Digitization and the Value of Intermediaries in the Market for News

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INTRODUCTION

This short paper presents an economic perspective on factors that shape the market for news in the digital age. Using standard economic concepts of supply, demand, and competition, I offer ways of thinking about the value and impact of search, aggregation, and social networks in the market. I extend these ideas to discuss how royalty payments from platforms to publishers can alter incentives for market participants, with the potential for unintended consequences. The paper synthesizes ideas presented at the 2022 Symposium of the Kernochan Center for Law, Media and the Arts.[1]

I. THE ECONOMIC PERSPECTIVE

Despite popular views to the contrary, economic analysis of the media reaches well beyond the "business side" of the news industry. Economic research studies how agents in the market for information goods—firms, journalists, readers, and advertisers—make choices about what information to produce and what to consume. The pursuit of profit certainly plays a role, since producers have little incentive to publish news and information that does not interest readers and does not attract advertisers. But just as important is the consumer pursuit of value, understanding how readers, watchers, and sharers allocate their scarce time and money to an expanding stock of available information. More than anything else, it is the competition among producers for the scarce attention of consumers that ultimately shapes the outcomes we observe.

Economists connect the forces of supply and demand using models that predict behavior, then test these predictions against real-world data. This process of modeling and testing lies at the heart of economic science. With more than two decades of experience with digital markets, economic research has established some robust empirical facts that show how digital technology has altered supply, demand, and competition in the market for news. Research can also help us understand why

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1. Please contact the author for a copy of the full presentation.

institutions of search, aggregation, and social networks have emerged as new intermediaries in the market and reveal their effects on both producers and consumers.

Economic analysis goes beyond positive predictions about behavior to offer normative assessments of value. The foundation of normative assessment is the concept of "revealed preference," the idea that consumers reveal the value of goods and services through their choices. The simple notion that consumers allocate scarce time and money to the products they value most can have far-reaching implications, one of which is that quality is determined through the perspective of those making choices rather than an outside or fixed perspective of good and bad. Another implication of revealed preference is that products available but not consumed have low value despite potentially substantial costs to produce. While it is likely the case that some people have preferences over information consumed by others, the economic framework emphasizes value from those who actually allocate scarce funds and attention.

Economic models can also predict the behavior of agents on the supply side. This is the case not only for prices or business models, but also for content decisions. From an almost limitless set of possibilities, news producers plan and produce bundles of stories with a quantity and perspective expected to deliver maximum subscriber and advertiser revenue at minimum cost. Outlets might vary in their style (formality, political slant, topical emphasis) and production approach (role of editors, freelance reporters), but all share an objective of designing products to maximize profitability given demand.

Technology, costs, and competition all play a role in incentivizing both the amount and nature of content that we observe across news outlets. While firms in perfectly competitive markets are typically incentivized to produce product varieties desired by consumers, structural factors that limit competition can lead to very different outcomes. Through most of the twentieth century, the high cost and slow pace of transporting heavy newspapers across cities in the U.S. limited the size of news markets, typically to the city or county level. Markets for less "perishable" media, such as magazines, could be profitably distributed nationally or over larger geographies. High fixed costs of production further limited the number of firms that could profitably exist in most markets. In the years prior to digitization, few cities had more than two daily newspapers, and many were served by a single outlet.[2]

What were the incentives to produce news and information with this cost structure? Economic models tell us that profit-seeking firms with high fixed costs and minimal competition tend to design products to satisfy an *average* reader. Advertiser funding creates further incentives for newspapers to produce centrist content, as appealing to the median reader at modest prices maximizes readership.[3] The American tradition of

2. For historical background and consolidation trends in newspaper markets, see generally Lisa George, *What's Fit To Print: The Effect of Ownership Concentration on Product Variety in Daily Newspaper Markets*, 19 INFO. ECON. AND POL'Y 285 (2007).

3. The alternative to centrist products at modest prices being targeted products at higher prices, which might reduce sales but raise subscription revenue. For empirical evidence of how the rise of advertiser funding shifted publisher incentives to produce centrist rather than partisan coverage, see Maria Petrova, *Newspapers and Parties: How Advertising Revenues Created an Independent Press*, 105 AM. POL. SCI. REV. 790, 790–808 (2011).

urban dailies with centrist coverage stood in contrast to the organization of news markets in more densely-populated European countries with national papers with partisan orientation. Overall, the organization of the U.S. newspaper market is a product of high production and transport costs over a large geographic area, limiting the potential for content competition.[4]

II. DEMAND TRENDS: TRUST AND POLARIZATION

Economics teaches that demand can shift independent of supply concerns. In the US, social surveys indicate that demand for news and information was changing well before the digital era, in some cases before suppliers faced incentives to satisfy that demand. Political polarization and declining institutional trust are two related social trends that began in the 1970s but set the stage for changes in news markets later observed in the digital era.

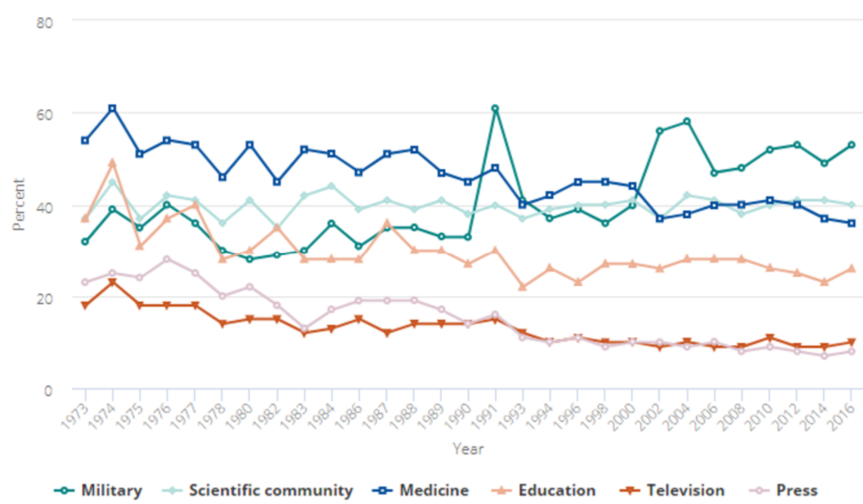

Figure 1: Public Confidence in Institutional Leaders, 1973–2016[5]

The General Social Survey has recorded declining trust in civic institutions since the 1970s. The steepest declines were in the 1990s, leveling off in the following decades. Figure 1 reports GSS responses related to institutional trust from 1973 through 2016.[6]

4. The incentives of news firms to enter markets and position products in response to demand is explored in Lisa George & Joel Waldfogel, *Who Affects Whom in Daily Newspaper Markets?*, 111 J. POL. ECON. 765 (2003).

5. NAT'L SCI. BD., SCIENCE & ENGINEERING INDICATORS 2018 CHAPTER 7, 63 (2018).

6. The General Social Survey (GSS) is a project of the independent research organization NORC at the University of Chicago, with principal funding from the National Science Foundation. The Figure reports responses to the following question: "As far as the people running these institutions are concerned, would

A few points in the Figure are worthy of note. Even in the 1970s, trust in media lay below trust in other institutions such as education, science, and the military. The gap between trust in media and other institutions also widened over time. Trust in media *relative to* other institutions came to be important in the digital era.

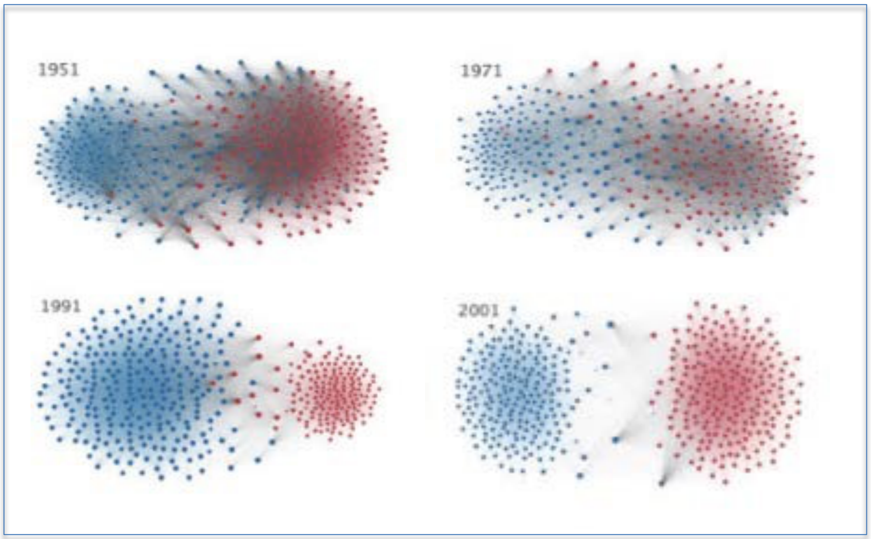

Figure 2: Division of Democrat and Republican Party Members Over Time[7]

In the years preceding digitization, large-scale social surveys also reported increasing measures of political polarization. For example, the share of individuals describing their political preferences as moderate fell from about forty-three percent in 1992 to thirty-five percent in 2019.[8] Observational studies of polarization in politics show even more pronounced trends than survey responses. For example, Figure 2 shows within-party and cross-party cooperation in roll-call votes in Congress in 1951, 1971, 1991, and 2001. Cross-party cooperation was not uncommon in the 1950s, less common in the 1970s, rare in 1990s, and close to zero after 2000.[9]

you say that you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?" The Figure shows the share of respondents indicating "a great deal of confidence." Additional trends are detailed in the full report. NAT'L SCI. BD., *supra* note 5.

7. Clio Andris et al., *The Rise of Partisanship and Super-Cooperators in the U.S. House of Representatives*, PLOS ONE, Apr. 21, 2015, at 6 n.4, https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0123507 [https://perma.cc/A8JL-HAMS] [https://web.archive.org/web/20230126021056/https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0123507].

8. Lydia Saad, *Americans' Political Ideology Held Steady in 2020,* GALLUP (Jan. 11, 2021), https://news.gallup.com/poll/328367/americans-political-ideology-held-steady-2020.aspx [https://perma.cc/N2MM-5S3D] [https://web.archive.org/web/20230126021343/https://news.gallup.com/poll/328367/americans-political-ideology-held-steady-2020.aspx].

9. Andris et al., *supra* note 7, at 1–14. The Figure depicts each member of the U.S. House of Representatives as a single node. Republican (R) representatives are in red and Democrat (D) representatives

Increased polarization and declining trust in media altered underlying demand for news and information before the digital transition even while supply constraints still limited the number and design of products offered to consumers. The most direct evidence of demand for partisan slant comes from daily newspaper readership. A groundbreaking methodological study of news coverage measured the left-right slant of over 400 daily newspapers by comparing language recorded in comprehensive full-text news databases to language used by Republican and Democrat in speeches in the House of Representatives. One robust finding was that partisan slant is strongly correlated with vote shares, with newspapers in liberal cities more left-leaning than newspapers in conservative regions.[10]

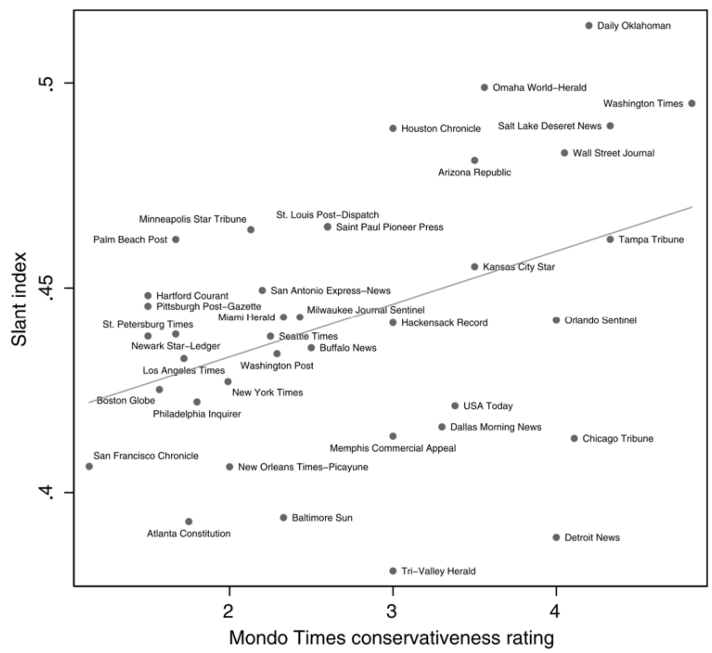

Figure 3: Language-Based and Reader-Submitted Ratings of Partisan Slant[11]

are in blue, with edges representing cross-party cooperation on roll-call votes. See source for methodological details.

10. Matthew Gentzkow & Jesse M. Shapiro, *What Drives Media Slant? Evidence from U.S. Daily Newspapers*, 78 ECONOMETRICA 35, 71 n.1 (2020), https://www.jstor.org/stable/25621396 [https://perma.cc/UMF4-BV3B] [https://web.archive.org/web/20230126021601/https://www.jstor.org/stable/25621396]. Gentzkow and Shapiro extend methods used by Groseclose and Milyo that measured slant using references to politically-aligned think tanks using large text archives. *See* Tim Groseclose & Jeffrey Milyo, *A Measure of Media Bias*, 120 Q. J. OF ECON. 1191, 1191–1237 n.4 (2005), https://www.jstor.org/stable/25098770 [https://perma.cc/S8P9-UHV3] [https://web.archive.org/web/20230126021801/https://www.jstor.org/stable/25098770].

11. Gentzkow & Shapiro, *supra* note 10, at 47.

For perspective, Figure 3 reports the Gentzkow and Shapiro (2010) measure of slant against user ratings collected by the media directory website Mondo Times (mondotimes.com) for a set of papers included in both data sources. The Mondo Times ratings use a five-point scale of one (liberal) to five (conservative) and are highly correlated with the language-based measure. The authors show that their language-based measure of slant for their full sample of 433 news outlets is highly correlated with standard measures of partisanship such as vote shares and campaign contributions.[12]

The central result of the study, however, is not the slant index itself, but the finding that newspaper readership is correlated with pro-attitudinal slant. Republicans in liberal cities are less likely to read the local newspaper than Democrats in those cities, and Democrats in conservative cities are less likely to read the newspaper than Republicans in those cities. In other words, consumers revealed a preference for coverage aligned with political preferences in markets characterized by few products and take-it-or-leave it choices.[13]

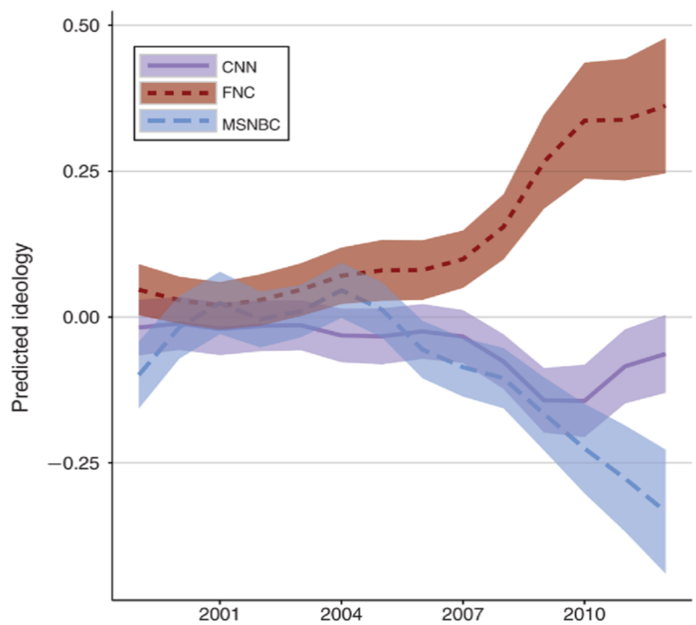

Figure 4: Estimated Ideology by Channel Year[14]

12. *Id.* The authors' Figures 4–6 show correlations between measured newspaper slant and local partisan shares, which are strongly positive.

13. *Id.*

14. Gregory J. Martin & Ali Yurukoglu, *Bias in Cable News: Persuasion and Polarization*, 107 AM. ECON. REV. 2565, 2574 n.9 (2017), https://www.aeaweb.org/articles?id=10.1257/aer.20160812. [https://perma.cc/

Without fundamental changes to the supply-side factors that limited competition in news markets and incentivized centrist content, shifts in demand toward news aligned with political viewpoints did not have major effects on newspaper markets. It was only with the expansion of cable television in the 1980s and associated expansion in channel capacity that news firms began to offer partisan news to satisfy underlying demand.

While systematic studies of slant in cable television are few, textual analysis has also been used to measure trends in partisan coverage on CNN, Fox News, and MSNBC from 2000 to 2012. Results show modest partisan slant from 2000 until about 2004, increasing thereafter, with trends reported in Figure 4.[15] But with competition in newspaper markets still restricted by high costs, the scope for preferences for pro-attitudinal coverage remained limited.

It is worth noting that preference for pro-attitudinal coverage was not the only aspect of demand to have been shifted in the years preceding digitization. In particular, the demand for national relative to local news also changed. Expansion of satellite technology allowed *USA Today* and later the *New York Times* to print and deliver in multiple cities, which in turn enabled them to compete for home delivery with local newspapers across the country. National circulation of both papers spread rapidly through the 1990s.[16]

Empirical studies of newspaper circulation and textual analysis of content show that national expansion of the *New York Times* reduced sales of urban dailies, especially among highly educated readers. Competition from the *Times* also induced shifts in coverage toward local content at competing daily papers.[17] The internet accelerated this trend, reducing circulation of daily newspapers and inducing shifts toward local coverage even before widespread availability of broadband and digital platforms.[18] The spread of technologies bringing new competition to local markets revealed unsatisfied aspects of demand that were only to grow with full digitization.

6GSH-J7T6] [https://web.archive.org/web/20230126021927/https://www.aeaweb.org/articles?id=10.1257/aer.20160812].

15. *Id.* at 2565–99. The authors present several alternative measures of slant that are consistent with Figure 3. *See* Gregory J. Martin & Ali Yurukoglu, *Bias in Cable News: Persuasion and Polarization*, 107 AM. ECON. REV. 2656 app. (2017), https://www.aeaweb.org/content/file?id=5278 [https://perma.cc/5XGS-AZH9] [https://web.archive.org/web/20221206233347/https://www.aeaweb.org/content/file?id=5278].

16. Lisa M. George & Joel Waldfogel, *The* "New York Times" *and the Market for Local Newspapers*, 96 AM. ECON. REV. 435, 435–47 n.1 (2006), https://www.jstor.org/stable/30034376 [https://perma.cc/UK9D-6AS2] [https://web.archive.org/web/20230126022335/https://www.jstor.org/stable/30034376].

17. *Id.*

18. Lisa M. George, *The Internet and the Market for Daily Newspapers*, 8 B.E. J. ECON. ANALYSIS & POL'Y 1, 1–33 n.1 (2008), https://www.degruyter.com/document/doi/10.2202/1935-1682.1944/html [https://perma.cc/V9YT-XWWQ] [https://web.archive.org/web/20230126022435/https://www.degruyter.com/document/doi/10.2202/1935-1682.1944/html].

III. SUPPLY TRENDS: TECHNOLOGY AND COMPETITION

It is hard to overstate the effects of high-speed internet on the supply of media products of all kinds—news, information, music, video, etc. In economic terms, technology reduced the up-front or "fixed" costs of producing content and reduced the per-unit costs of distributing products to far-flung consumers. Lower up-front costs reduced the barriers to entering markets, bringing about an explosion in the quantity and variety of news and information produced. The explosion of digital information was not limited to news from established publishers, but included material from government, educational, and commercial sources as well as independent experts seeking to access consumers directly. Lower distribution costs united products formerly separated by geography (national, local, global) or format (television, print, radio) into a single digital market. The shift from insulated monopoly producers to massive global competition was the most profound shock induced by digitization, from which many publishers never recovered.[19]

From the consumer perspective, the explosion of new information options was accompanied by only modest expansion in the time available for consumption. The expansion in choice without increase in time introduced consumption costs not present in the predigital world. In other words, realizing the benefit of higher quality content matched to individual preferences required expenditure of time on search and discovery. All else equal, many consumers also wanted to read articles popular with others, adding further costs of selecting content of highest social value. In short, search, discovery and social connection imposed new costs on consumers at the same time production and distribution costs were falling for news producers.[20]

The new media institutions of search, aggregation, and social media arose directly to help consumers minimize the costs of discovering the best content at any point in time. Today, consumers that access news via platforms and social media show higher overall information consumption and greater appetite for variety than those who access news through direct access to individual outlets. Of course, many consumers still prefer news from established brands such as the *New York Times* and subscribe to these outlets. But many, many people have revealed that content from news media is highly substitutable across news providers as well as between news outlets and other sources.[21]

19. George & Waldfogel, *supra* note 16. Early insights on the link between fixed costs, distributional costs and competition in the digital era were documented in CAL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY (1999).

20. *Id.* For a discussion of time and attention tradeoffs in news consumption, see Lisa George & Christiaan Hogendorn, *Aggregators, Search and the Economics of New Media Institutions*, 24 INFO. ECON. POL'Y 40 (2012).

21. This result appears in several empirical studies of aggregators. *See, e.g.*, Lisa George & Christiaan Hogendorn, *Local News Online: Aggregators, Geo-targeting and the Market for Local News*, 68 J. INDUS. ECON. 780 (2020); Susan Athey, Markus Mobius & Jeno Pal, *The Impact of Aggregators on Internet News Consumption* (Nat'l Bureau of Econ. Rsch., Working Paper No. 28746, 2021); Ro'ee Levy, *Social Media, News Consumption, and Polarization: Evidence From a Field Experiment*, 111 AM. ECON. REV. 831 (2021). Time and attention tradeoffs also play an important role in theoretical studies of aggregation. *See* George & Hogendorn, *supra* note 20; Larbi Alaoui & Fabrizio Germano, *Time Scarcity in the Market For News*, 174 J. ECON. BEHAV. ORG. 173 (2020).

Some empirical evidence shows that the small costs of search and discovery do affect consumption. One example comes from the 2010 introduction of personalized geographic targeting on Google News. At that time, Google added to the landing page a permanent strip of links to articles associated with the location of the user's IP address with a goal of promoting discovery of local content. The geo-targeted links did increase visits to local news sites. However, the targeted content shifted consumption by only a small magnitude from a very low base, suggesting that low interest in local news arises from lower demand relative to other content rather than due to search costs.[22]

A more broad-based study based on the full shutdown of Google News in Spain showed that the shutdown of Google News reduced news consumption by 20% for Google News (treated) users. The shutdown also reduced page views on publisher sites outside of Google News by 10%, with effects concentrated on smaller outlets.[23] In other words, consumption lost with closure of Google News was not replaced by direct visits. Taken together, this research suggests that aggregation works to increase demand for news, especially for smaller outlets.

Increased quantity and variety of news consumed is a first-order effect of the content explosion caused by digitization, as is the emergence of intermediaries that match content to consumer preferences. Other effects of digitization are secondary from the consumer standpoint but still have important industry implications. The desire to share news links with commentary on social media creates strong network effects in media, in other words raises the demand to read and share what others are reading and sharing. Network effects tend to concentrate attention into a smaller number of sources. This is despite the first-order effects of increased availability and consumption of niche products. The net effect in news has been concentration of attention onto a small number of large outlets such as the *New York Times* and *Washington Post* while smaller producers struggle to find audience. Empirical findings indicates that, as predicted by theory, aggregators benefit smaller producers more than large ones.[24]

The popularity of news sharing also alters incentives on the supply side. Whereas advertiser funding tends to incentivize neutral content that maximizes viewing, subscriber funding and, especially, social networks can work in the opposite direction. This is because readers tend to share content that appeals to emotion. In this regard search and aggregation are different than social media, with success in social media more driven by sensational coverage.[25]

22. *See* George & Hogendorn, *supra* note 21.

23. *See* Athey et al., *supra* note 21.

24. The tendency of digital markets to both enhance the market share of superstars while also supporting "'long-tail" of niche content is at this point a well-documented feature of digital markets for music, books and other digital media, *see* ERIK E. BRYNJOLFSSON, YU (JEFFREY) HU & MICHAEL D. SMITH, RESEARCH COMMENTARY: LONG TAILS VS. SUPERSTARS: THE EFFECT OF INFORMATION TECHNOLOGY ON PRODUCT VARIETY AND SALES CONCENTRATION PATTERNS, 21 INFO. SYS. RSCH. 736–47(2010). Aggregators disproportionally affect visits to smaller outlets. *See* George & Hogendorn, *supra* note 21; Athey et al., *supra* note 21; Leslie Chiou & Catherine Tucker, *Content Aggregation by Platforms: The Case of the News Media*, 26 J. ECON. MGMT. STRATEGY 782 (2017).

25. For an early study of how affect impacts sharing, see Jonah Berger & Katherine L. Milkman, *What Makes Online Content Viral?*, 49 J. MKTG. RSCH. 192 (2012).

IV. POLICY, INCENTIVES, AND CONSEQUENCES

With this background on how demand, supply, and competition affect equilibrium outcomes in news markets, it is possible to make some predictions about the positive and normative effects of policy interventions.

I've noted above that underlying features of demand for news and information such as preference for pro-attitudinal coverage, for variety, and for non-local content emerged before digitization, so underlying consumer preferences are unlikely to be altered by new policies. Instead, outcomes will be determined by how agents on the supply-side—intermediaries and publishers—alter product offerings when faced with new incentives established by policies. Consumer responses to product adjustments will in turn establish the new outcomes.

The intervention currently favored by media outlets is royalty fees paid by platforms to publishers.[26] These fees might be assessed at the outlet level or on a per-article basis, but the overall incentives and therefore effects would be similar. Policies might also include fees for links shared by users on social networks. In each case, however, the ultimate impact of royalty fees will be determined by two demand factors: (1) the extent to which platform users view content from sources without royalties (government, scientific, independent, or in-house content) as close substitutes for publisher content with royalty fees; and (2) the extent to which consumers view publisher news links as adding value to the platform. These two related attributes of demand matter because they determine the profitability of different platform strategies.

To see this, consider the choices of an aggregator such as Google News. Standard profit maximization dictates that Google will link to a particular news article on the Google News page if it is profitable to do so, meaning the incremental revenue from the new link exceeds the cost. In the current environment with no royalties, the new link is posted if the advertising revenue (from time spent on the Google News page) with the new link exceeds revenue from the best alternative link. Stated another way, links are added when the advertising revenue of the new link exceeds the opportunity cost of removing the best alternative link.

With royalty fees, a link to a publisher article is profitable only if the incremental revenue from the new article *less the royalty cost* exceeds revenue from the next best.

26. This approach has been favored by major publishers such as NewsCorp since early in the digital era. *See, e.g.*, Roy Greenslade, *Murdoch and Curley To Google: Pay Up!*, THE GUARDIAN (Oct. 9, 2009, 8:31 AM), https://www.theguardian.com/media/greenslade/2009/oct/09/rupert-murdoch-associated-press [https://perma.cc/4GWQ-ASQM] [https://web.archive.org/web/20230308190420/https://www.theguardian.com/media/greenslade/2009/oct/09/rupert-murdoch-associated-press]. Print and broadcast news organizations more recently pressed for payments through support of the Journalism Competition and Preservation Act. *See Pass Journalism Competition and Preservation Act: Editorial,* AP NEWS (Oct. 26, 2018), https://apnews.com/article/419b70b2ae674239bf2fd4dee1b34e61 [https://perma.cc/VYP9-CPD6] [https://web.archive.org/web/20230308191228/https://apnews.com/article/419b70b2ae674239bf2fd4dee1b34e61]. For broadcast news, see *Testimony of Joel Oxley at Congressional Hearing on Journalism Competition and Preservation Act*, NAT'L ASSOC. OF BROAD. (Feb. 2, 2022), https://www.nab.org/documents/newsroom/pressRelease.asp?id=6375 [https://perma.cc/KNQ7-FEM6] [https://web.archive.org/web/20230308191615/https://www.nab.org/documents/newsroom/pressRelease.asp?id=6375].

This changes the tradeoff for Google from one of selecting the best link for consumer engagement to one of selecting the best link for consumer engagement less royalty cost. In other words, the quality threshold for linking to a publisher article with royalty is higher than for linking to content without a royalty cost. If royalties for some articles were higher than for others, the quality threshold for including a high royalty link would be higher than for a lower priced link. With a higher threshold for profitability, Google would be expected to include fewer publisher links on the Google News page relative to alternative sources, with the quantity of publisher links falling with higher royalty prices.

What will determine the number of publisher links in practice is how consumer engagement with Google News varies with the type of links on the Google News page. If consumers view articles from sources without royalties (independent journalists, in-house coverage, educational or government sources) as close substitutes for publisher articles, then time spent on the Google News page would not be highly sensitive to the type of links posted. This means that the difference in advertising revenue from publisher links relative to other links would be small and may not exceed the royalty cost. In this case it would not be profitable for Google to include many links to articles with royalties. This decision might be made at the level of individual user, so some users would see publisher links and others might not. Overall, if most users viewed articles from non-royalty sources as close substitutes for publisher content, links to publisher articles on the Google News page would fall, possibly to zero. This implies that *visits* to publisher sites would fall, and publishers would earn minimal royalties.

If, on the other hand, users do *not* view royalty-free sources as close substitutes for publisher articles, removing publisher links would reduce the time individuals spend on the Google News platform. In this case, removing publisher links would reduce platform revenue, so it would be profitable for Google to include links for which incremental revenue from attention exceeded royalty cost. Again, the substitutability of articles from the consumer perspective is key, with the most profitable publisher links likely to be those most differentiated from royalty-free content. In this case of more limited substitutability, the quantity of links to publisher content would fall with royalty price but less so for publishers with the most distinctive content from the user perspective. This implies that visits to some publishers' sites would rise and earn royalties, while links to undifferentiated content would shrink or disappear, earning minimal royalties.

It might be the case that consumer time on Google News is so highly dependent on publisher links that removing them would substantially reduce engagement on the Google News page. If the royalty cost is low, it would be profitable to maintain the site with links selected based on the incremental revenue-cost tradeoff described above. However, if royalty prices were high and substitutability low, total royalty costs would exceed the revenue from attention to the Google News page. In this case it would be more profitable to shut down the Google News site altogether than to redesign the site. In this case, news visits would fall, and royalty payments would be zero.

It's worth noting that these scenarios do not require comparisons of publisher content with royalty-free sources on an article-by-article or topic-by-topic basis. What matters is the engagement attached to a publisher link relative to the next best royalty-free link *on any subject*, which might be drawn from television, magazines, or independent writers. The essential tradeoffs are also the same whether royalties are assessed at the outlet or article level, though the former is likely to produce less diverse links to a smaller set of sources.

The tradeoffs for liking on social media are somewhat different, but the platform strategy would still be governed by a balance between incremental revenue and cost. In the case of sharing, platform users select links to share rather than the platform, which means that users can affect the cost faced by the firm. This choice can include potentially malicious behavior, such as automated sharing. Because a social network has less control over linking and sharing than an aggregator, the cost benefit tradeoff would become a more binary one of whether to allow allowing sharing of particular content at all based on the incremental revenue from engagement less royalty cost.

How likely are these different scenarios? One lesson of research on digital media is that competing products are closer substitutes from the perspective of consumers than publishers expect.[27] Another lesson is that trust matters. If consumers trust information provided by government organizations, scientific sources, or other institutions as much as (or more) than they trust news media, then substitutability between published news articles and primary sources is likely to be high.

Some of the most relevant empirical evidence on substitutability comes from Chiou and Tucker (2017), which found that temporary removal of all Associated Press coverage from Google News during a contract dispute substantially reduced visits to AP content (measured via comparison to visits via Yahoo News), but did *not* reduce time spent on the Google News platform.[28] This result suggests that it might be possible for Google to remove many links to sites requiring royalties without substantial attention and revenue loss from the Google News page.

Evidence from Athey et al. (2021), which records effects of closing Google News in Spain, suggests that the value of publisher links compared to alternative coverage might be higher from the consumer perspective, but that the royalty cost of linking to publisher content exceeded the value of attention to the Google News page.[29] As a result, it was more profitable for Google to shut down the Google News site entirely than to incur royalty costs. Other indirect evidence on substitutability comes from George and Hogendorn (2020), which found that adding targeted links to the Google News page shifted the share of attention to local articles rather than increasing overall

27. For example, the high sensitivity of e-book sales to price changes suggests that even small price savings will induce purchase. For popular coverage, see Ryan Mac, *Amazon Does E-Book Math for Hachette in Arguing for $9.99 Prices*, FORBES (Jul. 29, 2014, 8:18 PM), https://www.forbes.com/sites/ryanmac/2014/07/29/amazon-does-e-book-math-for-hachette-in-arguing-for-9-99-prices/?sh=2040fc3a70d0 [https://perma.cc/JME6-XWVM] [https://web.archive.org/web/20230308182239/https://www.forbes.com/sites/forbesdigitalcovers/2018/07/12/why-the-rocks-social-media-muscle-made-him-hollywoods-highest-paid-actor/?malcolm=A&api=true&streamIndex=1]. A comprehensive academic study of e-book pricing is available in Imke Reimers & Joel Waldfogel, *Throwing the Books at Them: Amazon's Puzzling Long Run Pricing Strategy,* 83 S. ECON. J. 869 (2017).

28. *See* Chiou & Tucker, *supra* note 24.

29. Athey et al., *supra* note 21.

demand for local news, again indicating a substitutability of content that works against the potential for publishers to earn substantial revenue from royalties.[30]

And what about the incentives of a royalty regime on publishers? The value of a link to Google will depend on its differentiation from other independent content without royalties. Thus, a natural response for publishers seeking royalties would be to differentiate coverage from other sources, a change likely to benefit consumers. However overall demand for publisher coverage will still matter for profitability on Google News, so it is likely that links with royalties will likely be paid to the largest and most popular producers.

V. CONSEQUENCES AND CONCLUSIONS

This article offers an introduction to supply, demand and competitive incentives that determine the content that gets produced and consumed in media markets in the digital era. Economic research on media topics is far-reaching, and I focus here only on direct production and consumption decisions rather than broader social outcomes. But this is not to say that the consequences news production and consumption decisions do not matter: a substantial literature documents how news coverage and news consumption impact the behavior of politicians, of voters, and of firms, in most cases for the better.

But a key lesson from economics is that consumption is what matters in a world of abundant choice and limited time. News publishers and digital platforms will always design products to maximize profitability, making decisions that depend on incremental revenue and cost. Both policy and technology alter the profitability tradeoffs of producers, often with unintended or unforeseen consequences.

Digital markets have replaced the take-it-or-leave-it model of monopoly news markets of earlier decades. The digital environment of low production and distribution cost, easy entry and aggressive competition has given power to consumers, but also to the tools that help individuals discover, access, and share information. Real-world evidence indicates that diminishing the features that complement news consumption will lessen rather than increase interest in news. That is the unintended consequence of intervention that we all should keep in mind.

30. George & Hogendorn, *supra* note 21.