# The Effects of Monetary Policy on Macroeconomic Expectations: High-Frequency Evidence from Traded Event Contracts

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**Abstract**

When the Federal Reserve raises interest rates, standard macroeconomic models and VARs predict that output, employment, and inflation should fall over the next several quarters. However, monthly-frequency professional macroeconomic forecast data often respond positively to these events, leading to a debate about what could explain these puzzling responses. We bring to bear new high-frequency data on this question from macroeconomic event contracts traded on Kalshi, a CFTC-licensed, U.S.-based event trading exchange and prediction market. These high-frequency event contracts allow us to isolate and estimate the effects of monetary policy and other announcements on the Kalshi market-implied macroeconomic expectations. Our results are consistent with standard transmission channels from monetary policy to the macroeconomy, with little or no role for a "Fed Information Effect".

***Keywords:*** *Inflation Expectations*
***JEL Classification:*** *D22, E43, E52, E58, G14, G18, G23, G24*

# 1. Introduction

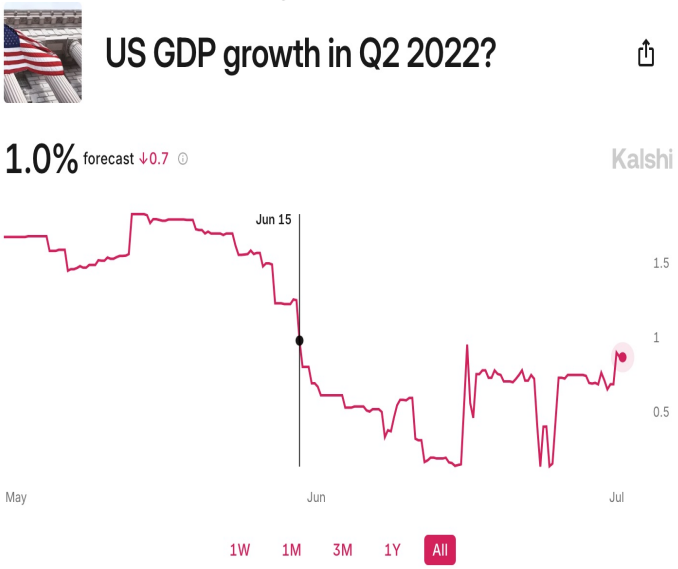
When the Federal Reserve raises interest rates, standard macroeconomic models and VARs predict that output, employment, and inflation should fall over the next several quarters (e.g., Christiano, Eichenbaum, and Evans, 2005). It is somewhat surprising, then, that monthly-frequency private-sector professional forecasts of these variables often seem to respond positively to Federal Reserve interest rate surprises. These puzzling results have led to a debate in the literature about what might possibly explain them. On the one hand, the "Fed Information Effect" literature argues that the Fed's monetary policy surprises communicate new information to the private sector about the current state of the economy that the private sector didn't previously have.(see, e.g., Romer and Romer, 2000; Campbell, Evans, Fisher, and Justiniano, 2012; Nakamura and Steinsson, 2018). The idea is that when the Fed raises interest rates, private-sector forecasters infer from that action that the underlying economy must be stronger than they thought. If this Fed Information Effect is strong enough, it can even overcome the standard channel of monetary policy transmission to the economy and lead private-sector forecasters to revise their forecasts in the opposite direction to what standard macroeconomic models would predict.

More recently, however, Bauer and Swanson (2023a) have argued that these puzzling regression results are due to the macroeconomic forecast data being available only at a relatively low, monthly frequency. Over the course of an entire month, a great deal of economic news is released to the public beyond just the Fed's monetary policy decision: for example, the U.S. Employment Report, CPI report, auto sales, housing starts, etc. are released every month, and stock market, commodity price, and credit spread data are released continuously throughout each month. Bauer and Swanson (2023a,b) present substantial evidence that this incoming, publicly available news about the economy and financial markets causes *both* the Federal Reserve to change interest rates by more than markes expected *and* macroeconomic forecasters to revise their predictions for macroeconomic variables. For example, when incoming news about the economy is stronger than expected, it tends to be followed both by Federal Reserve monetary policy tightening and by positive private-sector forecast revisions for GDP, employment, and inflation, leading to a positive regression coefficient. Bauer and Swanson refer to this effect as the "Fed Response to News" channel in monthly-frequency forecast regressions.

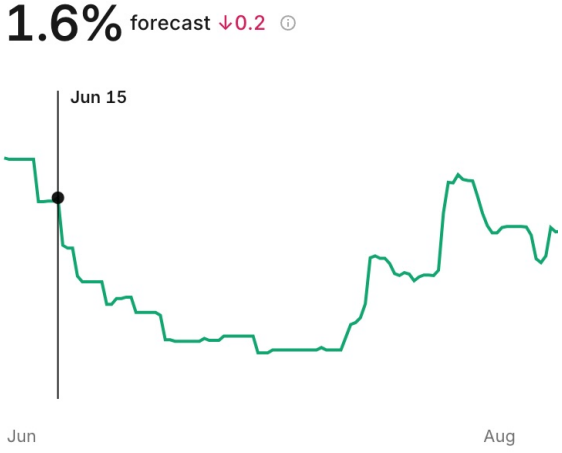
In this paper, we present new evidence on this debate in the form of macroeconomic forecasts that are available at intradaily frequency from Kalshi, a new, U.S.-based event trading exchange and prediction market that began operating in 2021. In contrast to

**Figure 1. Kalshi GDP Contract Prices around June 15, 2022**

(A) Kalshi Q2 2022 US GDP Growth




(B) Kalshi Q3 2022 US GDP Growth




some smaller-scale, unlicensed predecessors like Intrade and PredictIt, Kalshi has a license from the U.S. Commodities Futures Trading Commission, allows participants to take much larger positions of up to $7 million, and has affiliated companies that act as liquidity-providing market makers, all of which enhance market functioning and should improve the accuracy of contract prices for predicting future events. We focus in particular on the most heavily-traded macroeconomic event contracts on the Kalshi exchange: contracts covering the Federal Reserve's federal funds rate announcements and the U.S. CPI, GDP, and unemployment rate releases.

Because the Kalshi macroeconomic event contracts are traded every day (and typically many times each day), we have access to much higher-frequency macroeconomic forecast data than was available to previous authors, such as those cited above. Rather than running macroeconomic forecast response regressions at monthly frequency, we can run those same regressions at daily frequency and better isolate the effects of monetary policy announcements on the Kalshi market-implied forecasts of macroeconomic variables like CPI inflation, GDP, and unemployment.

For example, Figure 1 graphs the Kalshi market-implied expectations of the current-quarter (Q2) and next-quarter (Q3) GDP releases around June 15, 2022, the date on which the Federal Reserve announced that it was increasing the federal funds rate by a very large 75bp for the first time since 1994. Note first that the Kalshi market in these contracts is quite liquid, with many trades every day before and after the Fed's announcement. In

response to the Fed tightening on June 15, the Kalshi market-implied expectations of both the Q2 and Q3 2022 GDP releases fell significantly, suggesting that, on this day, traders viewed the monetary policy tightening as contractionary. This response is consistent with the predictions of standard macroeconomic models and VARs, and inconsistent with the presence of a strong "Fed Information Effect" that would drive private-sector forecasters to revise their forecasts in the opposite direction.

In this paper, we investigate to what extent this finding is true more generally: When the Fed changes monetary policy, how do private-sector market-implied expectations of macroeconomic variables like GDP, unemployment, and inflation react? The high-frequency nature of our Kalshi forecast data allows us to provide new insights into this question.

After surveying the related literature, the remainder of our paper proceeds as follows. In Section 2, we provide the background for the Kalshi market and detailed descriptions of the Kalshi market data. In Section 3, we show that Kalshi contract trading volumes increase substantially around the times of major monetary policy and macroeconomic announcements. In Section 4, we conduct high-frequency regressions of Kalshi market-implied expectations of macroeconomic variables on monetary policy announcements and show that those effects are generally consistent with standard macroeconomic models, with no need for a "Fed Information Effect" to explain the results. Section 5 provides additional discussion and conclusions. An Appendix provides additional tables of results and robustness checks for the analysis conducted in the main text.

*Related Literature*

Sargent and Wallace (1975); Barro (1976); Barro and Gordon (1983) present theoretical models of monetary policy that allow for the possibility that the central bank possesses asymmetric information about the economy, but the first paper to argue for the empirical relevance of the Fed Information Effect is Romer and Romer (2000). They found evidence that the Fed had information about future inflation that private sector forecasters did not have, and that the Fed's interest rate changes could be used to infer some of that information.[1] However, Faust, Swanson, and Wright (2004) showed that FOMC announcements do not significantly affect private-sector forecasts of upcoming macroeconomic data releases, such as GDP, retail sales, CPI, etc., while other macroeconomic data releases such as the

[1] Romer and Romer (2000) appealed to this Fed information effect to explain why long-term U.S. Treasury yields seemed to rise in response to federal funds rate changes. However, Gürkaynak, Sack, and Swanson (2005), using a high-frequency futures-based measure of federal funds rate surprises, showed that far-ahead forward U.S. Treasury yields actually *fall* in response to FOMC tightenings. Thus, an information effect is not needed to explain the response of long-term Treasury yields to FOMC announcements.

employment report, do. They concluded that there is little evidence of a Fed information effect in the data. They also showed that the Romer and Romer (2000) results for inflation are due to the Volcker disinflation in the early 1980s; excluding that one episode, the Fed's inflation forecasts were no better than those of the private sector.

Campbell et al. (2012) study how the Fed's monetary policy announcements affect Blue Chip forecasts of unemployment and inflation. Consistent with Faust et al. (2004) and contrary to Romer and Romer (2000), they find no evidence that Fed announcements contain significant information about inflation. However, CEFJ find that monetary policy tightenings are associated with a significant *downward* revision in Blue Chip forecasts of unemployment, which they conclude is due to a Fed information effect. They introduce the term "Delphic forward guidance" to refer to situations in which forward guidance by the FOMC conveys information to the private sector about the future evolution of the economy.

Nakamura and Steinsson (2018) investigate how FOMC announcements affect Blue Chip forecasts of real GDP. They find that monetary policy tightenings are associated with a significant *upward* revision in Blue Chip GDP forecasts, and like CEFJ, conclude that a Fed information effect is present.

Lunsford (2020) performs a detailed analysis of the Fed's forward guidance announcements from February 2000 to May 2006 and finds evidence of a Fed information effect in the period from February 2000 to August 2003, but not afterward.

Jarocinski and Karadi (2020) decompose monetary policy surprises in the U.S. and euro area into "pure monetary" shocks and "information" shocks, depending on whether stock prices move in the opposite direction or same direction as interest rates, respectively. They estimate that pure monetary shocks cause future GDP to decline, while pure information shocks cause future GDP to increase. Cieslak and Schrimpf (2019) decompose monetary policy surprises into "pure monetary", "information", and "risk premium" shocks according to the minute-by-minute covariance of stock prices and short- and long-term interest rates in a narrow window of time around each announcement. They find a relatively small role for information shocks in FOMC announcements, but a larger role for those shocks in FOMC minutes releases and speeches by the Fed Chair.

Finally, Bauer and Swanson (2023a) present a variety of evidence against the "Fed Information Effect" and in support of their alternative "Fed Response to News" channel. In particular, they show that the Fed's Greenbook forecasts are no more accurate than Blue Chip forecasts, that Blue Chip forecasters do not revise their forecasts in response to FOMC announcements in a way consistent with the Fed information effect, and that

previous authors' results that supported a Fed Information Effect can be explained by major macroeconomic data releases and financial market changes that were omitted from those previous studies.

# 2. Data and Background

Kalshi is a U.S.-based event trading exchange and prediction market that began operating in July 2021. The term "kalshi" is Arabic for "everything" and, consistent with its name, the platform offers event contracts across a wide variety of subjects, including music, the Oscars, pop culture, Covid, politics, economic data releases, and many others. Unlike some previous and current prediction market alternatives, such as Intrade and PredictIt, Kalshi has obtained regulatory approval from the U.S. Commodities Futures Trading Commission. This allows Kalshi to operate on a much larger scale than competing alternatives—for example, traders on Kalshi can take positions of up to $7 million in any one contract, while those on the nonprofit research platform PredictIt are limited to a maximum position of $850.[2]

To enhance liquidity in its markets, Kalshi has an affiliated company, Kalshi Trading, which performs market-making services; those market-making services are now further enhanced by the Susquehanna International Group, one of the largest derivative market makers.[3]

## 2.1. Event Contracts

Event contracts on Kalshi are generally issued a few months before the relevant events and typically have a binary outcome: "yes" or "no". Traders can buy and sell contracts continuously, between 8 am and midnight U.S. Eastern Time, based on their predictions about the outcomes of those future events.[4] Each binary contract is essentially a binary option, offering only two possible payoff outcomes: if the specific yes-or-no event is true at

[2]See Funt (2022) and the detailed contract specifications for individual contracts at https://www.kalshi.com.

[3]See Pound (2022), https://kalshi.com/blog/article/liquid-prediction-markets-are-finally-here, and https://www.bloomberg.com/news/articles/2024-04-03/susquehanna-starts-trading-desk-for-event-contracts-on-kalshi.

[4]On Thursdays and Saturdays, trading on Kalshi ends at 10pm Eastern Time. For special events that are scheduled to take place outside of regular trading hours, the exchanges can remain open for longer. See https://help.kalshi.com/faq/what-are-trading-hours.

expiration, the buyer receives a fixed amount, typically $1; otherwise, the buyer receives zero.

For example, a Federal Funds Rate event contract is a binary contract that settles based on the upper bound of the Fed's target federal funds rate range after a specified FOMC meeting. The contracts are written as "Will the target federal funds rate be above [$x$]% following the Federal Reserve's meeting on [date $t$]?", with the underlying based on the numbers published on the Federal Reserve's official website on date $t$. The contract expires at the end of date $t$ and settles at the end of that same date. Note that for each FOMC date $t$, there are many such Kalshi contracts, one for each different value of $x$, spaced 0.25 percentage points apart.

For our analysis, we obtained every trade on Kalshi from July 2021 to January 2025 for the four most popular and heavily traded economic event contracts: the federal funds rate, the unemployment rate, the Consumer Price Index (CPI), and real Gross Domestic Product (GDP). A summary of the contract specifications are as follows:

- Federal Funds Rate: The "Will the target federal funds rate be above [x]%?" contract is summarized above. The underlying instrument is the upper end of the federal funds target range published by the Federal Reserve on its official website on the date specified in the contract.
- Unemployment Rate: The "Will the unemployment rate (U-3) be above [x]%?" contract corresponds to the current U.S. unemployment rate. The underlying instrument is the seasonally adjusted unemployment rate (U-3) reported by the Bureau of Labor Statistics Monthly Employment Situation Report released on the date specified in the contract.
- CPI: The "Will the Consumer Price Index (CPI) increase more than [x]%?" contract corresponds to the percentage change in the value of the Consumer Price Index (CPI). The underlying instrument is the signed one-month percent change in the seasonally adjusted Consumer Price Index for All Urban Consumers (CPI-U) published by the Bureau of Labor Statistics on the date specified in the contract.
- GDP: The "Will real GDP increase by more than [x]%?" contract corresponds to the growth rate of U.S. real GDP. The underlying instrument is the Advance Estimate of the seasonally adjusted percentage change (at an annual rate) in quarterly U.S. real GDP released by the Bureau of Economic Analysis on the date specified in the contract.

Revisions to the data after contract expiration do not affect contract settlement or payouts.

Note that Kalshi lists other variations of the contracts above for trading—for example, in addition to the above contract for the CPI, investors can also purchase binary options for the core CPI (the CPI core contract), the 12-month percentage change in the CPI (the CPI YoY contract), and the 12-month percentage change in the core CPI (the Core CPI YoY contract), among others. For each of the four variables listed above (federal funds rate, unemployment rate, CPI, and GDP), we focus our analysis on the Kalshi contract that is the most thickly traded over our sample, which is the contract described above.

Also note that for each economic event above and each date, there are multiple binary options contracts traded on Kalshi. For example, for the May 2025 Federal Funds Rate, there ae 11 binary options contracts available, one for each of 11 different strikes: 2.75%, 3%, 3.25%, . . . , 5.25%. (For comparison, the spot federal funds rate in March 2025 was 4.33%.) Of course, the contracts that lie toward the extremes of this strike range are traded much less heavily than those that are closest to being at the money.

## 2.2. Contract Trading and Liquidity

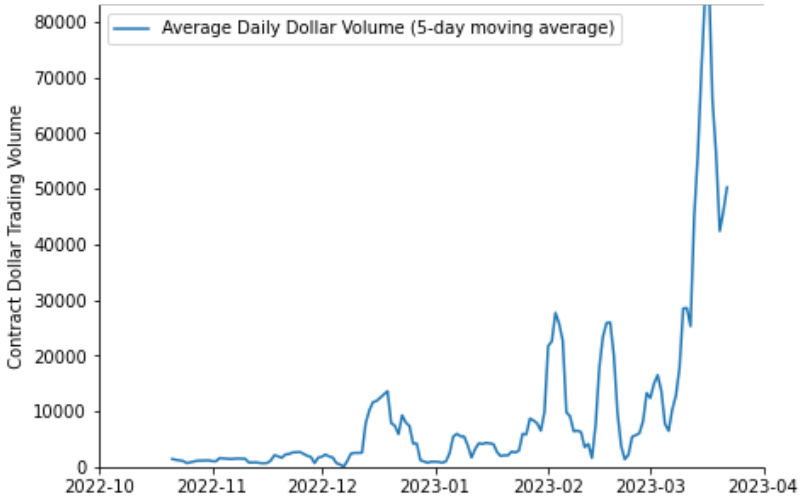
The Kalshi market for the four economic event contracts described above is generally quite liquid. Table 1 reports summary trading statistics for the Federal Funds Rate contracts in the top panel, Unemployment Rate in the second panel, CPI in the third panel, and GDP in the bottom panel. The first three columns of the table report daily trading statistics for each contract, the middle three columns report trading statistics for each contract over its entire history, and the last three columns report trading statistics for each event (e.g., the September 2024 Federal Funds Rate). Recall that, for each event, there are multiple binary options contracts available on Kalshi, so the number of contracts is roughly 8 times larger than the number of events.

## Table 1. Kalshi Contract Trading: Summary Statistics

Summary statistics for trading activity in Federal Fund Rate, Unemployment Rate, CPI, and GDP event contracts on the Kalshi Exchange. The first three columns report the number of trades, total trading volume, and total dollar trading volume per contract per trading day; the next three columns report the same statistics at the per-contract level, and the last three columns report the stats at the per-event level. Sample: July 2021 to May 2024. See text for details.

| | Per Contract Per Day | | | Per Contract | | | Per Event | | |
|---|---|---|---|---|---|---|---|---|---|
| | Trades | Volume | $Volume | Trades | Volume | $Volume | Trades | Volume | $Volume |
| | | | | Federal Funds Rate | | | | | |
| N | 10,621 | 10,621 | 10,621 | 314 | 314 | 314 | 36 | 36 | 36 |
| Mean | 6 | 2,336 | 1,207 | 215 | 79,021 | 40,836 | 1,873 | 689,241 | 356,179 |
| s.d. | 17 | 7,112 | 4,042 | 426 | 176,825 | 92,492 | 1,853 | 629,911 | 331,675 |
| Min | 1 | 1 | 0.01 | 1 | 1 | 0.02 | 23 | 2,704 | 2,094 |
| P25 | 1 | 100 | 24 | 10 | 1,902 | 989 | 106 | 37,341 | 26,781 |
| P50 | 2 | 468 | 164 | 56 | 14,074 | 7,624 | 1,632 | 606,885 | 295,773 |
| P75 | 5 | 1,644 | 770 | 192 | 62,082 | 31,911 | 2,671 | 1,184,522 | 634,620 |
| Max | 500 | 183,495 | 112,286 | 2,995 | 1,349,824 | 740,191 | 7,853 | 2,382,158 | 1,272,458 |
| | | | | Unemployment Rate | | | | | |
| N | 2,914 | 2,914 | 2,914 | 298 | 298 | 298 | 43 | 43 | 43 |
| Mean | 3 | 427 | 261 | 34 | 4,179 | 2,553 | 236 | 28,962 | 17,692 |
| s.d. | 6 | 1,846 | 1,456 | 58 | 8,925 | 6,546 | 227 | 40,857 | 27,180 |
| Min | 1 | 1 | 0.06 | 1 | 5 | 0.1 | 41 | 1,850 | 976 |
| P25 | 1 | 25 | 10 | 5 | 432 | 224 | 89 | 5,122 | 2,954 |
| P50 | 2 | 100 | 48 | 18 | 1,782 | 1,137 | 176 | 16,134 | 9,617 |
| P75 | 4 | 347 | 180 | 41 | 4,736 | 2,795 | 322 | 34,643 | 21,540 |
| Max | 133 | 86,525 | 70,732 | 697 | 118,491 | 99,022 | 1,363 | 230,396 | 163,063 |
| | | | | CPI | | | | | |
| N | 6,683 | 6,683 | 6,683 | 317 | 317 | 317 | 44 | 44 | 44 |
| Mean | 6 | 872 | 456 | 127 | 18,387 | 9,617 | 912 | 132,472 | 69,284 |
| s.d. | 9 | 1,567 | 922 | 142 | 18,636 | 9,695 | 932 | 123,397 | 64,996 |
| Min | 1 | 1 | 0.02 | 1 | 1 | 0.02 | 10 | 537 | 203 |
| P25 | 1 | 70 | 23 | 16 | 2,094 | 1,000 | 209 | 37,611 | 19,352 |
| P50 | 3 | 295 | 115 | 74 | 13,154 | 7,374 | 593 | 89,654 | 49,895 |
| P75 | 7 | 1,002 | 468 | 191 | 29,352 | 15,452 | 1,278 | 193,488 | 95,367 |
| Max | 248 | 22,698 | 14,241 | 826 | 87,135 | 48,507 | 3,703 | 479,551 | 253,865 |
| | | | | GDP | | | | | |
| N | 3,305 | 3,305 | 3,305 | 113 | 113 | 113 | 15 | 15 | 15 |
| Mean | 3 | 397 | 208 | 102 | 11,612 | 6,084 | 769 | 87,474 | 45,833 |
| s.d. | 6 | 928 | 510 | 114 | 13,161 | 6,862 | 346 | 51,276 | 27,466 |
| Min | 1 | 1 | 0.02 | 1 | 5 | 1 | 135 | 7,271 | 4,495 |
| P25 | 1 | 25 | 10 | 25 | 3,302 | 1,586 | 573 | 58,801 | 28,809 |
| P50 | 2 | 106 | 49 | 58 | 8,036 | 4,495 | 769 | 77,326 | 45,167 |
| P75 | 4 | 384 | 186 | 131 | 14,989 | 7,320 | 965 | 107,865 | 53,787 |
| Max | 163 | 19,402 | 9,592 | 585 | 66,773 | 32,928 | 1,445 | 197,240 | 104,148 |

**Figure 2. Trading Volume Patterns for March 2023 Federal Funds Rate Contract**




For example, for the Federal Funds Rate contracts, there are 36 events in our sample (36 FOMC meetings from July 2021 to January 2025), and there are on average 1,873 trades per event, with an average volume of 689,241 contracts traded, for a dollar value of $356,179, a nontrivial amount. On a per contract per day basis, there are on average 6 trades per day, with an average volume of 2,336 contracts traded, for a dollar value of $1,207. Although these daily averages might not seem very large, recall that many contracts toward the extremes of the distribution are not heavily traded, and that all contract trading volumes are relatively thin when the contract is first introduced but ramp up dramatically as the expiration date approaches, as can be seen in Figure 1. The average daily trading statistics in Table 1 are for all contracts on all days.[5]

Trading statistics for the other contracts listed in Table 1 are generally similar to those for the Federal Funds Rate contracts, although the values for real GDP are somewhat smaller due to the fact that the Advance Estimate of real GDP is released only once per quarter.

Reflecting their generally high liquidity, bid-ask spreads on these contracts are relatively small, typically 1 cent for contracts that are close to being at the money, although contracts at the extremes of the strike distribution have wider bid-ask spreads.

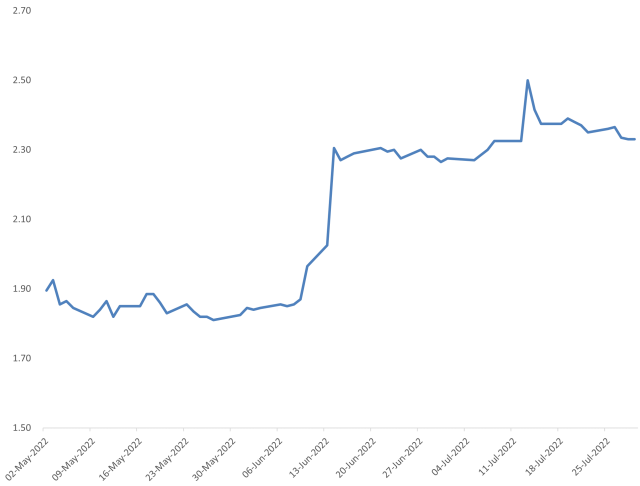
Further evidence of the liquidity of these contracts is provided in Figure 2. The left-hand panel reports the Kalshi market price of the July 2022 Federal Funds Rate above 2.25% contract from May 3, 2022, to its expiration on July 27, 2022. The right-hand panel reports market prices for the corresponding federal funds futures contract from the

[5]Note that we do not include a contract in our sample on days when there is no trading in that contract. Thus, the minimum values in Table 1 are nonzero.

**Figure 3. Kalshi Federal Funds Rate Contract vs. Federal Funds Futures**

(A) Kalshi July 2022 Federal Funds Rate

(B) CME Federal Funds Futures Rate




Chicago Mercantile Exchange over the same period.[6] The Kalshi contract in Figure 2 is a binary option while the CME fed funds futures rate is essentially an expected value, but the behavior of the two contracts clearly track each other closely. In May 2022, the upper bound of the Fed's target federal funds rate range was 1%, and markets expected additional Fed tightening at the June 15 and July 27 FOMC meetings, as evidenced by the August CME fed funds futures rate of about 1.8% in the right-hand panel. However, the probability of the fed funds rate being greater than 2.25% by the end of July was relatively low, only about 10% according to the Kalshi contract in the left-hand panel. On June 15, the FOMC raised the federal funds rate target by a greater-than-expected 75 basis points (bp), which led to significant moves on both the CME and Kalshi markets within minutes of the announcement—the August federal funds futures rate increased to about 2.3%, while the Kalshi probability of the rate being above 2.25% rose to about 80%. After June 15, as the July 27 FOMC meeting approached, both the fed funds futures rate and the Kalshi probability drifted upward a bit further.

The example in Figure 2 is a little unusual in terms of the size of the movements in the Kalshi and federal funds futures prices, but the point that Kalshi contracts and federal funds

[6]There are two technical points to note in Figure 2: First, federal funds futures contracts settle based on the average daily federal funds rate over the entire contract month. Since the FOMC announcement in this example was on July 27, the right-hand panel of Figure 2 reports fed funds futures rates for the August 2022 contract, which fully reflects the federal funds rate that will be announced on July 27 and take effect on July 28. Second, fed funds futures contracts pay $100 - r$ at expiration, where $r$ is the average federal funds rate just mentioned. Thus, the federal funds futures contract price $p$ on date $t$ implies an expected federal funds rate of $r = 100 - p$. The right-hand panel of Figure 2 plots the implied rate $r$ on each date rather than the contract price $p$.

future co-move closely holds in general throughout our sample. In particular, the four types of Kalshi contracts we study (federal funds rate, unemployment, CPI, and GDP) are heavily traded and market prices respond quickly to news such as macroeconomic data releases, as we verify empirically in Section 3, below.

## 2.3. Kalshi Market-Implied Expectations

In some of our analysis below, we report the Kalshi market-implied expectation of the given macroeconomic event (federal funds rate, CPI release, etc.). The prices of the Kalshi contracts are closely tied to the probabilities of the underlying events, and the contracts are heavily traded, so it's relatively straightforward to construct a daily measure of the market-implied risk-neutral probability distribution for the event–i.e., the probability distribution taking market prices as being risk-neutral.[7] From that probability distribution, we can compute the corresponding market-implied expectation.

In particular, let $r_h$ denote the realized value of an event at date $h$, such as the federal funds rate or CPI release. Let $p_{ths}$ denote the price at time $t$ for an event contract expiring at date $h$ with a strike value of $s$: that is, the contract pays off \$1 if $r_h > s$ and zero otherwise. For each strike value $s$, we observe

$$cdf_{th}(s) = 1 - p_{ths}, \tag{1}$$

where $cdf_{th}(x)$ denotes the market-implied cumulative distribution function for the realization $r_h$.

Let $s_{thi}$, $i = 1, \ldots, K$, denote the set of strikes that are traded at date $t$ for realization $r_h$, sorted in increasing numerical order, so $s_{thi} < s_{thj}$ for $i < j$. We define $pdf_{th0} \equiv cdf_{th}(s_{th1})$, $pdf_{thK} \equiv 1 - cdf_{th}(s_{thK})$, and

$$pdf_{thi} \equiv cdf_{th}(s_{th,i+1}) - cdf_{th}(s_{thi}), \tag{2}$$

for $i = 1, \ldots, K-1$. We also define $s_{th0} \equiv s_{th1} - (s_{th2} - s_{th1})$, and $s_{th,K+1} \equiv s_{thK} + (s_{thK} -$

[7] We first aggregate the trade-level data for each contract into a daily-frequency data set based on the last trade each day. If a contract does not trade on a given day, then we use the previous day's value (this is only the case for contracts at the lower or upper end of the range of strikes, or for contracts that are far from expiration). For a given event (e.g., August 2024 CPI), we drop days on which there are no trades for any contract related to that event (this only happens very far from expiration). Note that this implies we would include a contract with zero trading as long as during that day, other contracts for the same event were traded.

$s_{th,K-1}$).[8] We then compute the Kalshi market-implied expected value of $r_h$ as

$$E_t[r_h] \equiv \sum_{i=0}^{K} pdf_{thi} \cdot \left(\frac{s_{thi} + s_{th,i+1}}{2}\right). \tag{3}$$

Note that contracts at the very low and very high end of the range of strikes are typically much less liquid than contracts near the middle and have larger bid-ask spreads. We found that these extreme contracts sometimes introduced excess volatility into the expectation measure (3), so for our baseline results we compute the expectation (3) excluding the highest strike and lowest strike.[9]

## 2.4. Macroeconomic and Monetary Policy Announcements

In addition to the four main macroeconomic events described above—the federal funds rate announcement, unemployment rate release, CPI release, and GDP release—we also consider how our Kalshi contracts respond to other major macroeconomic and monetary policy announcements, summarized in Table 2. To determine which additional macroeconomic announcements to consider, we use Bloomberg's "relevance score", which is computed by Bloomberg based on the ratio of the number of alerts set on Bloomberg terminals for a given macroeconomic event relative to the sum of all alerts set for the universe of all U.S. macroeconomic announcements. We include announcements with a Bloomberg relevance score of 80 or more, and classify those announcements according to whether they primarily provide information about the unemployment rate, CPI, or GDP. For additional monetary policy announcements, we use monetary policy-related speeches and testimony by the Federal Reserve Chair, which were found by Swanson and Jayawickrema (2024) to be a very important source of news about U.S. monetary policy.

For example, the most relevant CPI-related events are the Producer Price Index (PPI) for final demand, the University of Michigan 1-year Inflation Expectations survey, and the Personal Consumption Expenditures (PCE) Core Deflator, each of which is described briefly in Table 2.

[8] Note that $pdf_{th0}$ and $pdf_{thK}$ are usually very small, so the exact values of $s_{th0}$ and $s_{th,K+1}$ usually do not have a noticeable effect on the calculation.

[9] For each contract on a given trading day, if there are five or more strikes available, we exclude the smallest and largest strikes; otherwise, we use all strike prices and rescale the implied PDFs to ensure they sum to 1. Results using the full range of strikes for the expectation are reported in the Appendix.

**Table 2. Other Macroeconomic Announcements**

| Event | Definition | Obs |
|---|---|---|
| | Panel A: Federal Funds Rate | |
| Fed Speeches | Speeches and testimony by the Federal Reserve Chair | 30 |
| | Panel B: Unemployment Rate | |
| U.S. Initial Jobless Claims | Department of Labor report on the number of workers applying for unemployment benefits for the first time following job loss | 161 |
| ADP Employment Change | Automatic Data Processing Inc., the largest payroll processor, estimate of the number of people employed in the U.S. private sector | 35 |
| | Panel C: CPI | |
| Producer Price Index (PPI) for Final Demand | BLS report on the change in prices received by domestic producers for their goods and services sold for personal consumption, capital investment, government, and export | 37 |
| University of Michigan 1-year Inflation Expectations | University of Michigan Survey of Consumers Report on Inflation Expectations | 73 |
| PCE Core Deflator MoM | BEA report on the change in prices that U.S. consumers, or those purchasing on their behalf, pay for goods and services | 28 |
| | Panel D: GDP | |
| Retail Sales Advance MoM | BEA report on the change in total value of sales at the retail level, a timely indicator of consumer spending, which is itself the largest component of GDP | 37 |

*Note:* Additional macroeconomic announcements that are likely to affect the Federal Funds Rate, Unemployment Rate, CPI, and GDP Kalshi event contracts. The macroeconomic events are selected based on having a Bloomberg relevance score greater than 80. We classify the macroeconomic events into four categories.

### 2.5. Federal Funds and Eurodollar Futures

Finally, for some of our analysis below, we compute high-frequency monetary policy surprises around FOMC announcements and Federal Reserve Chair speeches. We follow Gurkaynak, Sack, and Swanson (2005) and compute both a federal funds rate target surprise and a forward guidance surprise for each of these announcements, using a rotation of the first two principal components of federal funds futures and Eurodollar futures with maturities up to 12 months (see Gurkaynak et al., 2005, for details). The advantage of considering both a short-horizon (target) and longer-horizon (forward guidance) monetary policy surprise is that it facilitates comparison to Kalshi federal funds rate contracts with a short vs. longer time to expiration.[10]

## 3. Kalshi Trading Volume Responses to Macroeconomic Events

We first estimate the effects of macroeconomic and monetary policy announcements on Kalshi contract trading volumes. Kalshi contracts are traded essentially every day, so we expect trading volumes of macroeconomic and monetary policy event contracts to increase substantially around the times of relevant macroeconomic and monetary policy announcements.

Table 3 reports the effects of a variety of macroeconomic and monetary policy announcements on Kalshi Federal Funds Rate contract daily trading volumes. The dependent variable in these regressions is the logarithm of daily trading volume for three types of Fed Funds Rate contracts: the front-month contract (Column 1), next-month contract (Column 2), and longer-term contracts (Column 3), which includes all other Federal Funds Rate contracts after the front- and next-month contracts. The independent variables in these regressions are indicator variables that take on the value 1 on days on which the corresponding event in each row is released, and 0 otherwise. The Other CPI News, Other GDP News, and Other Unemployment News releases are the events reported in Table 2. Trading volumes are also negatively correlated with time to maturity of the contracts, both of which we control for

[10] To enhance comparability to our Kalshi event contracts, we also rescale these high-frequency monetary policy surprises so that they have the same standard deviation around FOMC announcements as the corresponding Kalshi event contracts. That is, the federal funds target surprise is rescaled to have the same standard deviation as the change in the current-meeting Kalshi fed funds rate contract, and the forward guidance surprise is rescaled to have the same standard deviation as the average of the Kalshi fed funds rate contracts for the 3 FOMC meetings after the current meeting.

using the log of months to maturity. Standard errors are reported in parentheses below each coefficient and are clustered at the trading date and contract expiration date level.

As expected, due to the direct connection between Kalshi Federal Funds Rate contracts and FOMC meetings, trading activity increases very significantly on days when a Federal Open Market Committee (FOMC) meeting occurs. Over our sample from July 2021 to January 2025, the largest effect is observed for the next-month contract, with a coefficient of about 1.88, implying that trading volumes are about $e^{1.88} = 6.5$ times higher on those dates, relative to dates on which no other announcements occurred. This effect is statistically significant, with a $p$-value substantially below 5%. Results for the front-month and longer-term Federal Funds Futures contracts are similarly large and statistically significant.

Kalshi Fed Funds Rate contract trading volumes also increase substantially on other Fed-related event days, such as FOMC minutes release dates and the dates of speeches by the Federal Reserve Chair. The magnitudes here are a bit less than for FOMC announcements themselves, with trading volumes about 4.5 times as large as on non-event days, but the magnitudes and statistical significance are still very large.

Kalshi Federal Funds Rate contracts also trade substantially around other major macroeconomic announcement dates. For example, CPI announcements lead to an increase in Fed Funds Rate contract trading volumes by a factor of about 2.5 to 5.6, relative to non-event days, and other CPI news, such as the PPI and PCE price index announcements, lead to increases of about 89 to 105 percent. Federal Funds Rate contract trading volumes increase on GDP announcement days by about 17 to 88 percent larger than normal, albeit not statistically significant, and trading volumes on Unemployment Rate announcement days is higher by a factor of about 3.8 to 4, which are highly statistically significant.

Finally, trading volumes are lower the greater the time to contract maturity, with a doubling in months to maturity causing a decrease in trading volumes of a factor of about 2 for the front- contracts, and an even larger decrease for the next-month longer-term contracts.

## Table 3. Kalshi Federal Funds Rate Contract Trading Volume Responses to News

Regressions of daily Kalshi trading volumes in Federal Funds Rate Contracts on dummy variables for macroeconomic and monetary policy events. The dependent variable is the log of trading volume for three types of Fed Funds Rate contracts: Front-month Contract (Column 1), Next-month Contract (Column 2), and Longer-term Contracts (Column 3), which includes all other Federal Funds Rate contracts after the front- and next-month contracts. Independent variables are dummies that take on the value 1 on the day of the release of the corresponding event in each row. Other CPI News, Other GDP News, and Other Unemployment News releases are the events reported in Table 2. Standard errors are clustered at the trading date and contract expiration date level and reported in parentheses (*** p<0.01, ** p<0.05, * p<0.1). Sample: July 2021 to January 2025. See text for details.

| | (1) | (2) | (3) |
|---|---|---|---|
| | Front Contract | Next Contract | Longer Contracts |
| FOMC Announcement | 1.508** | 1.879** | 1.821*** |
| | (0.441) | (0.622) | (0.478) |
| FOMC Minutes | 1.225*** | 1.516*** | 0.920** |
| | (0.285) | (0.403) | (0.334) |
| Fed Chair Speech | 0.790** | 1.592*** | 0.799 |
| | (0.270) | (0.429) | (0.476) |
| CPI | 0.911*** | 1.743** | 1.288*** |
| | (0.218) | (0.730) | (0.384) |
| Other CPI News | 0.720*** | 0.635*** | 0.666*** |
| | (0.200) | (0.159) | (0.212) |
| GDP | 0.473 | 0.161 | 0.480 |
| | (0.472) | (0.549) | (0.363) |
| Other GDP News | 0.633 | 0.208 | 0.563 |
| | (0.410) | (0.607) | (0.366) |
| Unemployment Rate | 1.850*** | 1.330** | 1.865*** |
| | (0.273) | (0.549) | (0.365) |
| Other Unemployment News | 0.713*** | 0.562** | 0.737*** |
| | (0.150) | (0.256) | (0.187) |
| log Months to Maturity | −0.737 | −1.540 | −2.313*** |
| | (1.176) | (1.045) | (0.632) |
| Expiration Day Fixed Effects | Yes | Yes | Yes |
| Observations | 1,228 | 1,114 | 5,429 |
| $R^2$ | 0.352 | 0.457 | 0.357 |
| Adjusted $R^2$ | 0.343 | 0.446 | 0.353 |

Overall, the results in Table 3 confirm that Kalshi Federal Funds Rate contract trading volumes respond very substantially to relevant monetary policy and macroeconomic announcements.

In Table 4, we repeat this analysis for the responses of Kalshi CPI, GDP, and Unemployment Rate contract daily trading volumes to the same announcements as in Table 3. The dependent variable in these regressions is the logarithm of daily trading volume of the two types of each macroeconomic event contract: the front contract (Columns 1, 3, and 5), and longer-term contracts (Columns 2, 4, and 6), which includes all other event contracts after the front contract. Note that CPI and Unemployment Rate contracts have maturities every month, while GDP contracts have maturities every quarter, so the front GDP contract could have a maturity as much as 3 months in the future, and longer-term GDP contracts have correspondingly longer maturity than the longer-term CPI and Unemployment Rate contracts. The dummy variables and standard errors in Table 4 are exactly analogous to Table 3.

As expected, CPI contract trading volumes spike on the days of CPI data releases, with trading volumes about 3 to 5.2 ($e^{1.1}$ to $e^{1.64}$) times higher on those days, and Unemployment Rate contract volumes spike on the days of unemployment rate releases, with trading volumes about 6 to 13 times higher. These responses are highly statistically significant. CPI contract trading volumes also increase substantially in response to other CPI news (PPI and PCE price index releases), and Unemployment Rate contract volumes increase in response to other unemployment news (initial claims and ADP employment releases); these responses are also statistically significant, but not as large as for the main CPI and unemployment rate releases themselves.

CPI contract trading volumes also increase significantly around many other announcements in Table 4, such as the unemployment rate release, other unemployment news, other GDP news, FOMC announcements, FOMC minutes, and Fed Chair speeches, but these trading volume responses are generally smaller, less statistically significant, and a little more idiosyncratic than for CPI news and other CPI news. Similarly, Unemployment Rate contract trading volumes respond significantly to FOMC announcements and the CPI and GDP releases.

## Table 4. Kalshi Macroeconomic Contract Trading Volume Responses to News

Regressions of daily Kalshi trading volumes in CPI, GDP, and Unemployment Rate contracts on dummy variables for macroeconomic and monetary policy events. The dependent variable is the log of trading volume for two types of each macroeconomic event contract: Front Contract (Columns 1, 3, 5), and Longer-term Contracts (Columns 2, 4, 6), which includes all of the event contracts after the front contract. Independent variables are dummies that take on the value 1 on the day of the release of the event in each row. Other CPI News, Other GDP News, and Other Unemployment News releases are the events reported in Table 2. Standard errors are clustered at the trading date and contract expiration date level and reported in parentheses (*** p<0.01, ** p<0.05, * p<0.1). Sample: July 2021 to January 2024. See text for details.

| | CPI Contracts | | GDP Contracts | | Unemployment Rate Contracts | |
|---|---|---|---|---|---|---|
| | Front | Longer-term | Front | Longer-term | Front | Longer-term |
| FOMC Announcement | 1.035* | 0.428* | 0.750 | 1.909** | 1.127*** | 0.089 |
| | (0.555) | (0.244) | (0.434) | (0.717) | (0.344) | (0.458) |
| FOMC Minutes | 0.950*** | 0.035 | 0.270 | 1.179* | 0.185 | 0.392* |
| | (0.310) | (0.205) | (0.337) | (0.513) | (0.352) | (0.223) |
| Fed Chair Speech | 0.098 | 0.621** | 0.131 | 0.946 | 0.990** | 0.025 |
| | (0.423) | (0.267) | (0.601) | (0.978) | (0.447) | (0.484) |
| CPI | 1.641*** | 1.080*** | 0.575 | -0.175 | 0.792** | -0.151 |
| | (0.470) | (0.330) | (0.379) | (0.717) | (0.333) | (0.408) |
| Other CPI News | 0.533*** | 0.277* | 0.717*** | 0.099 | 0.371 | 0.016 |
| | (0.178) | (0.146) | (0.186) | (0.106) | (0.226) | (0.197) |
| GDP | -0.348 | -0.196 | -0.354 | 1.225*** | -0.619 | 0.463* |
| | (0.422) | (0.162) | (0.462) | (0.117) | (0.374) | (0.247) |
| Other GDP News | 0.627 | 0.355* | 1.831*** | 0.260 | 0.159 | 0.076 |
| | (0.405) | (0.187) | (0.260) | (0.352) | (0.283) | (0.337) |
| Unemployment Rate | 0.499 | 0.286** | 0.916** | 0.366 | 1.822*** | 2.534*** |
| | (0.453) | (0.112) | (0.332) | (0.368) | (0.526) | (0.397) |
| Other Unemp. News | 0.823*** | 0.133 | 0.706*** | 0.296 | 0.861*** | 0.479*** |
| | (0.199) | (0.094) | (0.171) | (0.336) | (0.159) | (0.142) |
| log Months to Maturity | -4.588*** | -3.381*** | -1.551*** | -2.495*** | -2.965*** | -1.409*** |
| | (0.268) | (0.318) | (0.406) | (0.087) | (0.575) | (0.350) |
| Exp. Day Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,286 | 3,138 | 1,283 | 343 | 1,277 | 1,041 |
| $R^2$ | 0.520 | 0.627 | 0.195 | 0.644 | 0.405 | 0.444 |
| Adjusted $R^2$ | 0.505 | 0.622 | 0.179 | 0.626 | 0.383 | 0.424 |

Trading volume for the longer-term GDP contract increases very strongly and significantly in response to GDP news in Table 4, increasing 3.4 times. On the other hand, the front-month GDP contract volumes do not respond to that news, but instead respond to other GDP news (retail sales releases). Longer-term GDP contract trading volumes do not respond significantly to any data releases other than FOMC announcements. Front-month GDP contract trading volumes increase significantly in response to a number of announcements, though, including unemployment rate data releases, other CPI news, and other unemployment rate news.

Overall, the results in Table 4 are consistent with the results in Table 3 and show a substantial increase in Kalshi macroeconomic event contract trading volumes around relevant data releases.

# 4. Kalshi Market Expectations of Monetary Policy's Effects on the Macroeconomy

We now turn to a central question of this paper: How do the Kalshi market-implied expectations of future inflation, GDP, and unemployment respond to monetary policy announcements? As discussed in the Introduction, standard data on market expectations of macroeconomic variables, such as the Blue Chip survey of forecasters, are only collected and released at a monthly frequency, so it is very difficult to measure how those expectations respond to particular events like monetary policy announcements, because so much other confounding information is released every month. In contrast, the high frequency of our Kalshi contract data allows us to effectively isolate the effects of particular events, like monetary policy announcements, and see how they affect market expectations. Figure 1 in the Introduction provided a good example of the Kalshi market-implied forecast for GDP around the Federal Reserve's major monetary policy tightening announcement on June 15, 2022.

To estimate the effects of monetary policy announcements on Kalshi market-implied expectations more generally, we run regressions of the form:

$$\begin{aligned} \Delta Y_{i,t} &= \lambda'_{near}(\Delta FFR_t^{near} \times FedDays_t) + \lambda'_{far}(\Delta FFR_t^{far} \times FedDays_t) \\ &+ \alpha_i + \epsilon_{i,t} \end{aligned}$$

where $\Delta Y_{i,t}$ denotes the daily change in the Kalshi market-implied expectation for a given

macroeconomic variable (CPI, GDP, or unemployment) in contract $i$ on day $t$, $\Delta FFR_t^{near}$ measures the Kalshi market-implied daily change in federal funds rate expectations based on contracts expiring within the next two FOMC meetings, $\Delta FFR_t^{far}$ measures the Kalshi market-implied daily change in federal funds rate expectations based on contracts expiring after the next two FOMC meetings, $FedDays_t$ is a set of three indicator variables for each of the three types of Fed event days (FOMC announcements, Chair speeches, and FOMC minutes releases), $MacroSurprises_t$ is a set of indicator variables for the other macroeconomic events considered in Tables 3 and 4, $\alpha_i$ is a contract-specific fixed effect, and $\epsilon_{i,t}$ is a regression residual.

Our primary parameters of interest are the $\lambda$ coefficients, which measure the relationship between daily changes in macroeconomic expectations and daily changes in the expected federal funds rate on Fed announcement days. For example, for GDP expectations, a negative estimate of $\lambda$ would imply that the market associates tighter monetary policy news with weaker future GDP, consistent with standard macroeconomic model predictions, while a positive estimate of $\lambda$ would imply that the market associates tighter monetary policy with *stronger* future GDP, consistent with the presence of a "Fed Information Effect".

Table 5 presents our estimate of $\lambda$ for Kalshi market-implied CPI, GDP, and Unemployment Rate expectations at two different horizons: the "Front" contracts refer to the contracts that are closest to expiration, while "LR" contracts take the average market-implied expectation for all expirations beyond the front contracts.

## Table 5. Kalshi Market-Implied Expectations Responses to Monetary Policy Events

Estimates of the effects of federal funds rate changes on Kalshi market-implied expectations of macroeconomic variables. "Front" contracts refer to the contracts nearest to maturity, while "LR" contracts include all contracts beyond the front contract. The independent variables are the daily changes in federal funds rate expectations; the "Near" horizon captures expectations for the upcoming and following FOMC meetings, while the "Long" horizon covers meetings beyond the next two. See text for details.

| | | Daily Changes in Macroeconomic Expectations | | | | | |
|---|---|---|---|---|---|---|---|
| | | CPI | | GDP | | Unemployment | |
| **Implied Delta FFR Contract Horizon** | **x Policy Event** | Front | LR | Front | LR | Front | LR |
| Near | FOMC Announcement | 0.003 | −0.253*** | 0.227 | −1.624 | −0.288 | −0.567 |
| | | (0.102) | (0.082) | (0.634) | (0.993) | (0.261) | (0.365) |
| | Chair Speech | −0.002 | −0.037 | −0.304 | 1.725 | 0.193** | 0.249 |
| | | (0.032) | (0.070) | (0.860) | (2.132) | (0.071) | (0.453) |
| | FOMC Minutes | 0.032 | 0.098 | −0.761 | 2.622 | −0.062 | 0.765** |
| | | (0.128) | (0.094) | (0.724) | (1.788) | (0.116) | (0.351) |
| Long | FOMC Announcement | 0.068 | −0.109*** | −0.207 | −0.005 | −0.203 | −0.406* |
| | | (0.065) | (0.035) | (0.286) | (0.453) | (0.150) | (0.230) |
| | Chair Speech | −0.015* | 0.010 | −0.121 | −0.211 | −0.007 | 0.026 |
| | | (0.008) | (0.007) | (0.281) | (0.170) | (0.044) | (0.054) |
| | FOMC Minutes | 0.023 | −0.007 | −0.319** | 0.403 | 0.004 | 0.014 |
| | | (0.019) | (0.024) | (0.122) | (0.243) | (0.024) | (0.021) |
| Contract FE | | Yes | Yes | Yes | Yes | Yes | Yes |
| Fed Event Day Control | | Yes | Yes | Yes | Yes | Yes | Yes |
| Macro Surprise Control | | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | | 1,115 | 3,637 | 1,115 | 548 | 1,115 | 2,310 |
| $R^2$ | | 0.027 | 0.010 | 0.007 | 0.059 | 0.014 | 0.014 |
| Adjusted $R^2$ | | −0.006 | −0.002 | −0.018 | 0.020 | −0.022 | −0.004 |

For the Kalshi market-implied CPI expectations, we estimate generally negative values of $\lambda$ for both expectations horizons and both near- and longer-term federal funds rate changes, consistent with standard channels of monetary policy transmission in macroeconomic models. The effects on the front-month CPI expectation are generally statistically insignificant, probably because the market views monetary policy as taking some time to affect inflation. But the effects of FOMC announcements are highly statistically significant on CPI expectations more than one month ahead. A 100bp tightening of the current federal funds rate is estimated to reduce inflation in the future by about 0,25 percentage points. Longer-term federal funds rate changes due to FOMC announcements are also estimated to decrease inflation in the future, but by a smaller amount, only about 0.11 percentage points per 100bp of tightening. Speeches by the Fed Chair that affect the long-term outlook for monetary policy are also expected to significantly decrease inflation, but by a smaller amount, only about 0.02 percentage points per 100bp of tightening.

For GDP, our estimates suggest that Kalshi traders believe monetary policy primarily impacts near-term GDP growth, with less significant effects on the longer term. Specifically, in response to FOMC Minutes releases, a 100bp tightening in the long-term federal funds rate outlook is associated with a large and statistically significant 0.32% reduction in GDP expectations at the front quarter contract horizon, a substantial economic impact, and one that is again consistent with standard estimates of monetary policy's effects in macroeconomic models. Releases in the FOMC minutes and chair speeches in the short-term federal funds rate outlook are also associated with negative impact on the GDP expectations, although they are not statistically significant. None of our estimated coefficients for longer-term GDP expectations are statistically significant, perhaps because these contracts have a longer time to maturity (at least 3 months) and correspondingly lower liquidity, as discussed in the previous section.

Turning to unemployment rate expectations, we find that speeches by the Fed Chair impact short-term unemployment expectations more substantially. A speech by the Fed Chair that tightens near-term federal funds rates by 100bp is expected to increase the unemployment rate in the next month by a statistically significant 0.19 percentage points. FOMC minutes releases also have significant effects, with 100bp of tightening in the long-term federal funds rate leading to expectations that the unemployment rate will be about 0.77 percentage points higher down the road. Both of these effects are consistent, once again, with the standard transmission of monetary policy to unemployment in standard macroeconomic models. Notably, we do find some evidence of "Fed Information Effect" on the longer term unemployment contracts: the tightening through FOMC announcement

in the long-term federal fund rates has positive effects on employment, with statistically significant effect (0.41 percentage points per 100bp increase in FFR).

Overall, our estimates are very consistent with the standard transmission from monetary policy to the economy and are not consistent with the existence of a strong "Fed Information Effect", contrary to the predictions of Romer and Romer (2000), Campbell et al. (2012), and Nakamura and Steinsson (2018).

# 5. Conclusions

We use high-frequency data from Kalshi event contracts to investigate how monetary policy announcements affect macroeconomic expectations. Our findings indicate that market reactions align with the predictions of standard macroeconomic models, showing contractionary effects following rate increases, with no significant evidence of a Fed Information Effect. These results highlight the efficacy of high-frequency data in clarifying the immediate impacts of monetary policy on macroeconomic forecasts, thereby contributing to a better understanding of the transmission channels of monetary policy.

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# A Summary Statistics Kalshi Events

## Appendix Table A.1. Kalshi Target Events Summary

Summary of monetary policy and macroeconomic announcement events. Sample: July 2021 to January 2025.

| Event Type | No. of Events | Event Frequency |
|---|---|---|
| FOMC Day | 28 | 0.061 |
| Chair Speech Day | 30 | 0.065 |
| Fed. Minutes Day | 47 | 0.102 |
| CPI MoM. | 43 | 0.093 |
| CPI Other | 129 | 0.279 |
| GDP. QoQ | 42 | 0.091 |
| GDP Other | 43 | 0.093 |
| U3 MoM | 42 | 0.091 |
| Unemp. Other | 217 | 0.470 |

## Appendix Table A.2. Trading Volume and Contract Maturity by Event Type

Summary statistics for trading activity and contract maturity across event types. Sample: July 2021 to May 2024.

| Panel A: Fed Fund Rate Contracts | | | | | |
|---|---|---|---|---|---|
| | Mean | P25 | Median | P75 | N |
| Abs. 1-day change in volume | 2,693.168 | 0 | 16 | 1,333.5 | 7,771 |
| (log) abs. 1-day change | 3.617 | 0.000 | 2.833 | 7.196 | 7,771 |
| Days to expiration | 186.478 | 90 | 170 | 266 | 7,771 |
| **Panel B: CPI Contracts** | | | | | |
| | Mean | P25 | Median | P75 | N |
| Abs. 1-day change in volume | 1,267.117 | 0 | 0 | 400 | 4,424 |
| (log) abs. 1-day change | 2.657 | 0.000 | 0.000 | 5.994 | 4,424 |
| Days to expiration | 80.162 | 14 | 56 | 127 | 4,424 |
| **Panel C: GDP Contracts** | | | | | |
| | Mean | P25 | Median | P75 | N |
| Abs. 1-day change in volume | 747.150 | 0 | 100 | 600.8 | 1,626 |
| (log) abs. 1-day change | 3.828 | 0.000 | 4.615 | 6.400 | 1,626 |
| Days to expiration | 54.892 | 20 | 49 | 83 | 1,626 |
| **Panel D: Unemployment Rate Contracts** | | | | | |
| | Mean | P25 | Median | P75 | N |
| Abs. 1-day change in volume | 421.472 | 0 | 2 | 172 | 2,318 |
| (log) abs. 1-day change | 2.616 | 0.000 | 1.099 | 5.153 | 2,318 |
| Days to expiration | 42.544 | 8 | 22 | 66 | 2,318 |

# B Alternative Specification for Table 5

**Appendix Table A.3. Price-Implied Macroeconomic and Fed Fund Rate (w/o PCs) Expectations During Monetary Policy Events**

| | | Daily Changes in Macroeconomic Expectations | | | | | |
|---|---|---|---|---|---|---|---|
| | | CPI | | GDP | | Unemployment | |
| **Implied Delta FFR Contract Horizon** | **x Policy Event** | Front | LR | Front | LR | Front | LR |
| Near | FOMC Announcement | 0.030 | −0.066 | −0.013 | 2.600 | −0.038 | −0.138 |
| | | (0.065) | (0.046) | (0.343) | (1.703) | (0.087) | (0.175) |
| | Chair Speech | −0.003 | −0.033 | −0.303 | 1.731 | 0.195** | 0.255 |
| | | (0.032) | (0.071) | (0.862) | (2.147) | (0.072) | (0.448) |
| | FOMC Minutes | 0.033 | 0.099 | −0.765 | 2.747 | −0.064 | 0.767** |
| | | (0.128) | (0.095) | (0.725) | (1.805) | (0.115) | (0.344) |
| Long | FOMC Announcement | 0.023 | −0.056*** | 0.066 | −0.258 | −0.031 | −0.021 |
| | | (0.064) | (0.016) | (0.184) | (0.353) | (0.059) | (0.071) |
| | Chair Speech | −0.014 | 0.008 | −0.120 | −0.214 | −0.008 | 0.023 |
| | | (0.008) | (0.007) | (0.281) | (0.198) | (0.043) | (0.057) |
| | FOMC Minutes | 0.023 | −0.008 | −0.318** | 0.398 | 0.004 | 0.014 |
| | | (0.020) | (0.024) | (0.122) | (0.285) | (0.024) | (0.020) |
| Contract FE | | Yes | Yes | Yes | Yes | Yes | Yes |
| Fed Event Day Control | | Yes | Yes | Yes | Yes | Yes | Yes |
| Macro Surprise Control | | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | | 1,115 | 3,637 | 1,115 | 548 | 1,115 | 2,310 |
| $R^2$ | | 0.025 | 0.008 | 0.007 | 0.061 | 0.013 | 0.010 |
| Adjusted $R^2$ | | −0.007 | −0.003 | −0.018 | 0.021 | −0.024 | −0.009 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
S.E. clustered at trading day and contract expiration date
"1-day change in implied macro target" is based on negatively filtered contracts

## Appendix Table A.4. Kalshi Market-Implied Expectations Responses to Monetary Policy Events - Full Table w/ Macro Surprises

| | 1-day change in implied macro target | | | | | |
|---|---|---|---|---|---|---|
| | Front | Long-term | Front | Long-term | Front | Long-term |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| FOMC Day | 0.046* | 0.0001 | 0.076 | −0.120*** | −0.009 | −0.079 |
| | (0.025) | (0.010) | (0.087) | (0.023) | (0.026) | (0.052) |
| Chair Speech Day | −0.006 | −0.006 | 0.150 | −0.141 | 0.046* | −0.018 |
| | (0.013) | (0.007) | (0.087) | (0.077) | (0.026) | (0.042) |
| Fed. Event Day | −0.001 | 0.001 | −0.009 | −0.312 | −0.025 | 0.004 |
| | (0.013) | (0.007) | (0.097) | (0.189) | (0.020) | (0.010) |
| CPI Surprise | 0.018 | −0.007 | −0.123 | −0.285 | 0.010 | 0.007 |
| | (0.017) | (0.017) | (0.082) | (0.242) | (0.016) | (0.017) |
| CPI Surprise Other | 0.028*** | 0.018* | −0.080 | 0.058 | −0.037 | −0.001 |
| | (0.007) | (0.009) | (0.068) | (0.102) | (0.032) | (0.016) |
| GDP Surprise | 0.009 | 0.014 | 0.003 | −0.180 | −0.024 | 0.013 |
| | (0.006) | (0.010) | (0.213) | (0.325) | (0.022) | (0.056) |
| GDP Surprise Other | −0.010 | −0.005 | −0.055 | 0.081 | −0.0005 | 0.006 |
| | (0.015) | (0.009) | (0.119) | (0.145) | (0.011) | (0.032) |
| Unemp. Surprise | −0.010 | −0.007 | 0.034 | −0.049 | 0.065 | −0.032 |
| | (0.009) | (0.012) | (0.077) | (0.034) | (0.065) | (0.040) |
| Unemp. Surprise Other | 0.0005 | −0.002 | 0.010 | −0.076* | −0.020** | 0.010 |
| | (0.005) | (0.004) | (0.040) | (0.036) | (0.009) | (0.011) |
| Imp. Rate Delta (Near) w/ PC x FOMC Day | 0.003 | −0.253*** | 0.227 | −1.624 | −0.288 | −0.567 |
| | (0.102) | (0.082) | (0.634) | (0.993) | (0.261) | (0.365) |
| Imp. Rate Delta (Near) w/ PC x Chair Speech Day | −0.002 | −0.037 | −0.304 | 1.725 | 0.193** | 0.249 |
| | (0.032) | (0.070) | (0.860) | (2.132) | (0.071) | (0.453) |
| Imp. Rate Delta (Near) w/ PC x Fed. Event Day | 0.032 | 0.098 | −0.761 | 2.622 | −0.062 | 0.765** |
| | (0.128) | (0.094) | (0.724) | (1.788) | (0.116) | (0.351) |
| Imp. Rate Delta (Long) w/ PC x FOMC Day | 0.068 | −0.109*** | −0.207 | −0.005 | −0.203 | −0.406* |
| | (0.065) | (0.035) | (0.286) | (0.453) | (0.150) | (0.230) |
| Imp. Rate Delta (Long) w/ PC x Chair Speech Day | −0.015* | 0.010 | −0.121 | −0.211 | −0.007 | 0.026 |
| | (0.008) | (0.007) | (0.281) | (0.170) | (0.044) | (0.054) |
| Imp. Rate Delta (Long) w/ PC x Fed. Event Day | 0.023 | −0.007 | −0.319** | 0.403 | 0.004 | 0.014 |
| | (0.019) | (0.024) | (0.122) | (0.243) | (0.024) | (0.021) |
| Contract FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,115 | 3,637 | 1,115 | 548 | 1,115 | 2,310 |
| $R^2$ | 0.027 | 0.010 | 0.007 | 0.059 | 0.014 | 0.014 |
| Adjusted $R^2$ | −0.006 | −0.002 | −0.018 | 0.020 | −0.022 | −0.004 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
S.E. clustered at trading day and contract expiration date
"1-day change in implied macro target" is based on negatively filered contracts