China Walls

Tomy Lee Daniel Nathan Chaojun Wang*

September 4, 2025

Abstract

We evaluate whether information barriers within conglomerates—China Walls—are effectively enforced. We test for information sharing between walled-off dealers and their affiliate funds using 23 million trades between 2019 and 2024 in the Israeli Shekel foreign exchange market, where the US SEC enforces the China Walls. Our difference-in-differences design compares the trade volumes and profits of funds that are affiliated with, clients of, or entirely unrelated to a dealer around the days when the dealer is especially likely to hold private information. The dealers never trade nor share information with their affiliate funds, despite that they consistently share information with their clients and that the funds within the same conglomerate intensely share information among themselves. From a back-of-the-envelope calculation, extending the China Walls around the funds would eliminate $16.1 billion in trades, comprising 37% of their trades on the event dates. Our findings persist during crisis and non-crisis periods, and across granular cells of fund and asset characteristics. We reveal remarkable regulatory capacity to control information flows within conglomerates.

JEL classification: G21, G28, G14, G15

Keywords: Banking conglomerates, financial networks, information barriers, information sharing, regulatory capacity

*First version: November 20, 2024. Lee is at the Central European University. Nathan is at Hong Kong Polytechnic University and the Bank of Israel. Wang is at the Wharton School, University of Pennsylvania. We thank Markus Bak-Hansen, Philip Bond, David Card, Andras Danis, Xavier D'Haultfoeuille, Efrat Dressler, Felix Fattinger, Jian Feng, Thomas Gehrig, Terrence Hendershott, Sasha Indarte, Simon Jurkatis, Attila Lindner, Florian Nagler, Gabor Pinter, Adam Szeidl, Clara Vega, Toni Whited, Adam Zawadowski, and Josef Zechner for helpful comments. Emails: leeso@ceu.edu; daniel.nathan@polyu.edu.hk; wangchj@wharton.upenn.edu.

1 Introduction

Conflicts of interest are inherent to conglomerates. Banking conglomerates manage investment funds and broker the trades of competing clients, major accountancies audit and consult for the same firms, and big law firms routinely represent one firm while advising its competitors. Underlying these conflicts is the incentive of affiliates to share privileged information with each other, which contributed to numerous corporate scandals and the last financial crisis (Griffin, 2021). In response, regulators began to tightly enforce information barriers within financial conglomerates—*China Walls*—to preempt information sharing between conflicted affiliates.[1] Yet, it is unknown whether today's China Walls are effectively enforced, perhaps due to the difficulty in identifying information sharing.

We document remarkably effective enforcement of today's China Walls in the foreign exchange market. This market is segmented into dealers, which intermediate all trades, and their client funds, which are each connected to a subset of the dealers. The China Walls in this market isolate the employees of the dealers from their affiliate funds in order to preempt the sharing of privileged information gleaned from client orders. Our identification strategy compares the activities and profits of the funds that are affiliates of, connected with, or completely unrelated to a dealer around the days when the dealer is likely to hold valuable private information. Heightened activity or profits by the affiliate funds around those days would pinpoint information sharing by the dealer in breach of its China Walls. The unrelated funds act as controls to strip away confounding variation, and the connected funds allow us to potentially falsify our design.

[1] "China Walls," or more commonly "Chinese Walls," "information barriers,'' "ethical screens," and so on, was originally a reference to the Great Wall of China (Gozzi, 2003). We adopt "China Walls," because it is concise and the closest to the original reference.

Regulators enforce China Walls in many multi-service conglomerates beyond our focus of banking conglomerates. Consultancies must maintain information barriers between teams that advise competing client firms (DOJ/FTC 2016 HR Guidance). The auditor arms of accountancies must likewise be walled off from other services arms (PCAOB Rules 3523 and 2-01). Law firms cannot take on new cases that may harm any current or former clients unless the lawyers assigned to the new cases were "screened" from matters involving the clients who could potentially be harmed (ABA Model Rules 1.0(k) and 1.10(a)(2), which are widely enforced by state courts).

We apply the design on the near universe of foreign exchange trades involving the Israeli Shekel covering 23 million trades from 2019 to 2024. The Shekel market is large and liquid, with average daily trades worth USD 13 billion. Among them, 83% are trades in the US dollar-Shekel currency pair. The largest dealers in the Shekel market are identical to those in the broader US dollar market and the Israeli financial regulations are mainly based on the US regulations. An exception is that Israel does not impose China Walls, leaving the US Security and Exchange Commission (whose jurisdiction reaches worldwide) as the main enforcer of China Walls in our setting.[2] Their rules wall off dealers from their affiliate funds, while leaving funds affiliated to each other free to share information among themselves. Appendix A details the legal context.

Figure 1 illustrates our difference-in-differences design. GS Dealer and GS Fund are affiliates. (GS, MS, and BoA are illustrative names.) Unrelated Fund is unaffiliated and never trades with the other firms in the figure. An event is a trade (event trade) by the GS Dealer (event dealer) that belongs to the top 0.1 percentile of the GS Dealer's trades in dollar value. We compare the daily gross dollar volumes and the daily one-week future returns of the GS Fund (affiliate fund) and the Unrelated Fund (control fund) around the event day. We conclude that the event dealers share information with their affiliate funds if the daily volumes or returns of the affiliate funds increase relative to the unrelated funds around the event day.

This approach detects no information sharing from dealers to their affiliate funds nor, reversing their roles, from funds to their affiliate dealers. Richness of our setting provides two falsification tests. First, we verify whether our design reliably detects information sharing where it exists. Since dealers are well known to share information with their client funds (Barbon, Di Maggio, Franzoni, and Landier, 2019; Boyarchenko, Lucca, and Veldkamp, 2021), a reliable design must detect information sharing between such connected dealers and funds. In Figure 1, the BoA Fund is a client of the GS Dealer. Our

[2]Other major non-Israeli regulators include the European Securities and Markets Authority and UK's Financial Conduct Authority.

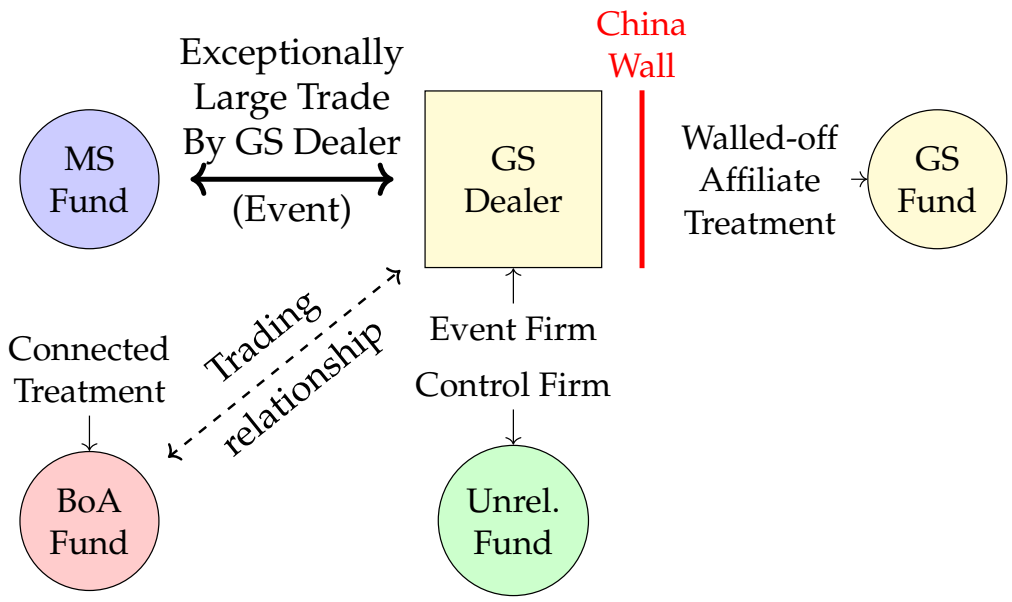


Figure 1: Identifying Information Sharing from Dealers to Affiliate Funds

first falsification test compares the daily volumes of the BoA Fund (connected fund) and the Unrelated Fund around the day of the GS Dealer's exceptionally large trade. We consistently detect information sharing from dealers to their connected funds. Second, we exploit funds that are affiliates but not walled off from each other to determine whether affiliates do share information with each other in the absence of China Walls. Affiliate funds intensely share information among themselves, and thus we infer that the dealers would share information with their affiliate funds if the China Walls were absent.

Section 2 explains the logic behind our design. The key identifying assumption is that especially valuable information prompts exceptionally large trades. If so, our findings also rule out information sharing between affiliate dealers and funds in circumstances without large trades, when there would be less incentive for the dealers to violate their China Walls. The assumption is consistent with standard theory (Kyle, 1985; Easley and O'Hara, 1987) and empirically holds in other markets (Kumar, Mullally, Ray, and Tang, 2020; Pinter, Wang, and Zou, 2024). A threat is the possibility that firms would split orders to disguise their private information. Appendix B jointly tests this assumption and the claim that our design detects information sharing. Consistent with these claims,

exceptionally large trades predict future returns, smaller trades do not, and we detect information sharing between connected dealers and funds only around the large trades.

One novel component of our design is the use of unrelated funds as controls. Under the plausible assumption that dealers would never leak information to a fund that is neither an affiliate nor its client, using the unrelated funds as controls preserves all variation due to information sharing. Yet, doing so removes any confounding variation from public news or macroeconomic shocks. For example, a surge in the aggregate demand for a currency would lead dealers to receive larger trade requests while raising the volumes of their affiliate funds. The unrelated funds would also see their volumes rise, partialing out this confounder. Separately, the event trade itself may have price or liquidity impacts that could confound our results. Since these impacts would affect both affiliate and unrelated funds, our choice of control again partials out such confounders.

Section 3 describes the data. The dealers virtually *never* trade with their affiliate funds, consistent with the onerous constraints of their China Walls. As a preliminary analysis, we compare the correlations in daily gross volumes within affiliate dealer-and-fund pairs to those of unrelated pairs and connected pairs. The unrelated pairs have highly correlated daily volumes over wide leads and lags, indicating the presence of spurious correlation. Foreshadowing our results, the correlations in volume within the affiliate pairs are indistinguishable from those within the unrelated pairs, whereas the contemporaneous correlation within the connected pairs is significantly higher.

Section 4 implements our design as stacked difference-in-differences specifications with never-treated controls, following Cengiz, Dube, Lindner, and Zipperer (2019). Our millions of observations and thousands of events and funds provide sufficient statistical power to detect even tiny differences between affiliate and unrelated funds. In the 11 trading days around an exceptionally large trade by an event dealer, the daily gross dollar volumes of the funds affiliated to this dealer are statistically indistinguishable from those of the unrelated funds, differing by -0.02 standard deviation on the event day (clustered

std. error: 0.04 sd). In contrast, the funds connected to the event dealer increase their volumes by 1.9 sd (std. error: 0.007 sd) on the event day relative to the unrelated funds. We rule out any mechanical effects from trades between the connected dealers and funds, as we exclude (from each event) all funds that trade with the event dealer on or after the event date. All results remain when we replace gross volumes with one-week future returns or net volumes signed in the direction of the event trade.

Section 5 applies this design to the subsample of funds. We flexibly control for overlaps in the funds' dealer connections to remove the effects of common shocks through shared dealers. On a day when an event fund makes an exceptionally large trade, the funds affiliated to the event fund increase their volumes by 1.7 sd (std. error: 0.2 sd) relative to the unrelated funds.

Taken together, we detect extensive information sharing among affiliated funds and between dealers and their clients, and yet zero information sharing between the dealers and their affiliate funds—exactly where China Walls are present. We remove dealer overlaps, mechanical comovement as connected dealers and funds trade, marketwide shocks and public news, and the price and liquidity impacts of event trades, while conservatively preserving all variation due to information sharing. Our results are consistent across gross volume, future returns, and net volume. It is difficult to imagine a confounder that can jointly rationalize this rich coincidence of results.

Section 6 scours granular cells of event, asset, and fund characteristics for China Wall violations. We never detect information sharing between affiliate dealers and funds across crisis and noncrisis periods, asset classes, currency pairs, and fund types. Affiliate funds consistently share information with each other, and so do connected dealers and funds. Hedge funds respond more intensely to event trades than other funds, especially to events by other affiliated hedge funds, echoing the evidence that hedge funds are particularly informed and sensitive to information (Di Maggio, Franzoni, Kermani, and Sommavilla, 2019; Kumar et al., 2020). Responses by funds during crisis and noncri-

sis periods are indistinguishable. Last, the connected funds respond the most intensely to the event trades in the currency pair or asset class of their specialization—homophily one would expect if an event trade's characteristics embody its corresponding private information.

Context and previous work on China Walls. The US regulators did not enforce China Walls before 2018. Previously, banking conglomerates voluntarily adopted China Walls to protect against corporate liability from insider trading by their employees. The 2010 Dodd-Frank Act allowed US regulators to conduct "risk-based" enforcement, under which they can prosecute firms for practices that substantially raise the risk of a crime, even without evidence that the crime has actually occurred. The US Securities and Exchange Commission (SEC) began to exercise this power to enforce China Walls in 2018: insufficiently maintaining China Walls itself, not only insider trading, is now a prosecutable offense. Appendix A provides further detail.

Existing evidence on China Walls exploit samples that predate 2018. This evidence identifies extensive breaches, as legal proceedings confirm.[3] We instead evaluate the China Walls during the recent period of their active enforcement.[4] As importantly, we contribute a novel identification strategy that uses unrelated funds as controls to isolate the effects of information sharing. We validate our strategy in conditions where one expects information sharing. Applying this design to a large and granular dataset yields precise estimates and robust evidence that today's China Walls effectively preempt information sharing.

[3] Lehar and Randl (2006), Irvine, Lipson, and Puckett (2007), Seyhun (2008), Massa and Rehman (2008), Chen and Martin (2011), Ivashina and Sun (2011), Li (2018), Li, Mukherjee, and Sen (2021), Kondor and Pintér (2022), and Haselmann, Leuz, and Schreiber (2023) find evidence of China Wall violations in various settings. The latest in-sample year among them is 2017.

[4] Garrett (2024) and Beck, Silva-Buston, and Wagner (2025) also document the effectiveness of recent regulations on banking conglomerates. Garrett (2024) finds that a Dodd-Frank ban on concurrent advising and bond underwriting for the same municipality lowers the financing costs of municipalities. Beck et al. (2025) find that supervisory cooperation agreements between national regulators cause banking conglomerates to shift lending to subsidiaries in countries without such agreements. We examine limits on information sharing within banking conglomerates, as opposed to limits on concurrent services or geographic coverage of regulation.

Broader contributions. We belong to the literature on the capacity of states to regulate firms.[5] In their settings, a large extent of regulatory enforcement occurs through private litigation by parties involved in the regulated activity (e.g., employer vs employee, insider vs outside shareholder; Glaeser and Shleifer (2003), La Porta, Lopez-De-Silanes, and Shleifer (2006)). In our setting, a China Wall violation involves affiliates under common corporate control, eliminating the threat of counterparty litigation. Information sharing is difficult to measure as it can be done in plausibly deniable ways, and bankers often do so (Peluso, 2020). Taken together, our results reveal a remarkable regulatory capacity to control information flows beyond what is established in prior work.

We extend the empirical literature on information diffusion in financial markets. Dealers extract information from their clients' order flow (Hortaçsu and Kastl, 2012), leak information to certain clients (Barbon et al., 2019; Boyarchenko et al., 2021; Chague, Giovannetti, and Herskovic, 2023), and generally act as the conduits through which information diffuses throughout their trading networks (Di Maggio et al., 2019; Hagströmer and Menkveld, 2019; Kumar et al., 2020). We identify a stark void in this informational network driven by regulatory intervention, thereby adding China Walls as a promising source of variation in information flows that is especially relevant today, when the financial sector is highly concentrated in banking conglomerates.

Roadmap. Section 2 develops the empirical design. Section 3 describes the data and performs motivating analyses. Sections 4 and 5 investigate whether the China Walls are effectively enforced in the Israeli Shekel market. Section 6 performs heterogeneity analyses. Section 7 concludes with complementary questions outside the scope of this paper.

[5] Regulators have greatly reduced pollution (Keiser and Shapiro, 2019; Behrer, Glaeser, Ponzetto, and Shleifer, 2021), insider trading (Bhattacharya and Daouk, 2002), misleading financial disclosures (Greenstone, Oyer, and Vissing-Jorgensen, 2006), and discrimination in pay (Bailey, Helgerman, and Stuart, 2024) and access to accommodation (Cook, Jones, Logan, and Rosé, 2023).

2 Design

2.1 China Walls in Financial Markets

China Walls refer to a collection of rules and physical barriers that aim to preempt the flow of material private information (MPI) between a walled-off subsidiary and its affiliates. An MPI is any information that (a) a reasonable investor would find important for her investment decisions and (b) is not publicly disclosed.[6] For example, proprietary analysis, inside information, or private trade requests would constitute MPI. Typical China Walls require walled-off subsidiaries to be isolated via separate entrances, opaque and soundproof barriers, and the monitoring and recording of their employees' communications.

New regulations since the 2008 financial crisis established today's China Walls around broker-dealers within banking conglomerates (and bank-owned investment advisers, which we do not examine). Today, the US SEC routinely imposes large fines for deficiencies in the dealers' China Walls. Appendix A details relevant definitions, history and legal precedents, impacts of the Dodd-Frank Act, and recent enforcement cases.

2.2 Empirical Setting

The foreign exchange market is an over-the-counter market, in which trades occur between dealers or a dealer and its client. The dealers are long-lived, trades are nonanonymous, and most firms rely exclusively on one or a few relationship dealers. Hence, reputation concerns discourage behavior frequently seen in centralized markets, such as repeated order submissions without the intent to trade or splitting a large trade quantity into a rapid sequence of small orders. This market operates at high frequency, where news

[6] Material non-public information (MNPI) is the more commonly referred type of information in law. The MPI includes analyses based purely on public information, whereas the MNPI expressly excludes such analyses. We focus on MPI rather than MNPI since proprietary analysis is valuable private information.

is rapidly incorporated into exchange rates (Menkhoff, Sarno, Schmeling, and Schrimpf, 2016). We thus expect private advantage from an MPI to dissipate in a few trading days.

Our data covers the near universe of Israeli Shekel (ILS) foreign exchange trades obtained from the Bank of Israel (BOI). The ILS market structure is identical to the other foreign exchange markets. Indeed, 83% of ILS transactions are for the USD-ILS pair and the ILS and the USD markets have the same largest dealers.[7] While Israel and the US have generally similar financial regulations, a peculiar Israeli law forbids Israeli holding companies from owning both a dealer and a nondealer investment firm, as the US Glass-Steagall Act did until its 1999 repeal. As such, the Israeli regulators neither mandate nor enforce the China Walls, with three implications. (a) Israeli entities cannot drive our results on information sharing between affiliate dealers and funds. (b) The banking conglomerates do not incriminate themselves when reporting data at odds with their China Walls to the BOI, and hence our data is the one in which we would most expect to observe violations of China Walls. (c) Non-Israeli regulators are the enforcers of the China Walls in our setting, especially the US SEC whose jurisdiction extends to all bank holding companies active in the US (every conglomerate in our sample).

2.3 Empirical Design

We overcome three challenges to test the hypothesis that the China Walls are effectively enforced. First, the China Walls may be violated in circumstances that we do not examine. In particular, the test may neglect the circumstances where China Wall violations are the most likely to occur. Second, we need a proxy that isolates the variation specifically due to bilateral MPI sharing, all while reliably detecting any such information sharing. Third, the bank-owned dealers may choose not to share MPI with their affiliates even if their China Walls were absent, in which case enforcement is moot.

Defining events. We seek events that pinpoint the days when a dealer receives espe-

[7] This number is 85% for all foreign exchange transactions that involve the USD (Somogyi, 2022).

cially valuable MPI. Under the plausible assumption that China Wall violations are most likely to occur when gains from sharing information with affiliates are largest, rejecting violations during such events would also rule out violations at other times. Standard theory shows that an informed trader requests to trade larger quantities when she holds more valuable private information (Kyle, 1985; Easley and O'Hara, 1987). Empirically, the trades that are unusually large compared to its trader's other trades are particularly predictive of returns (Kumar et al., 2020; Pinter et al., 2024). Appendix B tests this assumption. Therefore, we let an event be a dealer and a day (event day) when the event dealer makes a trade (event trade) that is exceptionally large compared to the dealer's other trades. Appendix C examines events by funds and show qualitatively identical results.

Isolating information sharing. We consider event dealer d and its affiliate fund f. A proxy for MPI sharing from dealer d to fund f must isolate information that is (i) material and (ii) bilaterally shared. Receiving material information would prompt fund f to rebalance its portfolio and earn greater trading profits, increasing its trading activity and the expected returns from those trades. Fund f may also become more likely to trade in the direction of the price change that the MPI predicts. We choose the increases in the daily gross dollar volume or the daily one-week future returns of fund f to proxy for the sharing of MPI by the event dealer d to f. Appendix D confirms our results using net dollar volumes signed in the direction of the event trades.

We remove the four confounders that could simultaneously increase the incidence of exceptionally large trades by event dealer d and the large volume or returns of its affiliate fund f. Figure 2 illustrates the confounders. First, any direct trade between dealer d and fund f would cause mechanical correlations, for instance when f is the counterparty to d's event trade. No such mechanical correlation exists between d and f in our sample, since dealers virtually never trade with their affiliate funds.

Second, the arrivals of public news or macroeconomic shocks may cause trade vol-

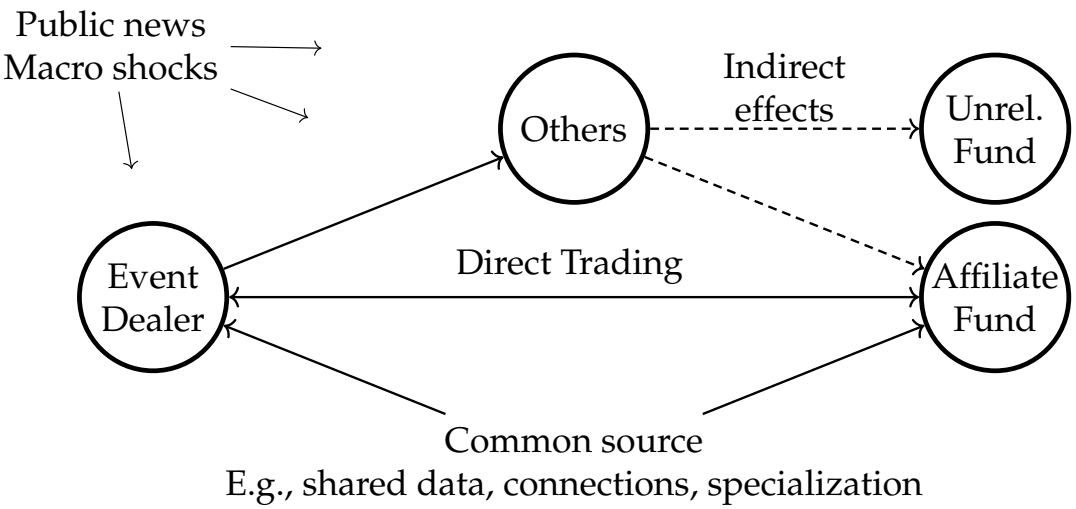


Figure 2: Potential Confounders to Measuring Bilateral Information Sharing

umes, returns, and trade sizes to covary. Third, the event trade may indirectly affect it affiliate fund f's volume or returns, either through its price or liquidity impact or as the dealer shares the corresponding MPI with others. For example, if an event trade is between dealer d and another dealer, the second dealer might offload the newly gained inventory with fund f. The gross volume of fund f would mechanically increase, and so would its future returns if the trade reveals the MPI to f.

We filter out these confounders by comparing the affiliate fund f to the funds that are neither affiliated with nor clients of the event dealer d. The *unrelated funds* would be as affected by the public news, macroeconomic shocks, or the indirect impacts of the event trade as the affiliate fund f. At the same time, the dealer d would not share MPI with an unrelated fund. This comparison detects bilateral MPI sharing from the event dealers to their affiliate funds if and only if the volumes and future returns of the affiliate funds increase relative to the unrelated funds on or after the event day.

Fourth, a source common to dealers and their affiliate funds, but not to the unrelated funds, may trigger the dealers' event trades while increasing the affiliate funds' volumes or returns. For example, dealer d and its affiliate fund f could be more likely than unrelated dealers and funds to share data or research sources. They could also be more likely

to specialize in the same assets, or be connected to the same thirdparty dealers. Our precise null results between dealers and their affiliate funds indicate that these confounders are unimportant in practice. As a formal test, we exploit the randomness in the order by which a common source would reach d and f. This randomness would generate pretrends, as sometimes the common source arrives at f before prompting the event trade by d. We reject the importance of common sources if we observe parallel trends between the affiliate and the unrelated funds prior to the event day.

Connected treatment. A key remaining threat is the possibility that our design fails to reliably detect bilateral MPI sharing where it exists. We test whether our design reliably detects bilateral MPI sharing based on the stylized fact that dealers extensively share information with its client (connected) funds (Barbon et al., 2019; Kumar et al., 2020; Chague et al., 2023). A reliable design would detect the MPI sharing between the event dealers and their connected funds. We falsify our design if the daily gross volumes or one-week future returns of the connected funds do not increase relative to the unrelated funds on or after the event day. We address any mechanical correlations due to trades between the event dealers and their connected funds by excluding from the analysis any connected fund that trades with the event dealer on or after the event day.

2.4 Implementation

We adopt the stacked difference-in-differences specification with never-treated controls of Cengiz et al. (2019).[8] An event trade is a dealer trade that belongs in the top 0.1 percentile among all of the dealer's trades by dollar value. An event is a dealer and a day on which the dealer made one or more event trades. Each event creates a stack, a subsample in which an observation is a treated or control fund-by-day in the 11-trading

[8]This implementation yields average treatment-on-the-treated (ATT) effect estimates that always place positive weights on all groups (Gardner, 2022), unlike those of traditional staggered two-way fixed-effects difference-in-differences specifications (Roth, Sant'Anna, Bilinski, and Poe, 2023).

day event window around the event day. We append the stacks across all events to obtain the analytical sample.

Our main regression specification is

$$Y_{e(d)ft} = \sum_{\tau=-5}^{5} \alpha_\tau \mathbb{1}_{t=\ell_{e(d)}+\tau} Affiliate_{e(d)f} + \delta_{e(d)f} + \varphi_t + \sum_{\tau=-5}^{5} \gamma_\tau \mathbb{1}_{t=\ell_{e(d)}+\tau} + \varepsilon_{e(d)ft}. \quad (1)$$

The dependent variable $Y_{e(d)ft}$ is the gross dollar volume or the one-week future return of fund f for event $e(d)$ by dealer d on calendar date t. All dependent variables are standardized at the fund level. Section 3.1 provides precise definitions. The affiliate treatment dummy $Affiliate_{e(d)f}$ equals 1 if fund f is an affiliate of the event dealer d. The dummy $Affiliate_{e(d)f} = 0$ if f is *(i)* not affiliated with and never trades with d and *(ii)* not affiliated with any event dealer of other events within the 21 trading days around the event day $\ell_{e(d)}$ ($t = \ell_{e(d)} - 10, \ldots, \ell_{e(d)} + 10$). The indicator variable $\mathbb{1}_{t=\ell_{e(d)}+\tau}$ equals 1 when t equals the event day $\ell_{e(d)}$ shifted by τ days, and 0 otherwise. We control for event-by-fund, calendar date, and event date fixed effects $\delta_{e(d)f}$, φ_t, and γ_τ. These effects control for event-and-fund-specific factors as well as common trends over calendar and event times. We cluster standard errors by event-and-fund and by calendar date, because our treatments are assigned event-by-fund and the incidence of events varies over time. Our clustered variances likely approximates the true variances, since we observe the near universe of trades in the Israeli Shekel, implying a high sampling probability (Abadie, Athey, Imbens, and Wooldridge, 2023).

The second specification considers the connected funds:

$$Y_{e(d)ft} = \sum_{\tau=-5}^{5} \beta_\tau \mathbb{1}_{t=\ell_{e(d)}+\tau} Connected_{e(d)f} + \delta_{e(d)f} + \varphi_t + \sum_{\tau=-5}^{5} \gamma_\tau \mathbb{1}_{t=\ell_{e(d)}+\tau} + \varepsilon_{e(d)ft}. \quad (2)$$

The connected treatment dummy $Connected_{e(d)f}$ equals 1 if fund f *(a)* trades 10 or more times with the event dealer d in our sample and *(b)* does not trade with d on or in the five days after the event day ($t = \ell_{e(d)}, \ldots, \ell_{e(d)} + 5$). Condition (a) implies that the con-

nected and the affiliate treatments are mutually exclusive, because the dealers essentially never trade with their affiliate funds. Condition (b) removes any mechanical effects as the connected funds trade with the event dealer. The dummy $Connected_{e(d)f} = 0$ if and only if $Affiliate_{e(d)f} = 0$, and all remaining aspects of Equation (2) are identical to those in Equation (1).

2.5 Identification Tests

We assume that a dealer makes an exceptionally large trade when the dealer learns especially valuable private information. Appendix B adjudicates the stronger assumption that dealers trade larger sizes when they have the more valuable private information. Specifically, we test *(I)* this stronger assumption and *(II)* the claim that our design detects MPI sharing if and only if such sharing exists.

We define placebo events as a dealer and a day when the dealer makes a trade in the X to $X + 0.1$ percentile of the dealer's trades, where X is each decile, $X \in \{10, 20, \ldots, 90, 99.9\}$. Our test consists of two parts. First, we separately compute the price impacts of the exceptionally large trades (top 0.1 percentile) and the placebo event trades for each decile. We fail to reject hypothesis (I) if the higher percentile event trades have the larger and positive price impacts. Second, we estimate (2) ten times beyond the main estimate, each time replacing events with the placebo events of a different decile. We fail to reject hypothesis (II) if the connected funds respond more than the unrelated funds around the event day only for the events whose event trades have positive price impacts. Appendix B fails to reject either hypothesis, and we conclude that our key identifying assumptions hold in our sample.

3 Data and Descriptive Results

3.1 Sample Construction

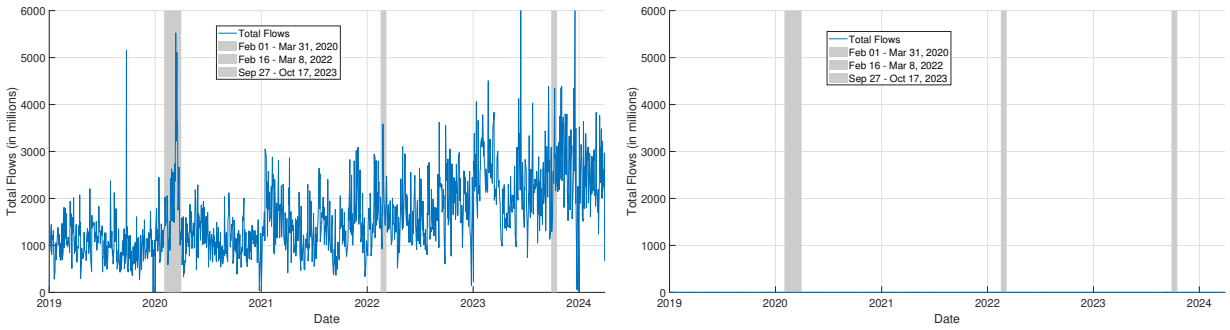
Raw data. We obtain the near universe of foreign exchange trades involving the Israeli Shekel from the Bank of Israel in the sample period January 2019 to March 2024, spanning 1,368 trading days.[9] Each trade specifies the currency pair (ILS and another currency), exchange rate, quantity, date and time,[10] asset class (spot, forward, swap, or option), legal names of the counterparties, their trade directions, and whether each counterparty is in Israel and whether it is a financial firm (i.e., dealers and investment funds). We mark the financial firms that can be matched to the BOI's list of foreign exchange dealers as dealers, and the other financial firms as funds. We assign each dealer or fund, partly with the aid of `ChatGPT 4.0o`: as unaffiliated or to its holding company; as a hedgefund or not; and to the country of its legal domicile if not Israel. All volume and dollar-return measures are converted to USD at the contemporaneous exchange rates retrieved from Bloomberg.

Figure 3 plots the total daily gross dollar volume of trades among the dealers and funds. The dealers trade USD2.8 billion with the funds each day (Figure 3a), of which mere four trades worth USD5.51 million are between the dealers and their affiliate funds (Figure 3b). We say that the dealers "virtually never" trade with their affiliate funds.

Affiliation, country, and fund type. First, we determine the affiliations of most US-based dealers and funds using the quarterly organizational hierarchy data accessible via the National Information Center (https://www.ffiec.gov/npw/). We assign affiliations as of the fourth quarter in 2023, because financial firms rarely change their affiliations and typically change their legal names when they do. Second, the non-US and non-Israeli

[9] All Israeli firms, including the Israeli branches of conglomerates, must report all their ILS foreign exchange trades to the BOI. Non-Israeli firms fall under the same reporting requirement if their foreign exchange trades (in any currency pair) in the previous year exceed $15 million per day on average, whether on their own accounts or on behalf of clients. Practically every significant financial firm falls under the reporting requirement. Rules can be retrieved from https://www.boi.org.il/en/economic-roles/statistics/reports-to-bank-of-israel/reporting-on-activity-in-the-foreign-currency-derivative/.

[10] We do not use the time stamps, as the BOI only verifies the trade dates, not their time stamps. An improbably high 6.6% of trades report "00:00:00" in our raw sample.



(a) Unaffiliated Dealers and Funds

(b) Affiliate Dealers and Funds

Figure 3: Daily Gross Dollar Volumes Traded Between Dealers and Funds

Figure 3a: The sum of daily gross dollar volume in USD millions across pairs of dealer and fund that are not affiliated with the same banking conglomerate. Figure 3b: The sum of daily gross dollar volume in USD millions across pairs of affiliate dealer and fund. Shaded regions mark the onsets of the Covid pandemic, the Russian Invasion of Ukraine, and the Hamas attack on Israel.

dealers and funds containing obviously indicative terms are linked to the corresponding holding company (e.g., "Deutsche Bank Luxembourg S.A."). Third, the legal names of the remaining dealers and funds are entered into `ChatGPT 4.0o` as queries in the form, "as of `[date the legal name last appears in the sample]`, does `[legal name]` belong to a financial conglomerate or is it independent? Which holding company if any does `[legal name]` belong to?" Fourth, we verify each answer generated in step three, by searching for the legal name paired with "independent" or the `ChatGPT`-suggested holding company name. Similarly, we determine the domicile and whether each fund is a hedgefund by querying and verifying, "as of `[last date of legal name]`, which country is the legal domicile of `[legal name]`?" and "as of `[last date of a fund]`, is `[fund name]` a hedgefund?"

Table 1 decomposes the dealers and funds in our raw data. A plurality of the dealers and funds are in the US and much of the remainder are in Europe or the UK. The 46 conglomerates are each headed by a holding company that controls at least one dealer. Every dealer belongs to a conglomerate, whereas most funds do not. All dealers without an affiliate fund are in Israel, which bans holding companies from controlling a dealer alongside a fund.

Table 1: Unique Financial Firms in Raw Data

	Conglomerates	Dealers		Funds		
		All	No affiliate fund	All	No affiliate dealer	Hedgefund
US	13	94	0	4824	4307	364
Europe & UK	13	101	0	1380	968	88
Israel	11	18	18	192	192	2
Elsewhere	9	22	0	1379	1193	178
Total	46	235	18	7775	6660	632

"Conglomerates" are holding companies that each controls at least one dealer. "Dealers" include brokers and broker-dealers. All dealers without affiliate funds are domiciled in Israel, which forbids common ownership of dealers and funds.

Table 2: Each Step in Sample Construction

	Obs.	Dealers	Funds	Mean value (USD millions)		Share of trades (%)		
				Dealer obs.	Fund obs.	USD	Forward	Swap
Raw data	22,848,453	235	7,775	3.74	1.74	83.1	14.5	14.7
Drop								
options	22,667,356	235	7,775	3.74	1.73	83.1	14.6	14.8
2nd legs	20,927,534	235	7,775	2.48	1.32	83.0	15.9	7.7
Consolidate								
dealers	18,560,942	46	7,775	2.12	1.32	82.9	16.4	7.7
Aggregate to								
dealer-day	62,974	46		774.8				
fund-day	10,643,975		7,775		0.39			

Raw data: All foreign exchange trades reported to the Bank of Israel between January 2019 to March 2024. *Drop*: All options trades and all second legs of swap trades (see Footnote 11). *Consolidate dealers*: We combine dealers up to the conglomerate-level and drop all trades between the dealers in the same conglomerate. *Dealer-day*: The sample where we aggregate all trades of each dealer at the daily level in USD terms. *Fund-day*: The sample where we aggregate all trades of each fund at the daily level in USD terms. *Mean value* is the average gross value across observations in USD millions. *Share of trades* is the proportion of trade-level observations with the corresponding characteristic (i.e., for USD-ILS, a forward or a swap trade).

Constructing the final sample. Table 2 summarizes our three-step sample construction. First, we drop all options trades (for insufficient observations) and all second legs of swaps trades (to avoid double counting).[11] Second, we consolidate the dealers up to the conglomerate-level by dropping all trades between affiliated dealers and combining the dealers under conglomerate-level labels. Doing so treats affiliated dealers as a single economic entity, given their ability to split incoming orders and transfer assets and capital among themselves, and minimizes the noise from nonmarket trades that shift cash and inventory for tax or balance sheet purposes.[12] Third, we aggregate the daily trades of each dealer and fund to arrive at the final sample in which an observation is a dealer-or-fund-by-day. The final sample is partitioned into two analytical subsamples: one for dealer-by-day observations and the other for fund-by-day observations.

Dependent variables. Each dependent variable defined below is at the dealer or fund-by-day level. We standardize each dependent variable of dealer or fund j by dividing the variable by its standard deviation computed over the observations of j. We winsorize these variables at the top 0.5 percent (for gross volume) or both the top and the bottom (other variables), since some observations can be extremely large. The winsorization occurs before estimating each regression and after combining the observations into stacks. All our results remain if we do not winsorize.

Gross dollar volume of fund j on day t aggregates the fund's daily spot, forward, and swap trades. For each (j, t, currency pair)-triple, we add together the notional amounts of the spot, forward, swap (first legs only) trades in the non-ILS currency unit. We convert

[11] Foreign exchange swap is a spot trade with the promise to reverse the spot trade at a predetermined exchange rate on a future date. The first leg is the initial spot trade and the second leg is the reverse trade. For example, consider a swap trade today to buy one USD using ILS at 3.03 USD/ILS spot rate (first leg; USD/ILS means ILS per USD by convention) then promise to sell one USD for ILS at 2.86 USD/ILS in five days (second leg). This trade would yield a profit in ILS terms if ILS appreciates below 2.86 USD/ILS in five days. To see this, the trader can immediate sell the USD from the first leg for 3.03 ILS; then buy back one USD just before the second leg using, say, 2.78 ILS; then deliver the USD for 2.86 ILS. Overall profit is $-3.03 + 3.03 - 2.78 + 2.86 = 0.08$ ILS.

[12] Some 8% of foreign exchange spot trades are "back-to-back" trades between affiliate dealers for accounting or inventory rebalancing reasons (Bank for International Settlements, 2022). All trades by funds are market-based, since they only trade with nonaffiliate dealers.

each non-USD-currency total notional amounts into USD using exchange rates at 17:00 EST on t. The daily gross dollar volume is the sum of all converted total notional amounts by j on t.

One-week future return is the dollar return from the trades by fund j on day t if the corresponding positions were held for five trading days. For each (j, t, asset class, currency pair)-quadruple, we compute the *net* notional amount (i.e., buys less sales of the non-ILS currency for spot and forward and the opposite for the first legs of swaps) in the non-ILS currency unit (CCY). The spot or the forward five-trading day realized return for a given CCY is the percent change in the exchange rate per ILS, $R_t^{sf}(CCY) := [(CCY/ILS)_{t+5}/(CCY/ILS)_t - 1]$, using the rates at 17:00 EST. The swap realized return is $R_t^{sw}(CCY) := -R_t^{sf}(CCY)$ (see Footnote 11). We multiply each net notional amount by the corresponding realized return, then convert the resulting amounts into USD using the 17:00 EST exchange rate at $t + 5$. The daily 1-week future return is the aggregate across these converted net return multiples of trades by j on t.

Table 3 summarizes the dealer-by-day and the fund-by-day analytical samples from which we combine observations into the stacks for regression analysis. All volumes, the return, and values are in USD millions. No variables are standardized in this table. While most dealers traded more than ten times (are connected) with several funds in our sample, the majority of funds only traded with one or two dealers. Some 95% of the fund-by-day observations in fact have no trades. The event trades widely vary in size, corresponding to the wide variation in the sizes of the dealers and the funds. For the events that combine multiple event trades, we assign the characteristics of the largest trade among them to the whole event.

3.2 Simple Analyses

We look for preliminary evidence of information sharing between dealers and funds using the correlations in trading activities within dealer-fund pairs. A dealer and a fund

Table 3: Summary Statistics of the Analytical Samples

	Mean	Std. Dev.	Min	25%	50%	75%	Max
Dealers ($N = 46$)							
Affiliate funds	24.3	39.8	0	1	10	30	182
Connected funds	162.8	297.6	0	0	6	152	1,131
Unrelated funds	7,293.9	804.2	5,027	7,153	7,757.5	7,775	7,775
Funds ($N = 7{,}775$)							
Affiliate dealers	0.14	0.35	0	0	0	0	1
Connected dealers	1.16	1.84	0	0	1	1	16
Unrelated dealers	42.6	3.1	29	41	44	45	45
Dealer-Day ($N = 62{,}974$)							
Has trade	0.82	0.38	0	1	1	1	1
Is an event	0.05	0.21	0	0	0	0	1
Gross volume	774.8	1,298.8	0	19.5	239.0	897.6	12,214.5
Net volume	36.6	213.2	-2,170.2	-5.8	0	20.0	2,093.4
1-week future return	2.9	111.4	-817.6	-8.4	0	6.8	1,980.6
Fund-Day ($N = 10{,}643{,}975$)							
Has trade	0.05	0.21	0	0	0	0	1
Is an event	0.00	0.01	0	0	0	0	1
Gross volume	0.39	8.9	0	0	0	0	4,210.1
Net volume	0.00	2.8	-1,201.0	0	0	0	1,046.7
1-week future return	52.1	2,145.9	-45,092.3	-12.8	0	14.1	45,377.5
Dealer Events ($N = 7{,}710$)							
Event trade value	275.5	246.3	1	100	217.1	393.2	4,582.5
Has multiple event trades	0.78	0.41	0	1	1	1	1
Crisis	0.06	0.24	0	0	0	0	1
USD	0.77	0.42	0	1	1	1	1
JPY	0.05	0.21	0	0	0	0	1
EUR	0.04	0.20	0	0	0	0	1
Spot	0.34	0.47	0	0	0	1	1
Forward	0.18	0.38	0	0	0	0	1
Swap	0.48	0.50	0	0	0	1	1
Fund Events ($N = 7{,}894$)							
Event trade value	18.9	102.8	0	0.1	0.5	2.5	1,349.8
Has multiple event trades	0.14	0.35	0	0	0	0	1
Crisis	0.05	0.22	0	0	0	0	1
USD	0.65	0.48	0	0	1	1	1
JPY	0.05	0.21	0	0	0	0	1
EUR	0.15	0.36	0	0	0	0	1
Spot	0.57	0.50	0	0	1	1	1
Forward	0.36	0.48	0	0	0	1	1
Swap	0.07	0.26	0	0	0	0	1

All volumes, the return, and values are in USD millions. No variables are standardized in this table. For the events that combine multiple event trades, we assign the characteristics of the largest trade among them to the whole event.

are an *affiliate pair* if they belong to the same conglomerate, an *unrelated pair* if they are unaffiliated and never trade with each other in our sample, and a *connected pair* if they are unaffiliated and trade 10 or more times in our sample. We omit the dealer-fund pairs that trade one to nine times with each other.

If the dealers do share information with their affiliate funds, the trading activities of the affiliate pairs would be more correlated than those of the unrelated pairs, whose correlation would reflect public news and other confounders that affect all dealer-fund pairs. Figure 4 presents the correlations in daily gross dollar volumes within the unrelated pairs. For each lag $l = -10 \ldots + 10$ and a pair of dealer d and fund f that are an unrelated pair, we compute the correlation $CorrGV_{ijl}$ between the date t gross volume of d and date $t + l$ gross volume of f. We average this correlation across all unrelated pairs for each l. Figure 4a plots the results. There are strongly positive and significant correlations in the daily gross volumes between the dealers and their unrelated funds. Absent a control group, the confounders cause comovement within the unrelated pairs that may severely contaminate any proxy of bilateral information sharing.

We next estimate a simplified version of our main specifications (1)-(2). We compare the correlations $CorrGV_{ijl}$ within the affiliate and the connected pairs to the unrelated pairs. Doing so tests whether the trading activities of affiliated or connected dealers and funds are correlated once stripped of confounders. Precisely, we estimate the regression specification

$$CorrGV_{dfl} = a_l Affiliate_{df} + b_l Connected_{df} + c_d + d_f + \varepsilon_{dfl}. \tag{3}$$

The dummy variable $Affiliate_{df}$ equals 1 if dealer d and fund f are an affiliate pair and 0 if they are an unrelated pair. The dummy $Connected_{df}$ equals 1 if d and f are an connected pair and 0 if they are an unrelated pair. We exclude the trades between connected d and f when computing $CorrGV_{dfl}$ to avoid mechanical correlations due to within-pair trades.

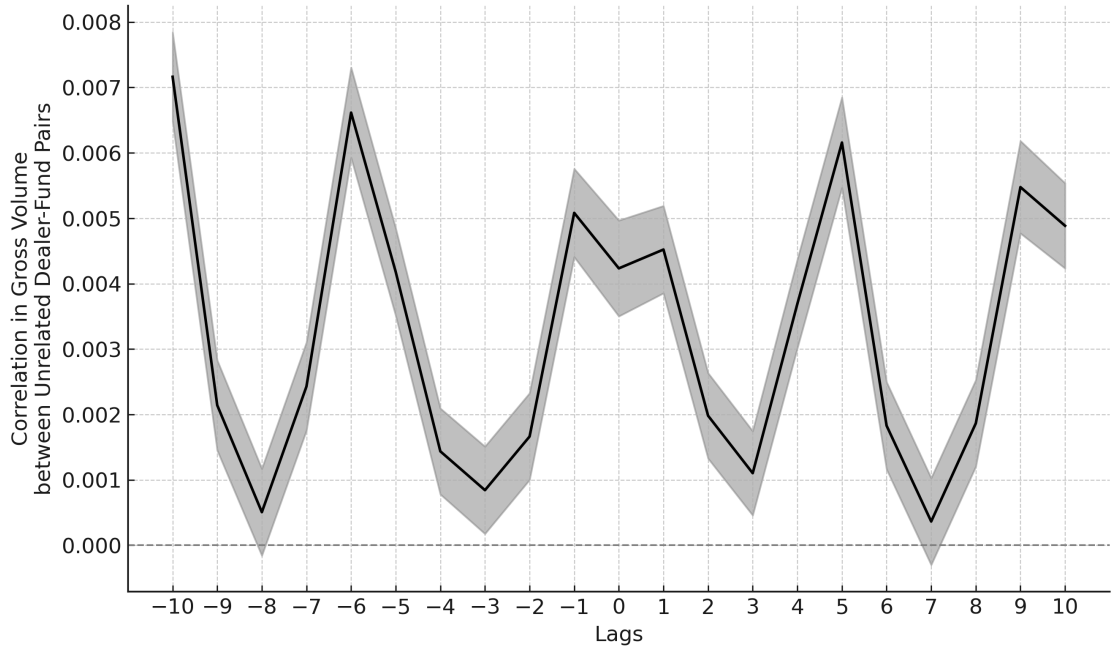
The dealer and the fund effects c_d and d_f control for time-invariant factors specific to each dealer and each fund.

Figure 4b plots the coefficients c_l and d_l across $l = -10 \ldots 10$. The daily gross volumes of the affiliate dealer-fund pairs are no more correlated than those of the unrelated pairs across all leads and lags l. In contrast, the connected dealer-fund pairs are contemporaneously far more correlated than the unrelated pairs. These results provide suggestive evidence that the China Walls are effectively enforced in our setting, and that our design reliably detects information sharing between dealers and their clients.

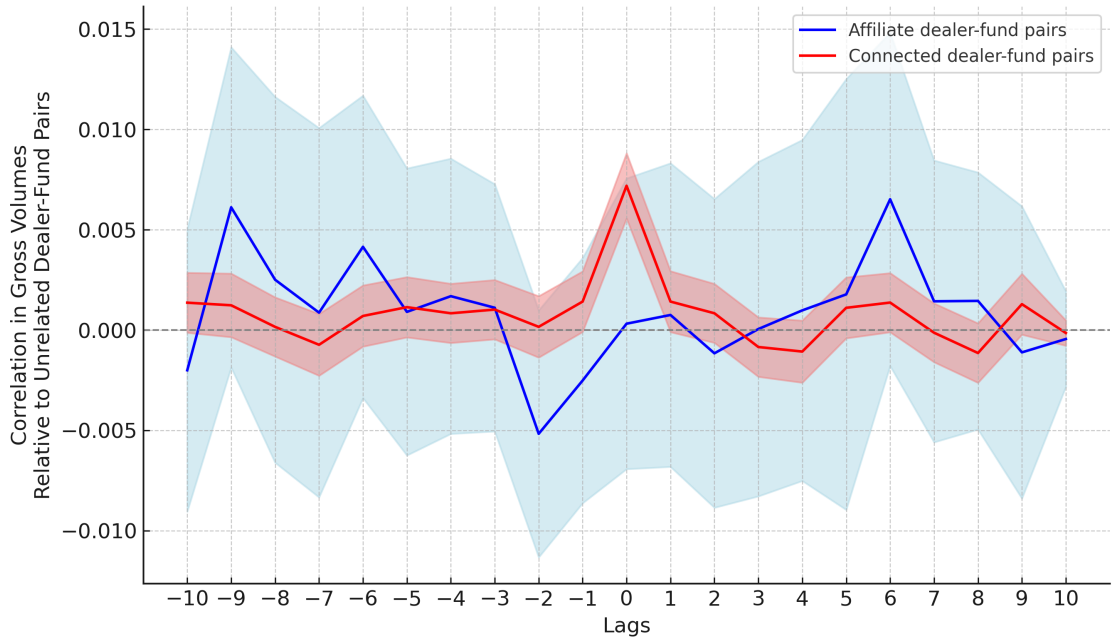
4 Are the China Walls Effectively Enforced?

We first estimate Equations (1) and (2) selecting the dealers as the event firms and the funds as the treated and the control firms. Figure 5a plots in blue the differences α_τ in standardized gross volume between affiliate and unrelated funds around the days of exceptionally large trades by dealers, and in red the differences β_τ between the connected and the unrelated funds. The affiliate funds exhibit neither pretrends nor posttrends. The connected funds show no pretrends and a positive estimate on the event day. The event-day estimates are far apart: the affiliate funds increase their gross volumes on the event day by -0.02 standard deviation (std. error: 0.04 sd), whereas the connected funds increase theirs by 1.9 sd (std. error: 0.007 sd).

We interpret Figure 5a as follows. The exceptionally large trades pinpoint the arrivals of especially valuable MPI at the dealers, and receiving MPI would prompt increases in trading activity. The null posttrend of the affiliate funds implies that the dealers do not share the especially valuable MPI with their affiliate funds. The positive posttrend of the connected funds means that the dealers obtain the MPI on the days that their connected funds exhibit heightened trading activity. We partition how this coincidence of MPI and increase in gross volume could arise into the four channels other than bilateral MPI shar-

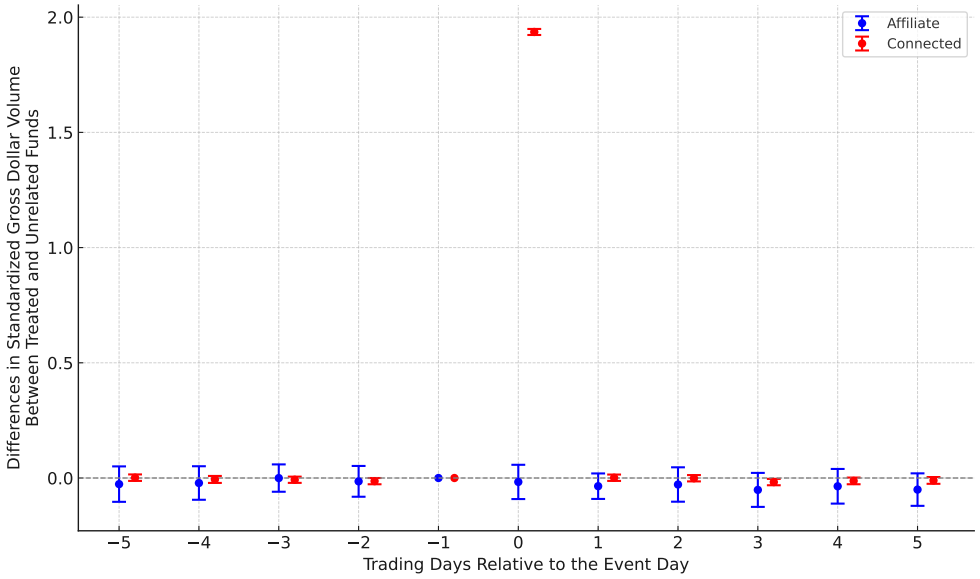


(a) Unrelated Pairs

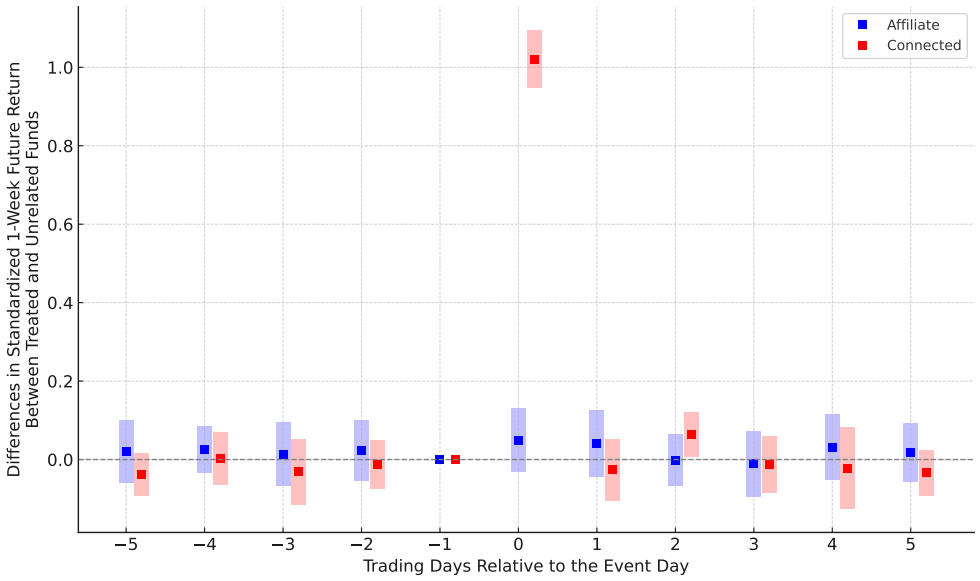


(b) Affiliate and Connected Pairs using Unrelated Pairs as Controls

Figure 4: Correlations in Daily Gross Volumes within Dealer-Fund Pairs



(a) Daily Gross Dollar Volume



(b) Daily 1-Week Future Return

Figure 5: Coefficient Estimates from (1) and (2): Fund Responses to Dealer Events

ing. The MPI may induce the dealers to trade with the connected funds, in which case the coincidence would be mechanical. An aggregate shock affecting all firms could simultaneously cause both the event trade and the increase in gross volume. The MPI, the event trade, and related trading or information sharing by the event dealers may indirectly affect the connected funds as the dealers' actions percolate throughout the market. There may be common shocks specific to the connected dealers and funds, perhaps because they tend to share sources of information or common thirdparty connections.

The mechanical channel is ruled out by the exclusion of funds that traded with the event dealer on or after the event day for each event. The aggregate-shock and the indirect-effect channels are stripped away by the unrelated fund control group, since the unrelated funds would be exposed to the aggregate shocks and the indirect effects of the dealers' actions. This control would preserve any increase in gross volume due to bilateral MPI sharing, because the dealers would not share MPI with the unrelated funds. The common-shocks channel is rejected by the parallel pretrend, as the shocks common to the connected dealers and funds would sometimes cause the connected funds' gross volumes to increase before the event dealers make their exceptionally large trades. Altogether, only the bilateral sharing channel remains. We conclude that the dealers do not bilaterally share MPI to their affiliate funds.

Figure 5b plots the coefficient estimates of Equations (1) and (2) where the dependent variable is the standardized daily 1-week future return of the funds around the days when a dealer makes an exceptionally large trade. In blue are the differences α_τ in the returns between the affiliate and the unrelated funds around the event days. In red are the differences β_τ between the connected and the unrelated funds. Neither the affiliate nor the connected funds exhibit pretrends. The affiliate funds do not show posttrends, and the estimated increase in their 1-week returns is precisely nil. The trades of the connected funds on the event day earn an additional 1.0 sd (std. error: 0.04 sd) weekly dollar

returns. We conclude the dealers do not share MPI with their affiliate funds, and do so with the connected funds.

Based on the results of Figure 5, we conclude that the China Walls effectively prevent the dealers from sharing private information to their affiliate funds. Appendix C flips the roles of the dealers and the funds to confirm that the funds do not share information to their affiliate dealers. Table 4 details the pooled regression counterpart to Figure 5a. The affiliate funds have precisely null response to the arrival of especially valuable information at the dealers.In contrast, the connected funds strongly respond to the dealer's information, with estimated coefficients that are at least an order of magnitude larger than the affiliate coefficients. By far the most responsive are the funds to the information from their affiliate funds. Altogether, the pooled results confirm that the China Walls are effective enforced.

5 Do Affiliates Without China Walls Share Information?

We exploit the conglomerates that own multiple funds to infer whether the dealers would share private information with their affiliate funds if the China Walls were absent. The affiliate funds in the same conglomerate are not walled off from each other. Where the affiliate funds share information with each other, we infer that dealers and their affiliate funds would also share information absent the China Walls.

5.1 Design and Implementation

Figure 6 depicts the design. Dotted arrows indicate trading relationships. GS Hedge Fund's sole dealer connection is BoA Dealer. GS Mutual Fund and the GS Hedge Fund are affiliate funds whose dealer connections do not overlap. All funds that trade with the MS Dealer are dropped, such as Independent Fund, to remove any confounding variation due to overlapping dealer connections. We compare the daily gross dollar volume and

Table 4: Responses by Funds on and after Event Days

	Affiliate Volume	Affiliate Return	Connected Volume	Connected Return	F2F Volume	F2F Return
$Post \times Affiliate$	-0.024	0.011			0.23***	
	[0.017]	[0.019]			[0.021]	
$Post \times Connected$			0.32***	0.16***		
			[0.005]	[0.011]		
$Post \times DealerOverlap$					0.011***	
					[0.004]	
$Post \times Affiliate$					0.25***	
$\times DealerOverlap$					[0.026]	
Event×Firm FE	Yes	Yes	Yes	Yes	Yes	
Calendar Date FE	Yes	Yes	Yes	Yes	Yes	
Days-since-Event FE	Yes	Yes	Yes	Yes	Yes	
Adjusted R-squared	0.022	0.005	-0.007	0.019	0.068	
Within R-squared	0.0	0.0	0.0005	0.002	0.0001	
Events	7,710	7,710	7,710	7,710	7,894	
Observations	89,005,179	91,435,210	42,150,672	110,481,871	12,664,366	

Coefficient estimates from the pooled counterparts to Equations (1), (2) and (4). The dependent variable is the standardized daily gross US dollar volume of a fund winsorized at the top 0.5 percentile. An event is a dealer and a day when the dealer made a trade in the 0.1 percentile among its trades. Each event window is the 11 trading days around the event day. *Affiliate* funds belong to the same conglomerate as the event dealer. *Connected* funds trade at least 10 times with the event dealer in our sample, and do not trade with the event dealer on or after the event day. Affiliate and Connected treatments are mutually exclusive, because no dealer trades with its affiliate fund in our sample. Controls are the funds that are unaffiliated and never trades with the event dealer, and are not treated in another event throughout the event window. *F2F* denotes estimates of (4) using the fund-by-day analytical sample, where events, the treatments, and the controls are defined for event funds, rather than event dealers. We include event-by-firm, calendar date, and days-since-event fixed effects. *DealerOverlap* indicates a treated or control fund whose set of connected dealers overlaps with that of the event fund. Standard errors in square brackets are clustered at the event-by-firm and date levels. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

1-week future returns of the GS Hedge Fund (the affiliate fund) to the Unrelated Fund around an exceptionally large trade by the GS Mutual Fund (the fund event). We control for whether the event fund and an affiliate or unrelated fund are connected to a common dealer, removing the confounding variation from overlapping dealer connections in our estimates of interest. We conclude that the enforcement of China Walls are necessary if the volumes and the returns of the affiliate funds increase relative to the unrelated funds on or after the fund event day.

A threat to the validity of this inference is that a dealer and a fund are tend to be farther apart in size and trading strategies than two funds. Section 6 partitions the funds

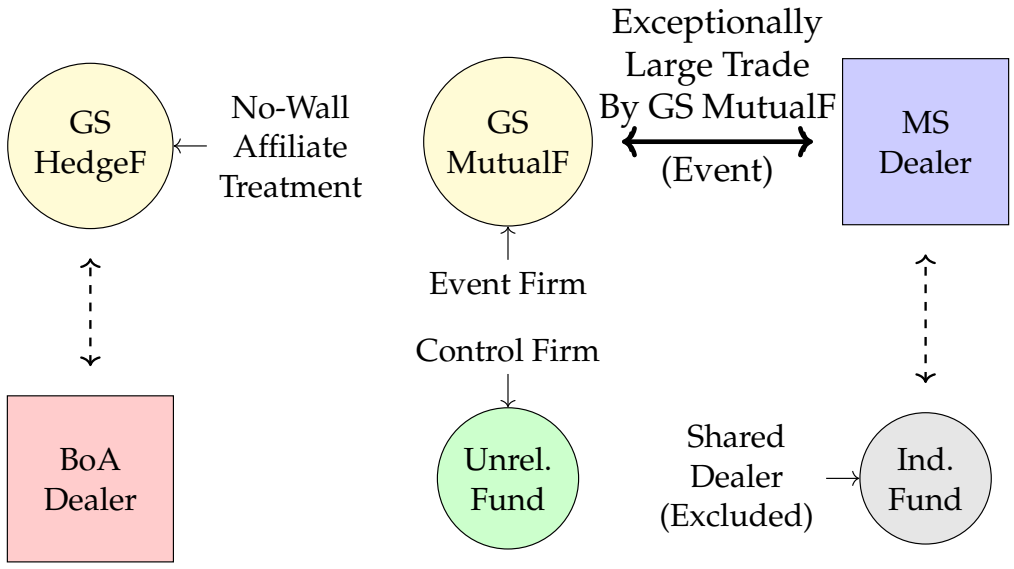


Figure 6: Identification: Information Sharing Between Affiliate Funds

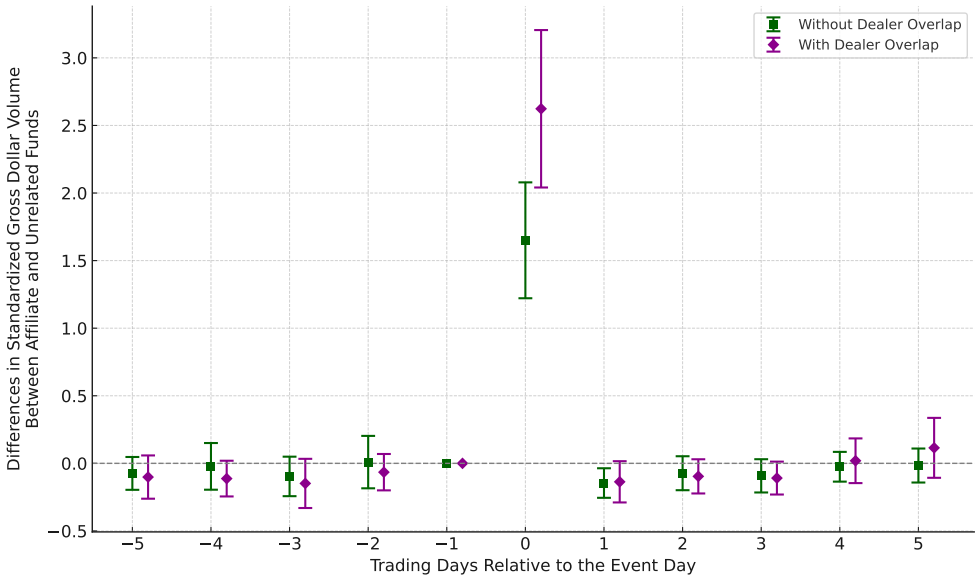
into granular cells of similar and differing sizes and trading strategies to address this threat.

We apply the following specification to the subsample of funds:

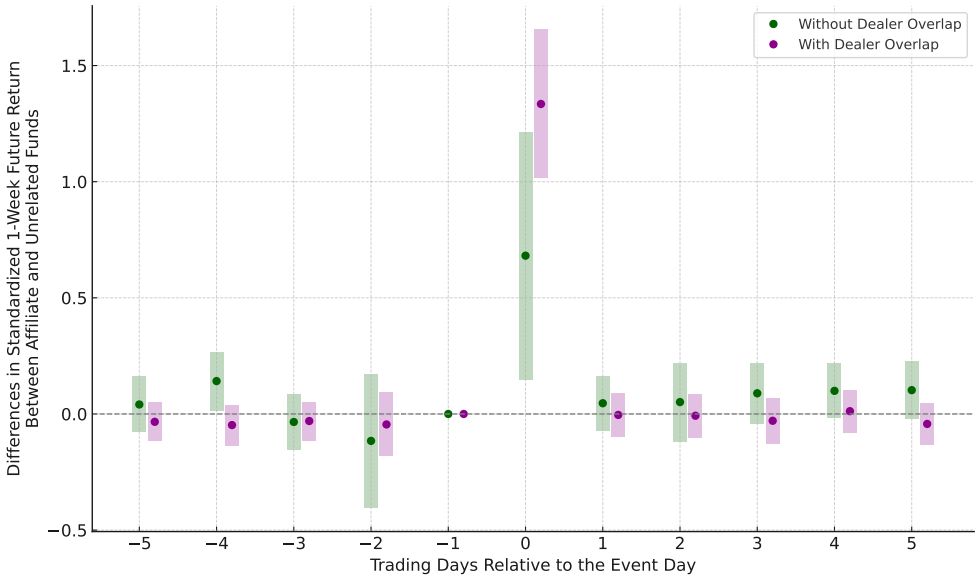
$$\begin{aligned} Y_{e(i)jt} = &\sum_{\tau=-5}^{5} \nu_\tau \mathbb{1}_{t=\ell_{e(i)}+\tau} Affiliate_{e(i)j} + \delta_{e(i)j} + \varphi_t + \sum_{\tau=-5}^{5} \gamma_\tau \mathbb{1}_{t=\ell_{e(i)}+\tau} \\ &+ \sum_{\tau=-5}^{5} \kappa_\tau \mathbb{1}_{t=\ell_{e(i)}+\tau} Affiliate_{e(i)j} DealerOverlap_{e(i)j} \\ &+ \sum_{\tau=-5}^{5} \eta_\tau \mathbb{1}_{t=\ell_{e(i)}+\tau} DealerOverlap_{e(i)j} + \varepsilon_{e(i)jt}. \end{aligned} \tag{4}$$

The control dummy $DealerOverlap_{e(i)j}$ equals 1 if fund j's set of connected dealers overlaps with event fund i's set of connected dealers, and equals 0 otherwise. We focus on the coefficients ν_τ, which measure the MPI sharing from the event funds to their affiliate funds without an overlapping dealer. Separate event-date effects, γ_τ and η_τ, flexibly control for any trend over event time specific to the funds with or without an over lapping dealer.

5.2 Results



(a) Daily Gross Dollar Volume



(b) Daily 1-Week Future Return

Figure 7: Coefficient Estimates from (4): Fund Responses to Fund Events

Figure 7 presents the results from Equation (4) estimated on the subsample of funds. In green are the differences ν_τ in standardized gross volume or 1-week returns between the affiliate funds and the unrelated funds whose dealer connections do not overlap with

the event fund around an exceptionally large trade by the event fund. Despite removing the common shocks through any overlapping dealers, the affiliate funds increase their gross volumes by 1.7 standard deviations (std. error: 0.2 sd; Figure 7a) and their 1-week returns by 0.68 sd (std. error: 0.27 sd; Figure 7b) on the event date. The large size of this response is consistent with affiliated funds being eager to share information among themselves. In magenta are the differences $\nu_\tau + \kappa_\tau + \eta_\tau$ between the affiliate funds whose dealer connections do overlap with the event fund and the nonaffiliate nonoverlapping funds. As one might expect, incorporating overlapping dealer effects dramatically raises the event-date responses.

A back-of-the-envelope calculation shows that extending the China Walls around the funds would eliminate $16.1 billion in trades, comprising 37% of their trades on the event dates. The dollar value of the eliminated trades is the product of: (a) the coefficient (1.7 sd) for the difference in gross volumes between the affiliate and the unrelated funds on the event day; (b) the average dollar value (USD[...]) of a standard deviation in the gross volume across all affiliate funds in the stacked sample for estimating (4); and (c) the total number ([...]) of affiliate funds in the stacked sample.

6 Heterogeneity

Our heterogeneity exercises aim to test the robustness of the China Walls. It is particularly important to test the robustness of our affiliate fund-to-fund results: Where even the affiliate funds only share MPI under special contexts, there is high likelihood that the affiliate dealers and funds would not share MPI absent the China Walls.

To do so, we repeat the analyses of Section 4 across cells of fund types, currency pair, and asset class (i.e., spot, forward, or swap), and for event during crisis and noncrisis periods. Since our main specification yields a null result, we maximize the power to detect deviations from the null by interacting dummy variables corresponding to each

characteristic with the complete set of terms in the pooled counterparts of Equations (1), (2) and (4). (Rather than splitting our sample across those characteristics.) We examine both event-level and firm-level characteristics. The dummy $HedgeFund = 1$ if the treated or control firm is a hedge fund, and $HedgeFundEvent = 1$ if the event firm is a hedge fund. Other firm-level dummies indicate whether a firm's share of trades in a currency pair or asset class is greater than the median across firms, separately for dealers and for funds. Event-level dummies indicate whether the event trade was in a given currency pair or asset class, and whether the event occurred during the crisis periods following the 2020 Covid shock, the 2022 Russian invasion of Ukraine, and the 2023 Hamas attack.

6.1 Hedge Funds versus Other Funds

6.2 Crisis Periods

The crisis periods span Covid (February 1st to March 31, 2020), the Russian Invasion of Ukraine (February 16 to March 8, 2022), and the Hamas Attack (September 27 to October 17, 2023).

6.3 Firm Size, Currency Pairs, and Asset Classes

To arrive at each estimate split split by size, currency pair, and asset class, we first run the pooled counterparts to Equations (1), (2) and (4) augmented with the complete set of interactions involving four dummies: $USDFirm_f = 1$ if the firm's dollar-value share of trades in USD-ILS pair over our sample exceeds the median across firms (i.e., the firm "specializes in USD"), $USDEvent_e = 1$ if the event trade (or any event trade for every event with multiple event trades) was for USD-ILS, and $NonUSDFirm_f$ and $NonUSDEvent_e$ are defined analogously. We separately compute the medians for dealers and for funds when assigning $USDFirm_f$ and $NonUSDFirm_f$. We further interact the NonUSD dummies with $MatchingNonUSD_{ef}$, which equals one if $NonUSDFirm_f =$

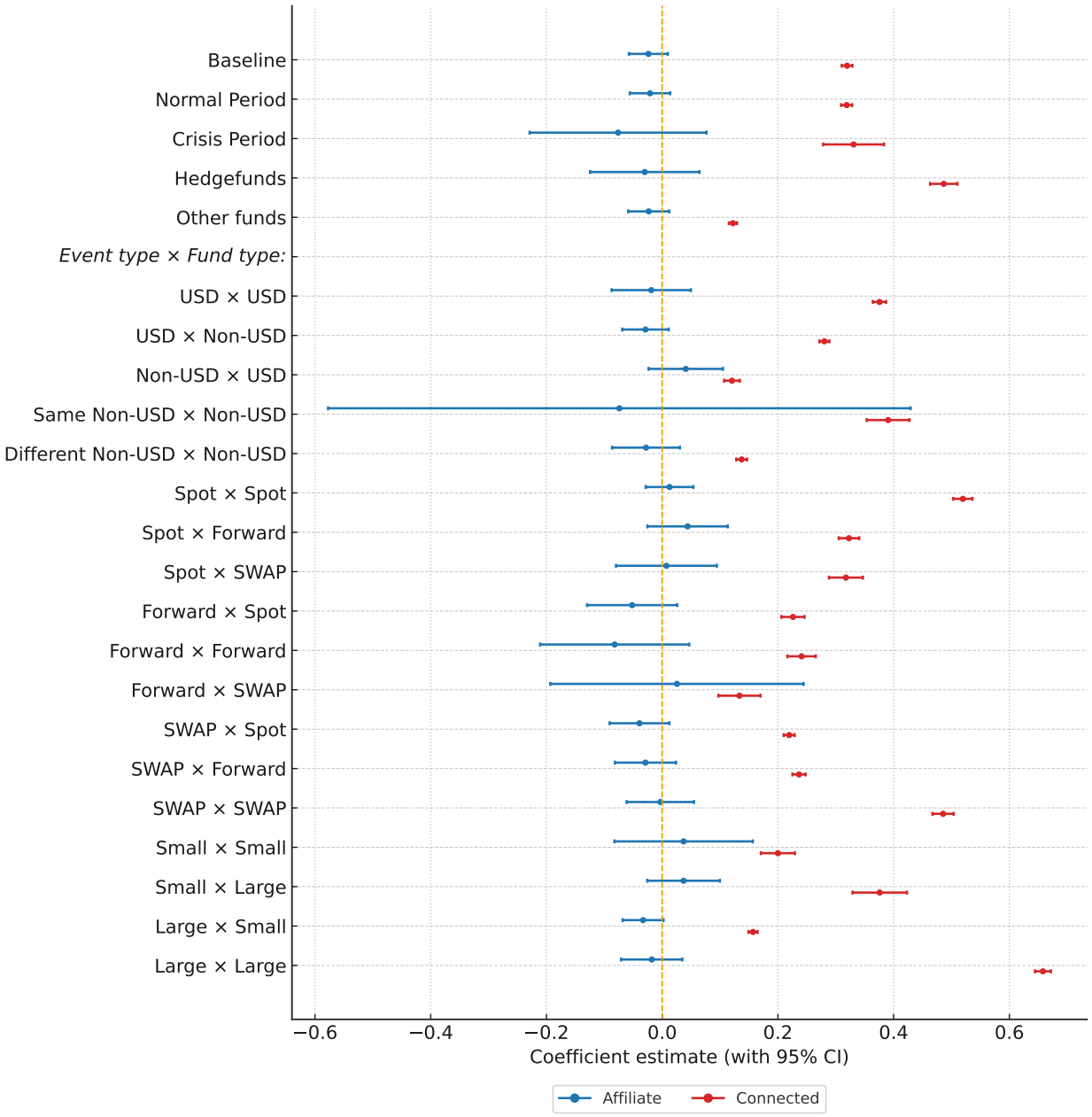


Figure 8: Responses of Funds to Dealer Events by Fund, Asset, and Event Characteristics: Daily Gross Dollar Volume

$NonUSDEvent_e = 1$ and the firm's currency specialization is in the currency of the event trade. Figure 8 displays the appropriate sums of the estimated coefficients, and uses the coefficients' covariance matrices to obtain the standard errors of those sums. The estimate in the USD Event Trade-USD Firm by D2F Connected cell, for example,

is the sum of coefficients that remain when we set $USDFirm_f = USDEvent_e = 1$ and $NonUSDFirm_f = NonUSDEvent_e = 0$.

The fund size estimates are calculated in the same way, except using dummies corresponding to the firms with above or below median average daily gross volume, separately computed for the dealers and the funds. The asset class estimates are similarly constructed using dummies for spot, forward, and swap.

7 Conclusion

We document that today's China Walls effectively preempt information sharing between dealers and their affiliate funds in the foreign exchange market. As this enforcement is the responsibility of the US Securities and Exchange Commission, our results reveal remarkable regulatory capacity in the US to control information flows within conglomerates. We leave for future research the question of whether effectively enforced China Walls are socially beneficial.

Appendix

A Detailed Context

This section provides detailed institutional context with a focus on the US.

A.1 Definitions

A *banking conglomerate* is a group of firms controlled by the same holding company and that includes a depository institution (i.e., a bank). A *financial conglomerate* is a broader term encompassing any such groups that includes firms offering financial services as its primary activity. We write "financial conglomerate" when discussing the period up to the 2000s, when most financial conglomerates became banking conglomerates, and "banking conglomerates" elsewhere.

Figure 9 summarizes the components of a banking conglomerate. Their services includes deposits, lending, insurance, asset management (i.e., investing clients' capital), proprietary trading (investing own capital), brokering (matching client orders) and dealing (absorbing client orders onto inventory), investment analysis and advising, underwriting (asset issuance), corporate advising (on mergers and acquisitions and other strategic decisions), and payments and trade finance. A conglomerate partitions these services into insurers, commercial banks (deposits, loans), investment banks (underwriting, corporate advising), investment funds (asset management), broker-dealers (brokering, dealing, analysis, proprietary trading), and investment advisers.

All regulations against the misuse or leakage of financial information target *material non-public information* (MNPI). Information is MNPI if its public disclosure would appreciably affect market prices. In practice, common-law courts treat as MNPI any non-publicly disclosed information that reasonable investors in the relevant securities would find important for their investment decisions. For example, insider earnings information

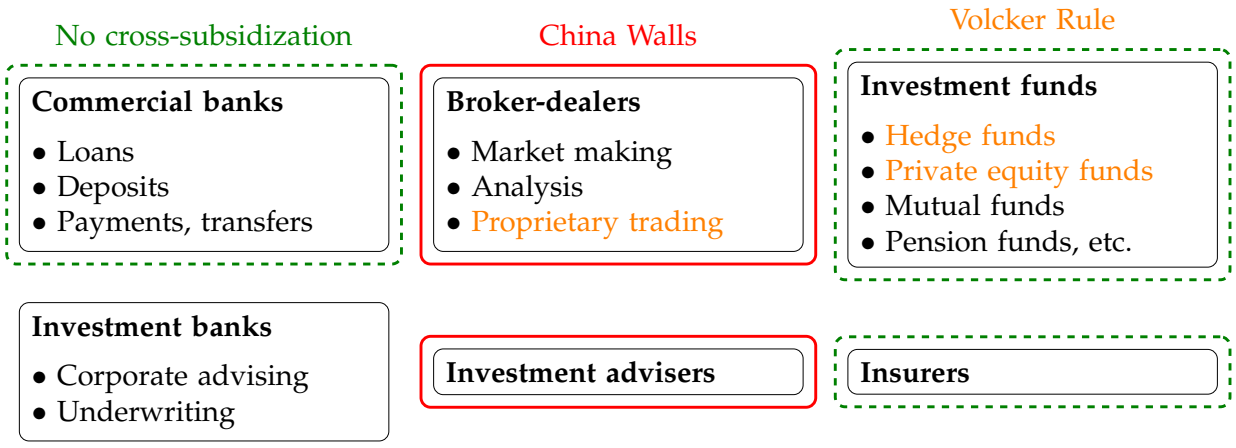


Figure 9: Stylized Banking Conglomerate and Relevant Legal Restrictions

Green dotted lines indicate restrictions on transactions and transfers: Banking laws, fiduciary duty to investors, and state-level insurance laws bar commercial banks, investment funds, and insurers from transferring capital to affiliates or trading with them at unfavorable terms. Red solid lines indicate the China Walls that aim to block the flow of information around subsidiaries in which conflicts of interest concentrate: Broker-dealers and investment advisers are required to prevent their employees interacting with the employees of affiliates. Orange fonts highlight the Volcker Rule restrictions on proprietary trading and ownership of hedge funds and private equity funds by banking conglomerates.

or outstanding order flows of clients are MNPI.[13] Possessing, sharing, or acting on MNPI is not generically illegal. However, financial intermediaries owe legal duties over MNPIs, as we soon elaborate.

The *China Walls* are blunt internal barriers set around subsidiaries with especially high risk of MNPI misuse. The Walls include both physical barriers and rules, typically:

- Separate offices, elevators, and entry ways for walled-off affiliates, with opaque and soundproof physical barriers when located on the same floor.
- Cool-down periods for employees transferring between walled-off affiliates.
- Watch lists that prohibit employees from trading or advising on the listed securities.
- Records of every instance where an "over-the-wall" executive (who oversees multiple affiliates walled off from each other) receives MNPI from any subsidiary, and requirement that the executive recuse themselves from any business related to the MNPI.

[13] Analyses of MNPI are MNPI, whereas analyses of publicly available information are not.

- Monitor and retain all business-related emails and messages sent by employees, and review those containing MNPI.
- Contingency plans when MNPI leaks through the China Walls, and the appointment of officers responsible for enforcing the Walls and handling the contingencies.

These restrictions on employee interactions effectively ban transactions between walled-off affiliates.

A.2 Key Regulations on Banking Conglomerates

The markings in Figure 9 indicate each key regulation on the banking conglomerates. Two concerns underlie the regulations. First, the conglomerates may divert publicly insured deposits or insurance premiums towards risky trades or to cross-subsidize affiliates, thereby shifting risk onto the state or the insureds. Second, the conflicts of interest inherent in combining intermediation, advisory, and trading functions could disadvantage retail investors and undermine trust in financial markets.

Three constraints on banking conglomerates address these concerns. First, a bank or an insurer cannot cross-subsidize affiliates. The US Regulation W (and similar rules elsewhere) limit the outstanding value of bank-to-affiliate transactions to 20 percent of the bank's capital and 10 percent with any single affiliate.[14] These trades must occur at prevailing market prices and under punitive collateral requirements. Moreover, banks cannot trade securities issued by its affiliates, accept them as collateral, nor guarantee a trade, loan, or securities issuance that involves an affiliate. Analogous rules on insurers, which are harmonized across the US yet enforced by state authorities, prevent their capital being used to subsidize affiliates (Hamilton, 2011).

[14]Outstanding transaction value include loans, face value of guaranteed assets or liabilities, and gross purchases from affiliates. For example, purchasing $1 million of an asset from an affiliate would raise the outstanding value by $1 million until the bank sells $1 million of the same asset back to that affiliate. (Sales to other affiliates or of other assets do not affect the outstanding value generated by this purchase.)

Second, the Volcker Rule restricts banking conglomerates from proprietary trading and owning risky investment funds. Specifically, a banking conglomerate cannot use its own capital to make short-term profit-seeking trades. The Rule also limits its ownership stake and exposure to hedge funds and private equity funds. Broad exemptions apply. The Rule exempts the trades linked to market making by broker-dealers and any trade held for more than 60 days. Further, hedge funds and private equity funds active entirely outside the US are exempt and, within the US, a conglomerate may sponsor and control such funds if it holds less than 3 percent of the funds' assets. Therefore, most banking conglomerates contain hedge funds and considerable scope remains for bank-affiliated broker-dealers to trade on private information using own capital.

Third, as we elaborate next, the China Walls around broker-dealers and around investment advisers seek to minimize information leakage surrounding these firms. Statutes single out investment advisers for their large potential impact on investment decisions. The broker-dealers are singled out, because their role as intermediaries provide constant stream of privileged information gleaned from their clients' orders. Under the argument that broker-dealers leaking this information to affiliate funds or receiving inside information from affiliates would place the investing public at a sharp disadvantage, preventing such information flows is necessary to maintain trust and participation in financial markets.

A.3 China Wall Enforcement Over Time

Origins. Under common-law tradition, insider trading on behalf of clients was encouraged. Brokers and dealers were expected to use all information that came into their possession, and further solicit inside information, to fulfill their fiduciary duty. This expectation was upended in 1961, when a landmark judgement held each conglomerate liable for damages incurred by the investing public due to trades based on its MNPI. The ruling demands that the intermediaries holding MNPI either publicly disclose or take no

action whatsoever related to the MNPI. Subsequent court rulings placed the full burden of avoiding incompatible duties onto the conglomerates.[15]

Financial conglomerates were in an impossible legal jeopardy. Beyond fiduciary duty and the new duty to the investing public, the agency principle requires the firms acting as agents to safeguard the private information of their principal (Tuch, 2014). Suppose a conglomerate owns a dealer and a mutual fund, and the dealer receives a large trade request from a client hedge fund—an MNPI. By fiduciary duty, the dealer ought to share this MNPI with the mutual fund for the benefit of the fund's investors. Yet, doing so would expose the conglomerate to liability if the mutual fund trading on the MNPI cause losses to some traders. This liability can be avoided only by publicly disclosing the hedge fund's trade request, in violation of the agency principle. These incompatible duties left financial conglomerates in near-permanent state of legal liability.

The China Walls provided a way out. In 1968, the US Securities and Exchange Commission (SEC) began offering safe harbor from liability for the conglomerates that implement sufficiently strict China Walls, as determined by the SEC.[16] The logic is that walled-off subsidiaries can be considered separate entities for the purpose of determining whether a legal duty has been breached. Continuing the example, the dealer would not owe fiduciary duty to the investors of the affiliate mutual fund if this fund were walled off from the dealer. The US financial conglomerates widely adopted the China Walls, which became broadly standardized according to SEC guidelines. Financial conglomerates in other jurisdictions followed, whether through their US operations or regulatory standardization (in Australia, Canada, France, Germany, Japan, Switzerland, and the UK).

[15] A typical case is *Black and Shearson v. Hammill Co.* (Black and Shearson, Hammill Co., 1968) which rules, "conflict in duties is the classic problem encountered by one who serves two masters. It should not be resolved by weighing the conflicting duties; it should be avoided in advance [..] or terminated when it appears." The judgement upheld awards of $25 thousand (1968 dollars) each to two customers of a dealer, which sold debentures of a failing firm whose board included a partner at the dealer's parent company. The conflicting duties were the dealer's fiduciary duty to its customers and the partner's duty to keep the inside information of the failing firm confidential.

[16] Alternative means to avoid incompatible-duty liabilities, such as obtaining client consent to waive fiduciary duties, are likely ineffective under most circumstances (Tuch, 2014).

Pre-2008 crisis legal status. A 1980 US Supreme Court case (*Chiarella v. United States*) replaced the constellation of duties with one overarching duty to "disclose or abstain." A person has the duty to disclose or abstain from acting on an MNPI when: (a) she owes fiduciary duty to the source of the MNPI; and (b) the action would give her a personal benefit.

The 1980s also saw the deregulation of financial conglomeration in the US and the UK. The arguments were that full-service financial conglomerates would generate economies of scope and be more competitive versus less regulated foreign competitors. Because the duty to disclose or abstain might render full-service conglomerates nonviable, new statutes explicitly incorporated the China Walls as safe harbor and broadened their legal protections (Brooke, Burrows, Faber, Harpum, and Silber, 1995, p. 98).[17] Suppose a fund consistently earns large profits whenever an affiliate dealer receives large order flows. Under the new statutes, presence of a China Wall between the dealer and the fund would protect the conglomerate against liabilities to the dealer's clients and to the fund's counterparties.[18]

Pre-2008 crisis regulatory regime. The China Walls were initially an legal benefit available to the banking conglomerates—not a regulatory requirement. As such, the China Walls enforcement was purely reactive, occuring in the course of assigning liability upon the discovery of fraud or breach of duty. Indeed, no US regulator proactively evaluated the China Walls between 1990 and 2012, the years when the SEC reviewed the Walls within broker-dealers as a research exercise.[19] The prosecutions over the LIBOR scandal

[17]The UK removed most restrictions on financial conglomeration in 1986. The US gradually weakened the Glass-Steagall Act provisions throughout the 1980s and 90s, until largely repealing the Act in 1999. The UK Financial Services Act 1986 (FSA) and the US Insider Trading and Securities Fraud Enforcement Act 1988 (ITSFEA) explicitly provide safe harbor from a wide range of liabilities to the financial conglomerates that adopt China Walls.

[18]The China Walls grant similar protection elsewhere. For instance, in a landmark Australian case, *ASIC v. Citigroup (2007)*, Citigroup's trading arm purchased one million shares of a target firm one day before its acquisition announcement, in a deal where Citigroup's investment bank was advising the acquirer. The judge dismissed the case, on the basis that the China Wall between Citigroup's trading and investment bank arms was sufficient to preclude conflict of interest (Hanrahan, 2007).

[19]The 1990 review was in response to the 1998 ITSFEA Act that explicitly gave safe harbor to walled-off broker-dealers. The 2012 review was in response to the Dodd-Frank Act.

highlights the nonobligatory status of China Walls precrisis: While each settlement with an implicated banking conglomerate often delves into its China Walls, the sole purpose of doing so were to determine the degree of the conglomerate's legal liability for fraud and insider trading. Lacking sufficient China Walls was not an offence in itself.

Further, financial regulators had more limited enforcement powers. Imposition of large penalties or punishment of individuals required court judgement, with 5-year statute of limitations. A firm that aided a violator could only be prosecuted if the firm knowingly assisted in the violation, a high legal bar. Most importantly, regulatory action required the evidence of actual fraud or breach of duty. Engaging in transactions with a high risk of fraud or duty breach, or failing to maintain China Walls that could greatly suppress the misuse of MNPI were not themselves actionable by regulators.

Current Regulatory Regime. The US Dodd-Frank Act 2010, and partly coordinated laws elsewhere, dramatically reshape the enforcement of China Walls today. The key change is the "risk-based" enforcement powers granted to financial regulators. Rather than requiring actual illegality before the regulators can act, Dodd-Frank gave them the ability to prosecute behavior that raises the risk of fraud or duty breaches. Moreover, a regulator can now prescribe corporate organization and internal rules that the regulator believes necessary to cap the risk of illegality to a reasonable level.

Today's China Walls form a heavily enforced risk-based regulatory prescription. The landmark case is the SEC's 2018 settlement with Mizuho Securities in which Mizuho paid $1.25 million partly for failing to maintain information barriers between its broker-dealer and hedge fund trading desks (US Securities and Exchange Commission, 2018). This case began a series of prosecutions by the SEC where the key issue was the effectiveness of the China Walls itself (Barrack, Moskowitz-Hesse, Richards, and Cox, 2020). As an ongoing example, in 2021, the SEC began a proactive sweep of monitoring and retension of business-related communication among employees across all broker-dealers and investment advisors. The first consequent settlement included a $125 million fine on Morgan

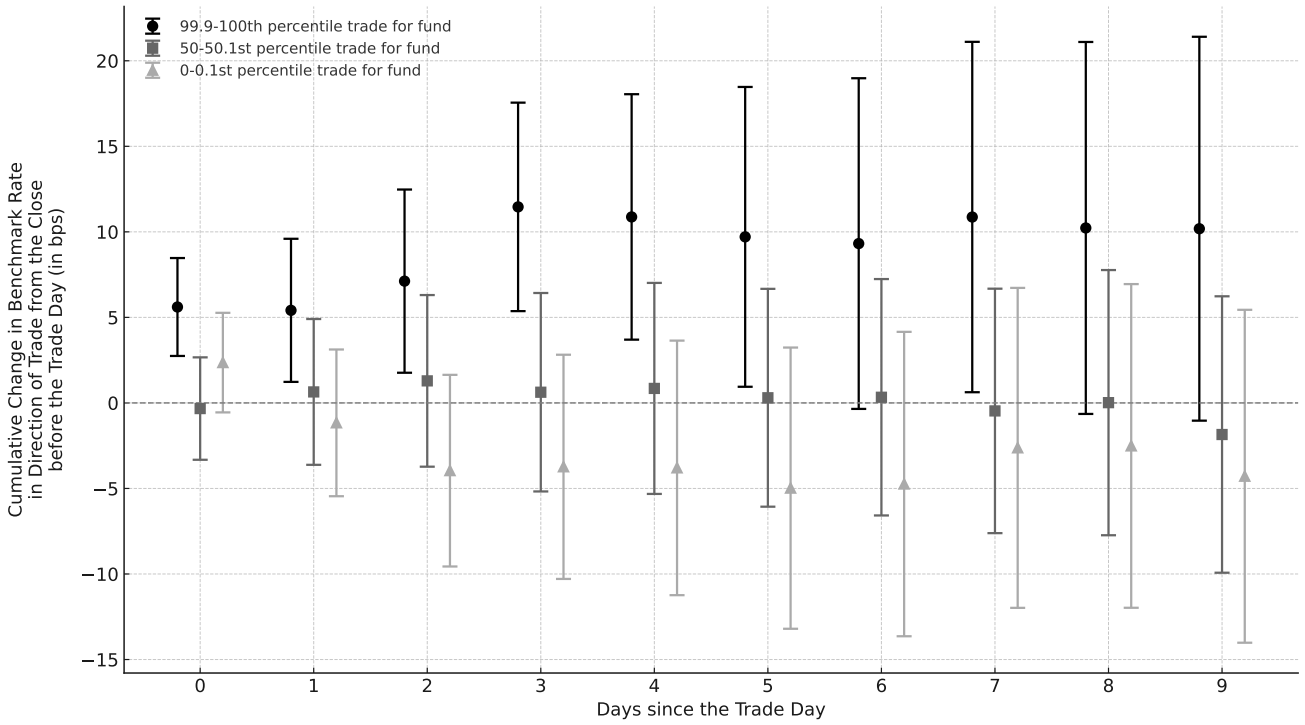
Stanley for their failure to retain all business-related messages sent by its broker-dealer employees *on their private devices* (US Securities and Exchange Commission, 2021). As of early 2024, over $2 billion in fines have been meted out to dozens of broker-dealers and investment advisors over similar failures. Similarly, the SEC charged Virtu Financial in 2024 merely for having a database accessible to both broker-dealer and nonbroker-dealer employees—despite producing no evidence that any MNPI was leaked (US Securities and Exchange Commission, 2024). Therefore, following Dodd-Frank, the regulatory regime over China Walls morphed from reactive to proactive.

B Identification Tests

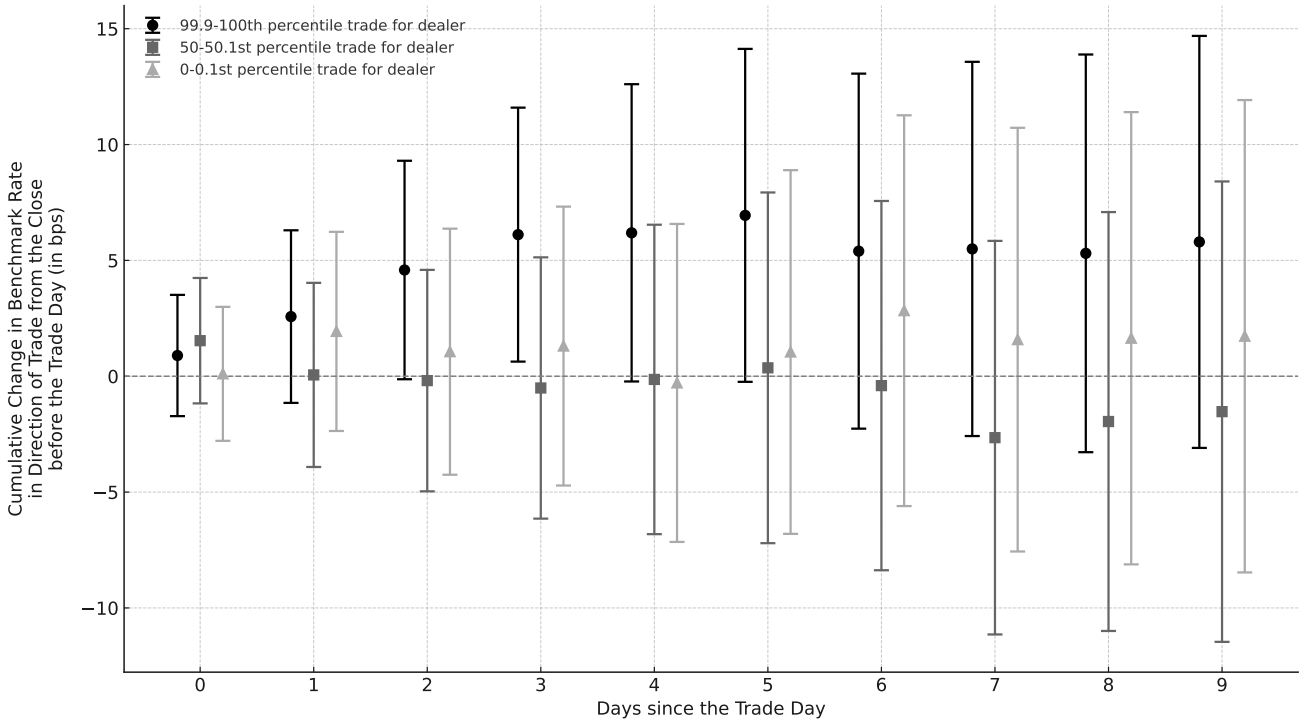
Two exercises jointly test two identifying assumptions that: (a) Exceptionally large trades pinpoint the arrivals of especially valuable MPI; and (b) our design yields a significant and positive coefficient at $t = 0$ if and only if the event firms bilaterally share MPI with the treated firms.

The first exercise is to compute the price impacts of exceptionally large, median (50 to 50.1st percentile among the event firm's trades by dollar value), and exceptionally small (99.9 to 100th percentile) trades. We do not observe who initiated each trade. Instead, under the intuition that net volumes determine prices (Kyle, 1985), we net all trades in the given percentile in each day separately for funds and dealers. To sign each event trade, we assume, for each dealer-fund trade, that the fund was the initiator. We assume that the event dealer was the initiator for each interdealer trade.

A three-step procedure obtains the price impact of firm type k, firm's trade-size percentile p, and cumulative return horizon ℓ. First, we convert the net dollar volumes on day t into trade-direction dummies $d_{t,k,p} \in \{-1, 0, 1\}$, for $k \in \{\text{fund}, \text{dealer}\}$ and percentile $p \in \{[0, 0.1], [50, 50.1], [99.9, 100]\}$. The dummy $d_{t,k,p} = -1$ if the day's net volume is negative, $d_{t,k,p} = 1$ if its positive, and zero otherwise. Second, we calculate the cu-



(a) Trades by Funds



(b) Trades by Dealers

Figure 10: Price Impact Estimates

mulative returns $R_{t,t+\ell}$ between t and $t+\ell$, $\ell \in \{0,\ldots,9\}$, using Bloomberg benchmark exchange rates. Third, the price impact is the coefficient $\rho_{k,p,\ell}$ in the time-series regression (5):

$$R_{t,t+\ell} = \alpha_{k,p,\ell} + \rho_{k,p,\ell} \cdot d_{t,k,p} + \varepsilon_{t,k,p,\ell}. \tag{5}$$

Figure 10 plots the price impact estimates. The net volumes from exceptionally large trades predict future returns, whereas the median and the small trades do not.

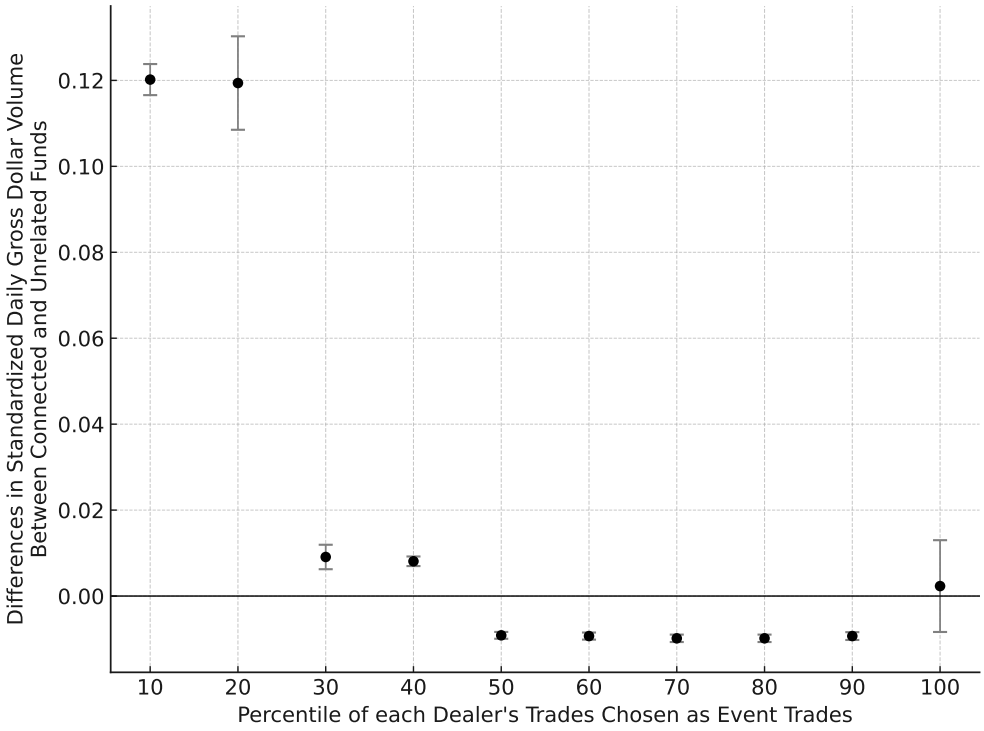


Figure 11: Placebo Estimates

The second exercise replicates Figure 5a, except redefining an event to be a day when a dealer makes a trade in a various percentiles of its trades. Figure 11 depicts the corresponding coefficient estimates for the connected funds. The estimate is always below the baseline result in Figure 5a and decreasing as the event trades become smaller. Combined with Figure 10, these results show that the daily gross volumes of the connected funds only increase relative to the unrelated funds around the event days if the event

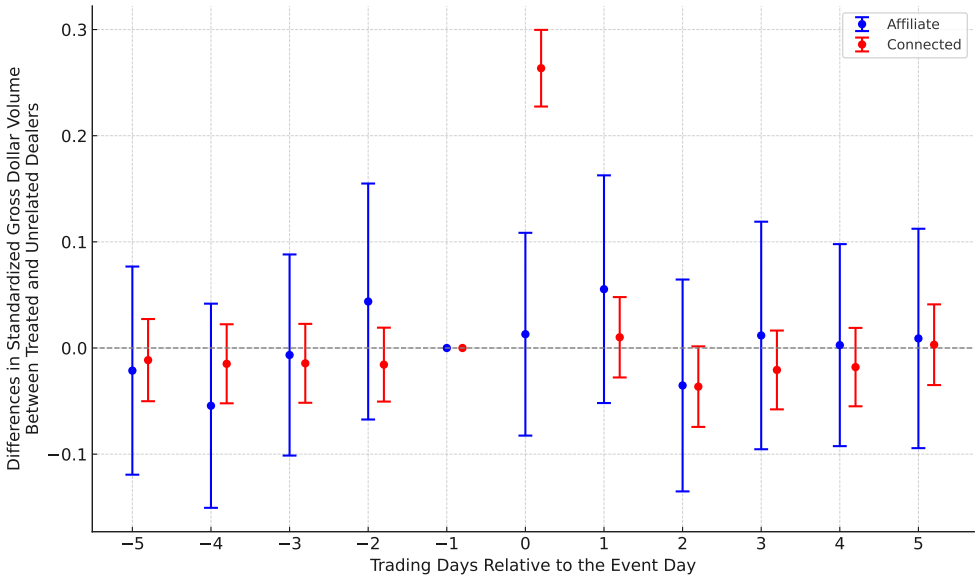
trades are collectively predictive of returns. We conclude that the exceptionally large trades pinpoint the arrivals of MPI, and that the bilateral sharing of the MPI drives our results.

C Information Sharing from Funds to Dealers

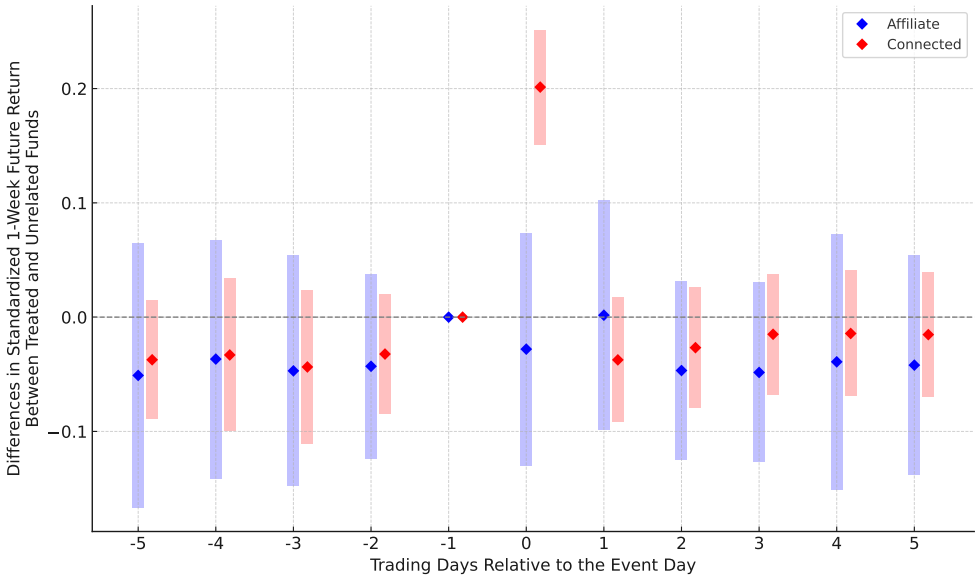
Figure 12 plots the responses in the daily gross dollar volumes and 1-week future returns of affiliate dealers relative to unrelated dealers around exceptionally large trades by the event funds.

D Net Dollar Volumes

We compute *net dollar volume* following the same steps as the 1-week future returns (Section 3.1), except that we do not multiply the net notional amount by their realized returns. Figure 13a plots the responses in the daily net dollar volumes of the affiliate funds relative to the unrelated funds around exceptionally large trades by the event dealers. Figure 13b is an analogous plot for the responses of the affiliate dealers to the unrelated dealers around the fund events. Figure 14 is the corresponding plot for the subsample of funds.

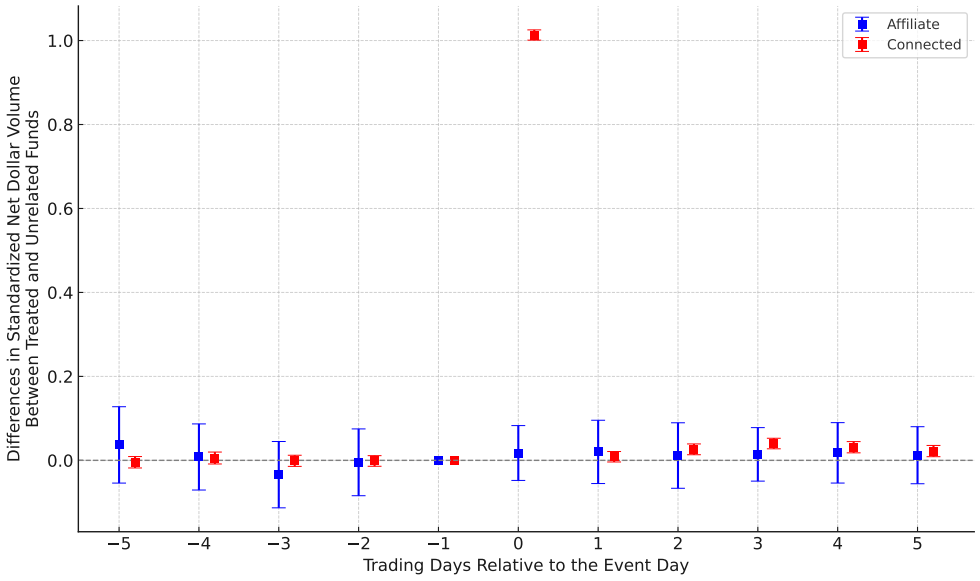


(a) Daily Gross Dollar Volume

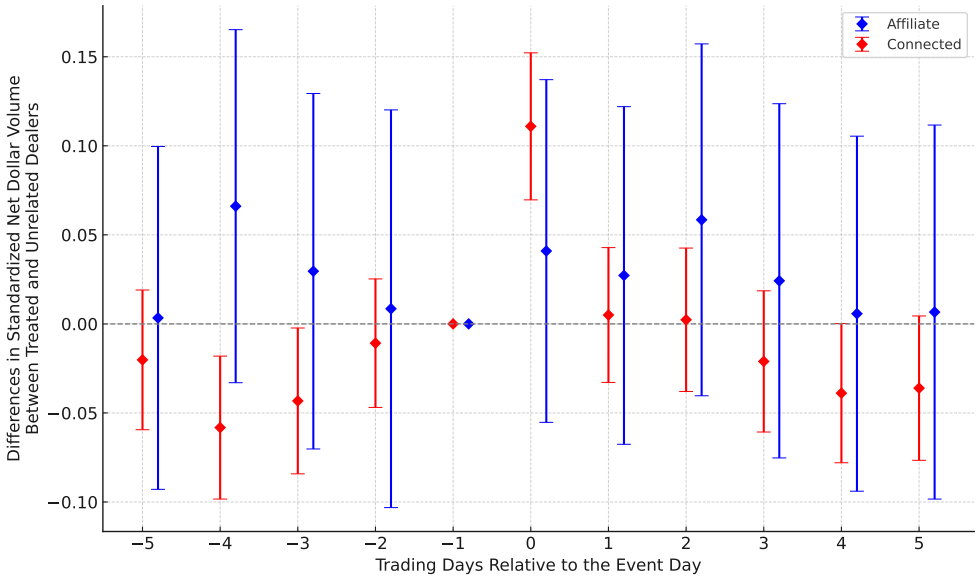


(b) Daily 1-Week Future Return

Figure 12: Dealer Responses to Fund Events



(a) Fund Responses to Dealer Events



(b) Dealer Responses to Fund Events

Figure 13: Fund and Dealer Responses in Daily Net Dollar Volume

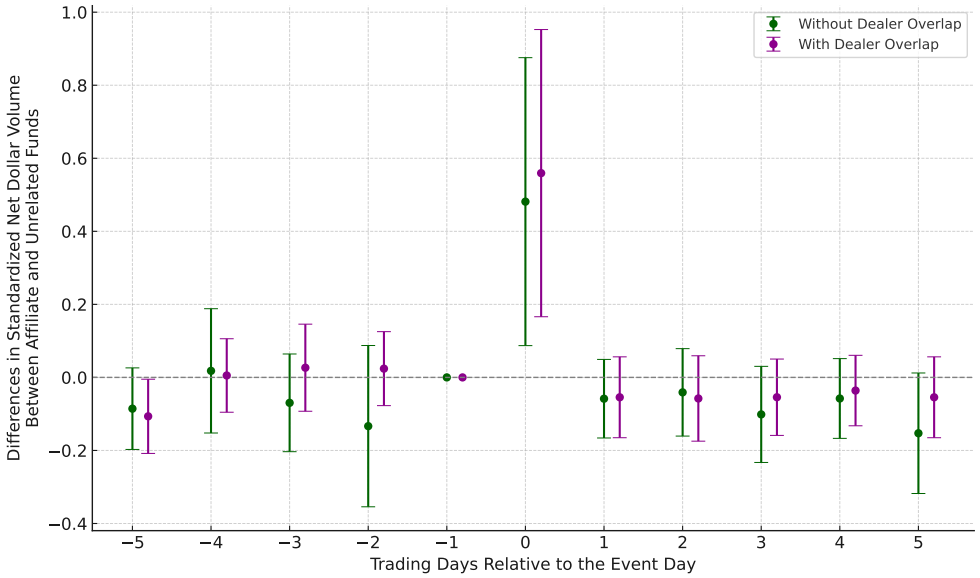


Figure 14: Fund Responses to Fund Events: Daily Net Dollar Volume

References

Abadie, A., S. Athey, G. W. Imbens, and J. M. Wooldridge (2023, February). When Should You Adjust Standard Errors for Clustering? *Quarterly Journal of Economics 138*(1), 1–35.

Bailey, M. J., T. Helgerman, and B. A. Stuart (2024, August). How the 1963 Equal Pay Act and 1964 Civil Rights Act Shaped the Gender Gap in Pay. *Quarterly Journal of Economics 139*(3), 1827–1878.

Bank for International Settlements (2022, October). OTC foreign exchange turnover in April 2022. Technical report, Bank for International Settlements, Basel, Switzerland.

Barbon, A., M. Di Maggio, F. Franzoni, and A. Landier (2019). Brokers and Order Flow Leakage: Evidence from Fire Sales. *Journal of Finance 74*(6), 2707–2749.

Barrack, C., M. Moskowitz-Hesse, L. Richards, and P. Cox (2020, March). Protecting Firm and Client Information: MNPI and Client Confidentiality. In *Securities Industry and Financial Markets Association*.

Beck, T., C. Silva-Buston, and W. Wagner (2025, March). Supervisory cooperation and regulatory arbitrage. *Review of Finance 29*(2), 381–413.

Behrer, A. P., E. L. Glaeser, G. A. M. Ponzetto, and A. Shleifer (2021, April). Securing Property Rights. *Journal of Political Economy 129*(4), 1157–1192.

Bhattacharya, U. and H. Daouk (2002). The World Price of Insider Trading. *Journal of Finance 57*(1), 75–108.

Black and Shearson, Hammill Co. (1968, October). Black v. Shearson, Hammill Co.

Boyarchenko, N., D. O. Lucca, and L. Veldkamp (2021, February). Taking Orders and Taking Notes: Dealer Information Sharing in Treasury Auctions. *Journal of Political Economy 129*(2), 607–645.

Brooke, J., A. Burrows, D. Faber, C. Harpum, and S. Silber (1995, December). Fiduciary Duties and Regulatory Rules. Technical Report LAW COM No. 236, The Law Commission, London.

Cengiz, D., A. Dube, A. Lindner, and B. Zipperer (2019, August). The Effect of Minimum Wages on Low-Wage Jobs. *Quarterly Journal of Economics 134*(3), 1405–1454.

Chague, F., B. Giovannetti, and B. Herskovic (2023, February). Information Leakage from Short Sellers.

Chen, T. and X. Martin (2011). Do Bank-Affiliated Analysts Benefit from Lending Relationships? *Journal of Accounting Research 49*(3), 633–675.

Cook, L. D., M. E. C. Jones, T. D. Logan, and D. Rosé (2023, February). The Evolution of Access to Public Accommodations in the United States. *Quarterly Journal of Economics 138*(1), 37–102.

Di Maggio, M., F. Franzoni, A. Kermani, and C. Sommavilla (2019, November). The relevance of broker networks for information diffusion in the stock market. *Journal of Financial Economics 134*(2), 419–446.

Easley, D. and M. O'Hara (1987, September). Price, trade size, and information in securities markets. *Journal of Financial Economics 19*(1), 69–90.

Gardner, J. (2022, July). Two-stage differences in differences.

Garrett, D. G. (2024, December). Conflicts of Interest in Municipal Bond Advising and Underwriting. *Review of Financial Studies 37*(12), 3835–3876.

Glaeser, E. L. and A. Shleifer (2003, June). The Rise of the Regulatory State. *Journal of Economic Literature 41*(2), 401–425.

Gozzi, R. (2003). The Chinese Wall Metaphor. *ETC: A Review of General Semantics 60*(2), 171–174.

Greenstone, M., P. Oyer, and A. Vissing-Jorgensen (2006). Mandated Disclosure, Stock Returns, and the 1964 Securities Acts Amendments. *Quarterly Journal of Economics 121*(2), 399–460.

Griffin, J. M. (2021, December). Ten Years of Evidence: Was Fraud a Force in the Financial Crisis? *Journal of Economic Literature 59*(4), 1293–1321.

Hagströmer, B. and A. J. Menkveld (2019). Information Revelation in Decentralized Markets. *Journal of Finance 74*(6), 2751–2787.

Hamilton, L. (2011, February). US - NAIC Adopts Modified Insurance Holding Company System model Act and regulation. *Global Corporate Insurance & Regulatory Bulletin*.

Hanrahan, P. F. (2007, December). *ASIC v Citigroup: Investment Banks, Conflicts of Interest, and Chinese Walls*, pp. 117–142. London: IMPERIAL COLLEGE PRESS.

Haselmann, R. F. H., C. Leuz, and S. Schreiber (2023, March). Know Your Customer: Informed Trading by Banks.

Hortaçsu, A. and J. Kastl (2012). Valuing Dealers' Informational Advantage: A Study of Canadian Treasury Auctions. *Econometrica 80*(6), 2511–2542.

Irvine, P., M. Lipson, and A. Puckett (2007, May). Tipping. *Review of Financial Studies 20*(3), 741–768.

Ivashina, V. and Z. Sun (2011, May). Institutional stock trading on loan market information. *Journal of Financial Economics 100*(2), 284–303.

Keiser, D. A. and J. S. Shapiro (2019, February). Consequences of the Clean Water Act and the Demand for Water Quality. *Quarterly Journal of Economics 134*(1), 349–396.

Kondor, P. and G. Pintér (2022). Clients' Connections: Measuring the Role of Private Information in Decentralized Markets. *Journal of Finance 77*(1), 505–544.

Kumar, N., K. Mullally, S. Ray, and Y. Tang (2020, August). Prime (information) brokerage. *Journal of Financial Economics 137*(2), 371–391.

Kyle, A. S. (1985). Continuous Auctions and Insider Trading. *Econometrica 53*(6), 1315–1335.

La Porta, R., F. Lopez-De-Silanes, and A. Shleifer (2006). What Works in Securities Laws? *Journal of Finance 61*(1), 1–32.

Lehar, A. and O. Randl (2006, January). Chinese Walls in German Banks. *Review of Finance 10*(2), 301–320.

Li, F. W., A. Mukherjee, and R. Sen (2021, September). Inside brokers. *Journal of Financial Economics 141*(3), 1096–1118.

Li, T. (2018, June). Outsourcing Corporate Governance: Conflicts of Interest Within the Proxy Advisory Industry. *Management Science 64*(6), 2951–2971.

Massa, M. and Z. Rehman (2008, August). Information flows within financial conglomerates: Evidence from the banks–mutual funds relation. *Journal of Financial Economics 89*(2), 288–306.

Menkhoff, L., L. Sarno, M. Schmeling, and A. Schrimpf (2016, April). Information Flows in Foreign Exchange Markets: Dissecting Customer Currency Trades. *Journal of Finance 71*(2), 601–634.

Peluso, D. (2020, December). Turning a blind eye: The complicit trespassing of 'Chinese walls' in financial institutions in New York. *Critique of Anthropology 40*(4), 438–454.

Pinter, G., C. Wang, and J. Zou (2024, July). Size Discount and Size Penalty: Trading Costs in Bond Markets. *Review of Financial Studies 37*(7), 2156–2190.

Roth, J., P. H. C. Sant'Anna, A. Bilinski, and J. Poe (2023, August). What's trending in difference-in-differences? A synthesis of the recent econometrics literature. *Journal of Econometrics 235*(2), 2218–2244.

Seyhun, H. N. (2007/2008). Insider Trading and the Effectiveness of Chinese Walls in Securities Firms. *Journal of Law, Economics & Policy 4*(2), 369–408.

Somogyi, F. (2022, August). Dollar Dominance in FX Trading.

Tuch, A. F. (2014). Financial Conglomerates and Information Barriers. *Journal of Corporation Law 39*(3), 563–616.

US Securities and Exchange Commission (2018, July). In the Matter of Mizuho Securities USA LLC.

US Securities and Exchange Commission (2021, December). In the Matter of J.P. Morgan Securities LLC.

US Securities and Exchange Commission (2024, January). Securities and Exchange Commission v. Virtu Financial Inc. and Virtu Americas LLC.