M&A and the Rise in Industry Concentration*

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Abstract

This paper provides the first quantification of the contribution of mergers and acquisitions (M&A) to rising industry concentration. We use comprehensive firm-level microdata from the U.S. Economic Census to show that M&A account for 44% of the increase in aggregate concentration. We classify M&A using the numerical criteria in the merger guidelines and show that presumed anticompetitive M&A account for 12% of the increase in aggregate concentration. We provide evidence indicating that low rates of intervention by the federal competition agencies reflect limited regulatory capacity rather than successful deterrence that prevented firms from attempting anticompetitive mergers.

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1 Introduction

Over the past 40 years, industry concentration (henceforth, concentration) in the U.S. has risen in all major industrial sectors. A growing literature studies the extent of rising concentration and its consequences for the labor share, employment, investment, profits, and market valuations. An actively debated question is whether the observed increase in concentration is a sign of lessening or intensifying competition. Both claims have been made, and both are theoretically possible. Improvements in productivity and the elimination of regulations or frictions may have allowed the largest and most productive firms to grow rapidly and increase their market share. However, stagnating large firms may have instead increased their market share by acquiring competitors.

In this paper, we provide the first quantification of the contribution of M&A to rising concentration. We decompose changes in concentration into the separate contributions of M&A and within-firm (internal) growth. The contribution of M&A measures the change in concentration due to changing ownership, while holding sales fixed, whereas the contribution of growth measures the change in concentration due to changing sales, while holding ownership fixed. Using data from the U.S. Economic Census from 1982 to 2012, we show that M&A account for 44% of the increase in aggregate concentration. In a similar manner, we present an empirical decomposition of changes in concentration in the style of Foster, Haltiwanger and Krizan (2001) that further accounts for the effects of entry and exit on concentration. In line with our earlier results, the decomposition shows that M&A account for 42% of the increase in concentration, the growth of continuing firms and net entry respectively account for 50% and 8% of the increase in concentration.

We document the extent to which the relaxation of merger guidelines and lax government enforcement of existing guidelines contributed to the rise in concentration. The merger guidelines, published by two federal competition agencies (the Department of Justice Antitrust Division and the Federal Trade Commission), lay out the principles and standards used to determine whether the effect of a merger "may be substantially to lessen competition." We approximate antitrust markets using information on industry and geography,[1] and then use the numerical criteria set forth in the merger guidelines to classify each observed M&A as either permissible or presumed anticompetitive. We show that presumed anticompetitive M&A are numerous and account for 12%

[1] In the case of tradable industries, we define the market as the national six-digit NAICS industry, and in the case of nontradable industries, we define the market as a six-digit NAICS industry within each U.S. state.

of the increase in aggregate concentration. In addition, we show that the M&A that were presumed anticompetitive under the earlier and stricter 1968 guidelines, but would have later been reclassified in 1982 as permissible, account for an additional 10% of the increase in aggregate concentration.

One might expect that the two federal competition agencies would have intervened and challenged all presumed anticompetitive M&A. Federal competition agencies receive advance notice of all significant proposed M&A transactions, as required by law under the Hart-Scott-Rodino (HSR) Antitrust Improvements Act.[2] Whenever the submitted materials suggest that a proposed M&A transaction might reduce competition, regulators can choose to open an internal investigation and later request additional information and documentation from the parties involved (this request for additional information is called a second request). Through such an internal investigation and second request, the federal competition agencies determine whether the completion of the M&A transaction would harm competition (in which case it should be challenged) or not harm competition (in which case it should be allowed). The lack of intervention, which allowed such a large number and aggregate impact of presumed anticompetitive M&A, is therefore surprising.

We discuss three possible explanations: measurement error in market boundaries, mitigating features, and limited regulatory capacity. Measurement error in our market boundaries could lead us to incorrectly view two parties as competitors even when they operate in different markets. Mitigating features, such as substantial cost savings resulting from economies of scale, allow regulators to weigh the benefits of efficiency gains against the harm of reduced competition. Limited regulatory capacity could lead regulators to forgo thorough vetting of many proposed mergers in an effort to prioritize the review of proposed mergers between firms that have significant market shares in national markets.

We argue that when we classify an M&A as presumed anticompetitive the regulators should likely have opened an internal investigation and issued a second request. The HSR filings contain the same numerical information as our earlier analysis: revenue of each party by six-digit NAICS industry, and, when the two parties operate in the same industry, a further breakdown of revenue by geography. An investigation could hypothetically determine that the parties should be allowed to complete the proposed M&A due to a reassessment of the market boundaries or mitigating features,

[2]Section 5 provides additional details on the Hart-Scott-Rodino Antitrust Improvements Act and the agencies' process of reviewing proposed M&A transactions.

but it is not clear how the federal competition agencies could reach such a conclusion based on the information contained in the HSR filings. We digitize data from the annual HSR reports and the DOJ Antitrust Division Workload Statistics and show that internal investigations and second requests are uncommon: more than 90% of proposed M&A transactions are cleared without any investigation, and more than 95% are cleared without a second request for additional information from the parties involved. In most cases involving a second request, the federal competition agencies proceed to challenge the proposed transaction, and in nearly all such challenges the agencies prevail. We therefore believe that it is unlikely that the many presumed anticompetitive M&A that we observe in the census data were investigated, received a second request, but were ultimately cleared by the federal competition agencies.

We provide evidence indicating that low rates of intervention by the federal competition agencies reflect limited regulatory capacity rather than successful deterrence that prevented firms from attempting anticompetitive mergers. Consistent with a lack of adequate resources to properly review all transactions, we show that the rate of second requests is lower in years with a greater number of reported transactions. Consistent with prioritizing the review of proposed M&A transactions that involve firms that are large nationally, we show that a clear majority of the contribution of presumed anticompetitive M&A to aggregate concentration comes from the many M&A in non-tradable industries that violate merger guidelines when evaluated locally, but do not violate the guidelines when firms are evaluated nationally.

The remainder of the paper is organized as follows. After a brief literature review, Section 2 describes the data. Section 3 presents our quantification of the contribution of M&A to rising concentration. Section 4 presents the contribution of presumed anticompetitive M&A to rising concentration. Section 5 provides evidence indicating that low rates of intervention by the federal competition agencies reflect limited regulatory capacity rather than successful deterrence. Section 6 concludes.

1.1 Literature Review

This paper contributes to a recent and growing literature on rising concentration in U.S. industries. Our work bridges several strands of research that examine the extent, consequences, and causes of increasing concentration, while providing the first systematic quantification of M&A's contribution

to this phenomenon.

A recent and substantial body of research documents rising concentration and studies its extent. Grullon, Larkin and Michaely (2019), Autor et al. (2020), and Barkai (2020) document an increase in concentration that is widespread and observed in a large majority of U.S. industries. More recent work by Kwon, Ma and Zimmermann (2024) examines trends in concentration over a century-long horizon, and show that concentration has increased persistently over the past century. Several studies focus on possible distinctions between industries and product markets. Amiti and Heise (2025) argue that imports of foreign-produced manufactured goods mitigated the rise in concentration in these product markets, while Benkard, Yurukoglu and Zhang (2021) and Neiman and Vavra (2023) study the levels and trends in concentration in consumer goods markets.

Our empirical framework is most closely related to Benkard, Yurukoglu and Zhang (2021), who present a similar decomposition of changes in HHI in the context of 336 narrowly defined consumer product markets. These consumer product markets are highly concentrated, but display no trend in concentration over the period 1994 to 2019. In this setting, the paper finds that none of the decomposition terms (including M&A) contribute much to the changes in concentration, which is perhaps unsurprising in a setting with no trend increase in concentration.

While most of the literature measures concentration at the national level, Rossi-Hansberg, Sarte and Trachter (2021) show that geographically hyperlocal measures of concentration (measured within each zip code) are in fact trending downward over time, though the paper leaves unexplored the proper geographic unit for measuring concentration. Autor, Patterson and Van Reenen (2023) further study the divergence in concentration at a national and local level, and attribute most of the decline in local concentration to the shift of the economy away from manufacturing and toward services. Affeldt et al. (2021) study concentration in EU markets, as defined by the Directorate-General for Competition of the EU Commission, and show that concentration in these markets is trending upward.

Another strand of literature studies the implications of rising concentration. This literature shows that rising concentration is associated with reduced labor shares (Autor et al., 2020; Barkai, 2020), depressed employment and wages (Benmelech, Bergman and Kim, 2022; Azar, Marinescu and Steinbaum, 2022; Dodini et al., 2024), reduced investment (Gutiérrez and Philippon, 2017), and higher profit margins and market valuations (Bessen, 2020; Covarrubias, Gutiérrez and Philippon,

2020; Smith and Ocampo, 2025).

A central debate in this literature concerns whether rising concentration reflects declining competition or is instead a sign of increasing competition that rewards the most efficient firms. This echoes earlier theoretical and empirical debates, notably Peltzman (1977) and Scherer (1979), about the relationship between concentration and competition. Peltzman (2014) argues that increased concentration may reflect efficient firms gaining market share, while Syverson (2019) provides a more recent assessment of these conflicting views. Other recent contributions advance this debate. Valletti and Zenger (2019) argue that lax antitrust enforcement allowed anticompetitive consolidation, while Gutiérrez and Philippon (2023) compare U.S. and European trends to argue that differences in antitrust policy may explain divergent concentration patterns. Koltay, Lorincz and Valletti (2023) use cross-country evidence to examine how regulatory environments affect the concentration-competition relationship, and Shapiro and Yurukoglu (2024) provide a comprehensive review arguing that the weight of evidence points to declining competition in many concentrated industries.

While many studies document rising concentration, fewer systematically decompose rising concentration into its sources. Our paper helps to fill this gap by estimating an empirical decomposition that explicitly separates the contributions of M&A and internal growth. Several papers propose explanations for rising concentration: Bessen (2020) argues that software and IT systems give large firms scalable advantages; Akcigit and Ates (2023) develop a model where reduced knowledge diffusion leads to increasing concentration; and Brynjolfsson et al. (2023) emphasize how information technology creates winner-take-most dynamics in many industries. Studies examining specific sectors provide additional insights. Einav et al. (2021) examine how customer acquisition contributes to concentration in retail markets; and Smith and Ocampo (2025) study the retail sector and provide evidence that economies of scale in logistics and inventory management drive concentration.

Our finding that M&A contributed significantly to rising concentration relates closely to the literature on potentially lax antitrust enforcement. Shapiro (2019) argues that merger enforcement has been too lenient, particularly regarding mergers that eliminate potential competition; Valletti and Zenger (2019) document a decline in merger challenges despite rising concentration; Wollmann (2019) shows that mergers just below notification thresholds have anticompetitive effects, suggesting that many problematic mergers escape scrutiny; and Aggarwal and Baxamusa (2025) analyze

mergers below reporting thresholds and find substantial aggregate effects on concentration. Complementary to our aggregate findings, Brot et al. (2024) study 1,000 mergers of U.S. hospitals, and find that 20% are presumed anticompetitive (based on the numerical criteria stated in the merger guidelines) and that these presumed anticompetitive mergers resulted in significant price increases.

Our evidence on the limited regulatory capacity of the federal competition agencies relates to a literature on the limited resources available to these agencies. Macher and Mayo (2021) provide evidence that the agencies' budgets are positively associated with the number of merger challenges. This form of evidence is especially relevant since DOJ Antitrust Division staffing declined by almost 50% between 1980 and 1989 (United States General Accounting Office, 1990), and federal antitrust enforcement expenditures have fallen significantly as a share of GDP since the mid-20th century (Scott Morton, 2020). Perhaps due to the perceived lack of enforcement resources, Jones and Kovacic (2020) warn that ambitious competition policy initiatives often overlook implementation constraints, creating a gap between enforcement goals and available resources.

Our paper makes several contributions to this literature. We provide the first quantification of the separate contributions of M&A and internal growth to rising concentration. While previous work documents that both mergers and internal growth occur in concentrating industries, we present a quantification that precisely measures their relative importance. Our finding that M&A account for 44% of rising aggregate concentration provides crucial evidence for the debate about whether concentration reflects competitive or anticompetitive forces. Second, our analysis of presumed anticompetitive mergers and their contribution to rising concentration offers a quantification of lax antitrust enforcement and its consequences. This evidence directly addresses calls in the literature for evidence on the possible contribution of lower levels of enforcement to concentration trends. Third, our analysis of the regulatory actions of the federal competition agencies presents new evidence indicating that the observed low rates of intervention by the federal agencies reflect limited regulatory capacity rather than successful deterrence that prevented firms from attempting anticompetitive mergers.

Our paper further contributes to the broader literature on the design of regulation and impediments to full implementation. Much of this literature focuses on three key frictions: enforcement costs, information barriers, and regulator incentives. These frictions play key roles in foundational works on the topic (Becker, 1968; Stigler, 1970, 1971; Posner, 1974; Peltzman, 1976; Laffont and Ti-

role, 1991, 1993). A smaller literature focuses on capacity as a key friction. Recent empirical work shows that increases in workload lead to lower enforcement levels (Bonsall IV, Holzman and Miller, 2024) and lower enforcement quality (Ege, Glenn and Robinson, 2020) by the Security Exchange Commission, as well as lower enforcement quality by patent examiners (Frakes and Wasserman, 2023). We contribute new evidence to this literature, demonstrating that capacity is a key friction. In addition, we provide evidence that regulators respond to capacity constraints by prioritizing the most impactful enforcement. Finally, we show that limited regulator capacity is, in our setting, sufficiently important to meaningfully impact aggregate outcomes for the US economy.

2 Data and Measurement

2.1 Data

Our main data source is the U.S. Census Bureau's Economic Census. The Economic Census provides us with establishment-level information on sales, geographic location, and firm identifiers that link together all establishments owned by each firm. The firm identifiers further allow us to track all changes in ownership, which are indicated by a change in the firm identifier of an establishment. Our sample from the Economic Census covers six major sectors of the economy: Manufacturing, Wholesale Trade, Retail Trade, Transportation and Warehousing, FIRE (finance, insurance, and real estate), and Services. We observe each establishment in these sectors in Economic Census years, which are those years ending in 2 and 7. In the Manufacturing, Wholesale Trade, Retail Trade, and Services sectors, our data cover the years 1982 to 2012, and in the FIRE and Transportation and Warehousing sectors our data cover the years 1992 to 2012.

We supplement the Economic Census with two variables constructed from the Longitudinal Business Database (LBD). First, we use the time-consistent six-digit North American Industry Classification System (NAICS) industry codes provided in the LBD, which build on the work of Fort and Klimek (2018).[3] Second, we use the LBD to determine the birth year of a firm. We follow the standard practice in the literature and define the birth year of a firm as the birth year of the oldest establishment of the firm in the first year that it appears in the LBD data. This definition

[3]For any establishment in the Economic Census without a longitudinal link to the LBD, we fill in this time-consistent industry classification using the most common time-consistent industry in the same year for other establishments in the same time-inconsistent industry variable reported by the Economic Census.

of firm birth year requires that we observe the firm (and its establishments) in the year in which it first appears in the data, something that is not possible in the Economic Census since most firms are not born in years ending in 2 or 7.

2.2 Concentration and Aggregation

At the level of a six-digit NAICS industry we measure concentration as the sales share of the four largest firms (C4):

$$\text{C4}_{j,t} = \frac{\text{Sales of the Four Largest Firms}_{j,t}}{\text{Total Industry Sales}_{j,t}}, \tag{1}$$

where j indexes industries and t indexes time. We aggregate industry-level concentration to the level of a sector using industry sales weights:

$$\text{C4}_{S,t} = \sum_{j \in S} \frac{\text{sales}_{j,t}}{\text{sales}_{S,t}} C4_{j,t}, \tag{2}$$

where S indexes sectors and $\frac{\text{sales}_{j,t}}{\text{sales}_{S,t}}$ is the sales weight of industry j in sector S in year t. This is equivalent to adding up the sales of the four largest firms of each industry in the sector and dividing this sum by total sales in the sector.

We construct changes in concentration ($\text{dC4}_{S,t \to t+5}$) at the level of a sector as

$$\text{dC4}_{S,t \to t+5} = \text{C4}_{S,t+5} - \text{C4}_{S,t}. \tag{3}$$

This measure of changes in sectoral concentration is distinct from the sales-weighted average of industry-level changes in concentration, which would measure the within-industry change in concentration. The difference is due to the changes in industry sales weights from year t to $t+5$: an increase in the weight of industries with low levels of concentration will reduce concentration, whereas an increase in the weight of industries with high levels of concentration will increase concentration.

When reporting cumulative changes in sectoral concentration over time, we sum the five-year changes in concentration. In the four sectors with complete time series coverage (Manufacturing, Wholesale Trade, Retail Trade, and Services) this corresponds to changes in concentration from 1982 to 2012 and in the other two sectors (FIRE and Transportation and Warehousing) this corresponds

to changes in concentration from 1992 to 2012.

Due to the unbalanced nature of our data, we measure the change in aggregate concentration from year t to $t+5$ using the sectors that report in both economic census years. This means that the changes in aggregate concentration from 1982 to 1987 and from 1987 to 1992 are only for the Manufacturing, Wholesale Trade, Retail Trade, and Services sectors and changes in aggregate concentration for later years include all six sectors. When reporting cumulative changes in aggregate concentration over time, we sum the five-year changes in aggregate concentration.

3 Contributions of M&A and Growth to Rising Concentration

3.1 Empirical Framework

We decompose changes in concentration into the separate contributions of M&A and Growth. For this purpose we introduce a new variation on the standard C4 concentration ratio:

$$\text{C4}_{j,t}^{\text{Ownership}(t+5)} = \frac{\text{Sales of the Four Largest Firms}_{j,t}^{\text{Ownership}(t+5)}}{\text{Total Industry Sales}_{j,t}}, \tag{4}$$

where Ownership(t+5) groups establishments into firms using the firm identifiers in year $t+5$ (instead of year t) and Sales of the Four Largest Firms$_{j,t}^{\text{Ownership}(t+5)}$ is the combined sales of the four largest firms in industry j in year t when using the Ownership(t+5) firm boundaries. We then measure the contributions of M&A and Growth to changes in concentration as

$$\text{Contribution of M\&A}_{j,t\to t+5} = \text{C4}_{j,t}^{\text{Ownership}(t+5)} - \text{C4}_{j,t} \tag{5}$$

$$\text{Contribution of Growth}_{j,t\to t+5} = \text{C4}_{j,t+5} - \text{C4}_{j,t}^{\text{Ownership}(t+5)}. \tag{6}$$

Contribution of M&A, as defined in Equation (5), measures the change in concentration due to all ownership changes that occur between years t and t+5, while holding fixed sales of all establishments at their values in year t. When the largest firms purchase other firms in the same industry, Contribution of M&A is positive. Contribution of Growth, as defined in Equation (6), measures the change in concentration due to the growth in sales at all establishments and firms between years t and $t+5$, while holding fixed the firm identifiers of all establishments at their values in year $t+5$.

When the largest firms grow faster than the industry, Contribution of Growth is positive. As the equations make clear, the sum of the Contribution of M&A and Contribution of Growth is equal to the change in concentration.

In order to construct the equivalent sectoral and aggregate measures, we construct sales-weighted equivalents for each of the terms on the right-hand side of Equations (5) and (6). This aggregation of $C4_{j,t}$ exactly matches Equation (2) and the aggregation of $C4_{j,t}^{\text{Ownership}(t+5)}$ uses year-t sales weights.

3.2 Empirical Results

Figure 1 presents, for each of our six major sectors, the five-year changes in concentration and the five-year contributions of M&A to such changes in concentration. Several features stand out in the data. First, concentration is increasing in nearly every five-year period in every sector. The only five-year periods that display a decline in concentration are Services from 1982 to 1987 (-0.3pp), Services from 2007 to 2012 (-0.01pp), Wholesale Trade from 1987 to 1992 (-0.1pp), and Wholesale Trade from 2002 to 2007 (-2.3pp), and only one of these exceeds in absolute value even half a percentage point. Second, the contribution of M&A to rising concentration is positive in nearly every five-year period in every sector. The contribution of M&A can turn negative when large firms spin off some of their establishments or sell these establishments to smaller competitors. While this does occur in the data, the increases in concentration that result from M&A activity far outweigh the reductions in concentration that result from large firms spinning off or selling some of their business to smaller competitors. Third, those five-year periods with large increases in concentration coincide with large contributions of M&A to concentration, but, at the same time, in nearly all five-year periods and sectors the increase in concentration exceeds the contribution of M&A.

Figure 2 presents the cumulative changes in concentration across all census years. In most major sectors, these changes are measured from 1982–2012, but in two sectors (FIRE and Transportation & Warehousing) the data only cover 1992–2012. We want to highlight three results shown in this figure. First, all sectors exhibit a significant increase in concentration. Concentration rises the least in Manufacturing (7.6pp increase) and the most in Retail Trade (23.7pp). This result is not new to the literature. Second, all sectors exhibit a positive contribution of M&A to concentration, ranging from 1.6pp in Wholesale Trade to 6pp in Manufacturing. Third, measured as a percentage

of each sector's cumulative increase in concentration, M&A contribute the most to concentration in Manufacturing (78.6% of the change) and contribute the least to concentration in Wholesale Trade (18.3%). Manufacturing is the only sector in which M&A account for more than half of the increase in concentration, and the next largest contribution is in the Services sector (37.4%).

Figures 3 and 4 present our aggregate results. Panel A of Figure 3 presents the five-year changes in aggregate concentration and the five-year aggregate contribution of M&A. The panel clearly shows that (i) aggregate concentration is increasing in every five-year period, (ii) the contribution of M&A to rising aggregate concentration is positive in every five-year period, and (iii) those five-year periods with large increases in aggregate concentration coincide with large aggregate contributions of M&A. Panel A of Figure 4 presents the cumulative changes in aggregate concentration and the cumulative aggregate contribution of M&A. Over the full period 1982–2012, the cumulative aggregate contribution of M&A is 4.0pp, which is equal to 43.8% of the 9.1pp increase in aggregate concentration. In the balanced panel of sectors over the shorter period 1992–2012, the cumulative aggregate contribution of M&A is 2.9pp, which is equal to 38.5% of the 7.5pp increase in aggregate concentration.

Even though concentration is increasing in all sectors, the gradual increase in the weight of the Services sector (the sector with the lowest level of concentration) and the decline in the weight of the Manufacturing sector (the sector with the highest level of concentration) help to moderate the increase in aggregate concentration over time. As a consequence, if (as a relevant example) M&A contribute 33% to the rise in concentration in each and every sector, we would find that contribution of M&A is equal to 45% of the increase in aggregate concentration. This moderation is greater in the first two periods 1982–1987 and 1987–1992, during which time (due to limited coverage of sectors) Services and Manufacturing have larger sales weights and therefore also larger changes in sales weights.

We report an additional set of results in which we compare the contribution of M&A to the aggregate within-sector change in concentration. The aggregate within-sector change in concentration from year t to year $t+5$ is defined as the weighted average of the sectoral changes in concentration using sales weights in year t. By fixing the weights in one year, rather than using different sectoral weights for concentration in years t and $t+5$, the within-sector estimates exclude the five-year reductions in concentration that result from the relative growth of the Services sector

and the relative decline of the Manufacturing sector.[4]

Panel B of Figure 3 presents the five-year aggregate within-sector change in concentration and the five-year aggregate contribution of M&A. In each and every five-year period, the aggregate within-sector change in concentration exceeds the change in aggregate concentration. This difference is primarily due to the relative growth of the Services sector (a sector with relatively low levels of concentration) and the relative decline of the Manufacturing sector (a sector with relatively high levels of concentration). Panel B of Figure 4 presents the cumulative aggregate within-sector change in concentration and the cumulative aggregate contribution of M&A. Over the full period 1982–2012, the cumulative aggregate within-sector change in concentration is 12.4pp and the cumulative aggregate contribution of M&A is 4.0pp, which is equal to 32.1% of the aggregate within-sector increase in concentration. In the balanced panel of sectors over the shorter period 1992–2012, the cumulative aggregate within-sector change in concentration is 8.8pp and the cumulative aggregate contribution of M&A is 2.9pp, which is equal to 32.8% of the aggregate within-sector increase in concentration.

In summary, this section presents three main findings. First, M&A contribute to rising concentration in each sector. Measured as a percentage of each sector's cumulative increase in concentration, M&A contribute the most to concentration in Manufacturing (78.6%) and contribute the least to concentration in Wholesale Trade (18.3%). Second, over the full period 1982–2012, M&A contribute 43.8% of the increase in aggregate concentration. In the balanced panel of sectors over the shorter period 1992–2012, M&A contribute 38.5% of the increase in aggregate concentration. Third, the increase in aggregate concentration is somewhat reduced by the relative growth of the Services sector (a sector with relatively low levels of concentration) and the relative decline of the Manufacturing sector (a sector with relatively high levels of concentration). When we remove this moderating effect by measuring aggregate within-sector changes in concentration, we find that M&A contribute 32%–33% to the aggregate within-sector increase in concentration.

[4]There is no need to adjust the contribution of M&A because it is already constructed using sales weights in a single year t.

3.3 Decomposition that Further Accounts for Net Entry

This section presents our empirical decomposition of changes in concentration into (1) M&A, (2) Growth of continuing firms, and (3) Net Entry.

Decomposition Framework We can express the concentration ratio $C4_{j,t}$ as a sales-weighted average (across all establishments) of an indicator function equal to one if the establishment is owned by one of the four largest firms in the industry:[5]

$$\mathrm{C4}_{j,t} = \sum_{i \in j} \omega_{i,j,t} \mathbb{1} \left\{ \text{Four Largest}_{j,\text{Ownership}(t),t} \right\}, \tag{7}$$

where i indexes establishments, j indexes industry, t indexes years, $\omega_{i,j,t}$ is the sales weight of establishment i in industry j in year t, and $\mathbb{1}\left\{\text{Four Largest}_{j,\text{Ownership}(t),t}\right\}$ is an indicator function equal to one if the establishment is owned by one of the four largest firms in industry j in year t, where the determination of which firms are the four largest uses the year-t ownership structure.

This nonstandard presentation of the concentration ratio allows us to implement a standard empirical decomposition of changes in concentration ($\mathrm{dC4}_{j,t\to t+5}$) in the style of Foster, Haltiwanger and Krizan (2001). To keep the equations clearly readable, we omit from within the summation the indices i and j and use the abbreviation "L4" instead of "Four Largest":

$$\begin{aligned}
\mathrm{dC4}_{j,t\to t+5} = & \sum_{Cnt_{t\to t+5}} \omega_t \mathbb{1}\left\{\mathrm{L4}_{\text{Ownership}(t+5),t}\right\} - \sum_{Cnt_{t\to t+5}} \omega_t \mathbb{1}\left\{\mathrm{L4}_{\text{Ownership}(t),t}\right\} && \text{(M\&A)} \\
& + \sum_{Cnt_{t\to t+5}} \omega_{t+5} \mathbb{1}\left\{\mathrm{L4}_{\text{Ownership}(t+5),t+5}\right\} - \sum_{Cnt_{t\to t+5}} \omega_t \mathbb{1}\left\{\mathrm{L4}_{\text{Ownership}(t+5),t}\right\} && \text{(Growth)} \\
& + \sum_{N_{t+5}} \omega_{t+5} \mathbb{1}\left\{\mathrm{L4}_{\text{Ownership}(t+5),t+5}\right\} - \sum_{X_t} \omega_t \mathbb{1}\left\{\mathrm{L4}_{\text{Ownership}(t),t}\right\}, && \text{(Net Entry)}
\end{aligned}$$

where $Cnt_{t\to t+5}$ is the set of all establishments in industry j that belong to continuing firms (those firms that operate in years t and $t+5$), N_{t+5} is the set of all establishments in industry j operating in year $t+5$ that belong to firms born after year t, and X_t is the set of all establishments in industry j that belong to firms that exit before year[6] $t+5$. We aggregate industry values using industry sales

[5] The measurement of concentration only depends on firm sales in each industry, rather than on the underlying sales of all establishments of the firm in the industry. We choose to present the decomposition equations in terms of establishments to highlight and make fully transparent the measurement of M&A and its impact on concentration.

[6] In line with the literature, a firm that operates in year t is said to exit before year $t+5$ if all of its establishments

weights, for all industries in sectors that report in both economic census years[7] t and $t+5$. This procedure is fully equivalent to implementing the decomposition using a single aggregate equation, after replacing industry weights with aggregate sales weights, but the presentation of a single aggregate equation is more cumbersome as it requires an additional summation over industries.

The M&A variable measures the change in concentration that is due to the redrawing of the ownership boundaries of the continuing firms to account for all changes in ownership over the subsequent five years, while holding fixed the sales of all establishments. When the largest firms purchase other firms in the same industry, concentration increases, and when the largest firms spin off some of their establishments, concentration decreases. The Growth variable measures the change in concentration that is due to the growth and decline in sales of continuing firms while holding fixed firm boundaries. When the largest firms grow faster than the industry, concentration increases, and when the largest firms grow slower than the industry, concentration decreases. The Net Entry variable measures the contribution of entry and exit to changes in concentration. The entry of a large firm increases concentration, and the exit of a large firm reduces concentration.

Decomposition Results Figure 5 presents the empirical decomposition of changes in concentration into M&A, Growth, and Net Entry. In Panel A, we separately report the values of the three decomposition terms for each five-year period. From 1997 to 2002, for example, M&A contributed 1.6pp, Growth contributed 2.8pp, and Net Entry contributed less than 0.1pp to the 4.4pp increase in aggregate concentration. There are time periods, like 1997 to 2002, where Growth is the dominant driver of increases in concentration. There are other periods, such as 1982 to 1987, where M&A is responsible for most of the increase in concentration. The contribution of Net Entry to concentration is small in most years. The only exception is 1992 to 1997, when Net Entry contributed 0.6pp to the 1.4pp increase in concentration.

Adding up the decomposition across years, we present the cumulative decomposition for the full sample (1982 to 2012) and for the balanced sample (1992 to 2012, those years when the data cover all sectors). These results are reported in panel B of Figure 5 and in Table 1. The decomposition shows that, over the full sample (1982 to 2012), M&A contributed 42%, Growth contributed 50%,

exit before year $t+5$.

[7] The two terms $\sum_{N_{t+5}} \omega_{t+5} \mathbb{1}\left\{\text{L4}_{\text{Ownership}(t+5),t+5}\right\}$ and $\sum_{C_{t\to t+5}} \omega_{t+5} \mathbb{1}\left\{\text{L4}_{\text{Ownership}(t+5),t+5}\right\}$ are aggregated using sales weights in year $t+5$ and the other terms are aggregated using sales weights in year t.

and Net Entry contributed 8% to the increase in concentration. These results are very much in line with the results reported earlier in this section.

4 Merger Guidelines and Presumed Anticompetitive M&A

In this section, we present an analysis designed to document how the relaxation of merger guidelines and lax government enforcement of existing guidelines may have contributed to the rise in concentration.

Section 7 of the Clayton Act is the principal federal law that regulates mergers, acquisitions, and joint ventures. The law prohibits M&A "in any line of commerce or in any activity affecting commerce in any section of the country, [where] the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly" and grants enforcement powers to the DOJ Antitrust Division and the FTC. In merger guidelines, the regulators codify the rules and standards used to determine whether a merger or acquisition is presumed to be anticompetitive, in which case it should be challenged in court under Section 7 of the Clayton Act.

The first merger guidelines were published in 1968. These guidelines set forth numerical criteria used by the regulators to determine which M&A are presumed to be anticompetitive. We present these criteria in Panel A of Table 2.[8] As an example (third row of Panel A), if the acquiring firm has a market share that exceeds 15% then any acquisition that exceeds 3% market share is presumed to be anticompetitive. In addition to numerical criteria, the guidelines further describe special cases that can influence regulators, such as mergers in markets with a significant trend toward increased concentration, acquisitions of competitors that are particularly "disruptive," even if their market share is small, and acquisitions of failing companies. The guidelines explicitly reject compensating economic considerations such as economies of scale "unless there are exceptional circumstances."

The merger guidelines underwent significant changes in 1982. The numerical criteria used to evaluate M&A were significantly relaxed and reformulated in terms of Herfindahl-Hirschman Index (HHI) instead of market shares. We present these criteria in Panel B of Table 2. As an example (first row of Panel B), any acquisition that increases the HHI by more than 100 and results in an HHI between 1,000 and 1,800 is presumed to be anticompetitive. Similar to the 1968 guidelines,

[8] The guidelines set stricter criteria in the extreme cases where the market share of the four largest firms exceeds 75%.

the revised 1982 guidelines further describe special cases and considerations that may influence the regulator. The merger guidelines have been updated several times since 1982 (in 1984, 1992, 1997, 2010, and 2023), but the numerical criteria were left unchanged until 2010, at which time they were further relaxed, and later in 2023 the 1982 criteria were again reinstated.

4.1 Empirically Classifying Mergers

Based on the numerical criteria set forth in the merger guidelines, in every five-year period (from t to $t+5$) we classify each observed merger and acquisition in the Economic Census microdata as either (1) permitted or (2) presumed anticompetitive.

Market Definition. In the case of tradable industries (such as automobile manufacturing), we define the market as the national six-digit NAICS industry, and in the case of nontradable industries (such as supermarkets), we define the market as a six-digit NAICS industry within each U.S. state. Our classification of industries into tradable and nontradable is taken from Barkai and Karger (2020). We measure firm size and market shares based on sales.[9]

Base Year and Bundles. The data do not provide us with the precise dates of mergers and acquisitions or even reliable annual information. Instead, the best available information on firm ownership for all firms in the U.S. is systematically updated once every five years to align with the sampling frame of the Economic Census. For this reason, we measure size and market shares in the base year t for each interval. We review and evaluate all mergers and acquisitions as bundles. This means that when one firm acquires several different firms in the same five-year period, we review the acquisition as if the firm had acquired all of these firms at once and as one. Therefore, when the merger guidelines set criteria that depend on the size of the acquired firm, we use the combined size of the different acquired firms.

[9]Sales is the most common measure of firm size used by enforcement agencies to evaluate mergers. There are unique cases in which other metrics are used instead. As described in the 1968 merger guidelines: "The market is ordinarily measured primarily by the dollar value of the sales or other transactions (e.g., shipments, leases) for the most recent twelve month period for which the necessary figures for the merging firms and their competitors are generally available. Where such figures are clearly unrepresentative, a different period will be used. In some markets, such as commercial banking, it is more appropriate to measure the market by other indicia, such as total deposits."

Aggregation. After classifying each individual merger and acquisition, we decompose the contribution of M&A to concentration into the separate contributions of presumed anticompetitive mergers and permitted mergers. As before, we aggregate from industries to sectors and from sectors to a national aggregate using sales weights, and when reporting cumulative changes in concentration over time we sum the five-year values.

4.2 Contribution of Presumed Anticompetitive M&A to Concentration

Figure 6 graphically presents the contribution of presumed anticompetitive M&A to changes in aggregate concentration. The results are presented numerically in Table 3.

Panels A and B of Figure 6 report the results of the classification of mergers and acquisitions using the 1982 merger guidelines. These show that in all five-year periods, presumed anticompetitive M&A contributed to aggregate concentration. In the first 20 years of the sample (from 1982 to 2002), the contribution of presumed anticompetitive M&A to concentration is a modest fraction of the overall contribution of M&A. However, in the more recent period of 2002 to 2012, presumed anticompetitive M&A account for a large majority of the total contribution of M&A to concentration. As reported in the first row of Table 3, over the full sample period of 1982–2012, presumed anticompetitive M&A contribute 12% of the increase in aggregate concentration.

Panels C and D of Figure 6 report the results of the classification of mergers and acquisitions using the 1968 merger guidelines. Because the 1968 guidelines are stricter than the 1982 guidelines, following the 1968 guidelines leads one to classify many more mergers and acquisitions as presumed anticompetitive. As reported in the first row of Table 3, presumed anticompetitive M&A under the stricter 1968 guidelines contribute 22% of the increase in aggregate concentration.

Combining the two sets of results, we see that mergers and acquisitions that were previously presumed to be anticompetitive under the stricter 1968 guidelines, but which were subsequently reclassified in 1982 as permissible, account for an additional 10% of the increase in aggregate concentration. Although these mergers individually contribute very modestly to concentration in their own industries (which is why they were permitted under the 1982 guidelines), they are so numerous that together they have a large measurable effect on aggregate concentration.

5 Limited Regulatory Capacity

In the previous section, we showed that the presumed anticompetitive M&A are numerous and account for 12% of the increase in aggregate concentration. We would have expected that the federal competition agencies would have intervened and challenged these presumed anticompetitive M&A. The lack of intervention, which allowed such a large number and aggregate impact of presumed anticompetitive M&A, is therefore surprising.

Following a short description of the HSR premerger notification process, we discuss three possible explanations for our findings: measurement error in market boundaries, mitigating features that influence regulator decisions, and limited regulatory capacity.

HSR Premerger Notification Process. Federal competition agencies receive advance notice of all significant proposed M&A transactions, as required by law under the Hart-Scott-Rodino Antitrust Improvements Act.[10] The HSR filings provide information on the parties involved, details of the proposed transaction, along with the revenue of each party in each six-digit NAICS industry.[11] Whenever the two parties generate revenue in the same six-digit NAICS industry they must further provide information on the geographic locations where they operate. The collection of data on revenue by industry and (in the case of industry overlap) geography was explicitly formulated to carry out the mandate provided by Congress, to "enable the Federal Trade Commission and the Assistant Attorney General to determine whether such acquisitions may, if consummated, violate antitrust enforcement laws."

Upon receiving an HSR filing, the federal competition agencies impose an initial waiting period (typically 30 days) during which time the agencies must decide whether to clear the proposed

[10]The HSR Antitrust Improvements Act requires premerger notification for all transactions that exceed $200 million. In the case of transactions that exceed $50 million but fall below $200 million, a premerger notification is required if one party has $100 million or more in annual net sales or total assets, and the other party has $10 million (as adjusted) or more. Prior to the December 27, 2000 amendment to the Act, all transactions (even those below $50 million) required premerger notification if one party has $100 million or more in annual net sales or total assets, and the other party has $10 million (as adjusted) or more.

[11]These filings provide legal information on the merging parties (Item 1), transaction details (Item 2), percentage and value of voting securities or assets being acquired (Item 3), supplemental documents including recent annual reports and financial statements of the parties (Item 4), revenue by six-digit NAICS industry and in the case of Manufacturing industries revenue by product (Item 5), organizational structure and holdings (Item 6), Information on geographic location for each six-digit NAICS industry in which both parties operate (Item 7), and prior acquisitions (Item 8). Prior to the use of NAICS codes, the form collected revenue by four-digit SIC and in the case of Manufacturing industries revenue by product (Item 5) and Information on geographic location for each four-digit SIC in which both parties operate (Item 7).

transaction or instead open an internal investigation. If no internal investigation is opened, the agencies will often grant early termination of the waiting period (often within 10 days) thereby allowing the parties to proceed with the proposed M&A transaction. If, however, the agencies have reason to believe that the proposed transaction might reduce competition, they can open an initial investigation and later issue a request for additional information and documentary material from the parties involved. This request for additional information, known as a second request, extends the waiting period and requires the merging parties to produce documents and data that allow regulators to conduct a more thorough assessment of the transaction's likely competitive effects.

Following receipt and review of the materials provided in response to a second request, the regulator makes a final determination on whether or not the completion of the M&A transaction will substantially lessen competition: if yes, a challenge is initiated, and if no the transaction is cleared.[12] When the regulators decide to challenge a proposed M&A transaction, they first notify the parties involved and this notification often leads the parties to voluntarily abandon or restructure the proposed transaction. If the transaction is not abandoned or restructured, the agencies will proceed by issuing a press release declaring their intentions to formally challenge the transaction, and ultimately to filing a complaint in federal court (in the case of the DOJ) or by initiating an administrative proceeding and seeking a preliminary injunction in federal court (in the case of the FTC).

Three Possible Explanations. We start by laying out three possible and in our view plausible explanations for our findings.

First, measurement error in market boundaries could lead us to incorrectly view two parties as competitors even when they operate in different markets. We might incorrectly designate merging parties as competitors even when they operate in separate product markets within the same six-digit NAICS industry or (in the case of nontradable industries) when they operate in separate geographic markets within the same state.[13]

[12] A decision by the agencies not to challenge an HSR-reported transaction at this point in the process does not prevent the agencies from pursuing future legal challenges. However, such future challenges are extremely rare. See, for example, statement of J. Robert Kramer, II on behalf of the United States Department of Justice before the Antitrust Modernization Commission's hearings on the merger process, November 17, 2005.

[13] Measurement error in market boundaries could just as easily lead us to understate the number and aggregate importance of presumed anticompetitive M&A. Two merging parties might have very large market shares in their narrow markets (in which case the merger is presumed anticompetitive) but at the same time these parties might

Second, there may be mitigating features that influence regulator decisions. The merger guidelines recognize the possibility of mitigating features, such as substantial cost savings resulting from the realization of scale economies that could not be achieved within a comparable period of time through internal expansion or through a merger that threatens less competitive harm. In such cases, the regulator can weigh the benefits of efficiency gains against the harm of reduced competition. It should be noted that the guidelines envisioned that these mitigating features would only be considered in "extraordinary cases" rather than used as a routine justification for granting approval to anticompetitive mergers.[14]

Third, limited regulatory capacity could lead regulators to forgo thorough vetting of many proposed mergers. In all significant M&A, the parties are required to provide advanced notice to the federal competition agencies through HSR premerger notification filings. In a typical year, the federal competition agencies receive several thousand HSR filings. Separately for each filing, agency staff need to determine within 30 days whether to open an initial investigation or whether to clear the proposed M&A. If the federal competition agencies have limited regulatory capacity to vet these initial filings or carry out more detailed investigations, then they will need to focus their attention on a small number of the proposed M&A where intervention is likely to be most needed and most impactful.

Low Rates of Investigation. We believe that in nearly all the presumed anticompetitive M&A that we measure in the Census data, the HSR filings would raise significant concerns about the likely anticompetitive effects of the proposed M&A and this would merit the opening of an investigation. Based on the materials submitted, staff of the federal competition agencies need to decide whether to clear the proposed transaction or start an initial investigation. When compared to published census statistics on industry (and industry-state) revenue, the HSR filings would show that market shares of the merging parties are potentially large and therefore an investigation should be opened.[15] It may be the case that an investigation will determine that the parties should be allowed to merge, whether due to a determination that the parties are not competitors (measurement error in the

have small market shares in the larger six-digit NAICS industry or (in the case of nontradable industries) state.

[14] See Section V.1.A of the 1982 Merger Guidelines.

[15] Outside of the manufacturing sector, where firms are required to provide information on products produced, the only information contained in the HSR filing that can indicate a potential lessening of competition is revenue (reported by industry and geography). These data are the same as the data that we use to determine whether a particular M&A is presumed to be anticompetitive according to the merger guidelines.

market), a determination that the parties are small players in a larger market (another form of measurement error in the market), or mitigating circumstances, but such a determination could not have been reached on the basis of the material contained in the HSR filing.

The parties of a proposed M&A transaction may include, along with their HSR form, supplemental materials laying out their arguments for why the proposed transaction is not anticompetitive (and therefore should be cleared) and this can include statistics on the parties and on the industries in which they operate. It is possible that this material can convince the federal competition agencies to clear the transaction, but self-reported statistics from interested parties can and should be treated skeptically. The opening of an investigation would likely be needed to provide an objective assessment of these and other statistics.

We digitize data contained in the annual HSR reports and in the DOJ Antitrust Division Workload Statistics and show that internal investigations and second requests are uncommon. The HSR annual reports submitted by the federal competition agencies to Congress provide statistics on the number of M&A transactions reported and on investigations that led to requests for additional information and documentary material (second request). From 1981 to 2021, the federal competition agencies issued a second request in only 3.2% of all reported M&A transactions. This means that over 95% of proposed M&A transactions are cleared without a request for additional information from the parties involved. While the annual reports to Congress do not describe the number of initial investigations opened in which no second request for materials was made, but DOJ Antitrust Division Workload Statistics show that nearly half of investigations result in a second request. Assuming that the FTC shares a similar ratio of investigations to second requests, we can conclude that investigations are opened in fewer than 10% of cases or equivalently over 90% of proposed M&A transactions are cleared without any investigation.

The low rates of investigation do not reflect a small number of proposed mergers between firms operating in the same industry. While the federal competition agencies explicitly collect information on overlapping industries (common six-digit NAICS) in each proposed M&A, no statistics on this overlap are reported. Using data received from the FTC pursuant to a Freedom of Information Act request, Sayyed (2013) fills in this information. Over the years 1990 to 2010, over 60% of all reported transactions involve firms with overlapping industries.

We think it is unlikely that the agencies issued second requests in many of the presumed

anticompetitive M&A that we measure in the Census data. In most cases involving a second request, the federal competition agencies proceed to challenge the proposed transaction and in nearly all such challenges the agencies prevail. Our digitized data from the HSR annual reports provide us with the annual counts of the agencies' challenges and importantly these include all instances in which the parties voluntarily abandon or restructure the proposed transaction prior to court filings, thereby providing a comprehensive account not available in court documents. From 1981 to 2021, the federal competition agencies proceeded with a challenge in 58% of cases that involved a second request. More recently, from 2000 to 2021, the agencies proceeded with a challenge in 76% of cases that involved a second request. We therefore believe that it is very unlikely that the many presumed anticompetitive M&A that we observe in the census data were investigated and received a second request, but were ultimately cleared by the federal competition agencies.

Limited Regulatory Capacity. There is a long-standing debate on whether the low rates of investigation and second requests reflect a failure or success of the federal competition agencies. Some have argued that the low rates of second requests reflect successful deterrence, whereby firms avoid proposing mergers that would tend to lessen competition because they know that these mergers will successfully be challenged by the federal competition agencies. Others have argued that the low rates of second requests reflects a failure on the part of the federal competition agencies to fully enforce the law. Already in 1983, only a few years after the passing of the HSR Act, then Commissioner of the Federal Trade Commission, Michael Pertschuk, summarized the debate and provided his views:[16]

> I cannot agree with the Commission's rosy view that the marked decline in second requests as a percentage of reported transactions means businesses are "increasingly avoiding transactions that approach the line of legality." (see p. 3) Given that the Commission's enforcement levels are at the lowest in years and that premerger filings are at an all time high (see App. A), it seems more likely that businesses are increasingly willingly [sic] to risk transactions that would have been viewed as likely to result in antitrust challenge a few years ago.

[16]This quote is taken from the Separate Statement of Commissioner Pertschuk Concerning Sixth Annual Report to Congress Regarding Premerger Notification Program, June 14, 1983.

These statements by Commissioner Pertschuk were made at a time when second requests as a percentage of reported transactions declined from 10% to 4.3%. Second requests as a percentage of reported transactions continued to decline further in the years since this statement was made.

We provide two additional pieces of evidence indicating that low rates of intervention by the federal competition agencies are due to limited regulatory capacity rather than successful deterrence.

First, consistent with a lack of adequate resources to properly review all transactions, we show that the rate of second requests is lower in years with a greater number of reported transactions. Figure 7 Panel A presents the annual number of adjusted transactions[17] and the rate of second requests. It is immediately clear from the figure that the rate of second requests is strongly negatively correlated with the number of adjusted transactions. Rates of second requests are lower in years with a greater number of adjusted transactions and higher in years with a fewer number of adjusted transactions. The correlation between the two variables is -51%. The correlation is even greater and equal to -77% after the 2000 amendment to the HSR Act, which exempted small transactions that were not likely to be investigated in any case. Panel B of the same figure presents the annual number of adjusted transactions with industry overlap and the rate of second requests with overlap (ratio of number of second requests to the number of adjusted transactions with industry overlap). The data on the number of adjusted transactions with industry overlap are taken from Sayyed (2013) and are only available for the years 1990-2010. It is immediately clear from the figure that the rate of second requests is strongly negatively correlated with the number of adjusted transactions (correlation -54%).

Second, a lack of adequate resources to properly review all transactions would likely lead the federal competition agencies to prioritize the review of proposed M&A transactions that involve firms that are large nationally. To illustrate this point, with limited resources, it would be better to investigate one proposed merger between two coffee chains operating in all 50 states rather than investigating one proposed merger between two local coffee chains that only operate in Massachusetts, even if both mergers have the same potential to harm competition in the relevant markets. Moreover, with limited resources, it would be better to investigate one proposed merger between two

[17]These figures omit from the total number of transactions reported all transactions for which the agencies were not authorized to request additional information. See Appendix A of HSR annual reports for further details.

coffee chains operating in all 50 states rather than investigating 50 different proposed mergers between two local coffee chains that operate in 50 different states even if the impacts of the one- and the 50- proposed mergers on local markets are identical.

We find support for this form of prioritization in the census data. We show that an exclusive focus on national markets would not have managed to identify and prevent many presumed anticompetitive M&A. Previously in Section 4 we evaluated M&A in nontradable industries separately in each state based on market shares within the state in order to determine which are permitted and which are presumed anticompetitive and the analysis showed that presumed anticompetitive M&A account for 12% of the increase in aggregate concentration. We now repeat the process of evaluating all mergers, but this time we evaluated M&A in nontradable industries based on national market shares instead of local market shares. Note that this change can only possibly impact our evaluation of M&A in nontradable industries. Implementing this alternative screening approach, we find that the set of M&A that would be designated as anticompetitive on the basis of market shares in national markets only contribute 5% of the increase in aggregate concentration. Moreover, the 5% that we find in this alternative screening approach is almost certainly overstated, since this approach will incorrectly designate as presumed anticompetitive many permitted mergers between firms that operate in the same nontradable industries, but in different geographic markets. In summary, a clear majority of the contribution of presumed anticompetitive M&A comes from the many M&A in nontradable industries that violate merger guidelines when evaluated locally, but do not violate the guidelines when market shares are evaluated nationally.

6 Conclusion

This paper provides the first quantification of the contribution of mergers and acquisitions to rising industry concentration in the United States. Using comprehensive firm-level microdata from the U.S. Economic Census from 1982 to 2012, we decompose changes in concentration into the separate contributions of M&A and internal growth. Our main finding is that M&A account for 44% of the increase in aggregate concentration over this period. While we know of no benchmark to help us evaluate the magnitude of this main result, we were surprised by this result and in our eyes 44% appears large.

Classifying all observed M&A using the numerical criteria set forth in the merger guidelines, we find that presumed anticompetitive M&A account for 12% of the increase in aggregate concentration. Moreover, mergers that would have been presumed anticompetitive under the stricter 1968 guidelines but were subsequently reclassified as permissible account for an additional 10% of the increase. These results suggest that both the relaxation of merger guidelines and limited enforcement of existing guidelines have contributed meaningfully to rising concentration.

We provide evidence indicating that low observed rates of regulator intervention are due to limited regulatory capacity rather than successful deterrence that prevented firms from attempting anticompetitive mergers. Consistent with a lack of adequate resources to properly review all transactions, we show that the rate of second requests is lower in years with a greater number of reported transactions. Consistent with prioritizing the review of proposed M&A transactions that involve firms that are large nationally, we show that a clear majority of the contribution of presumed anticompetitive M&A to aggregate concentration comes from the many M&A in nontradable industries that violate merger guidelines when evaluated locally, but do not violate the guidelines when firms are evaluated nationally.

The federal competition agencies have recently implemented changes to the premerger notification filing forms that greatly reduce the collection of information on revenue by six-digit NAICS industry. Effective February 10, 2025, the updated HSR form eliminated the parties' requirement to provide precise revenue values in each six-digit NAICS industry (89 Fed. Reg. 89,216). Instead, the form now asks the parties to report revenue by broad ranges for each six-digit NAICS industry: less than $10 million, $10 million to $100 million, $100 million to $1 billion, or more than $1 billion.

The reduced reporting of revenue by industry will further reduce the agencies' ability to properly screen presumed anticompetitive M&A in nontradable industries. Even in a large state like California, over 75% of nontradable six-digit NAICS industries have annual revenue below $10 billion (as recorded in the 2022 Economic Census) and therefore the reporting of revenues by broad ranges may not be able to inform the regulators whether the parties have high or low market shares in the state.

This reduction in reporting requirements does not ease the burden on the filing parties since this information is already requested by the economic census every five years. The thousands of annual HSR filings further demonstrate that the provision of detailed revenue information is not a

hindrance to the proposal of M&A transactions.

The changes in the reporting requirements likely reflect limited regulatory capacity of the federal competition agencies and may further reinforce the agencies' focus on scrutinizing firms that are large nationally, thereby clearing the way for many presumed anticompetitive mergers in non-tradable industries involving firms that are large locally.

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Figure 1: **Contribution of M&A to Rising Concentration: By Sector and Year**
This figure presents the change in concentration and the contribution of M&A to the change in concentration by sector and year. See Section 2 and Equation (3) for the measurement of changes in concentration and Section 3 and Equation (5) for the measurement of the contribution of M&A. See Section 3 for further details.

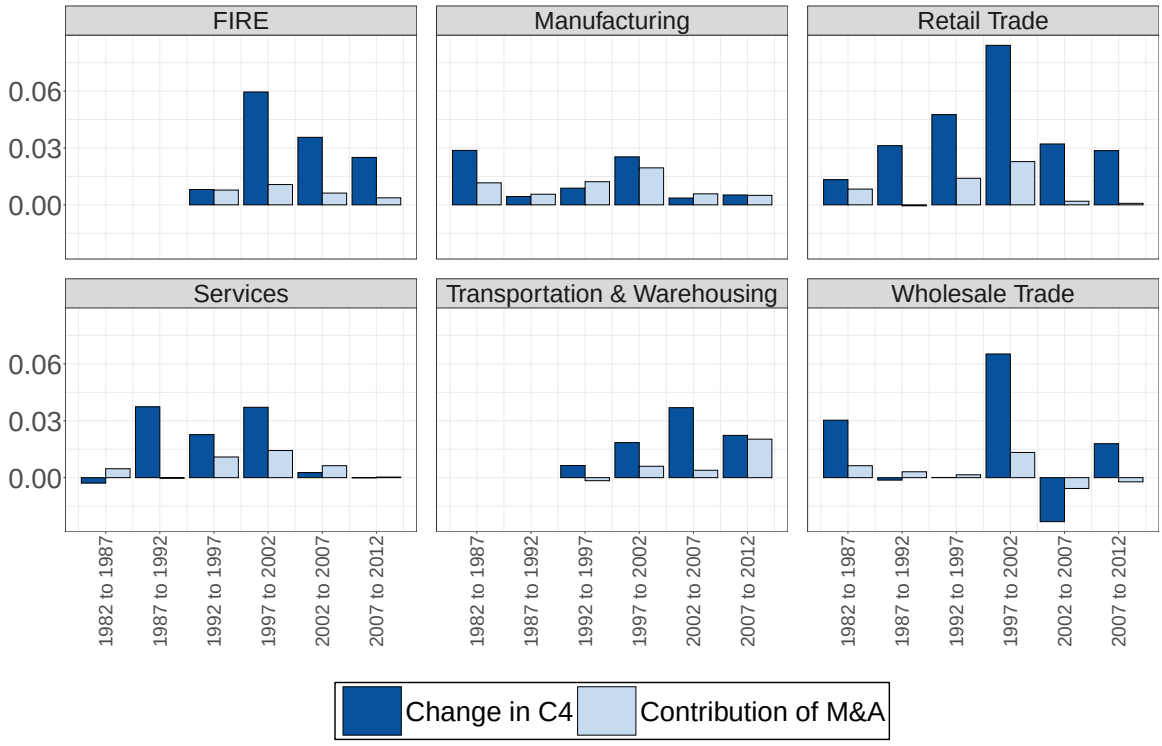


Figure 2: **Contribution of M&A to Rising Concentration: Cumulative by Sector**
This figure presents the cumulative change in concentration and the cumulative contribution of M&A to the change in concentration by sector. See Section 2 and Equation (3) for the measurement of changes in concentration and Section 3 and Equation (5) for the measurement of the contribution of M&A. See Section 3 for further details.

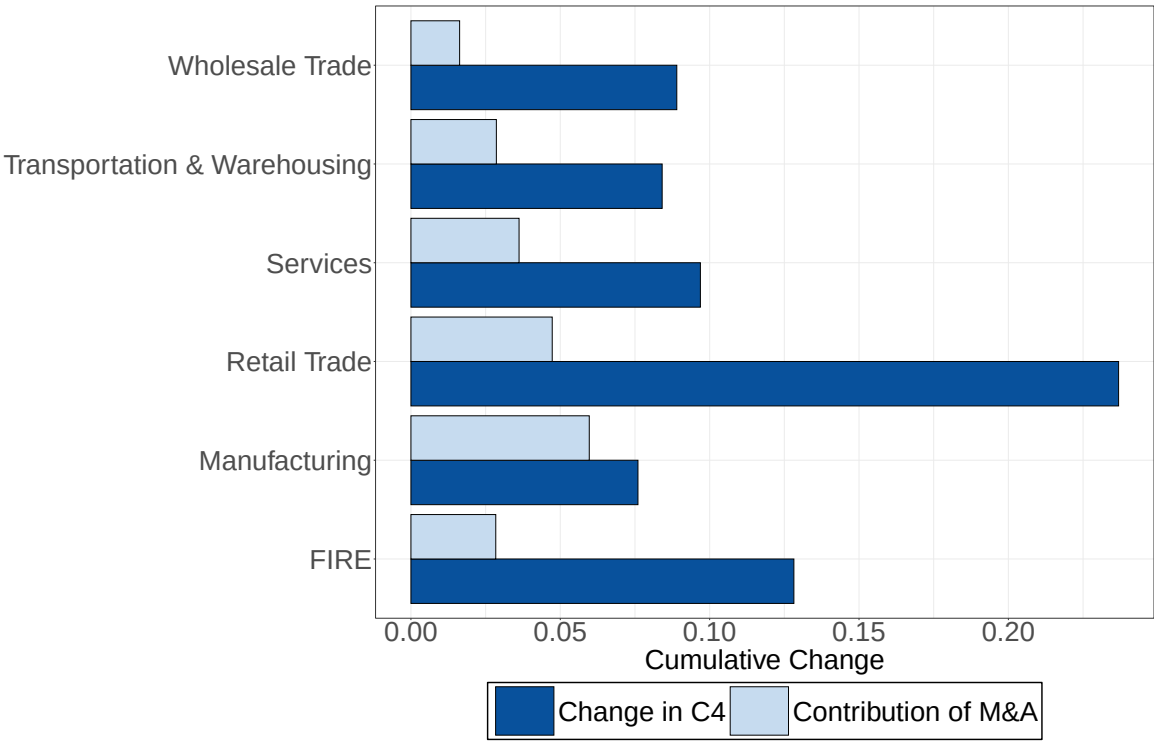
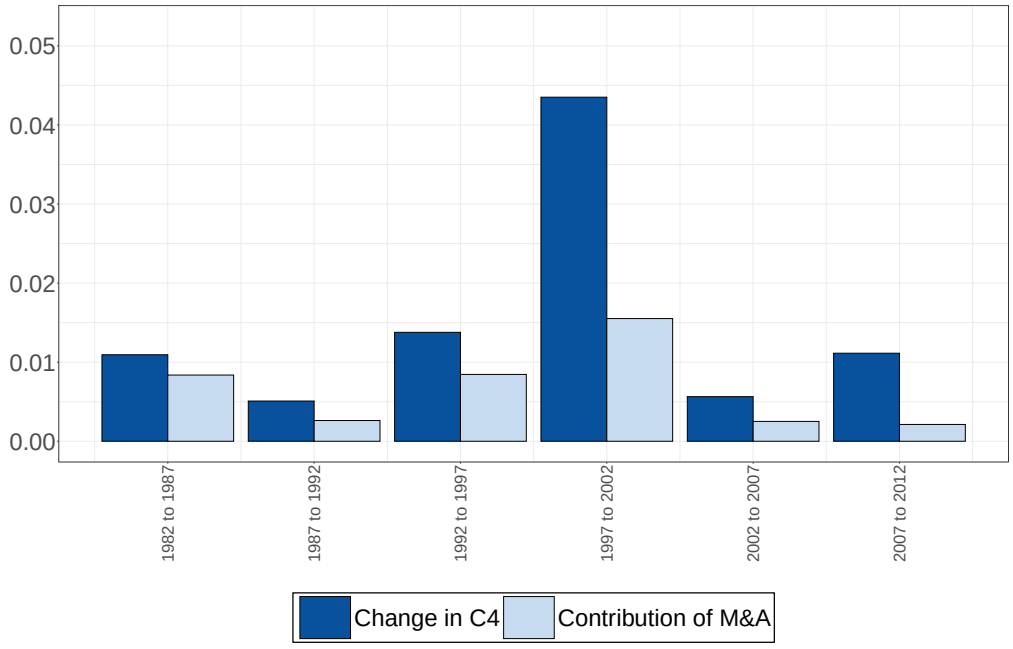


Figure 3: **Contribution of M&A to Rising Concentration: Aggregate by Year**
Panel A reports the statistics of the change in aggregate concentration. Panel B reports the statistics of the aggregate within-sector change in concentration. See Section 2 and Equation (3) for the measurement of changes in concentration and Section 3 and Equation (5) for the measurement of the contribution of M&A. See Section 3 for further details.

(a) Change in Aggregate Concentration



(b) Aggregate Within-Sector Change in Concentration

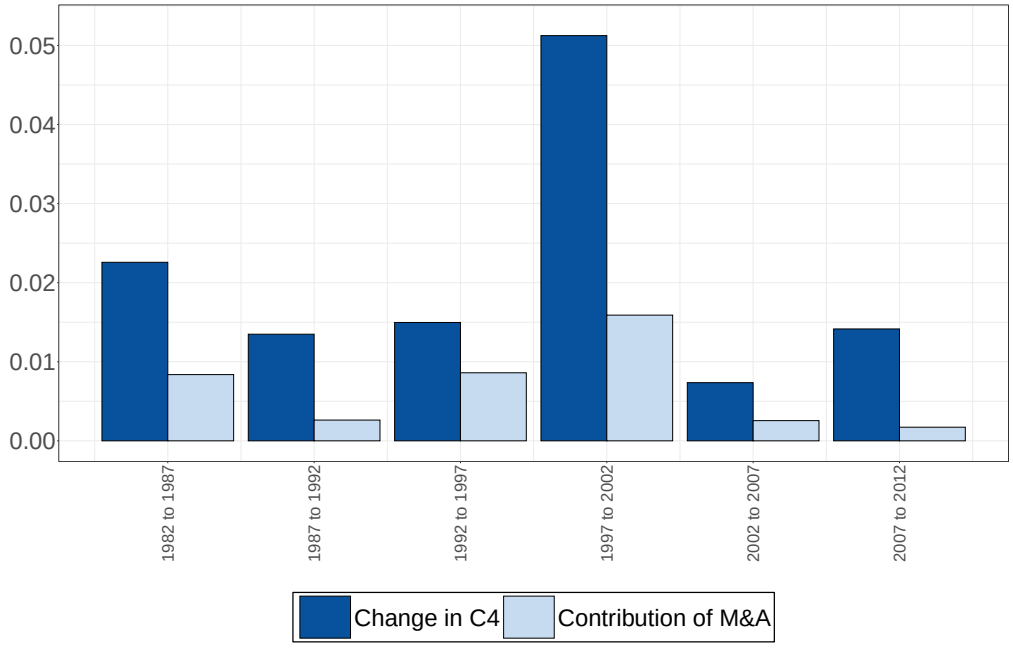
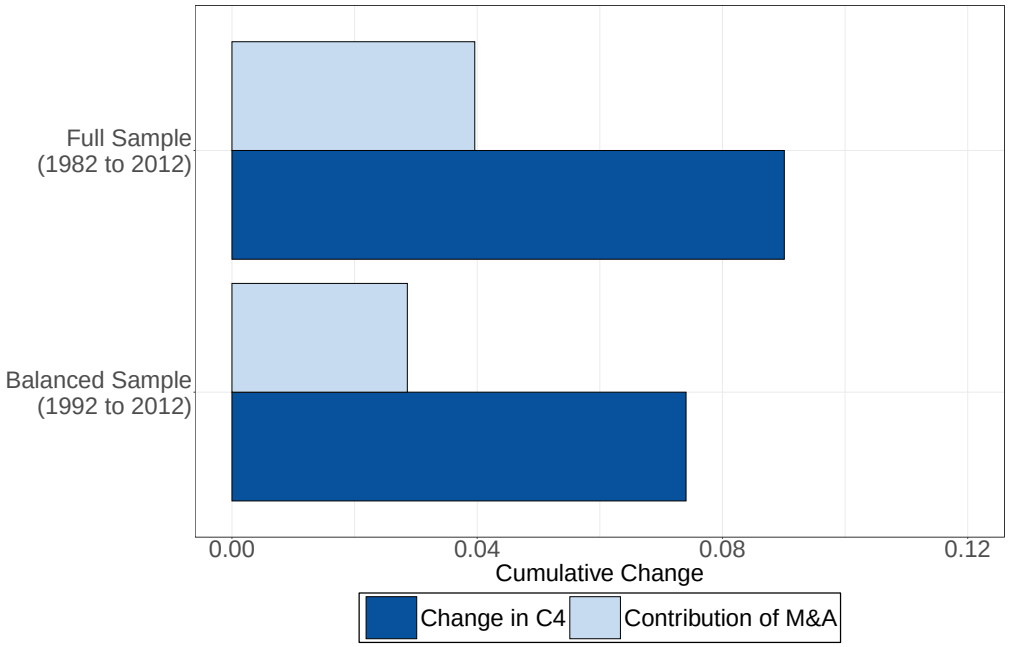


Figure 4: **Contribution of M&A to Rising Concentration: Aggregate**
Panel A reports the statistics of the change in aggregate concentration. Panel B reports the statistics of the aggregate within-sector change in concentration. Results are reported separately for the full sample covering the years 1982–2012 and for the balanced sample covering the years 1992–2012. See Section 2 and Equation (3) for the measurement of changes in concentration and Section 3 and Equation (5) for the measurement of the contribution of M&A. See Section 3 for further details.

(a) Change in Aggregate Concentration



(b) Aggregate Within-Sector Change in Concentration

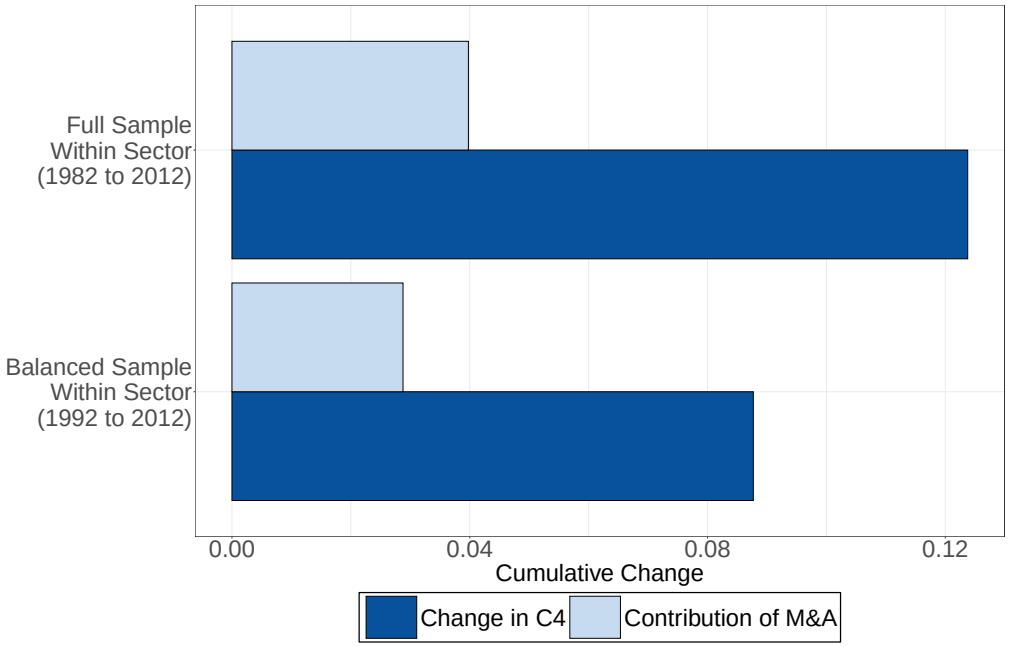
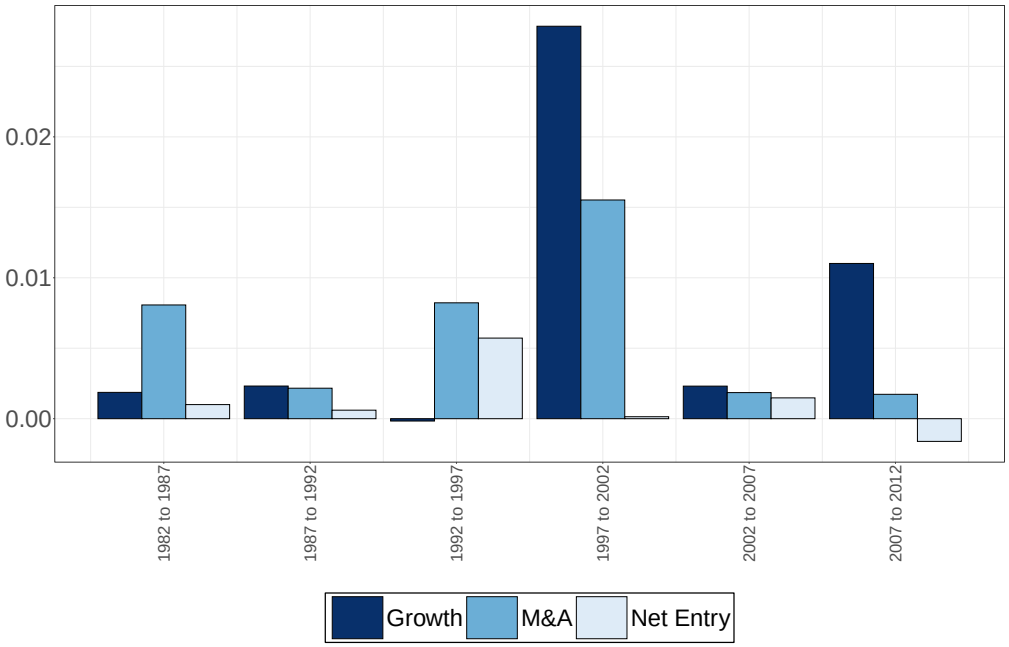


Figure 5: **Decomposing Changes in Concentration: Growth, M&A, and Net Entry**
This figure presents the decomposition of changes in aggregate concentration into the separate contributions of Growth, M&A, and Net Entry. Panel A reports the value of the three variables for each five-year period. Panel B reports the cumulative decomposition, where results are reported separately for the full sample covering the years 1982–2012 and for the balanced sample covering the years 1992–2012. See Section 3.3 for further details.

(a) Five-Year Changes



(b) Cumulative Changes

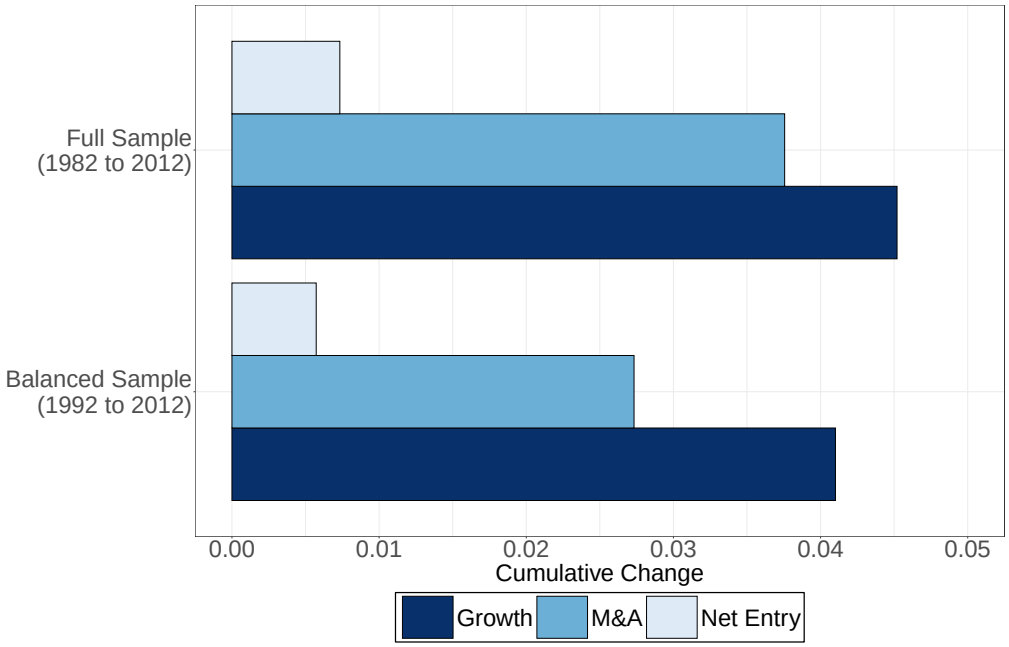
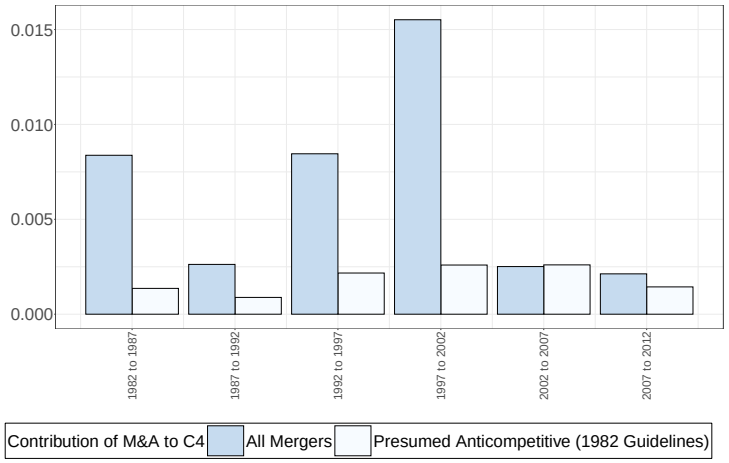
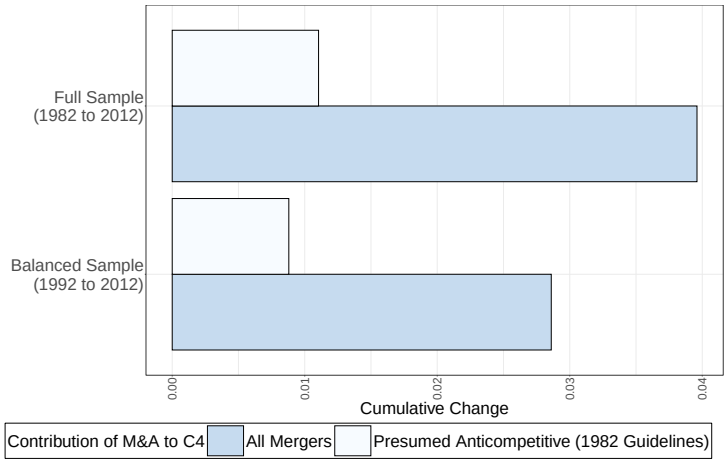


Figure 6: **Presumed Anticompetitive Mergers**
This figure presents the contribution of M&A and the contribution of presumed anticompetitive M&A to changes in aggregate concentration. Panels A and B report results from classifying mergers and acquisitions using the 1982 merger guidelines. Panels C and D report results from classifying mergers and acquisitions using the 1968 merger guidelines. See Section 4 for further details.

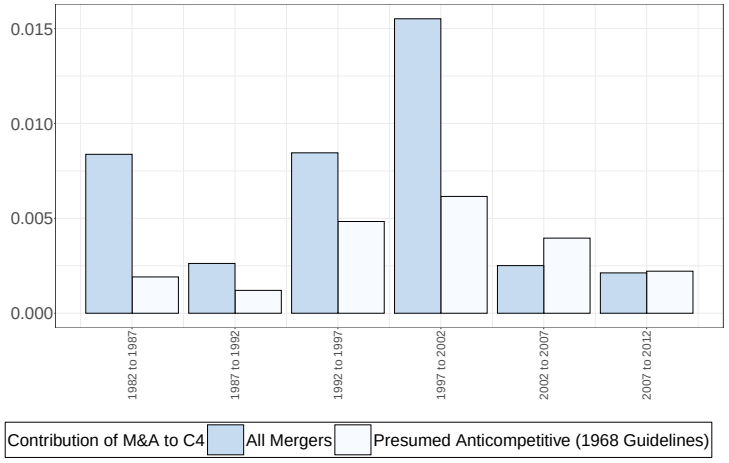
(a) 1982 Guidelines



(b) 1982 Guidelines, Cumulative



(c) 1968 Guidelines



(d) 1968 Guidelines, Cumulative

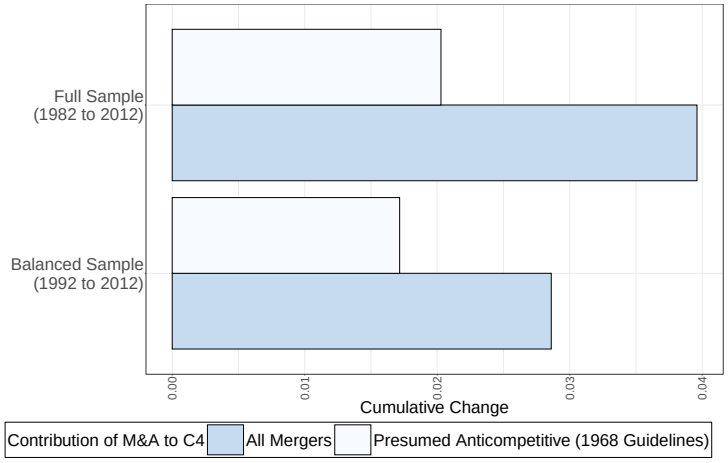
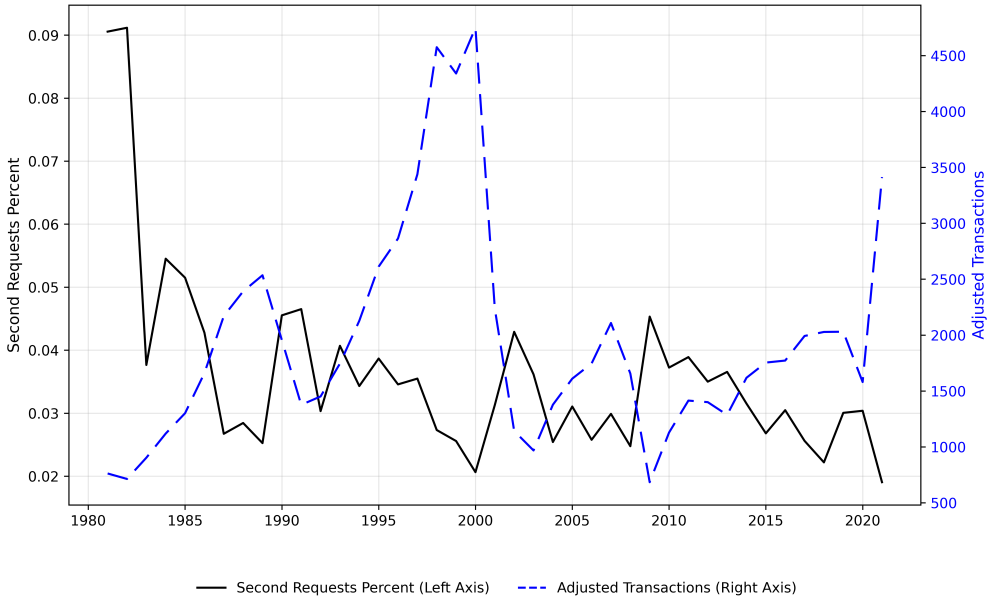


Figure 7: **HSR Reported Transactions and Rate of Second Requests**
Panel A reports the number of adjusted transactions and the rate of second requests. The rate of second requests is equal to the ratio of the number of second requests to adjusted transactions. Panel B reports the number of adjusted transactions with industry overlap and the rate of second requests with overlap. The rate of second requests with overlap is equal to the ratio of the number of second requests to adjusted transactions with industry overlap. Data on adjusted transactions and second requests are taken from Hart-Scott-Rodino annual reports submitted by the federal competition agencies to Congress. Data on the number of adjusted transactions with industry overlap are taken from Sayyed (2013). See Section 5 for further details.

(a) All Adjusted Transactions



(b) Adjusted Transactions with Industry Overlap

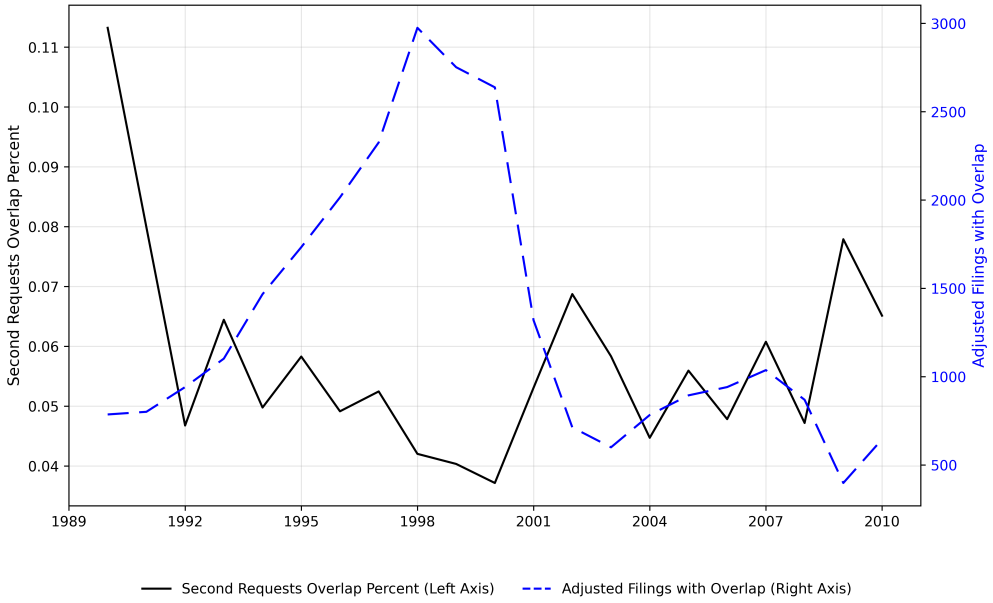


Table 1

Decomposing Changes in Concentration: Growth, M&A, and Net Entry (Percent of Total)

This table presents the decomposition of changes in aggregate concentration into the three terms M&A, Growth, and Net Entry. Each variable is presented as a percentage of the increase in aggregate concentration. We separately report results for the full sample covering the years 1982–2012 and for the balanced sample covering the years 1992–2012. See Section 3.3 for further details.

	M&A	Growth	Net Entry
Full Sample (1982 to 2012)	42%	50%	8%
Balanced Sample (1992 to 2012)	37%	55%	8%

Table 2

Mergers and Acquisitions Challenged under Merger Guidelines

Panel A presents the 1968 merger guideline rules, described in terms of market shares of the acquiring firm and acquired firm. As an example, the guideline states that a merger should be challenged when an acquirer has a market share between 15% and 20% and the acquired firm has a market share greater than 3%. Panel B presents the 1982 merger guideline rules, described in terms of post-merger competition-market HHI and the change in HHI that results from the merger. See Section 4 for further details.

(a) 1968 Merger Guidelines

Acquiring Firm	Acquired Firm(s)
5%	5% or more
10%	4% or more
15%	3% or more
20%	2% or more
25% or more	1% or more

(b) 1982 Merger Guidelines

Post-Merger HHI	Increase in HHI
1,000–1,800	100 or more
1,800+	50 or more

Table 3

Contribution of Presumed Anticompetitive Mergers to Rising Concentration (Percent of Total)

This table presents the decomposition of changes in aggregate concentration into Growth, Permitted M&A, and presumed anticompetitive M&A. Each variable is presented as a percentage of the increase in aggregate concentration for the full sample covering the years 1982–2012. We separately report results from classifying mergers and acquisitions using the 1982 merger guidelines and the 1968 guidelines. See Section 4 for further details.

		M&A (44%)	
		Presumed	
	Growth	Anticompetitive	Permitted
1982 Guidelines	56%	12%	32%
1968 Guidelines	56%	22%	22%