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**Market Concentration - Note by Joshua D. Wright**

**Hearing on Market Concentration**

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More documents related to this discussion can be found at [www.oecd.org/daf/competition/market-concentration.htm](http://www.oecd.org/daf/competition/market-concentration.htm) .

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## *Towards a Better Understanding of Concentration: Measuring Merger Policy Effectiveness*

Joshua D. Wright\*

### **Introduction**

1. Now is an important time in American antitrust history. More specifically, now is an important moment in policy debates about the appropriate relationship between market concentration and United States antitrust law and competition policy. There is widespread belief that corporate concentration is increasing in the United States and abroad. With the growing perception that market concentration in the United States is increasing have come renewed assertions that concentration and economic performance are systematically and inversely related. The resulting axiom is that increasing concentration has caused an increase in market power, which in turn has led to higher corporate profits, reduced output, higher prices, and a reduction in overall consumer welfare. Some have offered related claims that the increase in market concentration has had other demonstrable and significant economic impacts, including an increase in economic inequality. Lax antitrust policy, and lenient merger enforcement in particular, is understood to be the root cause of these and other problems.

2. It is important, as a logical matter, to identify separately the claims that have been made in the current debate. The first is the empirical observation that increases in aggregate concentration measures imply a meaningful reduction in competition in actual markets. The second is the claim that increases in aggregate concentration levels is sufficient to infer a causal relationship with poor economic performance. The third is the related claim that it is lax antitrust policy – and in particular, lax merger enforcement – in the United States that has caused both the increase in aggregate market concentration, if it exists, and the reduction in economic performance. Each of these claims should be taken quite seriously. And each can be evaluated with existing empirical evidence. It is only with a careful understanding of what exactly we know and do not know about each of these claims that one can address how and what American antitrust institutions should do in response.

3. The first and third claims are decidedly empirical. The second – that one can presume a causal relationship between market concentration and economic performance – can certainly be tested empirically, and we will discuss the existing evidence below. But the structural logic underlying the second claim has also been the subject of a long debate in economic history. It is well known among industrial organization economists that changes in market concentration can increase or decrease competition. Of course, within a particular market, increased concentration could indicate a reduction in competition, or it could equally reflect competitive forces at work, with the more efficient firms enjoying

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greater success. One of the primary lessons of the structural debates of the 1970s and 1980s in industrial organization economics was that competition and concentration are different things and need to be measured differently.<sup>1</sup>

4. The fundamental question presented by the concentration debate is, should merger policy be tightened or relaxed from current levels? Unfortunately, we are not close to a policy-relevant answer. We do not believe that the current empirical evidence – which consists largely of cross-sectional studies – can identify a causal relationship between either market concentration or intensity of antitrust policy on the one hand and economic performance on the other. These studies and the current policy discussion do, however, present an opportunity to harness the intellectual energy and policy interest in these issues to develop a better approach to measuring policy effectiveness.

5. Cross-sectional studies of aggregate concentration and various economic performance indicators and merger retrospective studies evaluating individual cases comprise the bulk of the overall body of evidence. Indeed, while merger analysis in individual cases has grown increasingly sophisticated, few distinguish between evaluating individual cases and identifying the effectiveness of current policy.<sup>2</sup> We still know very little about the effectiveness of horizontal merger *policy*. Optimal merger policy will generate both Type I and Type II errors. Learning about individual case outcomes is a good thing. But it often distracts from the issue of whether agency decision-making generating policy is calibrated correctly. The good news is that the same economic learning and tools that allow for effective merger enforcement in individual cases can put to use, with cooperation from the United States' enforcement agencies, to better inform this policy discussion.

6. Part I summarizes the three claims underlying calls for more stringent antitrust policy: (1) that aggregate industrial concentration is increasing in the United States at a worrisome rate; (2) that the increase in aggregate market concentration has resulted in less desirable outcomes for consumers and the economy as a whole; and (3) that it is the result of lax or ineffective merger enforcement. Part II briefly revisits the empirical evidence underlying each of those claims, highlighting problems with measurement, inference, and identification. We conclude there is currently no clear evidence that merger policy is too lax or too stringent and that the existing body of evidence is not capable of identifying an answer to that question. Part III discusses the limitations of merger retrospectives, and concludes with modest proposals for improving merger

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<sup>1</sup> See, e.g., Timothy J. Muris, *Improving the Economic Foundations of Competition Policy*, 12 GEO. MASON L. REV. 1, 9-10 (2003) (“[A]lthough some industries appeared to have market structures favorable for the existence and exercise of substantial market power, the industries were, nonetheless, quite competitive. This research made clear that sound theory plus the details of markets and institutional factors are necessary to understand competition.”); Cristina Caffarra & Serge Moresi, *Issues and Significance Beyond US Enforcement*, MLEX MAGAZINE 41, 42–43 (2010), [crai.com/uploadedFiles/Publications/Issues-and-significance-beyond-US-Enforcement.pdf](http://crai.com/uploadedFiles/Publications/Issues-and-significance-beyond-US-Enforcement.pdf) (“Most economists would agree that market shares and the HHI often are poor indicators of market power. . . . [T]he firms’ price-cost margins are often more direct and more precise indicators of market power than their market shares or HHI.”).

<sup>2</sup> But see Dennis Carlton, *Why We Need to Measure the Effect of Merger Policy and How to Do It*, 5 COMPETITION POLICY INT’L J. 77 (2009); Gregory J. Werden, *Inconvenient Truths of Merger Retrospective Studies*, J. ANTITRUST ENFORCEMENT 287 (2015); JOHN KWOKA, MERGERS, MERGER CONTROL, AND REMEDIES (2015).

retrospectives in a way that will help generate inferences about policy effectiveness rather than merely illuminating whether the agency got a particular challenge correct with the benefit of hindsight.

## 1. Concentration and Competition Policy: The Empirical Claims

7. The perception that the United States' economy faces a significant competition problem is increasing. In 2015, a White House Council of Economic Advisors (CEA) paper by Furman & Orszag became the catalyst for the current debate.<sup>3</sup> Furman & Orszag demonstrate increased dispersion of returns to capital across firms in the United States over time, with an increasingly large proportion of firms obtaining supra-normal returns.<sup>4</sup> Using the CR50 (the combined market share of the 50 largest firms) calculated at the two-digit industry level to measure concentration,<sup>5</sup> the authors go on to *tentatively* hypothesize that corporate consolidation, among other explanations, could be a contributing factor.<sup>6</sup> Rightfully, the authors call for deeper evaluation concluding that “a more complete exploration of these explanations can help guide us towards the right policy solutions for addressing rising inequality.”<sup>7</sup> Many have relied upon Furman & Orszag's result to substantiate the conclusion that the United States has a concentration problem and that more aggressive merger policy is warranted.

8. Before contesting that proposition, we review the evidence supporting each of the three related but distinct claims that underlie it.

9. *First*, some proponents of more aggressive merger policy claim that corporate concentration is increasing at a dramatic rate. Studies using various measures of aggregate concentration have demonstrated at least some increase in those measures. The United States economy uses the North American Industry Classification System (NAICS) for categorizing industries, and those categorizations are increasingly narrower at higher levels of specificity. The NAICS divides the economy into 24 2-digit sectors (e.g., broad sectors like “retail trade”) which are divided into 99 3-digit subsectors, 311 4-digit industry groups, 709 5-digit industries, and 1057 6-digit industries. As mentioned, Furman & Orszag show a small increase in the CR50 at the 2-digit sector level from 1997-2007.<sup>8</sup>

10. The Census Bureau measures the increase in the CR50 by revenue at the NAICS 2-digit sector categorization (i.e., the increase in the total share of revenue of the 50

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<sup>3</sup> Jason Furman & Peter Orszag, *A Firm-Level Perspective on the Role of Rents in the Rise in Inequality*, Presentation at “A Just Society” Centennial Event in the Honor of Joseph Stiglitz, Columbia University (Oct. 16, 2015).

<sup>4</sup> *Id.*

<sup>5</sup> Concentration ratios (CR) express the market share of the N<sup>th</sup> largest firms in a market, industry, or economy. For instance, the CR4 denotes the combined market shares of the four largest firms.

<sup>6</sup> “Our only real conclusion is thus that more attention needs to be paid to what is driving firm-level trends in the United States, and in particular whether they reflect economic rents at the firm level.” Furman & Orszag, *supra* note 3, at 2.

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

largest firms in each sector) for those sectors for which data is available (13 sectors total) from 1997-2012:

**Figure 1. Change in Market Concentration by Sector,**

Industry	Revenue Earned by 50 Largest Firms, 2012 (Billions \$)	Revenue Share Earned by 50 Largest Firms, 2012	Percentage Point Change in Revenue Share Earned by 50 Largest Firms, 1997-2012
Transportation and Warehousing	307.9	42.1	11.4
Retail Trade	1,555.8	36.9	11.2
Finance and Insurance	1,762.7	48.5	9.9
Wholesale Trade	2,183.1	27.6	7.3
Real Estate Rental and Leasing	121.6	24.9	5.4
Utilities	367.7	69.1	4.6
Educational Services	12.1	22.7	4.2*
Professional, Scientific and Technical Services	278.2	18.8	2.8*
Arts, Entertainment and Recreation	39.5	19.6	2.5*
Administrative/ Support	159.2	23.7	1.6
Health Care and Assistance	350.2	17.2	0.8*
Accommodation and Food Services	149.8	21.2	0.1
Other Services, Non-Public Admin	46.7	10.9	-0.2*

11. *The Economist* also used highly aggregate concentration levels to describe changes in concentration in the United States, calculating the CR4 using 4-digit NAICS categorization.<sup>9</sup> It found that across the 893 sectors measured, the weighted average CR4 increased from 26 percent in 1997 to 32 percent in 2012.<sup>10</sup> More recently, Autor et al. took a somewhat different approach, analyzing the evolution of concentration across 676 industries using 4-digit SIC classifications under both CR4 and HHI measures.<sup>11</sup> The authors found that, from 1982 to 2012, the CR4 grew 4 percent in service industries, 5 percent in manufacturing industries, 6 percent in the wholesale sector, 8 percent in utilities, 11 percent in financial services, and 15 percent in retail industries.<sup>12</sup>

12. *Second*, some proponents of more aggressive merger policy claim that any demonstrable empirical increase in aggregate concentration is sufficient to imply a likely decrease in economic performance. The call for stronger antitrust policy, particularly merger enforcement, is premised on the idea that increasing concentration causes an increase in market power.<sup>13</sup> This in turn leads to lower output and higher prices,

<sup>9</sup> *Business in America: Too Much of a Good Thing*, THE ECONOMIST (May 26, 2016), <https://www.economist.com/briefing/2016/03/26/too-much-of-a-good-thing>.

<sup>10</sup> *Id.*

<sup>11</sup> David Autor, et al., *Concentrating on the Fall of the Labor Share*, 107 AMERICAN ECONOMIC REVIEW: PAPERS & PROCEEDINGS 180 (2017), <https://economics.mit.edu/files/12544>.

<sup>12</sup> *Id.* at 183.

<sup>13</sup> See, e.g., Senator Elizabeth Warren, *Reigniting Competition in the American Economy* (June 29, 2016), [https://www.warren.senate.gov/files/documents/2016-6-29\\_Warren\\_Antitrust\\_Speech.pdf](https://www.warren.senate.gov/files/documents/2016-6-29_Warren_Antitrust_Speech.pdf); Hillary Clinton, *Being Pro-Business Doesn't Mean Hanging Consumers Out to Dry*, QUARTZ (Oct. 20, 2015), <https://qz.com/529303/hillary-clinton-being-pro-business-doesnt-mean-hanging-consumers-out-to-dry/>; *How Mergers Damage the Economy*, NEW YORK TIMES (Nov. 1, 2015), <https://www.nytimes.com/2015/11/01/opinion/sunday/how-mergers-damage-the-economy.html>

increased corporate profits, decreased innovation, increased economic inequality, and overall harm to consumer welfare. But industrial organization economists have long understood that changes in market concentration can reflect any of an increase in competitive intensity, a reduction in competition, or both. Identifying the net effect of any change in market level concentration on economic performance is difficult.

13. Does the recent rise in concentration, if it exists, imply an increase in market power? Numerous studies have been conducted to explore each of these indicators, and some of them offer support for the claim that market power has increased. For example, the Bureau of Economic Analysis suggests that corporate profits over the past thirty years have increased from 7-8 percent of GDP to 11-12 percent of GDP.<sup>14</sup> Carl Shapiro finds that, as a share of total domestic profits from 1998-2016, profits in the Finance & Insurance (from 13.6 percent to 18.3 percent) and Health Care & Social Assistance (from 2.1 percent to 5.2 percent) sectors have grown sharply, profits in the Information Sector (which includes both media and high-tech) grew from 5.3 percent to 7.8 percent, and profits in the Manufacturing Sector fell sharply.<sup>15</sup> *The Economist* also argues that corporate profits are on the rise, but estimates that half of the firms obtaining exceptional profits (which are defined as profits at and above 10 percent) can be found in the technology sector.<sup>16</sup> Furman & Orszag find that the distribution of return on investment capital for publicly traded, non-financial firms in the US has also shifted towards the most successful firms. The authors estimate that the ratio of the 90<sup>th</sup> percentile of the distribution of capital returns to the median has risen from under 3 in the 90s to approximately 10.<sup>17</sup>

14. Similar studies have analyzed firm markups over time. An increase in a firm's markups reflects an increase in its prices relative to marginal cost. Jan De Loecker and Jan Eeckhout find that the average markup across all publicly listed US firms went from 18 percent in 1980 to 67 percent in 2014.<sup>18</sup> The authors report that the increases in markups are not tied to any particular industries:<sup>19</sup>

<sup>14</sup> See, e.g., Amanda Novello & Jeff Madrick, *Government Fails to Adequately Address Industry Concentration*, CENTURY FOUND. (Oct. 27, 2017), <https://tcf.org/content/commentary/government-fails-adequately-address-industry-concentration>.

<sup>15</sup> Carl Shapiro, *Antitrust in a Time of Populism*, INT'L J. INDUS. ORG. (forthcoming 2018) (manuscript at 19) (available at <http://faculty.haas.berkeley.edu/shapiro/antitrustpopulism.pdf>).

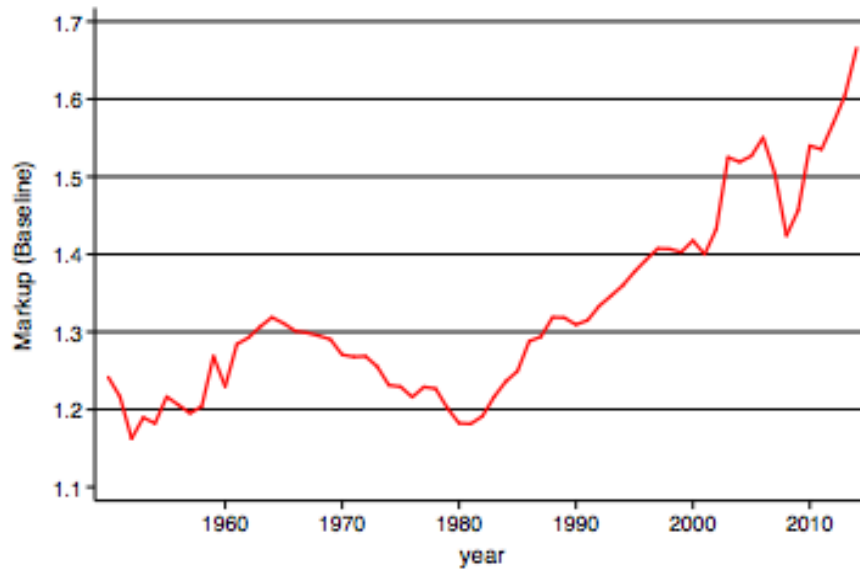
<sup>16</sup> *Business in America: Too Much of a Good Thing*, THE ECONOMIST (May 26, 2016), <https://www.economist.com/briefing/2016/03/26/too-much-of-a-good-thing>.

<sup>17</sup> Furman & Orszag, *supra* note 3, at 10.

<sup>18</sup> Jan De Loecker & Jan Eeckhout, *The Rise of Market Power and the Macroeconomic Implications* (2017), <http://www.janeeckhout.com/wp-content/uploads/RMP.pdf>.

<sup>19</sup> *Id.*

Figure 2. The evolution of average markups (1960-2014)



Note: Average Markup is weighted by marketshare of sales in the sample.

15. Other studies conclude that markups are increasing in the United States because high-markup firms are increasing in their relative size, not because firms have increased their markups.<sup>20</sup> Importantly, an increase in a firm's markups *could* be an indication that competitive constraints upon that firm have weakened. But higher markups are not necessarily tied to higher profits, and are equally consistent with several other explanations, including rising fixed costs or changes in technology.

16. *Third*, most proponents of more aggressive merger policy point towards lax or ineffective antitrust enforcement as the *cause* of increased concentration and the corresponding asserted decline in economic performance.<sup>21</sup> After drawing a link between increasing concentrations and decreasing economic performance, the assertion is fairly intuitive—horizontal mergers increase market concentration, and horizontal merger

<sup>20</sup> See, e.g., David Rezza Baqaee & Emmanuel Farhi, *Productivity and Misallocation in General Equilibrium* (NBER, Working Paper No. 24007, 2017), [https://scholar.harvard.edu/files/farhi/files/micro\\_distortions\\_draft\\_new.pdf](https://scholar.harvard.edu/files/farhi/files/micro_distortions_draft_new.pdf); German Gutierrez & Thomas Philippon, *Investment-Less Growth: An Empirical Investigation* (NBER, Working Paper No. 22897, 2016), <https://www.frbatlanta.org/~media/Documents/research/seminars/2017/philippon-030817.pdf>.

<sup>21</sup> See, e.g., Amanda Novello & Jeff Madrick, *Government Fails to Adequately Address Industry Concentration*, CENTURY FOUND. (Oct. 27, 2017), <https://tcf.org/content/commentary/government-fails-adequately-address-industry-concentration> (“Explosive inequality in America is linked to increasing rents, or “beyond-normal profits,” of top firms...[Furman & Orszag, 2015] show that these returns accrue disproportionately to already well-off firms.”); Eduardo Porter, *With Competition in Tatters, the Rip of Inequality Widens*, NEW YORK TIMES, (Jul. 12, 2016) (“There is plenty of evidence that corporate concentration is on the rise...[Furman & Orszag, 2015] report that between 1997 and 2007 the market share of the 50 largest companies increased in three-fourths of the broad industry sectors followed by the census.”).

enforcement has become more lenient. Merger retrospectives are relied upon to support this theory. John Kwoka's analysis in, *Mergers, Merger Control, and Remedies*,<sup>22</sup> is cited by many in support of the notion that modern antitrust enforcement has failed to prohibit mergers that reduce consumer welfare.<sup>23</sup>

17. Kwoka conducts a meta-analysis of a database which purportedly consists of sixty or so studies covering more than 3000 mergers.<sup>24</sup> Kwoka addresses "Merger Policy and Remedies" specifically, identifying 49 transactions for which a retrospective study exists, of which 42 are mergers.<sup>25</sup> He finds that for all mergers studied in his sample, the average price effect is a 7.22 percent increase.<sup>26</sup> Michael Vita and F. David Osinski summarize Kwoka's findings in their review of his study:<sup>27</sup>

Agency Action	Average Price Effect (Kwoka Table 7.9)	Number of mergers (Kwoka Table 7.4)
All mergers in the sample	7.22%	42
All mergers opposed by agencies	1.86%	5
Mergers when a divestiture remedy was obtained	7.05%	6
Mergers when a conduct remedy or conditions imposed	16.03%	4
Mergers explicitly cleared by agencies	6.08%	5
Mergers presumably cleared due to lack of explicit information	7.15%	22

18. Kwoka concludes that "[w]e can conclude that recent merger control has not been sufficiently aggressive in challenging mergers."<sup>28</sup>

19. In the less than three years since the Furman & Orszag paper, each of the three claims has become a stylized fact, altogether serving as the starting point for policy

<sup>22</sup> KWOKA, *supra* note 2.

<sup>23</sup> See Markus Dertwinkel-Kalt & Christian Wey, *Evidence Production in Merger Control: The Role of Remedies* 5 (Düsseldorf Inst. Competition Econ., Discussion Paper No. 217, 2016), <http://hdl.handle.net/10419/130192> ("Kwoka present[s] empirical evidence for the EU and the US which questions whether remedies effectively counter anti-competitive merger effects."); F. David Osinski & Jeremy A. Sandford, *Merger Remedies: A Retrospective Analysis of Pinnacle/Ameristar* (2017), <https://ssrn.com/abstract=3008770> ("Kwoka provides an extensive summary of agency enforcement actions, finding that remedies imposed are generally inadequate in preserving competition."); Shapiro, *supra* note 15, at 22 ("[E]vidence from U.S. merger retrospectives supports a shift to a moderately stricter merger enforcement policy." (citing KWOKA, *supra* note 2)).

<sup>24</sup> KWOKA, *supra* note 2, at 5.

<sup>25</sup> Kwoka lists all 49 transactions in Table 6.2. *Id.* at 90-91.

<sup>26</sup> *Id.* at 110.

<sup>27</sup> Michael Vita & F. David Osinski, *John Kwoka's Mergers, Merger Control, and Remedies: A Critical Review*, 82 ANTITRUST L.J. (forthcoming 2018) (noting that Kwoka assigned a "half-frequency" score to *Xidex* and *Thomson* because the remedies in those cases involved both divestitures and licensing).

<sup>28</sup> KWOKA, *supra* note 2, at 158.



proposals rather than testable hypotheses. But does the evidence underlying these propositions survive scrutiny?

## 2. Revisiting the Evidence

20. Existing empirical support for the claim that increasing concentration has led to increased market power involves important and interesting work by economists that raises important questions. Upon further review, however, the connection between the available evidence and the propositions is tenuous, at best. The techniques used to measure trends in concentration make it particularly difficult to discern whether and to what extent even aggregate concentration is increasing. It is less clear still that competition and welfare have changed in a meaningful way. Finally, even if both premises were accepted as true, our understanding of merger *policy* effectiveness is so limited that it certainly cannot be concluded that antitrust policy is either too lax *or* too stringent. The current research design and use of merger retrospectives render them inappropriate at the policy level. To be sure, determining whether the government was correct in a particular case tells us little about the optimality of merger policy.

21. The existing empirical evidence offers little support because it is undermined by problems relating to measurement, inference, and identification. Similarly, claims that current merger policy is too lenient primarily rely on a limited set of merger retrospectives that are both inconclusive and uninformative at the policy level.

### 2.1. Measurement: Is Concentration Actually Increasing?

22. The problem with the existing measures of concentration is that aggregation obscures market-level information. An antitrust relevant “market” is composed of firms that impose significant competitive pressure upon one another. Under the US Agencies’ Horizontal Merger Guidelines, “market definition focuses solely on demand substitution factors, i.e., on customers’ ability and willingness to substitute away from one product to another in response to a price increase or a corresponding non-price change such as a reduction in product quality or service.”<sup>29</sup> Unlike broadly defined industries (e.g., 2- and 4-digit SIC/NAICS level industry classifications) that describe entire national sectors like “Retail Trade” at the 2-digit NAICS level and “Bakeries and Tortilla Manufacturing” at the 4-digit NAICS level, antitrust product and geographic markets are often narrowly or locally defined. Compounding the issue is that reliable data for trends in market concentration is generally unavailable in the United States. Absent a well-defined market, market share statistics are largely meaningless for the purpose of measuring competitive intensity and certainly not appropriate for inferences about the intensity of competition across industries.

23. Let’s begin with the most cited statistic in favor of increasing concentration in the United States. Furman & Orszag demonstrate the CR50 has increased modestly over time in the United States. It is unclear why evidence describing the activity of the fifty largest firms in a given industry can support claims of problematic concentration—the ability to calculate a CR50 implicitly acknowledges the presence of at least 50

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<sup>29</sup> U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES § 4 (2010).

competitive firms. At the 2-digit level, observed trends may reflect nothing more than the expansion of efficient firms into related lines of business. The CR50 measure is based on revenues reported on a national basis which obscures trends in local markets. Moreover, the Census data table on which Furman & Orszag rely (reproduced above in Section I) shows that most of the increases in CR50 measures are in highly regulated industries. Why should it be a concern that the CR50 is greater than 30 percent in more industries today than in 1997? Using the top fifty firms, that would mean that the *average* market share per firm is 0.6 percent. Even CR4 measures tell us little about competition—the increase in CR4 identified by *The Economist* would correspond to a HHI of between 300 and 700.<sup>30</sup> Antitrust enforcement agencies in the United States consider a market unconcentrated if its HHI is below 1500.

24. The gap between aggregate concentration measures and actual product markets is not just a theoretical issue, but is quite important in practice. In a recent paper, Gregory Werden & Luke Froeb document the excessive aggregation in United States Census data and show how such aggregation masks changes in market concentration.<sup>31</sup> First, Werden & Froeb demonstrate how “even the least aggregated Census data can be over a hundred times too aggregated.”<sup>32</sup> The authors compare NAICS 6-digit industries to markets by calculating the Commerce Quotients<sup>33</sup> for the relevant markets alleged in mergers complaints filed by the Justice Department from 2013-2015, omitting certain markets.<sup>34</sup> The following figure is reproduced from Werden & Froeb’s study, and illustrates the five Commerce Quotients just above and just below the median:

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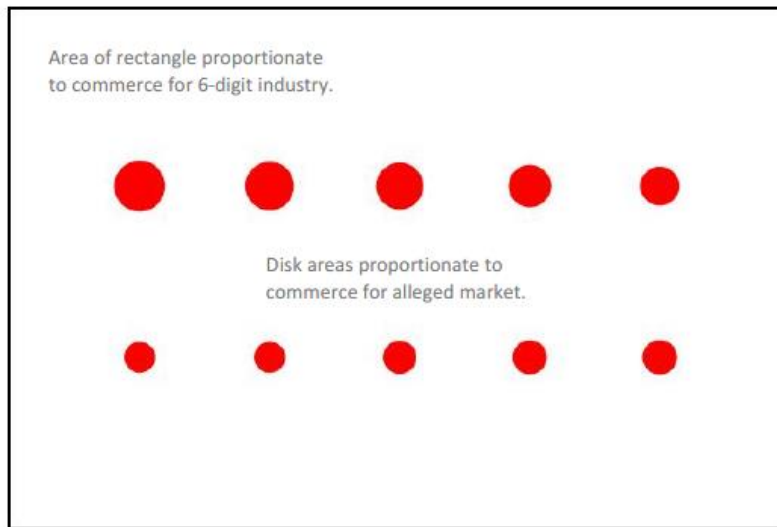
<sup>30</sup> Shapiro, *supra* note 15, at 14.

<sup>31</sup> Gregory J. Werden & Luke M. Froeb, *Don’t Panic: A Guide to Claims of Increasing Concentration*, ANTITRUST MAGAZINE (forthcoming 2018).

<sup>32</sup> *Id.*

<sup>33</sup> Defined as the annual volume of commerce of the alleged relevant market divided by the value of industry shipments in the corresponding NAICS 6-digit industries.

<sup>34</sup> Werden & Froeb, *supra* note 31 (omitting relevant markets where the Department’s investigation did not determine the volume of commerce or because alleged lessening of competition was on the buying side of the market).

**Figure 3. Medial Commerce Coefficients for NAICS 6-Digit Industries**

25. The ratio of the area of each disk to the area of the black rectangle is the Commerce Quotient for the market corresponding to the disk.<sup>35</sup> As the authors' visual demonstrates, studies like the one conducted by *The Economist* focus on what amounts to the rectangle rather than the disks.<sup>36</sup> Werden & Froeb go on to conduct a thought experiment that shows how such excessive aggregation can render observed concentration trends meaningless<sup>37</sup> and can lead to fallacies associated with averaging.<sup>38</sup> The authors conclude that increasing market concentration does not indicate whether antitrust reform is needed.

26. The evidence does tend to show a very modest increase in aggregate concentration in a handful of sectors, but it is far from obvious that this should be a cause for concern from an antitrust perspective. In other words, even if we were to accept that aggregate concentration is increasing at a meaningful level, the real questions of competition policy import are whether competitive intensity has changed over time and why? Aggregate concentration measures address neither question.

## 2.2. Inference: Cross-Sectional Studies Relating Aggregate Concentration to Performance Do Not Identify an Increase in Market Power

27. The second empirical premise underlying stricter merger policy proposals is that increasing concentration has caused an increase in sustainable market power that has resulted in harm to consumers. To test this claim it is necessary to have information about

<sup>35</sup> *Id.* at 5.

<sup>36</sup> *Id.*

<sup>37</sup> The authors show that even though horizontal and vertical mergers have completely *different* effects on market concentration, they might have exactly the same effect on NAICS subsectors and industries. *Id.* at 7.

<sup>38</sup> Subsector concentration can increase even if the concentration of every market in a subsector decreases. *Id.* at 9.

the movements of other indicators of competitive intensity. For example, the exercise of monopoly power, by definition, requires a reduction of output and an increase in market prices. One might expect, if competition has decreased over time, to observe an increase in market prices and a reduction in market output.

28. With respect to trends in prices, De Loecker & Eeckhout purport to show that markups have risen since 1980, and interpret this to suggest that there has been a rise in market power.<sup>39</sup> De Loecker & Eeckhout rely on firm-level accounting data for publicly traded firms from 1950 to 2014.<sup>40</sup> Specifically, the authors observe measures of sales, input expenditure, capital stock information, industry activity classifications, and accounting data measuring profitability and stock market performance. The authors do acknowledge that higher markups do not necessarily imply that firms are making higher profits.<sup>41</sup> This is particularly the case if “the source of the increase in markups is technological change that reduces variable costs, and the same technological increases the fixed costs.”<sup>42</sup>

29. An increase in markups alone is not sufficient to identify increased market power.<sup>43</sup> Higher markups are consistent with several explanations other than increased market power. Some examples include increased fixed cost investments for new technology, increased product differentiation within a market, or an economy-wide shift towards lower marginal cost products or services. In any case, much of the increase in markups that De Loecker & Eeckhout pick up on comes from expanded international sales, which in no way indicates that there is not enough competition in US product markets.<sup>44</sup>

30. Of course, if the increase in markups over time identified by De Loecker & Eeckhout is associated with an increase in market power, one would expect to see a corresponding decrease in output. Using a similar methodology, Ganapati instead demonstrates that industry concentration is positively correlated with productivity and real output, but is uncorrelated with price changes.<sup>45</sup> His results are reproduced here:

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<sup>39</sup> De Loecker & Eeckhout, *supra* note 18, at 5.

<sup>40</sup> *Id.*

<sup>41</sup> *Id.* at 14.

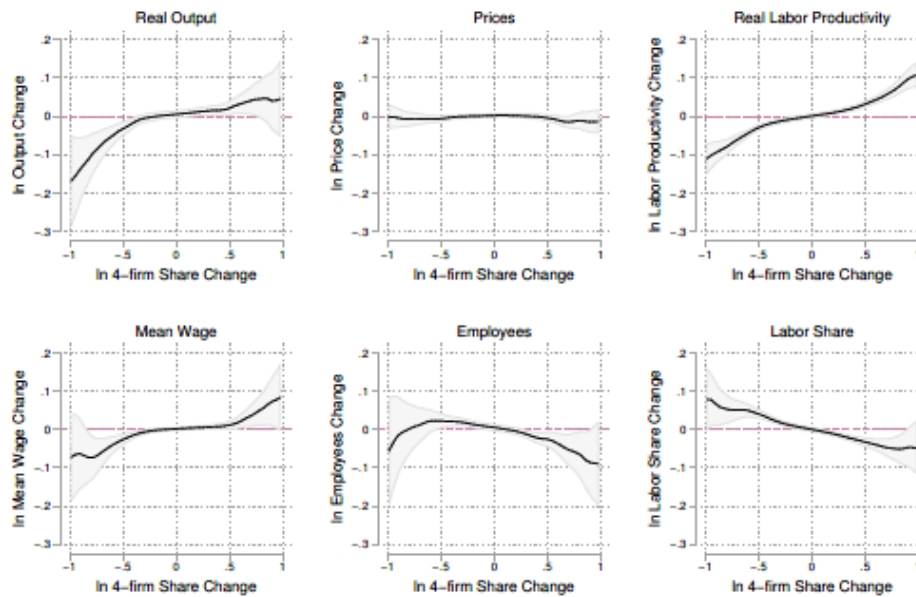
<sup>42</sup> *Id.*

<sup>43</sup> See e.g., Robert H. Bork & J. Gregory Sidak, *The Misuse of Profit Margins to Infer Market Power*, 9 J. COMPETITION L. & ECON. 511 (2013).

<sup>44</sup> Thank you to Dennis Carlton for this observation.

<sup>45</sup> Sharat Ganapati, *Oligopolies, Prices, Output, and Productivity* (2018), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3030966&download=yes](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3030966&download=yes).

Figure 4. Correlation of Economic Outcomes to Market Concentration



31. Caution is appropriate in relying upon these aggregate measures of concentration and performance to generate inferences about competitive intensity. However, the fact that the signature outcome from a rise in market power – the simultaneous increase in prices and decrease in output – is missing, gives one serious pause in interpreting the evidence in favor of the view that economic performance in the United States has declined as a result a rise in market power. Peltzman focuses on the interplay between concentration, prices, and productivity across hundreds of manufacturing industries from 1982-2011 by matching price and productivity data from the NBER-CES Manufacturing Industry Database with HHI data from the Census of Manufacturers.<sup>46</sup> He shows that there is not much change in prices in concentrated sectors relative to other sectors, but that there is evidence that productivity and concentration are positively correlated.<sup>47</sup>

32. Economists have also focused on measurement issues with markup studies. Traina argues that De Loecker & Eeckhout focus only on the cost of goods sold (COGS) component of firms' operating expense (OPEX), ignoring the selling, general, and administrative expenses (SGA) component. COGS measures direct inputs to production, such as materials and most of labor, while SGA measures indirect inputs to production, especially marketing and management. Traina demonstrates that SGA is an increasingly important share of variable costs for firms in the United States economy.<sup>48</sup> When the SGA (e.g., marketing and management) is included in De Loecker & Eeckhout's measure

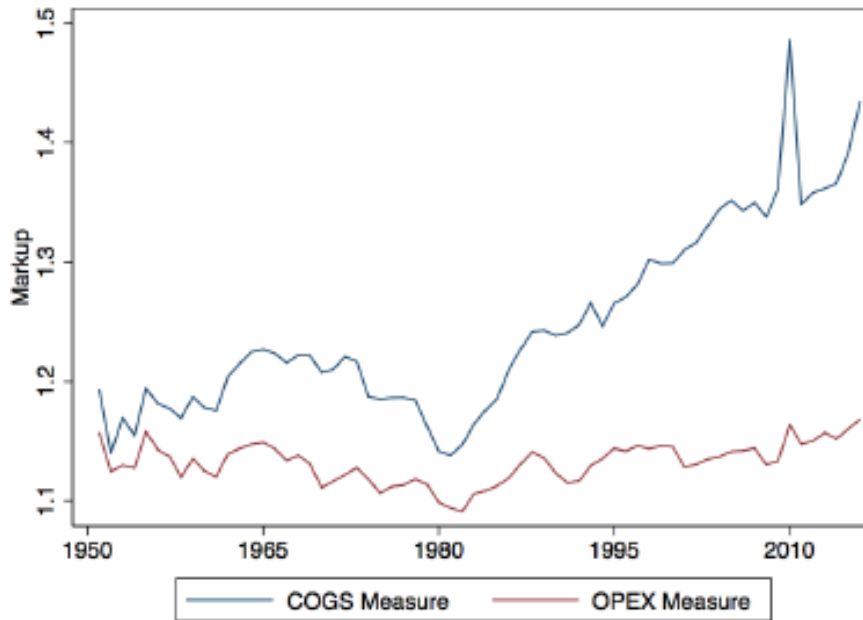
<sup>46</sup> Sam Peltzman, *Productivity and Prices in Manufacturing During an Era of Rising Concentration* (2018), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3168877](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3168877).

<sup>47</sup> *Id.* at 7.

<sup>48</sup> James Traina, *Is Aggregate Market Power Increasing? Production Trends Using Financial Statements* 9 (2018), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3120849](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3120849).

of variable cost (i.e., total operating expense is used as a measure of variable cost rather than COGS) market power is shown to either remain flat or decline:<sup>49</sup>

**Figure 5. COGS vs. OPEX Markups**



33. Much of the perception of an increase in concentration in the United States is focused on a handful of large firms. Hall tests this view and finds no evidence that mega-firm-intensive sectors have higher price/marginal cost markups.<sup>50</sup> In fact, Hall presents evidence that while there is no real trend in markups for manufacturing, there is a strong trend of growing markups in the Finance & Insurance and Health Care & Social Assistance Industries—both of which are heavily regulated.<sup>51</sup>

34. As it stands, there is no empirical foundation on which to conclude that monopoly power is rising. To the extent that markups are increasing, other studies show that output has increased and that quality-adjusted prices have remained stable. Claims that concentration has increased at least find somewhat consistent empirical support, although the extent of those changes are up for debate. There is no reliable empirical basis, however, to support the inference that the United States economy has experienced a systematic increase in market power.

<sup>49</sup> *Id.* at 7.

<sup>50</sup> Though he does find some evidence that markups grew in sectors with rising mega-firm intensity. Robert E. Hall, *New Evidence on the Markup of Prices over Marginal Costs and the Role of Mega-Firms in the US Economy* 20 (2018), <https://web.stanford.edu/~rehall/Evidence%20on%20markup%202018>.

<sup>51</sup> *Id.* at 15.

### 2.3. Identification: Price- and Profit-Concentration Studies are Plagued by Endogeneity

35. A more fundamental problem exists with regard to cross-sectional price- or profit-concentration studies. Those measurements are plagued with endogeneity and lack of identification. Basic economic theory shows that concentration could reflect a decline in competition, but could equally reflect the forces of competition at work.<sup>52</sup> Some firms are able to operate a lower cost or produce a better product.<sup>53</sup> As these firms grow in size, market concentration increases but average costs decrease or quality increases.<sup>54</sup> Thus, profits or quality-adjusted prices are positively related to concentration, but this tells us nothing about the likely effects of mergers.

36. Industrial organization economists have long been skeptical of claims of causal inference arising from cross-sectional studies.<sup>55</sup> Market structure is determined by market specific characteristics, and entry and exit feeds back from performance to market structure.<sup>56</sup> Many of the existing price-concentration studies are not designed to effectively account for such endogeneity. Furthermore, aggregate price-concentration studies are not adequate to make reliable inferences about the intensity of competition or the desirability of changes in merger policy because they ignore dynamic and market specific realities.

### 2.4. Existing Merger Retrospectives Are Generally Not Designed to Inform Merger Policy

37. Economists have expressed significant enthusiasm for merger retrospectives as a way to inform merger policy. For example, Shapiro states that “merger retrospectives are especially valuable [] since they directly address the question: which mergers harm customers by lessening competition?”<sup>57</sup> It is certainly true that more information is better; and merger retrospectives should be encouraged because they help to improve our understanding of individual agency decisions. But merger retrospectives focusing on a single transaction have significant limitations when used for the purpose of informing merger policy as a whole.

38. Professor Kwoka’s analysis of many merger retrospectives has been cited by many in support of the notion that modern antitrust enforcement has failed to prohibit

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<sup>52</sup> See, e.g., Harold Demsetz, *Industry Structure, Market Rivalry, and Public Policy*, 16 J.L. & ECON. 1, 1-3 (1973).

<sup>53</sup> *Id.*

<sup>54</sup> *Id.*

<sup>55</sup> E.g., *Id.*; William N. Evans, Luke M. Froeb & Gregory J. Werden, *Endogeneity in the Concentration-Price Relationship: Causes, Consequences, and Cures*, 41 J. INDUS. ECON. 431 (1993); T.F. Bresnahan, *Empirical Studies of Industries with Market Power*, in 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 1011 (Richard Schmalensee & Robert Willig eds., 1989); Richard Schmalensee, *Inter-Industry Studies of Structure and Performance*, in 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 951 (Richard Schmalensee & Robert Willig eds., 1989).

<sup>56</sup> See, e.g., Evans, Froeb & Werden, *supra* note 31.

<sup>57</sup> Shapiro, *supra* note 15, at 22.

harmful mergers. Michael Vita & David Osinski offer a critical review.<sup>58</sup> The authors, both FTC economists, raise several objections to Kwoka's methodology and in particular, the inference that his findings identify suboptimal merger policy. For example, Kwoka's analysis does not use standard meta-analytic techniques for computing average price effects and standard errors of the studies in the sample.<sup>59</sup> The observations are not weighted by their estimated variances, which leads to all price effects estimates being treated equally regardless of precision of the estimates.<sup>60</sup> The estimated average price effects also appear to lack standard errors, which makes it impossible to evaluate whether those effects are statistically different from zero.<sup>61</sup> These objections on methodology are central to the critique of Kwoka's study, as it prevents the estimation of an average price effect in the meta-analysis. Finally, while the average price change that Kwoka shows is 7.22 percent, the median price change is less than 1 percent,<sup>62</sup> indicating some significant outliers are driving the average effect.

39. Two-thirds of Kwoka's data sample covers just three industries—petroleum, airlines, and academic/professional journal publications.<sup>63</sup> As has been discussed, market realities and institutions are unique across antitrust relevant markets, and aggregate cross-sectional analysis cannot inform policy level debates. Indeed, of the seven mergers analyzed since 2000, only one presents a potential Type II error. As for the more basic assertion that lax merger policy is the cause for the calculated price increases, Vita & Osinski observe that the percentage of cases facing enforcement actions has increased every year since 2004.<sup>64</sup>

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<sup>58</sup> Vita & Osinski, *supra* note 27.

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

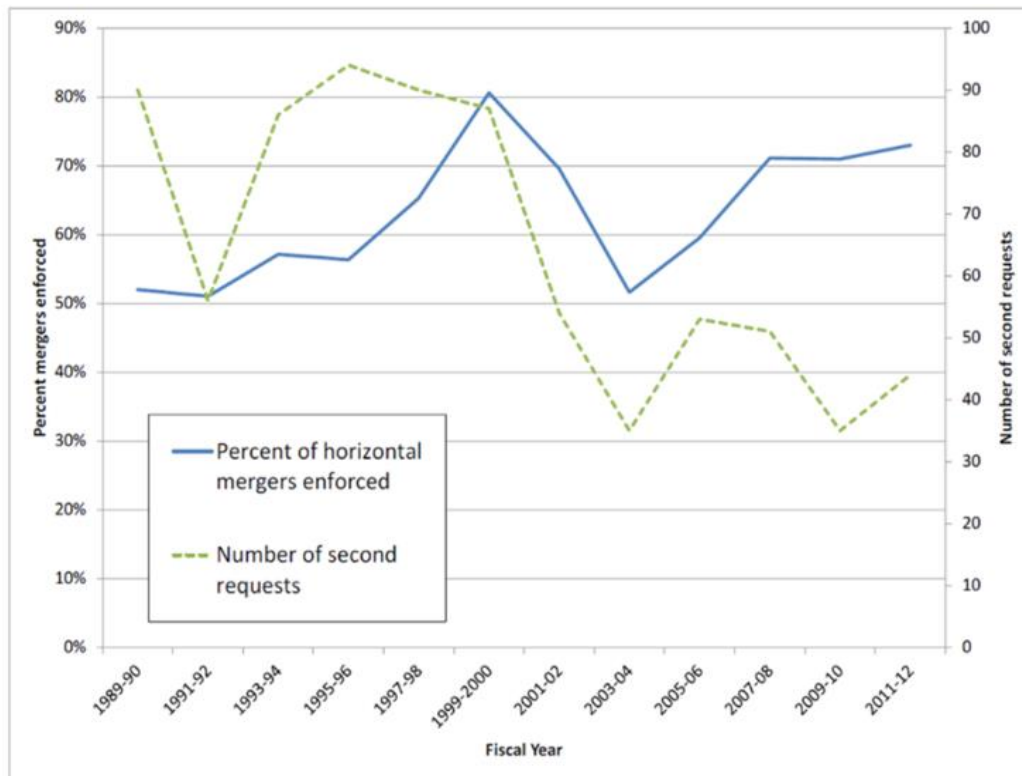
<sup>61</sup> *Id.*

<sup>62</sup> KWOKA, *supra* note 2, at 95.

<sup>63</sup> Vita & Osinski, *supra* note 27.

<sup>64</sup> *Id.*



**Figure 6. Percent of Mergers Investigations with Enforcement Actions, 1989-2012**

*Note:* In 2001 the Hart-Scott-Rodino thresholds were revised upwards (the \$15.0 million filing threshold increased to \$50.0 million – inflation adjusted), which accounts for the subsequent decline in second requests.

40. The papers discussed here, and others on these topics, raise important issues and contribute to our overall economic knowledge in important ways. Those contributions, however, largely focus on outcomes: cross-sectional studies measuring changes in concentration and various economic performance indicators and the result of individual merger decisions. Questions about policy are concerned with process, and the evidence needed to address policy questions is different and goes beyond a determination of whether any particular decision was right or wrong. In order to gain a better understanding of merger policy effectiveness, we must better understand the process by which enforcers make policy generating decisions.

### 3. Where To Go From Here: A Modest Proposal on Merger Retrospectives

41. Should merger policy be tightened or relaxed? Neither? Unfortunately, we do not have the evidence required to make an informed decision. Understanding the effectiveness of current merger policy requires a refined approach towards research design. Importantly, the existing studies on the relationship between concentration and competition tell us a lot about what we do not know. There is little reason to believe that more cross-sectional studies of the relationship between aggregate measures of industry concentration – much broader than real product markets – will improve the information we have available to calibrate merger policy. The studies will still suffer from serious issues of measurement, endogeneity, and identification.

42. Merger retrospectives may be somewhat informative about the competitive dynamics within a specific market, but ex-post evaluations of individual cases are of limited use for application across markets. But there is an opportunity to modify merger retrospective methodology, with the cooperation of the United States' agencies, to improve the information available and to add significantly to what we know about merger policy.

43. There are two types of data that must be collected in order to evaluate the effectiveness of merger policy.<sup>65</sup> The first is data on the relevant market pre- and post-merger. This type of data has been the primary focus of the antitrust community. The frequent calls for merger retrospectives typically envision a determination of whether a particular merger harmed consumers, with the goal of using that information prospectively to avoid making similar errors. But estimated merger effects from econometric studies are severely limited in their ability to improve merger enforcement. "Merger assessment is so heavily fact dependent that every case—or at least every close case—is unique, so the available data cannot trace out a general rule."<sup>66</sup>

44. Dennis Carlton demonstrates that merger retrospectives focused only on ex-post outcomes are surprisingly poor guides for analyzing merger policy.<sup>67</sup> Whether the government made a random error in an individual case does not indicate a policy bias. Even optimal merger policy will inevitably result in Type I and Type II errors. The question of whether merger policy is too lax or too stringent is different from the question of whether a particular enforcement decision is correct.<sup>68</sup> The former, policy relevant question is asking "whether the government is allowing too many or too few mergers overall."<sup>69</sup>

45. The more specific question is whether an agency's analysis of mergers is *systematically* biased. In order to inform discussions of merger policy, we must also collect a second type of data—ex-ante information concerning the enforcement agency's predictions of the merger. "Only . . . by combining a record of what tools were used and what conclusions were drawn from each tool with a study of observed outcomes from mergers . . . can systematic evidence be collected on the efficacy of various methods used in merger review."<sup>70</sup> By structuring merger retrospectives to square the estimated merger effects of econometric studies with the details of the agency's assessment process, we can begin to identify whether systematic decision-making is consistently biased in a way that harms consumers.<sup>71</sup>

46. Enhancing our evaluation of merger policy effectiveness is not without increased cost. Because it is a question of policy, an effective answer requires the analysis of numerous, ideally all, mergers. In the United States, the DOJ and FTC should play a

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<sup>65</sup> *Id.* at 77.

<sup>66</sup> Werden, *supra* note 2, at 294.

<sup>67</sup> Carlton, *supra* note 2, at 78.

<sup>68</sup> *Id.* at 79.

<sup>69</sup> *Id.*

<sup>70</sup> Dennis Carlton, *Revising the Horizontal Merger Guidelines*, 6 J. COMPETITION L. & ECON. 619, 651 (2010).

<sup>71</sup> Werden, *supra* note 2, at 299.

critical role and must consistently record their assessment techniques and predictions. Perhaps more importantly, to use merger retrospectives to test the effectiveness of merger policy, the agencies need to share information. While agencies might be understandably reluctant to share their predictions for the purpose of research, the FTC and DOJ have a long history of contribution to competition policy research and development. Werden points out that one objection to having agencies conduct the merger retrospective analyses could be the appearance of bias.<sup>72</sup> The DOJ and FTC are uniquely situated to conduct the appropriate retrospective studies, either on their own or in collaboration with academic industrial organization economists.

47. Overall, rigorous evaluation of policy is a heavier lift than ex-post evaluation of specific outcomes, but it is worth the investment. The consequences of merger policy are too important to be set by popular opinion.

#### 4. Conclusion

48. Studies suggesting that concentration is increasing and causing a reduction in economic performance raise important issues that should be explored and evaluated with existing empirical evidence. While we do not believe that current empirical evidence can identify a causal relationship between market concentration and economic performance, it is important to continue to test these assertions in order to better understand both what we do know and what we do not know about the claims presented. At the same time, the fundamental question presented by the current debate—should merger policy be tightened or relaxed from current levels—is premature. While learning about individual case outcomes is a good thing, it often distracts from the issue of whether agency decision-making generating policy is calibrated correctly. The studies discussed here deepen our economic knowledge, but do not provide the kind of evidence necessary to inform an effective evaluation of merger policy. What the current policy discussions might do, however, is provide the energy and interest necessary to catalyze a better approach to measuring merger policy effectiveness. We have made some modest suggestions here that we believe, with the support of the DOJ and FTC, will help us to improve our understanding of horizontal merger policy.

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<sup>72</sup> *Id.*