

Competition Enforcement and Accounting for Intangible Capital*

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ABSTRACT

Antitrust laws mandate review of mergers and acquisitions (M&As) that exceed an asset size threshold based on accounting standards that exclude most intangible capital. We show that this exclusion leads to thousands of intangible-intensive M&As being nonreportable. Acquirers in nonreportable deals achieve higher equity values and price markups, especially when consolidating product markets. Furthermore, nonreportable pharmaceutical deals are three times more likely to involve overlapping drug projects, which are subsequently 40% more likely to be terminated. Our results suggest that the growth of intangible assets may exacerbate market power through nonreportable consolidation of the sectors most concerning for consumers.

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Policymakers and antitrust authorities have long been concerned that corporate consolidations increase market power, leading to higher prices, fewer choices, and reduced quality for consumers (e.g., [Bonaime and Wang \(2024\)](#), [Cooper et al. \(2019\)](#), [Cunningham, Ederer, and Ma \(2021\)](#), [Eliason et al. \(2020\)](#), [Fathollahi, Harford, and Klasa \(2022\)](#), [Garmaise and Moskowitz \(2006\)](#), [Kamepalli, Rajan, and Zingales \(2022\)](#), [Sapienza \(2002\)](#)). Influenced by this evidence and the increasing body of research indicating a rise in corporate market power across the economy (e.g., [Autor et al. \(2020\)](#), [De Loecker, Eeckhout, and Unger \(2020\)](#)), a wave of policy actions has intensified scrutiny of mergers and acquisitions (M&As) that consolidate markets (e.g., [Biden \(2021\)](#)). However, for antitrust authorities to enforce these policies, they must first be aware of anticompetitive M&A deals. We show that thousands of large deals effectively escape ex ante merger review solely because the statutory reporting criteria that determine antitrust review ignores an increasingly important asset in the economy—intangible capital.

Intangible capital is systematically overlooked because, for M&A transactions within a specified deal-size range (e.g., \$90 million to \$359.9 million in 2023), antitrust authorities such as the Federal Trade Commission (FTC) and the Department of Justice (DOJ) apply a statutory reporting threshold based on the target firm’s assets to determine which deals are subject to review (i.e., the size-of-person test). Originally set at \$10 million in 2001, this asset size threshold has since been adjusted annually for Gross National Product. However, this asset size threshold only considers the value of assets as reported under US Generally Accepted Accounting Principles (GAAP), which exclude nearly all self-generated intangible assets. This exclusion means that the FTC and DOJ are not accounting for this increasingly important class of assets in the economy (e.g., [Crouzet et al. \(2022\)](#)). Indeed, acquired intangibles now represent eight times the amount of acquired tangible assets (see Figure 1). In line with the rise of intangible assets, the FTC and DOJ have recently focused explicitly on enforcing competition—including implementing appropriate screening mechanisms—in markets where firms’ intangible capital plays a central role, such as in the pharmaceutical and technol-

ogy sectors ([FTC \(2022\)](#)). However, little is known about the extent to which accounting rules regarding intangible capital impact M&A enforcement and how such an effect impacts product market competition in turn.

[INSERT FIGURE 1 ABOUT HERE]

We collect novel data on both intangible assets—for example, customer lists, patents, brands, and in-process R&D—and tangible assets of target firms from post-merger purchase price allocations (PPA) in acquirers’ financial statements. Consistent with reporting hinging on the target’s book assets, we find that having assets just over the threshold for premerger review strongly predicts reporting to the FTC and DOJ (see Figure 2). Since these targets’ book assets largely exclude intangibles, this suggests that many acquisitions effectively escape ex ante merger review solely because the intangible capital of target firms is ignored. Indeed, we find that if legislator were to require that firms add intangible capital to the targets’ assets, the number of deals reported to the FTC and DOJ would increase by approximately 263 per year, more than half of which represent horizontal consolidations among competitors. These nonreportable deals are very similar in size to reportable deals but comprise 50% more intangible assets. Thus, nonreportable deals, despite being exempt from premerger notification, are sizable enough to warrant antitrust review. If they were reported, we estimate that total Second Requests—the most stringent form of antitrust enforcement by the FTC and DOJ short of litigation—would increase by approximately 10% per year.¹

[INSERT FIGURE 2 ABOUT HERE]

¹One might wonder why antitrust authorities overlook these deals. In private correspondence between corporate lawyers and the FTC, presented in Section I of the Internet Appendix, we find that the agencies advise merging firms to strictly follow the Hart-Scott-Rodino Antitrust Improvements Act rules—even when the agencies are made aware that adding intangible capital to the target’s assets would mean that a deal should be reported. This advice is consistent with the capacity constraints faced by antitrust authorities driving adherence to bright line thresholds, but it is inconsistent with the DOJ and FTC believing that these deals are harmless to consumers as we also find that roughly 25% of all Second Requests correspond to deals that are nearly identical in transaction value to those that go unreported. Taken together, these findings suggest that antitrust authorities are likely unaware of the extent to which the current premerger notification rules overlook anticompetitive mergers involving the acquisition of intangible capital. The Internet Appendix may be found in the online version of this article.

We conduct four sets of tests to examine whether deals that escape ex ante merger review create benefits for acquirers' shareholders and impose costs on other stakeholders such as consumers, through increased acquirer market power. First, we compare the deal premia in nonreportable M&As with those in reportable M&As. If nonreportable deals reduce competition, we expect acquirers in those acquisitions to pay more than those in reportable deals. Consistent with this prediction, we find that deal premia are roughly 10 percentage points (or 20%) higher for nonreportable deals. We also find that deals that consolidate product markets drive our results.

Second, we compare changes in acquirers' equity values around the announcement of nonreportable and reportable deals. If nonreportable deals provide anticompetitive benefits, then the equity values of acquirers should impound this information (e.g., [Fathollahi, Hartford, and Klasa \(2022\)](#), [Kepler, Naiker, and Stewart \(2023\)](#)). We find that nonreportable mergers lead to increased equity values (3.4 percentage points higher) for acquirers around their announcement date. We further expect that the acquirer's industry peers should also benefit from these consolidations, since they too will benefit from lower competition. Consistent with this view, we find that the equity values of industry rivals also rise (0.8 percentage points higher) following the announcement of a nonreportable deal by a competitor. Also consistent with greater market power following nonreportable deals, we find that these equity value responses are driven largely by deals that consolidate product markets.

Third, we examine markups following nonreportable acquisitions. The intuition behind these tests is that a firm's ability to charge prices above marginal costs demonstrates market power ([De Loecker, Eeckhout, and Unger \(2020\)](#)). We find that the markups of acquirers whose deals escape ex ante merger review increase by 26 percentage points (or 11.3%) following these acquisitions, with the increase beginning in the subsequent year and persisting for at least three years. These results concentrate among deals that consolidate product markets, and they are driven by acquisitions of intangibles related to developed technologies and brands, consistent with the consolidation of intangibles for these markets having an im-

mediate price impact for consumers (e.g., consolidating competing brands can immediately influence an acquirer's ability to increase prices).

Finally, we examine the implications of accounting rules for intangible capital in facilitating the avoidance of premerger review in undeveloped product markets. To do so, we focus on post-acquisition development of overlapping pharmaceutical projects. We focus on this sector on account of its reliance on intangible capital (e.g., in-process R&D). Moreover, extant research suggests that acquirers have incentives to preempt competition by consolidating undeveloped pharmaceutical projects (e.g., [Cunningham, Ederer, and Ma \(2021\)](#))—a practice recognized by accounting standard setters as “defensive in-process R&D”.² We find that nonreportable deals are about three times more likely to involve overlapping projects between potentially competing drugs, and acquirers in nonreportable deals are roughly 40% more likely to discontinue acquired projects than acquirers in reportable deals, despite observing no differences in the ability to develop projects. Moreover, we find that this increased likelihood to discontinue projects in nonreportable deals is most pronounced for deals that are economically important to the acquirers, in particular drug projects in the final phase of clinical trials and drugs for highly concentrated markets. These results continue to hold when we compare acquired projects in nonreportable deals to all of an acquirer's internally developed projects, consistent with acquirers of overlapping projects in nonreportable deals striving to reduce product market competition.

Our findings have implications for public and private enforcement. We find that reportable deals similar in size to nonreportable deals receive 25% of all Second Requests. The deals are rarely blocked, but deals of this size are clearly of interest to antitrust authorities, although they tend to be overlooked simply because of the accounting treatment of intangible assets. We do find evidence, however, that private enforcement substitutes for a lack of public oversight, albeit imperfectly, given the frictions associated with private litigation. Given that the United States relies on both public and private enforcement (e.g., [Baer \(2014\)](#)), the

²Ernst & Young, 2024, Financial reporting developments (a comprehensive guide): Business combinations. Archived copy available online at: <https://chrisstewart.cc/data-library/>.

presence of these frictions suggests that many anticompetitive deals are happening.

We compute a back-of-the-envelope effect of an alternative size-of-person threshold that also includes the value of acquired intangible assets. Such a policy would be consistent with accounting rules that recognize the value of intangibles after validation in an M&A deal. Our estimates suggest that the Premerger Notification Office (PNO) would review an additional 90 deals involving horizontal rivals each year at an expected cost of 2.6% to 3.5% of the annual antitrust enforcement budget. Factoring in the effect on the reluctance of managers to initiate deals they believe would not pass antitrust review, we estimate that this policy change would deter 23 of these 90 newly reportable deals. However, given the capacity constraints of antitrust authorities, they have limited ability to allocate enforcement effort to challenge large M&A deals that meet statutory reporting thresholds. Thus, absent a proportional increase in resources, the increase in Second Requests resulting from an increase in the reportability of deals after including intangibles is difficult to determine precisely.

Such a policy shift would also likely affect managers' incentives to manipulate deals to avoid premerger review. Consistent with this view, we find a 50% increase in the proportion of nonreportable deals shortly after the announcement of an accounting standard that moved leases onto firms' balance sheets but before the accounting treatment was adopted, which implies that relevant deals that would have otherwise occurred after the policy shift increased the size of firms' balance sheets, making their deals reportable to the FTC and DOJ. These findings suggest that firms do indeed exercise discretion regarding the reportability of deals, and thus our back-of-the-envelope estimates on the enforcement implications of intangible capital likely represent a lower bound.

Our paper relates to several literatures. First, our paper adds to the growing literature on the effects of corporate consolidations on product markets. These studies highlight the potential harm of consolidations for consumers in important sectors of the economy—namely, healthcare (e.g., [Cooper et al. \(2019\)](#), [Eliason et al. \(2020\)](#), [Wollmann \(2024\)](#)), pharmaceuticals (e.g., [Bonaime and Wang \(2024\)](#), [Cunningham, Ederer, and Ma \(2021\)](#)), and technology

(e.g., Kamepalli, Rajan, and Zingales (2022)). Building on this evidence, recent studies examine how these deals are allowed to occur and find that many have deal values that are too small to trigger antitrust review (e.g., Asil et al. (2024), Cunningham, Ederer, and Ma (2021), Wollmann (2019, 2024)) or are structured to evade review (Kepler, Naiker, and Stewart (2023)). Our study demonstrates that even larger deals well above statutory reporting thresholds can escape ex ante merger review, and thus firms can consolidate markets and reduce competition simply because antitrust authorities rely on accounting data that largely exclude the value of self-developed intangible assets. Second, our paper contributes to the literature on the enforcement of product market competition (e.g., Asker and Nocke (2021), Nocke and Whinston (2010, 2022)) and to the growing debate on shareholder- versus stakeholder-based corporate governance (e.g., Edmans (2021)). Our evidence suggests that recent policies to intensify merger scrutiny in industries such as healthcare, pharmaceuticals, and technology are likely ineffective, as accounting rules help hide these deals from the view of antitrust authorities. In this regard, our study shows that “lax screening” driven by an overreliance on arbitrary thresholds found in other market contexts (e.g., Keys et al. (2010)) also extends to the enforcement of antitrust laws.

Third, our findings contribute to research on the sources of anticompetitive harm. Recent corporate finance studies highlight the importance of ownership structure (Aghamolla, Jain, and Thakor (2023), Asil et al. (2024), Azar, Schmalz, and Tecu (2018), Eaton, Howell, and Yannelis (2020), Gupta et al. (2024)), product similarity (Fathollahi, Harford, and Klasa (2022)), managerial incentives (Antón et al. (2023)), and political connections (Mehta, Srinivasan, and Zhao (2020)) for anticompetitive practices. Our study shows that the interaction between accounting rules for intangibles and antitrust enforcement can also contribute to anticompetitive behavior in product markets.

Fourth, our paper extends the literature on the link between accounting and regulatory enforcement. Historically, enforcement agencies have used accounting information for monitoring (e.g., Covaleski, Dirsmith, and Samuel (1995), Holthausen and Leftwich (1983),

Solomon (1970), Taggart (1981)). Considerable research explores how firms adjust financial reporting and investments in response to regulatory actions (see Leuz and Wysocki (2016) for a review). We add to this work by showing that financial reporting standards influence product market structure when antitrust authorities rely on accounting data to select mergers for review.

Finally, our paper adds to the literature on intangible assets (e.g., Crouzet et al. (2022), Lev (2019)). A growing body of research documents the rising importance of intangibles as the economy shifts from relying on physical assets to services and technology as key production inputs (e.g., Haskel and Westlake (2018), He, Mostrom, and Sufi (2024), Peters and Taylor (2017)). Because the value of most intangibles is difficult to measure (Glaeser and Lang (2024)), this literature focuses on distortions unique to intangible assets, such as the difficulty of contracting on intangibles and the potential for pricing inefficiency (e.g., Eisfeldt and Papanikolaou (2014), Giglio and Severo (2012), Rampini and Viswanathan (2010)). We add to this literature by identifying another potential inefficiency, namely, enforcement agencies' reliance on asset values that exclude most intangibles, which allows anticompetitive mergers to escape review.

The remainder of this paper proceeds as follows. Section I discusses our setting. Section II describes our data. Section III presents results on the role of intangibles in nonreportable M&As. Section IV separately analyzes developed and undeveloped product markets, and Section V discusses the implications of our results and additional analyses. Section VI concludes.

I. Institutional Setting

A. Antitrust Screening of Proposed Mergers

To promote competition in the United States, the antitrust divisions of the FTC and DOJ rely on the Hart-Scott-Rodino (HSR) Antitrust Improvements Act of 1976 to review

proposed M&As. The Act requires parties in deals above a specific size to file a premerger notification, which allows the FTC and DOJ to review whether the merger might decrease competition. After review, the FTC and DOJ can allow the merger to proceed or can issue a Second Request, seeking additional details before issuing a decision on the transaction. Approximately 3% (6%) of all notified (horizontal) deals receive a Second Request ([Billman and Salop \(2023\)](#)).

For most deals, the FTC and DOJ do not require a premerger notification because the size of the deal or transacting parties falls below certain size thresholds (see Figure 3). Deals with transaction prices below the lower size-of-transaction threshold are exempt from premerger notification and thus effectively escape ex ante merger review, while deals with transaction prices above the upper size-of-transaction threshold must submit a premerger filing and be reviewed by the agencies. In 2001, the lower and upper size-of-transaction thresholds were \$50 million and \$200 million, respectively. These thresholds have been adjusted since 2004 to track US gross national income. Consequently, as of 2019, the lower threshold was \$90 million and the upper one was \$359.9 million. Figure 3 displays the annual threshold amounts.

For deals that fall between the thresholds, the size-of-person (hereafter, SoP) test applies. These transactions require review only if (i) the target has total assets or net sales at or above a specified level (e.g., \$18 million in 2019) and (ii) the acquirer has total assets or net sales at or above a specified level (e.g., \$180 million in 2019).³ If either the target or acquirer does not meet these SoP conditions, a premerger filing is not required.⁴ Nearly 50% of all deals reviewed by the FTC and DOJ from 2001 through 2019 were between the lower and upper size-of-transaction thresholds where the SoP test applied.⁵

³When the firm is engaged in manufacturing, the maximum of total assets and net sales is tested. When the firm is not, only its total assets is tested.

⁴The intent of the SoP test is to ensure that only the largest mergers are reviewed by the antitrust authorities ([Howell \(2001\)](#)). For more about the statute and the rule, see www.law.cornell.edu/uscode/text/15/18a.

⁵We use the HSR Annual Reports published by the FTC and DOJ for our estimate. Specifically, from 2001 through 2019, we find 29,293 HSR transactions. We use the data from each report's Table I to compute the number of transactions that fall between the lower and upper deal-size thresholds. We estimate that

When determining the target’s and acquirer’s assets and net sales for the SoP test, firms must use financial information from their “last regularly prepared balance sheet” and “annual statement of income” (HSR Act Rules § 801.11(c)(1) and (2)). These values are based on GAAP book assets, which exclude the vast majority of intangible assets. Consistent with these rules, Section I of the Internet Appendix provides an example of an FTC representative agreeing in 2007 that, in accordance with US GAAP, intangibles should be excluded from a target’s total assets for premerger notification purposes, even though including intangibles would trigger antitrust review under the SoP test.⁶ Cases like this are likely common, as a growing range of firms—for example, innovation-intensive companies—often have few tangible assets, and most of their intangibles are not recognized on their balance sheets. Consequently, these targets can fall below the assets and sales thresholds, allowing them to escape ex ante merger review simply because of accounting standards.

Avoiding premerger review benefits the merging parties. In addition to avoiding filing fees (which range from \$45,000 to \$125,000), firms avoid the possibility of a substantially more costly Second Request. Second Requests typically last six months and cost \$2 million to \$9 million, while consuming 1,000 hours of internal management and legal time.⁷⁸ Perhaps more costly to the merging firms, however, is the fact that the vast majority (roughly 75%) of Second Requests result in orders to terminate the transaction or to divest key assets to mitigate anticompetitive effects. Aware of these risks, firms can take real actions to reduce

13,498 (46%) of these transactions were subject to and ultimately exceeded the assets or net sales threshold test.

⁶The email details a US GAAP reconciliation that was conducted as a requirement contained in an existing shareholder’s agreement. Specifically, as part of the reconciliation, the company had to recognize an intangible asset, but doing so pushed total assets above the SoP threshold for targets. Because this reconciliation differs from the most recent regularly prepared balance sheet, the company requested clarification from the FTC on which balance sheet should be used to determine total assets. The FTC, in its response on July 12, 2007, simply wrote “agree” at the end of the email, to indicate the agency staff agreed with the firm to not include intangible assets when determining total assets.

⁷Boberg, Peter, and Andrew Dick, 2014, Findings from the second request compliance burden survey, Charles River Associates, August 3.

⁸Roughly 300,000 documents (equivalent to 28 GB of data) are produced during a Second Request, not including an additional 47 GB of email. For example, in a document submitted to the Bankruptcy Court in Delaware re *RentPath Holdings, Inc* (Case No. 20-10312), a senior executive of the firm estimated that the costs associated with complying with a Second Request from the FTC or DOJ totaled nearly \$7 million and produced roughly 2.6 million pages of documents and a terabyte of data.

the value of the target’s assets, in an effort to avoid premerger review. Consistent with such review avoidance, Section I of the Internet Appendix provides an example of correspondence with the FTC in 2004 regarding a target’s plans to pay a special dividend, reducing the size of its tangible assets enough to avoid premerger review.

B. Accounting for Intangible Capital

Measuring total assets according to US GAAP for the SoP test immediately expenses internally generated intangibles rather than recording them as assets on the balance sheet.⁹ A consequence is that book assets primarily comprise physical assets, leading to underreporting of the true value of the firm’s economic assets. Only after a firm acquires another is the target’s internally generated intangible assets recognized at their fair value (ASC 805-20-30). These intangible assets include those that can be separately identified, including customer relationships, in-process research and development (R&D), trade names, and patents. After determining the fair value of the target’s assets and liabilities, the purchase price is allocated to the identifiable assets less liabilities (collectively called “net assets”). Any remaining amount of the purchase price is then recorded as goodwill on the acquirer’s balance sheet.

These accounting rules lead to considerable differences in a target’s book assets before versus after a merger. This difference has grown over time as intangible capital has become a prominent input in firms’ production. Indeed, Figure 1 shows that the ratio of acquired intangible-to-tangible assets has doubled over the past two decades.¹⁰ Acquired intangibles now represent eight times the amount of acquired tangible assets, with this increase driven to equal extents by identifiable intangible assets and goodwill.¹¹

⁹The one exception is internally generated software, for which firms capitalize the costs of after achieving technological feasibility when it is brought to market (ASC 350-40 and ASC 985-20).

¹⁰The decline in the ratio of intangible assets to tangible assets in 2009 and 2010 is likely driven by a decrease in the useful life of these assets around the 2008 to 2009 financial crisis ([Kepler, McClure, and Stewart \(2025\)](#)).

¹¹Although our evidence on the growth in the ratio of identifiable intangible-to-tangible assets is in line with similar trends documented in prior literature (e.g., [Crouzet et al. \(2022\)](#)), our ratio using market prices is considerably larger than their estimates that use firms’ expenses from the income statement and an assumed depreciation rate to estimate intangibles. To address selection concerns that our difference from the

An important result of overlooking the consolidation of intangible capital is that these accounting rules might enable intangible-intensive sectors to escape premerger review. While a vast accounting literature examines how financial accounting standards can shape economic activity (e.g., [Bens and Monahan \(2008\)](#), [Dou, Ryan, and Xie \(2018\)](#), [Graham, Hanlon, and Shevlin \(2011\)](#), [Kanodia and Sapra \(2016\)](#)), little is known about whether and how the use of GAAP rules by noncapital-market enforcement agencies shapes market structure and competition.¹²

II. Data and Descriptive Statistics

A. Primary Data Sources

Our data come from multiple sources. Data on all completed US M&A transactions announced by publicly traded firms between February 2001 and February 2020 come from the Refinitiv Mergers and Acquisitions database. This data set includes the announcement and completion dates, deal value, names, and industries of the target and acquirer, the acquirer's pre-deal ownership stake in the target, and the form of payment. To be included in our sample, deal values must fall within the annual HSR premerger notification thresholds for transaction size (see Figure 3).¹³

[INSERT FIGURE 3 ABOUT HERE]

literature is due to acquired firms having more identifiable intangible assets, we focus on public targets in our sample and we apply the same estimation procedures as used by [Crouzet et al. \(2022\)](#). In Internet Appendix Table IA.I, Panel A, we find the average ratio of actual identifiable intangible assets to total assets is 3.8 times the estimated proportion from prior research. In Panel B, we investigate whether this difference is driven by differences in identifiable intangible assets (i.e., the numerator) or total tangible assets, which are also adjusted to their market value (i.e., the denominator). We find that the ratio of post- to pre-acquisition total tangible assets is about 0.9—that is, nearly the same amount—and the ratio of actual to estimated identifiable intangible assets is about 4.1. These results suggest that the difference between our findings and the literature is likely the result of prior methods underestimating of intangible capital.

¹²Other studies on how accounting standards impact firms' economic decisions include [Huber and McClure \(2023\)](#), [Bartov, Cheng, and Wu. \(2021\)](#), [Williams and Williams \(2021\)](#), [Chircop and Novotny-Farkas \(2016\)](#), and [Iselin and Nicoletti \(2017\)](#).

¹³We follow HSR rules and adjust the deal value on the announcement date to reflect the total value of the target held by the acquirer after the deal closes (i.e., percentage acquired plus percentage held prior to the announcement). We explain this calculation in Section II of the Internet Appendix.

The FTC’s Bureau of Competition and the DOJ’s Antitrust Division copublish the HSR Annual Report. We obtain reports for fiscal years 2001 through 2019 from the FTC.gov website. These reports provide data on the number of reported HSR mergers, categorized by transaction size and by three-digit North American Industry Classification System (NAICS) industry. They also include information on the number of Second Requests issued, again broken down by transaction size and industry. We use the frequency of Second Requests to rank industries, focusing on those that averaged at least one Second Request per year. The final list of all industries that meet this requirement appears in Internet Appendix Table IA.II.¹⁴

We collect data on acquired assets from PPA disclosed in acquirers’ 10-K and 10-Q filings, obtained from the US Securities and Exchange Commission’s (SEC’s) website (SEC.gov), as well as from annual reports downloaded from acquirers’ corporate websites (see Section IV of the Internet Appendix for additional details). The PPA separately discloses the values of acquired tangible assets, intangible assets, and goodwill. We use the reported tangible asset values as our measure of the target’s size to determine whether a deal is reportable under the SoP test. To be included in our main sample, acquired assets must be reported in gross terms—the relevant basis for the SoP test—rather than net values.¹⁵ We exclude deals in which the acquirer consolidates multiple acquisitions into a single PPA disclosure, which occurs in approximately 5% of cases.

Our final sample consists of 1,918 unique M&A transactions, after excluding 5,483 deals due to incomplete acquisition data or because they fall outside our focal industries, as well as 1,608 additional deals that either do not report gross asset values or aggregate multiple acquisitions within a single PPA disclosure (see Internet Appendix Table IA.III).

¹⁴This sampling approach enables us to provide empirical estimates and conduct policy-relevant calculations for industries that receive substantial enforcement actions from antitrust authorities, but it comes at the cost of being unable to generalize these estimates to all industries.

¹⁵Using net assets could lead to incorrect classification. For instance, if the target reported \$30 million in tangible assets and \$25 million in liabilities, net assets would be \$5 million (\$30 million minus \$25 million). Using net assets would lead us to erroneously classify the deal as below the SoP threshold, whereas total assets (\$30 million) exceed the threshold.

B. Other Data Sources

We supplement our PPA data with information that we collect from corporate disclosures—such as merger agreements, proxy statements, 8-Ks, 10-Qs, and 10-Ks—as well as news reports and law firm websites, to determine whether the FTC and DOJ were notified of a deal. FTC-issued notices of “early terminations,” which we obtain from FTC.gov, are also used to identify notified transactions.¹⁶ Finally, following the approach of [Asil, Barrios, and Wollmann \(2023\)](#), we also use M&A announcement and completion dates from Refinitiv, to assess whether a deal was likely notified based on the number of days between these dates. The full methodology for identifying premerger notifications is described in Section III of the Internet Appendix.

Data used to analyze deal premia, announcement-date returns, and markups come from three main sources: Compustat, the Center for Research in Security Prices (CRSP), and, to support our markup calculations, the publicly available industry-level elasticity data sets of [De Loecker, Eeckhout, and Unger \(2020\)](#). Following the methodology of [De Loecker, Eeckhout, and Unger \(2020\)](#), we calculate firm-year markups by dividing net sales by the cost of goods sold—both from Compustat—multiplied by the firm’s corresponding industry-level elasticity. Descriptions of all outcome and control variables are available in Section VI of the Internet Appendix.

We classify industries using three-digit NAICS codes as the FTC and DOJ adopted NAICS for antitrust analysis starting in 2001—the same year our sample period begins. Because Refinitiv reports Standard Industrial Classification (SIC) codes rather than NAICS, we convert SIC to NAICS using the crosswalk process shown in Internet Appendix Table IA.II.

Finally, we obtain data on pharmaceutical drug projects from Cortellis Competitive Intelligence, which provides start and end dates for all development phases of each project.

¹⁶Early terminations are premerger reviews completed before the 30-day waiting period, based on a request by one of the filing parties. The FTC and DOJ can approve an early termination request if they determine no competitive issues exist. Approvals, but not requests, for early terminations are publicly available.

For every drug, the data set includes information on its intended therapeutic market (e.g., “Parkinson’s disease”), mechanism of action (e.g., “Growth Hormone Receptor”), and development phase. Following Cunningham, Ederer, and Ma (2021), we use this information to identify overlapping projects. Our sample includes drug projects that began in January 2000 and extends through the end of our study period. We link these projects to acquirers and targets in our main data set using fuzzy matching techniques.

C. Descriptive Summary

Of the 1,918 deals used in our analysis, 1,682 (88%) involve private targets. Horizontal deals, that is those for which the target and acquirer share the same three-digit NAICS, constitute roughly 50% of the sample in terms of both number of deals and transaction value (see Panel C of Internet Appendix Table IA.III). Table I, Panel A presents the distribution of deals by whether the deal was reportable to the FTC and DOJ. We classify a deal as reportable (nonreportable) if the total assets for the target exceed (fall below) the SoP asset threshold in the given reporting year. To validate our classification method, we collect information—as described in Section III of the Internet Appendix—to assess whether the size of the target’s tangible assets predicts whether a transaction is reportable. The results, shown in Figure 2, indicate that the share of transactions that are notified is near zero just below the asset size threshold. However, this share jumps sharply to around 70% immediately above the threshold and continues to increase beyond that point.¹⁷ Table I, Panel A shows that these nonreportable horizontal deals represent roughly the same percentage as reportable horizontal deals (both about 55%), but are on average smaller (i.e., \$121.3 million versus \$143.5 million).¹⁸

¹⁷In Internet Appendix Figure IA.1, Panel B, we show the number of deals in each bin from Figure 2. In Panel C, we show the percentage of transactions after accounting for early terminations.

¹⁸For this analysis, we exclude 145 deals that fall below the asset threshold but were still subject to premerger review, as a result of net sales exceeding the SoP net-sales threshold. We use early termination approvals published in the FTC online legal library to identify deals that, by definition, were reported. Thus, if a deal falls below the asset threshold but terminates early, we conclude that it exceeded the net-sales threshold. Internet Appendix Table IA.IV presents additional information on early terminations in our

[INSERT TABLE I ABOUT HERE]

Panel B of Table I presents the distribution, by value, of nonreportable horizontal deals. Of the 219 nonreportable horizontal deals, 169 (77%, with total deal value of \$20 billion) are in the computer and electronic product manufacturing and chemical manufacturing industries, which several of our subsequent analyses focus on given the prominence of consolidation in these product markets. In aggregate, over \$26.5 billion in horizontal deals were nonreportable. The total value of the 1,918 deals in our full sample is \$268 billion, and thus 10% of all market consolidation involved nonreportable horizontal mergers.

In terms of the composition of assets in these deals, Panel C of Table I presents PPA for reportable and nonreportable horizontal M&As. Reportable deals comprise roughly similar degrees of tangible and intangible assets (35.5% versus 27.7%, respectively). However, we find that identifiable intangible assets represent 46.8% of nonreportable deal values, roughly seven times the value of tangible assets in nonreportable deals (6.7%).

To illustrate how this omission of intangible capital impacts antitrust enforcement over time, Panel A of Figure 4 plots the number of deals in our sample that were subject to review (blue line) and the number that would have been subject to review if intangible assets were included in the SoP test (red line), where we determine the hypothetical number by adding in the fair value of intangibles from the acquirer's PPA. Doing so increases the number of reportable deals by 25% to 60% each year. Panel B applies these increases to all reportable deals reviewed by the FTC and DOJ annually. The panel shows that another 5,003 deals (\$630 billion of total deal value) would be reportable if intangibles were included in the SoP test (or 263 deals at \$33 billion annually).¹⁹ This translates to an additional 466 nonreportable horizontal deals (about 25 deals per year) in the United States over our sample period and in turn to approximately \$60 billion in deal value, or 10% of all consolidation in sample.

¹⁹These estimates represent lower bounds, since nonreportable deals are less likely to be publicly disclosed in the first place (e.g., Barrios and Wollmann (2024)).

the economy over this period.^{20,21}

[INSERT FIGURE 4 ABOUT HERE]

D. Defining Product Markets

Identifying mergers with the potential to cause anticompetitive harm is crucial to our study. Doing so requires a measure of overlapping product markets, which is challenging to obtain since nearly 90% of our targets are private firms. The FTC and DOJ analyze proprietary, product-level data at the six-digit NAICS level submitted by both the target and the acquirer in premerger review filings to identify and evaluate the potential anticompetitive effects resulting from the consolidation product markets. Absent detailed data, we employ two approaches to define overlapping markets. The first begins by classifying a merger as horizontal if the target and acquirer share the same three-digit NAICS code. To improve the accuracy of our classification, we then review corporate filings and press releases, industry reports, and news articles to determine whether the acquirer and target actually operate in at least one overlapping product market, and we adjust our classification if they do not. The second approach, applied specifically to pharmaceutical mergers, follows prior studies by constructing a measure of scientific overlap in drug development projects (e.g., [Cunningham, Ederer, and Ma \(2021\)](#)).

²⁰We estimate total nonreportable horizontal deals using our sample of 219 nonreportable horizontal deals and the fraction of deals in Refinitiv that are also disclosed in the HSR annual reports. Even though the number of deals in the HSR annual report does not, by definition, include nonreportable deals, we can use this amount to calculate the proportion of missing deals in our sample. From 2001 through 2019, the HSR annual reports indicate that 13,498 premerger filings were submitted for deals with values where the SoP test applies. By contrast, Refinitiv data suggest approximately 6,300 deals for which the SoP test applies, which implies that our data capture about 47% (or 6,300/13,498) of reviewed M&A deals. We estimate from this ratio that, for every deal in our sample, an additional 1.13 deals are missing. Applying that ratio to our sample of 219 nonreportable horizontal deals results in an additional 247 horizontal deals missing from our analysis.

²¹In addition to this approach, we use the findings of [Wollmann \(2023\)](#) to estimate the number of deals likely excluded from our analysis. Specifically, [Wollmann \(2023\)](#) documents that, from 2001 through 2011, approximately 60% of mergers in the Refinitiv data have undisclosed deal terms—and that this proportion increases to roughly 70% when narrowed to only horizontal M&A. This evidence suggests that, for each nonreportable horizontal (nonhorizontal) deal in our sample, our analysis misses an additional 2.3 (1.5) nonreportable deals involving private acquirers. Based on these figures, we estimate that, for horizontal deals alone, the total value of nonreportable M&A transactions due to accounting standards is roughly \$88.5 billion across 730 deals involving public and private acquirers (from 2001 through 2019).

III. Nonreportable M&A and Intangible Capital

We next study the types of intangible assets in nonreportable deals and examine how deal characteristics differ across nonreportable versus reportable transactions. Our empirical strategy compares deals that undergo the SoP test and are nonreportable to antitrust authorities with deals that undergo the test and are reportable. However, whether a nonreportable or reportable M&A transaction occurs may vary with factors such as industry norms and deal timing. For instance, firms in industries more subject to antitrust enforcement might be more likely to consolidate markets when they are nonreportable. Furthermore, firms might strategically time deals to occur during years of heightened M&A activity when the PNO is unusually busy. We employ industry and year fixed effects to address the first and second concerns, respectively. We also leverage the fact that many acquirers in our sample have both nonreportable and reportable deals, which allows us to conduct within-acquirer tests to help rule out differences in acquiring-firm preferences for deals of a certain kind to go unreported. Furthermore, the sharp discontinuity that we find in reporting likelihood precisely at the SoP asset threshold (as shown in Figure 2), which is difficult to attribute to other deal characteristics, provides further validation for our research design's treatment of deal nonreportability as exogenous.²²

[INSERT FIGURE 5 ABOUT HERE]

A. Levels and Types of Intangibles in Nonreportable Deals

We first characterize how reportable and nonreportable deals differ in their intensity of intangible capital. Figure 5 plots deal-size density for each type of deal. Panels A and B show that the total deal value and intangible asset value distributions for reportable and nonreportable deals are remarkably similar. Nonreportable deals have slightly more intangi-

²²An alternative sample of deals that might serve as a comparison group are those that (i) exceed the upper transaction-size threshold and thus are reported and (ii) involve target firms with a similar level of tangible assets as those that undergo the SoP test and are nonreportable. We investigate the prevalence of deals with such attributes but can identify only a handful that meet these requirements, and thus any tests using such a sample would be weak.

ble assets than reportable deals, consistent with our earlier finding that intangibles represent a higher proportion of deal value in nonreportable deals. In Internet Appendix Table IA.V, we find no statistically significant difference in the *level* of intangibles in nonreportable deals relative to reportable deals. However, the *proportion* of the deal related to intangibles is more than 50% greater for nonreportable deals. Thus, despite the FTC and DOJ perceiving reportable deals as larger, these results suggest that nonreportable deals are quite similar in size but differ in the accounting treatment of intangible assets when determining whether they avoid ex ante merger review.

[INSERT TABLE II ABOUT HERE]

We next examine the types of intangibles acquired in these deals by collecting data on the categories of intangibles disclosed in the PPA of acquirers' 10-Ks for 1,810 of 1,918 deals with identifiable intangible assets, 75% of which allocate the purchase price into separate intangible categories (e.g., customer relationships, patents, in-process R&D). See Sections IV and V of the Internet Appendix for details of this collection process. Panel B of Table II shows that identifiable intangibles total nearly \$79 billion across 22 categories. In Panel C, we find that nonreportable deals have on average approximately four times the level of in-process R&D relative to reportable deals, while reportable deals have twice the level of customer-related intangibles relative to nonreportable deals. Figure 6 shows these patterns visually. One reason for these findings is that customer relationships develop gradually and are more likely to be associated with mature firms with more tangible assets whose deals will therefore be reportable (e.g., [Foster, Haltiwanger, and Syverson \(2016\)](#)). By contrast, early-stage, innovative firms—which have few tangible assets—are more likely to rely on intangible capital.

[INSERT FIGURE 6 ABOUT HERE]

B. Deal Premia for Nonreportable M&A

Our remaining tests in this section seek to shed light on whether characteristics of non-reportable transactions differ from those of reportable transactions in ways that suggest consolidations can soften market competition, absent antitrust enforcement. We first examine how deal premia compare for reportable and nonreportable deals. If deals that avoid ex ante merger review are anticompetitive, we expect acquirers to pay higher deal premia, given the rents that accrue from exercising market power. We measure deal premia following [Kepler, Naiker, and Stewart \(2023\)](#) and use the proportion of goodwill in the deal. Specifically, we estimate the following ordinary least squares (OLS) model

$$DealPremium_{i,t} = \alpha + \beta Nonreportable_{i,j,t} + \tau_t + \gamma_{k(i)} + \epsilon_{i,t}, \quad (1)$$

where $DealPremium_{i,t}$ is the proportion of target i 's equity recognized as goodwill in year t . We include fixed effects for reporting year (τ_t) and acquirer industry ($\gamma_{k(i)}$). Table [III](#) presents the results. Consistent with nonreportable deals providing anticompetitive benefits that acquirers pay more for, column (1) shows that deal premia for nonreportable deals are approximately 10 percentage points (or 20%) higher than those in reportable deals.

[INSERT TABLE [III](#) ABOUT HERE]

To better attribute the higher deal premia for nonreportable deals to anticompetitive benefits that accrue to acquirers—rather than, say, lower transaction costs associated with deals that avoid ex ante merger review—we consider whether the higher deal premia vary with an indicator for whether the deal consolidated the acquirer's and target's product markets ($ProductMarketOverlap$). We interact $ProductMarketOverlap$ with $Nonreportable_t$ and present the results in column (2). We find that higher deal premia for nonreportable deals are more pronounced in deals that consolidate product markets—acquirers of non-reportable deals involving the consolidation of product markets are willing to pay a 13.3 percentage-point (or 26.6%) higher premium than acquirers of reportable deals. Similar

results obtain in columns (3) and (4), which include acquirer (rather than industry) fixed effects and compare deal premia within the same acquirer.²³

C. Acquirer Equity Values and Nonreportable M&A

We next examine responses of acquirers' equity values following nonreportable deals. If nonreportable deals reduce competition, the resulting increase in market power to acquirers should flow through to product prices (e.g., Stigler (1964)), which stock prices should reflect soon after a merger's announcement. To test this prediction, we conduct event studies that compare the market reactions of acquirers as well as those of rivals around the announcement date of reportable and nonreportable deals using the following OLS model

$$AnnReturn_{i,[-2,2]} = \alpha + \beta Nonreportable_{i,j,t} + \Gamma Controls_{i,k,t} + \tau_t + \gamma_{k(i)} + \epsilon_{i,t}, \quad (2)$$

where $AnnReturn_{i,[-2,2]}$ is acquirer i 's market-adjusted five-day cumulative abnormal return (centered on the announcement date) and $Nonreportable$ is as previously defined.²⁴ To account for other factors previously shown to be associated with announcement returns in M&A (e.g., Bao and Edmans (2011), Masulis, Wang, and Xie (2007), Moeller, Schlingemann, and Stulz (2004), Officer (2003)), we include the following deal- and acquirer-level characteristics: $AllCash$, $AllStock$, $DealPremium$, $DealSize$, $FreeCashFlow$, $Leverage$, $PublicTarget$, $RelativeSize$, Q , and $Size$. All variables are described in Section VI of the Internet Appendix.

Panel A of Table IV reports the results.²⁵ In column (1), we find no significant difference in announcement returns for nonreportable relative to reportable deals. However, when we interact $Nonreportable$ with $ProductMarketOverlap$ in column (2), we find a 3.4 percentage-

²³The larger economic magnitude of the coefficient observed when transitioning from column (2) to (4) suggests the presence of serial acquirers in our sample. Supporting this view, we find that acquirers often engage in multiple acquisitions, with these deals accounting for 44% of our sample. Nevertheless, this is still lower than the proportion seen in the broader market, where roughly 85% of the more than 11,000 acquisitions depicted in Figure 1 involve serial acquirers.

²⁴We use five-day windows to capture market reactions that may occur prior to the announcement date when, for example, the FTC discloses an early-termination decision before the merging firms disclose the merger.

²⁵We report coefficients on control variables in Internet Appendix Table IA.VI.

point increase in abnormal returns of nonreportable deals that consolidate product markets relative to reportable deals that do the same. This represents a 43% increase over the mean abnormal return for reportable deals that consolidate product markets. We find similar results in columns (3) and (4), which include acquirer (rather than industry) fixed effects and therefore compare announcement returns within the same acquirer.

[INSERT TABLE IV ABOUT HERE]

Finally, following [Eckbo \(1983\)](#), [Chevalier \(1995\)](#), and [Fathollahi, Harford, and Klasa \(2022\)](#), we examine the abnormal returns of industry rivals around the deal's announcement.²⁶ The intuition for these tests is that if nonreportable deals soften competition, rents should also accrue to industry rivals, as they can free ride on the benefits. Consistent with this view, in Table IV, Panel B we find 0.8 percentage points higher abnormal returns, as shown in column (2), for industry rivals following nonreportable deals that consolidate a product market.²⁷ Taken together, the results in Table IV are consistent with equity markets impounding into stock prices the anticompetitive benefits of nonreportable deals, particularly when an acquirer's market power increases.

IV. Developed and Undeveloped Market Consolidation

We next examine mechanisms, that is, whether acquiring intangible-intensive targets is beneficial simply because it avoids antitrust review, or whether these intangibles are especially advantageous in providing anticompetitive benefits. To do so, we first leverage data on the most prominently consolidated intangibles in developed product markets, namely (i)

²⁶We include *DealPremium* in these specifications to control for rival returns around announcement dates possibly being associated with value-destroying acquisitions made by the acquirer ([Antón et al., 2022](#)).

²⁷We lose 49 observations when moving from our tests in columns (1) and (2) of Panel A to our tests in columns (1) and (2) of Panel B due to a lack of publicly listed peer firms at the time of the merger announcement. The absence of public rival firms is likely due to an overall decline in the number of US publicly listed companies over our sample period ([Doidge, Karolyi, and Stulz \(2017\)](#)).

trademarks and brands and (ii) patents, technology, and software.²⁸ We then examine the role of intangibles in undeveloped product markets (e.g., in-process pharmaceutical drug projects), as a growing literature suggests that the acquisition of undeveloped products can have anticompetitive consequences (e.g., Cunningham, Ederer, and Ma (2021), Kamepalli, Rajan, and Zingales (2022)).

A. Empirical Approach

Our empirical strategy leverages our intangible capital data to compare nonreportable and reportable deals in event-study designs. We first focus on transactions that only involve the acquisition of technology, brands, or in-process R&D. These tests incorporate acquirer-firm fixed effects. This design enables us to assess differences in economic outcomes between nonreportable and reportable deals involving similar intangible assets acquired by the same firm. We next examine pharmaceutical mergers. These tests incorporate a fixed-effect framework that enables comparisons of drug project R&D within therapeutic classes and mechanisms of action across nonreportable and reportable deals. They also include a set of variables that allow us to control for other factors that may help explain drug project outcomes. We elaborate on our research designs below.

B. Markups and Developed Product Market Consolidation

[INSERT TABLE V ABOUT HERE]

We first conduct event studies of acquirers' markups to explore one way that nonreportable intangible-intensive deals might impact market structure. Markups measure the degree to which firms price goods above marginal cost as a way to exercise market power.

²⁸As shown in Table II, these categories are among the largest intangibles in our sample, with over 40% and 45% of all deals in our sample having brand- and technology-related intangible capital, respectively, 40.7% of nonreportable deals and 40.5% of reportable deals include brand-related intangibles, while 56.3% of nonreportable deals and 41.2% of reportable deals include technology-related intangibles.

We therefore estimate the following

$$\begin{aligned}
Markup_{i,t-3:t+3} = & \beta_1 Nonreportable_{i,j,t} \times Post_{i,t:t+3} \times ProductMarketOverlap_{i,j,t} \quad (3) \\
& + \beta_2 Nonreportable_{i,j,t} \times Post_{i,t:t+3} \\
& + \beta_3 ProductMarketOverlap_{i,j,t} \times Post_{i,t:t+3} \\
& + \beta_4 Nonreportable_{i,j,t} + \beta_5 ProductMarketOverlap_{i,j,t} \\
& + \beta_6 Post_{i,t:t+3} + \tau_t + \gamma_{k(i)} + \varepsilon_{i,t-3:t+3},
\end{aligned}$$

where $Markup_{i,t-3:t+3}$ is acquirer i 's markup in the years $t - 3$ through $t + 3$, and $Post_{i,t:t+3}$ is an indicator for whether the markup is in year t , $t + 1$, $t + 2$, or $t + 3$.²⁹ All other variables are as previously defined. Table V, Panel A presents the results.³⁰ Overall, we find that nonreportable deals between firms in overlapping product markets are associated with higher post-acquisition markups. This association begins shortly after the acquisition (see column (2)) and persists for at least three years. The increase in markups continues to hold, as shown in columns (3) and (4), when our control group only includes acquisitions by firms that are not yet-, last-, or never-treated, that is, observations that are “clean” controls, to address problems related to staggered treatment timing and treatment effect heterogeneity (e.g., Athey and Imbens (2022), Baker, Larcker, and Wang (2022), Borusyak, Jaravel, and Spiess (2024), Callaway and Sant'Anna (2021), Cengiz et al. (2019), De Chaisemartin and d'Haultfoeuille (2020), Goodman-Bacon (2021), Kosuke and Song (2021), Sun and Abraham (2021)).³¹ Panel A of Figure 7 depicts the results from our dynamic specification reported in column (4).³²

²⁹We include the acquisition year, t , in the $Post$ period.

³⁰Coefficients for all interaction terms are displayed in Internet Appendix Table IA.VIII.

³¹We classify an acquirer as treated if it is involved in a nonreportable consolidation of a product market. After this initial treatment, any subsequent reportable acquisitions by the same acquirer are removed from the control group. In total, we exclude 23 such deals from the control sample.

³²In Internet Appendix Figure IA.2, we show results from a nine-year dynamic specification. Due to data limitations, we use an unbalanced panel, as relatively few firms have complete data covering the entire nine-year window. While our tests are somewhat underpowered, the results indicate that, on average, the increase in markups persists for at least four years following the acquisition.

[INSERT FIGURE 7 HERE]

As shown in column (3), markups increase by approximately 26 percentage points on average over the three years following a nonreportable acquisition that consolidates product markets. Given the sample mean markup of 2.278, this represents an 11.3% increase over the average markup. Compared to recent studies estimating the impact of horizontal mergers on markups, our findings are consistent with those of [Blonigen and Pierce \(2016\)](#), who report increases ranging from 15% to over 50% in the context of US manufacturing plant acquisitions. In magnitude, the 11.3% increase in markups that we estimate is also broadly comparable to the 5.9% announcement returns reported in column (4) of Table [IV](#).

To assess whether our estimates are economically sensible given the relative size of targets to acquirers, we estimate an OLS regression model of $\Delta Markup$ —the percentage change in markups from one year before to one year after an acquisition—on $Nonreportable \times ProductMarketOverlap$, along with the main effects. The model includes industry and year fixed effects. Summary statistics and cross-sectional results by quantiles of *RelativeSize* are reported in Internet Appendix Table IA.IX. Panel A shows that a target is on average one-quarter (or 0.259) the size of an acquirer. Panel B presents regression estimates for subsamples based on quantiles of relative size.³³ Overall, we find that changes in markups grow following nonreportable acquisitions involving overlapping product markets when the relative size of the target to the acquirer is larger. In the upper decile of relative size—where targets are at least half the size of acquirers—markups increase by an average of 47.2%, consistent with the magnitudes reported in recent studies (e.g., [Blonigen and Pierce \(2016\)](#)).³⁴

Finally, using our specifications from columns (3) and (4) of Table [V](#), we examine whether results vary based on types of intangible assets that, when consolidated, might lead to increased markups. We focus on acquisitions of brands and technologies, given that we

³³We estimate our regression model separately for subsamples of the lower and upper quartiles of *RelativeSize* in columns (1) and (2), and for the lower and upper deciles of *RelativeSize* in columns (3) and (4).

³⁴For example, [Blonigen and Pierce \(2016\)](#) find that markups increase by over 50% of the average markup when industry rivals of similar size acquire US plants.

expect them to be economically important in developed product markets (e.g., consolidating two competing brands likely has an immediate impact on the acquiring firm's market power). Panel B of Table V presents results from separately estimating equation (3) for subsamples in which the deal involves (i) brands or technology (columns (1) and (2)), (ii) brands and technology (columns (3) and (4)), and (iii) neither brands nor technology (columns (5) and (6)). Overall, we find that the increase in markups documented in Panel A concentrates among deals that involve intangibles related to developed product markets.³⁵ By contrast, in columns (5) and (6), where we restrict our sample to deals that do not involve either a brand or technology, we find no significant differences in markups. Panels B through D of Figure 7 display these patterns graphically. Taken together, our results in Table V suggest that nonreportable deals between firms in overlapping product markets are more likely to increase acquirers' market power, which is exacerbated when these deals relate directly to developed product markets.³⁶

C. Undeveloped Product Market Consolidation

We next explore the implications of accounting rules for the avoidance of premerger review in undeveloped product markets, where intangible assets are as prevalent, if not more so, relative to developed product markets.

Since the anticompetitive effects of deals in undeveloped product markets are unlikely to manifest in markups, we turn our attention to the pharmaceutical industry, defined by antitrust authorities as chemical manufacturing (NAICS 325), which receives significant

³⁵In line with this result, in Internet Appendix Table IA.VII we conduct our announcement return event study from our previous section and find that the increase in abnormal returns of nonreportable deals that consolidate product markets is greater for deals that include the acquisition of brand-related intangible capital and intellectual property, such as patents or technology.

³⁶One way intangible assets may contribute to higher markups is by enabling acquirers to capture monopolistic rents. Supporting this view, Internet Appendix Table IA.X shows that patents—our sample's third-most common intangible asset—acquired in nonreportable deals involving overlapping product markets are of significantly higher quality. These patents are relatively more likely to represent technologically important breakthrough innovations compared to those acquired in either reportable deals or nonreportable deals without market overlap. This result suggests that nonreportable M&As facilitate the transfer of higher-quality innovations, offering one way subsequent increases in markups may arise.

antitrust enforcement, as reflected in the rate of Second Requests (14.72%) reported in Internet Appendix Table IA.II.³⁷ In particular, the early-stage intangible assets involved in pharmaceutical deals—for example, in-process R&D—are a key concern in public and private antitrust-related litigation (see Section VII of the Internet Appendix). Evidence in [Cunningham, Ederer, and Ma \(2021\)](#) suggests that this concern might be warranted, given acquirers' incentives to preempt competition by consolidating undeveloped pharmaceutical projects. Indeed, accounting standard setters have provided examples of how fair-value measurements of acquired in-process R&D should be conducted when the acquirer does not intend to complete the project but instead wants to lock up the project to “prevent its competitors from obtaining access to the technology.”³⁸ We also find that intangible assets are prevalent in our sample of pharmaceutical deals, especially for those that are nonreportable to antitrust authorities.³⁹ We examine overlapping drug projects acquired in these deals in the sections that follow.

C.1. Acquisitions to Preempt Future Competition

Following [Cunningham, Ederer, and Ma \(2021\)](#), we identify overlapping drug projects by examining the intended therapeutic class (TC) and mechanism of action (MOA). If both the acquirer and the target have a drug project that shares the same TC and MOA, we categorize that project as overlapping. We then calculate the number of overlapping projects scaled by the target firm's total number of drug projects. Thus, if a target firm has only one project and that project overlaps with one of the acquirer's, the project is likely the focus of the

³⁷This focus on pharmaceuticals is also consistent with [Tucker \(2013\)](#), in that the FTC's concerns about the effects on market structure are among the most frequently cited factors in Merger Screening memoranda leading to Second Requests in horizontal mergers in the pharmaceuticals industry.

³⁸For a discussion of accounting for Defensive In-Process R&D, see p. 101 of [Ernst & Young, 2024](#), Financial reporting developments (a comprehensive guide): Business combinations. Archived copy available online at: <https://chrisstewart.cc/data-library/>.

³⁹In particular, Internet Appendix Table IA.XI shows that nonreportable deals include an additional \$20.8 million (or nearly 65% more) intangibles relative to reportable deals. Given that we find intangibles represent nearly 34% of the average deal value in reportable pharmaceutical deals, these results imply identifiable intangibles represent nearly 75% of the average deal value in nonreportable deals. In terms of pharmaceutical deals, nonreportable pharmaceutical deals involve nearly three times as much in-process R&D relative to reportable ones (i.e., 34.8% versus 8.8%).

deal. By contrast, if a target has many projects and one of the projects overlaps with a project of the acquirer, the overlapping project is less likely to be the focus.

We begin by examining the prevalence of overlapping projects in nonreportable deals. Of the 169 horizontal pharmaceutical deals in our sample, 13 have at least one overlapping drug project. Overlaps occur in five of the 107 reportable deals (a rate of 4.7%) and eight of the 62 nonreportable deals (a rate of 12.9%)—a test of the difference in means is significant at the 1% level. We employ our two measures of overlap to compare nonreportable horizontal deals in the pharmaceutical industry with reportable deals using the OLS model

$$ProjectOverlap_{i,j,t} = \alpha + \beta Nonreportable_{i,j,t} + \tau_t + \epsilon_{i,t}, \quad (4)$$

where $ProjectOverlap_{i,j,t}$ is either an indicator variable equal to one if at least one project overlaps or a continuous variable equal to the proportion of projects that overlap in year t .

Table VI, Panel A presents results from estimating equation (4). Results in column (1) indicate that, on average, nonreportable deals are associated with a 8.2 percentage point higher likelihood of involving overlapping drug projects relative to reportable deals, that is, overlapping drug projects in nonreportable deals occur at nearly three times the rate of overlapping drug projects in reportable deals (i.e., 13% versus 4.7%). Columns (3) and (4) report results using our continuous measure of overlap as the dependent variable and show that nonreportable deals have a greater proportion of overlap between acquired projects. For roughly half of the horizontal deals in this sample, more than 15% of acquired projects overlap, all of which were nonreportable, in part because in-process R&D comprises nearly 35% (relative to 15% for reportable deals) of the deal but is not accounted for in the SoP test.⁴⁰

[INSERT TABLE VI ABOUT HERE]

⁴⁰Illustrating the size of deals that escape ex ante merger review, in one deal from the sample, the estimated market size for therapeutic drugs is \$1.4 billion in annual sales.

C.2. Project Development after Acquisition

We next examine how consolidated pharmaceutical projects develop post-acquisition. Acquirers may choose to continue projects if synergies exist (Beneish et al. (2022)). Alternatively, they may discontinue projects when the acquisition aims to preempt competition. Consistent with the latter, Cunningham, Ederer, and Ma (2021) shows that incumbents discontinue acquired drug projects when a project potentially substitutes for the incumbent's project. In our setting, the acquirer's ability to discontinue overlapping projects is likely greater when the size of the target firm's assets is below the asset size threshold, allowing the merger to escape ex ante merger review. Moreover, as we show in Section V.A.3, the threat of private litigation is near zero because drug development occurs before commercialization.

To examine whether drug development differs between nonreportable and reportable deals, we exploit our project-level data, which track project development throughout its life cycle. We identify a project as discontinued if, after the acquisition date, the project's status is "discontinued" or "no development reported." For this analysis, we use a sample of 210 overlapping projects across the 13 deals that involve overlapping projects, approximately 50% of which (98 of 210) are discontinued after acquisition.

Panel B of Table VI presents results from regressing an indicator variable for whether a project is discontinued (*ProjectDisc'd*) on *Nonreportable*. Overall, we find that acquired overlapping projects in nonreportable deals are about 15 percentage points more likely to be discontinued than overlapping projects in reportable deals. This represents a 40% increase over the 37.5% probability of discontinuing a project in reportable deals. These results are robust to the inclusion of TC fixed effects, which control for the possibility that nonreportable and reportable deals differ in development rates (e.g., due to the types of drug projects acquired) as well as filing-year fixed effects (see columns (2) and (3), respectively).

Next, we examine whether the likelihood of discontinuing a drug project increases with economic importance. Given the absence of data on drug sales for yet-to-be-developed drugs,

we construct two measures of economic importance: advanced drug development and market concentration. Our first measure, advanced drug development, is an indicator for whether the target's drug project is in Phase 3 trials, that is, the final-phase marketing approval from the US Food and Drug Administration.⁴¹ Our second measure, high market concentration, is an indicator for whether three or fewer competitors are developing an overlapping drug with the same TC and MOA.⁴² We interact our measures with *Nonreportable* and report the results in columns (4) and (5) of Panel B. The interaction term in both columns is positive and statistically significant, indicating that overlapping drug projects in nonreportable deals are more likely to be discontinued when the target's project is in an advanced stage of development (column (4)) and when the benefits to reducing competition are larger (column (5)).

One concern with the preceding analysis is that acquirers in nonreportable deals may naturally have higher project discontinuation rates (e.g., if they tend to be smaller and riskier projects). To address this concern, we broaden our analysis to also include all of the acquirer's ongoing projects that were initiated but not discontinued before the acquisition date. Combining these nonoverlapping projects with the 210 overlapping projects increases our sample to roughly 3,500 unique drug projects. For this analysis, we modify the regression used in columns (1) and (2) of Panel B by including the interaction term $\text{Nonreportable} \times \text{AcquiredProject}$ in the empirical model,

$$\begin{aligned} \text{ProjectDisc}'d_{i,j,p,t} = & \alpha + \beta_1 \text{Nonreportable}_{i,j,p,t} + \beta_2 \text{AcquiredProject}_{i,j,p,t} \\ & + \beta_3 \text{Nonreportable}_{i,j,p,t} \times \text{AcquiredProject}_{i,j,p,t} \\ & + \beta_4 X_{i,t-1} + \tau_t + \phi_a + \epsilon_{i,j,t}, \end{aligned} \quad (5)$$

⁴¹The probability that a drug moves from Phase 3 trials to an approved drug ranges from roughly 35% to nearly 90% depending on the therapeutic group (Wong, Siah, and Lo (2019)).

⁴²In a market with three or fewer competitors, the benefits to acquiring and discontinuing a project should be pronounced. Assuming equal market shares, a market with five competitors (e.g., the acquirer, the target, and three peers) would have an Herfindahl–Hirschman index (HHI) of 2,000, which is 200 points higher than what the FTC and DOJ generally consider highly concentrated. Removing one competitor would increase the HHI by 400 points to 2,400. The FTC and DOJ presume that transactions that increase the HHI by more than 100 points in highly concentrated markets enhance market power.

where $AcquiredProject$ is an indicator variable that assumes the value of one if the project is an overlapping project acquired via M&A and zero otherwise. Given the larger sample for this analysis, we can include a vector of controls that proxy for the size and the financial health of the acquirer (e.g., *Size*, *Sales*, *Leverage*, *EBITDA/Assets*, *Cash/Assets*, *CashFlow/Assets*, *R&D*, and Q). To account for baseline differences in discontinuation rates inherent to a project's specific drug category, we also include fixed effects for each $TC \times MOA$ pair (ϕ_a). All variables are defined in Section VI if the Internet Appendix.

Panel C of Table VI reports the results from estimating equation (6). Overall, we find that overlapping projects in nonreportable deals are 16 percentage points more likely to be discontinued (column (1))—an increase of approximately 77% relative to the discontinuation rate in reportable deals. Notably, the coefficient on *Nonreportable* is not statistically significant at conventional levels, suggesting that the discontinuation rate of internally developed projects for acquirers with nonreportable deals does not differ from that of internally developed projects in acquirers with reportable deals. Thus, no ex ante differences exist in the development rates across these firms, consistent with prior work on large firms having incentives to stifle innovation (e.g., Seru (2014)).

We obtain similar inferences when we control for the size and financial health of the acquirer (column (2)), but we also find that the discontinuation rate for acquired projects in reportable deals does not differ from that of internally developed projects. We also find similar results when we include TC (filing-year) fixed effects to control for variation in discontinuation rates due to unobservable drug-therapy characteristics (time trends) in columns (3) and (4) ((5) and (6)). Finally, in columns (7) and (8), we replace TC fixed effects with $TC \times MOA$ pair fixed effects and find that, even within the same TC and the same MOA, acquired overlapping projects in nonreportable deals have a higher rate of discontinuation than internally generated ones. Taken together, our results in Panel C are consistent with acquirers of overlapping projects in nonreportable deals striving to reduce product market competition.

V. Implications and Additional Analysis

We now discuss enforcement challenges associated with deals that escape ex ante merger review. We also estimate the effects of a change in enforcement policy, consider various threats to our inferences, investigate the impact of a change in intangible capital accounting standards on nonreportable deals, and address how current reporting practices might impact the likelihood of deal completion.

A. *Implications for Public and Private Enforcement*

A.1. *Public Enforcement*

Given antitrust authorities are resource-constrained, one possibility is that enforcement of deals subject to the SoP test, that is, deals that fall between the lower and upper size-of-transaction test, receive lax enforcement. To examine this possibility, we obtain data from HSR reports on Second Requests (the highest degree of antitrust enforcement prior to litigation). We find that roughly 25% of all Second Requests correspond to such deals (see Panel A in Internet Appendix Table IA.XII) and are similar in investigative length to the largest US mergers (e.g., 146 days versus 160 days; [Tucker \(2013\)](#)). Thus, public enforcement of deals scrutinized under the SoP appears to be costly from a compliance perspective but does not lead to denial of the merger (these deals are 29 times less likely than those above the upper deal-size threshold to be subject to actual enforcement actions; see Section VIII of the Internet Appendix).

However, firms can reduce the risk of a Second Request by withdrawing and refile their premerger notifications, which in effect restarts the 30-day waiting period, giving the FTC and DOJ additional time to evaluate the deal before they must initiate a Second Request. Firms typically use “pull-and-refile” when they believe doing so will give them a reasonable chance of a clearance without a Second Request. We compile a data set of pull-and-refiles by searching the public disclosures of public targets and acquirers and report our findings in

Panel B of Internet Appendix Table IA.XII. Roughly 11% of pull-and-refiles occur in deals subject to the SoP test, suggesting that relying on Second Requests incidences alone likely underestimates the actual threat of enforcement for SoP deals.⁴³

A.2. Private Enforcement

Given that accounting rules lead to many deals escaping ex ante merger review, one might wonder whether private litigation substitutes for public enforcement against these deals (e.g., [Lancieri, Posner, and Zingales \(2023\)](#)), which is permitted under the Clayton Act. The fixed costs of private antitrust litigation for both plaintiff and defendant are high (e.g., [Davis and Kohles \(2022\)](#)), potentially limiting its prevalence. Nonetheless, we examine the prevalence of private litigation in nonreportable versus reportable deals in Section VIII of the Internet Appendix. We find that 1.2% (i.e., 23/1,918) of the deals in our sample have private antitrust-related litigation, which is comparable to the number of deals litigated by the FTC (1.4%; [Billman and Salop \(2023\)](#)). Among the 23 deals with private litigation, eight relate to nonreportable deals. Thus, 2.1% of nonreportable deals in our sample faced a private antitrust lawsuit, which is 50% higher than the rate of public litigation for reportable deals. Furthermore, most (60%) private antitrust litigation is in the same industries as public litigation (i.e., technology and pharmaceutical sectors). Given that private antitrust litigation is financially costly for defendants (roughly \$200 million on average for plaintiff-favorable rulings in one-third of cases), private antitrust litigation seems to at least partially substitute for public enforcement against anticompetitive deals that escape ex ante merger review due to the accounting rules for intangible assets.⁴⁴

⁴³While the rate of pull-and-refiles for SoP deals (11%) is about half the rate observed for Second Requests (25%), this is likely due to our need to search public company disclosures. About half as many public companies are involved in SoP deals as those above the upper size of transaction, directly reducing our ability to find pull-and-refiles.

⁴⁴In Section VII of the Internet Appendix, we study the extent to which intangibles appear in the court filings of public and private complaints. We find that 80% (100%) of public (private) complaints discuss the harm from the merger because of the acquisition of an intangible asset.

A.3. Frictions to Litigation

While private litigation partially offsets a lack of public enforcement, plaintiffs—usually customers or competitors—face different thresholds for court dismissal than the FTC or DOJ. For instance, competitors must prove both that the merger violates antitrust law and that its alleged harm is anticompetitive (e.g., predatory pricing practices; see the US Supreme Court’s decisions in *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.* and *Cargill, Inc. v. Monfort of Colorado, Inc.*). Private litigation is further limited by the nature of the markets impacted by intangible-intensive consolidations, like those in undeveloped product markets. Indeed, all of the court complaints in our sample include allegations of anticompetitive harm in either existing product markets or those with sophisticated customers. Given the United States relies on a combination of public and private enforcement ([Baer \(2014\)](#)), when private enforcement faces legal constraints or when no private enforcers intervene, anticompetitive acquisitions will likely go unchecked.⁴⁵

B. Estimated Antitrust Enforcement Effects

We next provide back-of-envelope calculations of the effect of an alternative treatment that requires firms to include intangible assets in their calculations for the SoP test. Such a rule change would increase the number of reportable mergers as well as the compliance costs to firms and enforcement costs to the DOJ and FTC. Furthermore, it could also deter M&As with increased antitrust costs and enforcement risk. We estimate the magnitudes of these effects in our setting and consider how such a change may impact firms’ incentives to manipulate deals to avoid premerger review. We also consider a recent change to accounting standards to understand the prevalence of manipulation around the threshold.

⁴⁵Despite these frictions, the deterrence effects from enforcement that we estimate are likely lower bounds for two reasons. First, deals are often abandoned after a Second Request is issued but before the FTC or DOJ file a legal complaint ([Billman and Salop \(2023\)](#)). Second, even after receiving a legal complaint, firms typically choose to resolve the issue before litigation commences. Indeed, from 2001 to 2020, only 26 of the 441 legal complaints by the FTC or DOJ resulted in a court decision ([Billman and Salop \(2023\)](#)).

B.1. Enforcement Costs

To compute our back-of-envelope calculation, we begin with the 263 deals we estimate would be reportable if intangible assets were included in the SoP test (Figure 4). However, 44% of those new filings would involve nonhorizontal deals (Table I, Panel B), which are unlikely to receive a Second Request. The costs to enforcement agencies for reviews that do not require a Second Request are minimal (i.e., less than the filing fees; [Wollmann \(2024\)](#)). Thus, most of the premerger-review enforcement costs would come from the increase in reported horizontal deals, which constitute 55% of reportable deals. Based on these amounts, recognizing intangible assets in the SoP test would increase the number of horizontal deals by 145 each year. We expect that 40% of these deals would be granted an early termination of the premerger review (see Internet Appendix Table IA.IV). Therefore, an additional 90 horizontal deals (i.e., 60% of the 145 deals) would be reviewed each year if intangible assets were included in the SoP test.

Of these 90 additional deals, roughly 6% (five or six) would likely result in a Second Request, assuming a proportional increase in Second Requests (see Section I.A). Thus, at an estimated cost per Second Request investigation of \$163,000 to \$215,000 ([Wollmann \(2024\)](#)), recognizing intangibles in the SoP test would cost the agencies an estimated additional \$815,000 to \$1,075,000 each year (a 2.6% to 3.5% increase in total enforcement costs of \$31 million to \$41 million). When we include the expected effects of deterrence (i.e., we estimate that 23 of the 90 additional horizontal deals would not occur if managers knew the deal would not pass antitrust review; see Section IX of the Internet Appendix), our estimates decrease to \$652,000 to \$860,000 (2.1% to 2.8% of annual enforcement costs).

An important caveat to these estimates is that the capacity constraints of antitrust authorities may limit the agencies from allocating enforcement effort to challenging large M&A deals that meet statutory reporting thresholds. An increase in reportable mergers from including intangibles in the SoP test could further strain these resources. Such an increase in reportable deals could even relax the scrutiny of other enforcement efforts to substitute re-

sources in scrutinizing additional reportable deals. Thus, an increase in reportable deals may not necessarily lead to a proportional increase in Second Requests or subsequent litigation.

B.2. Incentives to Manipulate Deals to Avoid Enforcement

While including intangibles in the SoP test would likely increase the number of deals subject to premerger review, doing so could also alter firms' incentives to manipulate deal terms to sidestep review. In line with this kind of manipulation, [Kepler, Naiker, and Stewart \(2023\)](#) find a 45% higher-than-expected number of deals just below the lower deal-size threshold. Applying this magnitude to our estimates of the 90 annual horizontal mergers that our analysis suggests would become reportable, 41 would continue to avoid reporting via manipulation.

In terms of managers' incentives to avoid reviews, they may prefer that deals be nonreportable if they believe that antitrust authorities block deals that are not anticompetitive. However, our collective results on higher markups, project discontinuation, and private litigation are more indicative of nonreportable deals increasing firms' market power rather than avoiding an imperfect antitrust authority. Another explanation could be that managers want to avoid reviews because reviews increase deal termination or renegotiation risk, which is costly to acquirers. However, cancellations and renegotiations are rare (3.9% and 3.1% of all deals, respectively), and only 0.2% of these deals cite "antitrust authority concern" as the reason for cancellation or termination (see Internet Appendix Table IA.XIII).

B.3. Changes to Accounting Standards

To better understand managers' incentives to manipulate around the SoP thresholds, we examine how firms respond to changes in accounting standards that shift some deals from nonreportable to reportable. Given that the SoP test uses the book value of assets to determine premerger review requirements, any change that moves assets to the balance sheet could shift deals to being reportable. For deals with anticompetitive implications, such a

shift would heighten the risk of antitrust enforcement solely because the deal would become reportable. If firms internalize these costs, we expect such a change to an accounting standard would influence the decision to acquire or the timing of deals. Consistent with such patterns, we find a 50% increase in the proportion of nonreportable deals shortly after an accounting standard that moved leases onto firms' balance sheets was announced but before its adoption (see Internet Appendix Section X). We also find that the increase is driven by target firms that, if operating leases had been recognized on the balance sheet, would have shifted from nonreportable to reportable. These results further support the view that requiring firms to include intangible capital in the SoP test would result in additional avoidance strategies by managers.

VI. Conclusion

We find that the use of antitrust screening criteria that rely on accounting information leads to thousands of M&A transactions being nonreportable to antitrust authorities, despite these deals being otherwise similar to reportable deals. These nonreportable deals consolidate product markets in intangible capital-intensive industries that antitrust authorities have expressed particular concerns over (e.g., technology and pharmaceutical markets), as these deals often involve the acquisition of brands, patented technology, and in-process R&D that lead to anticompetitive behavior for a significant fraction of deals. We find that acquirers and their rivals benefit from nonreportable deals in terms of higher equity values and product markups. Furthermore, we find that nonreportable deals in the pharmaceutical industry are more likely to involve overlapping projects that are subsequently discontinued.

Our findings have policy implications. Given antitrust authorities' reliance on screening thresholds, accounting standards can influence the types of deals that avoid ex ante merger review and thus impact market structure. In this regard, our study suggests that enforcement agencies' concerns about the limitations set by premerger-review thresholds may

be warranted. We add to this debate by showing that industries that are more intangible-intensive are more likely to consolidate, increasing firms' market power but going undetected by antitrust authorities. Overall, our study suggests that the continued growth of intangible assets may exacerbate market consolidation in the sectors that are of most concern for consumers.

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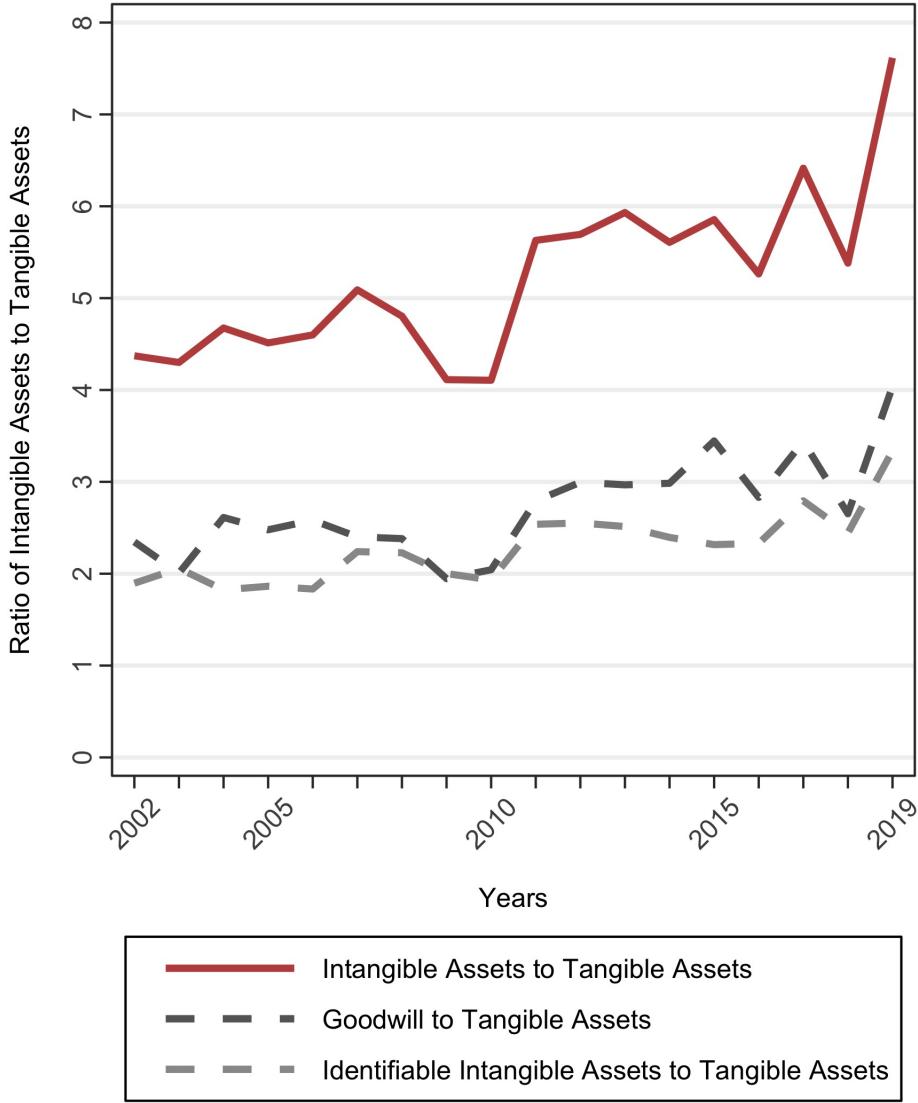


Figure 1. Ratio of acquired intangible assets to tangible assets. This figure displays the ratio of acquired intangible assets to tangible assets from 2002 through 2019. The red line depicts the ratio of identifiable intangible assets plus goodwill, all scaled by tangible assets. The dashed lines depict goodwill scaled by tangible assets (dark gray) and identifiable intangible assets scaled by tangible assets (light gray). We use a sample of 11,436 unique observations that comprise M&As conducted by US publicly traded acquirers and represent \$8.8 trillion in total acquired assets. For the purpose of our study, we narrow our focus to 1,918 deals that are subject to the size-of-person test, as depicted in Figure 3. Our measure of intangible assets is identifiable intangible assets plus goodwill, and our measure of tangible assets is the sum of all tangible assets. We obtain values for each type of asset from the purchase price allocation (PPA) disclosed in acquirers' 10-K SEC filings, found on EDGAR at www.SEC.gov. An example of the PPA disclosure is found in Internet Appendix Section IV.

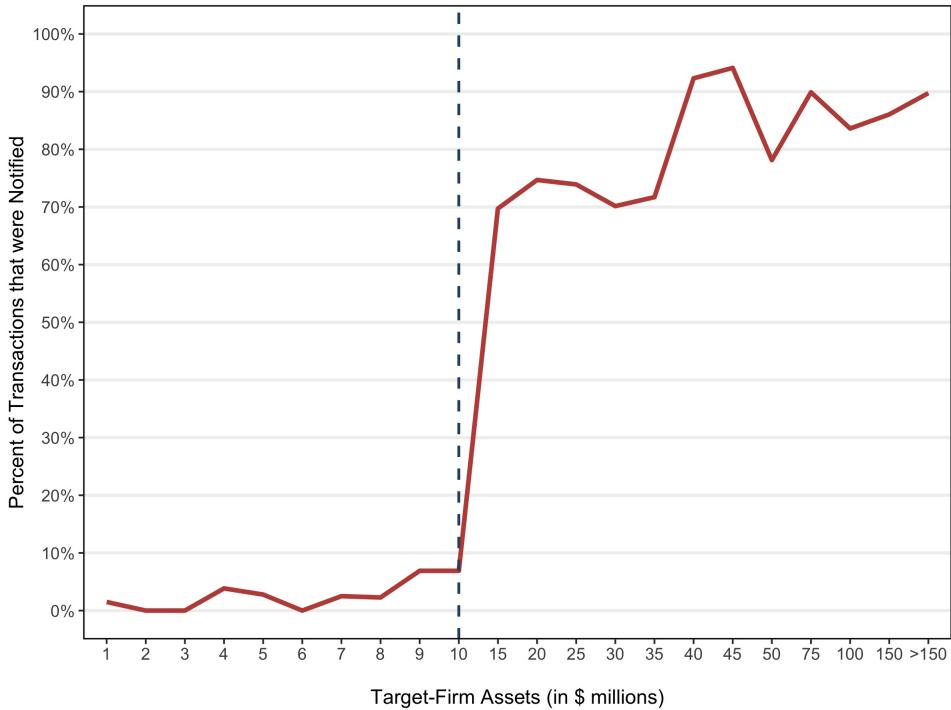


Figure 2. Percent of transactions that were notified. This figure displays the percent of transactions that triggered premerger notifications under the size-of-person test, covering filing years 2001 through 2019. Transactions are grouped by the target firm's tangible asset value (in millions of 2005 dollars). The vertical dashed line at \$10 million marks the asset threshold (for the filing year ending on 2005) below which transactions are not required to file a premerger notification. Data on premerger notifications are manually collected from public corporate filings available on the US SEC's EDGAR database (www.sec.gov) and supplemented with internet searches. Internet Appendix Section III provides our method for identifying whether the FTC and DOJ were notified.

Panel A. Rules of Premerger Notification for Size of Transaction and Size of Person Tests

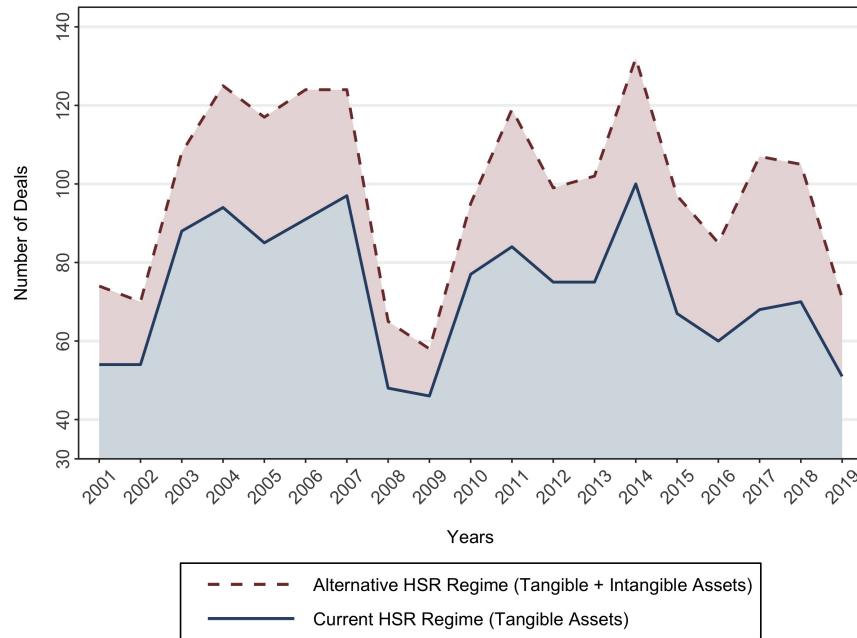


Panel B. Lower and Upper and Deal-Size Thresholds (by year) and Size of Person Asset Threshold (by year)

Reporting Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Size of Transaction Lower Threshold (\$ mm)	50.0	50.0	50.0	50.0	53.1	56.7	59.8	63.1	65.2	63.4	66.0	68.2	70.9	75.9	76.3	78.2	80.8	84.4	90.0
Size of Transaction Upper Threshold (\$ mm)	200.0	200.0	200.0	200.0	212.3	226.8	239.2	252.3	260.7	253.7	263.8	272.8	283.6	303.4	305.1	312.6	323.0	337.6	359.9
Size of Person Asset Threshold (\$ mm)	10.0	10.0	10.0	10.0	10.7	11.3	12.0	12.6	13.0	12.7	13.2	13.6	14.2	15.2	15.3	15.6	16.2	16.9	18.0
Effective Date	Feb 1, 2001	Feb 1, 2002	Feb 1, 2003	Feb 1, 2004	Mar 2, 2005	Feb 17, 2006	Feb 21, 2007	Feb 28, 2008	Feb 12, 2009	Feb 22, 2010	Feb 24, 2011	Feb 27, 2012	Feb 11, 2013	Feb 24, 2014	Feb 20, 2015	Feb 25, 2016	Feb 27, 2017	Feb 28, 2018	Apr 3, 2019

Figure 3. Notification thresholds. The Hart-Scott-Rodino Act established the federal premerger notification program, which provides the FTC and the DOJ with information about M&A deals before they become effective. This figure depicts the premerger notification rules and threshold values used to determine whether a merger is subject to or exempt from notification. Panel A depicts the premerger notification rules, as they relate to the size-of-transaction and size-of-person tests. Panel B depicts the values (in \$ millions) by year for the lower and upper size-of-transaction thresholds and the size-of-person threshold.

Panel A. Within-sample analysis



Panel B. Market-level analysis

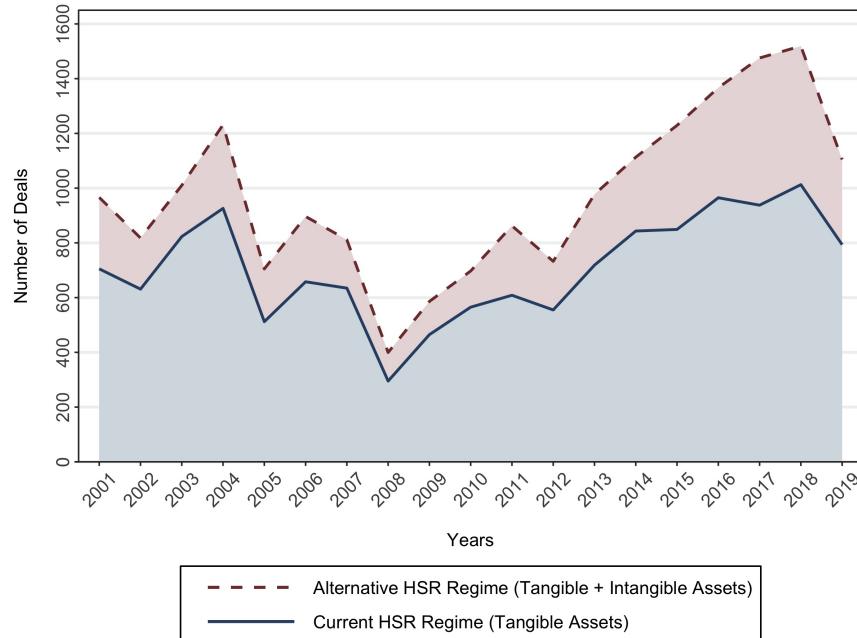
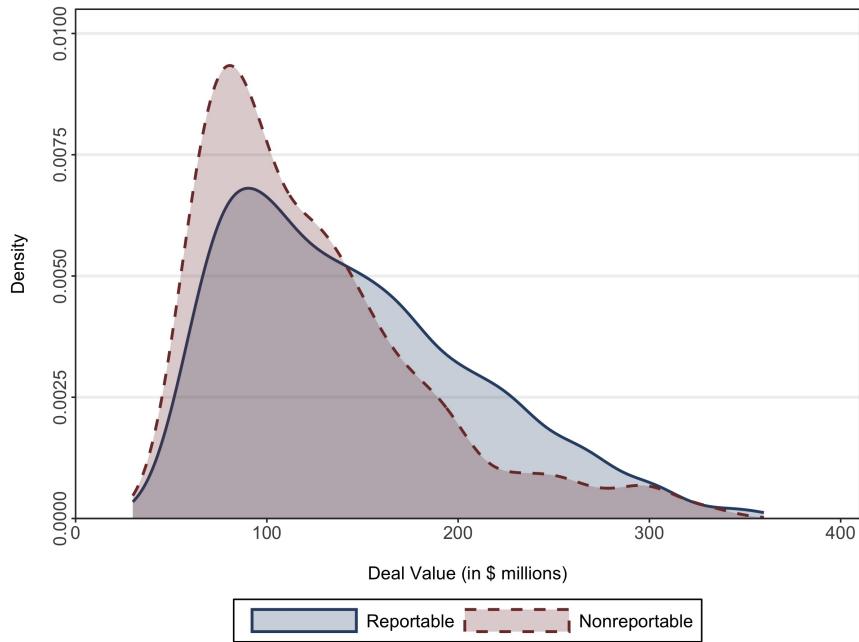


Figure 4. Trends in reported deals. This figure displays the number of deals reported to antitrust authorities when only tangible assets are included in the size-of-person test (in blue) and the number of deals that would be reportable if both tangible and identifiable intangible assets were included in the SOP test (in red). In Panel A, we present the current HSR regime (blue) and the counterfactual regime (red) for only our sample of deals. In Panel B, we present the current HSR regime (blue) using data from HSR annual reports and then estimate the counterfactual HSR regime (red) using red-to-blue proportions obtained from Panel A.

Panel A. Distribution of deal values for nonreportable and reportable M&A



Panel B. Distribution of intangibles for nonreportable and reportable M&A

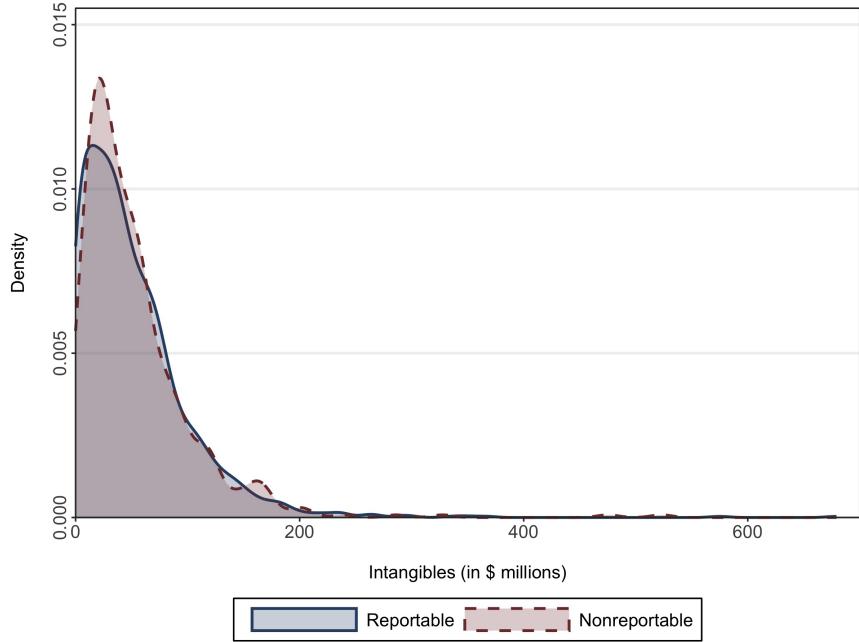


Figure 5. Distribution of deals: Nonreportable versus reportable. This figure graphically displays the distribution of nonreportable versus reportable deals. In Panel A, we present the distribution of deal values for nonreportable and reportable M&As. Deal values presented exclude the value of equity in the target held by the acquirer before the deal is announced (i.e., the “toehold”). We explain this calculation in Internet Appendix Section II. This adjustment shifts 22 deals at the lower end of the deal-value distribution from below to above the lower size-of-transaction threshold. In Panel B, we present the distribution of identifiable intangible asset values for nonreportable and reportable M&As.

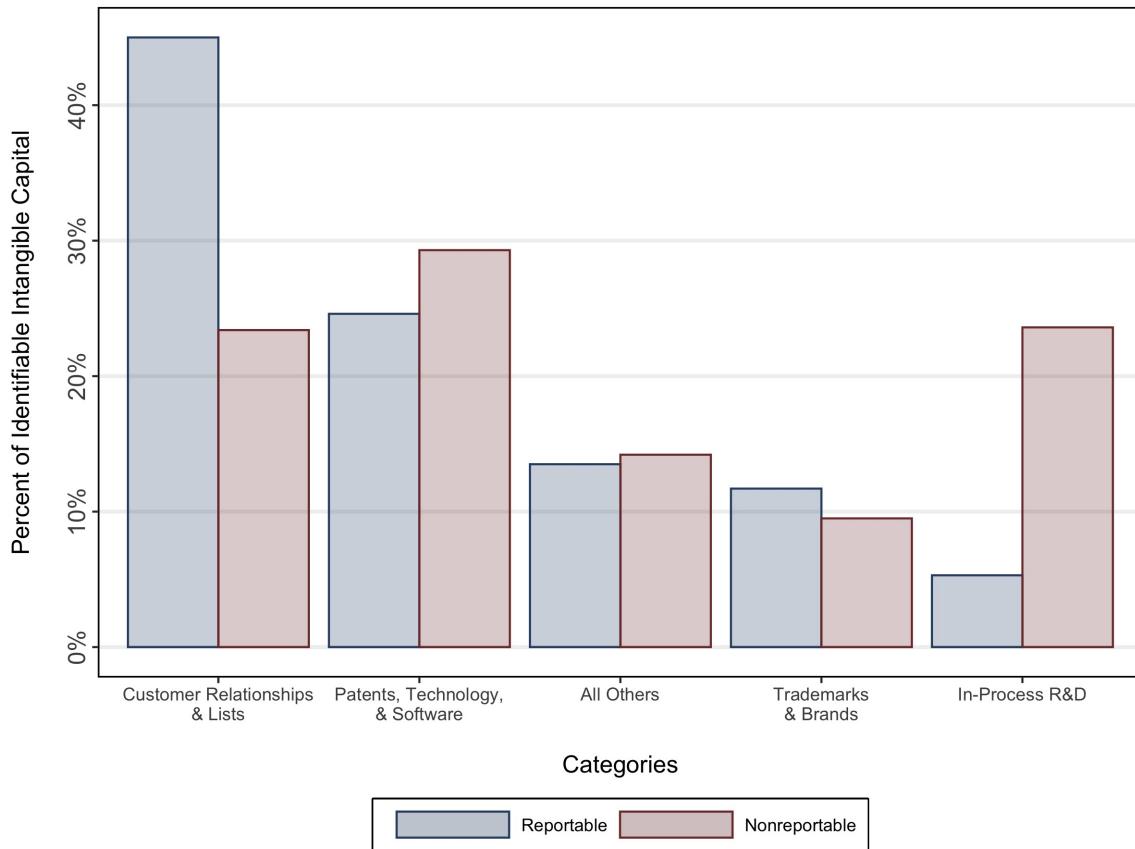


Figure 6. Categories of intangibles. This figure displays, by reportable versus nonreportable, the percent of total identifiable intangibles that each category represents. We display the top four categories separately and aggregate the remaining 18 categories into “All Others.” See Panel B of Table II for the complete list of categories.

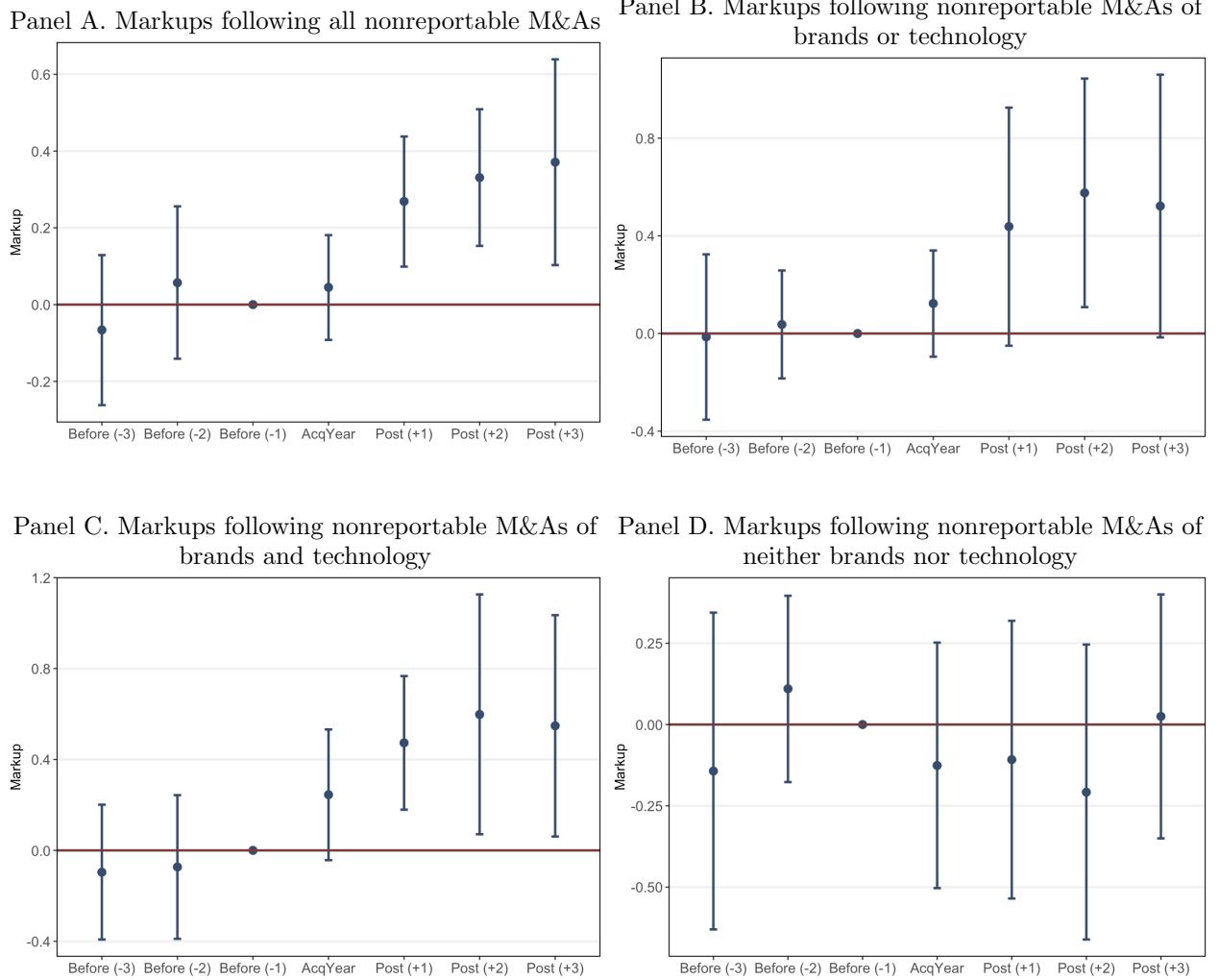


Figure 7. Markups following nonreportable deals. This figure graphically displays the evolution of markups before and after acquisitions that consolidate developed product markets. In Panel A, the figure presents coefficients from column (4) of Panel A in Table V. In Panel B, the figure presents coefficients from column (2) of Panel B in Table V. In Panel C, the figure presents coefficients from column (4) of Panel B in Table V. In Panel D, the figure presents coefficients from column (6) of Panel B in Table V. Coefficients correspond to the following interaction terms in the model: $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post} (+3)$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post} (+2)$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post} (+1)$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{AcqYear}$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post} (-1)$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Before} (-2)$, and $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Before} (-3)$. Our exclusion year is $\text{Before} (-1)$.

Table I
Descriptive Statistics

This table presents descriptive statistics for our sample of reportable and nonreportable deals from February 2001 through February 2020. A deal is classified as reportable if its total assets are greater than the SoP threshold in that reporting year. A deal is classified as nonreportable if its total assets are less than or equal to the SoP asset threshold in that reporting year but has not been reviewed by the FTC or DOJ. In Panel A, we present descriptive statistics separately for reportable and nonreportable deals. In Panel B, we present descriptive statistics by industry (sorted by total deal value) for only nonreportable horizontal deals. In Panel C, we present the mean percent of tangible assets, intangible assets, and goodwill for reportable and nonreportable horizontal deals. *, **, *** represent significance at the 10%, 5%, and 1% level, respectively.

Panel A. Reportable versus Nonreportable M&As			
	Reportable	Nonreportable	Difference
Type of M&A			
Horizontal (3-digit NAICS)	766 (55.2%)	219 (56.6%)	-1.0%
Nonhorizontal	621 (44.8%)	168 (43.4%)	1.0%
Average deal value (in \$ millions)			
Horizontal (3-digit NAICS)	\$143.5	\$121.3	\$22.2***
Nonhorizontal	\$148.1	\$122.1	\$26.0***
Panel B. Nonreportable Horizontal M&As (by total deal value)			
Industry	Horizontal M&As (Nonreportable)	Value (in \$ billions)	
Computer and Electronic Product Manufacturing	107 (48.8%)	\$11.83	
Chemical Manufacturing	62 (28.3%)	\$8.72	
Professional, Scientific, and Technical Services	17 (7.80%)	\$2.11	
Machinery Manufacturing	10 (4.60%)	\$1.62	
Telecommunications	8 (3.70%)	\$0.71	
Food and Kindred Products	5 (2.30%)	\$0.57	
Publishing Industries (except Internet)	4 (1.80%)	\$0.45	
Communications	5 (2.30%)	\$0.44	
Hospitals	1 (0.50%)	\$0.12	
Utilities	0 (0.00%)	\$0.00	
Transportation Equipment	0 (0.00%)	\$0.00	
Health Services	0 (0.00%)	\$0.00	
Merchant Wholesales, Nondurable Goods	0 (0.00%)	\$0.00	
Total	219 (100%)	\$26.56	
Panel C: Tangible Assets, Intangibles, and Goodwill of Horizontal M&As			
	Reportable	Nonreportable	Difference
Horizontal M&As			
Tangible assets	35.5%	6.7%	28.8%***
Intangibles	27.7%	46.8%	-19.1%***
Goodwill	36.8%	46.4%	-9.6%***
Total	100%	100%	

Table II
Categories of Intangibles

This table presents results of the analysis of categories of intangibles. In Panel A, we present the frequency of intangibles in our sample. In Panel B, we present the amounts (in \$ millions) and percents for all categories of identifiable intangible assets in our sample. In Panel C, we present results for difference-in-means tests by category for reportable and nonreportable deals. *, **, *** represent significance at the 10%, 5%, and 1% level, respectively.

Panel A. Frequency of Intangibles in M&A		
Description	Observations	
No intangibles	108	
Intangibles (not disaggregated)	410	
Intangibles (disaggregated by category)	1,400	
Total	1,918	

Panel B. Economic Importance by Category of Intangible		
Category	Amount(\$ millions)	Percent
Customer Relationships & Lists	\$30,491.91	38.7%
Patents, Technology, & Software	\$19,808.12	25.1%
Trademarks & Brands	\$8,906.38	11.3%
In-Process R&D	\$7,663.93	9.7%
Licenses	\$3,212.06	4.1%
Product Rights	\$3,036.69	3.9%
Distribution Agreements	\$1,242.37	1.6%
Power Purchase Agreements	\$628.67	0.8%
Other Intangibles	\$627.16	0.8%
Non-Compete Agreements	\$513.91	0.7%
Mineral Interests	\$475.20	0.6%
Usage Rights	\$391.00	0.5%
Franchise Rights	\$325.60	0.4%
Databases	\$272.60	0.3%
Lease Intangibles	\$247.96	0.3%
Supplier Agreements	\$163.03	0.2%
Maintenance Contracts	\$122.20	0.2%
Management Agreements	\$103.10	0.1%
Pipeline Capacity Rights	\$87.60	0.1%
Other Contract Rights	\$66.90	0.1%
Assembled Workforce	\$50.80	0.1%
Royalty Agreements	\$4.90	0.0%
Total	\$78,760.16	100.0%

Panel C. Difference-in-Means Tests (by Category) for Reportable versus Nonreportable M&A			
Category	Mean(\$ millions) Reportable	Mean(\$ millions) Nonreportable	Difference
Customer Relationships & Lists	\$25.19	\$12.04	\$13.15***
Patents, Technology, & Software	\$13.78	\$15.05	-\$1.27
Trademarks & Brands	\$ 6.54	\$ 4.88	\$1.66*
In-Process R&D	\$ 2.94	\$12.14	-\$9.20***

Table III
Deal Premiums and Nonreportable M&As

This table presents results from ordinary least squares (OLS) regressions of deal premiums on an indicator for whether the deal was reportable or nonreportable to the antitrust regulators. The main variable of interest in columns (1) and (3), *Nonreportable*, is an indicator that assumes the value of one if the target firm's assets are below the size-of-person asset threshold, and zero otherwise. The main variable of interest in columns (2) and (4), *Nonreportable* \times *ProductMarketOverlap*, is an interaction term that assumes the value of one when the acquirer and the target firm share overlapping product markets in a nonreportable deal, and zero otherwise. Across all columns, the dependent variable, *DealPremium*, is a continuous variable that captures the proportion of the acquired equity that is allocated to goodwill. All variables are described in Internet Appendix Section VI. We vary the inclusion of fixed effects as follows. In columns (1) and (2), we include filing-year and acquirer-industry fixed effects, respectively. In columns (3) and (4), we include filing-year and firm (i.e., acquirer) fixed effects. *DealPremium* is winsorized at the 1% and 99% levels. Per prior research (e.g., Dong et al., 2006), we exclude deals when the deal premium is larger than 200%. Robust *t*-statistics are reported in parentheses and calculated using standard errors clustered at the filing-year and the acquirer's industry level, respectively. *, **, *** represent significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable:	(1) <i>DealPremium</i>	(2) <i>DealPremium</i>	(3) <i>DealPremium</i>	(4) <i>DealPremium</i>
<i>Nonreportable</i>	0.099*** (3.16)	0.084** (2.45)	0.060* (1.86)	0.046 (1.34)
<i>ProductMarketOverlap</i>		-0.047* (-2.15)		-0.039 (-1.19)
<i>Nonreportable</i> \times <i>ProductMarketOverlap</i>		0.049* (1.91)		0.051*** (4.52)
Observations	1,663	1,663	707	707
Adjusted <i>R</i> ²	0.151	0.155	0.481	0.482
Filing-Year F/E	Y	Y	Y	Y
Industry F/E	Y	Y	N	N
Firm F/E	N	N	Y	Y

Table IV
Announcement Returns and Nonreportable M&As

This table presents results from OLS regressions of cumulative abnormal returns on an indicator for whether the deal was reportable or nonreportable to the antitrust regulators. In Panel A, the main variable of interest in columns (1) and (3), *Nonreportable*, is an indicator that assumes the value of one if the target firm's assets are below the size-of-person asset threshold, and zero otherwise. The main variable of interest in columns (2) and (4), *Nonreportable* \times *ProductMarketOverlap*, is an interaction term that assumes the value of one when the acquirer and the target firm share overlapping product markets in a nonreportable deal, and zero otherwise. Across all columns, the dependent variable, *AnnReturn*, is a continuous variable that captures the five-day market-adjusted cumulative abnormal returns of the acquirer centered on the announcement date. In Panel B, the main variable of interest in columns (1) and (3), *Nonreportable*, is an indicator that assumes the value of one if the target firm's assets are below the size-of-person asset threshold, and zero otherwise. The main variable of interest in columns (2) and (4), *Nonreportable* \times *ProductMarketOverlap*, is an interaction term that assumes the value of one when the acquirer and the target firm share overlapping product markets in a nonreportable deal, and zero otherwise. Across all columns, the dependent variable, *RivalReturns*, is a continuous variable that captures the five-day market-adjusted cumulative abnormal return, centered on the announcement date, of the industry rivals of the acquirer. Acquirer- and deal-level control variables included, but reported in Internet Appendix Table IA.VI, in the estimations in Panel A are *AllCash*, *AllStock*, *DealPremium*, *DealSize*, *FreeCashFlow*, *Leverage*, *PublicTarget*, *RelativeSize*, *Q*, and *Size*. In Panel B, we control for *DealPremium*. All variables are described in Internet Appendix Section VI. In Panels A and B, we vary the inclusion of fixed effects as follows. In columns (1) and (2), we include filing-year and acquirer-industry fixed effects. In columns (3) and (4), we include filing-year and firm (i.e., acquirer) fixed effects. *AnnReturn* and *RivalReturns* are winsorized at the 1% and 99% levels. Robust *t*-statistics are reported in parentheses and calculated using standard errors clustered at the filing-year and acquirer-industry level, respectively. *, **, *** represent significance at the 10%, 5%, and 1% level, respectively.

Panel A. Acquirer's Announcement Returns				
Dependent Variable:	(1) <i>AnnReturn</i>	(2) <i>AnnReturn</i>	(3) <i>AnnReturn</i>	(4) <i>AnnReturn</i>
<i>Nonreportable</i>	-0.002 (-0.31)	-0.009 (-1.20)	0.023** (2.95)	0.008 (0.57)
<i>ProductMarketOverlap</i>		0.011* (2.02)		-0.015 (-0.89)
<i>Nonreportable</i> \times <i>ProductMarketOverlap</i>		0.034* (2.00)		0.059** (2.32)
Observations	1,047	1,047	502	502
Adjusted <i>R</i> ²	0.037	0.046	0.186	0.199
Controls	Y	Y	Y	Y
Filing-Year F/E	Y	Y	Y	Y
Industry F/E	Y	Y	N	N
Firm F/E	N	N	Y	Y

Table IV
Announcement Returns and Nonreportable M&As (Continued)

Panel B. Rivals' Announcement Returns				
Dependent Variable:	(1) <i>RivalReturns</i>	(2) <i>RivalReturns</i>	(3) <i>RivalReturns</i>	(4) <i>RivalReturns</i>
<i>Nonreportable</i>	0.005** (2.70)	0.003* (2.00)	-0.001 (-0.15)	-0.002 (-0.73)
<i>ProductMarketOverlap</i>		0.001 (0.65)		-0.003 (-0.89)
<i>Nonreportable</i> \times <i>ProductMarketOverlap</i>		0.008* (2.13)		0.007* (2.16)
<i>DealPremium</i>	-0.002 (-0.60)	-0.002 (-0.62)	0.004 (0.27)	0.003 (0.25)
Observations	998	998	458	458
Adjusted R^2	0.010	0.010	0.032	0.026
Filing-Year F/E	Y	Y	Y	Y
Industry F/E	Y	Y	N	N
Firm F/E	N	N	Y	Y

Table V
Markups and Intangible Capital in Nonreportable M&As

This table presents results from OLS regressions of markups on an triple-interaction term for whether the deal was reportable or nonreportable to the antitrust regulators, whether the acquirer and the target have product markets that overlap, and a time indicator. In Panel A, the main variable of interest in columns (1) and (3), $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post}$, is an indicator that assumes the value of one if the target firm's assets are below the size-of-person asset threshold, the acquirer and the target have product markets that overlap, and the year the markup is measured is the acquisition year (AcqYear) or after, and zero otherwise. The main variables of interest in columns (2) and (4), $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post (+3)}$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post (+2)}$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post (+1)}$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{AcqYear}$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Before (-2)}$, and $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Before (-3)}$, are triple-interaction terms that include a time indicator that takes the value of one if the markup is measured three years after, two years after, the year of, one year after, two years before, or three years before the acquisition, respectively, and zero otherwise. The exclusion year is the year immediately before the acquisition year. In Panel B, the main variable of interest in columns (1), (3), and (5), $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post}$, is an indicator that assumes the value of one if the target firm's assets are below the size-of-person asset threshold, the acquirer and the target have product markets that overlap, and the year the markup is measured is after the acquisition year, and zero otherwise. The main variables of interest in columns (2), (4), and (6), $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post (+3)}$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post (+2)}$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Post (+1)}$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{AcqYear}$, $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Before (-2)}$, and $\text{Nonreportable} \times \text{ProductMarketOverlap} \times \text{Before (-3)}$, are triple-interaction terms that include a time indicator that takes the value of one if the markup is measured three years after, two years after, one year after, the year of, two years before, or three years before the acquisition, respectively, and zero otherwise. Across all columns of Panels A and B, the dependent variable, Markup , is a continuous variable that captures the acquirer's markup. All variables are described in Internet Appendix Section VI. In Panels A and B, across all columns, we include acquisition-year and firm (i.e., acquirer) fixed effects. Markup is winsorized at the 1% and 99% levels. Robust t -statistics are reported in parentheses and calculated using standard errors clustered at the acquisition-year and the acquirer's industry level, respectively. *, **, *** represent significance at the 10%, 5%, and 1% level, respectively. Coefficients not displayed in columns (2) and (4) of Panel A, and columns (2), (4), and (6) of Panel B, are reported in Internet Appendix Table IA.VIII.

Table V
Markups and Intangible Capital in Nonreportable M&As (Continued)

Panel A. Markups following Nonreportable M&As				
Dependent Variable:	(1) <i>Markup</i>	(2) <i>Markup</i>	(3) <i>Markup</i>	(4) <i>Markup</i>
Sample:	<i>Full Sample</i>	<i>Full Sample</i>	<i>Never- or Last-Treated</i>	<i>Never- or Last-Treated</i>
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post</i>	0.244*** (5.48)		0.257*** (5.59)	
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post</i> (+3)		0.352** (2.75)		0.371*** (2.90)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post</i> (+2)			0.321*** (3.96)	0.331*** (3.90)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post</i> (+1)			0.264*** (3.34)	0.269*** (3.32)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>AcqYear</i>		0.041 (0.67)		0.045 (0.68)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Before</i> (-2)		0.060 (0.64)		0.057 (0.61)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Before</i> (-3)		-0.058 (-0.64)		-0.066 (-0.71)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i>	-0.162 (-1.24)	-0.163 (-1.08)	-0.038 (-0.31)	-0.035 (-0.26)
<i>Nonreportable</i> × <i>Post</i>	0.025 (0.43)		0.021 (0.37)	
<i>ProductMarketOverlap</i> × <i>Post</i>	-0.033 (-0.58)		-0.046 (-0.82)	
<i>Nonreportable</i>	0.003 (0.02)	0.023 (0.13)	-0.015 (-0.11)	0.005 (0.03)
<i>ProductMarketOverlap</i>	-0.017 (-0.94)	0.010 (0.45)	-0.054** (-2.49)	-0.031 (-1.36)
<i>Post</i>	-0.012 (-0.26)		-0.008 (-0.17)	
Sample Markup (Mean)	2.284	2.284	2.278	2.278
Observations	6,748	6,748	6,643	6,643
Adjusted <i>R</i> ²	0.886	0.886	0.885	0.884
Acquisition-Year F/E	Y	Y	Y	Y
Firm F/E	Y	Y	Y	Y

Table V
Markups and Intangible Capital in Nonreportable M&As (Continued)

Panel B. Markups and Intangible Capital						
Dependent Variable:	(1) Markup	(2) Markup	(3) Markup	(4) Markup	(5) Markup	(6) Markup
Subsample:	Brand or Tech=1	Brand or Tech=1	Brand & Tech=1	Brand & Tech=1	Brand & Tech=0	Brand & Tech=0
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post</i>	0.407** (2.75)		0.522*** (4.19)		-0.093 (-0.45)	
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post</i> (+3)		0.522* (2.03)		0.548** (2.35)		0.025 (0.14)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post</i> (+2)		0.576** (2.58)		0.598** (2.38)		-0.208 (-0.96)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post</i> (+1)		0.438* (1.88)		0.473*** (3.37)		-0.108 (-0.53)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>AcqYear</i>	0.122 (1.18)		0.245* (1.78)			-0.126 (-0.70)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Before</i> (-2)	0.037 (0.35)		-0.073 (-0.49)			0.110 (0.80)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Before</i> (-3)	-0.015 (-0.09)		-0.100 (-0.67)			-0.143 (-0.61)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i>	-0.164 (-1.20)	-0.171 (-1.12)	0.172 (1.19)	0.228* (1.79)	0.488 (0.95)	0.499 (0.94)
<i>Nonreportable</i> × <i>Post</i>	-0.049 (-0.64)		-0.070 (-0.52)		0.193 (1.03)	
<i>ProductMarketOverlap</i> × <i>Post</i>	-0.013 (-0.20)		-0.151** (-2.10)		-0.102 (-1.02)	
<i>Nonreportable</i>	-0.032 (-0.23)	-0.016 (-0.08)	-0.115 (-1.27)	-0.165* (-1.94)	-0.383 (-1.08)	-0.360 (-1.14)
<i>ProductMarketOverlap</i>	0.020 (0.55)	0.060 (1.04)	0.049 (0.79)	0.068 (1.38)	-0.023 (-0.22)	-0.024 (-0.25)
<i>Post</i>	-0.042 (-0.80)		0.029 (0.35)		0.050 (0.73)	
Observations	4,207	4,207	2,100	2,100	2,436	2,436
Adjusted <i>R</i> ²	0.900	0.900	0.900	0.898	0.871	0.870
Never- or Last-Treated Sample	Y	Y	Y	Y	Y	Y
Acquisition-Year F/E	Y	Y	Y	Y	Y	Y
Firm F/E	Y	Y	Y	Y	Y	Y

Table VI
Overlapping Pharmaceutical Projects and Nonreportable M&As

This table presents results from OLS regressions of pharmaceutical projects on an indicator for whether the deal was reportable or nonreportable to the antitrust regulators. The main variable of interest in Panel A, *Nonreportable*, is an indicator that assumes the value of one if the target firm's assets are below the size-of-person asset threshold, and zero otherwise. In Panel B, the main variable interest in columns (1) to (3) is *Nonreportable*; in columns (4) and (5), it is the interaction term *Nonreportable* \times *EconImportance*. In column (4), *EconImportance* assumes the value of one if the target's drug project is in Phase 3 of trials, and zero otherwise, and in column (5), *EconImportance* assumes the value of one if there are three or fewer competitors developing an overlapping drug that matches the target's project, and zero otherwise. The main variable of interest in Panel C, *Nonreportable* \times *AcquiredProject*, is an interaction term that assumes the value of one when an overlapping project is acquired in a nonreportable deal, and zero otherwise. In columns (1) and (2) of Panel A, the dependent variable, *Pr(ProjectOverlap)*, is an indicator variable that assumes the value of one if the target firm and the acquiring firm have at least one drug development project that directly overlaps, and zero otherwise. In columns (3) and (4) of Panel A, the dependent variable, *ProjectOverlap*, is a continuous variable that measures the proportion of the target firm's drug development projects that overlap with the acquirer's drug development projects. In all columns of Panels B and C, the dependent variable, *ProjectDisc'd*, is an indicator that assumes the value of one if a drug project is discontinued after the acquisition date. All variables are described in Internet Appendix Section VI. For both Panels A and B, we vary the inclusion of fixed effects as follows. In columns (1) and (3) of Panel A, we exclude filing-year fixed effects, and in columns (2) and (4), we include filing-year fixed effects. In column (1) of Panel B, we exclude fixed effects, in columns (2) we include TC fixed effects, and in column (3), we include TC and filing-year fixed effects, respectively. For Panel C, we vary the fixed effects structure across columns. We also vary the inclusion of our control variables, for example, we include control variables in columns (2), (4), (6), and (8). Control variables included in the estimations in Panel C but not reported are *Size*, *Sales*, *Leverage*, *EBITDA/Assets*, *Cash/Assets*, *CashFlow/Assets*, *R&D*, and *Q*. Robust *t*-statistics are reported in parentheses and calculated using standard errors clustered at the filing-year level. *, **, *** represent significance at the 10%, 5%, and 1% level, respectively.

Panel A. Overlapping Projects					
Dependent Variable:	(1) <i>Pr(ProjectOverlap)</i>	(2) <i>Pr(ProjectOverlap)</i>	(3) <i>ProjectOverlap</i>	(4) <i>ProjectOverlap</i>	
<i>Nonreportable</i>	0.082** (2.26)	0.073* (2.05)	0.015** (2.75)		0.012** (2.68)
Observations	169	169	169		169
Adjusted <i>R</i> ²	0.016	0.051	0.045		0.051
Filing-Year F/E	N	Y	N		Y

Panel B. Drug Project-Level Development and Competition					
Dependent Variable:	(1) <i>ProjectDisc'd</i>	(2) <i>ProjectDisc'd</i>	(3) <i>ProjectDisc'd</i>	(4) <i>ProjectDisc'd</i>	(5) <i>ProjectDisc'd</i>
<i>EconImportance</i> :				<i>Phase 3 Trials</i>	<i>High Market Concentration</i>
<i>Nonreportable</i>	0.148** (2.92)	0.332** (2.39)	0.595* (2.29)	0.597* (2.25)	0.306 (1.07)
<i>EconImportance</i>				0.042 (0.61)	-0.088*** (-6.10)
<i>Nonreportable</i> \times <i>EconImportance</i>				0.643*** (9.44)	0.686*** (20.33)
Observations	210	210	210	210	210
Adjusted <i>R</i> ²	0.016	0.044	0.088	0.097	0.121
Therapeutic Class F/E	N	Y	Y	Y	Y
Filing-Year F/E	N	N	Y	Y	Y

Table VI
Overlapping Pharmaceutical Projects and Nonreportable M&As (Continued)

Panel C. Drug Project-Level Development								
Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Nonreportable</i> × <i>AcquiredProject</i>	0.161*** (3.51)	0.331** (2.26)	0.235*** (4.60)	0.414** (2.82)	0.216*** (4.31)	0.361** (2.52)	0.282*** (6.44)	0.366* (2.08)
<i>Nonreportable</i>	-0.013 (-0.38)	-0.026 (-0.79)	0.000 (0.00)	-0.007 (-0.23)	-0.043 (-0.87)	-0.026 (-1.25)	-0.002 (-0.05)	-0.018 (-0.64)
<i>AcquiredProject</i>	0.209*** (4.76)	0.058 (0.41)	0.200*** (4.17)	0.028 (0.19)	0.190*** (4.15)	0.074 (0.52)	0.137*** (3.40)	0.074 (0.42)
Observations	3,504	2,541	3,504	2,541	3,504	2,541	2,658	2,003
Adjusted <i>R</i> ²	0.038	0.065	0.043	0.073	0.071	0.104	0.265	0.328
Controls	N	Y	N	Y	N	Y	N	Y
Therapeutic Class F/E	N	N	Y	Y	Y	Y	N	N
Filing-Year F/E	N	N	N	N	Y	Y	Y	Y
TC-by-MOA F/E	N	N	N	N	N	N	Y	Y

Internet Appendix for “Competition Enforcement and Accounting for Intangible Capital”

JOHN D. KEPLER, CHARLES G. MCCLURE, and CHRISTOPHER R. STEWART*

This appendix contains additional analyses and details referenced in our paper and is organized as follows:

- Section I: Examples of FTC Correspondence
- Section II: Process to Determine Total Value Held by Acquirer
- Section III: Process to Determine Premerger Notifications
- Section IV: Purchase Price Allocation Collection
- Section V: Categories of Intangibles
- Section VI: Variable Descriptions
- Section VII: Intangibles in Public and Private Litigation
- Section VIII: Litigation
- Section IX: Deterrence Effects
- Section X: Changes to Accounting Standards
- Figure IA.1: Premerger Exemptions and Notifications
- Figure IA.2: Markups following Nonreportable M&As (nine-year window)
- Table IA.I: Fair Value versus Estimated Value of Intangible Capital
- Table IA.II: Second Requests
- Table IA.III: Sample Construction and Distribution
- Table IA.IV: Early Terminations
- Table IA.V: Degree of Intangible Assets
- Table IA.VI: Acquirer’s Announcement Returns
- Table IA.VII: Acquirer’s Announcement Returns and Intangible Capital

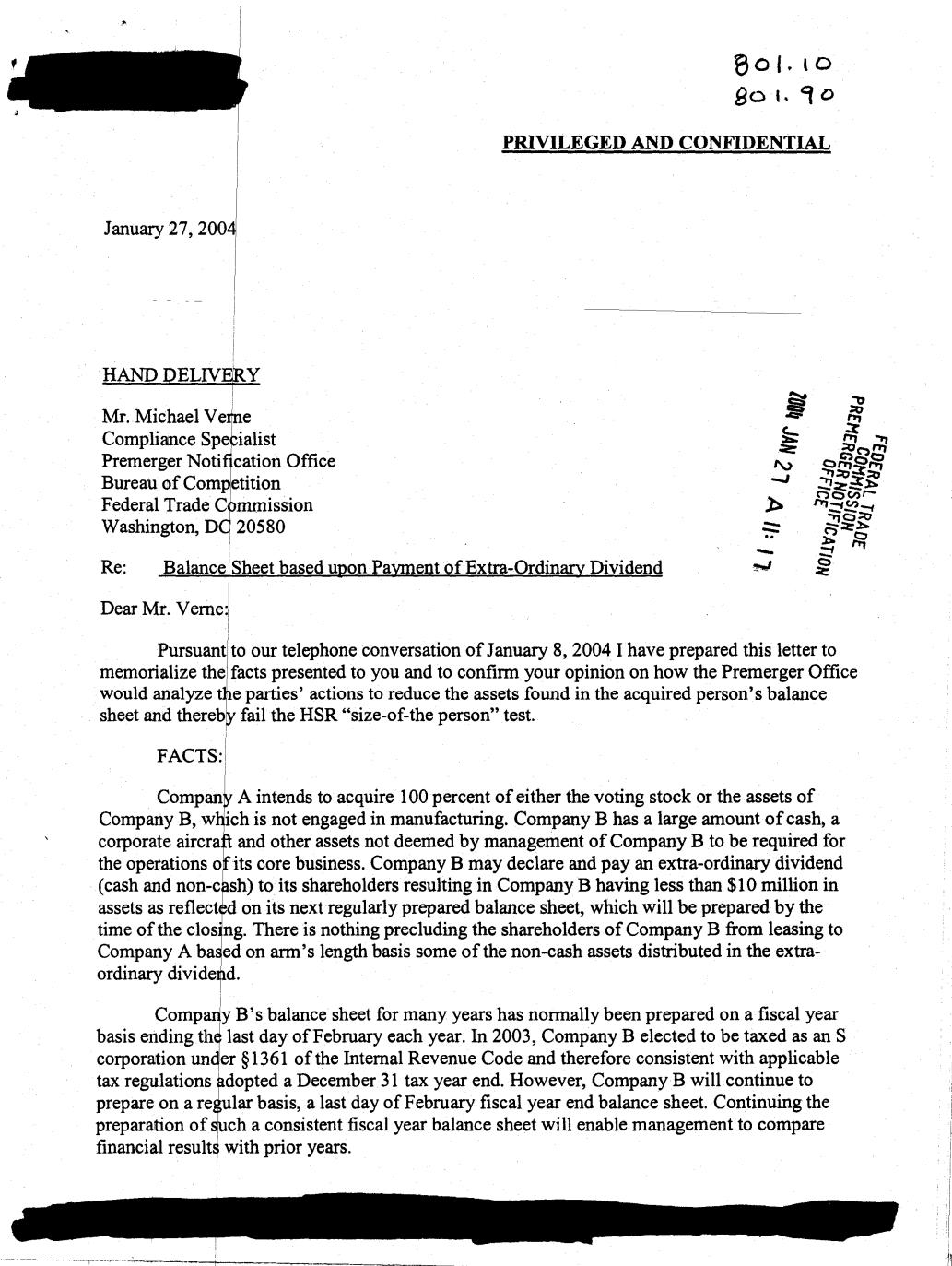
*Citation format: Kepler, John, Charles McClure, and Christopher Stewart, Internet Appendix for “Competition Enforcement and Accounting for Intangible Capital,” Journal of Finance [DOI STRING]. Please note: Wiley is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries (other than missing material) should be directed to the authors of the article.

- Table IA.VIII: Markups following Nonreportable M&As (seven-year window)
- Table IA.IX: Markups and Relative Size
- Table IA.X: Quality of Nonreportable Acquisitions
- Table IA.XI: Nonreportable Pharmaceutical M&As
- Table IA.XII: Second Requests and Pull-and-Refils
- Table IA.XIII: Deal Termination and Renegotiation Risk

I. Examples of FTC Correspondence

This section of the Internet Appendix contains two correspondences between representatives of merging parties and the FTC. The correspondences concern two unrelated deals. The first correspondence is a letter to the FTC. The second is an email to the FTC. Correspondences were obtained from the FTC's publicly available records.

Sample correspondence No. 1 (January 27, 2004)



ANALYSIS:

For a proposed transaction valued in excess of \$50 million and up to and including \$200 million to be reportable under the HSR Act, the parties to the proposed transaction must meet the "size-of-person" test. In this regard, if an acquiring person has over \$100 million in assets or sales and it intends to acquire the voting stock or assets of a person not engaged in manufacturing, the acquired person must have at least \$10 million in assets as shown on its last regularly prepared balance sheet. Opinion number 195 of the Premerger Notification and Practice Manual (2003 edition) provides a question submitted to the Premerger Notification Office ("PNO") inquiring whether a problem arises where shortly before it is to be acquired the acquired person "declares an extraordinary (and accelerated) dividend that reduces its size below \$10 million on its next regularly prepared balance sheet, which is prepared by the time of closing".

The PNO analysis in Opinion 195 states that it does not view this as a device for avoidance and that the HSR rules of practice instructs that the size of a person is to be determined by referring to its financial statements prepared in accordance with the accounting principles normally used; and, if the statements have been prepared on a regularly prepared basis in accordance with the person's normal accounting practices and show that the person does not satisfy the relevant size-of-person test the proposed transaction would not be reportable.

DISCUSSION:

In our conversation, I noted that the PNO's analysis in opinion 195 reverses the viewpoint presented previously in opinion number 215 published in the 1991 edition of the Premerger Notification and Practice Manual. In that opinion, based on a memorandum dated January 23, 1979, the PNO felt that an extra-ordinary dividend declared shortly before the transaction to reduce the person's size and thereby fail the size-of-person test would raise avoidance issues under section 801.90 of the rules. You stated that many of the older opinions in the 1991 edition have been reversed in the new edition of the Premerger Notification and Practice Manual (2003 edition) and that you had "no problem with opinion 195". Additionally, you noted that the size of a person is its size even though the extra-ordinary dividend was created to fail the size-of-person test and was created at the request of the acquiring person.

In regard to the issuance of a balance sheet on a calendar year basis for tax purposes, it is your view that this does not preclude Company B from issuing its regularly prepared balance sheet reflecting a fiscal year as it has done for numerous years in the past. We note that Company B's management needs such a financial statement for management and financial comparison purposes. Thus, the fiscal year statements continue to be regularly prepared financial statements because they will be prepared at the same time and in the same manner in the future as they have been prepared in the past.

CONCLUSION:

The issuance of the extra-ordinary dividend (cash and non-cash) does not raise avoidance issues under section 801.90 of the rules even though the issuance of the dividend occurs shortly before a proposed transaction results in the failure of the acquired person to meet the HSR "size-of-person" test. The continuation of the issuance of balance sheets on a fiscal year basis, to be used for management and financial comparison purposes, is considered to be the creation of regularly prepared balance sheets even though Company B has changed to a calendar year basis for tax purposes.

If the above analysis is incorrect, please telephone me at [REDACTED] to discuss the matter. Thank you for your time and consideration in this matter.

Sincerely,

A large rectangular area of the document has been completely blacked out with a redaction marker, obscuring a signature.

AGREE.

B. Mueller

11/27/04

Sample correspondence No. 2 (July 12, 2007)

Page 1 of 2

Verne, B. Michael

801.11

From: [REDACTED]
Sent: Thursday, July 12, 2007 3:43 PM
To: Verne, B. Michael
Cc: [REDACTED]
Subject: Size-of-Person Test

Hi Mike.

I hope you are doing well. It was nice to talk to you earlier today.

We have a question about the size-of-person test and the financials that are used to determine if a party satisfies the \$12 million prong of the size-of-person test.

Company A proposes to acquire all of the voting securities of Company B, a U.S. issuer not engaged in manufacturing, for \$70 million. Company B is its own UPE. Company A has in excess of \$119.6 million in assets or annual net sales. Company B's most recent regularly prepared balance sheet (April 30, 2007) shows total assets of approximately \$7 million. Company B's most recent regularly prepared annual income statement (FY 2006) shows total net sales of approximately \$71 million.

Largely for historical reasons, and because of a contractual requirement contained in an existing Shareholder's Agreement among the shareholders of Company B, Company B performs a US GAAP reconciliation of its **annual** financial statements, which requires Company B to recognize an intangible asset. The reconciliation in Company B's most recent annual financial statement (12/31/06) shows total assets in excess of \$12 million. However, Company B's most recent regularly prepared balance sheet (April 30, 2007) does not show assets in excess of \$12 million because it was not performed with a US GAAP reconciliation. Company B does not do such reconciliations in connection with its monthly or quarterly financials.

We understand that when determining Company B's size under the size-of-person test, it is necessary to examine only its most recent regularly prepared annual income statement to determine its annual revenues and its most recent regularly prepared balance sheet (April 30, 2007) to determine its total assets, and we would disregard the 12/31 balance sheet that was prepared with a US GAAP reconciliation. Please advise if you agree.

Mike, thanks for your help.

Best regards,

AGREE
Bru
7/12/07

This electronic message transmission contains information from this law firm which m

7/12/2007

II. Process to Determine Total Value Held by Acquirer

We follow the FTC guidelines when determining the total value of the target held by the acquirer after the M&A is completed. Specifically, we use Refinitiv data on the percent of the target held by the acquirer on the date the deal is announced, and data on the deal value, to calculate the value (in \$) of the target held by the acquirer on the announcement date. For example, if the acquirer holds 20% of the target on the date the deal is announced, and is acquiring the remaining 80% for \$80 million, the 20% has a value of \$20 million (i.e., the total value of the target as implied by the acquisition is $\$80 \text{ million} \div 80\% = \100 million).

Because HSR premerger review rules stipulate that the total value of the target held by the acquirer after the completion of the merger must be used to determine whether an HSR filing is required, we apply the above calculation to our initial sample of M&A.

III. Process to Determine Premerger Notifications

We use several datapoints to determine whether a deal is exempt from filing a premerger notice to the FTC and DOJ. To begin, we use data on the target's total assets collected from public disclosures by the acquirer. However, because the disclosed amounts are the fair-value estimates, these estimates may be higher or lower than the book value reported in the financial statements prior to the date of the acquisition, which is the value the HSR Act requires to be used in the size-of-person (SoP) test. Importantly, differences between fair value and book value can lead to incorrect identification if, for example, the total fair value of total assets is slightly above the SoP threshold when the total book value of assets (if known) is below. In addition, sometimes the fair value estimates are net of liabilities (i.e., fair value of tangible assets minus fair value of liabilities), thereby understating the amount of total assets. Because the rule requires the use of total assets when determining whether a premerger notification filing is required, this difference can also lead to incorrect identification if, for example, total assets are above the threshold but net assets are below.

To address this issue, we use other sources of information to help us identify mergers that are exempt from premerger review:

Early terminations: Early terminations are premerger reviews completed before the 30-day waiting period, as a result of a request by one of the filing parties. The FTC and DOJ can approve an early termination request if they determine no competitive issues exist. Although requests for early terminations are not publicly available, approvals are. We use approvals published in the FTC online legal library (<https://www.ftc.gov/legal-library/browse/early-termination-notices>) to identify deals that, by definition, filed a premerger notification. Internet Appendix Table IA.IV summarizes the frequency and proportion of early terminations by reportable and nonreportable deals.

Corporate disclosures, news, and other publicly available sources: Corporate disclosures made after the merger announcement date, such as press releases, quarterly and annual reports, merger agreements, and proxy statements will oftentimes disclose the antitrust screening requirements of the transaction. We search these disclosures for mention of "FTC," "DOJ," "Hart-Scott-Rodino," "HSR" and other related terms. If any of these terms are found in the disclosure, we examine the document for information about whether premerger notification was required. Below, we provide some examples of these disclosures:

Example 1: Buyer has determined, in good faith and in accordance with 16 CFR 801.10(c)(3), that the fair market value of the US assets to be acquired that are included in the Acquired Assets is not greater than \$70.9 million. This determination is made solely for the purpose

of determining the applicability of the Hart-Scott-Rodino Act to the transaction.

Example 2: Neither the Seller nor any of its affiliates has, in the aggregate, total assets or annual net sales of \$113.4 million or more for purposes of the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (15 U.S.C. §18a).

Example 3: Based on information currently available, each of buyer and seller believes that the transactions contemplated by the merger agreement do not require an antitrust notification under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, or the HSR Act.

Example 4: All filings pursuant to the HSR Act have been made by Buyers and their respective affiliates and the required waiting period under the HSR Act has expired or been terminated without any threat or commencement of antitrust proceedings with respect to the transactions contemplated by this Agreement.

Example 5: Total assets reported on the Company's last balance sheet regularly prepared immediately prior to the closing of the transactions contemplated by this Agreement (which balance sheet shall have consolidated the total assets of all subsidiaries of the Company) are below \$13,000,000.

Other sources, such as news outlets or the websites of the law firms who conducted HSR-related work for the merger, provide definitive evidence of premerger notification:

Example 1: Represented (buyer name) in its acquisition of the (seller name). The acquisition cleared after the expiration of the initial HSR waiting period.

Example 2: The transaction is subject to customary conditions, including FCC and antitrust approval.

Days to completion: The HSR premerger notification waiting period begins when both the FTC and DOJ receive complete filings from both the buyer and seller. The waiting period is 30 days (or 15 days for tender offers) and expires at 11:59 ET on the last day. If the waiting period expires without either agency issuing a request for additional information, the parties have met their HSR filing obligation and can complete the deal. However, because premerger filings are not publicly disclosed and cannot be obtained through Freedom of Information Act requests, we must use the announcement date and effective date of the deal to infer whether a filing was required (e.g., [Asil, Barrios, and Wollmann, 2023](#)). Specifically, we define a deal as nonreportable if the days between announcement and completion are one or zero; and define a deal as reportable if the number of days between these two dates is greater than thirty.

IV. Purchase Price Allocation Collection

We obtain data on the purchase price allocation (PPA) by collecting and reading the post-acquisition public disclosures (e.g., 10-K, 10-Q, or Annual Report) of the acquirers. Such disclosure is required by Accounting Standards Codification (ASC) 805-10-50.

For foreign acquirers, we first search for public disclosures on the SEC.gov website. We also collect Annual Reports disclosed on company websites. If the disclosure in the Annual Report is not in US dollars, we convert the amounts using the conversion rate on the date of the acquisition.

PPA is usually presented in a table in the firm's disclosure, such as the example disclosure below. Acquirers sometimes disclose only the net of assets and liabilities acquired, which is permitted by the rules but not useful for our study. In addition, acquirers can consolidate several transactions into one PPA disclosure, if each transaction on its own is not considered material.

Example of a Purchase-Price-Allocation (PPA) Disclosure

The following is an example of a PPA disclosure obtained from the acquirer's 10-K. Immediately below the PPA, the acquirer provides additional disclosure on the breakdown of the identifiable intangible assets acquired. We use these additional disclosures for our analysis of the categories of intangibles.

	October 13, 2015
Accounts receivable	\$ 1,450
Inventories	682
Other current assets	166
Property and equipment	311
Intangible assets	46,200
Other assets	7
Total identifiable assets	\$ 48,816
Accounts payable	\$ 256
Accrued liabilities	1,589
Total liabilities assumed	\$ 1,845
Net identifiable assets acquired	\$ 46,971
Goodwill	69,871
Total consideration	\$ 116,842

The valuation of the intangible assets acquired and related amortization periods are as follows:

	Valuation	Amortization Term (in years)
SUBTLE access technology	\$ 2,179	5
IPR&D	44,021	
Total	\$ 46,200	

V. Categories of Intangibles

The following table presents descriptions of the categories of intangibles.

Category	Group	Description
Customer Relationships & Lists	Customer-related	Customer contracts and related customer relationships; noncontractual customer relationships; customer lists; order or production backlog.
Databases	Technology-based	Databases of information, typically stored electronically.
In-Process R&D	Technology-based	Research and development that is in process, has substance, but is incomplete.
Patents, Technology, & Software	Technology-based	Patented technology; trade secrets; computer software.
Non-Compete Agreements	Marketing-related	Legal arrangement that prohibit a person or business from competing with a company in certain market for a specified period of time.
Trademarks & Brands	Marketing-related	Trademarks; trade names; newspaper mastheads; painternet domain names.
Assembled Workforce	Contract-based	Intangible asset may be recognized for an assembled workforce acquired in an asset acquisition.
Distribution Agreements	Contract-based	Contractual-based distribution agreements.
Franchise Rights	Contract-based	Contractual-based franchise rights.
Lease Intangibles	Contract-based	Contractual-based leases.
Licenses	Contract-based	Contractual-based licenses.
Maintenance Contracts	Contract-based	Contractual-based maintenance agreements.
Management Agreements	Contract-based	Management contract may be below market value, resulting in an intangible asset.
Mineral Interests	Contract-based	Contractual-based mineral rights.
Other Contract Rights	Contract-based	All other contractual-based rights agreements.
Pipeline Capacity Rights	Contract-based	Contractual-based rights to pipeline capacity.
Power Purchase Agreements	Contract-based	Contractual-based power purchase agreements.
Product Rights	Contract-based	Various rights (e.g., manufacturing, distribution, etc.) attached to a specific product.
Royalty Agreements	Contract-based	Contractual-based royalty agreements.
Supplier Agreements	Contract-based	Contractual-based supplier agreements.
Usage Rights	Contract-based	Contractual-based usage rights.
Other Intangibles	Any	Any identifiable intangible asset that does not fit into a specific category.

VI. Variable Descriptions

The following table presents descriptions of the variables.

Variable	Description
<i>AcquiredProject</i>	Indicator variable that takes the value of 1 if the drug project was acquired, and 0 otherwise. Source: Refinitiv.
<i>AcqYear</i>	Indicator variable that takes the value of 1 if the year is the acquisition year, and 0 otherwise. Source: Refinitiv.
<i>AllCash</i>	Indicator variable that takes the value of 1 if the form of payment is 100 percent cash, and 0 otherwise. Source: Refinitiv.
<i>AllStock</i>	Indicator variable that takes the value of 1 if the form of payment is 100 percent stock, and 0 otherwise. Source: Refinitiv.
<i>AnnReturn</i>	Continuous measure of the 5-day, market-adjusted, cumulative abnormal returns of the acquirer, centered on the announcement date. Refinitiv (for announcement dates); CRSP (for returns data).
<i>Before (-1)</i>	Indicator variable that takes the value of 1 if the year the markup is measured is one year before acquisition year, and 0 otherwise. Refinitiv (for acquisition dates); Compustat.
<i>Before (-2)</i>	Indicator variable that takes the value of 1 if the year the markup is measured is two years before the acquisition year, and 0 otherwise. Refinitiv (for acquisition dates); Compustat.
<i>Before (-3)</i>	Indicator variable that takes the value of 1 if the year the markup is measured is three years before the acquisition year, and 0 otherwise. Refinitiv (for acquisition dates); Compustat.
<i>Before (-4)</i>	Indicator variable that takes the value of 1 if the year the markup is measured is four years before the acquisition year, and 0 otherwise. Refinitiv (for acquisition dates); Compustat.
<i>Brand</i>	Indicator variable that takes the value of 1 if the M&A included brand-related intangible capital, and 0 otherwise. Source: SEC Edgar 10-K filings.
<i>Breakthrough</i>	Indicator variable that takes the value of 1 if the patent is a breakthrough innovation, and 0 otherwise. Source: Kelly et al. (2021) .
<i>Cash/Assets</i>	Continuous measure of cash scaled by total assets of the acquirer. Source: Compustat.
<i>CashFlow/Assets</i>	Continuous measure of cash flow scaled by total assets of the acquirer. Source: Compustat.
<i>DealPremium</i>	Continuous measure of goodwill scaled by that acquired equity (i.e., net assets plus identifiable intangibles + goodwill). Source: SEC Edgar 10-K filings.
<i>DealSize</i>	Continuous measure of the size of the deal (in \$ millions). Source: Refinitiv.
<i>EBITDA/Assets</i>	Continuous measure of EBITDA scaled by total assets of the acquirer. Source: Compustat.
<i>EconImportance</i>	Economic importance of drug projects is measured in two ways in Panel B of Table 6. In column (4), we measure economic importance of the target's overlapping project with an indicator variable that takes the value of 1 if the project is in Phase 3 of trials, and 0 otherwise. In column (5) of Panel B, we measure economic importance of the drug market with an indicator variable that takes the value of 1 if there are three or fewer competitors with overlapping projects that match that of the target, and 0 otherwise. Source: Cortellis.

VI. Variable Descriptions (Continued)

The following table presents descriptions of the variables.

Variable	Description
<i>FreeCashFlow</i>	Continuous measure of free cash flow of the acquirer. Computed as operating income before depreciation (oibdp) - interest and related expense (xint) - income taxes (txt) - capital expenditures (capx), all scaled by total assets (at). Source: Compustat
<i>In-Process R&D</i>	In Internet Appendix Table IA.VII an indicator variable that takes the value of 1 if the M&A includes in-process R&D-related intangible capital, and 0 otherwise. In all other tables, a continuous measure of in-process R&D of the target. Source: SEC Edgar 10-K filings.
<i>Intangibles</i>	Indicator variable that takes the value of 1 if an M&A includes the acquisition of brand-related, technology-related, or in-process R&D-related intangible capital, and 0 otherwise. Source: SEC Edgar 10-K filings.
<i>Leverage</i>	Continuous measure of current portion of long-term debt plus long-term debt of the acquirer (dltt + dlc), scaled by total assets less the book value of common equity plus the market value of equity (at - ceq + csho * prccf). Source: Compustat.
<i>MarketShare</i>	Continuous measure of market share, where market share is calculated as 100 divided by the number of firms with ongoing drug projects in the same therapeutic class and mechanism of action. Source: Cortellis
<i>Markup</i>	Continuous measure of acquirer's markup. Following De Loecker, Eeckhout, and Unger (2020) , we calculate markup, at the firm-year level, as net sales (sale) divided by cost of goods sold (cogs), and then multiply by the industry-level elasticity. Industry is defined at the 2-digit NAICS level. Industry elasticities are obtained from data files made publicly available by De Loecker, Eeckhout, and Unger (2020) . Source: Compustat.
ΔMarkup	Continuous measure of the percent change in <i>Markup</i> from one year before to one year after the acquisition year. Source: Compustat
<i>Nonreportable</i>	Indicator variable that takes the value of 1 if target's tangible assets, as reported in the acquirer's PPA, are below the asset-size threshold, and 0 otherwise. Source: Acquirer's 10-K and 10-Q filings and annual reports.
<i>PatentImportance</i>	Continuous measure of the importance of the patent. Source: Kelly et al. (2021) .
<i>Post</i>	Indicator variable that takes the value of 1 if the year is the acquisition year (t) or is any year after the acquisition year (e.g., t+1, t+2, t+3, or t+n), and 0 otherwise. Source: Refinitiv (for acquisition dates); Compustat.
<i>Post (+1)</i>	Indicator variable that takes the value of 1 if the year is one year after the year acquisition year, and 0 otherwise. Source: Refinitiv (for acquisition dates); Compustat.
<i>Post (+2)</i>	Indicator variable that takes the value of 1 if the year is two years after the acquisition year, and 0 otherwise. Source: Refinitiv (for acquisition dates); Compustat.
<i>Post (+3)</i>	Indicator variable that takes the value of 1 if the year is three years after the acquisition year, and 0 otherwise. Source: Refinitiv (for acquisition dates); Compustat.
<i>Post (+4)</i>	Indicator variable that takes the value of 1 if the year is four years after the acquisition year, and 0 otherwise. Source: Refinitiv (for acquisition dates); Compustat.

VI. Variable Descriptions (Continued)

The following table presents descriptions of the variables.

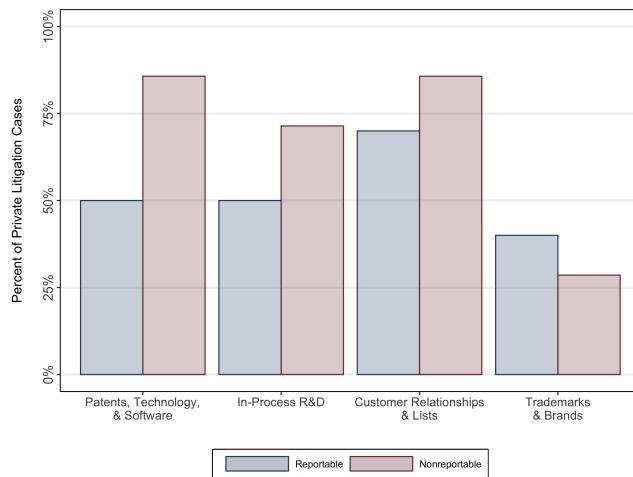
Variable	Description
<i>ProductMarketOverlap</i>	Indicator variable that takes the value of 1 if the acquirer and the target share the same three-digit NAICS code and operate in at least one overlapping product market, and 0 otherwise. Source: Corporate filings and other publicly available information sources.
<i>ProjectDisc'd</i>	Indicator variable that takes the value of 1 if the drug project is terminated or there is no development activity after the acquisition date, and 0 otherwise. Source: Cortellis.
<i>Pr(ProjectOverlap)</i>	Indicator variable that takes the value of 1 if at least one ongoing drug project of the acquirer shares the same therapeutic class and mechanism of action as an ongoing drug project of the acquirer. Source: Cortellis.
<i>ProportionofProjectOverlap</i>	Continuous measure of the number of overlapping drug projects scaled by the total number of ongoing drug projects of the target. Source: Cortellis.
<i>PublicTarget</i>	Indicator variable that takes the value of 1 if the target is a public filer. Source: Refinitiv.
<i>Q</i>	Continuous measure of market value of assets ($(at - ceq + csho * prccf)$) over the book value of assets (at) of the acquirer. Source: Compustat.
<i>R&D</i>	Continuous measure of R&D expense of the acquirer. Source: Compustat.
<i>RelativeSize</i>	Continuous measure of the size of the deal scaled by the market value of the acquirer. We use the deal value (<i>DealSize</i>) for the size of the target, and the market value of equity ($csho * prccf$) for the size of the acquirer. Source: Compustat and Refinitiv.
<i>RivalReturns</i>	Continuous measure of the 5-day, market-adjusted, cumulative abnormal returns of rivals, centered on the announcement date. Returns are equal-weighted. Rivals are defined as firms in Compustat that share the same four-digit SIC code with the acquirer. Source: Refinitiv (for announcement dates; CRSP (for returns data).
<i>Sales</i>	Continuous measure of sales (in \$ million) of the acquirer (sale). Source: Compustat.
<i>Size</i>	Continuous measure of the natural logarithm of total assets (at) of the acquirer. Source: Compustat.
<i>Tech</i>	An indicator variable that takes the value of 1 if an M&A includes the acquisition of technology-related intangible capital (e.g., patents, technology, or software), and 0 otherwise. Source: SEC Edgar 10-K filings.

VII. Intangibles in Public and Private Litigation

To investigate the importance of intangibles in litigation, we first obtain from the court records the initial “complaint” filing, which outlines the reason(s) for the lawsuit and details the proposed anticompetitive effects of the deal. We then read through each filing, with the aim of answering two questions. First, are the proposed anticompetitive effects of the deal related to the acquisition of identifiable intangible assets? Second, if yes, which categories of intangibles?

We determine whether the case involves identifiable intangible assets and identify which categories of intangible assets are involved based on whether they are mentioned in legal findings ([Francis, Philbrick, and Schipper, 1994](#)). We find intangible assets are prevalent in legal complaints for both public and private litigation. Specifically, of the 510 (17) public (private) cases we investigate, 417 (17) include the mention of intangible assets directly in the written complaint. Thus, more than 80% of public complaints and 100% of private complaints dispute the merger because of the alleged competitive harm caused by the acquisition of an intangible asset.

In the table below, we present descriptive evidence of the prevalence of intangibles, by category, for public and private litigation. Our analysis reveals that the four most frequently mentioned categories, in both public and private complaints, are Patents, Technology & Software, In-Process R&D, Customer Relationships & Lists, and Trademarks & Brands. Strikingly, nearly 50% of public antitrust litigation and 60% of private antitrust litigation involve a dispute over innovation projects that have yet to be developed into an actual product (i.e., in-process R&D). The figure below shows, for private litigation cases, a higher proportion of cases mentioning the largest categories of intangibles, including in-process R&D and internally generated technology, in nonreportable relative to reportable deals.



This table presents descriptive evidence of the prevalence, by category, of identifiable intangible assets in public and private litigation. *Public Frequency* represents the number of unique public litigation cases in which the complaint includes intangible capital (from that category). *Public Percent* represents the percent of all public complaints that the intangible capital (from that category) mentioned. *Private Frequency* represents the number of unique private litigation cases in which the complaint includes intangible capital (from that category). *Private Percent* represents the percent of all private complaints that the intangible capital (from that category) is mentioned.

Category	Public Frequency	Public Percent	Private Frequency	Private Percent
Patents, Technology, & Software	223	53.5%	14	82.4%
In-Process R&D	197	47.2%	10	58.8%
Customer Relationships & Lists	161	38.6%	13	76.5%
Trademarks & Brands	138	33.1%	6	35.3%
Licenses	94	22.5%	3	17.6%
Product Rights	79	18.9%	3	17.6%
Distribution Agreements	77	18.5%	3	17.6%
Assembled Workforce	68	16.3%	6	35.3%
Supplier Agreements	17	4.1%	2	11.8%
Databases	13	3.1%	1	5.9%
Non-Compete Agreements	12	2.9%	4	23.5%
Lease Intangibles	1	0.2%	0	0%
Power Purchase Agreements	0	0%	0	0%
Other Intangibles	0	0%	0	0%
Mineral Interests	0	0%	0	0%
Usage Rights	0	0%	0	0%
Franchise Rights	0	0%	0	0%
Maintenance Contracts	0	0%	0	0%
Management Agreements	0	0%	0	0%
Pipeline Capacity Rights	0	0%	0	0%
Other Contract Rights	0	0%	1	5.9%
Royalty Agreements	0	0%	0	0%

VIII. Litigation

Litigation data: Data on litigation comes from four sources. For data on public litigation, we use the HSR Annual Report, published jointly by the FTC and the DOJ. This report provides yearly data on the number of premerger review filings (by industry and range of deal values) and the number of Second Requests (by industry and range of deal values). We supplement the HSR data with transaction data on public litigation compiled by [Billman and Salop \(2023\)](#). For data on private litigation, we use Lex Machina's Legal Analytics Platform. Lex Machina categorizes federal court data from the Public Access to Court Electronic Records (PACER). One limitation of our analysis of private litigation is that, prior to 2007, the adoption by US district courts of electronic case filing using the PACER system was limited, reducing the number of deals we can match to court filings.¹ Finally, for our sample of M&A involving publicly traded acquirers, we collect additional data on public and private litigation from the legal proceedings section in the notes to their 10-K filings.

Public Litigation: Public enforcement beyond a Second Request, such as further investigation and litigation by the FTC or DOJ, imposes even higher costs on the antitrust authorities, likely forcing them to focus on fewer but larger deals ([Wollmann, 2024](#)). Indeed, when we match Second Requests that resulted in more stringent enforcement actions to deals, we find that deals above the upper size-of-transaction threshold are nearly 29 times more likely to be the target of these actions than deals that are subject to the (size-of-person) SoP test (i.e., 3.0% vs. 0.1%).² However, this amount decreases to approximately 3 times more likely when we narrow our focus to deals that are just above, i.e., within 100% of the upper size-of-transaction threshold, as compared to deals that are subject to the SoP test. In terms of the number of enforcement actions, the differences around the threshold are less pronounced; nine enforcement actions are for deals that are above but proximate to the upper size-of-transaction threshold versus seven for deals that are subject to the SoP test. Notably, these seven, more stringent enforcement actions represent roughly 5% of the total enforcement activity (i.e., 7 of 154 enforcement actions) that we can observe with the data.³

¹For example, in 2002, only 11 of the 94 district courts used electronic filing.

²The results from an OLS regression suggest a positive and statistically significant relation between deal values and additional enforcement actions. Specifically, in a sample of 11,247 deals involving public and private acquirers, we find the mean deal has a 0.4% probability of an action, and this probability increases by roughly 0.9% for each \$1 billion in deal value.

³[Billman and Salop \(2023\)](#) uncover 526 Second Requests that are not cleared by the FTC and DOJ, resulting in further enforcement actions, including litigation. We are able to match 154 of these cases to M&A. In other words, our finding of seven enforcement actions likely understates the true number by several-fold. However, our estimate of the rate of enforcement (i.e., 5%) is likely in the range of the true rate.

Private Litigation: In Panels A, B, and C of the following table, we present descriptive evidence of private antitrust lawsuits for our sample of M&A. In Panel A, we show the number of cases, by reportable and nonreportable. In Panel B, we show the number of cases, by industry. In Panel C, we show case outcomes.

Panel A. Cases by Reportable & Nonreportable Deals			
Type	Cases	Total M&A	Percent
Reportable	15	1,529	0.98%
Nonreportable	8	389	2.06%
Reportable + Nonreportable	23	1,918	1.20%

Panel B. Cases by Industry			
Industry	Reportable	Nonreportable	Total
Computer and Electronic Product Manufacturing	4	5	9
Chemical Manufacturing	3	2	5
Professional, Scientific, and Technical Services	2	1	3
Machinery Manufacturing	3	0	3
Food and Kindred Products	1	0	1
Merchant Wholesales, Nondurable Goods	1	0	1
Communications	1	0	1
Total	15	8	23

Panel C. Case Outcomes			
Outcome	Observations	Average Length (in days)	Average Amounts (\$ millions)
No electronic filings	3	n.a.	
Ongoing litigation	5	n.a.	
Terminated by plaintiff	1	21	
Forced divestiture	1	2,056	
Settlement or awarded damages	4	1,973	\$187.4
Complaint dismissed by court	9	916	
Total	23		

IX. Deterrence Effects

Thus far, our analysis has ignored the deterrence effect of the policy change. To estimate the expected level of deterrence, we assume firms not only incur the cost of filing but also costs related to the collection and filing of a comprehensive list of proprietary information they must file with the antitrust authorities.⁴ Furthermore, firms would also likely consider the probability (and thus the additional costs) of a Second Request and, as a result, the probability of public enforcement (e.g, a consent decree or litigation) when deciding whether to merge. Thus, we expect that increasing antitrust costs and risk, through the policy change, will also deter some deals.

[Wollmann \(2024\)](#) estimates that up to three-quarters of horizontal mergers in the dialysis industry would be deterred if they needed to be reported. That estimate suggests that, despite the relatively low rate of Second Requests, merging firms would be unwilling to absorb the incremental antitrust costs arising from premerger review. The sample in [Wollmann \(2024\)](#) is for smaller deals (i.e., deal values less than \$50 million) than what we examine. Thus, if we assume the relationship between deal value and the rate of deterrence is linear and negative (i.e., higher deal values are associated with lower deterrence rates), we can extrapolate the estimates in ([Wollmann, 2024](#)) to estimate the expected deterrence rate for our sample. Table I Panel A, shows the average deal value for a reported horizontal transaction in our sample is nearly three times that of the deals examined in [Wollmann \(2024\)](#), suggesting our sample's deterrence rate is about 25%. Applying this rate to the estimated 90 new reported horizontal deals means nearly 23 horizontal deals annually would not occur if a policy change was implemented. Moreover, the expected decrease in horizontal deals would also likely reduce our estimated number of additional Second Requests from five to four per year. As a consequence, our estimated additional antitrust enforcement costs per year would also likely decrease by a fifth to around \$652,000–\$860,000.

Finally, deterrence is beneficial in at least two ways. First, it benefits enforcement agencies because it directly reduces the costs of investigation and potentially litigation. Second, it benefits consumers, if we believe the outcome of an anticompetitive deal would have been higher prices, lower quality, less choice, or a combination of these. However, given that our study includes many different industries, we do not attempt to estimate the benefits to consumers due to deterrence, although they are likely substantial.⁵ Thus, one takeaway from

⁴Firms are required to disclose sensitive information to the FTC and DOJ in their premerger filing. The instructions for the filing, found online at <https://www.ftc.gov/enforcement/premerger-notification-program/form-instructions>, shed light on the cost burden placed on merging firms that are required to file.

⁵Consistent with this, [Wollmann \(2024\)](#) estimates the value of lives saved in the kidney dialysis attributed to a reduction in horizontal mergers, and concludes the benefits approach \$100 million per year.

our analysis is that, by requiring merging firms to include the fair value of intangibles in their size-of-person test, antitrust authorities could deter or block transactions that could harm consumers.

X. Changes to Accounting Standards

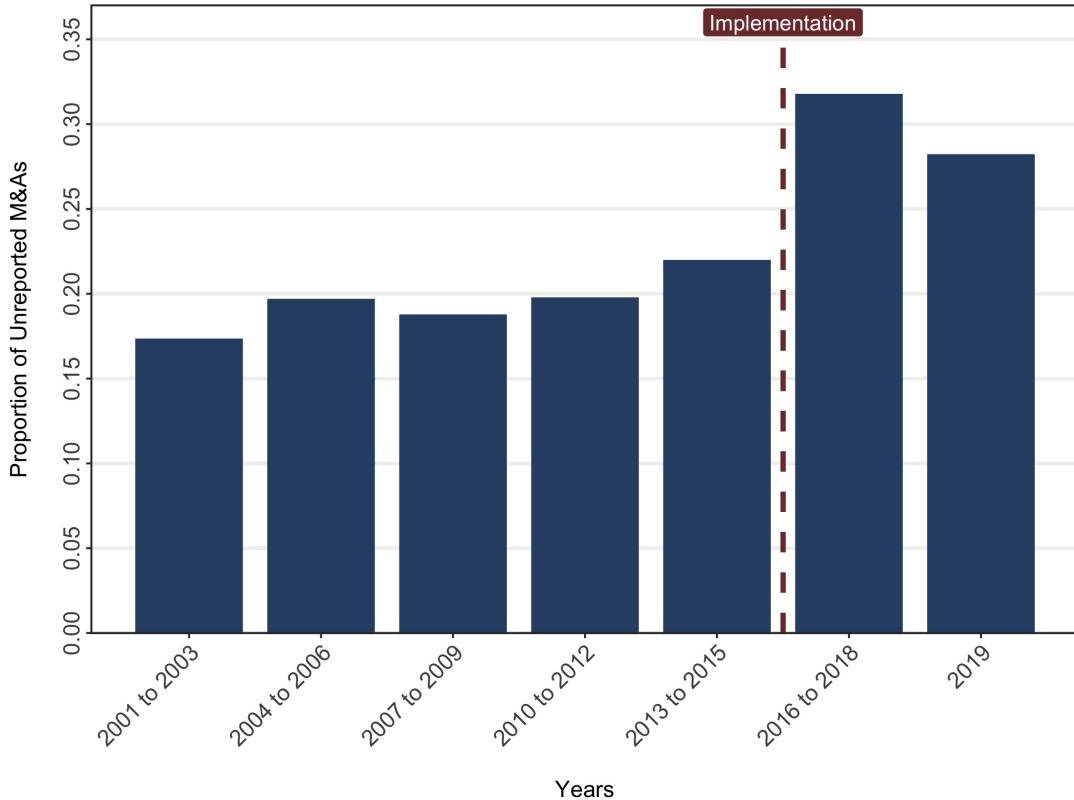
If accounting standards play a critical role in the competition enforcement of the takeover market, significant changes to standards that impact how assets are measured could influence M&A activity. We exploit a recent change to the accounting standard for operating leases. Specifically, beginning in January 2019 (2022), ASU 2016-02 requires all US public (private) firms to recognize their operating leases as an asset (to represent the right of use) and, correspondingly, a liability (to represent the future payments) on their balance sheets. To put this change in perspective, some reports estimate the new standard added \$3.3 trillion in operating leases to the balance sheets for publicly listed firms or an average of 12.5% of lagged sales (Ma and Thomas, 2023).⁶ In our setting, increasing the target firm's assets via the capitalization of operating leases could conceivably shift deals from being nonreportable to being required to reportable.

To avoid the costs and risks associated with needing to report the deal, firms can take real actions. For instance, Internet Appendix Section I shows private correspondence with the FTC from attorneys representing merging parties where the firms wanted to pay a special dividend to reduce the target's assets so it is below the SoP threshold. Alternatively, firms could conduct a merger earlier, because the standard was proposed in 2010 and finalized in 2016, but did not go into effect until 2019 for public companies (or 2022 for private companies). This idea parallels prior findings that observe that changes to regulation, at least partially, explain merger activity (e.g., Harford, 2005, Mitchell and Mulherin, 1996).

We first generate a histogram of the proportion of deals that are nonreportable.⁷

⁶See <https://www.ifrs.org/content/dam/ifrs/project/leases/ifrs/educational-materials/leases-fact-sheet-jan-2016.pdf>.

⁷We use 3-year increments because the accounting standard implementation period for public firms is three years (i.e., 2016 through 2018). We present 2019 alone because our data end in early 2020 and because the implementation for private firms continued until January 2022.



The histogram shows that from 2001 through 2015, the proportion of nonreportable M&As remains relatively stable (e.g., 0.18 to 0.22). By contrast, from 2016 through to the end of 2018, we see about a 50% increase in the proportion of deals that are nonreportable. This sharp increase coincides with the years during which public and private firms were aware of the forthcoming change to the accounting standard, but before the years they were required to adopt the new lease standard (i.e., 2019 for public firms and 2022 for private firms). Interestingly, we also find a slight decrease in the proportion of nonreportable deals in 2019—that is, when public firms were required to adopt the standard but private firms were not yet required to adopt. Given most of our target companies are private, and therefore not subject to the standard until 2022, the elevated activity in 2019 also suggests firms may be engaging in deals before the lease standard went into effect. Collectively, the evidence in the figure above is consistent with the idea that changes to accounting standards that impact assets could have real effects on M&A activity in our setting.

To provide further evidence, we present the results of an OLS model that regresses nonreportable deals on a set of time indicators. Specifically, following [Ma and Thomas \(2023\)](#), we create an indicator for the three-year period (i.e., 2016 through 2018) during which firms were implementing but not yet adopting the new lease standard. To remain

consistent, we create separate indicators for each of the three-year windows that precede 2016, for example, an indicator for 2013 through 2015, for 2010 through 2012, and so on. We also create a single indicator for 2019, because this year is the first one that public firms were required to adopt the new lease standard while private firms could continue to implement the standard. We set the exclusion period in our specification to the three-year window immediately at the beginning of our sample (i.e., 2001 to 2003). The results are presented in the table below.

Dependent Variable:	(1) <i>Nonreportable</i>	(2) <i>Nonreportable</i>	(3) <i>Nonreportable</i>
<i>2004 to 2006</i>	0.024 (0.69)	0.021 (0.61)	0.022 (0.63)
<i>2007 to 2009</i>	0.011 (0.29)	0.011 (0.29)	0.011 (0.29)
<i>2010 to 2012</i>	0.025 (0.60)	0.025 (0.60)	0.025 (0.60)
<i>2013 to 2015</i>	0.044 (1.27)	0.044 (1.27)	0.044 (1.27)
<i>2016 to 2018 (Public and Private Firm Implementation)</i>	0.145*** (4.21)	0.021 (0.60)	0.048 (1.38)
<i>2019 (Only Private Firm Implementation)</i>	0.109*** (3.25)	-0.017 (-0.52)	0.005 (0.15)
Observations	1,774	1,774	1,728
Adjusted R^2	0.011	-0.002	-0.002

In column (1), we find that relative to the exclusion window, the proportion of nonreportable deals in 2016 through 2018 is roughly 10 percentage points higher, or the equivalent of a 44.5% increase. Notably, we do not find a statistically significant difference in any of the three-year windows before the exclusion window, suggesting our findings are not an artifact of a pre-period trend.

Next, we consider whether the increase in the proportion of nonreportable deals, shown in column (1), is indeed driven by deals that, if operating leases were included when determining the size of the target's assets, would shift from nonreportable to reportable. For this analysis, we require data on future operating lease commitments, which we have for a subsample of 236 deals involving public targets. We use these data to estimate the relationship between deal values (i.e., target-firm size) and operating leases and then apply the coefficient from this regression to deals with missing values of operating leases. Specifically, we use the disclosure of future lease commitments located in the 10-K filings of public targets to determine the value of operating leases. Of the 236 public targets in our sample, we find disclosed operating lease commitments for 220 of them. At a minimum, nearly all firms disclose future operating

lease commitments for at least two years, and approximately 72% of the firms disclose them for five years or more. For simplicity, we follow Moody's and multiply the first year of the future minimum lease commitments by a factor of 3.5, which is the average Moody's industry multiple. (See Moody's Investor Service report: <https://ratings.moodys.com/api/rmc-documents/69913>). We use this value as our estimated present value of operating leases (PVOP). Next, we use an OLS model to regress PVOP on deal values, and include target-firm industry fixed effects and year fixed effects, respectively. The output of this model is reported in the table below.

Dependent Variable: <i>Operating Leases</i>	
<i>DealValue</i>	0.044** (2.62)
Observations	217
Adjusted R^2	0.122
Filing-year F/E	Y
Industry F/E	Y

The magnitude of the coefficient (0.044) indicates that, on average, future operating lease commitments increase by roughly \$44,000 per \$1 million of deal value. This estimate appears realistic, given that we find the average future lease commitments for a sample of public targets in nonreportable deals is about \$3.75 million. Finally, we use the coefficient from the regression output to impute the value of future lease commitments for deals with missing values. We use these imputed values for our analysis.

Specifically, we add the imputed lease amounts to only those deals occurring in 2016 through 2019 and then estimate the same equation we used in column (1) of the time-indicators analysis. We contend that if capitalizing operating leases increases the target's assets such that the deal shifts from nonreportable to reportable, we should find no statistically significant difference in the 2016 to 2019 and 2019 windows relative to the exclusion window. Put differently, if operating leases are indeed economically important, we should find that capitalizing them shifts the additional nonreportable deals we found in column (1) to being reportable deals. The results are reported in column (2). Consistent with our conjecture, in column (2), we do not find a statistically significant difference in any of the windows relative to the exclusion window. Moreover, when comparing the results in column (2) with those in column (1), we find a significant decrease in the magnitude of the coefficients for the 2016 to 2018 and 2019 windows, indicating operating leases are economically important for nonreportable deals. In column (3), we exclude those deals that, due to the capitalization of operating leases, shift from nonreportable to reportable. The intuition is

that, absent the announcement of a new lease standard, these deals might not have occurred. Our results continue to hold. Overall, the results suggest changes to accounting standards can have real effects on M&A activity via the SoP test.⁸

⁸One might question why some firms may choose to accelerate a merger, rather than just waiting and using an avoidance technique, such as the approach of paying a special dividend shown in Internet Appendix Section I. However, section § 801.90 of the HSR Act prohibits “[a]ny transaction(s) or other device(s) entered into or employed for the purpose of avoiding the obligation to comply with the requirements of the act.” Based on this fact, firms might be unwilling to delay and risk an avoidance strategy that the antitrust authorities will challenge.

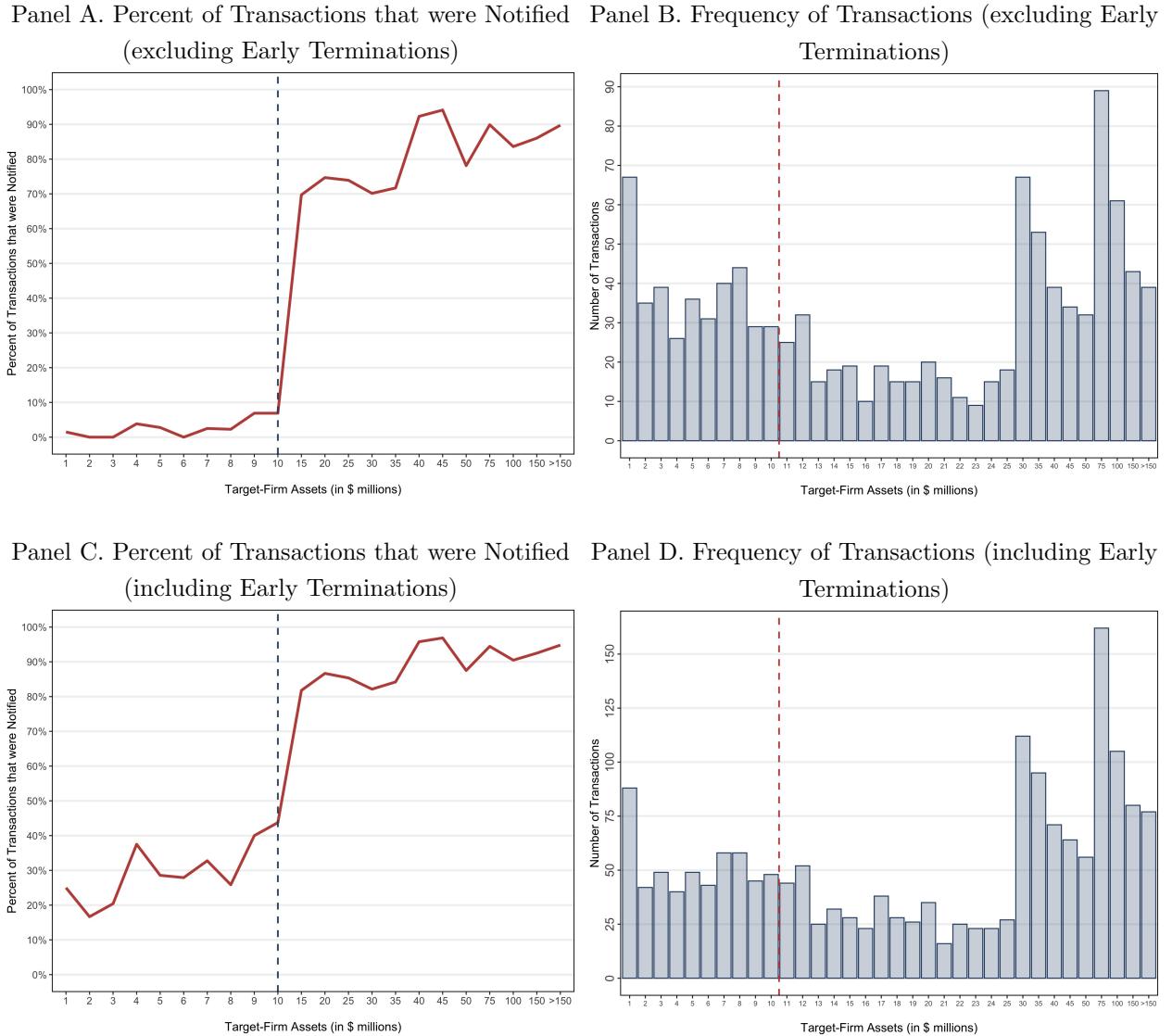


Figure IA.1. Premerger exemptions and notifications. This figure graphically displays the effect of asset-based thresholds on premerger notifications. Panels A (excluding Early Terminations) and C (including Early Terminations) display the percent of transactions that triggered premerger notifications under the size-of-person test, covering filing years 2001 through 2019. Transactions are grouped by the target firm's tangible asset value (in millions of 2005 dollars). A vertical dashed line at \$10 million marks the asset threshold (as of 2005) below which transactions are not required to file a premerger notification. Data on premerger notifications were manually collected from public filings available on the US Securities and Exchange Commission's EDGAR database (www.sec.gov) and supplemented with internet searches. Internet Appendix Section III details our methodology for identifying whether the FTC and DOJ were notified. Panels B and D display the number of transactions (along the y-axis) for the groups of target-firm asset values (along the x-axis) depicted in Panels A and C.

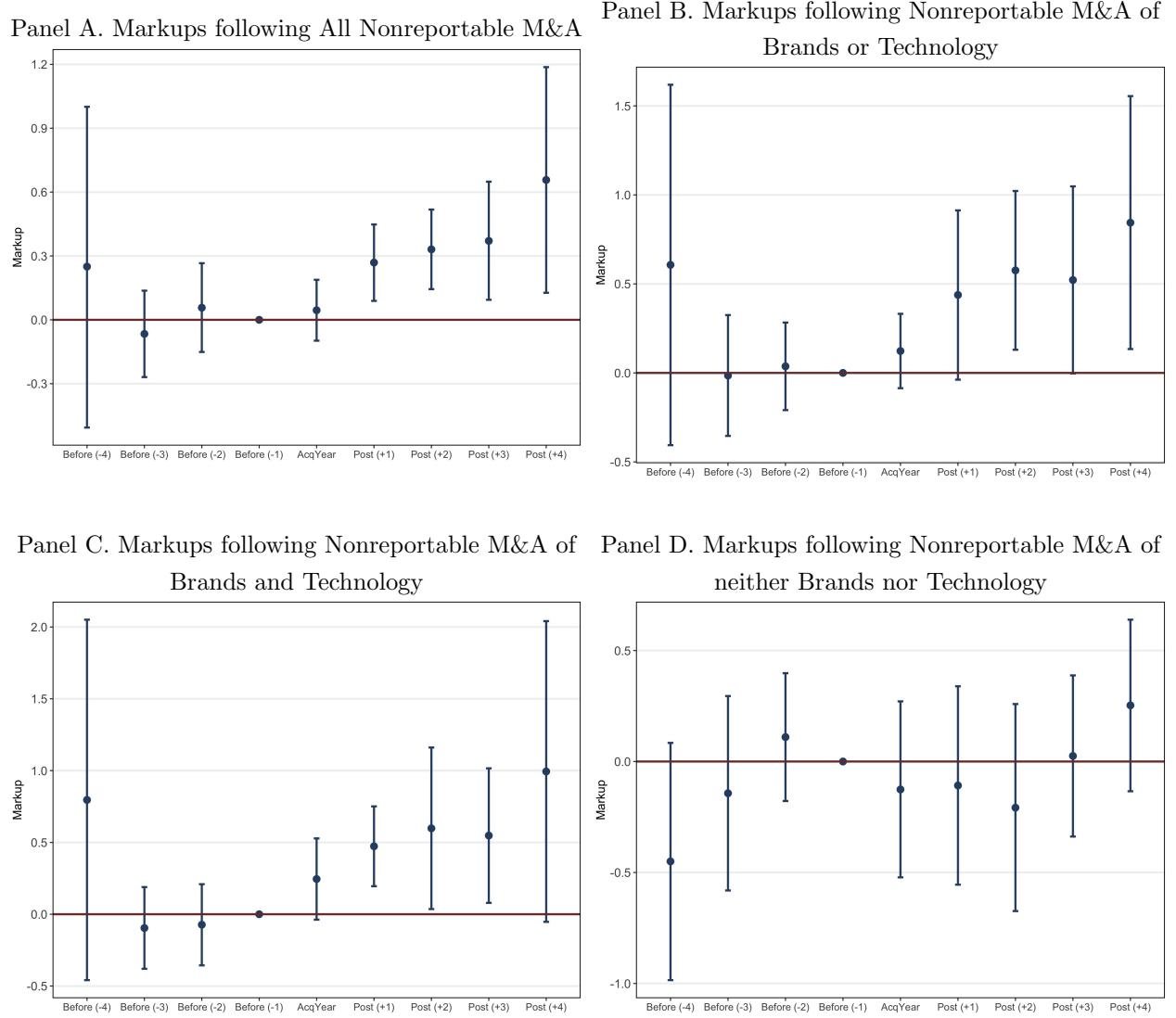


Figure IA.2. Markups following nonreportable M&As (nine-year window). This figure graphically displays the evolution of markups from four years before to four years after acquisitions that consolidate developed product markets. To estimate the coefficients, we extend the models in Panels A and B of Table V by adding one additional year both before and after the acquisition year. Due to limited data availability, we rely on an unbalanced panel, as relatively few firms have sufficient data to span the full nine-year window.

Table IA.I
Fair Value versus Estimated Value of Intangible Capital

This table presents the results of an analysis of fair values of identifiable intangible capital relative to estimated values. For fair values on intangible capital, we use data collected from purchase price allocation (PPA) disclosures of US public acquirers. For estimated values, we follow prior literature and use the perpetual inventory method to estimate the level of intangible capital in the year before the acquisition year. Specifically, we use financial statement data obtained from Compustat for a subsample of 518 deals for which the target firm is a publicly traded firm in the US. Panel A presents the mean of the 518 deal-level ratios of estimated intangible capital scaled by total tangible capital in column (1), and the mean of the 518 deal-level ratios of fair value of identifiable intangible capital scaled by the fair value of tangible capital in column (2). Panel B presents the mean of the 518 deal-level ratios of fair value of total tangible assets scaled by the book value of total tangible assets in column (1), and the mean of the 518 deal-level ratios of fair value of identifiable intangible assets scaled by the estimated value of intangible assets in column (2).

Panel A. Estimated Ratios vs. Fair-Value Ratios

	(1) <i>Estimated-Value Ratio</i>	(2) <i>Fair-Value Ratio</i>
Mean	0.278	1.053

Panel B. Denominator vs. Numerator Effects

	(1) <i>Tangible-Assets Ratio</i>	(2) <i>Intangible-Assets Ratio</i>
Mean	0.887	4.095

Table IA.II
Second Requests

Top Industries (by Second Requests)

This table presents industries ranked by the total number of Second Requests (from 2001-2019). Column (2) presents the total number of horizontal mergers reviewed by the FTC and DOJ (from 2001-2019); column (3) presents the percent of horizontal mergers that received a Second Request; column (4) presents the industry (as defined by the HSR Annual Report); column (5) presents the 3-digit NAICS code for the industry (obtained from the HSR Annual Report); and column (6) presents all 4-digit SICs that correspond to the 3-digit NAICS. Data on Second Requests, horizontal mergers, and industry (3-digit NAICS) are obtained from the HSR Annual Reports.

(1)	(2)	(3)	(4)	(5)	(6)
Second Requests	Horizontal Mergers (HSR)	% of Horizontal Mergers with Second Requests	Industry	NAICS (3-digit)	SIC (4-digit)
102	693	14.72	Chemical Manufacturing	325	2812, 2813, 2816, 2819, 2821, 2822, 2823, 2824, 2833, 2834, 2835, 2836, 2841, 2842, 2843, 2844, 2851, 2861, 2865, 2869, 2873, 2874, 2875, 2879, 2891, 2892, 2893, 2895, 2899, 3087, 3861, 3952, 3999, 7389
50	540	9.26	Computer and Electronic Product Manufacturing	334	3429, 3495, 3571, 3572, 3575, 3577, 3578, 3579, 3599, 3651, 3652, 3661, 3663, 3669, 3671, 3672, 3674, 3675, 3676, 3677, 3678, 3679, 3695, 3812, 3822, 3823, 3824, 3825, 3826, 3829, 3842, 3844, 3845, 3873, 3915, 7372, 7819
42	655	6.41	Publishing Industries (except Internet)	511	2711, 2721, 2731, 2741, 2771, 7331, 7372
41	442	9.28	Food and Kindred Products	311	0723, 0751, 2011, 2013, 2015, 2021, 2022, 2023, 2024, 2026, 2032, 2033, 2034, 2035, 2037, 2038, 2041, 2043, 2044, 2045, 2046, 2047, 2048, 2051, 2052, 2053, 2061, 2062, 2063, 2064, 2066, 2067, 2068, 2074, 2075, 2076, 2077, 2079, 2082, 2083, 2087, 2091, 2092, 2095, 2096, 2098, 2099, 2899, 5147, 5441, 5461
41	947	4.33	Professional, Scientific, and Technical Services	541	0741, 0742, 0781, 1081, 1382, 1481, 3721, 3724, 3728, 3761, 3764, 3769, 4499, 4731, 5199, 6541, 7221, 7291, 7299, 7311, 7312, 7313, 7319, 7331, 7335, 7336, 7361, 7371, 7373, 7376, 7379, 7389, 7819, 8099, 8111, 8711, 8712, 8713, 8721, 8731, 8732, 8733, 8734, 8742, 8743, 8748, 8999
39	369	10.57	Merchant Wholesales, Nondurable Goods	424	5111, 5112, 5113, 5122, 5131, 5136, 5137, 5139, 5141, 5142, 5143, 5144, 5145, 5146, 5147, 5148, 5149, 5153, 5154, 5159, 5162, 5169, 5171, 5172, 5181, 5182, 5191, 5192, 5193, 5194, 5198, 5199
27	197	13.71	Telecommunications	517	4812, 4813, 4822, 4841, 4899, 7375
25	276	9.06	Transportation Equipment	336	2396, 2399, 2531, 3069, 3292, 3429, 3465, 3499, 3519, 3531, 3585, 3592, 3599, 3647, 3694, 3711, 3713, 3714, 3715, 3716, 3721, 3724, 3728, 3731, 3732, 3743, 3751, 3761, 3764, 3769, 3792, 3795, 3799, 3944, 3999
25	215	11.63	Health Services	621	4119, 4522, 8011, 8021, 8031, 8041, 8042, 8043, 8049, 8071, 8082, 8092, 8093, 8099
25	334	7.49	Hospitals	622	8062, 8063, 8069
24	260	9.23	Machinery Manufacturing	333	2499, 2599, 3429, 3433, 3443, 3444, 3496, 3511, 3519, 3523, 3524, 3531, 3532, 3533, 3534, 3535, 3536, 3537, 3541, 3542, 3544, 3545, 3546, 3547, 3548, 3549, 3552, 3553, 3554, 3555, 3556, 3559, 3561, 3563, 3564, 3565, 3566, 3567, 3568, 3569, 3577, 3578, 3579, 3581, 3582, 3585, 3586, 3589, 3593, 3596, 3599, 3634, 3639, 3699, 3743, 3799, 3821, 3827, 3841, 3861, 3999
42	404	10.40	Communications	513	4812, 4813, 4822, 4832, 4833, 4841, 4899
20	557	3.59	Utilities	221	4911, 4923, 4924, 4925, 4931, 4932, 4939, 4941, 4952, 4961, 4971

Table IA.III
Sample Construction and Distribution

This table presents the sample-selection construction for our full sample of M&A observations. In Panel A, we construct the sample and describe it by horizontal and non-horizontal M&A. In Panel B, we present the sample distributed by HSR reporting year. Reporting Year is measured from the “Effective Date” of the current HSR reporting year to the day before the “Effective Date” of the following reporting year. See Figure 3 for “Effective” dates and “Reporting” years. In Panel C, we describe, by industry (3-digit NAICS), the horizontal M&A in the sample. In Panels B and C, columns may not add up to 100%, due to rounding.

Panel A. Sample Construction	
Description	Observations
Full sample:	3,526
Horizontal M&A (by 3-digit NAICS)	1,863
Non-horizontal M&A	1,663
	<hr/>
	3,526
Less: M&As with incomplete or missing data on "assets" of the target	(1,608)
	<hr/>
Sample of M&As with data for analysis:	1,918
Horizontal M&A (by 3-digit NAICS)	1,065
Non-horizontal M&A	853
	<hr/>
	1,918

Table IA.III
Sample Construction and Distribution (Continued)

Panel B. All M&As (by year)

Reporting Year*	M&A (Full sample)	M&A (For analysis)
2001	220 (6.2%)	81 (4.2%)
2002	179 (5.1%)	73 (3.8%)
2003	209 (5.9%)	110 (5.7%)
2004	236 (6.7%)	128 (6.7%)
2005	243 (6.9%)	120 (6.3%)
2006	255 (7.2%)	125 (6.5%)
2007	253 (7.2%)	127 (6.6%)
2008	138 (3.9%)	67 (3.5%)
2009	115 (3.3%)	58 (3.0%)
2010	196 (5.6%)	95 (5.0%)
2011	189 (5.4%)	121 (6.3%)
2012	179 (5.1%)	100 (5.2%)
2013	168 (4.8%)	102 (5.3%)
2014	201 (5.7%)	135 (7.0%)
2015	153 (4.3%)	97 (5.1%)
2016	153 (4.3%)	88 (4.6%)
2017	158 (4.5%)	111 (5.8%)
2018	163 (4.6%)	108 (5.6%)
2019	118 (3.3%)	72 (3.8%)
Full sample	3,526 (100%)	1,918 (100%)
Total value (in \$ billions)	\$477.8	\$267.7

Panel C. Horizontal Mergers (by 3-digit NAICS industry)

Industry	Horizontal M&A (Full sample)	Horizontal M&A (For analysis)
Computer and Electronic Product Manufacturing	662 (35.5%)	409 (38.4%)
Chemical Manufacturing	332 (17.8%)	189 (17.8%)
Professional, Scientific, and Technical Services	215 (11.5%)	128 (12.0%)
Telecommunications	123 (6.60%)	64 (6.00%)
Utilities	108 (5.80%)	37 (3.50%)
Food and Kindred Products	93 (5.00%)	49 (4.60%)
Machinery Manufacturing	92 (4.90%)	59 (5.50%)
Transportation Equipment	67 (3.60%)	36 (3.40%)
Communications	59 (3.20%)	31 (2.90%)
Health Services	29 (1.60%)	17 (1.60%)
Publishing Industries (except Internet)	29 (1.60%)	18 (1.70%)
Hospitals	28 (1.50%)	9 (0.90%)
Merchant Wholesales, Nondurable Goods	26 (1.40%)	19 (1.80%)
Sample of Horizontal Mergers	1,863 (100%)	1,065 (100%)
Total value (in \$ billions)	\$247.4	\$146.2

Table IA.IV
Early Terminations

This table shows the percent of deals that have early terminations granted by the FTC. We present these data by horizontal vs. non-horizontal deals and by reportable vs. nonreportable deals. Data on early terminations are obtained from the FTC's online Legal Library. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.

	Reportable	Nonreportable	Difference
<i>Type of M&A</i>			
Horizontal (3-digit NAICS)	312/766 (40.7%)	80/299 (26.8%)	13.9%***
Non-Horizontal	250/621 (40.3%)	64/232 (27.6%)	12.7%***

Table IA.V
Degree of Intangible Assets

This table presents results from ordinary least squares (OLS) regressions of intangibles on nonreportable M&A. The main variable of interest, *Nonreportable*, assumes the value of 1 if the target firm's assets are below the size-of-person asset threshold; and 0 otherwise. In columns (1), (2), and (3), the dependent variable is the natural log of intangible assets. In columns (4), (5), and (6), the dependent variable is the proportion of intangibles, measured as the level of intangibles scaled by the sum of assets plus intangibles plus goodwill. We include filing-year and industry (3-digit NAICS) fixed effects across all columns. Robust *t*-statistics are reported in parentheses and calculated using standard errors clustered at the acquirer's industry and reporting-year levels. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable:	(1) <i>Log</i> (<i>Intangibles</i>)	(2) <i>Log</i> (<i>Intangibles</i>)	(3) <i>Log</i> (<i>Intangibles</i>)	(4) <i>Proportion of</i> <i>Intangibles</i>	(5) <i>Proportion of</i> <i>Intangibles</i>	(6) <i>Proportion of</i> <i>Intangibles</i>
<i>Nonreportable</i>	-0.098 (-0.73)	-0.039 (-0.20)	0.061 (0.34)	0.136** (2.57)	0.156* (1.94)	0.157* (1.96)
Observations	1,774	985	673	1,774	985	673
Adjusted <i>R</i> ²	0.192	0.232	0.235	0.227	0.277	0.302
Filing-Year F/E	Y	Y	Y	Y	Y	Y
Industry F/E	Y	Y	Y	Y	Y	Y

Table IA.VI
Acquirer's Announcement Returns

This table presents regression results from Panel A of Table IV, including the estimates for the firm- and deal-level controls that were specified, but unreported, in Table IV.

Dependent Variable:	(1) <i>AnnReturn</i>	(2) <i>AnnReturn</i>	(3) <i>AnnReturn</i>	(4) <i>AnnReturn</i>
<i>Nonreportable</i>	-0.002 (-0.31)	-0.009 (-1.20)	0.023** (2.95)	0.008 (0.57)
<i>ProductMarketOverlap</i>		0.011* (2.02)		-0.015 (-0.89)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i>		0.034* (2.00)		0.059** (2.32)
Firm Characteristics:				
<i>FreeCashFlow</i>	0.080 (1.42)	0.081 (1.42)	0.190 (1.53)	0.200 (1.48)
<i>Leverage</i>	0.027 (0.76)	0.027 (0.73)	0.080** (2.82)	0.073** (2.69)
<i>Q</i>	-0.001 (-0.32)	-0.001 (-0.35)	-0.005 (-0.68)	-0.005 (-0.70)
<i>Size</i>	-0.009*** (-5.91)	-0.008*** (-5.15)	0.001 (0.03)	0.005 (0.31)
Deal Characteristics:				
<i>AllCash</i>	0.006 (1.24)	0.006 (1.17)	0.008 (0.61)	0.007 (0.48)
<i>AllStock</i>	0.005 (0.21)	0.007 (0.30)	0.047 (1.56)	0.049 (1.65)
<i>DealPremium</i>	-0.012 (-1.09)	-0.011 (-0.93)	-0.043 (-1.63)	-0.048 (-1.56)
<i>DealSize</i>	0.000 (0.03)	0.000 (0.15)	0.000 (0.25)	0.000 (0.41)
<i>PublicTarget</i>	-0.029*** (-3.12)	-0.030*** (-3.13)	-0.029** (-2.28)	-0.029** (-2.32)
<i>RelativeSize</i>	0.013 (1.14)	0.013 (1.20)	0.034 (0.66)	0.036 (0.74)
Observations	1,047	1,047	502	502
Adjusted <i>R</i> ²	0.037	0.046	0.186	0.199
Controls	Y	Y	Y	Y
Filing-year F/E	Y	Y	Y	Y
Industry F/E	Y	Y	N	N
Firm F/E	N	N	Y	Y

Table IA.VII
Acquirer's Announcement Returns and Intangible Capital

The main variable of interest in columns (1) to (3), $Nonreportable \times ProductMarketOverlap$, is an interaction term that assumes the value of 1 when the acquirer and the target firm share overlapping product markets in a nonreportable deal; and 0 otherwise. The main variable of interest in column (4), $Nonreportable \times ProductMarketOverlap \times Intangibles$, is a triple interaction term that assumes the value of 1 if the acquirer and the target firm share overlapping product markets in a nonreportable deal and the deal includes the acquisition of either brand-related or technology-related intangible capital; and 0 otherwise. Across all columns, the dependent variable, $AnnReturn$, is a continuous variable that captures the 5-day market-adjusted cumulative abnormal returns of the acquirer centered on the announcement date. Acquirer- and deal-level control variables included and reported in the estimates are the same as those included, but unreported, in tests reported in Table IV. We include filing-year and acquirer's industry fixed effects, respectively. $AnnReturn$ is winsorized at the 1% and 99% levels. Robust t -statistics are reported in parentheses and calculated using standard errors clustered at the filing-year and the acquirer's industry level, respectively. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Dependent Variable:	<i>AnnReturn</i>	<i>AnnReturn</i>	<i>AnnReturn</i>	<i>AnnReturn</i>
Sample:	<i>Brand=1</i>	<i>Tech=1</i>	<i>IPRE&D=1</i>	<i>Full</i>
<i>Nonreportable</i> \times <i>ProductMarketOverlap</i> \times <i>Intangibles</i>				0.090*** (3.65)
<i>Nonreportable</i> \times <i>ProductMarketOverlap</i>	0.060** (2.50)	0.047** (2.97)	0.032 (0.86)	-0.037 (-1.40)
<i>Nonreportable</i> \times <i>Intangibles</i>				-0.064*** (-6.61)
<i>ProductMarketOverlap</i> \times <i>Intangibles</i>				-0.011 (-1.09)
<i>Nonreportable</i>	-0.006 (-0.52)	-0.018** (-2.57)	-0.019 (-0.92)	0.042*** (6.65)
<i>ProductMarketOverlap</i>	0.008 (0.69)	0.004 (0.51)	0.005 (0.37)	0.018* (1.91)
<i>Intangibles</i>				0.010 (1.45)
Observations	470	538	214	1047
Adjusted R^2	0.038	0.031	0.013	0.054
Controls	Y	Y	Y	Y
Filing-year F/E	Y	Y	Y	Y
Industry F/E	Y	Y	Y	Y

Table IA.VIII
Markups following Nonreportable M&A (seven-year window)

This table presents the full set of coefficients that were estimated but not reported in Panel A of Table V.

Dependent Variable:	(1) <i>Markup</i>	(2) <i>Markup</i>	(3) <i>Markup</i>	(4) <i>Markup</i>
Sample:	<i>Full Sample</i>	<i>Full Sample</i>	<i>Never- or Last- Treated</i>	<i>Never- or Last- Treated</i>
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post</i>	0.244*** (5.48)		0.257*** (5.59)	
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post (+3)</i>		0.352** (2.75)		0.371*** (2.90)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post (+2)</i>		0.321*** (3.96)		0.331*** (3.90)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Post (+1)</i>		0.264*** (3.34)		0.269*** (3.32)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>AcqYear</i>		0.041 (0.67)		0.045 (0.68)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Before (-2)</i>		0.060 (0.64)		0.057 (0.61)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i> × <i>Before (-3)</i>		-0.058 (-0.64)		-0.066 (-0.71)
<i>Nonreportable</i> × <i>ProductMarketOverlap</i>	-0.162 (-1.24)	-0.163 (-1.08)	-0.038 (-0.31)	-0.035 (-0.26)
<i>Nonreportable</i> × <i>Post</i>	0.025 (0.43)		0.021 (0.37)	
<i>ProductMarketOverlap</i> × <i>Post</i>	-0.033 (-0.58)		-0.046 (-0.82)	
<i>Nonreportable</i>	0.003 (0.02)	0.023 (0.13)	-0.015 (-0.11)	0.005 (0.03)
<i>ProductMarketOverlap</i>	-0.017 (-0.94)	0.010 (0.45)	-0.054** (-2.49)	-0.031 (-1.36)
<i>Post</i>	-0.012 (-0.26)		-0.008 (-0.17)	
<i>Nonreportable</i> × <i>Post (+3)</i>		-0.069 (-0.77)		-0.075 (-0.84)
<i>ProductMarketOverlap</i> × <i>Post (+3)</i>		-0.100 (-1.19)		-0.119 (-1.44)
<i>Nonreportable</i> × <i>Post (+2)</i>		0.019 (0.28)		0.015 (0.22)
<i>ProductMarketOverlap</i> × <i>Post (+2)</i>		-0.068 (-1.16)		-0.078 (-1.39)
<i>Nonreportable</i> × <i>Post (+1)</i>		0.022 (0.68)		0.019 (0.61)
<i>ProductMarketOverlap</i> × <i>Post (+1)</i>		-0.050 (-0.97)		-0.054 (-1.03)
<i>Nonreportable</i> × <i>AcqYear</i>		0.050 (1.31)		0.048 (1.19)
<i>ProductMarketOverlap</i> × <i>AcqYear</i>		-0.021 (-0.39)		-0.025 (-0.45)
<i>Nonreportable</i> × <i>Before (-2)</i>		-0.045 (-0.49)		-0.045 (-0.48)
<i>ProductMarketOverlap</i> × <i>Before (-2)</i>		-0.025 (-0.75)		-0.023 (-0.62)
<i>Nonreportable</i> × <i>Before (-3)</i>		-0.014 (-0.14)		-0.014 (-0.14)
<i>ProductMarketOverlap</i> × <i>Before (-3)</i>		-0.054 (-0.99)		-0.045 (-0.81)
<i>Post (+3)</i>		-0.005 (-0.06)		0.000 (0.00)
<i>Post (+2)</i>		-0.021 (-0.35)		-0.017 (-0.29)
<i>Post (+1)</i>		-0.024 (-0.59)		-0.020 (-0.50)
<i>AcqYear</i>		-0.029 (-0.66)		-0.027 (-0.64)
<i>Before (-2)</i>		0.005 (0.14)		0.004 (0.12)
<i>Before (-3)</i>		-0.028 (-0.66)		-0.028 (-0.66)
Sample Markup (Mean)	2.284	2.284	2.278	2.278
Observations	6,748	6,748	6,643	6,643
Adjusted <i>R</i> ²	0.886	0.886	0.885	0.884
Acquisition-year F/E	Y	Y	Y	Y
Firm F/E	Y	Y	Y	Y

Table IA.IX
Markups and Relative Size

This table presents results from ordinary least squares (OLS) regressions of changes in markups on an indicator for whether the deal was reportable or nonreportable to the antitrust authorities. In Panel A, we present summary statistics for *RelativeSize*, which is *DealSize* scaled by the market value of equity of the acquirer. In Panel B, we present regression estimates, by quantile of *RelativeSize*. Across all columns, we include filing-year and acquirer's industry fixed effects, respectively. Robust *t*-statistics are reported in parentheses and calculated using standard errors clustered at the filing-year and the acquirer's industry level, respectively. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.

Panel A. Summary Statistics					
Percentile:	10th	25th	Mean	75th	90th
<i>RelativeSize</i>	0.016	0.042	0.259	0.247	0.486

Panel B. Markups and Relative Size					
Dependent Variable:	(1)	(2)	(3)	(4)	
	$\Delta Markup$	$\Delta Markup$	$\Delta Markup$	$\Delta Markup$	
Relative Size:					
	<i>Lower</i>	<i>Upper</i>	<i>Lower</i>	<i>Upper</i>	
	<i>Quartile</i>	<i>Quartile</i>	<i>Decile</i>	<i>Decile</i>	
<i>Nonreportable</i> \times <i>ProductMarketOverlap</i>	0.099 (1.17)	0.397** (2.99)	0.078 (0.51)	0.472** (2.38)	

Table IA.X
Quality of Nonreportable M&A

This table presents results from ordinary least squares (OLS) regressions of patent importance and breakthrough patents on an indicator for whether the deal was reviewed or not reviewed by the antitrust authorities. The main variable of interest in columns (1), (3), (5), (7), *Nonreportable*, is an indicator variable that assumes the value of 1 if the target firm's assets are below the size-of-person asset threshold; and 0 otherwise. The main variable of interest in columns (2), (4), (6), (8), *Nonreportable* \times *ProductMarketOverlap*, is an interaction term that assumes the value of 1 when the acquirer and the target firm share overlapping product markets in a nonreportable deal; and 0 otherwise. The dependent variable, *PatentImpt*, is a continuous variable that measures the importance of the patent; and the dependent variable, *BreakThrough*, is an indicator variable that assumes the value of 1 if the patent is a breakthrough innovation; and 0 otherwise. All variables are described in Internet Appendix Section VI. We include filing-year fixed effects and an acquirer fixed effect in all columns. We vary the inclusion of a control variable, *DealValue*, as indicated at the bottom of each column. Robust *t*-statistics are reported in parentheses and calculated using standard errors clustered at the filing-year and the industry level, respectively. *, **, *** represent significance at the 10%, 5%, and 1% level, respectively.

Table IA.XI
Nonreportable Pharmaceutical M&A

This table presents results from ordinary least squares (OLS) regressions of intangibles on nonreportable pharmaceutical M&A. The main variable of interest, *Nonreportable*, assumes the value of 1 if the target firm's assets are below the size-of-person asset threshold, and 0 otherwise. In columns (1) and (2), the dependent variable is 1 plus the natural log of intangible assets. In column (3) and (4), the dependent variable is the proportion of intangibles, measured as the level of intangibles scaled by the sum of assets plus intangibles plus goodwill. In all columns, we include only horizontal deals in the pharmaceutical industry, defined as deals with targets and acquirers having the same 3-digit NAICS code (i.e., NAICS code '325'). We include filing-year fixed effects in columns (2) and (4). Robust *t*-statistics are reported in parentheses and calculated using standard errors clustered at the reporting-year level. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Dependent Variable:	<i>Log</i> <i>(Intangibles)</i>	<i>Log</i> <i>(Intangibles)</i>	<i>Proportion of</i> <i>Intangibles</i>	<i>Proportion of</i> <i>Intangibles</i>
<i>Nonreportable</i>	0.507* (1.97)	0.478* (1.74)	0.398*** (7.91)	0.387*** (7.32)
Observations	169	169	169	169
Adjusted <i>R</i> ²	0.025	0.011	0.345	0.354
Filing-year F/E	N	Y	N	Y

Table IA.XII
Second Requests and Pull-and-Refils

This table presents the number of Second Requests (in Panel A) and Pull-and-Refils (in Panel B) for M&A with deal values that fall between the lower and upper size-of-transaction thresholds. (See Figure 3 for size-of-transaction thresholds.) Deals within this range are subject to the size-of-person (SoP) test. We also present the total number of Second Requests and Pull-and-Refils across all deal-value sizes and the percent of all Second Requests and Pull-and-Refils that fall between the lower and upper size-of-transaction thresholds. FTC Fiscal Year is October through September (per the HSR Annual Reports).

Panel A. Second Requests (2001 to 2019)			
	(1)	(2)	(3)
FTC Fiscal Year	Second Requests (within Lower and Upper Thresholds)	Total Second Requests	Percent of Total Second Requests (1) ÷ (2)
2001	20	70	29%
2002	17	49	35%
2003	15	35	43%
2004	12	35	34%
2005	13	50	25%
2006	16	45	35%
2007	21	63	33%
2008	12	41	28%
2009	7	31	22%
2010	16	46	35%
2011	11	58	19%
2012	14	49	29%
2013	14	47	29%
2014	9	51	18%
2015	8	47	17%
2016	11	54	21%
2017	11	51	22%
2018	7	45	15%
2019	7	61	12%
Total	241	928	26%

Panel B. Pull-and-Refils (2001 to 2019)			
	(1)	(2)	(3)
Pull-and-Refils (within Lower and Upper Thresholds)	Total Pull-and-Refils	Percent of Total Pull-and-Refils (1) ÷ (2)	
Pull-and-Refils	18	163	11%

Table IA.XIII
Deal Termination and Renegotiation Risk

This table presents descriptive statistics of renegotiated and terminated M&A. We obtain M&A data from Refinitiv. A deal is included in this sample if the M&A was announced between January 1, 1997, and December 31, 2018, and if the deal value is at least \$50 million. Completed and terminated M&A are included in the sample. Panel A describes the data by time and by event. Events are identified by an extensive examination of the public disclosures of contractual amendments, SEC filings, and news articles for each M&A. Panel B presents the reasons for renegotiations and terminations, which we obtain from publicly available documents.

Panel A. Distribution of all deals, renegotiations, and terminated deals																					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)										
All Deals	Reneg. Up	Reneg. Down	All renege.	Term. by target	Term. by acquirer	Mutually term.	Term. by authority	Term. by vote	Undisc. term.	All term.											
Years	N	N	%of deals	%of deals	%of deals	%of deals	%of deals	%of deals	%of deals	%of deals											
1997 - 2001	1953	25	1.3%	27	1.4%	52	2.7%	11	0.6%	19	1.0%	47	2.4%	10	0.5%	0	0.0%	5	0.3%	92	4.7%
2002 - 2008	1424	31	2.2%	22	1.5%	53	3.7%	13	0.9%	13	0.9%	19	1.3%	6	0.4%	9	0.6%	0	0.0%	60	4.2%
2009 - 2018	1517	38	2.5%	7	0.5%	45	3.0%	9	0.6%	3	0.2%	15	1.0%	9	0.6%	3	0.2%	0	0.0%	39	2.6%
Total	4894	94	1.9%	56	1.1%	150	3.1%	33	0.7%	35	0.7%	81	1.7%	25	0.5%	12	0.2%	5	0.1%	191	3.9%

**Table IA.XIII. Deal Termination and Renegotiation Risk
(Continued)**

Panel B. Reasons for renegotiations and terminations					
Reason	Reneg. up	Reneg. down	Term. by target	Term. by acquirer	Mutually term.
Board dissent (acquirer or target)			3	1	
Breach of terms (acquirer or target)			12	4	1
Competing offer	51				
Contract change	1	3			
Creditor concern		6		5	
Deadline expired			10		3
Due diligence				2	1
Material adverse event (acquirer or target)	1	35	6	15	39
Proxy advisor disapproval	3				
Authority concern		3	2	1	5
Renegotiation unsuccessful					4
Shareholder dissent	24				5
Strategic reason		2			16
Undisclosed reason	14	7		6	7
Total	94	56	33	34	81

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