STEALTH CONSOLIDATION: EVIDENCE FROM AN AMENDMENT TO THE HART-SCOTT-RODINO ACT

Thomas Wollmann†

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Abstract

Prospective merger review is the most frequent application of antitrust law, though it exempts deals below certain size thresholds. When industries are highly segmented, these exemptions can lead to stealth consolidation: anticompetitive mergers whose small size enables them to escape regulatory scrutiny but whose cumulative effect is large. I study this using an amendment to US law that raised reporting thresholds, leading to an abrupt, 70% drop in premerger notifications to the government. Below the amended threshold, enforcement fell to almost zero while mergers between competitors rose sharply. Exempt transactions consolidated hundreds of billions of dollars in US output.

†University of Chicago Booth School of Business; email: thomas.wollmann@chicagobooth.edu; Corresponding author address: 5807 South Woodlawn Avenue, Chicago, IL 60637.
Antitrust laws serve a vital role in society, safeguarding against mergers-to-monopoly and the ensuing deadweight losses that would occur in their absence. Their most frequent application by far is prospective merger review, wherein government agencies assess the anticompetitive effects of deals prior to their completion. This review process depends crucially on the relevant authorities receiving advanced notice of pending transactions, and as a result premerger notification requirements exist in the majority of the over 150 countries and supranational unions with antitrust laws. Such programs exempt transactions that fall below certain size thresholds, which can screen out minor deals unlikely to have major effects on market structure. For industries that are highly segmented, however, these exemptions can result in stealth consolidation: anticompetitive deals whose small size enables them to escape regulatory scrutiny but whose cumulative effect is large.

To illustrate, consider two large industries that are otherwise identical except that the second is geographically segmented. To fix ideas, suppose the relevant market of the first is national, e.g., as in automotive manufacturing, while the second is local, e.g., as in funeral services. If, at some point, firms in the first industry desire to merge to reduce rivalry, these attempts would likely require premerger notifications, thereby inviting antitrust scrutiny. In the second industry, however, even mergers to monopoly may fail to trigger a single filing, and such events are not without historical precedent. Recent examples range from web-based business services and equipment manufacturing to healthcare and death care.

Exempt deals, though, are economically substantial. Mergers transfer trillions of dollars in ownership rights each year, and the vast majority fall below premerger reporting thresholds. Moreover, thresholds have been increasing worldwide for decades. As a result, stealth consolidation may play a role in increasing aggregate concentration and, in turn, affecting markups [De Loecker and Eeckhout, 2017] and private investment [Gutiérrez and Philippon, 2016], aiding the rise of “superstar” firms [Autor et al., 2017], and even impacting the share of output going towards profits [Barkai, 2016] and away from labor [Elsby et al., 2013, Karabarbounis and Neiman, 2013].

I study these issues in the context of US merger activity and antitrust enforcement. The country’s premerger notification program was established with the 1976 Hart-Scott-Rodino (“HSR”) Antitrust Improvements Act, regarded today as one of the most important pieces of antitrust legislation in the

\[^1\]In the last decade, e.g., the US Department of Justice investigated 758 mergers and reviewed 15,311 premerger filings. All other competition-related investigations totaled only 509.

\[^2\]Most countries without them are creating them. Egypt is the most recent. Note that Egyptian mergers affecting cross-border commerce with other COMESA member states already require a premerger notification.

\[^3\]For the first and second, see US v. Bizarrevoice, an online review platform, and US v. Election Systems & Software, a voting equipment manufacturer, respectively. For the third and fourth, see Section 4.
The Act provides exemptions based on revenues, assets, the proportion and value of control transferred, and the type of economic activity the parties are engaged in. In practice, though, the Act can be summarized as exempting deals only if the target firm has assets under $10 million (and sales under $10 million, in the event the target is engaged in manufacturing). The only major modification of the program came with a December 27, 2000 Amendment to the Act, which can be summarized as additionally exempting transactions valued at less than $50 million, i.e. the “amended threshold”. Figure I shows the dramatic effect on notifications. They rise throughout the 1990s alongside mergers from just over 1,000 to nearly 4,000, but as the Amendment takes effect they fall abruptly by 70%. In short, the competition authorities stopped receiving details about—or warning of—most previously-reported US mergers.

My data consists of premerger notifications and antitrust enforcement actions, compiled by the US Department of Justice (“DOJ”) and Federal Trade Commission (“FTC”), and of reported US mergers, collected by Thomson Reuters. These measures are observed annually from 1994 to 2011, above and below the amended threshold, so variation occurs due to the timing of the Amendment and the size of the transactions. Notably, 30% of all enforcement actions prior to the Amendment target deals valued at less than $50 million, which rejects the notion that smaller deals are unlikely to cause anticompetitive harm. In the merger data, additional variation occurs because deals are categorized as either horizontal or non-horizontal. Horizontal deals are defined by the target and acquirer operating in the same narrowly-defined industry, so they often involve a merger between direct competitors. Thus, they present a distinct concern.

I first estimate effects on enforcement. If premerger notifications are crucial to the detection and challenge of anticompetitive deals, then agency actions directed towards mergers valued at less than $50 million should decline post-Amendment. I find that DOJ and FTC actions directed towards newly-exempt transactions fall sharply from about 150 per year to near zero. (Note that this is of no presumed fault of the US agencies, only of the legislation.) A coincidental shift towards less aggressive policy is an unlikely culprit. For deals valued at or above $50 million, merger activity and enforcement actions track closely with one another throughout the sample.

I then estimate the extent of stealth consolidation. If infrequent enforcement encourages anticompetitive deals, then horizontal mergers valued at less than $50 million should rise post-Amendment. I employ a difference-in-difference (“DD”) research design, which controls for shifts in merger activity
over time by comparing the post-Amendment change in horizontal mergers to the post-Amendment change in non-horizontal mergers. I also employ a triple-difference (“DDD”) research design, which additionally controls for shifts in horizontal merger activity over time by comparing the aforementioned DD estimate to one obtained on mergers valued at or above $50 million. I find that the decrease in enforcement leads to an increase in mergers between competitors. Below the amended threshold, horizontal and non-horizontal mergers track very closely with one another prior to the Amendment but diverge sharply after the it. This is unlikely to be driven by factors increasing horizontal merger activity overall: above the amended threshold, horizontal and non-horizontal mergers track very closely with one another throughout the sample.

DD and DDD estimates are close in magnitude and precision. They indicate a 19 to 22 percentage point increase in horizontal, newly-exempt mergers—between 253 to 324 economically-relevant firms each year that are acquired in response to the Amendment. These mergers consolidate an additional $32-40 billion of annual US output over the post-Amendment period. If one considers all horizontal mergers falling outside the purview of the Act over the full sample, then stealth consolidation transfers ownership over $250-325 billion in annual US output. For a sense of scale, this is 32-44% of the increase in four and eight firm industry concentration over the sample.

While there is little or no academic research examining these issues or quantifying their importance, the idea is certainly known to practitioners. For example, one prestigious, multinational law firm explicitly advises its clients with respect to “smaller scale transactions” that the “use of terms like ‘dominant,’ ‘powerful,’ ‘rationalizing,’ and ‘strength’ tend to get the attention of the regulators when used in reference to a completed transaction” [Murphy, 2016]. Another states, “Not only do competitors and frustrated suppliers have an incentive to tell the agencies about non-reportable deals in their markets, they can provide significant market information and direction on issues for greater focus” (emphasis added). Remarkably, the firm adds that “it is prudent to avoid rapid and sudden price increases in the first year after closing, particularly if they are not tied to cost increases,” suggesting that although these transactions may permit higher markup through reduced rivalry, one should be careful to not broadcast this fact [Farrington et al., 2015].

This paper ties into a recent, growing literature on secular trends in market structure, markups, investment, and income (described briefly at the beginning of this section). If declining competition is driving these trends, then this paper provides one potential antecedent. Moreover, to the extent that “killer acquisitions” shutdown small rivals and eliminate future competition [Cunningham et al., 2017], or to the extent that concentration facilitates entry barriers, stealth consolidation may also contribute to
the decline in economic dynamism in the US [Decker et al., 2014]. Notably, these changes—particularly those evidenced by US data—coincide with or accelerate around the effective date of the Amendment. Other candidate explanations include increasing common ownership of across rival firms by asset managers [Azar et al., 2016, Antón et al., 2016] and less restrictive antitrust policy overall following the 1982 Merger Guidelines and influential work of Robert Bork [Peltzman, 2014], though these are probably complementary rather than competing theories with respect to the present work.

1 Institutional details

Requiring notification

In the absence of premerger notification requirements, US antitrust enforcement was relatively ineffective [Baer, 1996]. The responsibility for discovering mergers near their completion fell to the agencies and proved difficult. In the event an anticompetitive deal was not spotted and challenged quickly, the process of ex post unwinding was so slow and expensive that it came to be known as “unscrewing the egg.” When, for example, El Paso Natural Gas Co. acquired its only potential rival in a market, the government’s challenge lasted 17 years and involved seven trips to the Supreme Court [Signs, 2015]. As a result, the agencies balked at pursuing completed deals and, in response, firms merged “speedily and surreptitiously” to avoid detection. Antitrust entered an era of what are euphemistically called “midnight mergers” [Baer, 1996].

To combat the problem, Congress provided bicameral, bipartisan support to the 1976 Hart-Scott-Rodino (“HSR”) Antitrust Improvements Act, which established the US premerger notification program. Firms who wish to merge and are not explicitly exempted by the Act must notify the agencies of their intentions. They then must wait a predetermined period—about a month—before closing the deal.

The Act provides exemptions. Transactions in the ordinary course of business, like an airline’s purchase of a jet, or those that do not affect US commerce, like the combination of firms that only operate in Canada, do not require a filing. There are also exemptions based on size. In particular, a filing is required when both a “size-of-persons” and “size-of-transaction” test are met. The first of these tests is met if (a) the acquired party is engaged in manufacturing, has sales or assets of $10 million

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4Profit shares roughly triple through the early-to-mid 2000s (see Figure 2(b) in particular of Barkai [2016]). Weakness in private fixed investment starts in the early 2000s (see Figures 2 and 4 in particular of Gutiérrez and Philippon [2016]). Declining dynamism accelerated since about 2000.

5For example, premerger notification program exemptions may be expediting many “common” ownership transfers. They may also work in concert with the circa-1982 enforcement changes that eliminated per se illegality for horizontal mergers.

6There are other exemptions, e.g., for hotels without casinos, which are described in the Appendix.
or more, and the acquiring party has sales or assets of $100 million or more, (b) the acquired party is not engaged in manufacturing, has assets of $10 million or more, and the acquiring party has sales or assets of $100 million or more, or (c) the acquired party has total assets of $10 million or more and the acquiring party has sales or assets of $100 million or more. The second of these tests is met if (a) 15% or more of the voting securities or assets are acquired or (b) an aggregate amount of voting securities or assets in excess of $15 million are acquired.

Though the Act is written for a host of contingencies, for almost all deals the rules simplify considerably. First, the acquirer is almost always larger than the target, so the size-of-persons test hinges on the target’s financial statements alone. Second, deals that transfer small ownership stakes can be ignored. In the first year of the data, for example, they account for only about 2.5% of notifications and less than 2.0% enforcement actions. Moreover, these deals by definition usually do not involve changes of control, so they are unlikely to have operational impact. If one ignores them, i.e. transactions where less than 15% of voting rights change hands, the size-of-transactions test is always satisfied. In practice, then, the premerger notification requirement of the Act turns on whether the target has assets under $10 million (and sales under $10 million, in the event the target is engaged in manufacturing).

**Amending the Act**

On December 20, 2000, President Clinton signed into law an Amendment to the Act, effective February 2, 2001, whose main purpose was to modify the size and nature of the aforementioned thresholds. First, with respect to the size-of-transaction test, criterion (a) was eliminated while the threshold in criteria (b) was moved from $15 million to $50 million. Second, in all cases where the size of the transaction exceeded $200 million, the parties would have to report the deal, regardless of whether the size-of-persons tests was met or not. To summarize the Act, as amended, no deal would be reportable if the transaction size was under $50MM, all deals would be reportable if the transaction size was over $200MM, and for deals whose transaction size fell between these amounts, the size-of-persons tests would apply. Last, all dollar-based thresholds increase with gross national income after September 30, 2004.

For almost all mergers, the Amendment amounted to one crucial, almost immediate change: for parties meeting the size-of-persons test, the size-of-transactions test threshold rose from $0 to $50 million. The 15% transfer-of-control criterion can be ignored, following the logic above, as can the elimination of the size-of-persons test for transactions over $200 million. For the latter test to bind,
a deal must be valued at twenty times the underlying assets or more (and/or at twenty times sales or more, if the target was engaged in manufacturing), which is very unlikely. The Amendment also stipulated a trivial filing fee increase, equal to, at worst, 0.0016 of the transaction value. The Appendix provides more detail.

2 Data

Sources

The “Hart-Scott-Rodino Annual Report” provides data on the US premerger notification program. The DOJ and FTC jointly author the report, which counts the number of transactions for which the agencies receive premerger notifications (Notifications) and the number of enforcement actions taken on these transactions (HSRActions). Each measure is available above and below the amended threshold. To count agency actions taken outside the scope of the Act, I turn to the annual “Workload Statistics” of the DOJ. The report provides the number of “non-HSR civil investigative demands” (NonHSRs).

The “Thomson Reuters Mergers & Acquisition database” provides transaction details. It is an industry-leading source of information on worldwide ownership data and heavily relied upon by academics as well as practitioners. Included are the transaction date of the deal, the transaction value, and the industry, revenue, and assets of the target and acquirer, where available. Transactions fall into three groups: those that are never exempt from the Act, newly exempt due to the Amendment, and always exempt (because they do not involve US commerce, fail the size-of-persons test, etc.). The research design centers around comparisons between the first two, so the third group is excluded (except in Table II, where it is otherwise noted). The Appendix describes variable construction in detail.

Summary

Panels A-B of Figure II plot mergers and notifications over time, above and below the amended threshold. Over 57,000 mergers comprise the sample, which spans eighteen years. The mean number of mergers each year is 3,180. As few as 2,070 and as many as 4,996 firms are acquired in a given year.

7 The latter include both “clearances” and “second requests,” which closely proxy for antitrust investigations and challenges.

8 These are the first step to challenging a nonreportable and/or consummated deal. The FTC does not publish this statistic, but it can be approximated by the DOJ’s figure, since on all other dimensions these agencies’ actions are highly correlated. (For example, correlation in formal merger enforcement actions between 1994 to 2011 is 77%, with each contributing equally, i.e. 414 for the FTC and 411 for the DOJ.)

9 In rare cases, an alternative data provider, CapitalIQ, has transaction details that Thomson Reuters does not. When possible, I use the additional data sources to fill in missing transaction value, sales, and asset figures.
The DOJ and FTC receive advanced notice of 31,464 pending transactions over this period, as required by the Act.

[Figure II about here.]

Comparing the plots over time, it is clear that the Thomson Reuters data boasts not only good coverage but also accurate information. Prior to the Amendment, when the total number of notifications and mergers should be near one another, the two measures differ by 19%. Over all years, but restricting the sample to above-the-amended-threshold observations, for which notifications are always required, they differ by 23%. This is not surprising, since some merging parties each year claim exemptions that I do not observe. Paramount to this, the ratio of above-the-amended-threshold to below-the-amended-threshold observations tallied by the DOJ and FTC prior to the Amendment (0.716) almost exactly equals the ratio based on the asset, sales, and transaction values extracted from Thomson Reuters (0.722). Perhaps most compelling, notifications and mergers track closely with one another from year to year (modulus the affect of the Amendment). Prior to the Amendment, the correlation between these two is 93%. Over all years, but restricting the sample to above-the-amended-threshold observations, the correlation is 91%.

Validation

These graphs also validate the use of the quasi-experiment to study stealth consolidation. They rule out that a drop in merger activity overall—perhaps related to the “dot com” bust and ensuing recession—drives the aforementioned 70% drop in notifications. In fact, mergers activity falls less than 25% year-over-year and recovers completely by the mid-2000s. Notifications never recover.

They also confirms that, conditional on merger activity, below-the-amended-threshold notifications account for effectively all of the drop. These fall abruptly from over 2,000 in the year prior to the Amendment to zero, or very close to it, in the years subsequent to the Amendment. Outside this drop, though, other pre/post-Amendment comparisons are similar to one another. Ratios of post-2001 to pre-2000 above-the-amended-threshold mergers, above-the-amended-threshold notifications, and below-the-amended-threshold mergers are all between 0.85 and 0.93.

10 In the year that the Amendment took effect, they total 300. This is roughly consistent with sub-$50MM transactions being required for just over a month in that year.
Relevance

For an initial sense of harm caused by nonreportable mergers, note that 30% of all enforcement actions taken by the DOJ and FTC from 1994 to 2000 were directed towards mergers whose transaction size fell below $50 million. This is lower than the proportion of all mergers that these deals account for, which squares with the notion that smaller deals are on average less harmful, but is nonetheless striking. If enforcement actions provide an unbiased measure of harm, then the Amendment could blind the authorities to nearly one-third of all anticompetitive mergers—even before one allows for an equilibrium response by firms, which will increase this proportion. Moreover, since “mega-mergers” receive widespread media attention, they may face more stringent enforcement, in which case this yields a lower rather than upper bound on harm from exempt deals.

3 Empirical framework

Enforcement

The agencies are not restricted to challenge only deals for which they’ve received a premerger notification. Any deal can be challenged, regardless of size or completion status. Since an increase in agency actions taken outside the purview of the Act can, at least in theory, compensate for a drop in those taken within it, the effect of the Amendment and of the thresholds more generally is still unclear. Thus, the first empirical question is whether and by how much enforcement rates vary based on whether the competition authorities receive advanced warning of an impending deal.

To measure the effects of the threshold on enforcement, I exploit variation provided by the Amendment, which eliminates the premerger notification requirement for a well-defined set of prospective mergers in the data. I measure enforcement both with \( HSRActions \) and with the sum of \( HSRActions \) and \( NonHSRs \), and I identify the effect of premerger reporting by comparing pre- and post-Amendment enforcement rates for newly-nonreportable transactions. I can also contrast this result with one derived from transactions above the amended threshold, i.e. never-exempt transactions. Previewing the result somewhat, the comparisons reported in the following section are rather stark, so I omit a lengthier discussion of identification and inference here.

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11The AT&T and T-Mobile, Nasdaq and New York Stock Exchange, and Aetna and Humana proposed mergers are all recent examples.
Stealth consolidation

In the event that enforcement rates are much lower for exempt deals, firms may respond with stealth consolidation. If they do, then the 30% figure arrived at in the prior section may significantly understate harm from exempt deals, since it is based on a selected set of prospective transactions that are not obviously anticompetitive. Thus, the second empirical question is whether and by how much parties contemplating an anticompetitive merger are more likely to follow through if no premerger notification is required of them.

To measure the response to decreased antitrust scrutiny, I exploit the fact that horizontal mergers are anticompetitive relative to non-horizontal ones. That is, transactions in which the target and acquirer operate in the same primary four-digit SIC code industry are by definition more likely to reduce rivalry.\(^{12}\) This view is shared by the US competition authorities: since 1992, they have even titled their general merger evaluation procedures the “Horizontal Merger Guidelines.” I then rely on variation provided by the Amendment.\(^{13}\)

I employ two identification strategies. A “DD” design compares the number of horizontal and non-horizontal mergers, below the amended threshold, before and after the Amendment. The DD estimating equation is given by

\[
\ln Mergers_{it} = \beta I^H_i \cdot I^\text{Post}_t + \gamma I^H_i + \sum_{t=1994}^{2011} \left( \zeta_t I_t + \eta_t I^H_i \cdot I_t \right) + \epsilon_{it}. \quad (1)
\]

\(i\) indexes the merger type, which is either horizontal or non-horizontal. \(I^H_i\) takes a value of one for horizontal mergers and zero otherwise. \(t\) indexes the year, so \(I_t\) denote year dummies. \(I^\text{Post}_t\) takes a value of one if \(t > 2001\) and zero otherwise. The coefficient of interest is \(\beta\).

Unbiased DD estimates require error in the model to be uncorrelated with the interaction between \(I^H_i\) and \(I^\text{Post}_t\). The existence of factors aside from the Amendment that yield relatively more horizontal mergers post-2001 violate this condition. A DDD design, however, helps rule out confounding factors.

\(^{12}\)Recall that the main problem for the agencies, given the cost and difficulty of ex post unwinding, and in particular of trying to “unscramble” assets, is the timing rather than the existence of a disclosure. Thus, there is no per se tension in assuming I observe on-average anticompetitive deals in the the Thomson Reuters data but that the agencies are unaware of them for the purposes of quickly investigating and potentially blocking the transactions.

\(^{13}\)The setting tends to preclude a “regression discontinuity” research design, i.e. one that relies on a discontinuity in the probability mass distribution of transaction values at the threshold. One reason is that merging parties tend to agree on salient round number values and the US legislature selected such a value for the amended threshold. To illustrate, there are 5, 7, 9, and 10 deals valued on the intervals [$49.75MM,$49.85MM), [$49.85MM,$49.95MM), [$50.05MM,$50.15MM), and [$50.15MM,$50.25MM), respectively, but 293 deals at exactly $50,000,000. One has look as far below $50MM as $45MM and as far above $50MM as $55MM to find comparable mass in the distribution, and even still, only 200 and 142 targets transact at these values, respectively. Another reason is that manipulating transaction values, assets, or sales to avoid notification is explicitly forbidden by the Act and would entail severe penalties.
Intuitively, it compares the DD estimates that result from regressing on below-the-amended-threshold mergers to those that result from regressing on above-the-amended-threshold mergers. To illustrate, suppose that horizontal mergers increase relative to non-horizontal mergers post-Amendment by exactly the same amount above and below the amended threshold. The Amendment is an unlikely culprit, since it only affected below-the-amended threshold mergers. On the other hand, if there is a large relative post-Amendment increase in horizontal mergers only below the amended threshold, then the data provides evidence of stealth consolidation. The DDD estimating equation is given by

\[
\ln \text{Mergers}_{ist} = \theta I_i^H \cdot I_s^{\text{Below}} \cdot I_{\text{Post}} + \kappa I_i^H + \lambda I_s^{\text{Below}} + \mu I_i^H \cdot I_s^{\text{Below}} + \sum_{t=1994}^{2011} (\phi_t I_t + \chi_t I_s^{\text{Below}} \cdot I_t + \psi_t I_i^H \cdot I_t) + v_{ist}. \tag{2}
\]

s indexes the size of the transaction. \(I_s^{\text{Below}}\) takes a value of one for below-the-amended-threshold mergers and zero otherwise. The coefficient of interest is \(\theta\).

4 Results

Is enforcement affected?

To assess whether and by how much threshold changes impact enforcement, Panels C and D of Figure II report mergers and agency actions over time. Very apparent is the devastating effect of the Amendment on enforcement rates below the amended threshold, shown in Panel C. HSR-related actions fell from roughly 150 per year in the late 1990s to near zero in the years following the February 2001 law change without any appreciable increase in enforcement measures taken outside the Act.

Equally apparent, the elimination of thousands of premerger reviews did not, it seems, free up agency resources to increase scrutiny of mergers meeting the amended size-of-transactions test threshold. As shown in Panel D, Mergers and HSRActions above the amended threshold track closely with one another throughout the sample. It is impossible to say whether it is small or large deals whose enforcement is inelastic with respect to agency resources. It does, though, seem unlikely that this was driven by an Executive Branch party change, since there is no obvious reversal following the 2008 election of a Democrat.
Do firms stealth consolidate?

To assess how and whether firms respond, Figure III plots the log number of horizontal and non-horizontal mergers over time. Above the amended threshold, the Amendment does not affect reporting requirements—these deals always necessitate a notification—and should not affect the composition of transactions. The top panel confirms this hypothesis. The bottom panel shows a similar relationship, but only through 2001. At that point, horizontal and non-horizontal mergers diverge noticeably. This departure is evidence of stealth consolidation. In other words, when advanced warning to the DOJ and FTC is no longer required, as per Panel B of Figure II, resulting in a much lower likelihood of costly enforcement, as per Panel D of Figure II, direct competitors are much more likely to merge.

To quantify these differences, I turn to Table I. The first two columns report estimates from equations 1 and 2, respectively. Horizontal, below-the-amended-threshold mergers increase between 19% and 22% relative the control groups. Estimates are significant at the 1% level, and the fit of the model is very good. DD and DDD estimates are close. To see why, and to more precisely rule out that the bottom panel of Figure III reflects an exaggerated version of the top panel, column 3 re-estimates equation 1 for above-the-amended-threshold mergers. As opposed to the prior column, here we see a small, statistically insignificant decrease in horizontal deals.

The last three columns replicate the first three, except that the left-hand size is measured in levels rather than logs. As a result of the Amendment, an additional 253 to 324 horizontal, exempt mergers occur each year. Over the post-Amendment period, this translates to as many as 3,240 competition-reducing business combinations. Additional specifications, estimated in the Appendix, indicate that these results are highly robust.

Note that these mergers are likely mean illegal by Section 7 of the Clayton Act. This section prohibits deals that "may substantially reduce competition" and serves as the legal basis for agency investigations and challenges as well as court orders that block or restructure US mergers, so it is the portion of US law from which the Amendment de facto shields mergers in the bottom panel. The divergence there reflects mergers that would not have otherwise been attempted, but for the higher threshold under the Amendment—less the parties suffer high expected enforcement costs of aborting or restructuring the transactions. Thus, by revealed preference, the gap comprises deals that are on
average unlawfully anticompetitive. (An alternative explanation for this pattern in the data involves the agencies disproportionately hassling parties to horizontal transactions under the purview of the Act, although this contradicts the consensus view of the US competition authorities14 and probably the existing enforcement statistics.15)

Potential impact

Among these more than 3,000 mergers, target net revenues average $9.2-12.3 million. Thus, these deals consolidate $30-40 billion in US output over the post-Amendment period. If one considers all horizontal mergers outside the purview of the Act over the full panel (regardless of whether they pass the size-of-persons test), then there are roughly 35,000 relevant transactions among which target net revenues average $7.1-9.3 million. The caveats required to accurately equate stealth consolidation to economy-wide changes in market structure—let alone the real effects of those changes—are too numerous to list. Nonetheless, if the acquiring parties in these deals are the industries’ largest firms, and if entry barriers in their respective industries are high enough to preclude subsequent entry, then stealth consolidation could account for roughly 32-44% of the gross increase in output accounted for by the largest four and eight firms in their respective six-digit NAICS code industries. The Appendix provides detailed calculations.

Incidence across industries

For a sense of effected markets, I turn to Table II, which lists industries in which horizontal, exempt mergers are most common. Panel A sorts by proportion. Services dominate the list. Most are difficult to transport, consistent with the idea that segmentation (and in particularly the type imposed by geography) leads to smaller firms and facilitates stealth consolidation. This does not imply, though, that only local- or service-oriented businesses are affected—merely that these industries are less heterogeneous. This is apparent from Panel B, which sorts the industries by number rather than proportion. Many geographically concentrated and/or manufacturing-oriented industries top the list, including thousands of deals among medical device, pharmaceutical, and semiconductor producers.

[Table II about here.]

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14That is, they are very rarely accused of being too “interventionist” and are often described as too “conservative.” See, e.g., Voorhees [2014] for a summary of opinions on this subject.
15For example, more than 60% of DOJ “second requests” result in public challenges. From 1994 to 2011, 96% of these result in either a restructured/abandoned transaction or win in the federal court system. Also, more than 70% of FTC “second requests” result in formal enforcement actions over this period. Of these, substantially all result in settlement [Coate, 2012].
Healthcare deals are overrepresented, which are of particular concern since the sector accounts for a large, increasing share of public spending, was already highly concentrated at the time of the Amendment, and is home to research showing market power impacts not just price but quality of care.\footnote{See, e.g., Gaynor, Ho, and Town [2015].} There is recent evidence of this among hospitals [Gowrisankaran et al., 2015, Dafny et al., 2016] as well as dialysis centers [Eliason, 2018, Eliason et al., 2018], both of which appear in Panel A, and growing interest in post-acute care services, [Eliason et al., 2016, Einav et al., 2017], several of which appear in Panel B. Similarly represented are the “domestic outsourcing” industries, which have grown with the fissuring of the US workforce [Katz and Krueger, 2016].

Perhaps most striking, though, is that (aside from legal services) the top two industries here are home to highly-publicized antitrust investigations. In packaged ice, for example, 80% of deals are horizontal and exempt, and almost all involve Reddy Ice or Arctic Glacier. According to court documents, these deals contributed to a far-reaching price fixing conspiracy in which the two firms, along with a third co-conspirator, acquired smaller, independent rivals and subsequently allocated customers amongst themselves. Executives of both companies pleaded guilty to violations of the Sherman Act.

In the death care industry, as another example, state-level regulators have been critical of horizontal, exempt mergers since the late-1990s. A Florida Senate states, for example, “The consolidation of the funeral and cemetery industry in Florida has been characterized as ‘creeping expansion’ whereby a larger corporation buys one small or independent business at a time until the corporation’s acquisitions represent a substantial presence in a particular region.” It goes on to state, “Due to the small amount of assets involved in these individual buy-outs, the transactions do not trigger automatically any federal or state antitrust laws.” The effects of these deals are measurable. Court documents from one related lawsuit state, “Records of the Federal Trade Commission ‘clearly show that [Loewen] has consistently raised prices in almost every instance’ in which it established market dominance.”\footnote{See Jeremiah O’Keefe et al. v. The Loewen Group et al.}

5 Conclusion

Many direct competitors would merge but for the costly enforcement actions they would face, so legislators should expect an equilibrium response to relaxing antitrust law. For example, as the probability of detection, investigation, and challenge falls, the likelihood that rivals pursue mergers
rises. In the context of raising premerger notification program thresholds, which blind governments to many impending deals, the response is stealth consolidation. This is potentially very problematic in segmented industries, in which even small mergers can result in large increases in market power, in turn leading to sharp decreases in consumer welfare.

Mergers exempted from premerger notifications consolidated hundreds of billions of dollars in output since the mid-1990s in the US alone. Similar figures could obtain abroad, since thresholds have been rising worldwide. More work is, of course, needed to know their ultimate effect on market power, let alone consumer surplus and other real outcomes. This is left to future research.
References


David Autor, David Dorn, Lawrence F Katz, Christina Patterson, and John Van Reenen. The fall of the labor share and the rise of superstar firms. Technical report, Centre for Economic Performance, LSE, 2017.

José Azar, Martin C Schmalz, and Isabel Tecu. Anti-competitive effects of common ownership. 2016.


Figures

Figure I: Notifications drop sharply when the Amendment takes effect.

This graph plots premerger notifications filed in the US over time. Filings are received under the Hart-Scott-Rodino Antitrust Improvements Act and reviewed by the Department of Justice and the Federal Trade Commission. A vertical line marks 2001, the year the Act was amended to raise the size-of-transactions threshold at or above which mergers must be reported to the aforementioned US competition authorities.
Figure II: Effectively all of the decline in notifications and enforcement occurs below-the-amended-threshold.

Panels A and B plot premerger notifications against mergers over time. Panels C-D plot agency actions against mergers over time (with the primary y-axis counting mergers and the secondary y-axis measuring actions). The left-hand side graphs are based on transactions valued at or above $50 million, so that they meet the amended size-of-transaction test and fall within the purview of the Act. The right-hand side graphs are based on transactions that are not. In all graphs, a vertical line marks 2001, the year the Act was amended to raise the size-of-transactions threshold. The Appendix provides an accompanying table sample statistics.
Figure III: Horizontal, below-the-amended-threshold mergers increase following the Amendment.

In both graphs, the x-axis denotes the calendar year of the mergers. The y-axis denotes the log number of mergers. Plotted values are reduced by the value they take in the year of the effective date of the Amendment. In other words, all lines intersect y = 0 at x = 2001. Panel A is based on transactions valued at or above $50 million, so that they meet the amended size-of-transaction test and fall within the purview of the Act. Panel B is based on transactions that are not.
Tables

Table I: Parameter estimates

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Below</td>
<td>Above</td>
<td>All</td>
<td>Below</td>
<td>Above</td>
</tr>
<tr>
<td>$I^H_i : I_{i, Below}^s$</td>
<td>.218</td>
<td>253</td>
<td>(.0504)</td>
<td>(54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$I^H_i : I_{i, Post}^s$ (Below-the-amended-threshold)</td>
<td>.186</td>
<td>324</td>
<td>(.0457)</td>
<td>(87.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$I^H_i : I_{i, Post}^s$ (Above-the-amended-threshold)</td>
<td>-.0322</td>
<td>71.1</td>
<td>(.0377)</td>
<td>(77.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Observations | 72 | 36 | 36 | 72 | 36 | 36 |
R-squared | .997 | .988 | .993 | .995 | .96 | .947 |

Columns 1-2 report estimates from equations 1 and 2, respectively. Column 3 reports estimates analogous to those reported in column 2 but restricts the sample to above-the-amended-threshold mergers. Columns 4-6 report estimates analogous to those in columns 1-3 except that the outcome measure is in level rather than log values. Robust standard errors are reported.
Table II: Horizontal, exempt mergers by industry

<table>
<thead>
<tr>
<th>Panel A: Sorted by proportion of total</th>
<th>Panel B: Sorted by count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>Proportion</td>
</tr>
<tr>
<td>Legal Services</td>
<td>82%</td>
</tr>
<tr>
<td>Ice Manufacturing</td>
<td>78%</td>
</tr>
<tr>
<td>Cemeteries and Crematories</td>
<td>75%</td>
</tr>
<tr>
<td>Uranium, Radium, Vanadium Ore Mining</td>
<td>72%</td>
</tr>
<tr>
<td>Credit Unions</td>
<td>70%</td>
</tr>
<tr>
<td>New Car Dealers</td>
<td>68%</td>
</tr>
<tr>
<td>Elementary and Secondary Schools</td>
<td>67%</td>
</tr>
<tr>
<td>Architectural Services</td>
<td>65%</td>
</tr>
<tr>
<td>Golf Courses and Country Clubs</td>
<td>65%</td>
</tr>
<tr>
<td>Limousine Service</td>
<td>63%</td>
</tr>
<tr>
<td>Public Relations Agencies</td>
<td>63%</td>
</tr>
<tr>
<td>Water Supply</td>
<td>62%</td>
</tr>
<tr>
<td>Plumbing, Heating, and AC Contractors</td>
<td>61%</td>
</tr>
<tr>
<td>Dental Laboratories</td>
<td>61%</td>
</tr>
<tr>
<td>Cosmetology and Barber Schools</td>
<td>61%</td>
</tr>
<tr>
<td>Fitness and Recreational Sports Centers</td>
<td>58%</td>
</tr>
<tr>
<td>Insurance Agents, Brokers and Service</td>
<td>56%</td>
</tr>
<tr>
<td>Fuel Dealers</td>
<td>56%</td>
</tr>
<tr>
<td>Other Accounting Services</td>
<td>56%</td>
</tr>
<tr>
<td>Motion Picture Theaters (Not Drive-Ins)</td>
<td>55%</td>
</tr>
<tr>
<td>Kidney Dialysis Centers</td>
<td>53%</td>
</tr>
<tr>
<td>Gold Ore Mining</td>
<td>53%</td>
</tr>
<tr>
<td>Travel Agencies</td>
<td>51%</td>
</tr>
<tr>
<td>Passenger Car Rental</td>
<td>50%</td>
</tr>
<tr>
<td>Hospitals: General, Surgical, and NEC</td>
<td>50%</td>
</tr>
<tr>
<td>Retail-Grocery Stores</td>
<td>50%</td>
</tr>
<tr>
<td>Retail-Eating Places</td>
<td>48%</td>
</tr>
<tr>
<td>Employment Agencies</td>
<td>48%</td>
</tr>
<tr>
<td>Collection Agencies</td>
<td>48%</td>
</tr>
<tr>
<td>Malt Beverages</td>
<td>48%</td>
</tr>
</tbody>
</table>

This table reports thirty industries with the most horizontal, exempt mergers in the post-Amendment period. To provide a comprehensive list, it considers all mergers that fail to meet the amended size-of-transaction-test threshold (regardless of whether they meet the size-of-persons test). In Panel A, industries are sorted by the proportion of all mergers that horizontal, exempt mergers account for. In that panel, the first column reports the industry and the second reports the proportion. Panel B sorts by the number rather than proportion of these mergers. In that panel, the first column reports the industry and the second reports the number. “NEC” stands for “not elsewhere classified.”