Terms of the deal were not announced: Accounting for mergers with unpublicized values [ONLINE APPENDIX]

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1 Supplementary figures

The sample on which this paper is based differs slightly from the one on which Wollmann (2019) is based. To ensure the results presented in this paper are immediately comparable to those presented in the prior work (and to save the reader time referring back to the original paper), I replicate the exercise used to produce the main result (i.e., Figure 3 of Wollmann (2019)). Figure 1 reports this result.
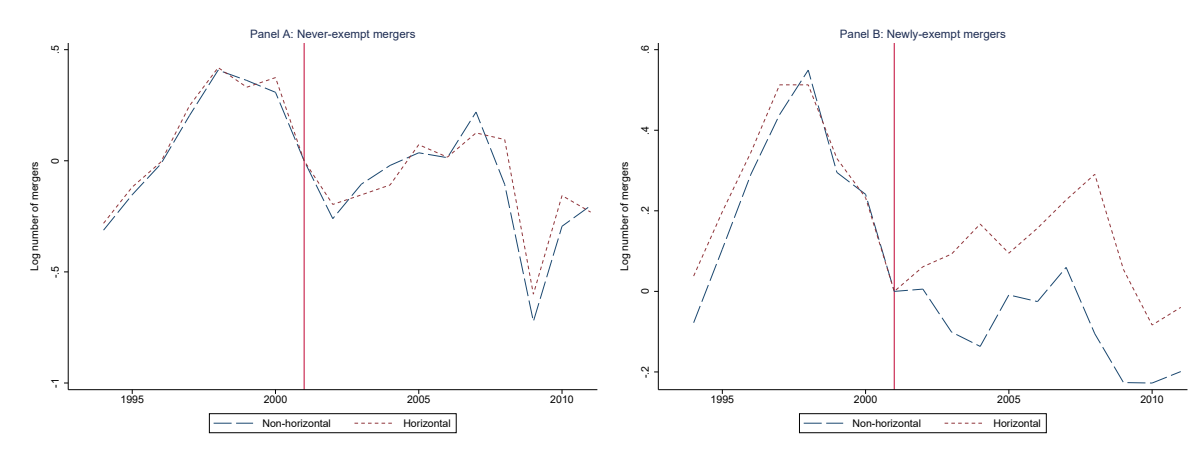

Figure 1: *Replication of prior work with current sample*

Notes.—This figure replicates the main result of Wollmann (2019). It plots the log of the number of horizontal and non-horizontal mergers over time. The underlying sample consists of deals with unpublicized values. A vertical line marks 2001, the year the HSR Act was amended to raise the size-of-transactions threshold. To facilitate comparisons, both series are normalized to zero in that year (i.e., the lines that connect the plotted points intersect y = 0 in 2001).

Figure 2 replicates Figure 2 in the body of the main text but compares mergers with publicized values to all mergers (rather than to mergers with unpublicized values).

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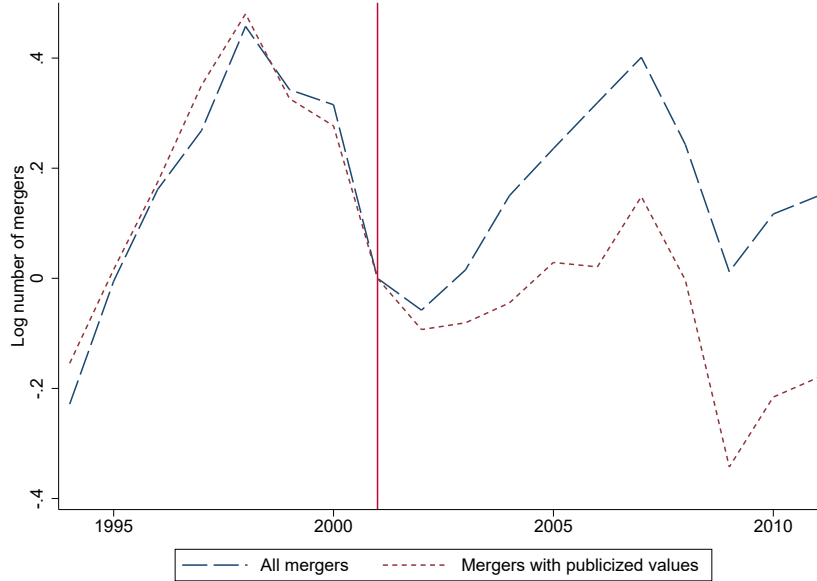
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Figure 2: *Accounting for mergers with unpublicized values affects wave amplitude*

Notes.—This figure replicates Figure 2 in the body of the main text but instead compares all mergers to mergers with publicized values. That is, it plots the log number of all mergers and the log number of mergers with publicized values over time. A vertical line marks 2001, the year the HSR Act was amended to raise the size-of-transactions threshold. To facilitate comparisons, both series are normalized to zero in that year (i.e., the lines that connect the plotted points intersect y = 0 in 2001).

2 Supplementary tables

2.1 Robustness of result reported by Figure 1 in body of main text

Table 1 tests whether shifts between public and private equity drive the post-amendment increase in horizontal mergers with unpublicized values. In columns 1 and 4, I restrict attention to mergers with unpubliciczed values; in columns 2, and 5, I restrict attention to newly-exempt mergers; and in columns 3, and 6, I restrict attention to never-exempt mergers.

Columns 1-3 report "baseline" estimates. To be specific, I collapse the dataset such that in each year, there are two observations: the number of horizontal and non-horizontal mergers. I then estimate

$$y_{it} = \beta I_i^{Horizontal} I_t^{Post} + \gamma I_i^{Horizontal} + \sum_{t=1994}^{2011} \zeta_t I_t + \epsilon_{it}, \tag{1}$$

where y denotes the number of mergers. The estimates confirm what one observes in the figures: the horizontal share of mergers with unpublicized values and newly exempt mergers increase post-amendment while the horizontal share of never-exempt mergers do not.

In columns 4-6, I report estimates that reflect variation within acquirer types. Specifically, I assign each merger an acquirer type based on the acquirer ultimate parent's entity type, i.e., public equity or public company. I collapse the dataset such that in each year and for each parent type, there are two observations:

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the number of horizontal and non-horizontal mergers. I then estimate

$$y_{itj} = \beta I_i^{Horizontal} I_t^{Post} + \alpha I_i^{Horizontal} I_j^{Private} + \sum_{t=1994}^{2011} \left(\zeta_t I_t + \eta_t I_j^{Private} I_t \right) + \epsilon_{it}, \qquad (2)$$

where y denotes the number of mergers. Notice that the estimate in columns 4 and 5 are large and significant, while the estimate in column 6 is small and insignificant. This implies that the result reported by Figure 1 in the body of the main text is not driven by shifts between public and private equity.

Table 1: *Robustness to compositional changes in acquirer type*

VARIABLES	(1) Baseline: Unpub. value	(2) Baseline: Newly exempt	(3) Baseline: Never-exempt	(4) Within: Unpub. value	(5) Within: Newly exempt	(6) Within: Never-exempt
Horiz. X Post	0.18***	0.16***	0.0099	0.15***	0.11**	0.040
	(0.035)	(0.037)	(0.034)	(0.037)	(0.046)	(0.035)
Observations	36	36	36	72	72	72
R-squared	0.991	0.992	0.995	0.987	0.990	0.996

Notes.—See the text for a description of this table.

Table 2 tests whether compositional changes in the industry mix drive the post-amendment increase in horizontal mergers with unpublicized values. In columns 1, 4, and 7, I restrict attention to mergers with unpubliciczed values; in columns 2, 5, and 8, I restrict attention to newly-exempt mergers; and in columns 3, 6, and 9, I restrict attention to never-exempt mergers.

Columns 1-3 report "baseline" estimates. To be specific, I collapse the dataset such that in each year, there are two observations: the number of horizontal and non-horizontal mergers. I then estimate

$$y_{it} = \beta I_i^{Horizontal} I_t^{Post} + \gamma I_i^{Horizontal} + \sum_{t=1994}^{2011} \zeta_t I_t + \epsilon_{it}, \qquad (3)$$

where y denotes the number of mergers. As in the prior table, the estimates estimates confirm what one observes in the figures: the horizontal share of mergers with unpublicized values and newly exempt mergers increase post-amendment while the horizontal share of never-exempt mergers do not.

The remaining columns require industry information. I assign each merger a two-digit SIC code, which is a truncated version of the four-digit SIC code of the target firm. The goal is to estimate within-SIC2 estimates, but not all SIC2s have at least one horizontal and non-horizontal merger in every year, so I restrict attention to SIC2s that produce a balanced panel. I then replicate the process used to generate estimates in columns 1-3. Columns 4-6 report the results, which are similar to those reported in the first three columns.

In columns 7-9, I report estimates that reflect variation within SIC2s. I collapse the dataset such that in each year and for each SIC2, there are two observations: the number of horizontal and non-horizontal mergers. I then estimate

$$y_{its} = \beta I_i^{Horizontal} I_t^{Post} + \sum_{s \in S} \alpha_s I_i^{Horizontal} I_s + \sum_{t=1994}^{2011} \zeta_t I_t + \sum_{t=1994}^{2011} \sum_{s \in S} \eta_{ts} I_t I_s + \epsilon_{it}, \qquad (4)$$

where y denotes the number of mergers. and where S is the set of SIC2s. Notice that the estimates in

column 7 and 8 are large and significant, while the estimate in column 9 is small and insignificant. This implies that the result reported by Figure 1 in the body of the main text is not driven by compositional shifts across industries.

Table 2: *Robustness to composition changes in industry mix*

VARIABLES	(1) Baseline: Unpub. value	(2) Baseline: Newly exempt	(3) Baseline: Never-exempt	(4) Balanced: Unpub. value	(5) Balanced: Newly exempt	(6) Balanced: Never-exempt	(7) Within: Unpub. value	(8) Within: Newly exempt	(9) Within: Never-exempt
Horiz. X Post	0.18***	0.16***	0.0099	0.18***	0.13***	-0.039	0.12***	0.16***	0.029
	(0.035)	(0.037)	(0.034)	(0.037)	(0.042)	(0.046)	(0.033)	(0.050)	(0.057)
Observations	36	36	36	36	36	36	1,332	468	540
R-squared	0.991	0.992	0.995	0.990	0.987	0.991	0.958	0.960	0.934

Notes.—See the text for a description of this table.

2.2   Robustness of result reported by Figure 2 in body of main text

Table 3 tests whether shifts between public and private equity drive the post-amendment increase in mergers with unpublicized values.

Column 1 reports "baseline" estimates. To be specific, I collapse the dataset such that in each year, there are two observations: the number of mergers with publicized and unpublicized values. I then estimate

$$y_{it} = \beta I_i^{Unpub.} I_t^{Post} + \gamma I_i^{Unpub.} + \sum_{t=1994}^{2011} \zeta_t I_t + \epsilon_{it}. \tag{5}$$

As in the prior table, the estimates estimates confirm what one observes in the figures: the share of mergers with unpublicized values increases post-amendment.

In column 2, I report estimates that reflect variation within acquirer types. Specifically, I assign each merger an acquirer type based on the acquirer ultimate parent's entity type, i.e., public equity or public company. I collapse the dataset such that in each year and for each acquirer type, there are two observations: the number of mergers with publicized and unpublicized values. I then estimate

$$y_{itj} = \beta I_i^{Unpub.} I_t^{Post} + \alpha I_i^{Unpub.} I_j^{Private} + \sum_{t=1994}^{2011} \left(\zeta_t I_t + \eta_t I_j^{Private} I_t \right) + \epsilon_{it}. \tag{6}$$

Notice that the estimate in column 2 is large and significant. This implies that the result reported by Figure 2 in the body of the main text is not driven by shifts between public and private equity.

Table 3: *Robustness to compositional changes in acquirer type*

VARIABLES	(1) Baseline	(2) Within
Unpublicized X Post	0.45***	0.48***
	(0.068)	(0.029)
Observations	36	1,800
R-squared	0.933	0.961

Notes.—See the text for a description of this table.

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Table 4 tests whether compositional changes in the industry mix drive the post-amendment increase in mergers with unpublicized values.

Column 1 reports "baseline" estimates. To be specific, I collapse the dataset such that in each year, there are two observations: the number of mergers with publicized and unpublicized values. I then estimate

$$y_{it} = \beta I_i^{Unpub.} I_t^{Post} + \gamma I_i^{Unpub.} + \sum_{t=1994}^{2011} \zeta_t I_t + \epsilon_{it}. \tag{7}$$

As in the prior table, the estimates estimates confirm what one observes in the figures: the share of mergers with unpublicized values increases post-amendment.

The remaining columns require industry information. I assign each merger a two-digit SIC code, which is a truncated version of the four-digit SIC code of the target firm. The goal is to estimate within-SIC2 estimates, but not all SIC2s have at least one merger with an unpublicized value and one merger with a publicized value, so I restrict attention to SIC2s that produce a balanced panel. I then replicate the process used to generate estimates in column 1. Column 2 reports the result, which is similar to the one reported in the column.

In column 3, I report estimates that reflect variation within SIC2s. I collapse the dataset such that in each year and for each SIC2, there are two observations: the number of mergers with publicized and unpublicized values. I then estimate

$$y_{its} = \beta I_i^{Unpub.} I_t^{Post} + \sum_{s \in S} \alpha_s I_i^{Unpub.} I_s + \sum_{t=1994}^{2011} \zeta_t I_t + \sum_{t=1994}^{2011} \sum_{s \in S} \eta_{ts} I_t I_s + \epsilon_{it}, \tag{8}$$

where S is the set of SIC2s. Notice that the estimate in column 3 is large and significant. This implies that the result reported by Figure 2 in the body of the main text is not driven by compositional shifts across industries.

Table 4: *Robustness to composition changes in industry mix*

VARIABLES	(1) Baseline	(2) Balanced	(3) Within
Unpublicized X Post	0.45***	0.45***	0.40***
	(0.068)	(0.068)	(0.068)
Observations	36	36	72
R-squared	0.933	0.933	0.952

Notes.—See the text for a description of this table.

3 Policy developments

Since the problem has been identified, various policy changes have been proposed to address the lack of antitrust scrutiny applied to nonreportable mergers.

State level example. New York's legislature introduced the "Twenty-First Century Anti-Trust Act" (S933). It establishes a state-level premerger notification requirement. As originally written, it would target much smaller transactions than federal reporting requirements, but it would be limited to persons or entities con-

ducting business in the state. An amended version of the bill, which was introduced in May 2022, amended the original threshold upwards.

Federal level: agencies restore prior approval. In July 2021, the Commission rescinded a 1995 policy statement, which had prevented it from imposing these merger restrictions. This restores the long-established practice of routinely restricting future acquisitions for merging parties that pursue anticompetitive transactions. As a result, acquisitive firms will have to obtain prior approval from the agency before closing any future transaction affecting each relevant market for which a violation was alleged, for a minimum of ten years.

Federal level: Congress contemplates lowering thresholds. Senator Richard Blumenthal discussed introducing these changes. See March 2019 Subcommittee hearing on "Does America Have a Monopoly Problem?: Examining Concentration and Competition in the US Economy" at 1:36:00.[1]

Federal level: FTC issues special orders. The Federal Trade Commission (FTC) issued special orders in February 2020 that compelled the five largest US firms to disclose all acquisitions over the past decade. The resulting report, which was published 18 months later, revealed over 1,000 previously unreported mergers. It highlights that many of these deals would have been reported if the thresholds incorporated other forms of consideration (e.g., debt, deferred compensation, and milestone payments to sellers).

Supranational level: the European Commission expands reporting requirements. In March 2021, it published a guidance paper that encourages national competition authorities to refer mergers to the EC for review even if they do not reach national premerger notification thresholds in the Member States. Under Article 22, a Member State may request that the EC to review a transaction if it (a) affects trade between Member States and (b) threatens to significantly affect competition.

4 Sample construction

4.1 Data that produces Figures 1 and 2 in the body of the main text

Refinitiv (previously known as Thomson Reuters Mergers and Acquisitions Database, Eikon, Securities Data Corporation, and SDC) tracks global ownership transfers. It is by far the most comprehensive source of this information, especially for US mergers (see Barrios and Wollmann (2022) for various facts that support this claim). The data provider reports the target's and acquirer's names, CUSIPs, primary four-digit SICs, nations in which they are headquartered and incorporated, and organization types (e.g., public company, private company, subsidiary, government-owned entity, etc.) in addition to other select deal-specific information, including an announcement and effective dates.

I extract from Refinitiv all mergers where the *Target Nation* variable equals "United States of America," and I exclude all mergers with the *Form of the Deal* variable equals "Buyback." I limit the sample to mergers where the *Acquiror Ultimate Parent Public* variable equals "Public" or "Private." This drops a small number of mergers related to misc. acquirer types. I also omit mergers where the acquirer is a creditor. I restrict attention away from mergers in industries that always require notification, i.e., banks. I also restrict attention

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[1]https://www.judiciary.senate.gov/meetings/does-america-have-a-monopoly-problem-examining-concentration-and-competition-in-the-us-economy

from mergers in industries that are typically exempt from notification, i.e., ones in which the target operates hotels, owns coal deposits, or owns oil and gas reserves.

4.2 Data that produces Figure 3 in the body of the main text

I obtain the distribution of values for mergers with unannounced terms directly from Barrios and Wollmann (2022) and refer the reader to that paper for details. Briefly, the procedure we use relies on reporting requirements imposed by the Financial Accounting Standards Board (FASB), which mandates that managers report the total value of cash mergers annually, irrespective of whether any deal-specific information about the underlying transactions is released. It distinguishes between (a) mergers with disclosed and undisclosed transaction values and between (b) the cash value and the stock value of mergers. Since mergers involving stock transfers are typically large and require additional disclosures related to stock issuance, one can assume that all mergers where the seller receives stock have disclosed transaction values. Under this assumption, one can infer transaction values even when terms of the deal are not disclosed. To illustrate, suppose (a) a firm reports $40 million in cash acquisitions in a particular year, (b) Refinitiv reports that during that period the firm was involved in exactly one merger, and (c) the transaction value of the merger was not disclosed. One can reasonably infer that the transaction value of that deal was $40 million. Further, suppose that (a) a firm reports $60 million in cash acquisitions in a particular year, (b) Refinitiv reports that during that period the firm was involved in exactly two mergers, (c) the transaction value of one merger was not disclosed, and (d) the transaction value of the other was $25 million. One can reasonably infer that the value of the deal whose transaction value was not disclosed is $45 million.

To implement this approach, we require additional data, which we obtain from S&P Capital IQ's Compustat Annual Snapshot North America, which provides firm-year level financial data. We accessed the data through Wharton Research Data Services (WRDS). Each record provides the registrant's legal name, fiscal year, CUSIP, the month of fiscal year-end, as well as various measures of financial performance described below. The most important for my purposes is cash paid for acquisitions, i.e., Compustat's AQC variable. To construct the sample, we begin with the Refinitiv-sourced transaction level merger data, described above. We then assign each merger a fiscal year. To compute the cash value of disclosed mergers, we multiply each transaction value by the proportion paid in cash and sum across transactions. To compute the stock value of disclosed mergers, we replicate the process but multiply by one minus the portion paid in cash (rather than the proportion itself). These computations effectively collapse the data to the level of the firm and fiscal year. Separately, we obtain the cash value of all mergers off the cash flow statement, which is also described above. Compustat provides these observations at the firm and fiscal year level, so we merge the Refinitiv-derived and Compustat-derived data at that level.

I restrict attention to observations where (a) there is at least one merger with an unpublicized value completed by the firm in the fiscal year and (b) there are no cash mergers completed by the firm in the fiscal year. The latter restrict merely minimizes measurement error. For instance, if in a given fiscal year a firm has $1.01 billion in cash acquisitions, one merger with a publicized cash value of $1 billion, and one merger with an unpublicized value, then I could infer the latter merger's value is $10 million. However, measurement error is typically proportional to the total value, so variations in how large mergers with publicized values would heavily influence the distribution of infer values of remaining mergers. Thus, to sidestep this problem entirely, the distribution depends only on cases where there are no mergers with publicized values. In the event there is more than merger with an unpublicized value in the fiscal year, I divide the cash acquisition value evenly between them.

References

Barrios, John, and Thomas G Wollmann. 2022. "A New Era of Midnight Mergers: Antitrust Risk and Investor Disclosures."

Wollmann, Thomas G. 2019. "Stealth consolidation: Evidence from an amendment to the Hart-Scott-Rodino Act." *The American Economic Review: Insights*, 1(1): pp. 77–94.