesale fee in relation to documented extraordinary expense resulting from an attack or threat of attack on the Security or Stability of the DNS.¹⁷⁰

D. Price caps are unlikely to facilitate tacit coordination

208. It is unlikely that price caps on .ORG, .INFO and .BIZ have or would have facilitated tacit coordination.¹⁷¹ Tacit coordination is primarily a concern in markets where the products are close substitutes. In such circumstances, absent coordination, competition keeps prices at low levels, close to unit costs. To profitably set higher prices, firms would need to coordinate their pricing.

209. In contrast, a registry of a TLD that holds market power does not need to coordinate the TLDs pricing with registries of other TLDs to profitably set the price above competitive levels. We have shown in Section IX that .ORG, .INFO, and .BIZ each hold market power. Because they hold market power, the registries of these gTLDs likely did not have much interest in tacitly coordinating registration fees in the first place and are unlikely to have much such interest in the future. The risk that price caps have worsened or would have worsened the economic outcomes by facilitating tacit price coordination is therefore limited.

210. Moreover, there are no indications that registries of .ORG, .INFO, or .BIZ were tacitly coordinating their prices with new gTLDs in the past. Indeed, as reported by Rafert and Tucker in their phase I and phase II reports, throughout the third gTLD expansion round, the price dispersion across gTLDs has been significant.¹⁷² This considerable price dispersion either indicates that the gTLDs are not close substitutes (in which case price coordination is not credible as explained earlier) or, assuming the gTLDs were close substitutes—which they are not—it indicates absence of price coordination.

211. As Table 2 shows, the amount of price dispersion today remains considerable. For example, the interquartile range - i.e. the range of the middle half of all the prices for one-year registration of all gTLDs when they are ordered from lowest to highest - of wholesale prices for legacy gTLDs is USD 3.43 to USD 8.39, while for the new gTLDs it is USD 3.37 to USD 10.00. The comparison

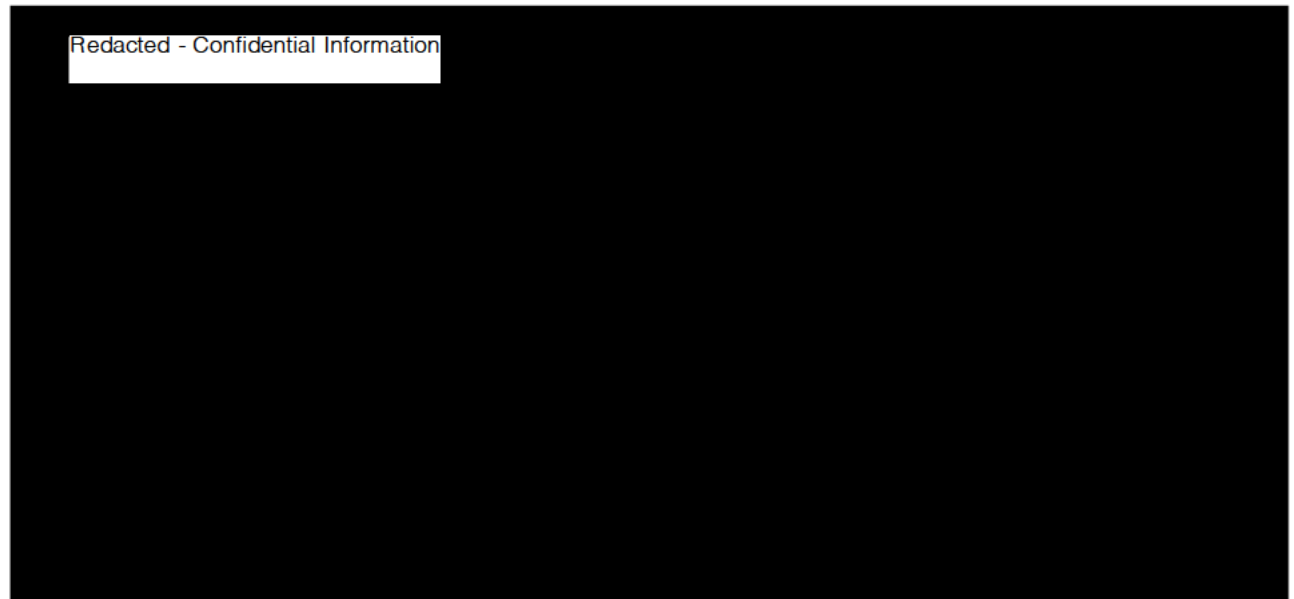
¹⁷⁰ *.com Registry Agreement from 2012*. [online] Available at: <https://www.icann.org/en/registry-agreements/com/com-registry-agreement-1-12-2012-en> [Accessed 4 Oct. 2021].

¹⁷¹ See Section VII.A.1

¹⁷² Rafert, G. and Tucker, C. (2015). *Phase I Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-one-assessment-28sep15-en.pdf>, p. 21. Rafert, G. and Tucker, C. (2016). *Phase II Assessment of the Competitive Effects Associated with the New gTLD Program*. [online] Available at: <https://newgtlds.icann.org/en/reviews/cct/competitive-effects-phase-two-assessment-11oct16-en.pdf>, p. 37.

of prices of .ORG, .INFO and .BIZ to some of the largest new gTLDs and ccTLDs in Section IX also confirm a considerable amount of price dispersion.

Table 2: Wholesale fee dispersion in October 2021



Redacted - Confidential Information

XI. CONCLUSIONS: ANSWERS TO QUESTIONS II AND III POSED BY THE COUNSEL

212. In this section we answer questions ii. and iii. posed by the counsel. For this, we assess the economic trade-offs that may arise when price caps are imposed (or removed) on .ORG, .INFO and .BIZ.
213. As explained in Section VII, a registry that holds market power in relation to a TLD can profitably increase the wholesale registration fees for the TLD above competitive benchmark levels. The fee increase, in turn, leads to higher retail registration fees and a reduction in registration volumes in the TLD to levels below socially optimal ones. A price cap on a TLD with market power can improve economic outcomes by bringing its wholesale fees to a lower level, closer to a competitive benchmark, where the registration volumes and the overall economic efficiency are higher.
214. When unchecked by price caps, market power held by registries may also hamper the incentives for the registrars to enter the market at the downstream level of the DNS value chain, offer complementary products, and to innovate. This is because registries of TLDs with market power could appropriate a share of the additional value that the registrars create by raising wholesale prices in response to an increase in the value created by the registrars. As the fraction of the value created downstream that is appropriated by upstream firms increases due to market power increase, the incentives for such value creation decrease. Price caps on TLDs with market power may limit the extent of such appropriation and thereby also improve the economic outcomes by facilitating entry and innovation at the downstream level of the DNS value chain.
215. On the other hand, as also explained in Section VII, if imposed on TLDs that do not hold market power, or set at too low levels, price caps could in principle worsen the economic outcomes in the DNS space by leading to inefficient rationing of demand for registrations or by hampering the competitive process and thus limiting the entry of efficient new TLDs, reducing the incentives for improvement of quality of registry services for existing TLDs, or by facilitating tacit coordination.
216. As established in Section IX, the registries of .ORG, .INFO, and .BIZ hold considerable persistent market power in relation to these gTLDs. These registries also have an incentive to exploit their market power.¹⁷³ Evidence indicates that price caps on .ORG, .INFO, and .BIZ constrained the exercise of market power of these gTLDs in the past, keeping registration fees at lower levels. And there is no reason for price caps on these gTLDs could not play a similar role in the future.
217. At the same time, as established in Section X, the scope that price caps on these gTLDs would worsen the economic outcomes via any of the mechanisms identified above is limited. There is

¹⁷³ As we noted in our First Report, the tendency to exercise market power by setting prices above competitive levels is not limited to firms that pursue maximization of profits as their objective. PIR, despite being a not-for-profit organization, may have an incentive to increase its price above competitive levels, even if that incentive may be less pronounced because of its status. While not-for-profit organizations cannot distribute profits to owners, they may still pursue objectives other than serving their customers. These objectives may be best served when the organization generates substantial revenues, for example when it distributes its proceeds to charities.

no evidence that price caps have in the past led either to demand rationing, a reduction in quality, reduced entry of efficient registries, or that they have facilitated tacit coordination. There is also no reason to believe that the risk is significant that properly set price caps on these gTLDs could have led to such adverse outcomes in the future.

218. Against this background, our conclusion on question ii. is that it cannot be reliably expected that the removal of price caps has or will have improved the economic outcomes in the DNS space. This is because .ORG, .INFO, and .BIZ hold market power the exercise of which price caps can constrain, and because properly set price caps have a low potential to hamper the effective competitive process in the DNS space.

219. Our conclusion on question iii. is that it cannot be reliably excluded that the removal of price caps would worsen the economic outcomes in the DNS space. Indeed, the removal of price caps may result in increases in the wholesale registration fees for these gTLDs above the levels that would prevail in the absence of price caps without the offsetting benefits in the form of a more effective competitive process.

XII. CONCLUSIONS: ANSWER TO QUESTION IV POSED BY THE COUNSEL

220. In this section we answer question iv. posed by the counsel: what economic effects can be expected of the removal of price caps on .ORG, .INFO and .BIZ on independent registrars in the foreseeable future.
221. In the First Report we found that ICANN's removal of price caps has had a considerable potential to harm Namecheap because the removal introduced an upward pressure on the costs of independent registrars, including Namecheap, as follows:
- i. Registries operating .ORG, .INFO and .BIZ TLDs hold considerable market power.
 - ii. The wholesale fees for these gTLDs were subject to price caps, which were intended to limit, and which in practice have likely been effective in limiting, the ability of the registries to exploit their market power by increasing wholesale registration fees.
 - iii. Therefore, the removal of price caps in relation to these TLDs can be expected to result in an increase of wholesale registry prices of affected gTLDs, i.e. Namecheap's costs.
 - iv. Because Namecheap has no ability to pass on the increased costs by increasing retail registration fees without losing customers, ICANN's removal of price controls can be expected to reduce Namecheap's profits, causing harm to Namecheap.
222. Like Namecheap, other independent registrars are also affected by the same upward pressure on their costs. Therefore, the effect of the removal of price caps on other independent registrars is like the effect on Namecheap.
223. The additional evidence we have reviewed in this report—the characteristics of demand for registrations in .ORG, .INFO, .BIZ, and in other TLDs, and indicators of market power—provides further indications that registries of .ORG, .BIZ and .INFO hold considerable and persistent market power (Section IX). The market power of these gTLDs persists despite the introduction of more than a thousand of new gTLDs since 2012. This is because
- i. These gTLDs are differentiated from each other and from the new gTLDs (Section IX.A.1).
 - ii. The demand for registration in these gTLDs benefits from positive network effects (Section IX.A.2) and by the fact that many groups of registrants view the new gTLDs and ccTLDs as complementary rather than substitutable to the legacy gTLDs (Section IX.A.3).
 - iii. Switching a TLD often entails substantial costs (Section IX.A.4), which gives the registries an incentive to act opportunistically by raising prices for existing registrants.

224. In this report we also provide evidence indicating that price caps on .ORG, .INFO and .BIZ have been effective in limiting the ability of the registries to exploit their market power (Section IX).
225. Because .ORG, .INFO, and .BIZ continue to hold considerable market power, under a reasonable assumption that price caps would be effective in constraining the exercise of market power of these gTLDs in the foreseeable future, we expect the removal of price caps to result in an upward pressure on wholesale fees and consequently harm to independent registrars. The additional evidence reviewed in this report allows us to state this with a greater degree of confidence compared to the First Report.
226. Moreover, in this report we identified (Sections V and VII) an additional mechanism through which a removal of price caps on wholesale registration fees can harm Namecheap and other independent registrars. Registrars do not only act as intermediaries between registries and registrants in domain name registration, but also offer additional complementary services, like web or email hosting or privacy and e-commerce products. However, registries of TLDs with market power have an incentive and ability to appropriate a share of the additional value that registrars thus create—by raising wholesale prices in response to an increase in the value created by the registrars. The fraction of the value created downstream that is appropriated by upstream firms increases with market power; accordingly, the incentives of registrars to create such additional value decrease. In turn, this results in a reduction in value created and appropriated by registrars in the downstream market. A removal of price caps can therefore also be expected to harm the profits that registrars make by providing value-added services.
227. To the extent that the removal of price caps on .ORG, .INFO and .BIZ may be used as a justification for removing a price cap on .COM and .NET—in a comparable way as ICANN has justified the removal of price caps for .ORG, .INFO and .BIZ by the equitable treatment of registries in the view of the absence of price caps on new gTLDs—we may also expect an increase in wholesale prices of .COM and .NET. This would result in additional harm to independent registrars.
228. Accordingly, we expect that the removal of price caps on .ORG, .INFO, and .BIZ will harm Namecheap and other independent registrars. A mere likelihood that price controls are effective in the future is sufficient for a sudden and unexpected removal of price controls to harm Namecheap. This is because the removal of price controls in the presence of such likelihood causes a decrease in expected future profits for Namecheap. As this likelihood increases, so does the magnitude of the drop in expected profits. The drop in expected profits reduces Namecheap's market value, which harms its owners.

Expert Declaration

229. We confirm that we understand that our overriding duty is to the IRP Panel and that we must assist the IRP Panel on matters within our expertise. We believe that we have complied with this duty.
230. The assumptions upon which our analysis is based are reasonable and likely assumptions, corroborated by well-established economic literature, our review of the relevant facts, our analysis of data, and our review of the studies cited in this report.
231. We have no present or past relationship with any of the Parties.
232. We confirm that, as far as the facts stated in our report are within our own knowledge, we have made clear which they are and we believe them to be true, and that the opinions we have expressed represent our true and complete professional opinion.

Signed on 25 November 2021

Gregor Langus



Frank Verboven



Appendix I SCOPE OF REVIEW

In addition to discussion with Namecheap and Counsel and the references taken up in the report itself, we have relied upon the following documents in the course of our review:

- Request for Independent Review Process by Namecheap, 25 February 2020
- Claimant Namecheap's Request for Emergency Arbitrator and Interim Measures of Protection, 25 February 2020
- ICANN's Opposition to Namecheap's Request for Emergency Arbitrator and Interim Measures of Protection, 11 March 2020
- Decision on Request for Emergency Relief, ICDR Case No. 01-20-0000-6787, 20 March 2020
- ICANN's Response to Namecheap's Request for Independent Review Process, 10 April 2020
- Claimant's Motion to Compel, 4 November 2020
- ICANN's Motion to Compel Production of Documents from Claimant Namecheap, Inc., 4 November 2020
- Claimant's Response to ICANN's Motion to Compel, 24 November 2020
- ICANN's Opposition to Namecheap's Motion to Compel, 24 November 2020
- The annexes, appendices, reference material attached to the documents mentioned above
- Email from 26 November 2020 by Mr. Flip Petillion to the IRP Panel
- Email from 27 November 2020 by Mr. Jeffrey A. Levee to the IRP Panel
- Data on Domains under management from ICANN as provided by Namecheap:
 - *ICANN_Nov_Dec_2020.csv*
 - *ICANN_reports.csv*
- Namecheap data files (HIGHLY CONFIDENTIAL - OUTSIDE ATTORNEYS' EYES ONLY) at the transaction level submitted to ICANN on 8 September 2021 - *Average Prices and Cost by tld and provider (updated).xlsb*
- Namecheap data files (HIGHLY CONFIDENTIAL - OUTSIDE ATTORNEYS' EYES ONLY) at the transaction level for the year 2021 - *Average Prices and Costs by tld and provider (2021).xlsb*

Appendix II CURRICULUM VITAE OF PROFESSOR DR. FRANK VERBOVEN

CURRICULUM VITAE FRANK VERBOVEN

CONTACT INFORMATION

- Working address: Professor Frank Verboven
Department of Economics
KU Leuven
Contact Information Redacted
- Email: Contact Information Redacted e

EDUCATION

- 1993 Ph.D. in Economics, University of Toronto
Title: “Theoretical and Empirical Essays in Oligopoly Behavior”
(Supervisor: Nancy Gallini)
- 1989 M.A. in Economics, University of Toronto
- 1988 Lic. in Economics, KU Leuven
- 1986 Kan. in Economics, KU Leuven

RESEARCH FIELDS OF INTEREST

Industrial Organization, Competition Policy, Applied Microeconomics

PROFESSIONAL EXPERIENCE

- 2006- Professor (Gewoon Hoogleraar), KU Leuven
- 2002-2006 Professor (Hoogleraar), KU Leuven
- 2000-2002 Associate Professor (Hoofddocent), KU Leuven
- 2000-2001 Professor (Hoogleraar), University of Antwerp (Part-time)
- 1998-2000 Associate Professor (Hoofddocent), University of Antwerp
- 1997-1998 Assistant Professor (Docent), University of Antwerp
- 1996-1997 Postdoctoral Researcher, FWO/KU Leuven
- 1995-1996 Postdoctoral Researcher, BOF/KU Leuven
- 1993-1995 Postdoctoral Researcher, Center Tilburg University
- 1988-1993 Teaching Assistant, University of Toronto

OTHER POSITIONS

KU Leuven service

- Member of Assessment Committee Economics & Business, 2016-
- Chairman of Department of Economics, 2013-2017
- Member of University Research Council, 2010-2012

Holder of the Orange Chair of Regulation and Innovation, Telecom ParisTech, 2012-2015

Research Fellow

- Centre for Economic Policy Research, London, 1997-
- CentER for Economic Research, Tilburg University, 1997-

Member of:

- Academic Panel, Ofcom, UK, 2008-
- Elected academic member steering committee of the Association of Competition Economists (ACE), 2008-2011.
- Economic Advisory Group Competition Policy, European Commission, 2003-2019
- Raad van Bestuur, Vereniging voor Economie, 2003-2012
- E.A.R.I.E. Executive Committee, 2001-2007
- Steering Committee of the Annual C.E.P.R. Applied IO Conference, 1997-2017

Editorial positions

- Managing Editor, International Journal of Industrial Organization, 2019-
- Co-editor, Journal of Industrial Economics, 2003-2008

- Associate Editor, Review of Network Economics, 2016-
- Associate Editor, Economic Journal, 2011-2016
- Associate Editor, De Economist, 2011-
- Associate Editor, Journal of the European Economic Association, 2003-2008
- Associate Editor, Journal of Industrial Economics, 1999-2003
- Associate Editor, European Economic Review, 1999-2002
- Associate Editor, Economisch en Sociaal Tijdschrift, 1998-2001

AWARDS AND GRANTS

- Methusalem, 2015-2022: The granular economy, co-promotor (promotor: Joep Konings)
- KKV Project, 2013-2014, Modeling Uncertainty in Merger Simulation (with Jonas Björnerstedt)
- SEEK-ZEW Project, 2011, “Competitiveness of the European Car Industry”.
- Fund for Scientific Research (Flanders) Onderzoeksproject, promotor, 2011-2015: “A Retailer’s Private-Label Portfolio: Budget, Standard and Premium Private Labels”.
- KU Leuven Programmafinanciering “Centre of Excellence”, promotor, 2010-2018: “Governments & Markets: Institutions and Regulation in a Changing World”.
- NBB Onderzoekstoelage, 2010: “Constructie van een samengestelde indicator voor het evalueren van markten in de Belgische economie”.
- Agora, promotor, 2009-2011: “MMS: Monitoring, Markten en Sectoren” Fund for Scientific Research (Flanders), Onderzoeksproject, promotor, 2009-2014: “Vertical Control of the Size and Geographic coverage of Distribution Networks: Empirical Methodology and Applications”.
- NBB Onderzoekstoelage, 2007: “Concurrentie en Europese integratie in de automarkt”.
- PAI Project, co-promotor Leuven node, 2007-2011

- K.U.Leuven OT Onderzoeksproject, promotor, 2005-2008: “Entry, Competition and Economic Efficiency: Applications to Banking, Health Services and Retail”,
- Fund for Scientific Research (Flanders) Onderzoeksproject, co-promotor, 2004-2007: “Entry, Competition and Econ Efficiency: Applications to Banking, Health Services and Retail”.
- PAI Project, co-promotor Leuven node, 2003-2006: “Universities and Firms: A Comparative Analysis of the Interaction Between Market Processes, Organizational Strategies and Governance”
- RTN Network Fellowship, promotor Leuven node, 2002-2006: “Competition Policy in International Markets”.
- Fund for Scientific Research (Flanders) Onderzoeksproject, promotor, 2002-2005: “New Industrial Organization Methods in Marketing, with Applications to Automobiles and Telecommunications”.
- Tweejaarlijkse Prijs Vereniging voor Economie, 2001.
- University of Antwerp BOF Onderzoeksproject, promotor, 1998-2001: “Structural Modeling of the European Automobile Industry”.
- Fund for Scientific Research (Flanders) Onderzoeksproject, promotor, 1998-2003: “Deregulation in telecommunications, with applications to the Mobile Telecommunications Industry”.
- Fund for Scientific Research (Flanders) Krediet aan Navorsers, promotor, 1997-2000: “Empirical Analysis of the Automobile and Semiconductor industries”.
- Phare ACE Research Grant for project P96-6204-R, participant, 1996-1999: “Industrial Change in Transition: a Comparative Analysis of Three Industries in Three Countries”
- Fellow at the Institute for Policy Analysis, University of Toronto, 1992
- Winner of “Young Economists’ Essay Competition” European Association of Research in Industrial Economics, 1992
- Open Fellowship, University of Toronto, 1992
- Mary H. Beatty Fellowship, University of Toronto, 1991
- Connaught Fellowship, University of Toronto, 1989-1990
- Margaret and Nicholas Fodor Fellowship, University of Toronto, 1988

TEACHING

Graduate:

- Microeconomics
- Applied Econometrics
- Advanced Industrial Organization
- Empirical Industrial Organization
- Empirical Methods in Competition Policy
- Network Industries and the Digital Economy

Undergraduate:

- Intermediate Microeconomics
- Industrial Organization
- Seminar Economic Policy & Econometrics

CURRENT RESEARCH PROJECTS AND WORKING PAPERS

Current research projects:

- The Impact of Geo-Blocking Practices on Consumers and Producers with Nestor Duch-Brown, Lukasz Grzybowski and André Romahn
- The Profit and Consumer Welfare Effects of National Pricing Policies and International Price Differentiation in the retail industry
- Strategic Trade Liberalization, with Jo Van Biesebroeck and Hang Gao

Working papers:

- Nestor Duch-Brown, Lukasz Grzybowski, André Romahn and Frank Verboven “Evaluating the Impact of Online Market Integration: Evidence from the EC Portable PC Market,” revised and resubmitted at American Economic Journal: Microeconomics.
- “Implicit Interest Rates in Durable Goods Purchasing Decisions - Evidence from Automobile Purchasing Data,” (1998) also C.E.P.R. Discussion paper no. 2069.

PUBLICATIONS

International publications:

- Marc Bourreau, Yutec Sun and Frank Verboven, “Market Entry and Fighting Brands and Tacit Collusion: Evidence from the French Mobile Telecom Industry,” American Economic Review, 2021, 111(11), 3459-99.
- Nestor Duch-Brown, Lukasz Grzybowski, André Romahn and Frank Verboven “Are Online Markets More Integrated than Traditional Markets: Evidence from the Consumer Electronics,” Journal of International Economics, 2021, 131.
- Olivier De Groot and Frank Verboven, Subsidies and Time Discounting in Technology Adoption: Evidence from Solar Photovoltaic Systems, American Economic Review, 2019, 109(6), 2137-72.
- Koen Declercq and Frank Verboven, Enrollment and Degree Completion in Higher Education without Admission Standards, Economics of Education Review, 2018, 66, 223-244.
- Laura Grigolon, Mathias Reynaert and Frank Verboven, Consumer Valuation of Fuel Costs and Tax Policy: Evidence from the European Car Market, American Economic Journal: Economic Policy, 2018, 10(3), 193-225.
- Christos Genakos, Tommaso Valletti and Frank Verboven, Evaluating Market Consolidation in Mobile Telecommunications, Economic Policy, 2018, 33 (93), 45-100.
- Gizem Hökelekli, Lien Lamey and Frank Verboven, The Battle of Traditional Retailers versus Discounters: the Role of Private Label Tiers, Journal of Retailing and Consumer Services, 2017, 39, 11-22.
- Gizem Hökelekli, Lien Lamey and Frank Verboven, Private Label Line Proliferation and Private Label Tier Pricing: a New Dimension of Competition between Private Labels and National Brands, Journal of Retailing and Consumer Services, 2017, 36, 39-52.
- Nestor Duch-Brown, Lukasz Grzybowski, André Romahn and Frank Verboven, The Impact of Online Sales on Consumers and Firms -- Evidence from Consumer Electronics, International Journal of Industrial Organization, 2017, 52, 30-62.
- Olivier De Groot, Guido Pepermans and Frank Verboven, Heterogeneity in the Adoption of Photovoltaic Systems in Flanders, Energy Economics, 2016, 59, 45-57.

- Lukasz Grzybowski and Frank Verboven, Substitution between Fixed and Mobile Access - The Role of Complementarities, *Journal of Regulatory Economics*, 2016, 49(2), 113-151.
- Laura Grigolon, Nina Leheyda and Frank Verboven, Scrapping Schemes in the Financial Crisis - Evidence from Europe, *International Journal of Industrial Organization*, 2016, 44, 41-59.
- Jonas Björnerstedt and Frank Verboven, Does Merger Simulation Work? Evidence from the Swedish Analgesics Market, *American Economic Journal: Applied Economics*, 2016, 8(3), 125-164.
- Laura Nurski and Frank Verboven, Exclusive Dealing as a Barrier to Entry? - Evidence from the Car Market, *Review of Economic Studies*, 2016, 83, 1156-1188.
- Koen Declercq and Frank Verboven, Socio-economic Status and Enrollment in Higher Education: Do Costs Matter?, *Education Economics*, 2015, 23(5), 532-556.
- Mattia Nardotto, Tommaso Valletti and Frank Verboven, Unbundling the Incumbent: Evidence from UK Broadband, *Journal of the European Economic Association*, 2015, 13(2), 330-362.
- Laura Grigolon, Nina Leheyda and Frank Verboven, Public Support to the European Car Industry: the Impact of the Financial Crisis, *Journal of Industry, Competition and Trade*, 2015, 15(3), 283-321.
- Catherine Schaumans and Frank Verboven, Entry and Competition in Concentrated Markets with Product Differentiation, *Review of Economics and Statistics*, 2015, 97(1), 195-209.
- Laura Grigolon and Frank Verboven, Nested or Random Coefficients Logit? A Comparison between Alternative Discrete Choice Models of Product Differentiation, *Review of Economics and Statistics*, 2015, 96(5), 916-935.
- Lukasz Grzybowski, Rainer Nitsche, Frank Verboven and Lars Wiethaus, Market Definition of Broadband Internet in Slovakia: are Fixed and Mobile in the Relevant Market? *Information Economics and Policy*, 2014, 28, 39-56.
- Laura Nurski and Frank Verboven, Incumbency Advantages, Distribution Networks and Exclusivity - Evidence from the European Car Markets, *International Journal of Industrial Organization*, 2014, 34, 75-79.
- Jonas Björnerstedt and Frank Verboven, Merger simulation with Nested Logit Demand: Implementation using Stata, 2014, *Stata Journal*.
- Frank Verboven, The effects of Environmental Policies in the Car Sector, *Economic Journal*, 2014, 124 (578), F389-F392.
- Mathias Reynaert and Frank Verboven, Improving the Performance of Random Coefficients Demand Models - the Role of Optimal Instruments, *Journal of Econometrics*, 2014, 179(1), 83-98.
- Stijn Ferrari and Frank Verboven, Vertical Control of a Distribution Network - Evidence from Magazines, *RAND Journal of Economics*, 2012, 43(1), 26-50.
- Catherine Haecck and Frank Verboven, The Internal Economics of a University - Evidence from Personnel Data, *Journal of Labor Economics*, 2012, 30(3), 591-626.
- Jan Bouckaert, Theon van Dijk and Frank Verboven, Access Regulation, Competition and Broadband Penetration: an Empirical Study, *Telecommunications Policy*, 2010, 34, 661-671.

- Stijn Ferrari and Frank Verboven, Empirical Analysis of Markets with Free and Restricted Entry
International Journal of Industrial Organization, 2010, 28, 403-406.
- Stijn Kelchtermans and Frank Verboven, Program Duplication in Higher Education is not Necessarily Bad, Journal of Public Economics, 2010, 94 (5-6), 397-409.
- Kathleen Cleeren, Marnik Dekimpe, Katrijn Gielens and Frank Verboven, Intra- and Inter-format Competition among Discounters and Supermarkets, Marketing Science, 2010, 29(3), 456-473.
- Stijn Ferrari, Frank Verboven and Hans Degryse, Investment and Usage of New Technologies: Evidence from a Shared ATM Network, American Economic Review, 2010, 100(3), 1046-1079.
- Stijn Kelchtermans and Frank Verboven, Participation and Study Decisions in Higher Education
Journal of Applied Econometrics, 2010, 25, 355-391.
- Frank Verboven and Theon van Dijk, Cartel Damages Claims and the Passing-on Defense
Journal of Industrial Economics, 2009, 57(3), 457-491.
- Stijn Kelchtermans and Frank Verboven, Regulation of Program Supply in Higher Education: Lessons from a Funding System Reform in Flanders, CESifo Economic Studies, 2008, 54(2), 204-228.
- Catherine Schaumans and Frank Verboven, Entry and Regulation - Evidence from Health Care Professions, RAND Journal of Economics, 2008, 39, 949-972.
- Kathleen Cleeren, Marnik Dekimpe and Frank Verboven, Competition in Local services: the Video Rental Case, International Journal of Research in Marketing, 2006, 23, 357-367.
- Randy Brenkers and Frank Verboven, Liberalizing a Distribution System: the European Car Market, Journal of the European Economic Association, 2006, 4(1), 216-251.
- Marc Ivaldi and Frank Verboven, Quantifying the Effects from Horizontal Mergers in European Competition Policy, International Journal of Industrial Organization, 2005, 23 (9-10), 669-691.
- Marc Ivaldi and Frank Verboven, Quantifying the Effects from Horizontal Mergers in European Competition Policy: comments on the underlying assumptions, International Journal of Industrial Organization, 2005, 23(9-10), 693-698.
- Chaim Fershtman, Uri Gneezy and Frank Verboven, Discrimination and Nepotism: the Efficiency of the Anonymity Rule, Journal of Legal Studies, 2005, 34(2), 371-394.
- Pinelopi K. Goldberg and Frank Verboven, Market Integration and Convergence to the Law of One Price: Evidence from the Automobile Industry, Journal of International Economics, 2005, 65(1), 49-73.
- Penny Goldberg and Frank Verboven, Cross-country Price Dispersion in the Euro Era: a Case Study of the European Car Market, Economic Policy, 19(40), 2004, 484-521.
- Jan Bouckaert and Frank Verboven, Price Squeezes in a Regulatory Environment
Journal of Regulatory Economics, 2004, 26(3), 321-351.

- Frank Verboven, Quality-based Price Discrimination and Tax Incidence - the Market for Gasoline and Diesel Cars In Europe, *RAND Journal of Economics*, 2002, 33(2), 275-297.
- Companion paper:
Frank Verboven, Implicit Interest Rates in Durable Goods Purchasing Decisions - Evidence from Automobile Purchasing Data, C.E.P.R. Discussion paper no. 2069, 1998.
- Pinelopi K. Goldberg and Frank Verboven, The Evolution of Price Dispersion in the European Car Market, *Review of Economic Studies*, 2001, 68(4), 811-848.
- Frank Verboven, Testing for “Monopoly” Market Power when Products are Differentiated in Quality, *The Manchester School - Special Issue on Industrial Organization*, 2002, 70(1), 115-133.
- Harald Gruber and Frank Verboven, The Evolution of Markets under Entry and Standards Regulation - the Case of Global Mobile Telecommunications, *International Journal of Industrial Organization*, 2001, 19(7), 1189-1212.
- Harald Gruber and Frank Verboven, The Diffusion of Mobile Telecommunications Services in the European Union countries, *European Economic Review*, 2001, 45(3), 577-588.
- Uri Gneezy, Werner Guth and Frank Verboven, Presents or Investments? - An Experimental Analysis, *Journal of Economic Psychology*, 2000, 21(5), 481-493.
- Leon Bettendorf and Frank Verboven, Incomplete Transmission of Coffee Bean Prices: Evidence from the Netherlands, *European Review of Agricultural Economics*, 2000, 27(1), 1-16.
- Frank Verboven, Product Line Rivalry and Market Segmentation, with an application to the Pricing of Optional Engine Power on Automobiles, *Journal of Industrial Economics*, 1999, 47(4), 399-425.
- Frank Verboven, Localized Competition, Multimarket Operation, and Collusive Behavior, *International Economic Review*, 1998, 39(2), 371-398.
- Frank Verboven, Collusive Behavior with Heterogeneous Firms, *Journal of Economic Behavior and Organization*, 1997, 33(1), 21-36.
- Frank Verboven, International Price Discrimination in the European Car Market, *RAND Journal of Economics*, 1996, 27 (2), 240-268.
- Frank Verboven, The Nested Logit Model and Representative Consumer Theory, *Economics Letters*, 1996, 50(1), 57-63.
- Frank Verboven, Corporate Restructuring in a Collusive Oligopoly, *International Journal of Industrial Organization*, 1995, 13(3), 335-354.

Chapters in books:

- Frank Verboven, “Efficiency Enhancing or Anti-Competitive Vertical Restraints: Selective and Exclusive Car Distribution in Europe,” (2008), forthcoming in *Cases in European Competition Policy: the Economic Analysis*, Edited by Bruce Lyons, Cambridge University Press.
- Theon van Dijk and Frank Verboven, “Quantification of Damages,” (2008), in: Wayne D. Collins, ed., *Issues in Competition Law and Policy (Volume III)*, American Bar Association, August 2008.

- Frank Verboven, “Price Discrimination: Empirical Studies,” (2008) in: Stephen N. Durlauf and Lawrence E. Blume, ed., *The New Palgrave: A Dictionary in Economics*, MacMillan, second edition.
- Randy Brenkers and Frank Verboven, “Market Definition with Differentiated Products - Lessons from the Car Market,” (2006), in: Jay Pil Choi (ed.), *Recent Developments in Antitrust: Theory and Evidence*, MIT Press, p. 153-186.
- Lars-Hendrik Röller, Johan Stennek and Frank Verboven, “Efficiency Gains from Mergers,” (2001) with, *European Economy*, 5, 31-127.
- Johan Stennek and Frank Verboven, “Merger Control and Enterprise Competitiveness: Empirical Analysis and Policy Recommendations,” (2001), *European Economy*, 5, 130-194.
- Jan Bouckaert and Frank Verboven, “Price Differences and Price Setting in the European Car Market,” (2000), in: Ooghe H., Heylen F. and Vander Vennet, R. (eds.), *The Economic and Business Consequences of EMU: a Challenge for Governments, Financial Institutions and Firms*, Kluwer Academic Publishers, 438p.

Selected publications in Dutch:

- Koen Declercq and Frank Verboven, “Slaagkansen aan Vlaamse Universiteiten - Tijd om het Beleid bij te Sturen?” (2010), *Impuls*, 41(2), 88-98.
- Frank Verboven, “Motieven voor het selectieve en exclusieve distributiesysteem in de Europese automarkt,” (2003) *Tijdschrift voor Economie en Management*, 48 (3), p. 405-430.
- Frank Verboven, “Nieuwe technieken ten dienste van het mededingingsbeleid,” *Business InZicht*, (2002).
- Eric van Damme, Theon van Dijk and Frank Verboven, “Het nieuwe toezicht op ondernemingen: economische aspecten van marktwerking en regulering,” (2001), in H. Schenk (ed.), *Herpositionering van Ondernemingen*, KVS Preadviezen, LEMMA, Utrecht.
- Frank Verboven, “Het Gebruik van Simulatieanalyse in het Europese Mededingingsbeleid,” (2001) *Markt & Mededinging*.
- Jan Bouckaert and Frank Verboven, “Mededinging en de E.M.U.: Prijsverschillen en Prijszetting in de Europese automarkt,” (2000), in F. Heylen, H. Ooghe and R. Vander Vennet (eds.), *E.M.U.: dé Uitdaging*, Vereniging voor Economie vzw, 593p.
- Frank Verboven, “Prijsverschillen in de Europese automarkt,” (1999) *Trends Review*, nr. 6.
- Frank Verboven, “De Markten voor Benzine- en Dieselauto’s in de Europese Unie,” (1999) *Economische en Statistische Berichten*, 84, nr. 4203.
- Frank Verboven, “Productdifferentiatie, Prijszetting en Overheidsinterventie in de Europese automarkt,” (1999) *Economisch en Sociaal Tijdschrift*.

Selected policy reports:

- “Regulation and Broadband Penetration - What is Required to Regain Speed in Belgium?” (2008), with Jan Bouckaert and Theon van Dijk.
- “Report on: an economic analysis of the Austrian/German soft drink sectors,” (2003) report for the Competition Directorate-General of the European Commission.

- “Efficiency Defense and Consumers’ Interests in European Merger Control,” (2003) with Johan Stennek, report for Directorate General of Health and Consumer Protection.
- “Quantitative Techniques to Assess Price Effects in European Merger Control from a Consumer Protection Perspective,” (2003) with Johan Stennek, report for Directorate General of Health and Consumer Protection.
- “Quantitative Study to Define the Relevant Market in the Passenger Car Sector,” (2002) report for the Competition Directorate-General of the European Commission.
- “Enterprise Competitiveness and Merger Control,” (2001) with Johan Stennek, report for the Enterprise Directorate General of the European Commission.
- “Car Price Differentials in the European Union: and Economic Analysis,” (2000) with Hans Degryse, report for the Competition Directorate-General of the European Commission.
- “The European Heavy Trucks Market: an Economic Analysis,” (2000) with Marc Ivaldi, report for the Competition Directorate General of the European Commission.
- “The Efficiency Defense in Merger Analysis,” (1999) with Lars-Hendrik Röller and Johan Stennek, report for the Economic and Financial Affairs Directorate General of the European Commission.
- “Restructuring in the Automotive Sector in Three Countries in Transition: a Comparative Analysis,” (1999) report for Phare ACE-program.

PHD SUPERVISION

Currently (co-)supervising at KU Leuven includes (expected graduation year in parentheses):

Cam Birchall (2021), Enrico Camarda (2022), Debashrita Mohapatra (2022), Julian Hidalgo (2023)

Promotor at KU Leuven of (year and first job in parentheses):

Randy Brenkers (2006, BNP Paribas), Kathleen Cleeren (2007, Maastricht University), Stijn Kelchtermans (2007, HUB), Catherine Schaumans (2008, Tilburg University), Stijn Ferrari (2009, National Bank of Belgium), Catherine Haeck (2012, U Montreal), Laura Grigolon (2012, McMaster University), Mathias Reynaert (2015, Toulouse School of Economics), Laura Nurski (2015, KBC Bank), Koen Declercq (2016, KU Leuven), Gizem Hokelekli (2017, Nike), Olivier De Groote (2018, Toulouse School of Economics), Ruben Savelkoul (2019, Compass Lexecon)

Co-promotor at KU Leuven of:

Yunus Aksoy (2000), Roel Helgers (2016), Thi Hien Pham (2017)

Internal Committee member at KU Leuven of:

Bert Willems (Leuven, 2004), Marc Callens (2004), Kristien Coucke (2005), Jan De Loecker (2006), Katrin Hussinger (2007), Tom Franck (2008), Ilke Van Beveren (Leuven, 2008), Koen Jochmans (2009), Eline Poelmans (2009), Carine Van De Voorde (2010), Saskia van der Loo (2011), Dries Desmedt (2011), Jo Reynaerts (2011), Linda Van Bouwel (2012), Koen Deconinck (2014), Hang Gao (2014),

Alexander Schmitt (2015), Simon Michielsen (2016), Hendrik Meder (2016), Sven Daemen (2017), Marten Ovaere (2017), Paul Hünermund (2017), Thomas Wouters (2019), Deni Mazrekaj (2019), Michael Rubens (2020)

External committee member of:

Youdi Schipper (Amsterdam, 1999), Zsolt Sandor (Groningen, 2001), Vincent Verouden (Tilburg, 2001), Ziv Hagai (Tel Aviv, 2004), Christos Genakos (London Business School, 2005), Lapo Filistrucchi (Florence, 2005), Szabolcs Lorincz (Toulouse, 2006), Gorm Gronnevet (Norwegian School of Economics, 2007), Nina Leheyda (U Mannheim, 2008), An Renckens (Antwerp, 2008), Eve Van Haacht (Antwerp, 2008), Sandra Jodar (Toulouse, 2008), Marie Goppelsroeder (Amsterdam, 2009), Riemer Faber (Rotterdam, 2010), Ricardo Ribeiro (LSE, 2010), Raquel Sampaio (Toulouse, 2011), Daniel Coublucq (Toulouse, 2012), Isis Durrmeyer (CREST, 2012), Nan Yang (Amsterdam, 2012), Yufeng Huang (Tilburg, 2015), George Vivien Hounghonon (Paris, 2015), Laura Lazio (Toulouse, 2015), Giulia Pavan (Rome, 2016), Roxana Fernandez (Tilburg, 2017), Ambre Nicolle (ParisTech, 2018), Simon Martin (Vienna, 2019)

REFEREEING SERVICES

Research grants:

US National Science Foundation, EU-ERC, FWO (Flanders)

Journals:

American Economic Review; Econometrica; Economic Policy; Economisch en Sociaal Tijdschrift; European Economic Review; European Review of Agricultural Economics; Games and Economic Behavior, International Journal of Industrial Organization; Journal of Applied Econometrics; Journal of Economic Behavior and Organization; Journal of the European Economic Association; Journal of Competition, Industry and Trade; Journal of Political Economy; Journal of Public Economics; RAND Journal of Economics; Recherches Economiques de Louvain; Regional Science and Urban Economics; Review of Economics and Statistics; Review of Economic Studies; Quarterly Journal of Economics; Telecommunications Policy; Tijdschrift voor Economie en Management; and other journals.

SERVICES TO INTERNATIONAL CONFERENCES

Organizer:

Flemish Economic Association (bi-annual) 2010 (Leuven)
CEPR IO Conference 2003 (Leuven)

Member of program committee at (until 2012):

EARIE 2012 (Rome), 2008 (Toulouse), 2011 (Stockholm), 2007 (Valencia), 2005 (Porto), 2004 (Berlin), 2003 (Helsinki), 2002 (Madrid), Lausanne (2000), Leuven

(1997)

CEPR IO meetings 2011 (Tel-Aviv), 2010 (Toulouse), 2009 (Mannheim), 2008 (Paris), 2007 (Taragona), 2006 (Madeira), 2005 (Munich), 2004 (Hydra), 2003 (Leuven), 2000 (Lissabon), 1999 (Toulouse)
EEA 2011 (Oslo), 2007 (Budapest), 1999 (Santiago), 1998 (Berlin)
ESEM 2003 (Stockholm)

CONFERENCE AND SEMINAR PRESENTATIONS

Keynote lectures at conferences

- EARIE 2017 (European Association of Research in Industrial Economics (Maastricht)
- ParisTech ICT conference 2017 (Paris)
- CEPR Applied IO Conference 2013 (Bologna)
- Research Network on Innovation and Competition Policy 2009 (Vienna).
- Spanish Industrial Economics Association 2008 (Reus)

Invited sessions at conferences

- ASSA 2018 (Atlanta)
- China Econometric Society meeting 2018 (Shanghai)
- EEA/ESEM 2016 (Zürich)
- EEA/ESEM 2011 (Oslo)
- EARIE 2009 (Ljubljana)
- EARIE 2008 (Toulouse)
- EARIE 2002 (Madrid)

Selected other presentations at annual conferences (until 2012 only):

- EARIE 2012 (Rome), 1997 (Leuven), Nice (1995), Chania (1994)
- CEPR IO Conference 2010 (Toulouse), 2009 (Paris), 2006 (Madeira), 2004 (Hydra)
- CRESSE 2012 (Chania), 2011(Rhodes), 2009 (Chania), 2008 (Athens)
- EEA/ESEM 2005 (Amsterdam), 2003 (Stockholm), 2001 (Lausanne), 1999 (Santiago), 1998 (Berlin), 1994 (Maastricht), 1993 (Tel Aviv), 1992 (Stuttgart)
- ASSA 2011 (Denver)
- Marketing Science 2001 (Wiesbaden)

Selected other conference presentations (until 2012 only):

2012: SEEK Conference on the Economics of State Aid, Brussels
 Workshop on Industrial Economics, Amsterdam
 Conference on Merger Control, Bergen

2010: CCP Conference on Vertical Restraints, East Anglia
 IFS Conference on Econometric Analysis of Scanner Data, London

2007: UK Network of Industrial Economics Conference, Oxford University

2006: Professional Services Conference of the European Commission

2005: Conference Centrum voor Economische Studies, Leuven
 Conference in Industrial Organization and Competition Policy, Madrid

2004: WZB/RTN Conference on Competition Policy in International Markets, Berlin

- PAI Conference on the Economics of Education, Toulouse
- CEPR/Economic Policy Conference, Trinity College, Dublin
- Conference on Antitrust and Regulation, University of Brescia
- Conference on Issues on the Economics of Pricing, Utrecht School of Economics
- UK Network of Industrial Economics Conference, University of Lancaster
- 2003: RTN/C.E.P.R. Conference Competition Policy in International Markets, Toulouse
- C.E.P.R. Conference on Competition Policy, Madrid
- 2001: 2nd Tel Aviv Workshop on Industrial Organization and Antitrust
- 2000: Conference on the Economics of Antitrust, Wissenschaftszentrum Berlin
- 1997: Conference on Advances in Empirical Industrial Organization, WZB
- 1996: CEPR Conference on Applied Theory and Empirical Work in IO, Champéry

Selected seminar presentations:

- 2020: Autonoma Barcelona
- 2019: Cambridge, Federal trade Commission, Vienna, Research Center Ispra (European Commission), IFN Stockholm, Research Center Sevilla (European Commission), DG-Competition
- 2018: Tinbergen Institute (Amsterdam), CREST (Paris), University of East Anglia, University of Virginia, Department of Justice (Washington), Yale University, Science Po (Paris)
- 2017: Stern & Colombia (New York), ZEW (Mannheim), HEC & McGill (Montreal)
- 2016: Enaudi (Rome), DICE (Dusseldorf), Humbolt (Berlin)
- 2015: European Commission, Tilburg University
- 2014: London School of Economics
- 2013: Toulouse School of Economics, UvA (Amsterdam)
- 2012: Bocconi (Milan), Northwestern (Evanston)
- 2011: European Commission, Tilburg University, Toulouse School of Economics, Telecom ParisTech, CREST (Paris)
- 2010: University of Zürich, University of Mannheim
- 2008: CREST (Paris), Harvard & MIT, Stern Business School, Wharton, Tilburg (Tilburg)
- 2007: Stockholm School of Economics, Helsinki Center for Economic Research
- 2006: Tinbergen Institute (Rotterdam), CPB/EZ/Tilburg (Den Haag), Norwegian School of Economics and Business Administration (Bergen), Collegio Carlo Alberto (Turin), Ecares (Brussels), London School of Economics
- 2005: CREST (Paris), Warwick University
- 2004: Portuguese Competition Authority (Lissabon), UCL (London), European Commission (Brussels), Nationale Bank (Brussels)
- 2003: European University Institute (Florence), Tilburg University, Maastricht University, Cemfi (Madrid), London School of Economics, Encore (Amsterdam)
- 2002: University of Chicago GSB, University of Cyprus, London Business School, Office of Fair Trading, University of Toulouse
- 2001: UCL (Louvain-La-Neuve), IUI (Stockholm), FUNDP (Namur), DG-ECFIN of European Commission (Brussels), Tilburg University
- 1999: University of Lausanne, University of Toulouse, WZB (Berlin), K.U.Leuven, Ecares (Brussels).
- 1998: London Business School, Tinbergen Institute (Amsterdam), Norwegian School of Economics (Bergen)
- 1997: Ecares (Brussels), UCL (Louvain)
- 1996: UFSIA (Antwerp), RUG (Groningen), WZB (Berlin), R.U.Limburg (Maastricht)
- 1995: WZB (Berlin)
- 1994: CEME (Brussels), ENCAE-CREST (Paris)
- 1993: Tinbergen Institute (Rotterdam), Erasmus University (Rotterdam), CES (Leuven), CentER (Tilburg), University of Toronto

Appendix III CURRICULUM VITAE OF DR. GREGOR LANGUS

CURRICULUM VITAE GREGOR LANGUS

CONTACT INFORMATION

- Working address: Dr. Gregor Langus
Contact Information Redacted
- Email: Contact Information Redacted

PROFESSIONAL EXPERIENCE

- 2021 (December), *Founder*, Competitionsphere
- 2020 (April) - 2021 (November), *Director*, E.CA Economics
- 2018 - 2020, *Senior Vice President*, Compass Lexecon
- 2016 - 2018, *Economist*, Chief Economist Team, Directorate General for Competition, European Commission, Brussels
- 2014 - 2016, *Senior Vice President*, Compass Lexecon
- 2011 - 2014, *Senior Consultant*, Charles River Associates
- 2007 - 2011, *Directorate for Competition, Chief Economist Team, Economist*, European Commission
- 2007, *Researcher, Lecturer*, Tilburg University
- 2003 - 2006, *Researcher*, European University Institute

EDUCATION

- 2003 - 2007, *Ph.D. in Economics*, European University Institute
- 2000 - 2002, *M.A. in Economics*, Central European University

SELECTED PUBLICATIONS

- Does Envelopment through Data Advantage Call for New Regulation (jointly with Vilen Lipatov); CESifo Working Paper Series, 2021
- *Non-horizontal mergers with investments into compatibility* (jointly with Vilen Lipatov and Jorge Padilla); CESifo Working Paper Series, 2019.
- *Horizontal mergers and product innovation* (jointly with Giulio Federico and Tommaso Valletti); International Journal of Industrial Organization, 2018.
- *A simple model of mergers and innovation* (jointly with Giulio Federico and Tommaso Valletti); Economics Letters, 2017.

- *Recent Developments at DG Competition: 2016/2017* (jointly Benno Buehler, Daniel Coublucq, Cyril Hariton, Tommaso Valletti); Review of Industrial Organization, 2017.
- *Standards of proofs in sequential merger control procedures* (jointly with Vilen Lipatov and Damien Neven); Concurrences, 2018.
- *Economic Analysis of the Territoriality of the Making Available Right in the EU* (jointly with Damien Neven and Sophie Poukens); report for the EC, DG Markt, 2014.
- *Assessing the Economic Impacts of Adapting Certain Limitations and Exceptions to Copyright and Related Rights in the EU* (jointly with Damien Neven and Gareth Shier); report for the EC, DG Markt, 2014.
- *The Effect of EU Antitrust Investigations and Fines on a Firms' Valuation* (jointly with Luca Aguzzoni and Massimo Motta); Journal of Industrial Economics, 2013.
- *Injunctions for Standard Essential Patents: Justice is not Blind* (jointly with Peter Camesaca, Damien Neven and Pat Treacy); Journal of Competition Law and Economics, 2013.
- *Injunctions for Standard Essential Patents: Who is Really Holding Up (and when)?* (jointly with Damien Neven and Vilen Lipatov); Journal of Competition Law and Economics, 2013.
- *Casting Methodologies and Incentives to Invest in Fibre* (jointly with Jenny Haydock, Vilen Lipatov, Damien Neven and Gareth Shier); report for the EC, DG Connect, 2012.
- *RWE/Essent: On the Borderline* (jointly with Miriam Driessen Reilly, Krisztian Kecsmar, Philippe Redondo, Phillipe Chauve and Kristof Kovacs); Competition Policy Newsletter, 2009.
- *The E.ON Electricity cases: an antitrust decision with structural remedies* (jointly with Philippe Chauve, Martin Godfried, Kristof Kovacs, Karoly Nagy and Stefan Siebert); Competition Policy Newsletter, 2009.

Speaking Engagements

- November 2021 - Competition Law Roundtable: Competition and Privacy - Conflict, Intersection or Harmony? - panellist

- November 2020 - Concurrences: Digital Ecosystem: Regulatory Intervention & Efficiency Trade-Offs - panellist
- December 2019 - Karanovic and Partners, Annual Competition and Regulation Conference: “Competition Law and Digital Economy” - panellist
- June 2019 - CCP Annual Conference: Machine Learning and AI as Business Tools: Threat or Blessing to Competition - Session on Privacy & Competition - panellist
- April 2019 - Barcelona Graduate School of Economics: “Course on the economics of digital platforms”
- September 2018 - Ljubljana, Slovenian Competition Day: “Competition Assessment in Digital Markets - Digital Platforms”
- Nov 2017 - Madrid, ACE plenary session: “When do mergers mute innovation and harm consumers” - panellist
- Oct 2017 - Brussels: “Mergers and innovation - a discussion with Gregor Langus, from the EU CET” - American Bar Association event speaker
- June 2014 - London: GCR Live 3rd Annual Telecoms, Media and Technology - territoriality in copyright - panellist.
- June 2014 - Ljubljana Law Faculty: The use of economics in competition cases in front of national courts - Education and Training of National Judges in the Field of EU Competition Law.
- April 2014 - Johannesburg: Comesa workshop on merger guidelines (The economics of merger control), Key speaker on economic aspects of new Comesa merger guidelines.
- March 2014 - Brussels: JRC workshop on Copyright, panellist.
- March 2013 - WIPO Seminar, Geneva: Patents and Standard Setting.
- December 2012 - Florence School of Regulation - Annual Training 2012-13 on Communications and Media Regulation: “Costing methodologies and investments into Fibre”, Lecture.

- June 2012 - Florence School of Regulation, Florence: “Regulation and investments into Fibre”, Conference address.
- May 2012 - ETNO and Total Telecom Regulatory Summit, Brussels: “Costing methodologies and investments into Fibre infrastructure”, Keynote address.
- October 2011 - Workshop on Legal aspects and Economics of Vertical Restraints, Bucarest: “RPM Efficiencies”, Panel address.
- May 2011 - Seminar at GSE Pompeu Fabra, Barcelona: “Use of Economics at the Directorate for Competition of the EC in abuse and merger cases”, Lecture.

Awards

- 2007 - 2009, Netherlands Organization for Scientific Research (NWO) - post doctoral grant
- 2006, European Doctoral Programme scholarship and *Marie Currie* fellowship
- 2003 - 2007, Scholarship of the *European University Institute*
- 2002, M.A. degree in Economics with honors, M.A. thesis judged outstanding and awarded departmental distinction
- 2000 - 2002, Scholarship of the Soros foundation
- 1997, Award for Outstanding study results at *Ljubljana State University*, B.A. Thesis - Distinction
- 1993 - 1997, *Zois* state merit scholarship

Additional Information

- Tilburg Law and Economics Centre, extramural fellow, 2007 - 2010