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Antitrust and Industrial Concentration in California: A Misleading and Unworkable Benchmark

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I. Introduction

In August 2022, the California legislature enacted ACR 95, a bill directing the California Law Revision Commission (CLRC) to study "new prescribed topics relating to antitrust law and its enforcement."[1] Based on this mandate, the CLRC identified seven topics for study and appointed panels to submit reports on each topic. The instructions provided to the panels ask each group to "[d]escribe any deficiencies in the [current] law that have been identified" and "[d]escribe possible reforms that have been identified."[2] Thus, it is widely anticipated that policymakers in California are evaluating making substantive changes to state antitrust law and that these reports will inform the policies that are proposed and, potentially, enacted. If enacted, such laws could represent a substantial break with current antitrust practice, as the enforcement of state-level antitrust laws like California's Cartwright Act is largely guided by the goals, standards, and precedents of federal antitrust law.

Concerns about industrial concentration or a "concentration problem" in the United States are a primary focus of the preamble to ACR 95. For instance, the second paragraph of the preamble cites a 2016 American Antitrust Institute policy brief stating that "[t]here is a growing consensus that inadequate antitrust policy has contributed to the concentration problem [in the United States] and associated inequality effects" [3]; the third paragraph also cites a 2017 article by Barry Lynn, the executive director of the Open Markets Institute, stating "[t]he idea that America has a monopoly problem is now beyond dispute."[4] The CLRC thus interpreted studying trends in concentration as part of its mandate, and instructed one of the panels to provide a report on "Concentration in California."[5]

Although the CLRC specifically charged the panel studying concentration to prepare "an empirically-based description of the degree and effect of business concentration in California,"[6] the paper produced by the panel, *Concentration and Competition in California: A Focus on Critical Sectors and Labor Markets* (the CLRC Concentration Report), did not provide an empirical analysis of trends in concentration in California or the United States.[7] Furthermore, the report also failed to provide background on the use and interpretation of industrial concentration data as a benchmark to guide antitrust policy. Therefore, this paper attempts to fill the gaps left by the CLRC Concentration Report. Specifically, we evaluate three crucial questions regarding industrial concentration:

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[1] 2022 Cal. Stat. res. ch. 147.

[2] California Law Revision Commission, *Antitrust Law: Status Report*, Memorandum 2023-16 (March 9, 2023) at 3-4, available at http://www.clrc.ca.gov/pub/2023/MM23-16.pdf.

[3] 2022 Cal. Stat. res. ch. 147 (citing American Antitrust Institute, *A National Competition Policy: Unpacking the Problem of Declining Competition and Setting Priorities Moving Forward* (September 28, 2016)).

[4] 2022 Cal. Stat. res. ch. 147 (citing Barry Lynn, "America's Monopolies Are Holding Back the Economy," *The Atlantic* (February 22, 2017)).

[5] California Law Revision Commission, *Antitrust Law: Status Report*, Memorandum 2023-16 (March 9, 2023) at 3, available at http://www.clrc.ca.gov/pub/2023/MM23-16.pdf.

[6] California Law Revision Commission, *Antitrust Law: Status Report*, Memorandum 2023-16 (March 9, 2023) at 4, available at http://www.clrc.ca.gov/pub/2023/MM23-16.pdf.

[7] Cheryl Johnson, Dean Harvey, Diana Moss, Barak Richman, and Shana Scarlett, *Concentration and Competition in California: A Focus on Critical Sectors and Labor Markets*, (March 26, 2024), available at: http://www.clrc.ca.gov/pub/Misc-Report/ExRpt-B750-Grp7.pdf.

(1) Does the evidence suggest that concentration in the U.S. has risen to "excessive" or "harmful" levels?

(2) Is industrial concentration a useful benchmark of monopoly power?

(3) Is it empirically feasible to study trends in industrial concentration in California?

The paper is organized as follows: In Section II, we show that far from it being "beyond dispute" that there is a "concentration problem" or "monopoly problem," in the United States, **the empirical evidence based on official data from the U.S. Census Bureau demonstrates that there is no general trend towards increasing and excessive concentration.** Indeed, overall concentration levels are on par with those that prevailed before the allegedly lax antitrust policy of the Bush and Obama Administrations and the advent of "Big Tech." We trace the rise of the notion that industrial concentration is increasing and has reached dangerous levels – what we refer to as the "excessive concentration narrative" – to reliance on unreliable, incomplete, and/or anecdotal evidence and document its rapid, uncritical acceptance among policymakers. Finally, we show that economic research using the official Census data has falsified the excessive concentration narrative.

Having established that the original motivation for the CLRC's inquiry into "Concentration in California," rests on a mistaken premise, in Section III, we turn to the question of whether trends in industrial concentration are a useful benchmark of monopoly power. We start by discussing the well-known economic reason that trends in industrial concentration are an unreliable metric for assessing competition: **Industries are not economic markets, which must be defined in terms of consumer substitution patterns to be potentially informative about competitive conditions.** We also demonstrate that not only are trends in industrial concentration a conceptually flawed benchmark, but empirical analysis confirms that industrial concentration is an unreliable and deceptive tool for guiding antitrust policy. Indeed, because it has been shown repeatedly that increases in industrial concentration are correlated with measures of economic growth including output, productivity, and wages, conflating industrial concentration and monopoly power has the potential to create serious economic harm by misleading policymakers.

Finally, in Section IV, we show that putting the economic and empirical evidence aside, there is an important practical limitation regarding industrial concentration data that renders the question of whether to base policy decisions on trends in industrial concentration in California moot: **Official Census data on concentration is not available at the state level and there is no systematic empirical research available on state-level trends in industrial concentration.** We also explain why it is highly unlikely any such research will be produced in the foreseeable future, and why, if such research did exist, a deep methodological problem would prevent the results from being useful from an antitrust perspective: Economic activity in the Census data is attributed to the geographic location in which production occurs, not where consumption occurs, and thus, the data would provide scant insight regarding consumer substitution patterns and competition. In addition, we highlight in Section IV that, because in the absence of data, the CLRC Concentration Report relies on anecdotal and ad hoc examples to evaluate "Concentration in California," it repeats and perpetuates the mistakes that originally allowed the excessive concentration narrative to metastasize, despite being false.

In sum, the conclusion of our paper is simple: **Industrial concentration is a deeply flawed, misleading, and unworkable benchmark of monopoly power, and trends in industrial concentration should play no role in guiding antitrust policy in California, any other state, or the United States.**

II. The Rise and Fall of the Excessive Concentration Narrative in the U.S.

The excessive concentration narrative, which has rapidly come to be accepted as truth by many policymakers, arose from a failure to scrutinize the unreliable, incomplete, and/or anecdotal evidence put forward by its proponents in the latter half of the 2010s. In taking for granted that there is a "concentration problem" or "monopoly problem" in the United States, the preamble of ACR 95 is just one example of this trend. In this section, we show, that the excessive concentration narrative has been falsified by economic research using official concentration data from the U.S. Census Bureau. The data demonstrate that there is no general trend towards increasing and harmful levels of industrial concentration in the United States since the early 2000s and that overall concentration levels are on par with those that prevailed before the allegedly lax antitrust policy of the Bush and Obama Administrations and the advent of "Big Tech."

A. The Rise of the Excessive Concentration Narrative

Until recently, it was a generally accepted truth among policymakers that industrial concentration had risen to excessive and dangerous levels in the United States since the 2000s. The prevailing wisdom and its ostensible foundations were perhaps best expressed in a 2018 article by Lina Khan, now chair of the Federal Trade Commission:

> Mounting research shows that America has a market power problem. In sectors ranging from airlines and poultry to eyeglasses and semiconductors, just a handful of companies dominate. The decline in competition is so consistent across markets that excessive concentration and undue market power now look to be not an isolated issue but rather a systemic feature of America's political economy.[8]

To support these assertions, Chair Khan cited an analysis published by *The Economist* in March 2016,[9] an analysis published by the Council of Economic Advisors (CEA) in April 2016,[10] and a number of anecdotal press and opinion reports on specific industries.

Both the empirical analyses conducted by *The Economist* and the CEA contained glaring methodological problems. For instance, the CEA study used a measure of concentration (the fifty-firm concentration ratio or CR_{50}) that was far too broad to be informative from an antitrust perspective and examined aggregated economic "sectors" rather than specific industries;[11] meanwhile, the analysis conducted by *The Economist* deviated from the official industry

[8] Lina Khan, *The Ideological Roots of America's Market Power Problem*, 127 YALE LAW JOURNAL FORUM 960 (2018) at 960-961.

[9] *Too Much of a Good Thing*, THE ECONOMIST (March 26 2016), available https://www.economist.com/briefing/2016/03/26/too-much-of-a-good-thing.

[10] Council of Economic Advisors, *Benefits of Competition and Indicators of Market Power* (April 2016), available at https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160414_cea_competition_issue_brief.pdf.

[11] Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 11.

definitions used by the U.S. Census Bureau without providing details on the adjustments made to the underlying data.[12] Furthermore, putting aside these methodological problems, the economy-wide increases in concentration reported by both studies were not economically significant and the overall levels of concentration reported were modest.[13]

Nevertheless, in the absence of empirical analysis, and combined with anecdotes about the demise of competition in various sectors, the excessive concentration narrative was widely embraced. **Indeed, as Carl Shapiro, former Deputy Assistant Attorney General for Economics in the Antitrust Division of the U.S. Department of Justice and an author of the CLRC report on single-firm conduct, and Ali Yurukoglu, a professor of economics at Stanford, have observed, despite the manifest flaws in the evidence supporting the excessive concentration narrative, the rapidity with which these ideas were "accepted as ground truth and used to justify major changes in antitrust policy is striking."**[14] This narrative reached its apex with President Biden's July 2021 "Executive Order on Promoting Competition in the American Economy," which made "combat[ing] the excessive concentration of industry" a foundation of the administration's economic policy.[15] However, the excessive concentration narrative started to unravel as researchers began carefully examining the data.

B. The Economic Census Data

Before discussing the evidence dispelling the excessive concentration narrative, in this section, we offer a brief discussion of how industrial concentration is measured in the U.S. Census Bureau's Economic Census data. Official data on industrial concentration in the United States are released by the U.S. Census Bureau as part of the Economic Census every five years in the second and seventh year of each decade. The Economic Census is compiled from surveys of nearly four million business locations and "serves as the most extensive collection of data related to business activity" in the U.S.[16]

Economic activity is classified and organized in the Economic Census using the North American Industry Classification System (NAICS).[17] The NAICS uses a hierarchical system of numerical codes ranging from two to six digits to categorize economic activity with businesses grouped based

[12] Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 9, n. 24.

[13] Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 10-11; see also Carl Shapiro, *Antitrust in a Time of Populism*, 16 INTERNATIONAL JOURNAL OF INDUSTRIAL ORGANIZATION 714 (2018) at 729.

[14] Carl Shapiro and Ali Yurukoglu, *Trends in Competition in the United States: What Does the Evidence Show?* NBER Working Paper 32762 (July 2024) at 1, available at https://www.nber.org/papers/w32762.

[15] The White House, *Executive Order on Promoting Competition in the American Economy* (July 19, 2021), §1, available at https://www.whitehouse.gov/briefing-room/presidential-actions/2021/07/09/executive-order-on-promoting-competition-in-the-american-economy/.

[16] United States Census Bureau, *About the Economic Census*, available at https://www.census.gov/programs-surveys/economic-census/year/2022/about.html.

[17] Executive Office of the President and Office of Management and Budget, *North American Industry Classification System* (2017) at 3, available at https://www.census.gov/naics/reference_files_tools/2017_NAICS_Manual.pdf.

on similarities in "processes used to produce goods or services."[18] Industries are the narrowest groupings of businesses and are represented by six-digit NAICS codes.[19]

The only measures of concentration in the Economic Census data available for all industries over the relevant years are concentration ratios (CRs), which represent the percentage of industry revenues accounted for by a specified number of the top earning firms in the industry.[20] Specifically, the four-firm, eight-firm, twenty-firm, and fifty-firm CRs, typically denoted as "CR_4," "CR_8," "CR_{20}," and "CR_{50}," are reported for each industry. It is generally recognized by economists that only the CR_4 is of potential use from an antitrust perspective.[21]

C. The Fall of the Excessive Concentration Narrative

Rigorous empirical research has now demonstrated that there is no trend towards excessive industrial concentration in the United States. Two studies conducted by the authors of this paper provide an in-depth investigation of trends in industrial concentration over the last two decades.[22] These studies evaluate trends in concentration from two perspectives. The first perspective is a cross-sectional analysis of industrial concentration in each Economic Census year from 2002 to 2017. This analysis includes all six-digit NAICS industries available in the data. As shown in Figure 1, using the full set of industries, industrial concentration as measured by CR_4 has declined since 2007 and is now approximately the same as it was in 2002.

[18] Executive Office of the President and Office of Management and Budget, *North American Industry Classification System* (2017) at 15, available at https://www.census.gov/naics/reference_files_tools/2017_NAICS_Manual.pdf.

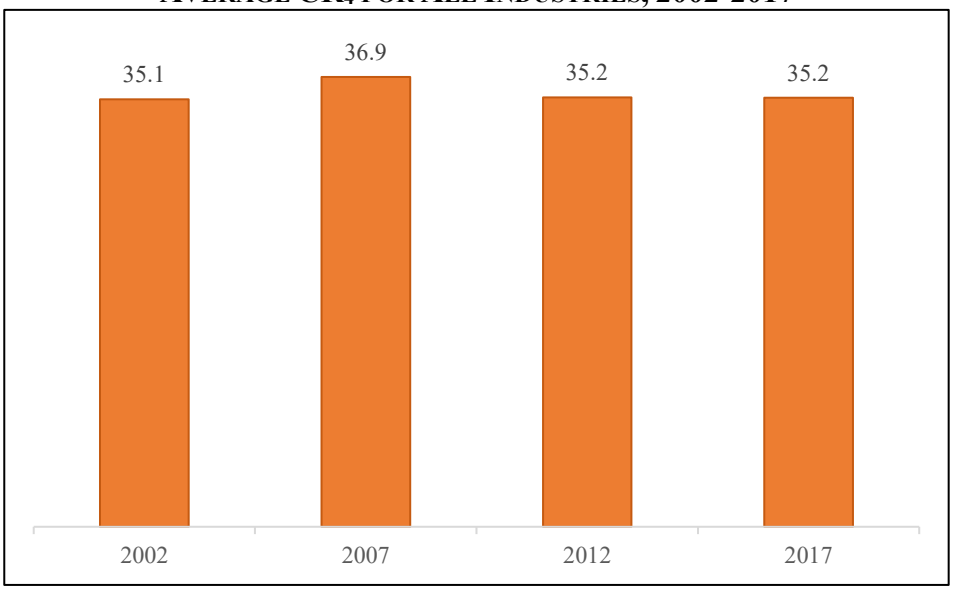
[19] Executive Office of the President and Office of Management and Budget, *North American Industry Classification System* (2017) at 18, available at https://www.census.gov/naics/reference_files_tools/2017_NAICS_Manual.pdf.

[20] Prior to 2017, the Census only provided HHIs (Herfindahl-Hirschman Index) for manufacturing industries (six-digit NAICS industries beginning with "31," "32" or 33"). Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 8.

[21] See e.g., Carl Shapiro, *Antitrust in a Time of Populism*, 16 INTERNATIONAL JOURNAL OF INDUSTRIAL ORGANIZATION 714 (2018) at 723.

[22] Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022); Robert Kulick and Andrew Card, *A Tale of Two Samples: Unpacking Recent Trends in Industrial Concentration*, AEI Economics Working Paper 2023-11 (June 2023), available at https://www.aei.org/research-products/working-paper/a-tale-of-two-samples-unpacking-recent-trends-in-industrial-concentration/.

FIGURE 1:
AVERAGE CR_4 FOR ALL INDUSTRIES, 2002-2017



Source: Economic Census data.

As technology and production processes change over time, the NAICS is revised and industries are redefined to capture current patterns of economic activity.[23] When industries are redefined, there is often consolidation of existing industries, and the result has been a decline in the total number of industries over time.[24] In contrast to the analysis presented in Figure 1, much of the existing research on concentration excludes industries subject to redefinition or makes other adjustments reducing the sample of industries considered.[25] However, there are two reasons that restricting attention to a subset of industries is problematic. First, "to the extent the NAICS industry definitions represent useful proxies for economic markets, changes in the contours of competition should be reflected[.]"[26] Second, the set of industries that maintain a constant definition over time (the Comparable Industries Sample) have lower initial levels of concentration in 2002 than those industries that are subsequently redefined. Lower initial levels of concentration in the Comparable Industries Sample, coupled with the fact that less concentrated industries tend to become more

[23] U.S. Census Bureau, *Comparing Historical Economic Census Data*, available at https://www.census.gov/programs-surveys/economic-census/guidance/historical-data.html?cq_ck=1474317700046#par_textimage_8.

[24] Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022), Table 2.

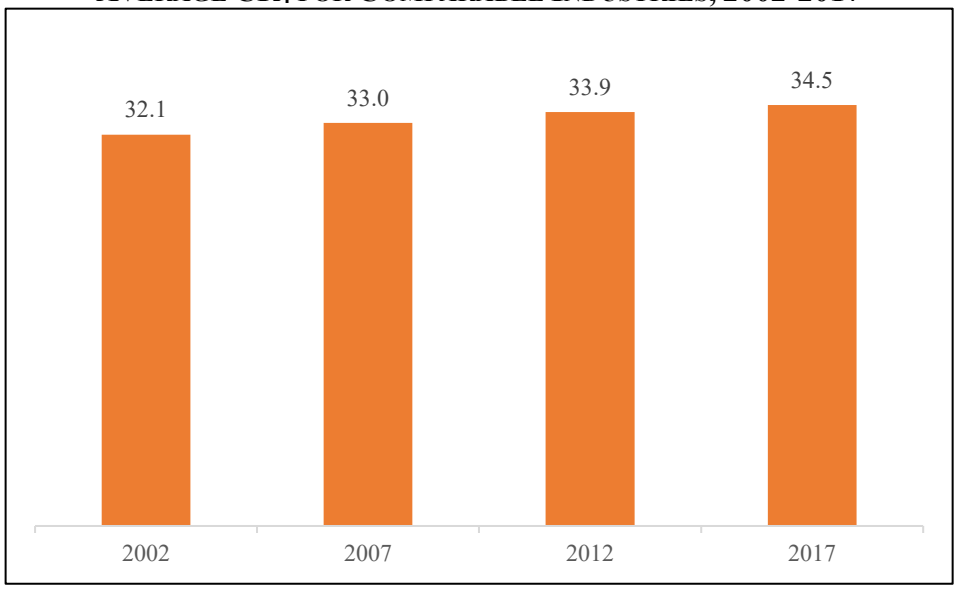
[25] See e.g., Sam Peltzman, *Industrial Concentration under the Rule of Reason*, THE JOURNAL OF LAW & ECONOMICS 101 (2014); Robert Atkinson and Filipe Lage de Sousa, *No Monopoly Has Not Grown*, Information Technology & Innovation Foundation (June 2021), available at https://itif.org/publications/2021/06/07/no-monopoly-has-not-grown/; *Too Much of a Good Thing*, THE ECONOMIST (March 26 2016), available https://www.economist.com/briefing/2016/03/26/too-much-of-a-good-thing.

[26] Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 14.

concentrated over time,[27] creates potential bias towards a finding of increasing concentration among Comparable Industries.[28]

Nevertheless, it is also useful to consider whether it is possible that redefinition and consolidation are masking possible evidence of a trend towards excessive concentration. Thus, we also examine trends in concentration restricting attention to the Comparable Industries Sample. The results are presented in Figure 2.

FIGURE 2:
AVERAGE CR_4 FOR COMPARABLE INDUSTRIES, 2002-2017



Source: Economic Census data.

Two facts about concentration in the Comparable Industries Sample are immediately apparent. First, the increase in concentration is small (2.4 percentage points). Second, due to the small increase in concentration, the Comparable Industries Sample remains slightly less concentrated than the full set of Census industries in 2017. Even in the absence of concerns about sample selection bias, this increase in concentration is too small and the concentration levels too low to justify concerns about excessive concentration. As observed by Professor Shapiro and Professor Yurukoglu discussing research finding similar (and, in fact, somewhat larger) increases in concentration:

> [I]f one were to measure concentration using "markets" based on NAICS codes, then the levels are so low and the increase so modest that traditional concerns

[27] Robert Kulick and Andrew Card, *A Tale of Two Samples: Unpacking Recent Trends in Industrial Concentration*, AEI Economics Working Paper 2023-11 (June 2023), at 10-12, available at https://www.aei.org/research-products/working-paper/a-tale-of-two-samples-unpacking-recent-trends-in-industrial-concentration/.

[28] Robert Kulick and Andrew Card, *A Tale of Two Samples: Unpacking Recent Trends in Industrial Concentration*, AEI Economics Working Paper 2023-11 (June 2023), at 10-12, available at https://www.aei.org/research-products/working-paper/a-tale-of-two-samples-unpacking-recent-trends-in-industrial-concentration/.

associated with market concentration are unlikely to be significant in most U.S. industries.[29]

Thus, when this analysis is considered in conjunction with the full-sample analysis, it is clear that there is simply no evidence of a trend towards increasing and excessive concentration. Other researchers evaluating the Census data have corroborated our findings.[30] **Thus, a critical implication of the recent economic research on trends in industrial concentration is that the premises regarding trends in concentration motivating ACR 95 have been falsified.**

III. Trends in Industrial Concentration are Not a Reliable Benchmark of Monopoly Power

Having established that there is no trend towards excessive industrial concentration in the U.S., in this section, we address the usefulness and reliability of industrial concentration as a gauge of competitive activity. We first discuss the well-known economic reason that **trends in industrial concentration are considered an unreliable metric for assessing competition: Industries are not economic markets, which must be defined in terms of consumer substitution patterns to be potentially informative about monopoly power.** We then show that, in addition to this fundamental conceptual problem, empirical analysis of the Census data confirms that industrial concentration is an unreliable and misleading benchmark of monopoly power.

A. Industries are Not Economic Markets

Economic competition is driven by the ability of consumers to substitute to alternative products or services. Because consumer substitution is the mechanism through which competition is realized, economic markets are defined in terms of the group of firms that offer substitute products or services that directly compete with one another.[31] Thus, "any market used to measure market concentration should include a collection of reasonable substitutes, but not other products."[32]

High levels of concentration in properly defined economic markets do not necessarily indicate low levels of competition. Ultimately, it is the degree and quality of competition that determines the propensity of consumers to substitute between products – what is known in economics as the cross-price elasticity of demand. Thus, even a market with a limited number of competitors may be highly competitive if the products involved are very close substitutes.[33] Furthermore, in markets

[29] Carl Shapiro and Ali Yurukoglu, *Trends in Competition in the United States: What Does the Evidence Show?* NBER Working Paper 32762 (July 2024) at 11, available at https://www.nber.org/papers/w32762.

[30] Robert Atkinson and Filipe Lage de Sousa, *No Monopoly Has Not Grown*, Information Technology & Innovation Foundation (June 2021) at 1, available at https://itif.org/publications/2021/06/07/no-monopoly-has-not-grown/.

[31] Dennis Carlton and Jeffrey Perloff, MODERN INDUSTRIAL ORGANIZATION, 4th ed. (Addison-Wesley, 2005) at 644.

[32] Carl Shapiro and Ali Yurukoglu, *Trends in Competition in the United States: What Does the Evidence Show?* NBER Working Paper 32762 (July 2024) at 6, available at https://www.nber.org/papers/w32762.

[33] For example, Economic Census data indicate that the CR_4 in the U.S. taxi industry increased from 17.6 percent to 77.2 percent from 2002 to 2017 as the result of the emergence of ridesharing companies like Uber and Lyft. Despite the increase in concentration, the empirical evidence demonstrates that the emergence of ridesharing firms (and the intense competition between ridesharing firms, and between ridesharing firms and traditional taxis) has benefitted

where competition is driven primarily by innovation and investment – what are known as dynamically competitive markets – high levels of concentration may be necessary to facilitate competition.[34] Nevertheless, limited opportunities for substitution and high levels of concentration are typically a necessary, though not sufficient, condition for the exercise of monopoly power. Thus, analyzing market concentration is a useful screen for identifying situations where there is potential for firms to extend or maintain monopoly power through anticompetitive behavior.

However, as discussed above, NAICS industries in the Census data are defined by grouping firms which have similar production patterns, not by grouping products based on consumer substitution patterns. As explained by Professor Shapiro and Professor Yurukoglu:

> The data typically used to measure concentration follow the North American Industry Classification System (NAICS), which was not designed to capture collections of substitute products and does not do so. As a result, the measures of concentration typically cited [using Census data] are not informative regarding market power. Period.[35]

In addition to this fundamental economic problem with attempting to use industrial concentration metrics as a gauge of competition, a large body of empirical evidence demonstrates that industrial concentration is an unreliable and misleading benchmark of monopoly power. The remainder of this section discusses the empirical evidence.

B. High Levels of Concentration are Not Persistent

A central tenet of the excessive concentration narrative is that not only has industrial concentration increased but that the trend is persistent, reflecting a structural change in the U.S. economy, and a

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consumers and the economy. Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 23.

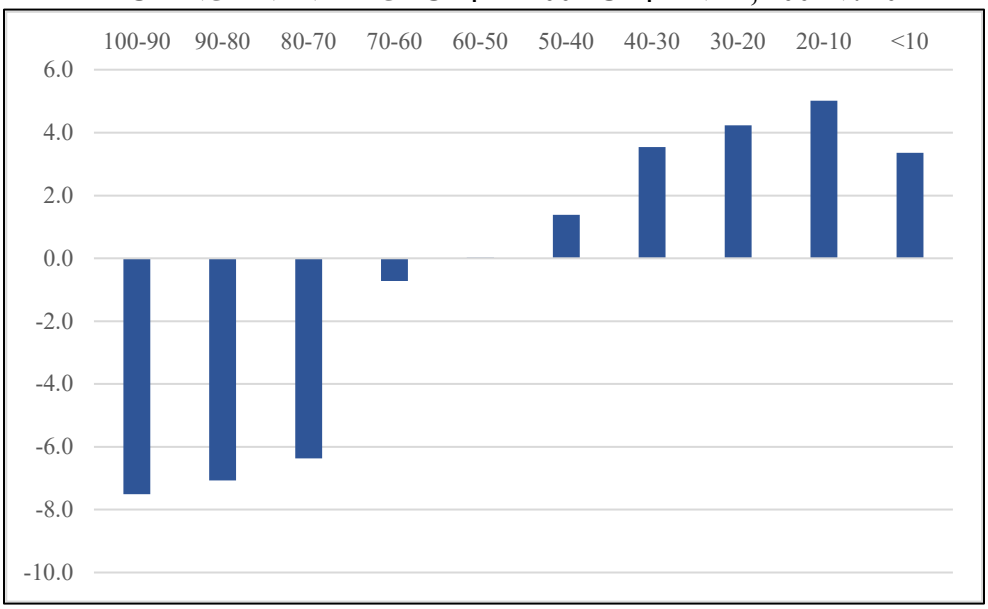
[34] Jeffrey Eisenach and Ilene Gotts, *Looking Ahead: The FTC's Role in Information Technology Markets*, 83 GEORGE WASHINGTON LAW REVIEW 1876 (2015) at 1879 ("Dynamism refers to what is often called 'Schumpeterian' competition and implies that firms compete primarily by offering new and improved products rather than by finding ways to produce and sell existing products at lower prices. Such competition implies the existence of sunk costs (in research and development ('R&D') or nonrecoverable investments in fixed assets). The resulting economies of scale tend to lead to high levels of concentration, and the product differentiation that results from successful innovation yields high margins with equilibrium prices above marginal costs that are easily mistaken for traditional monopoly power. But to conclude based on those factors that the firms involved have traditional monopoly power, in the sense of being able to exclude entrants or earn monopoly rents, would be erroneous.").

[35] Carl Shapiro and Ali Yurukoglu, *Trends in Competition in the United States: What Does the Evidence Show?* NBER Working Paper 32762 (July 2024) at 3, available at https://www.nber.org/papers/w32762. See also, Carl Shapiro, *Antitrust in a Time of Populism,* 61 INTERNATIONAL JOURNAL OF INDUSTRIAL ORGANIZATION 714 (2018) at 728 ("But, simply as a matter of measurement, the Economic Census data that are being used to measure trends in concentration do not allow one to measure concentration in relevant antitrust markets, *i.e.,* for the products and locations over which competition actually occurs."); Directorate for Financial and Enterprise Affairs Competition Committee, *Market Concentration – Note by the United States*, Organisation for Economic Co-operation and Development (May 27, 2018) at ¶5, available at https://one.oecd.org/document/DAF/COMP/WD(2018)59/en/pdf ("The U.S. Census Bureau publishes data for broad ranges of economic activity at several levels of aggregation. At no level is the Census data capable of demonstrating increasing concentration of '*relevant markets*' in the antitrust sense, i.e., ranges of economic activity in which competitive processes determine price and quality, and in which the impact of agreements, mergers, and unilateral conduct are evaluated in competition law.") (emphasis in original).

weakening of the ability of competitive forces to discipline market power.[36] However, the empirical evidence tells a different story.

In our previous work, we assessed the relationship between an industry's initial level of concentration in 2002 and its level of concentration in 2017 – the most recent year of Economic Census data currently available. The results are shown in Figure 3:

FIGURE 3:
CHANGE IN AVERAGE CR_4 BY 2002 CR_4 LEVEL, 2002 V. 2017



Source: Industrial Concentration in the United States at 17.

In Figure 3, each NAICS industry in the Comparable Industry Sample is grouped according to its 2002 level of CR_4 in increments of ten (i.e., 100-90, 90-80, 80-70, etc.). The figure then presents the change in each group's average level of concentration between 2002 and 2017. **Contrary to the notion that concentration is persistent, over time highly concentrated industries tend to become less concentrated, while less concentrated industries tend to become more concentrated.**

The finding that more concentrated industries tend to become less concentrated has also been demonstrated by other researchers. Indeed, in one of the few existing studies directly assessing market concentration rather than industrial concentration, the authors found that not only has market concentration decreased, but that concentration has fallen most in the most concentrated markets.[37]

The pattern of more concentrated industries or markets becoming less concentrated over time may reflect the competitive impact of "new entry or investment from firms that are not leaders in those

[36] Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 4.

[37] C. Lanier Benkard, Ali Yurukoglu, and Anthony Zhang, *Concentration in Product Markets* (2023) at 16, available at https://anthonyleezhang.github.io/pdfs/concentration.pdf.

markets."[38] However, an important consideration in interpreting these results is that there are many factors which affect concentration. For instance, economic research has shown that government regulation tends impede the entry of new firms and slow the growth of small firms relative to larger firms.[39] Research has also shown that there is a positive relationship between the share of revenue accounted for by government spending in an industry and its level of concentration.[40] Thus, political cycles of regulation or government spending may impact concentration, with higher levels of government activity leading to higher levels of concentration, and lower levels of government activity leading to lower levels of concentration. More broadly, trends in concentration may be driven by transient industry-specific economic shocks that dissipate over time.[41] Thus, trends in industrial concentration do not provide a reliable basis for making inferences about the extent of monopoly power in an industry, a state, or in the broader economy.

C. Industrial Concentration is Positively Correlated with Economic Growth and Wages

Competition brings many economic benefits, including lower prices, increased economic growth, higher wages, and greater innovation. Thus, if rising industrial concentration is a useful benchmark of monopoly power, it should be associated with poor economic outcomes. Again, however, the empirical evidence is at odds with the excessive concentration narrative.

In our previous work, we investigated the relationship between within-industry changes in concentration from 2002 to 2017 and three measures of economic growth available in the Census data: the percentage growth in industry sales, industry employment, and employee compensation. The results are presented in Figure 4:

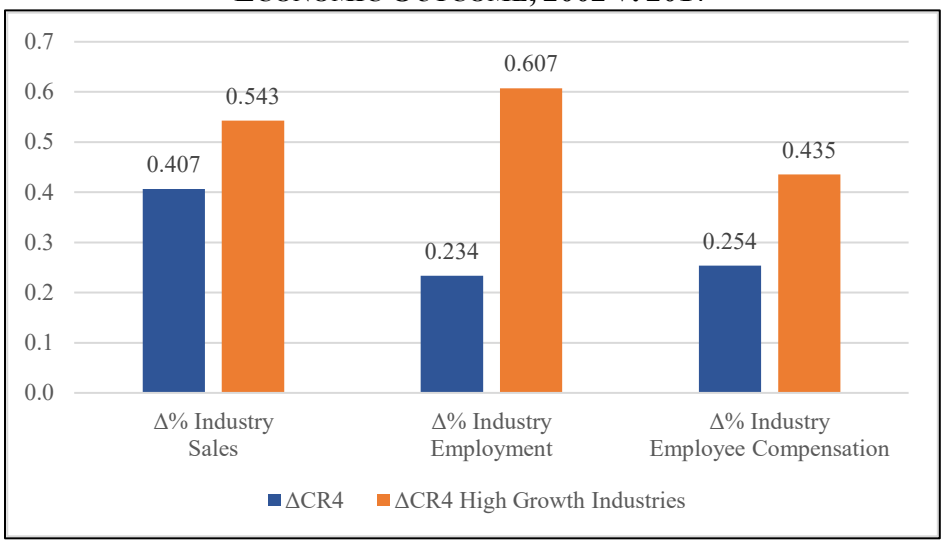
[38] Carl Shapiro and Ali Yurukoglu, *Trends in Competition in the United States: What Does the Evidence Show?* NBER Working Paper 32762 (July 2024) at 9-10, available at https://www.nber.org/papers/w32762.

[39] See e.g., James Bailey and Diana Thomas, *Regulating Away Competition: The Effect of Regulation on Entrepreneurship and Employment*, 52 JOURNAL OF REGULATORY ECONOMICS 237 (2017); Dustin Chambers, Patrick McLaughlin, and Tyler Richards, *Regulation, Entrepreneurship, and Firm Size*, 61 JOURNAL OF REGULATORY ECONOMICS 108 (2022).

[40] Christopher Nekarda and Valerie Ramey, *Industry Evidence on the Effects of Government Spending*, 3 AMERICAN ECONOMIC JOURNAL: MACROECONOMICS 36 (2011) at 42, 48-49.

[41] Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 18.

FIGURE 4:
CORRELATIONS BETWEEN CONCENTRATION AND ECONOMIC OUTCOME, 2002 V. 2017



Source: Industrial Concentration in the United States at 20.

Figure 4 presents the correlation[42] between industry-level changes in concentration and each measure of economic growth on both an economy-wide basis and for "high growth industries" (industries whose growth rate is in the 90th percentile or higher). **In each case, increases in concentration are associated with increases in each measure of economic growth and these relationships become even stronger with respect to the fastest growing industries.**

Other research using the Census data from the manufacturing sector has also shown that industry-level increases in concentration are positively correlated with increased productivity and real output growth, and uncorrelated with changes in price.[43] These relationships indicate that higher levels of concentration are often "likely due to technical innovation or scale economies." [44]

The need for innovative industries to operate at sufficient scale to drive technological innovation is increasingly recognized by policymakers. For instance, Mario Draghi's recent report, *The Future of European Competitiveness*, calls for "[f]acilitating consolidation in the telecoms sector" to "deliver high rates of investment in connectivity."[45] Enrico Letta's April 2024 report, *Much More*

[42] See e.g., Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 20 ("A correlation coefficient is a measure of the strength of the relationship between two variables with a value of one representing a perfect positive relationship, a value of zero representing no relationship, and a value of negative one representing a perfect negative relationship," citing Jay Devore and Kenneth Berk, MODERN MATHEMATICAL STATISTICS WITH APPLICATIONS, 2nd. Ed. (Springer, 2012) at 665.)

[43] Sharat Ganapati, *Growing Oligopolies, Prices, Output, and Productivity*, 13 AMERICAN ECONOMIC JOURNAL 309 (2021).

[44] Sharat Ganapati, *Growing Oligopolies, Prices, Output, and Productivity*, 13 AMERICAN ECONOMIC JOURNAL 309 (2021) at 324.

[45] Mario Draghi, *The Future of European Competitiveness*, European Commission (September 2024) at 31, available at https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en?filename=The%20future%20of%20European%20competitiveness%20_%20A%20competitiveness%20strategy%20for%20Europe.pdf.

Than a Market, also calls for increased consolidation, and hence higher levels of industrial concentration, in the financial, energy, and electronic communications sectors in Europe.[46]

It is important to note that these findings do not imply that concentration is in itself an economic good or that antitrust enforcement is unimportant. Nor does this body of research imply a "direct causal relationship between rising concentration and beneficial economic outcomes."[47] **Rather, what economic research demonstrates is that industrial concentration is a deeply flawed and misleading benchmark for measuring monopoly power and guiding policy.** To achieve its goals, antitrust policy must be based on rigorous economic analysis of economic markets and the conduct and behavior of firms within those markets. Industrial concentration is not only ineffective as a tool for guiding competition policy, but to the extent the consideration of concentration encourages deconcentration as an economic policy objective, it risks causing significant harm to the U.S. and world economy.

IV. There is No Reliable Evidence on Trends in Industrial Concentration in California

The CLRC's concentration panel was charged with producing "an empirically-based description of the degree and effect of business concentration in California."[48] However, the CLRC Concentration Report did not provide such an analysis. **The ultimate reason for this omission is simple: reliable data necessary to conduct a rigorous state-level analysis of industrial concentration (akin to our work on national concentration levels discussed above) is not available.** As discussed below, it is highly unlikely that these circumstances will change in the foreseeable future, and thus, even if industrial concentration were a useful benchmark for guiding competition policy (which it is not), there is no empirical evidence on trends in state-level concentration to analyze. Thus, the CLRC Concentration Report instead relies on anecdotal evidence to argue that concentration is excessive in California. **Yet, it is precisely this approach – drawing sweeping conclusions untethered to empirical evidence – that resulted in the rapid rise of the excessive concentration narrative in the first place, despite its lack of foundation.**

A. There is No Reliable Data Measuring State-Level Industrial Concentration

As discussed above, official data on industrial concentration in the United States are released by the U.S. Census Bureau as part of the Economic Census and made generally available. These publicly-accessible data on levels of concentration by industry are reported only at the national level.[49] The Census Bureau does not provide official statistics on industrial concentration by state.

Researchers looking to analyze questions related to industrial concentration that go beyond the official statistics reported by the Census Bureau have attempted to use private data sources as an

[46] Enrico Letta, *Much More Than a Market*, European Commission (April 2024) at 8, available at https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf.

[47] Robert Kulick and Andrew Card, *Industrial Concentration in the United States: 2002-2017*, NERA Economic Consulting (March 2022) at 21.

[48] California Law Revision Commission, *Antitrust Law: Status Report*, Memorandum 2023-16 (March 9, 2023) at 4, available at http://www.clrc.ca.gov/pub/2023/MM23-16.pdf.

[49] See e.g., U.S. Census Bureau, "EC1700SIZECONCEN," available at: https://data.census.gov/table/ECNSIZE2017.EC1700SIZECONCEN?q=Concentration%20Ratio.

alternative. For example, some studies of concentration have relied on data from S&P Compustat,[50] a database with detailed market and financial information for many U.S. companies over time, to compute concentration metrics.[51] A key limitation of Compustat, however, is that the database is limited to publicly-traded firms, and thereby excludes the significant portion of economic activity attributable to private firms from consideration. As a result, it is not surprising that comparison of alternative data sources like Compustat to official Census Bureau data demonstrates that these sources are systematically unreliable for the purposes of analyzing concentration.[52]

While it is possible for researchers to apply to the Census Bureau for access to the confidential (*i.e.,* non-public) data underlying the Economic Census[53] from which state-level concentration metrics might theoretically be computed,[54] there are several practical obstacles to utilizing these data for this purpose. In addition to applying for and obtaining "Special Sworn Status" approval required to access the data,[55] researchers using the data must conduct work onsite at a Federal Statistical Research Data Center.[56] Moreover, there is no guarantee that the Census will approve or refrain from censoring publication of the results, and all results are carefully reviewed by the Census to ensure that sensitive business information for any firm cannot be identified from the data presented. Finally, even if these practical obstacles were to be overcome in a reasonable timeframe, there would still be a fundamental methodological problem which cannot be overcome: Economic activity in the Economic Census data is attributed to the geographic location in which production occurs, not where consumption occurs. As such, the findings would not be tied to patterns of competition and consumer substitution in a particular state. **In sum, there is no empirical evidence on trends in concentration in California, it is unlikely that such evidence**

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[50] S&P Global, "Compustat Data from S&P Global Market Intelligence," available at https://www.spglobal.com/marketintelligence/en/documents/compustat-brochure_digital.pdf.

[51] See e.g., Gustavo Grullion, Yelena Larkin and Roni Michaely, *Are U.S. Industries Becoming More Concentrated?,* Swiss Finance Institute Research Paper Series N. 19-41 (2018), available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2612047.

[52] Ryan Decker, "A note on industry concentration measurement," Board of Governors of the Federal Reserve System Note (February 3, 2023), available at: https://www.federalreserve.gov/econres/notes/feds-notes/a-note-on-industry-concentration-measurement-20230203.html.

[53] U.S. Census Bureau, "Restricted Use Data Application Process," available at: https://www.census.gov/topics/research/guidance/restricted-use-microdata/standard-application-process.html.

[54] U.S. Census Bureau, "Restricted Use Data Application Process," available at: https://www.census.gov/topics/research/guidance/restricted-use-microdata/standard-application-process.html. ("While access to restricted-use data might facilitate more granular analysis than the publicly-available national concentration metrics, computing state-level concentration metrics would not be a straightforward exercise.

[55] U.S. Census Bureau, "Restricted Use Data Application Process," available at: https://www.census.gov/topics/research/guidance/restricted-use-microdata/standard-application-process.html ("To perform statistical research in an FSRDC using non-public microdata, researchers must be both associated with an approved project and obtain Special Sworn Status (SSS). Applying for SSS includes successfully completing a background investigation and fingerprinting. Those who are approved to take an oath of confidentiality are sworn for life to protect the data and are subject to legal obligations and penalties.").

[56] U.S. Census Bureau, "Restricted Use Data Application Process," available at: https://www.census.gov/topics/research/guidance/restricted-use-microdata/standard-application-process.html ("After your research proposal and Special Sworn Status (SSS) security clearance are both approved, you may make plans with the Administrator at one of the Federal Statistical Research Data Center (FSRDC) locations to begin work on the project. All project work must be done inside the FSRDC secure facility. There are strict physical and cyber restrictions regarding data protection within the FSRDCs.").

will become available in the foreseeable future, and even if such data were available, it would not be informative for guiding competition policy.

B. Anecdotal or Incomplete Assessments of Concentration are Not Reliable

In the absence of empirical data on changes in concentration levels in California within well-defined industries over time, the CLRC Concentration Report instead mimics the tact adopted by previous proponents of the excessive concentration narrative – namely, pointing to anecdotal evidence to intimate that concentration is not an "isolated," but "systemic" feature of California's economy.[57]

The CLRC Concentration Report focuses, specifically, on three sweeping "sectors" in California: agriculture, healthcare/pharmaceuticals, and entertainment.[58] With regard to agriculture, for example, the CLRC Concentration Report concludes that, "[f]rom the level of farms, through the distribution channel, down to the retailers, California faces a consolidation crisis placing a stranglehold on the cost of food to consumers."[59] **Yet, the evidence of California's agricultural "consolidation crisis" presented by the CLRC Concentration Report is neither from California nor an indictment of concentration levels in California's agricultural sector as a whole.** In particular, the CLRC Concentration Report states that "four large conglomerates control 55 to 85 percent of the [national] market for pork, beef and poultry,"[60] and that four large retailers control a significant share of grocery stores nationwide.[61] Such examples are problematic and unreliable along multiple dimensions. For instance, both sets of examples are based on national data, not data specific to California. In addition, the data cited to support the assertion that 69 percent of grocery store sales are controlled by four firms are at odds with the most recent official data from the Census, which indicate a CR_4 for the grocery industry of 36 percent.[62] However, the most significant problem with these examples, and the CLRC Concentration Report in general, is that they ignore many other sectors related to agriculture and food and are not accompanied by any rigorous analysis of the relationship between concentration and economic outcomes.

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[57] Lina Khan, *The Ideological Roots of America's Market Power Problem*, 127 YALE LAW JOURNAL FORUM 960 (2018) at 960-961 ("The decline in competition is so consistent across markets that excessive concentration and undue market power now look to be not an isolated issue but rather a systemic feature of America's political economy.").

[58] The CLRC focuses on three of California's seven largest sectors, in particular: agriculture, healthcare/pharmaceuticals, and entertainment, to the exclusion of travel/tourism, tech, service, and construction. The CLRC Report also discuss the general "labor" market. Cheryl Johnson, Dean Harvey, Diana Moss, Barak Richman, and Shana Scarlett, *Concentration and Competition in California: A Focus on Critical Sectors and Labor Markets*, (March 26, 2024), available at: http://www.clrc.ca.gov/pub/Misc-Report/ExRpt-B750-Grp7.pdf (citing "The 7 Biggest Industries in California," (January 19, 2024), available at https://www.california.com/biggest-industries-california/).

[59] Cheryl Johnson, Dean Harvey, Diana Moss, Barak Richman, and Shana Scarlett, *Concentration and Competition in California: A Focus on Critical Sectors and Labor Markets*, (March 26, 2024), at 10, available at: http://www.clrc.ca.gov/pub/Misc-Report/ExRpt-B750-Grp7.pdf. (emphasis added).

[60] Cheryl Johnson, Dean Harvey, Diana Moss, Barak Richman, and Shana Scarlett, *Concentration and Competition in California: A Focus on Critical Sectors and Labor Markets*, (March 26, 2024), at 11-12, available at: http://www.clrc.ca.gov/pub/Misc-Report/ExRpt-B750-Grp7.pdf.

[61] Cheryl Johnson, Dean Harvey, Diana Moss, Barak Richman, and Shana Scarlett, *Concentration and Competition in California: A Focus on Critical Sectors and Labor Markets*, (March 26, 2024), at 15, available at: http://www.clrc.ca.gov/pub/Misc-Report/ExRpt-B750-Grp7.pdf.

[62] Economic Census data.

With respect to the "healthcare" sector in California, the CLRC Concentration Report claims that "consolidation" is to blame for rising prices for health-related services in California[63] and that merger activity, in particular, is linked to reductions in innovation.[64] Similarly, the CLRC Report decries consolidation and merger activity in the "entertainment" industry.[65] Again, however, no attempt is made to systematically tie consolidation to changes in concentration and changes in concentration to the economic performance of each sector. Furthermore, factors prevalent in healthcare and entertainment markets including dynamism, high fixed costs, reliance on innovation, and network effects tend to increase the size at which firms operate most efficiently.[66] The CLRC Concentration Report, however, ignores such considerations in condemning merger activity in these sectors. Indeed, the CLRC Concentration Report wholly ignores the empirical evidence linking merger activity to increased innovation.[67]

Finally, there are many factors that may impact industry-level concentration and must be considered in conducting a rigorous analysis of concentration levels and economic performance. As discussed above, for example, government regulation can increase concentration by impeding entry and slowing the growth of small firms relative to larger firms,[68] and research has established a positive relationship between the share of revenue accounted for by government spending in an industry and its level of concentration.[69] Assessing the effects of both regulation and government spending levels is therefore necessary in evaluating the economic significance of industrial concentration in California, a state with the largest total government expenditures annually ($467.6 billion in FY 2023)[70] and, by many measures, the most state-level regulation of the economy.[71]

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[63] Cheryl Johnson, Dean Harvey, Diana Moss, Barak Richman, and Shana Scarlett, *Concentration and Competition in California: A Focus on Critical Sectors and Labor Markets*, (March 26, 2024), at 19, available at: http://www.clrc.ca.gov/pub/Misc-Report/ExRpt-B750-Grp7.pdf.

[64] Cheryl Johnson, Dean Harvey, Diana Moss, Barak Richman, and Shana Scarlett, *Concentration and Competition in California: A Focus on Critical Sectors and Labor Markets*, (March 26, 2024), at 22-23, available at: http://www.clrc.ca.gov/pub/Misc-Report/ExRpt-B750-Grp7.pdf.

[65] Cheryl Johnson, Dean Harvey, Diana Moss, Barak Richman, and Shana Scarlett, *Concentration and Competition in California: A Focus on Critical Sectors and Labor Markets*, (March 26, 2024), at 41-42, available at: http://www.clrc.ca.gov/pub/Misc-Report/ExRpt-B750-Grp7.pdf.

[66] Jeffrey Eisenach and Ilene Gotts, *Looking Ahead: The FTC's Role in Information Technology Markets*, 83 GEORGE WASHINGTON LAW REVIEW 1876 (2015) at 1879; Joe Kennedy, *Monopoly Myths: Is Concentration Leading to Higher Markups?*, Information Technology & Innovation Foundation (June 1, 2020), available at: https://itif.org/publications/2020/06/01/monopoly-myths-concentration-leading-higher-markups/.

[67] See e.g., Robert Kulick and Andrew Card, *Mergers, Industries, and Innovation: Evidence from R&D Expenditure and Patent Applications,* NERA Economic Consulting (February 2023), available at: https://www.nera.com/experience/2023/mergers--industries--and-innovation--evidence-from-r-d-expenditu.html?lang=en.

[68] See e.g., James Bailey and Diana Thomas, *Regulating Away Competition: The Effect of Regulation on Entrepreneurship and Employment*, 52 JOURNAL OF REGULATORY ECONOMICS 237 (2017); Dustin Chambers, Patrick McLaughlin, and Tyler Richards, *Regulation, Entrepreneurship, and Firm Size*, 61 JOURNAL OF REGULATORY ECONOMICS 108 (2022).

[69] Christopher Nekarda and Valerie Ramey, *Industry Evidence on the Effects of Government Spending*, 3 AMERICAN ECONOMIC JOURNAL: MACROECONOMICS 36 (2011) at 42, 48-49.

[70] Urban Institute, "State Fiscal Briefs – California," available at: https://www.urban.org/policy-centers/cross-center-initiatives/state-and-local-finance-initiative/projects/state-fiscal-briefs/california.

[71] Dustin Chambers and Colin O'Reilly, *The Regressive Effects of Regulations in California,* Mercatus Center Policy Brief (March 2, 2021), available at: https://www.mercatus.org/research/policy-briefs/regressive-effects-regulations-california#:~:text=In%20terms%20of%20the%20number,1%E2%80%9D%20is%20most%20burdensome) ("In terms of the number of state-level regulatory restrictions, California ranks 1 of 44 states, with 395,608 regulatory

The CLRC Concentration Report, however, makes no attempt to address these factors, or the many other factors that may underlie trends in industrial concentration. **Thus, in the absence of such analysis, and therefore, its failure to satisfy its mandate, the CLRC Concentration Report should be accorded no weight by policymakers.**

V. Conclusion

This paper evaluates three questions regarding industrial concentration:

(1) Does the evidence suggest that concentration in the U.S. has risen to "excessive" or "harmful" levels?

(2) Is industrial concentration a useful benchmark of monopoly power?

(3) Is it empirically feasible to study trends in industrial concentration in California?

The answer to each is an unambiguous no. Thus, trends in industrial concentration should play no role in guiding antitrust policy in California, any other state, or the United States. We also caution that anecdotal or ad hoc claims regarding concentration are not a substitute for rigorous empirical analysis and should be rejected. Basing policy decisions on unfounded claims of increasing and excessive concentration has the potential to do serious harm to the California and U.S. economies.

restrictions (where a rank of "1" is most regulated). California also ranks 1 in the nation in terms of occupational licensure burden (where a rank of "1" is most burdensome).").

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