MARKET CONCENTRATION AND THE IMPORTANCE OF PROPERLY DEFINED MARKETS

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Since the 1970s, America's antitrust policy regime has been weakening and market power has been on the rise. High market concentration—in which fewer firms exist in a given market—is one troubling symptom and cause of market power. From 1985 to 2017, we saw an increase in the annual number of mergers from 2,308 to 15,361 (IMAA 2017). The failure of antitrust policy in the U.S. has led to an increase in market concentration in 75% of industries from 1997 to 2012 alone (Grullon, Larkin, and Michaely 2016). High market concentration deters healthy competition, leading to low investment by companies who don't need to keep up with competitors in R&D. It can also lead to stagnant wages through labor market monopsony—where employers have the discretion to set wages and working conditions on their own terms, without fearing that their workers could check their power by finding another job. High market concentration makes it nearly impossible for small businesses to compete or for new businesses to enter the market because of the increased cost of entry. Overall, this trend leads to rising inequality and a decline in labor mobility and entrepreneurship.

Improper market definitions have led to underestimated calculations of market concentration across significant industries in the U.S. This has caused many to look elsewhere for the causes of the failures in our economy. As you can see in the table below, nearly all of the markets within the industries included are highly concentrated. Antitrust enforcement agencies and courts must properly define markets, so that proper analysis of increased concentration and its effects can be studied.

THE ESTABLISHMENT OF HORIZONTAL MERGER GUIDELINES

The Clayton Antitrust Act of 1914 was a staple in America's antitrust law; it provided substantial changes by supplementing the Sherman Antitrust Act of 1890 through prohibitions of conduct. The act focused on price discrimination, exclusive dealings, and mergers and acquisitions. Section 7 of the Clayton Act states that a merger will be prohibited if "in any line of commerce or in any activity affecting commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition, or to

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tend to create a monopoly" (DOJ 2010). Since 1968, this statute has been enforced according to the Horizontal Merger Guidelines.

The Horizontal Merger Guidelines, formed by the Department of Justice (DOJ) and the Federal Trade Commission (FTC), outline the techniques, practices, and enforcement policy with respect to the mergers and acquisitions amongst competitors. In the 1968 guidelines, the main concerns were barriers to entry and concentration ratios. In 1982, the guidelines were updated to include the Herfindahl-Hirschman Index, which will later be defined. In the update, the DOJ raised the level of market concentration necessary for the government to scrutinize mergers. Then again, in 2010, the level of market concentration was raised even more. As a result, decades of lax merger review and antitrust enforcement gave way to rampant market power across core industries.

Before an analysis of market concentration can occur, the relevant market must first be defined. Antitrust officials determine the "relevant market" as the alternative firms or products available to consumers within the same market of the merging firms. For example, if a firm were to raise its prices after a proposed merger, regulators may examine how easy it would be for consumers to switch to another, more affordable product. When determining which products compete in a given market, the geographical extent of the market is often a crucial dimension. The guidelines define the geographical area as one where buyers in a potential monopolist market do not have the ability to defeat a price increase by going to distant sellers. Due to travel costs, for instance, customers are unlikely or unable to travel an exceedingly long distance to buy a product from a different company following a price spike.

MEASURING MARKET CONCENTRATION

The Herfindahl–Hirschman Index (HHI) is a commonly used measure for determining market concentration. It is calculated by squaring the market share of each firm in a market and summing them up. Market share can be calculated using revenue or sales. For example, if we have four firms in a market with market shares of 35%, 30%, 20%, and 15%, the HHI would be 302 + 252 + 252 + 202 = 2550. The index ranges from 1 (perfect competition) to 10000 (a monopoly).

According to the Horizontal Merger Guidelines, a market with an HHI above 2500 is considered highly concentrated. It states, "mergers resulting in highly concentrated markets that involve an increase in the HHI of more than 200 points will be presumed to be likely to enhance market power" (DOJ 2010). Before 2010, the guidelines were much more strict. The guidelines considered a highly concentrated market to be one with an HHI above 1800, and a post merger HHI increase of 100 to be considered potential for enhanced

market power. The Obama administration believed it should loosen the guidelines and block mergers that exceed the two HHI thresholds, since before, too many mergers would exceed the threshold, but most would go unchallenged. However, just like in the 1980s when the restrictions were first loosened, we continue to see many cases where mergers exceeded the higher threshold and still were unchallenged.

The figures reported at the start of this issue brief refer to industry concentration levels. They calculated industry concentrations by summing the square ratios of firms' sales to total industry sales and found industry concentrations to be high and increasing over time. Industry concentration is not the same as market concentration in a relevant antitrust market. A relevant antitrust market includes the options available to consumers, workers, or other counterparties to the merging firms. That is usually fewer than all the firms in a given industry. Thus, the market concentration of a properly defined antitrust market within specific industries can be much higher than the concentration of each industry overall.

Market definition is one of the most crucial tasks in antitrust enforcement, and in sectors where the antitrust agencies have reviewed many mergers, they tend to have established rules of thumb about the appropriate market definition. For example, in mergers between hospitals, they might conclude that the relevant market for a given merger is a 20-mile radius around hospitals owned by the merging parties. What that means is that when patients consider which hospital to go to, they generally choose from the options within that radius. In this issue brief, I report a number of concentration calculations for antitrust markets as defined by the antitrust literature for a number of industries and sectors that have seen merger activity in recent years.

INADEQUATE ENFORCEMENT OF THE GUIDELINES

As you can see in the table below, nearly all of the markets reviewed are highly concentrated across the different industries. The internet search engine market is composed of companies looking to advertise their products by purchasing ads and listings using search services. It was highly concentrated with an HHI of 5105 in 2010, with Google, Microsoft, and Yahoo sharing over 96% of the revenue. Just two years later, the HHI grew to 5506, following the Search Alliance made by Microsoft and Yahoo (Noam 2016). The Search Alliance was a deal that enabled Microsoft to bypass acquiring Yahoo by instead powering Yahoo's search engine in exchange for listings and ads on Bing, Microsoft's search engine. The DOJ shut down a potential Google-Yahoo pact a year prior in fear of the highly concentrated search engine market becoming even more so. However, they did not challenge the Search Alliance in court, even though the guidelines would suggest that there would be grounds to do so. To have an online presence, companies must now either choose

between signing up for Google Adwords or Microsoft's Bing Ads.

There is also a huge concern recently about user privacy. Up until last year, online companies have been able to sell one's browser history with their consent. President Trump signed a bill further rolling back restrictions and allowing one's search history to now be sold without consent. In our current duopoly—in which two companies dominate the market for online advertisements—we have no other choice than to accept that whatever we search on Google or Bing can be sold to whomever without our knowledge. In a competitive search engine industry, we would be able to instead use a competitor's service to avoid this practice, possibly discouraging Google or Microsoft from continuing to invade our privacy.

The Whirlpool acquisition of Maytag in 2006 led to the refrigerator industry's high HHI growing from 2244 in 2007 to 2484 in 2008 (Taylor 2012). Before the acquisition, the top four companies within the industry had a 98% share of the market. At the time, the standard for enforcement was much lower than it is today. Yet, even with a lower standard, antitrust regulators did not challenge the merger at the time.

PROPER MARKET DEFINITIONS CAN STRENGTHEN ANTITRUST POLICY

The health insurance industry has had many large mergers in the past two decades. When analyzing a potential merger between two large insurance agencies, it would be wrong to define the market at the national level. At the national level, there are many insurance companies and the HHI would be very small, so any merger would not increase the calculated HHI significantly. Also, health insurance is regulated at the state level, so insurance regulators have to approve policies offered in their state. Therefore, the proper market definition would be at the state level or even the local level, since buyers can only buy insurance that is available within their geographical area. One study looked at health insurance premiums offered by 800 employers in 139 geographical areas. They calculated the average HHI to be 2984 in 2006 (Dafny et al. 2012), revealing that the health insurance industry is highly concentrated.

The Aetna-Humana merger of last year was blocked by the DOJ. The market here was defined as Medicare Advantage plans at the county level. It was found that in all 364 complaint counties, the post-merger HHI would have surpassed 5000 for 75% of the counties. In 70% of the counties, the HHI would have increased by over 1000. In 70 counties, where Aetna and Humana are the only two Medicare Advantage plan providers in the market, the merger would have created a monopoly (DOJ 2017). Aetna's lawyers argued that the Medicare and Medicare Advantage plans should be in the same market. However,

Medicare Advantage plans are run by private companies and provide extensive coverage. In exchange for out-of-pocket limits and supplemental benefits, seniors can choose to pay monthly premiums and give up network flexibility by choosing Medicare Advantage over Original Medicare. This difference is the reason why the DOJ decided to define each plan in different markets.

The pharmaceutical industry needs to have clearly defined markets. A study by Torreya Partners stated "it is readily apparent that the generic pharmaceutical segment is not highly concentrated," but they defined the industry at the global level, looking at revenue of companies that sell generic brand drugs and calculated the HHI to be 210 (Lefkowitz, Opler, and Vaderah 2016). One cannot get a prescription from their doctor to buy a drug from a different country, so the market should be defined at the country level at least. More importantly, though, the product market should not be defined using all generic drugs in the same market. A consumer cannot substitute their diabetic medication with an antidepressant in the way they might be able to substitute one fast food item for another. Instead, the pharmaceutical industry should have its markets defined by specific drugs. In the failed attempt by the DOJ to block the Pfizer-Warner merger in 2000, the DOJ lawyers pointed out that the HHI for specific drug markets would increase by a substantial amount. For example, over the counter pediculicides would see an HHI increase from 2223 to 4024. Pfizer's Aricept had 98% of the Alzheimer's treatment market, with Warner's Cognex being their only competition (FTC 2000). With better defined markets, antitrust officials can block anti-competitive mergers—and, in the case of the pharmaceutical industry at least, protect Americans' access to affordable medication.

LABOR MARKETS SHOULD CONSIDER MERGER ANALYSIS

The Horizontal Merger Guidelines include a section on protecting customers from price discrimination and a section on obstructing mergers of competing buyers, but there is no framework regarding the potential effects of concentration on the labor market. The guidelines' approach to the merging of buyers is to see if there will be a decrease in the price paid to suppliers for their goods and services. As individuals, we provide our labor as a service to companies in exchange for wages. If a merger happens in a highly concentrated industry, the effect it has on the employees of that industry must be considered. Layoffs are likely to occur, since many of the positions of the two firms will overlap in duties, and workers' bargaining power for wages will also decline.

The potential effects of mergers on the labor market have recently been elevated as a concern for antitrust regulators. A recent paper on labor market concentration defined the labor market as job vacancies by occupations at the SOC-6 level and commuting zone

(Azar, Marinescu, and Steinbaum 2017). The authors found the average HHI to be very high at 3157. They also found that increasing market concentration is associated with lower wages. Despite the major economic implications, there is a lack of literature in connecting labor market concentration to antitrust policy. The paper served as evidence in favor of using labor markets as a factor in merger analysis.

CONCLUSION

If the DOJ does not make significant changes to the enforcement of antitrust policy, fewer and fewer firms will continue to expand their dominance in many industries. The public perception of why we do not want a monopoly, or even an oligopoly, to control markets is that there is the potential for excessive price increases for consumers. However, consumers are not the only ones who are affected by rampant market power. Market concentration leads to stagnant wages, fewer new businesses, and a diminished supply chain. The DOJ must add provisions to the Horizontal Merger Guidelines to account for concentration in the labor market, and they must step up and challenge more mergers overall.

HHI Concentration Levels by Industry				
Industry	Study	Market Definition	Average HHI	Year(s) Studied
Labor Market	Azar, Marinescu, Steinbaum (2017)	Job vacancies in commuting zones by SOC-6 occupation (Careerbuilder)	3157	2010-2013
Labor Market	Azar, Marinescu, Steinbaum, Taska (2018)	Job vacancies in commuting zones by SOC-6 occupation (Burning Glass)	3953	2010-2013
Airline	Azar, Schmalz, Tecu (forthcoming)	Airport-to-airport routes	5264	2001-2014
Airline	Kwoka, Hearle, Alepin (2016)	Airport-to-airport routes	3930	2009-2010
Retail Groceries	Hosken, Olson, Smith (2012)	Revenue shares of grocery stores within in cities	2914	2007
Appliance Industry	Taylor (2012)	Revenue shares at the national level	2484	2008
Broadband	Noam (2016)	Local broadband ISP connections by number of subscribers	3171	2013
Wireless	Noam (2016)	Mobile telecommunications at the national level	2636	2013
Beer	Gokhale, Tremblay (2012)	Revenue share of domestic beer brewing industry at the national level (not including craft)	4329	2009
Beer	Miller, Weinberg (2017)	Revenue share of brewing industry at the national level	2162	2011
Internet Search/Advertising	Noam (2016)	Revenue from banner ads, buttons, and sponsorships	5506	2012
Medical Devices	Lobmayr (2011)	Active firms in the medical specialty at the national level	5370	2007
Health Insurance	Daffny, Duggan, Ramanarayanan (2012)	Growth rate of premiums offered by employers in local markets	2984	2006
Fertilizer	Taylor, Moss (2013)	Production capacity of nitrogen-based fertilizer in North America	2107	2011
Fertilizer	Taylor, Moss (2013)	Production capacity of phosphorus-based fertilizer in North America	3163	2011
Fertilizer	Taylor, Moss (2013)	Production capacity of potash-based fertilizer in North America	4604	2011
Pharmaceutical	Leftkowitz, Opler, Vaderah (2016)	Generic brand companies at the global level	210	2016
Pharmaceutical	Dave, Kesselheim, Fox, Qiu, Hartzema (2017)	Average HHI amongst generic drugs in markets with HHI below 5000	3600	2008
Pharmaceutical	FTC (2000)	Suppliers of OTC pediculicides	2223	2000
Pharmaceutical	FTC (2000)	Suppliers of SSRI/SSNI drugs	1834	2000
Pharmaceutical	FTC (2000)	Supplier of Alzheimer's treatment drug	9801	2000
Meat Packing	Department of Justice (2008)	Cattle Packing in the High Plain Region	2100	2008
Meat Packing	Department of Justice (2008)	Cattle Packing in the Southwest Region	3200	2008

REFERENCES

Azar, Jose, Ioana Marinescu, and Marshall Steinbaum. 2017. “Labor Market Concentration.” SSRN Electronic Journal. http://dx.doi.org/10.2139/ssrn.3088767.

Azar, Jose, Martin C. Schmalz, and Isabel Tecu. 2017. “Anti-Competitive Effects of Common Ownership.” SSRN Electronic Journal.

Dafny, Leemore, Mark Duggan, and Subramaniam Ramanarayanan. 2012. “Paying a Premium on Your Premium? Consolidation in the US Health Insurance Industry.” *American Economic Review*, 102 (2): 1161–85.

Dave, Chintan V., Aaron S. Kesselheim, Erin R. Fox, Peihua Qiu, and Abraham Hartzema. 2017. “High Generic Drug Prices and Market Competition: A Retrospective Cohort Study.” *Annals of Internal Medicine*, 167 (3): 145.

The Federal Trade Commission. 2000. *Pfizer Inc. - Warner-Lambert Company*. Complaint.

Gokhale, Jayendra and Victor J. Tremblay. 2012. “Competition and Price Wars in the U.S. Brewing Industry.” *Journal of Wine Economics*, 7 (02): 226–40.

Grullon, Gustavo, Yelena Larkin, and Roni Michaely. 2017. “Are U.S. Industries Becoming More Concentrated?,” 67. SSRN Electronic Journal. http://dx.doi.org/10.2139/ssrn.2612047.

Hosken, Daniel S., Luke M. Olson, and Loren K .Smith. 2017. “Do Retail Mergers Affect Competition? Evidence from Grocery Retailing.” *Journal of Economics & Management Strategy*, 27 (1): 45.

Institute for Mergers, Acquisitions, and Alliances (IMAA). 2017. “M&A US - Mergers & Acquisitions in the United States.”

Kwoka, John, Kevin Hearle, and Phillippe Alepin. 2016. “From the Fringe to the Forefront: Low Cost Carriers and Airline Price Determination.” *Review of Industrial Organization*, 48 (3): 247–68.

Lefkowitz, Allen, Tim Opler, and Vimal Vaderah. 2016 “Generic Pharmaceutical Industry Yearbook.” Torreya Partners.

Lobmayr, Bernard. 2011. “Innovation and Regulation in High-Risk Medical Device Markets.” Centre for Regulation and Market Analysis.

Martin Gaynor, Kate Ho, and Robert J. Town. 2015. “The Industrial Organization of Health-Care Markets.” *Journal of Economic Literature*, 53 (2): 235–84.

Miller, Nathan H., and Matthew C. Weinberg. 2017. “Understanding the Price Effects of the MillerCoors Joint Venture.” *Econometrica*, 85 (6): 1763–91.

Moss, Diana L., and Robert C. Taylor. 2013. “The Fertilizer Oligopoly: The Case for Global Antitrust Enforcement” American Antitrust Institute, 13-05.

Noam, Eli M. 2016. *Who Owns the Worlds Media? Media Concentration and Ownership around the World*. Oxford: Oxford University Press.

Taylor, Margaret. 2013. “An Exploration of Innovation and Energy Efficiency in an Appliance Industry.” Berkeley National Laboratory.

The United States Department of Justice. 2008. *U.S. and Plaintiff States v. JBS S.A. and National Beef Packing Company, LLC*. Complaint.

The United States Department of Justice. 2010. *Horizontal Merger Guidelines*.

The United States Department of Justice. 2017. *Aetna-Humana, Memorandum Opinion*.

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