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Reallocation of Global Supply Chains

The structure of US international trade has undergone a dramatic transformation since 2018 when the US began imposing substantial tariffs targeting Chinese imports. This trade policy shift, combined with pandemic-era supply chain disruptions and subsequent geopolitical tensions, led US firms to reconsider their global sourcing strategies.

In An Anatomy of the Great Reallocation in US Supply Chain Trade (NBER Working Paper 34490), Laura Alfaro and Davin Chor analyze detailed product-level trade data from the US Census Bureau, examining over 5,300 product categories over the period 2017 to 2025. They combine this trade data with information on tariff rates, product characteristics such as capital and skill intensity, and measures of relationship-specific investments in supply chains.

They find that China's share of US imports declined from approximately 21 percent in 2017 to 9 percent in the first 8 months of 2025. This decline accelerated sharply following the "Liberation Day" tariff announcements in April 2025, effectively reversing two decades of trade integration and bringing US imports from China to levels last seen when China joined the World Trade Organization in 2001. This shift represents a selective decoupling from China rather than broader US deglobalization; total US imports from all countries grew at an average annual rate of 5.7 percent between 2017 and 2025. The April 2025 tariffs produced faster reallocation responses than the 2018–19 tariffs, suggesting firms had already developed contingency plans for supply chain reorganization based on earlier trade policy experiences.

China's declining share of US imports coincided with rising import shares from a relatively stable set of trading partners. Vietnam and Mexico each gained more than 3 percentage points of US import market share between 2017 and 2025. There was minimal expansion of import share to countries ranked outside the top-20 sources of US imports.

Change in Direct Import Shares from US Trading Partners between 2017 and 2025

Estimates have been updated with one additional month of data, August 2025, since the working paper was released.
Source: Researchers' calculations using data from the US Census Bureau.

Between 2017 and mid-2025, China's share of US imports fell from 21 to 9 percent, with displaced trade reallocated primarily among existing top-20 US trade partners.

The researchers estimate that products subject to the Trump administration's tariffs experienced substantial trade flow adjustments. For Chinese products facing the average additional tariff of 20 percentage points, import shares declined by approximately 5 percentage points, with both extensive margin effects (reduced likelihood of importing the product) and intensive margin effects (lower volumes conditional on importing). They also find tariff pass-through to duty-inclusive import prices of about 71 percent.

Between 2017 and 2020, import share declines for Chinese goods were concentrated in skill-intensive products and products for which alternative production capacities could be mobilized relatively quickly. However, between 2021 and 2025, the reallocation extended to contract-intensive goods requiring specialized inputs and products characterized by sticky buyer-supplier relationships. This pattern suggests companies initially adopted a "wait and see" approach for products with higher relationship-specific sunk costs, but proceeded with supply chain reorganization once the persistence of tariff policies became clear.

Across countries, the mechanisms of trade diversion varied. Vietnam's gains were concentrated in labor-intensive products with below-median capital intensity, with significant extensive margin expansion into new product categories. Mexico's increases occurred primarily on the intensive margin for contract-intensive goods, likely facilitated by geographic proximity and institutional familiarity under NAFTA/USMCA. Taiwan's export growth centered overwhelmingly on computer products and semiconductors, driven by intensive margin increases in existing comparative advantage sectors.

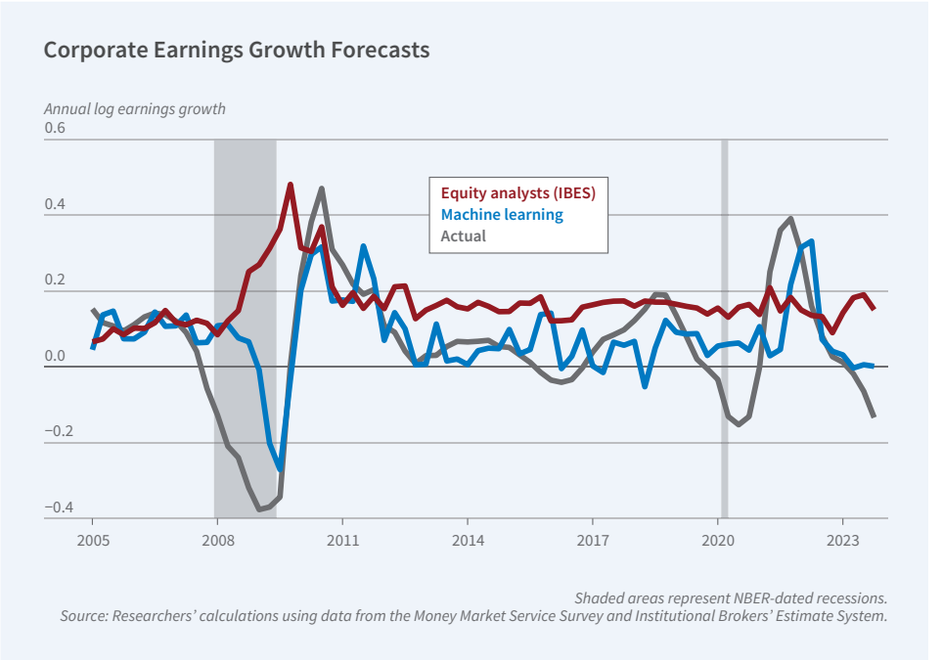
Are There Predictable Errors in Investor Expectations?

The accuracy of investor expectations is fundamental to understanding how efficiently financial markets process information. While extensive research has documented deviations from rational expectations in survey data, quantifying the practical importance of these distortions requires a benchmark of objective beliefs against which subjective expectations can be compared. Without such a measure, it is difficult to assess the extent to which investors systematically misuse available information when forecasting stock returns and corporate earnings.

In The Prestakes of Stock Market Investing (NBER Working Paper 34420), Francesco Bianchi, Do Q. Lee, Sydney C. Ludvigson, and Sai Ma develop a machine learning framework to establish a benchmark and identify predictable mistakes, which they label "prestakes," in the expectations of market participants. The researchers train their machine model using historical data from 1970 to 2005 and then make real-time forecasts from 2005 through 2023. They restrict the model to using only information that actual investors could have obtained at each point in time.

The input data to the machine learning framework includes thousands of real-time economic time series, including 92 macroeconomic indicators, 147 financial market variables, consensus forecast surprises, Federal Reserve policy shocks, and text-based sentiment factors from approximately 1,000,000 *Wall Street Journal* articles. Crucially, the algorithm's forecasts can differ from paired survey responses only when it can find demonstrable improvements in the survey response's predictive accuracy during validation testing immediately prior to making each out-of-sample forecast.

For corporate earnings growth, the machine learning model's forecasts are 63 percent more accurate than those of the median Institutional Brokers' Estimate System equity analyst. For one-year stock returns, they are between 26 and 35 percent more predictive than forecasts from surveys of individual investors, CFOs, and professional forecasters. The machine learning forecasts were notably more accurate than those of survey respondents in predicting negative returns during both the 2008 financial crisis and the 2022 bear market.



Shaded areas represent NBER-dated recessions.
Source: Researchers' calculations using data from the Money Market Service Survey and Institutional Brokers' Estimate System.

Investors make predictable mistakes when forecasting earnings and stock returns, but machine learning models avoid them through adaptive learning.

The time-varying gap between forecasts from the machine learning model and surveys reveals when subjective beliefs systematically deviate from objective expectations. During the global financial crisis, survey forecasts of both earnings and returns were driven primarily by local means based on recent trends, exhibiting a form of recency bias. In contrast, the machine learning model drew on its longer-term memory, incorporating credit risk indicators, Treasury market variables, and Federal Reserve policy surprises that moved sharply before earnings declined. Survey respondents paid minimal attention to these early warning signals and showed little evidence of learning from past forecast errors.

The market returns predicted by the machine learning model are more sensitive to objective measures of market uncertainty than survey predictions are to investors' perceived risk measures. There is very little correlation between survey expectations and objective market uncertainty, which suggests that investor expectations are suboptimally responsive to evidence of changing market risk.

Trading strategies based on the machine learning forecasts generate substantial risk-adjusted returns. A long-only strategy that invests in the CRSP value-weighted index when model-based excess return forecasts are positive—and otherwise holds Treasury bills—would earn 4.6 percent per year more than a portfolio based on the Capital Asset Pricing Model. A long-short strategy that additionally shorts the market when raw return forecasts are negative produces an estimated risk-adjusted return of 9 percent per year. These gains are concentrated in periods of market turbulence. By comparison, strategies based on survey forecasts earn near-zero risk-adjusted returns because surveys rarely predict returns that fall below the Treasury bill rate, let alone stock market losses.

Sydney C. Ludvigson acknowledges support from the CV Starr Center for Applied Economics at NYU.

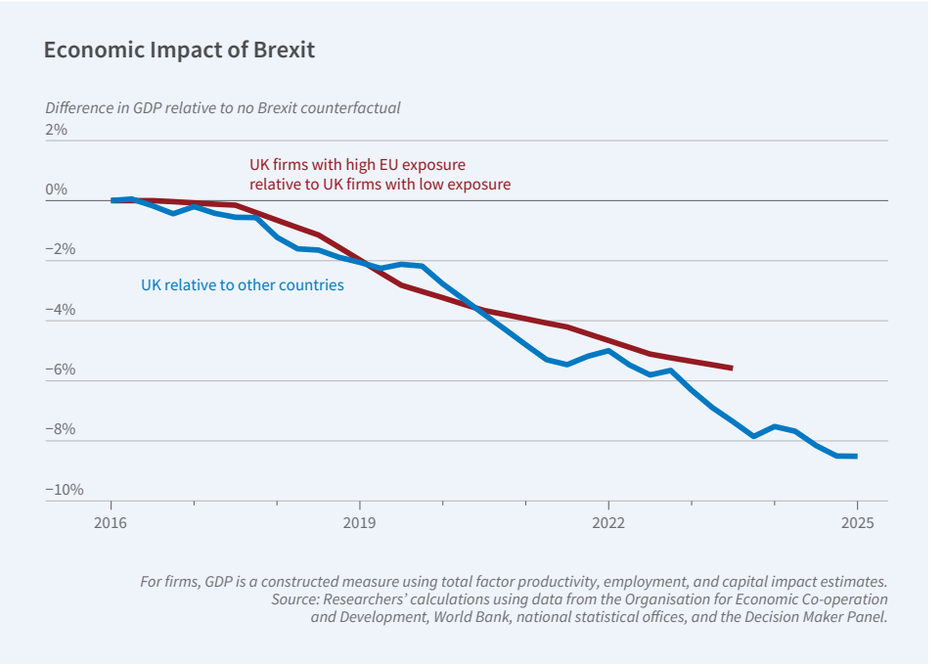
Measuring Brexit's Economic Toll on the United Kingdom

Nearly a decade has passed since British voters narrowly chose to leave the European Union in June 2016. The referendum's outcome set in motion a complex withdrawal process that did not conclude until 2023. During this period, businesses faced uncertainty about trade arrangements, regulatory frameworks, and labor mobility.

In The Economic Impact of Brexit (NBER Working Paper 34459), Nicholas Bloom, Philip Bunn, Paul Mizen, Pawel Smietanka, and Gregory Thwaites estimate that by 2025, the Brexit process had reduced UK GDP per capita by 6 to 8 percent, investment by 12 to 18 percent, employment by 3 to 4 percent, and productivity by 3 to 4 percent. These effects grew gradually over time.

The researchers employ two complementary approaches to estimating the impact of Brexit: a macro-level analysis that compares UK economic performance after 2016 to an estimate of what the UK economy might have looked like in the absence of Brexit, based on the experience of 33 comparable countries, and a micro-level analysis that uses firm-level data from the Decision Maker Panel (DMP), a monthly survey of over 11,000 UK firms, with responses each month from 2,000–2,500 firms. The DMP covers approximately 10 percent of UK private sector employment.

The macro-based estimates of Brexit's impact generally exceed the micro estimates, which are based on comparisons across firms with different degrees of EU exposure. The former suggest that GDP per capita was 8 percent lower in 2025 than it would have been without Brexit. The micro approach suggests a 6 percent decline. For business investment, the gap is larger: 18 percent versus 12 percent. The estimates for employment and productivity are more aligned, at between 3 and 4 percent for both approaches.



For firms, GDP is a constructed measure using total factor productivity, employment, and capital impact estimates. Source: Researchers' calculations using data from the Organisation for Economic Co-operation and Development, World Bank, national statistical offices, and the Decision Maker Panel.

The UK's 2016 decision to leave the EU lowered per capita GDP nine years later by more than 6 percent.

Four main channels explain these effects. First, Brexit generated persistent uncertainty that weighed particularly heavily on investment. Survey data show that nearly 40 percent of firms rated Brexit as one of their three main sources of uncertainty immediately after the referendum, rising to 55 percent in 2019 before declining following the December 2019 election that cleared the path for the UK's formal exit.

Second, lower expected future demand for goods and services reduced investment and, especially, employment growth. Third, productivity within firms suffered from reduced innovation, lower IT investment, and management time diverted to Brexit preparation. Nearly 10 percent of CFOs reported spending six hours or more per week on Brexit planning between 2017 and 2020. Finally, productivity declined because more productive, internationally exposed firms were disproportionately affected, leading to adverse reallocation effects.

Studies conducted around the time of the 2016 referendum forecast an average GDP per capita impact of approximately -4 percent. The researchers' estimates for 2021, five years after the vote, closely match these predictions. However, the longer-term impact of 6 to 8 percent exceeds initial forecasts, possibly reflecting the unexpectedly protracted nature of the Brexit process, which created uncertainty lasting nearly five years, rather than resolving quickly.

The researchers acknowledge support from ESRC research grants ES/P010385/1, ES/X013707/1, and ES/V004387/1.

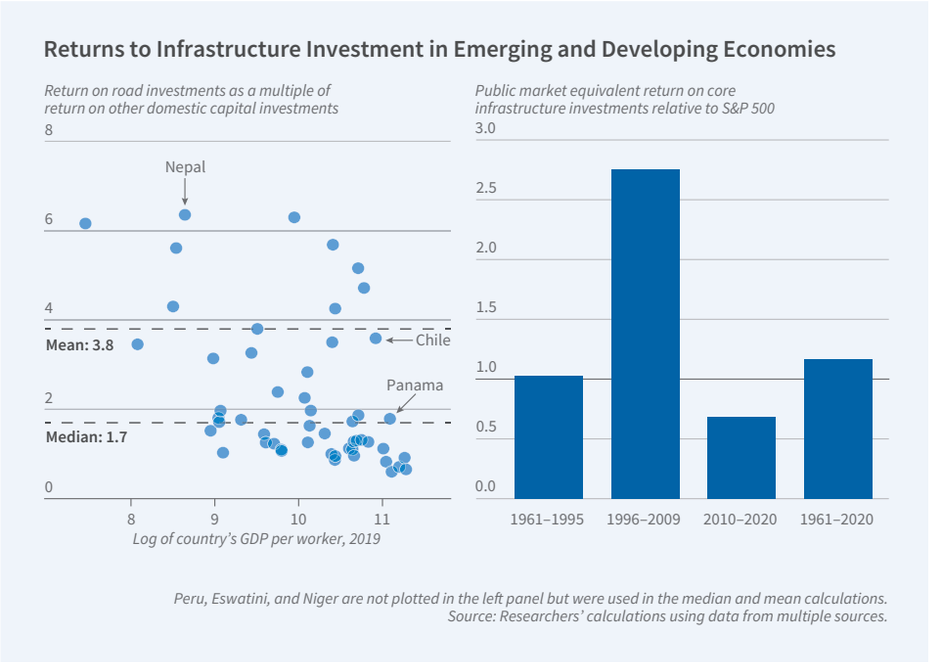
Rate of Return on Emerging Market Infrastructure Projects

Roughly 1 billion people live more than two kilometers from an all-season road, primarily in emerging-market and developing economies (EMDEs), where limited access to paved roads constrains growth and development. Despite a critical investment shortfall, in the absence of readily accessible data on historical returns, private investors remain reluctant to invest in EMDE infrastructure. Two recent studies construct new datasets to estimate the social and private returns to infrastructure investment in EMDEs.

In The Social Rate of Return on Road Infrastructure Investments (NBER Working Paper 34501), Anusha Chari, Peter Blair Henry, and Pablo Picardo estimate country-specific social rates of return to road construction in 55 EMDEs. Using a production-function framework and data from 1960 to 2019, they estimate each country's marginal product of public capital and combine these estimates with country-specific road construction costs from the World Bank's Roads Cost Knowledge System.

The researchers find that the median social rate of return to building an additional kilometer of two-lane highway in EMDEs is 55 percent, with a mean of 97 percent, roughly eight and fourteen times the 7 percent social rate of return on private capital in the United States. Although returns on roads vary widely across EMDEs, they exceed the returns on domestic private capital in those same countries. Moreover, the excess social return on roads far exceeds the excess financial return on emerging-market equities that previously incentivized the creation of that asset class.

The marginal product of public capital averages $1.3 million (2017 USD) per kilometer, with a median of $950,000. Average construction costs are $1.89 million per kilometer but vary considerably across countries. Together, these findings suggest potentially large, unrealized gains from reallocating developed-country savings toward public capital formation in EMDEs. The researchers interpret these macro-level estimates alongside complementary micro-level and financial evidence.



In a second study, Financial Returns to Equity Investments in Infrastructure in Emerging-Market and Developing Economies (NBER Working Paper 34537), Chari, Henry, Yanru Lee, and Paolo Mauro examine the financial performance of infrastructure investments made by the International Finance Corporation, the private-sector arm of the World Bank Group, between 1961 and 2020. The researchers analyze equity investments in core infrastructure, which includes electric power, information, transportation, warehousing, and utilities. For each project, the researchers compute a Public Market Equivalent (PME) that compares the project's discounted cash flows to those of a benchmark public equity index. A PME greater than 1.0 indicates outperformance relative to public markets.

Using the S&P 500 as a benchmark, the authors estimate a PME of 1.17 for the portfolio of 266 equity investments, corresponding to an average excess return of about 2.0 percentage points per year over an average eight-year holding period. When benchmarked against the MSCI Emerging Markets Index, the PME rises to 1.26, implying an annual excess return of 2.9 percentage points. Relative to country-specific MSCI indices, the average PME is 1.31. Over the full sample period, these estimates indicate that equity investments in emerging-market infrastructure delivered higher financial returns than portfolios of publicly listed equities.

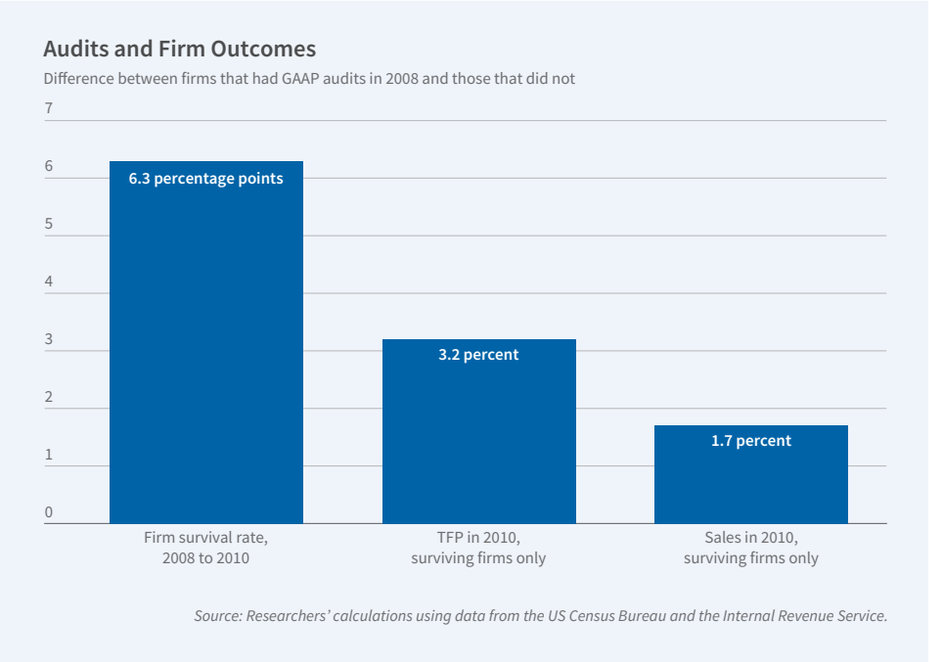
By contrast, investments initiated between 2010 and 2020 exhibit a PME of 0.68 relative to the S&P 500, indicating underperformance during that decade. The researchers attribute this finding to unusually strong returns in the US equity market, weaker macroeconomic conditions in some emerging markets, and the US dollar's appreciation relative to EMDE currencies. Despite this recent weakness, the researchers find broad-based outperformance over the six-decade sample period, with the infrastructure investment asset class exceeding S&P 500 returns for countries in most World Bank income categories and geographic regions.

Financial Reporting Practices and Firm Productivity

Why do seemingly identical firms produce such different outcomes? In US manufacturing, plants at the 90th percentile produce twice the output of those at the 10th percentile using the same inputs. This enormous productivity dispersion persists even after controlling for management quality, information technology (IT) adoption, and capital intensity. A missing piece of the puzzle: firms differ substantially in how they measure and report their economic activity. These differences matter. Financial reporting quality, defined as the rigor with which firms track, verify, and disclose their operations, explains as much productivity variation as management practices or IT adoption. This operates through two channels: better information for managers and more accurate measurement for economists.

In Measurement Matters: Financial Reporting and Productivity (NBER Working Paper 34536), John M. Barrios, Brian C. Fujiy, Petro Lisowsky, and Michael Minnis exploit a unique institutional feature of the US: private firms face no mandatory audit requirement, creating variation in reporting practices. They assemble three novel datasets covering different segments of the private sector: new audit questions added to the 2021 US Census Bureau's Management and Organizational Practices Survey, comprehensive tax return data from the Internal Revenue Service for medium and large firms between 2008 and 2010, and detailed financial records for smaller enterprises between 2002 and 2008 from Sageworks. This allows them to directly measure how financial reporting choices affect both actual and measured productivity.

Their central finding: variation in financial reporting quality explains 10–20 percent of within-industry productivity dispersion, a magnitude comparable to that attributed to IT or structured management practices. They also find that firms with audited financial statements are 10–12 percent more productive than similar firms without external verification.



Source: Researchers' calculations using data from the US Census Bureau and the Internal Revenue Service.

Variation in the quality of financial accounting reporting can explain more than 10 percent of the dispersion in productivity across private US firms.

These effects are robust to matching on size, industry, and capital structure, ruling out simple selection stories in which better-run firms merely choose better accounting. The relationship appears across all three datasets, spanning manufacturing, services, construction, and wholesale trade.

How could audits raise productivity? First, audits function as information technology. Better accounting provides managers clearer signals about the operation of their business, enabling a more efficient resource allocation. Consistent with this mechanism, the productivity gains are concentrated where information matters most: in competitive, low-margin industries where small efficiency improvements determine survival, and among young firms still learning how to operate. The effect is muted in R&D-intensive industries, where current accounting practices have little to say about tomorrow's innovation.

The timing of the effects supports the information story. Productivity jumps in the second year after firms adopt audits, but not the first, which is exactly what one would expect if managers need time to learn from better data. Firms with higher reporting quality are also 7 percent more likely to survive a two-year window, holding initial productivity constant. Thus, better measurement predicts survival independently of current performance.

The second channel is measurement bias. Without auditors, firms have the incentive and ability to underreport output to minimize taxes. Using cross-state variation in corporate tax rates as a natural experiment, the authors show that the productivity premium from auditing is twice as large in high-tax states (California) as in low-tax states (Texas). Audits don't just improve management; they also clean the data statistical agencies use to measure productivity in the first place. This matters for interpreting productivity statistics as some of the measured dispersion reflects differences in reporting, not economics.

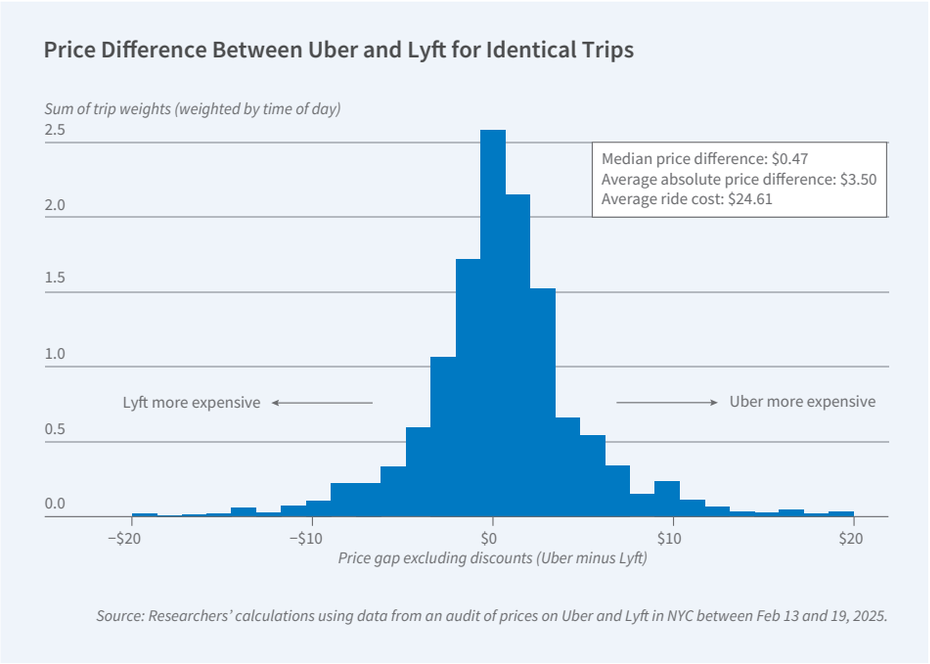
Do Rideshare Users Comparison Shop?

The widespread adoption of mobile web and smartphone apps was expected to dramatically reduce consumer search costs and intensify price competition, particularly in markets where comparing prices requires little more than opening a second application. The US rideshare market, dominated by Uber and Lyft, provides an opportunity for testing this prediction. In 2023, Lyft reported revenue of $13.8 billion in bookings on 709 million rides. Uber, roughly ten times larger, reported $138 billion in revenue on 9.4 billion trips.

In Leaving Money on the Dashboard: Price Dispersion and Search Frictions on Uber and Lyft (NBER Working Paper 34441), Jeffrey Fossett, Michael Luca, and Yejia Xu investigate price disparities between the two platforms and the extent to which consumers compare prices before booking rides.

The researchers analyzed 2,238 matched trips in New York City (NYC) during one week in February 2025, collecting price quotes from both Uber and Lyft for identical routes at identical times. They selected trips to match the temporal and geographical distribution of actual rideshare usage patterns shown in public data provided by the NYC Taxi & Limousine Commission. They measure consumer search behavior using device-level data from Comscore covering 4,016 mobile devices over a three-month period in 2023. The data indicate which rideshare applications users opened on given days.

They found that the average absolute price gap between Uber and Lyft was approximately $3.50, representing roughly 14 percent of the average fare price, with higher gaps for longer rides. Price differences exceeded $1 about 75 percent of the time, and the distribution of price gaps was relatively symmetric, meaning neither platform was consistently cheaper.



Source: Researchers' calculations using data from an audit of prices on Uber and Lyft in NYC between Feb 13 and 19, 2025.

Rideshare users in NYC compare prices on the Uber and Lyft platforms only 16 percent of the time, even though their prices often differ substantially.

Despite significant potential savings, price comparison rates were low. Among consumers who opened either the Uber or the Lyft app on a given day, only 16 percent opened the other. This pattern was consistent across demographic groups, showing no systematic variation by household income or age.

To assess whether this behavior was economically rational, the researchers calibrated a sequential search model assuming a value of time of $28.80 per hour, drawing on literature estimating the value of time, and that it took app users one minute to retrieve a price quote—a conservative estimate. The model predicted that consumers should compare prices 97 percent of the time—a rate dramatically higher than that in the data. To rationalize the observed comparison rate, consumers would need to value their time at $209.47 per hour or require 7.27 minutes to check prices, both implausibly high values. The researchers estimate that NYC riders collectively forgo approximately $300 million in potential annual savings by not comparing prices between platforms—roughly 6 percent of total gross bookings. Consumers may benefit from comparing prices more regularly. The market could also become more competitive if there were increased access to price aggregators, reducing search frictions.

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