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Disruptions to Foreign Trade and U.S. Banks' Returns

Michele Modugno, Dino Palazzo, Carlos A. Ramírez, and Thiago R.T. Ferreira¹

Abstract: We develop a market-based measure of firms' and industries' exposure to foreign trade disruptions. Combining this approach with detailed supervisory data, we quantify large U.S. banks' exposure to such disruptions and propose a novel bank-level vulnerability index. We show that banks with greater exposure experienced significantly larger stock price declines following the April 2025 tariff announcements. Our vulnerability index explains 18% of the cross-sectional variation in bank returns during this episode.

Introduction

The growing frequency and severity of geopolitical tensions have heightened concerns about the economic consequences of disruptions to foreign trade. Yet, quantifying these effects is challenging, as it requires identifying which firms and industries are most exposed to trade policy changes. This task is complicated by the interconnected nature of modern economies and the limited availability of detailed supply-chain information.² In addition, restrictive trade policies can trigger broad recessionary forces, leading to declines in investment and aggregate real income, reductions in wages in tradable sectors, and contractions in hours worked, consumption, and output (Caldara et al., 2020; Fajgelbaum et al., 2020; Handley and Limão, 2017).³ Disruptions to foreign trade may therefore affect not only firms directly reliant on foreign markets but also financially weaker, further complicating the identification of the channels through which trade disruptions propagate throughout the economy.

To address these challenges and capture the full spectrum of firms affected by trade policies, we rely on a market-based methodology to identify the most vulnerable firms and industries. Our identification strategy focuses on trading days dominated by unexpected trade policy changes, during which cross-sectional differences in stock returns reveal differential exposure to foreign trade risk. This approach leverages financial markets' ability to aggregate otherwise difficult-to-observe information, including supply-chain linkages, cost structures, and foreign market dependence. By isolating these trade-policy-driven episodes and examining the resulting dispersion in returns, we construct a simple, yet powerful, measure of trade exposure, which we then combine with supervisory data on U.S. bank lending to assess how foreign trade disruptions can affect the U.S. banking system.

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² A growing literature shows that supply chains can play an important role in the propagation of shocks throughout the economy, affecting not only production processes but also firms' valuations (see, for example, Acemoglu et al. (2012); Oberfield (2018); Herskovic (2018); Gofman et al. (2020); Elliott et al. (2022); Buraschi and Tebaldi (2024); Ramírez (2024); among others).

³ These findings are consistent with Irwin's (2012) historical analysis of the 1930s, which estimated that trade barriers accounted for approximately 10% of the global decline in output and 50% of the contraction in world trade during the Great Depression.

We validate our identification strategy by analyzing the April 2025 tariff announcements, which triggered the largest increase in the average U.S. tariff rate in the post-WWII period (Barnichon and Singh (2026)). We examine the relationship between our trade exposure measure and firm characteristics capturing reliance on foreign markets and financial fragility. Consistent with our interpretation, firms experiencing the largest stock price declines exhibit greater dependence on foreign sales and weaker financial positions. These results support the validity of our market-based measure in capturing both direct and indirect vulnerabilities to trade policy shocks.

Turning to the banking system, we show that while large U.S. banks have limited direct lending to the most trade-vulnerable firms, there is substantial heterogeneity in their exposure to trade-sensitive industries. Banks with greater exposure—measured by the share of lending to trade-sensitive industries—experienced significantly larger stock price declines following the April 2025 tariff announcements. This evidence points to an important transmission channel: trade disruptions can propagate to banks through their loan portfolios, even without substantial direct lending to the most affected firms. Our findings underscore the importance of monitoring banks’ trade exposures in financial stability assessments and highlight the broader implications of trade policy shocks for the banking sector.

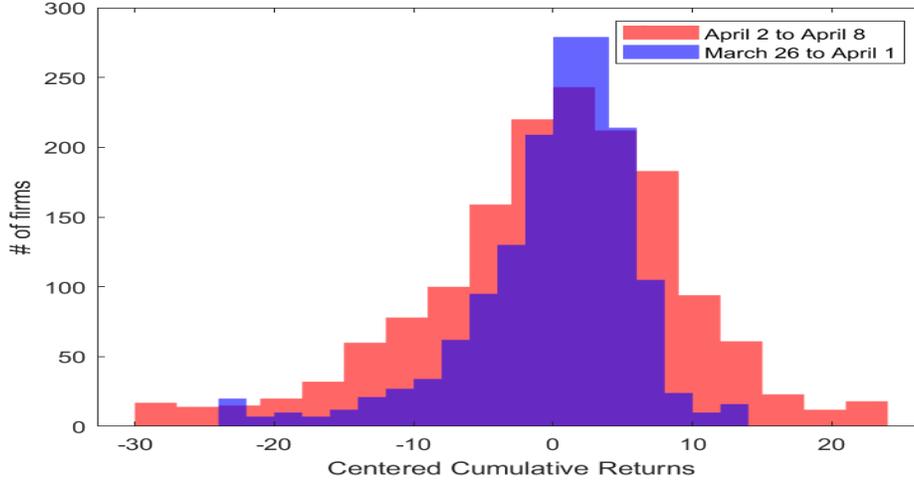
Our paper contributes to the growing literature on the interaction between trade policy, supply-chain risk, and financial stability. Recent work examines how trade policy shocks affect firm performance (Ignatenko et al., 2025) and how global supply chains shape firms’ financing needs (Alfaro et al., 2025). Greenland et al. (2024) show that equity market reactions provide a comprehensive measure of firm exposure to trade policy changes, capturing both direct and indirect channels without requiring detailed supply-chain data. While their focus is on firm-level responses to trade liberalization, we extend this market-based approach to quantify banks’ indirect exposure through their loan portfolios. Other studies show that trade policy uncertainty (Correa et al., 2024) and supply chain risk (Morgan et al., 2026) affect bank lending, while broader economic uncertainty also shapes credit supply conditions (Wu and Suardi, 2021). Our approach is also complementary to text-based measures of trade policy exposure derived from conference calls (Hassan et al., 2019). By linking our exposure measure to supervisory bank-level data, we provide a novel bridge between the literature on trade policy shocks and the literature on bank risk and financial stability.

Identification Strategy

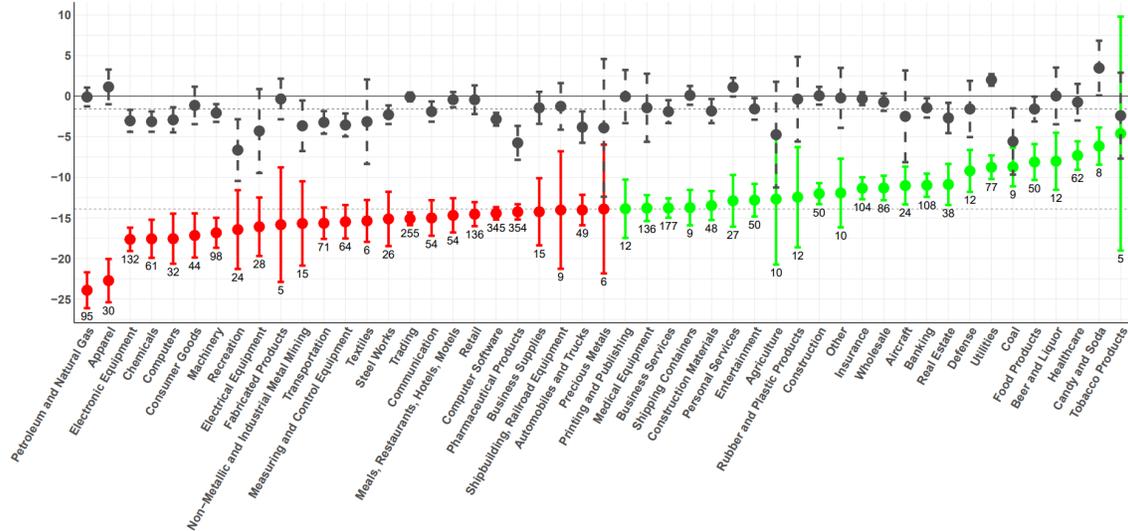
Our methodology focuses on trading days when U.S. stock prices are primarily driven by unexpected trade policy announcements. We exploit cross-sectional variation in stock returns during these episodes to infer firms’ exposure to trade disruptions. This strategy rests on the premise that financial markets aggregate dispersed information—drawing on the detailed knowledge of financial analysts and investors about firms’ operations, supply chains, and production structures.

FIGURE 1: 4-day S&P500 returns

Panel A: 4-day S&P500 returns distribution



Panel B: Industry-level 4-day return distribution



Note: Panel A depicts the frequency of demeaned 4-day cumulative returns from all publicly listed firms during the weeks of March 26th to April 1st, 2025, and April 2nd - April 8th, 2025. Panel B reports the cumulative returns over the business days 3-8 of April 2025 for each one of the 49 industries defined by Fama and French. For each industry, we report the number of stocks used, and the average (dots) and 95 percentile (bars) returns across these stocks. The dash line represents the median return across industries in each period. Industries with post April 2 returns below the median are in red, while industries above the median are in green. In black, we report the cumulative 4-day returns over the four business days up to (and including) April 2, 2025, for each one of the 49 industries defined by Fama-French. Source: Center for Research in Security Prices, CRSP 1925 US Indices Database, Wharton Research Data Services, <http://www.whartonwrds.com/datasets/crsp/>.

As market participants incorporate this information, stock prices adjust to reflect the perceived consequences of trade policy shifts, acting as information aggregators (Grossman, 1989). Our approach is corroborated by Schmalz and Zhuk's (2019) findings that stock prices react more strongly to aggregate economic news during market downturns, allowing for a clearer revelation of firms' exposure to systematic risk and enhancing the precision of our trade exposure measure.

The April 2025 tariff announcements provide a clear and compelling illustration of our approach. On April 2, 2025, the U.S. government announced tariffs on imports from most countries, with rates ranging from a 10% baseline to as high as 50%.⁴ The market reaction was swift and severe: between the announcement and the temporary pause on April 8, the S&P 500 declined by approximately 12%. This episode ranks among the sharpest short-term market contractions since the 1990s, with the four-day return falling below the first percentile of its historical distribution.⁵ Importantly, the aggregate decline was accompanied by substantial return dispersion across individual firms, offering a clear window into how investors reassessed firms' differential exposure to trade disruptions.

This cross-sectional differentiation is central to our identification strategy. Panel A of Figure 1 illustrates that cumulative returns for the period April 2–8 (red bars) displayed far greater dispersion and a much more pronounced negative skewness than in the preceding four-day trading window (blue bars)—a pattern consistent with Schmalz and Zhuk (2019)'s “revealing downturn” idea. We exploit this increased variation to distinguish between firms more and less exposed to trade-related shocks. Panel B demonstrates that the same pattern holds at the industry level: even when firms are aggregated into industries, return dispersion during April 2–8 is markedly wider than in the immediately preceding window.⁶ Taken together, these patterns illustrate how trading days dominated by unexpected trade policy shocks provide a quasi-natural experiment for identifying firms' and industries' differential exposure to trade disruptions.

With these ideas in mind, Table 1 complements the visual evidence with a simple cross-sectional regression. Column 1 shows that industry fixed effects alone account for approximately 20% of the cross-sectional variation in firm-level stock returns over April 2–8—a substantial share. Column 2 examines whether the observed return differences across firms also reflect their financial fragility and exposure to foreign trade risk. Alongside firms' measures of financial fragility—such as their interest coverage ratios and leverage—and their exposure to foreign sales, we also control for other standard firm-level characteristics commonly used in asset pricing: firm size (log market capitalization), valuation (log book-to-market), return momentum and short-term reversal (prior 12-month returns and March 2025 returns), and comovement with the overall market (market beta).⁷

⁴ See Executive Order “Regulating Imports with a Reciprocal Tariff to Rectify Trade Practices that Contribute to Large and Persistent Annual United States Goods Trade Deficits”, and its Annex I.

⁵ See the online appendix for more details.

⁶ Our classification uses the 49 industries build by Fama and French This industry classification groups companies with similar economic characteristics, which can be useful for studying how industry-specific factors are related to stock returns or other financial metrics. For more information see: https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_49_ind_port.html.

⁷ Relying only on foreign sales would not be sufficient to identify trade shock sensitive firms. For instance, firms that sell mainly domestically, but import from abroad their inputs, are not captured by this metric. Note that we also include a dummy for missing foreign sales data to allow for a larger number of observations in our sample.

TABLE 1: Explaining Trade-Sensitivity of Public Firms

VARIABLES	(1) Cum Ret Apr3-Apr8	(2) Cum Ret Apr3-Apr8
Leverage		-1.027*** (0.203)
High ICR Dummy		0.794** (0.323)
Foreign Sales (Frac)		-1.206*** (0.204)
Foreign Sales Dummy		-0.161 (0.411)
Market Beta		-1.710*** (0.216)
Market Cap (Log)		-0.465* (0.247)
Book-to-Market (Log)		-0.960*** (0.205)
Return Last Year ex-Mar 2025		0.403* (0.212)
March 2025 Return		1.308*** (0.251)
Constant	-14.55*** (0.139)	-7.847*** (1.354)
Industry FE	Yes	Yes
Observations	2,532	2,281
Adjusted R-squared	0.191	0.319

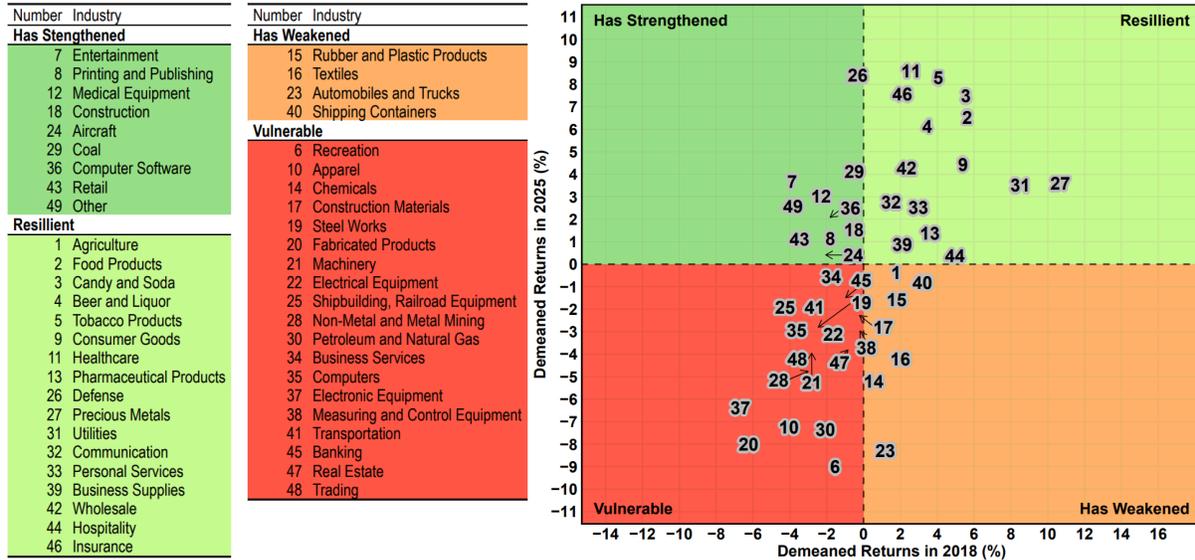
Note: This table reports the results of regressions on cumulative stock market returns from April 3–8, 2025. Explanatory variables include: log of the market capitalization; log of book-to-market; leverage, measured by debt divided by assets; a dummy variable for high interest coverage ratio (ICR), defined as the ratio of earnings before interest and taxes to interest payments (high ICR firms are in the top 20% of the ICR distribution); the share of revenues from foreign sales (Foreign Sales (Frac)); a dummy variable for missing values of foreign sales; prior 12-month returns excluding March 2025; March 2025 returns; and market beta. Both regressions include Industry Fixed Effects. Standard errors are reported in parentheses. *** and ** indicate statistical significance at the 1% and 5% levels, respectively. Data source: Center for Research in Security Prices, CRSP/Compustat Merged Database, Wharton Research Data Services, <http://www.whartonwrds.com/datasets/crsp/>.

The main takeaway from Column (2) of Table 1 is that financially fragile firms and those more exposed to trade were disproportionately affected by unexpected trade policy developments. Within industries, firms with higher leverage, lower interest coverage ratios, and a greater share of foreign sales experienced significantly larger stock price declines during the April 2025 tariff episode.

Several additional patterns emerge. First, more cyclical firms—those with higher market betas—suffered larger losses, whereas differences between large and small firms are only marginally significant. Second, high book-to-market firms experienced more pronounced declines. These firms are typically characterized by weaker past performance, lower profitability, higher leverage, and greater uncertainty (e.g., Griffin and Lemon, 2002), making them more vulnerable to large aggregate shocks. Third, positive momentum persisted: firms with higher prior 12-month returns (excluding the most recent month) outperformed during the episode. Finally, firms with higher returns in March 2025 also performed relatively better. Although short-term reversals are common (e.g., Jagadeesh, 1990), trade-

related news had already affected markets in March 2025, and firms that proved resilient then continued to outperform following the April 2 announcement.

FIGURE 2: Trade-Sensitive Sectors



Note: This figure reports the average cumulative equity returns of all publicly listed firms, grouped by the 48 Fama-French industries. The horizontal axis shows cumulative returns during four separate days in 2018 identified as market reactions to predominantly trade disruptions (see footnote 7). The vertical axis shows average cumulative equity returns during April 2–8, 2025. Both axes represent returns demeaned by the cross-sectoral average for the respective period. The dashed lines divide the chart into four quadrants: Vulnerable (lower-left), Resilient (upper-right), Has Weakened (lower-right), and Has Strengthened (upper-left). The table provides the industry definitions for a selection of sectors. Source: Center for Research in Security Prices, CRSP 1925 US Indices Database, Wharton Research Data Services, <http://www.whartonwrds.com/datasets/crsp/>.

A Tale of Two Trade Wars: Identifying Industries More Vulnerable to Foreign Trade Disruptions.

Although the April 2025 tariff announcements offer a clear setting to study the effects of a major trade shock, stock returns during this episode could still reflect factors unrelated to trade exposure. To address this concern, we extend our analysis to an earlier episode in which unexpected trade policy changes were the primary drivers of U.S. equity markets: the 2018 U.S.–China trade war. Amiti et al. (2024) document that stock markets declined cumulatively by 11.5% across eleven major tariff announcement days in 2018–2019, corresponding to a \$4.1 trillion loss in equity value. Building on their identification of this period as a significant trade policy shock, we focus on four trading days in 2018 during which trade-related news dominated market movements. Examining this additional episode allows us to assess the consistency of our methodology across distinct trade policy environments and to better isolate trade-specific effects from other potential confounding forces.

We acknowledge that classifying individual firms as more or less vulnerable across the two episodes poses challenges, as firms evolve over time and may be at different stages of their life cycles. This concern is substantially mitigated at the industry level, where structural characteristics adjust more

gradually. Moreover, unlike the April 2025 episode—when key announcements were concentrated within a four-day window—the major 2018 trade policy developments were more dispersed over time. To ensure comparability, we identify four trading days in 2018 during which news about U.S.–China trade relations was the dominant driver of stock market movements. This targeted selection facilitates a more consistent comparison across episodes.⁸

The right panel in Figure 2 depicts (demeaned) industry-level cumulative returns across the 2025 and 2018 trade policy episodes. Each dot represents an industry, as defined by Fama and French, with demeaned cumulative returns of 2018 on the horizontal axis and those of 2025 on the vertical axis.⁹ Red dashed lines indicate the average industry return in each episode. We classify industries falling below the mean in both episodes—those located in the lower-left, red-shaded quadrant—as the most vulnerable to disruptions on foreign trade. As expected, this group includes industries heavily reliant on foreign trade or global supply chains, such as electronics and computer equipment, as well as others, like oil and gas extraction or air transportation, which may be sensitive to the broader recessionary effects arising from disruptions to global trade (e.g., Caldara et al. (2020) and Handley and Limão (2017)). Conversely, industries in the upper-right green-shaded quadrant performed above average in both episodes and we classify them as least vulnerable. Many of these industries—such as precious metals and utilities—tend to fare better during periods of heightened macroeconomic uncertainty as they serve investors as a hedge.

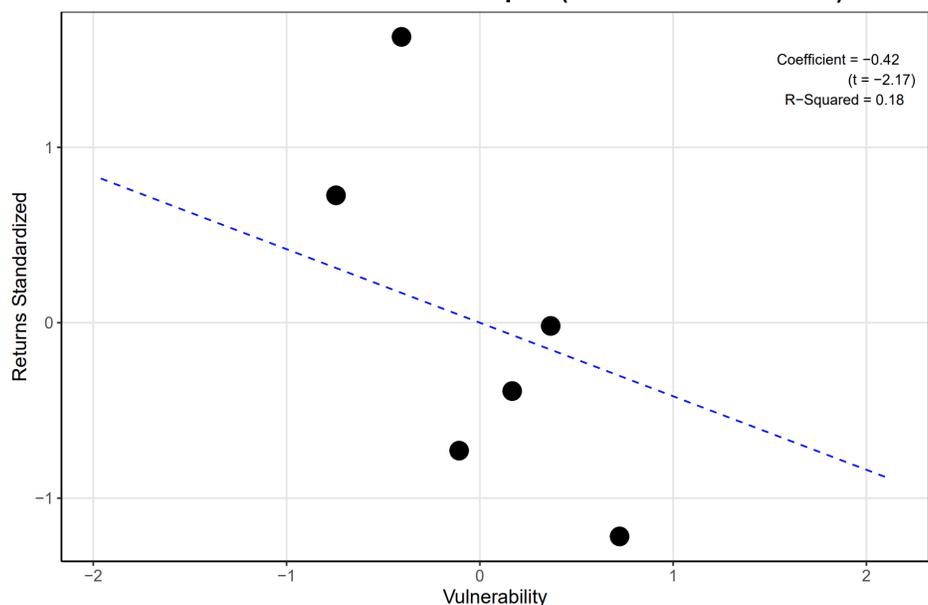
How Do Foreign Trade Disruptions Affect U.S. Bank Returns?

With the above measures of exposure to trade disruptions in hand, we next examine how foreign trade shocks can transmit to the U.S. banking system. Establishing this link poses an important challenge as publicly available data provides limited insights into the connections between banks and the firms they finance. To overcome this challenge, we focus on large U.S. banks for which we observe detailed data on corporate lending from Form Y-14Q, Schedule H.1. This quarterly loan-level dataset enables us to map banks to their corporate borrowers, and, in doing so, quantify banks' exposure to trade disruptions.

At this point, it is crucial to recognize that focusing solely on public firms provides a partial view of banks' true exposures, given their extensive lending to private companies. This limitation underscores the value of our industry-level identification strategy. We assume that trade sensitivity is broadly similar for public and private firms operating within the same industry. Under this assumption, banks with greater lending to industries identified as vulnerable to trade disruptions are themselves more exposed to such shocks.

⁸ These days are October 10, November 12, November 20, and December 4. During these days, the equity market plummeted mostly due to mounting trade tensions between the United States and China. The daily change in the S&P 500 was -3.3 percent, -2 percent, -1.8 percent, and -3.2 percent, respectively. Our dates differ from the 11 announcement dates analyzed by Amity et al. (2024), which include earlier 2018 events (January, March, June, August) and extend into 2019. We focus on late-2018 market declines where market participants commentary explicitly cited trade tensions as a dominant market driver. See the Appendix for more details.

**Figure 3: Banks Returns and Exposure to Trade-Sensitive Sectors
Binned Bank Returns Scatterplot (Standardized Returns)**



Note: This figure presents the cumulative equity returns during the week of April 2nd–8th, 2025, on the vertical axes, against our measure of banks' vulnerability to trade policy shocks: the ratio between banks' total assets and C&I loans of borrowers from the 19 vulnerable industries reported in the left panel of Figure 2. Stock returns source: Center for Research in Security Prices, CRSP 1925 US Indices Database, Wharton Research Data Services, <http://www.whartonwrds.com/datasets/crsp/>.

To assess how these exposures affected bank performance during the April 2025 tariff announcements, we construct a bank-level vulnerability index using loan data as of 2025Q1. Specifically, for each bank, we define its trade vulnerability as the ratio of total commercial and industrial (C&I) loan commitments to industries classified as highly trade-sensitive (the top-right quadrant of Figure 2) to total assets. Notably, this measure exhibits substantial cross-sectional variation, enabling us to distinguish meaningful differences across banks in their exposure to foreign trade risk.

Figure 3 illustrates the relationship between the standardized version of our bank-level vulnerability index and banks' cumulative stock returns during the April 2025 tariff announcements episode. Because we cannot disclose bank-level information, each dot represents a group of four banks with similar (vulnerability, return) characteristics, while the fitted line is estimated using individual bank data. As the figure shows, there is a statistically significant negative correlation of -0.42 between banks' vulnerability index and returns, with our proposed index explaining 18% of the cross-sectional return variation. These results are consistent with the view that banks' exposure to trade-sensitive borrowers is an economically meaningful driver of banks' performance during disruptions to foreign trade.

Conclusion

We develop a market-based methodology to measure firms' and industries' exposure to trade disruptions using high-frequency, readily available stock price data. We show that trade-sensitive U.S. public firms are more reliant on foreign sales and display greater financial fragility—characterized by higher leverage and lower interest coverage ratios—making them particularly vulnerable when trade shocks materialize. Our industry-level ranking further identifies sectors that are either directly dependent on foreign markets or exposed to the spillovers stemming from global trade tensions.

Building on these insights, we then examine the transmission of trade disruptions to the U.S. banking system. Combining our market-derived measure of trade exposure with granular supervisory data, we uncover substantial heterogeneity in large U.S. banks' exposures to trade-sensitive industries. Crucially, we demonstrate that banks with greater exposure to these industries experienced significantly lower stock returns during the April 2025 tariff announcements episode. These findings highlight the importance of monitoring banks' indirect exposures to foreign trade risk.

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