Has financialization changed the impact of macroeconomic announcements?

Simon-Pierre Boucher* Marie-Hélène Gagnon† Gabriel J. Power‡

December 4, 2023

Abstract

We investigate, using high-frequency data, how financialization has changed the impact of macroeconomic announcements on commodity futures returns and volatility. We find that greater financialization dampens the impact of macroeconomic release surprises on commodity markets, as measured by price drift and volatility changes. Moreover, financial participants improve liquidity and price discovery, while reducing volatility. Since traditional market participants prefer stability, our results suggest a beneficial impact of financialization. When we disaggregate the results, we find that the beneficial effects of greater financial participation are linked to money managers rather than swap dealers.

Keywords: commodities, energy, futures, information diffusion, financialization, high-frequency, speculation, sustainable, commercial, institutional, volatility, macro, announcements, surprise, events.

*PhD student in finance, Université Laval, Quebec City QC Canada G1V 0A6, email: simon-pierre.boucher.1@ulaval.ca

†Professor of Finance and Research Fellow, CRREP, Université Laval, email: marie-helene.gagnon@fsa.ulaval.ca

‡IG Wealth Management Chairholder, Professor of Finance and Research Fellow, CRREP and CRIB, Université Laval, email: gabriel.power@fsa.ulaval.ca

1 Introduction

Despite investment outflows in 2009 and 2014-2016,[1] commodities remain a popular asset class among non-traditional market participants such as hedge funds and index traders. Indeed, 2022 may be a record year for commodity trading profit.[2] The financialization of commodities refers to important market and regulatory changes that have affected how commodities (futures, options, swaps and physicals) are traded by institutional and other non-traditional investors. Financialization is controversial: Testimony given by Masters (2009) to the Commodities Futures Trading Commission (CFTC) argued that institutional investors disrupted commodity markets in the mid-2000s through the use of strategies intended for financial securities.[3] This paper investigates financialization in commodity markets through the lens of macroeconomic announcement releases.

Commodity financialization has coincided with a commodity bull cycle (Humphreys, 2010), during which traditional market participants (i.e., those who produce or process the commodity) expressed fears that prices would be distorted from their fundamental values and that volatility increases would make hedging more costly. Research has found that increases in speculation and long-only index positions in commodity markets are linked to increases in volatility and correlations between commodities.[4] Theory suggests that financialization could affect commodity futures markets through risk sharing and information discovery (Cheng and Xiong, 2014). Indeed, investors can either provide liquidity to meet the hedging needs of other traders or consume liquidity when they trade for their own needs (Kang, Rouwenhorst, and Tang, 2020), thereby influencing liquidity risk. In addition, price discovery in commodity markets is affected by informational frictions concerning supply, demand and inventories. Price discovery tends to occur on

[1] These outflows are explained by the Great Recession and a global commodity slump, respectively.

[2] See, for example, the Wall Street Journal, September 9th 2022, "Wall Street's Commodity Traders on Track to Break Profit Records".

[3] As we explain later, however, this claim has been challenged by empirical research (Irwin and Sanders, 2011, 2012b,a).

[4] Helpful surveys of this large literature include Boyd et al. (2018) and Cheng and Xiong (2014).

futures markets, as spot or cash markets are more decentralized (Garbade and Silber, 1983). Since new players in commodities mostly take positions in derivatives rather than physicals, financialization could alter how these markets incorporate new information. This paper shows that we can assess the impact of financialization by measuring how information discovery is affected by the arrival of new players in commodity markets.

To investigate how financialization affects commodities, we analyze how prices and variance change in response to unexpected macroeconomic news. We use high frequency data ranging from April 2nd, 2007 to December 29th, 2020, and a methodology similar to Andersen, Bollerslev, Diebold, and Vega (2007) and Kurov, Sancetta, Strasser, and Wolfe (2019). We focus on six major commodity futures and provide results for additional commodities in the online appendix. Using intraday data allows us to more accurately measure the effect of news on volatility and returns. Moreover, we avoid a common criticism of event study methods, namely that daily frequency data may attribute the effect of an announcement to another, concurrent market event (see e.g., Kothari and Warner, 2007).

Our first contribution is to present new insights on financialization by bridging this line of research with the macro announcements literature. The announcements literature has shifted from using daily data to high-frequency data and has examined a variety of markets such as bonds (Andersen et al., 2007; Hu et al., 2013; Balduzzi et al., 2001; Lee et al., 1995; Hautsch et al., 2011; Kurov et al., 2019), stocks (Andersen et al., 2007; Bernile et al., 2016; Kurov et al., 2019) and foreign exchange rates (Lee et al., 1995; Andersen et al., 2003). However, the use of high-frequency data is less common in commodity futures research (Couleau et al., 2020). We argue that the literature's use of a lower sampling frequency for futures price returns could help explain why there is no consensus as to the impact on volatility (Tang and Xiong, 2012; Brunetti, Büyükşahin, and Harris, 2016; Irwin and Sanders, 2012b; Stoll and Whaley, 2010; Alquist and Gervais, 2013). Indeed, the use of daily or weekly data results in a smaller sample size and reduces the power of statistical tests (Irwin, Sanders, and Merrin, 2009).

In so doing, our paper also builds on the literature on information transmission in markets. Goldstein and Yang (2022) develop a theory of how financial participants in commodity markets affect futures price informativeness, bias, and comovement. Their model predicts that financialization, defined here as increasing the number of speculators relative to hedgers in a market, initially improves price efficiency but eventually makes it worse. Our results further contribute to research on the impact of institutional investors. For instance, Brunetti, Büyükşahin, and Harris (2016) find that hedge funds add liquidity to commodity markets, resulting in more efficient prices, while merchant positions are linked to greater volatility in crude oil and natural gas markets.

Our second contribution is to provide disaggregated results, where fund managers and swap dealers are analyzed separately, and to consider more informative measures of financialization than what is typically used. Prior studies often split the sample into pre- and post-financialization periods, using 2004[5] as the break point.[6] Instead, we use several measures to let financialization be time-varying and commodity-specific. Overall, our research sheds new light on the resolution of uncertainty, market efficiency and information transmission, and the anticipation of macroeconomic announcements.

We summarize our findings as follows: First, financialization contributes to information diffusion and price discovery. The impact of a surprise following a macroeconomic announcement is generally dampened when a commodity is more financialized. Thus, it appears that commodity markets are better informed since macro news generate less of a shock. This outcome should benefit traditional commodity market participants. The dampening effect we find is stronger for pro-cyclical commodities such as crude oil or natural gas than for gold, which is a safe haven asset.

Second, we find that money managers reduce volatility and contribute more to price discovery when there is a macro announcement. This result is consistent with the idea

[5]Although the Commodity Futures Trading Commission passed the Commodity Futures Modernization Act in 2000, the literature generally agrees that 2004 marks the beginning of financialization.

[6]Some examples include Büyükşahin and Robe (2010); Kilian and Murphy (2014); Brunetti et al. (2016); Irwin and Sanders (2012a); Stoll and Whaley (2010); Alquist and Gervais (2013).

that money managers are more informed investors, given their role in the market (Fishe and Smith, 2012). In contrast, swap dealers also contribute to price discovery but are linked to increases in volatility after macro announcements. If we aggregate all trader categories, financialization seems to reduce volatility in commodity markets. Robustness checks show that our main findings are unchanged if we consider alternative volatility estimators, different econometric specifications, or if we change the financialization proxy. Thus, our results suggest that financialization is helpful to commodity markets.

The paper's implications on financialization go beyond the efficiency of commodity markets. With the ongoing shift towards green energy, how might financialization affect the growth of sustainable energy markets? If financialization means less volatile commodity and energy markets, we could see increased investment in the green energy transition.[7] Beyond the energy sector, demand has grown for the metals and minerals needed to build a renewable energy infrastructure (Knuth, 2018). By broadening the investor base, financialization could play a role in creating more sustainable, affordable and accessible raw energy markets.

2 Literature Review

2.1 Financialization of commodities

Basak and Pavlova (2016) develop a model which predicts that financialization will: (i) increase commodity futures prices, especially for futures that belong to the commodity index; (ii) increase volatility for both index and non-index futures; (iii) increase correlations between commodities and with equities; and (iv) only affect prices of storable commodities (e.g., wheat, crude oil). Empirical evidence on their predictions is, however, inconclusive. Table 1 presents a summary of research findings on the impact of financial-

[7] This follows from real options theory, as higher volatility discourages investment by increasing the value of waiting to invest (Kellogg, 2014).

ization and speculation on commodity prices and volatility.[8]

Tang and Xiong (2012) report increases in the correlations of crude oil and non-energy commodity returns, which they claim are due to the rapid growth of index investments in commodity markets. They argue that when a commodity is included in a benchmark index, its price is no longer determined solely by the commodity's own supply and demand, but also by other commodities and assets in the index. Singleton (2014) further shows that speculative activity by financial investors creates informational frictions, leading commodity prices to diverge from their fundamental value. This result implies that financialization would increase volatility. In a similar vein, Yang, Balyeat, and Leatham (2005) show that when commodity futures trading volume increases, so does the volatility of commodity spot prices.

Another line of research, however, finds no evidence that financialization is responsible for distorted prices or higher volatility. Brunetti and Reiffen (2014) use an equilibrium model and data on commodity trader positions to show that index traders provide insurance against price risk. Brunetti, Büyükşahin, and Harris (2016) analyze the impact of particular types of speculators in commodity markets from 2005 to 2009. They find that hedge funds allow for a faster and more efficient price discovery, resulting in a lower volatility. Furthermore, they find that the positions of swap dealers are not correlated with contemporaneous returns and volatility in commodity markets. Stoll and Whaley (2010) show that inflows and outflows from commodity index investments do not Granger-cause price or volatility changes. Using a no-arbitrage argument, Hamilton and Wu (2014) show that the positions of commodity traders included in index funds cannot be used to achieve excess returns in futures markets. In addition, Kilian and Murphy (2014) show that several speculative trades can occur in the oil market without seeing a significant change in inventory levels. This would seem to rule out speculation as being responsible for the boom and bust cycle in the oil market between 2003 and 2008.

[8]Note that we use a broader definition of financialization that what some authors use. In particular, we do not limit our analysis strictly to the impact of index traders.

2.2 Macroeconomic announcements

2.2.1 Macro announcements and financial markets

A large empirical literature documents the impact of macroeconomic announcements on stocks (Scholtus, Van Dijk, and Frijns, 2014) and bonds (Fleming and Remolona, 1997, 1999). This research is distinct from, but complementary to, a large body of work on informed trading and corporate announcements such as dividend changes (Zhang, 2018). In a key study, Balduzzi, Elton, and Green (2001) investigate the effects of scheduled macro announcements on prices, trading volume, and bid-ask spreads. They find that 17 public news releases have a significant impact on the prices of the three-month bill, the two-year and 10-year notes and a 30-year bond. There is a persistent and significant increase in volatility and trade volume following a macro announcement. The literature also looks at whether economic conditions can explain heterogeneous responses to announcements across business cycles. Andersen et al. (2003) find that the stock market reacts to news differently depending on the stage of the business cycle. Boyd, Hu, and Jagannathan (2005) show that the impact of unemployment-related announcements varies according to the economic environment.

2.2.2 Macro announcements and commodity markets

Much of the literature on announcements and commodity markets concerns production and inventory updates from the Organization of Petroleum Exporting Countries (OPEC). Evidence on the impact of OPEC news on prices is mixed (Pescatori and Nazer, 2022; Lin and Tamvakis, 2010). While some research suggests a short-run impact on crude oil prices and volatility, OPEC's influence has weakened since the oil glut in the 1980s (Zorn, 1983). Horan, Peterson, and Mahar (2004) find that volatility drifts upward as OPEC meetings draw nearer and decreases in the first five days after the meetings start. Wirl and Kujundzic (2004) find little market reaction to fifty OPEC meetings from 1984 to 2001. Kilian

and Vega (2011) find no significant responses in regressions of WTI crude oil and U.S. gasoline prices on 30 U.S. macro announcements from 1983 to 2008. Gu and Kurov (2018) study the pre-announcement price drift in natural gas and show that inventory surprises can be predicted using the difference between the median analyst forecast (historically highly accurate) and the consensus forecast. As the lack of conclusive results in this area may be due to using daily data, we propose using high-frequency return data.

A smaller literature looks at how commodities react to macro announcements, also generally using daily data. Frankel and Hardouvelis (1985) find that a positive shock in the money supply lowers gold prices. Christie-David, Chaudhry, and Koch (2000) study how gold and silver futures prices react, over 15-minute intervals, to 23 U.S. macro announcements over 1992-1995 and find that volatility is higher on announcement days. Cai, Cheung, and Wong (2001) analyze five-minute gold price returns around macro announcements using GARCH models. They find that intraday price impacts of announcements are fewer and less significant for gold than for bonds or currencies. Similarly, Hess, Huang, and Niessen (2008) find that CRB and Goldman Sachs commodity indexes are less sensitive to the impact of 17 U.S. macro announcements than are bonds or stocks. Hollstein, Prokopczuk, and Würsig (2020) look at how different economic variables affect the term structure of commodity futures volatility. They show that speculation and jobs-related macro variables have the largest impact on volatility. Lastly, Ye, Guo, Deschamps, Jiang, and Liu (2021) find that volatility in commodity futures is more affected by macroeconomic forecasts than by current economic conditions.

So far, the literature shows a clear impact of macroeconomic announcements on stock and bond prices. However, there does not seem to be a clear answer to whether announcements affect commodity futures prices. Our research provides new insights by i) using high frequency data, ii) expanding the set of announcements beyond those which are normally analyzed (such as OPEC meetings) and iii) considering different variables to quantify the level of financialization for each of the commodities in the sample.

3 Data

3.1 Data on macroeconomic announcements

The macroeconomic announcement release data are obtained from Bloomberg and Refinitiv Eikon. We collect information on 22 important announcements that are standard to the literature (see e.g., Andersen and Bollerslev, 1998; Kurov et al., 2019). The announcements can be broken down into ten categories: Income, Employment, Industrial Activity, Investment, Consumption, Housing Sector, Government, Net Exports, Inflation and Forward-looking. The majority of the announcements are released on a monthly basis. However, there are some exceptions which have a quarterly or weekly frequency of release. Table 2 summarizes the announcements and provides details including number of observations, release frequency, source, unit of measure, and time of release. Bloomberg provides analyst forecasts for all macroeconomic announcements, as well as the actual value of the announcement release (see e.g., Kurov et al., 2019).

In addition to macroeconomic announcements, we consider energy sector-specific announcements published by the U.S. Energy Information Administration. The first is the weekly crude oil storage report, which provides an update on the quantity of crude oil held in storage in the U.S. This report can have a significant impact on oil prices, as it provides insights into a buffer that affects the supply and demand equilibrium for crude oil. The second is the weekly natural gas storage report, which provides similar information for natural gas held in storage. As these reports are closely watched by energy sector traders, they can generate market movements. We do not include OPEC announcements, as they cannot be reliably used in a high-frequency econometric design (Känzig, 2021).[9]

In this literature, it is common practice to use the standardized surprise of an announcement rather than its realized value to quantify the unexpected component of the

[9]There are two issues with the OPEC announcements: First, they are not released at a specific time, and second, it is impossible to know precisely when a given OPEC announcement was made available to investors.

release. To calculate announcement surprises, we follow Balduzzi, Elton, and Green (2001) as a starting point. Let A_{kt} be the realized value (i.e., release) of macroeconomic announcement k at time t, and let E_{kt} be the median value of all Bloomberg analyst forecasts for announcement k at time t. To standardize the surprise, we divide the raw surprise $(A_{kt} - E_{kt})$ by σ_k, the sample standard deviation of the surprise for announcement k. Thus, equation (1) describes the standardized surprise for announcement k at time t :

$$S_{kt} = \frac{A_{kt} - E_{kt}}{\sigma_k} \tag{1}$$

As in Balduzzi et al. (2001) and Kurov et al. (2019), the full sample period is used to compute σ_k.[10] For robustness, we also estimate our models using surprises where σ_k is computed using only past observations. The main findings are unchanged.[11] Thus, we report regression results based on the most standard methodology in the literature.

Our sample for macroeconomic announcements is matched to our high-frequency data and therefore runs from April 2nd, 2007 to December 29th, 2020. The data for all announcements in our study can be obtained from their respective government organizations, as shown in Table 2. Table 3 presents the minimum, 1st quartile, median, mean, 3rd quartile and maximum of the surprise for each announcement. As expected, the standardized surprises are centered on zero. For some announcements, the range is roughly from -3 to 3, but in many cases the outliers display asymmetry. For instance, the Initial Jobless Claims maximum value (20.746) is much larger than the minimum (-3.117) while conversely, Consumer Credit and Personal Consumption show larger negative than positive outliers.

[10]The literature argues that measuring σ_k in this manner is reasonable because the standardized surprise is not used for forecasting purposes. This approach is also used in Scotti (2016), Andersen et al. (2003), and Goldberg and Grisse (2013). Using raw surprises is not recommended due to scaling issues, nor is using analyst dispersion for σ_k because announcement coverage sometimes involves only a few analysts.

[11]In this case, we exclude the first M observations (e.g., $M = 10$) to get a reasonable sample size for σ_k.

3.2 Commodity futures price data

For intraday data on commodity futures prices, we use Barchart's API.[12] Our dataset for prices contains some of the most economically significant commodity futures contracts traded in the U.S. We use a high frequency price series that runs from April 2nd, 2007 to December 29, 2020. Among these contracts, crude oil and natural gas have a pro-cyclical behavior, while gold and silver behave as a safe haven. High-grade copper and palladium are industrial metals and are used in the manufacturing of consumer products. Results for additional commodities (e.g., agriculturals) are shown in the online appendix.

For each of the commodities in our sample, price returns R_t are calculated as the log return over a period of 5 minutes ($\tau = 5$) beginning at time t. For each 5-minute interval, the database provides the futures contract price at the opening (p_t^{open}) and at the close ($p_{t+\tau}^{close}$). Thus, R_t is obtained as in equation (2):

$$R_t^{t+\tau} = \ln\left(\frac{p_{t+\tau}^{close}}{p_t^{open}}\right) = \ln(p_{t+\tau}^{close}) - \ln(p_t^{open}) \tag{2}$$

Descriptive statistics for the 5-minute log returns are presented in table 5. In one of our robustness checks, we confirm that the main findings are robust to using different window lengths. To this end, we estimate equation 2 using 30-minute returns. The most extreme outlier observations belong to crude oil, while gold has the fewest extreme outliers. Moreover, natural gas is more volatile than other commodities.

3.3 Measures of commodity financialization

We argue that financialization is greater when speculative activities increase relative to productive activity. To measure the impact of financialization, we need a measure that captures the intensity of speculation in commodity markets. The indexes we use are constructed using data in the *Commitment of Traders (COT) Report* published weekly by

[12] See the https://www.barchart.com/futures website.

the Commodity Futures Trading Commission (CFTC). The data provided by the CFTC relates to the number of positions held by different types of participants in commodity markets. The data on money manager and swap dealer positions are obtained from Quandl's API[13]. The CFTC separates trader types as follows:[14]

1. **Commercial**: We classify as commercial all trader reported futures positions for a given commodity if the trader claims to use futures contracts in that commodity for purposes of hedging;

2. **Non-Commercial:** This value is obtained by subtracting total long and short commercial positions from total open interest.

The following information on commodity futures contracts is presented in the CoT report and is used to compute financialization measures:

- SS_i: the number of short positions in futures i held by Non-Commercial traders,
- SL_i: the number of long positions in futures i held by Non-Commercial traders,
- HS_i: the number of short positions in futures i held by Commercial traders,
- HL_i: the number of long positions in futures i held by Commercial traders.

3.3.1 Working's T

The first proxy we consider to compare levels of speculative and hedging activity is due to Working (1960).[15] This index compares the activity levels of Non-Commercial commod-

[13] See the https://data.nasdaq.com/data/CFTC-commodity-futures-trading-commission-reports website.

[14] The CFTC defines commercial traders as participants in commodity markets who primarily use futures contracts to hedge their business activities (e.g., buying or selling commodities). All traders who are not classified as Commercial are automatically classified as Non-Commercial traders. To obtain the number of long positions held by Non-Commercial traders, we subtract the total long Commercial Positions from the total open interest. For the number of short positions held by Non-Commercial traders, we subtract the total short Commercial Positions from the total open interest.

[15] Shanker (2017) provides an updated definition of Working's T.

ity futures traders (e.g., speculators) to those of Commercial traders (e.g., hedgers). Typically, Commercial traders take short positions in futures contracts while Non-Commercial traders take long positions. This proxy measures the extent to which speculation exceeds the level required to offset any unbalanced hedging at the market clearing price. For robustness, we present below two alternative measures of financialization which we also use in the empirical analysis. The Working's T index, WT_i, is computed as follows:

$$WT_i \begin{cases} 1 + \frac{SS_i}{HL_i + HS_i} & \text{if} \quad HS_i \geq HL_i \\ 1 + \frac{SL_i}{HL_i + HS_i} & \text{if} \quad HS_i < HL_i \end{cases} \tag{3}$$

3.3.2 Market share of Non-Commercials (MSCT)

Instead of Working's T, Büyükşahin and Robe (2014) suggest a measure of commodity financialization that emphasizes the market share of Non-Commercial traders (MSCT). This ratio is expressed as the sum of the short and long positions of Non-Commercial traders over twice the total open interest in a given market:

$$MSCT_i = \frac{SL_i + SS_i}{2 \times OI_i} \tag{4}$$

3.3.3 Net Long Short (NLS)

A further alternative suggested by Hedegaard (2011) is to define an index of speculative activity as the ratio of net long speculative positions over total open interest (NLS_i),

$$NLS_i = \frac{SL_i - SS_i}{OI_i} \tag{5}$$

Descriptive statistics for the three financialization variables are shown in table 6. These three proxies are computed separately for each of the six commodities in our sample, based on the number of open positions for a given futures contract. Unlike the number of open positions, the variables themselves are scale-free. The value of the MSCT variable

fluctuates between 0 and 0.5, while the NLS variable varies between -0.4 and 0.8 and the Working's T variable between 1 and 2. Time series plots of the MSCT, NLS and Working's T variables are presented in figures 1, 2 and 3, respectively. In each figure, values for all six commodity futures contracts in our sample are shown.

4 Econometric framework and methods

4.1 Modeling the impact on returns

Our regression models are based on Kurov et al. (2019) and Andersen et al. (2007). We run the regressions using two different specifications of equation (6):

$$R_t^{t+\tau} = \alpha + \sum_{m=1}^{22} \gamma_m S_{m,t} + \delta X_{t,i} + \sum_{m=1}^{22} \theta_m (S_{m,t} \cdot X_t) + \beta R_{t-\tau}^t + \epsilon_t \tag{6}$$

where $R_t^{t+\tau}$ denotes the continuously compounded futures return from time t and $t+\tau$, S_{mt} denotes the surprise for macroeconomic announcement m published at time t. $X_{t,i}$ is the financialization proxy for commodity i measured at time t. There are three possible values for $X_{t,i}$ depending on which proxy is used: $MSCT_i$, NLS_i and WT_i . We estimate the regression using a two-step weighted least squares procedure.

4.1.1 Approach based on Andersen, Bollerslev, Diebold, and Vega (2007)

The first approach follows Andersen et al. (2007) and estimates equation (6) by OLS. Then, we regress the model's residuals in absolute value on the macro variables and 23 time-of-the-day dichotomous variables. This auxiliary regression is shown by equation (7):

$$\mid \epsilon_t \mid = \rho + \sum_{m=1}^{22} \zeta_m S_{m,t} + \sum_{h=1}^{23} \delta_h D^h \tag{7}$$

After estimating the model, we use the fitted value of the residuals from eq. (7) to obtain the WLS regression weight $w_t = \hat{\epsilon_t}^{-2}$. Then, we multiply each left- and right-hand

side variable in our original model by w_t and estimate the model once more by OLS.

4.1.2 Approach based on Kurov, Sancetta, Strasser, and Wolfe (2019)

Next, we estimate equation (6) using the approach shown in Kurov et al. (2019). To account for heteroskedasticity, we construct a volatility estimate by means of an exponential moving average, using the regression residuals obtained in the first step. This auxiliary regression is shown in equation (8), with a smoothing parameter $\alpha = 0.9$ and a starting parameter value set to $\sigma_1 = \epsilon_t$:

$$\sigma_t = \alpha\sigma_{t-1} + (1-\alpha) \mid \epsilon_t \mid \tag{8}$$

After obtaining σ_t for each observation, we transform it using $w_t = \hat{\sigma_t}^{-2}$ to obtain the WLS regression weight. As with the previous regression equation, we complete this step by multiplying each variable by w_t and running an OLS regression to estimate the model. The impact of macro announcements on commodity futures returns can be assessed by looking at the significance of the γ_m coefficient in the mean equation. As for the impact of financialization on commodity futures returns, we test the significance of the δ coefficient. Finally, we look at the sign and significance of θ_m to assess the impact of time-varying financialization on the size of the post-macro announcement drift. This last coefficient is the most important one to help answer our main research question.

4.2 Modeling the impact on volatility

As volatility is unobservable, different volatility estimators have been provided by the literature. Using a GARCH specification is justified by the time-varying and clustered volatility of commodity price returns (see e.g., Hammoudeh and Yuan, 2008). To quantify the relationship between commodity price volatility and financialization, we use a GARCH (1,1) model, and extend the volatility equation by including our financializa-

tion variable and the macroeconomic surprise variables. Estimating the GARCH model is done in two steps. First, we estimate the mean equation equation (9):

$$R_t^{t+\tau} = \alpha + \sum_{m=1}^{22} \gamma_m S_{m,t} + \beta R_{t,-\tau}^{t} + \epsilon_t \tag{9}$$

Then, we estimate the following equation for conditional variance:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \sigma_{t-1}^2 + \alpha_2 \epsilon_t^2 + \sum_{m=1}^{22} \Phi_m D_{m,t} + \beta X_{i,t} + \sum_{k=1}^{n} \phi_k I_{kt} \tag{10}$$

where $I_{k,t} = D_{m,t} \cdot X_{i,t}$ and $D_{m,t}$ is a dummy variable for macro announcement m. The latter equals 1 if an announcement takes place at time t and equals 0 otherwise. $X_{i,t}$ is the financialization variable i at time t. The impact of macro announcement m on commodity futures volatility is assessed by looking at the significance of the Φ_m coefficient in the variance equation (10). To see the impact of the financialization variable $X_{i,t}$ on commodity futures volatility, we look at the β coefficient. Finally, we look at the ϕ_k coefficient to assess the simultaneous impact on commodity futures volatility of financialization and the surprise in macro announcement m.

Among the announcements in our sample, all but one are "good news." Only a positive surprise in Initial Jobless Claims indicates a deterioration in economic conditions. Therefore, the surprise coefficient is expected to be positive for all pro-cyclical commodities (i.e., all but gold and silver) for all announcements except Initial Jobless Claims, for which it should be negative (since a positive surprise is "bad news"). In the case of gold and silver, which are safe-haven commodities, the reverse is expected for coefficient signs.

4.3 Impact by type of non-commercial trader

To better understand the effects of financialization, we repeat the procedure in equations (9) and (10) for two separate groups of non-commercial investors: swap dealers and money managers. A swap dealer is an entity that deals primarily in swaps for a

commodity and uses the futures markets to manage or hedge the risk associated with those swaps transactions. The swap dealer's counterparties may be speculative traders, like hedge funds, or traditional commercial clients that are managing risk arising from their dealings in the physical commodity. A money manager is a registered commodity trading advisor (CTA), a registered commodity pool operator (CPO), or an unregistered fund identified by the CFTC. These traders manage and conduct organized futures trading on behalf of clients. For both categories (swap dealers and managed money), the CFTC reports the number of long and short positions. We compute the NLS index (Hedegaard, 2011) for each trader category, allowing us to quantify the extent of speculation by money managers and swap traders, respectively. For swap traders, we denote the index by NLS_{swap} while for money managers, it is denoted by NLS_{mm}.

5 Results

This section presents and discusses our baseline empirical results, as well as some robustness checks. Before describing the results, we review what is expected from macroeconomic announcements and their economic implications. Boehm and Kroner (2020) track the behavior of different financial assets following releases for different U.S. announcements. Their results help us tell for which macro announcements a positive sign on the surprise variable would signal a weak economy. In our sample, only Consumer Price Index (Bryan and Cecchetti, 1993; Clark et al., 1997) and Initial Jobless Claims (Fleming and Remolona, 1997, 1999; Getz and Ulmer, 1990) announcement releases would signal a weaker economy when the surprise is positive. For the other announcements, a positive surprise will be interpreted by investors as signaling a strong economy.

5.1 Effect of surprises and financialization on returns

Table 7 presents the results of regressions to explain high-frequency commodity futures returns in a window following a macro announcement. For brevity, this table presents only results obtained using the NLS financialization variable. Results using either MSCT or Working's T are presented in the online appendix. Our main findings are robust to the choice of proxy. To see how macro announcement surprises affect returns, we consider the γ_m coefficient. We find that for Initial Jobless Claims, where a positive surprise is "bad news", the coefficient is negative for crude oil and positive for gold, as expected. For surprises related to CB Consumer Confidence, Advance Retail Sales, ADP Employment, and Pending Home Sales announcements, however, the coefficients are positive for crude oil and negative for gold. These findings support the idea that crude oil is pro-cyclical while gold is considered a safe haven (see e.g., Lucey and Li, 2015).

As for the other commodities, we find that the effects on copper returns are similar to those of crude oil returns, which is as expected given its role in industrial production. The coefficients have the predicted signs, although they are not significant for all announcements. The results for silver are similar to those for gold. The surprise coefficient γ_m in particular is positive and significant for Initial Jobless Claims. For the other announcements, γ_m is negative when it is significant. Lastly, for natural gas and palladium the coefficients suggest a pro-cyclical response but they are significant for fewer announcements.

Next, we look at the θ coefficient, which quantifies the interaction effect between the macro surprise variables and the financialization proxy. For crude oil, gold and silver, θ_m has the opposite sign to the sign of the macro surprise coefficient γ_m. Thus, an increase in financialization *reduces* the magnitude of the price adjustment due to a macro surprise. Using MSCT, financialization is significant for all commodities when we combine it with surprises for ADP Employment, Durable Goods Orders, and Non-farm Employment announcements. If we use instead the NLS proxy, the effect is significant for surprises in

Initial Jobless Claims, ADP Employment, Advance Retail Sales, New Home Sales, and Personal Income. Lastly, using Working's T as a proxy, there is a significant effect for Initial Jobless Claims, ADP Employment, CB Consumer Confidence, Durable Goods Orders, New Home Sales, and Non-farm Employment.

Thus, we find significant results, especially for employment- and household income-related macro releases. This finding is consistent with Hördahl, Remolona, and Valente (2020), who report that the most important macro announcements are those included in the Employment Report, as they are the most likely to affect asset returns and volatility. Our results are also robust to the inclusion of crude oil and natural gas inventory announcements. The regression results in table 7 show that oil announcements affect only crude oil returns, while no commodity is affected by natural gas announcements. For crude oil, the γ_m coefficient is negative: An unexpected increase in inventories dampens prices. The financialization coefficient θ_m is positive for crude oil. Thus, as with macro announcements, prices react less to surprises when a commodity is more financialized, as financial participants contribute liquidity and information to the market.

5.2 Effect of surprises and financialization on volatility

Table 8 shows the results of equation (10) estimated across commodities. The macro surprise coefficient Θ_m is significant for several announcements in the case of crude oil, gold, copper and silver. It is nearly always positive when significant, consistent with the claim that macro surprises usually increase futures volatility. However, the financialization interaction coefficient ϕ_k is always negative when it is significant (e.g., for crude oil and copper), suggesting that an increase in financialization dampens the volatility reaction to macro surprises. This result is consistent with Brunetti et al. (2016), who argue that speculation tends to lower volatility rather than increase it. Moreover, our results are robust to using a non-parametric variance estimator instead of a GARCH model.

For all three proxies, the combined effect of macro surprises and financialization leads

to economically plausible signs. The results are significant for Advance Retail Sales, Construction Spending, Factory Orders and Non-farm announcements. The only macro announcement surprise with a negative and significant coefficient across commodities is Non-farm Employment, as in Hördahl et al. (2020). These results suggest that commodity financialization increases the efficiency of information discovery that occurs after a surprise in the Employment Report. As for energy inventory announcements, only copper volatility reacts to crude oil news and none reacts to natural gas news.

5.3 Differences across market participants

This section presents additional results for the two individually reported categories of financial participants, namely swap dealers and fund managers. For this analysis, we use the NLS financialization variable, as this proxy allows for separate categories of financial traders. The MSCT and Working's T variables cannot be computed in such a way as to separate the different types of financial investors, given the presence of the number of positions of commercial traders in the variable's calculation.

The regressions results described below include a recession indicator variable defined using the NBER's Business Cycle Dating Committee. This variable is not significant in the return regressions, but it is positive and significant in the volatility regressions. This finding is robust to using the Aruoba-Diebold-Scotti (ADS) Business Conditions Index, published by the Federal Reserve Bank of Philadelphia (Aruoba, Diebold, and Scotti, 2009). The ADS variable has the advantage of being continuous rather than dichotomous, and it is updated more frequently. It is not significant in the estimated returns equation, but it is negative and significant in volatility regressions (as a higher value of ADS indicates a better economic state).

Table 9 shows results for the return regression using a financialization proxy defined only for money managers. We find that increased participation by money managers has the same effect as our baseline financialization results. If we take for instance crude oil,

the γ_m macro surprise coefficient is positive while the θ_m financialization coefficient is negative (for significant announcements). Since γ_m has the opposite sign of θ_m, we conclude that money managers lower hedging pressure. For swap dealers, table 10 shows that the signs for γ_m and θ_m are the same. Thus, it appears that swap dealers, unlike money managers, make hedging pressure worse and may not help to improve liquidity in commodity futures markets.

Tables 11 and 12 show results for the conditional variance equation using only money managers and swap dealers, respectively, to capture financialization. For money managers, we find that the financialization interaction coefficient ϕ_k is negative when significant, while for swap dealers it is positive when significant. These results support the economic interpretation of the earlier results for returns. While increased trading by money managers dampens the effect of macro surprises on volatility, a greater presence of swap dealers seems to amplify the effect of surprises on volatility. Thus, hedging pressure is lessened with money managers but worsens with swap dealers.

While our discussion of the results focuses on crude oil as a benchmark commodity, the evidence for the other pro-cyclical commodities supports our economic arguments. Note that the coefficient signs for gold differ, however, and are instead consistent with a safe haven interpretation (Erb and Harvey, 2013; Bredin, Conlon, and Potì, 2015). While gold has characteristics of a commodity and a currency, prior research has focused on how the value of gold increases with investor risk aversion. Indeed, gold can act as a safe haven in periods of economic uncertainty and market turmoil.[16] Therefore, we would expect that in times of crisis financial traders would increase their net long positions in gold futures for reasons unrelated to the actual economics of the gold market. Given the large proportion of gold futures positions held at all times by financial traders, and since non-financial traders can go long or short depending on their hedging needs, there are

[16] Baur and Lucey (2010) explain what empirical findings would lead to the conclusion than an asset or asset class has safe haven characteristics. For instance, asset returns should be uncorrelated or negatively correlated with other asset returns, and this property should hold only in times of market stress or turmoil.

two possible outcomes. First, when non-financial traders are mostly long in gold futures, the impact of financial traders is to worsen hedging pressure and thus increase volatility. Second, when non-financial traders are mostly short in gold futures, they are more likely to be taking opposite positions to financial traders, which should result in less hedging pressure and lower volatility.

5.4 Discussion and implications

Our results provide a deeper understanding of price discovery in commodity markets and the role of different types of participants. Previous research, such as Goldstein and Yang (2022), has shown that financial investors may have an adverse impact on commodity markets by introducing noise along with new information. However, our findings offer a different perspective by empirically assessing which types of financial participants seem to be responsible for introducing more noise to these markets.

Unlike Goldstein and Yang (2022), we find that noise is not due to a concentration of financial participants, but rather to the rise of swap dealers in commodity markets. We find that the increased participation of financial investors, particularly money managers, improves price accuracy and reduces volatility. An increased participation by swap dealers, however, leads to less accurate prices and to greater volatility. Thus, if traders only consisted of money managers, an increase in their proportion beyond a certain threshold would continue to improve price accuracy and reduce volatility. However, if traders were composed only of swap dealers, prices would be less accurate and more volatile, regardless of whether the threshold was exceeded or not. In addition, we find that volatility reacts less to announcement surprises when a commodity is more financialized, suggesting a benefit for traditional market participants. Our results are consistent with research including Brunetti and Buyuksahin (2009) and Cheng, Kirilenko, and Xiong (2015), who have shown that fund managers, being more sensitive to market information, contribute to price discovery and liquidity in commodity markets.

6 Conclusion

This paper investigates the impact of financialization on the real economy through a new angle, namely high-frequency effects linked to macroeconomic announcements. We test empirically whether financialization has amplified the impact of macro announcement surprises on prices and volatility in commodity markets. Indeed, it is well known that equity and bond markets react to these surprises. If commodities behave more like financial assets due to financialization, we should expect commodity futures to display greater reactions to macro surprises. Rather than split our sample in two (pre- and post-financialization), we measure this variable by means of a time-varying and commodity-specific proxy. Our results suggest that financialization, by reducing volatility and improving price discovery, is beneficial to commodity markets. Indeed, a greater participation by financial actors does not appear to amplify the effects of macro announcement surprises on prices or volatility. On the contrary, greater financialization in a given commodity has a dampening effect such that prices and volatility react less to macro surprises. This finding is consistent with information diffusion economic arguments.

Our results also find support in a literature suggesting that non-traditional investors, such as hedge funds, are beneficial to commodity markets by supplying liquidity, reducing volatility, and improving market efficiency. The results we present are robust to the use of a non-parametric variance estimator, different proxies for financialization, and to alternative empirical specifications (e.g., regression equation, high-frequency window, etc.). Lastly, by documenting a dampening effect on volatility shocks (thus reducing the real option value of delaying investments), this paper's findings suggest that financialization may also help with sustainability efforts in financing a green energy transition, alongside other instruments such as green bonds and portfolio screens for sustainable investments.

References

Alquist, R. and O. Gervais (2013). The role of financial speculation in driving the price of crude oil. *The Energy Journal 34*(3), 35–54.

Andersen, T. G. and T. Bollerslev (1998). Deutsche mark–dollar volatility: intraday activity patterns, macroeconomic announcements, and longer run dependencies. *Journal of Finance 53*(1), 219–265.

Andersen, T. G., T. Bollerslev, F. X. Diebold, and C. Vega (2003). Micro effects of macro announcements: Real-time price discovery in foreign exchange. *American Economic Review 93*(1), 38–62.

Andersen, T. G., T. Bollerslev, F. X. Diebold, and C. Vega (2007). Real-time price discovery in global stock, bond and foreign exchange markets. *Journal of International Economics 73*(2), 251–277.

Aruoba, S. B., F. X. Diebold, and C. Scotti (2009). Real-time measurement of business conditions. *Journal of Business & Economic Statistics 27*(4), 417–427.

Aulerich, N. M., S. H. Irwin, and P. Garcia (2012). Bubbles. In *Food Prices, and Speculation: Evidence from the CFTC's Daily Large Trader Data Files, Paper prepared for presentation at the NBER Conference on "Economics of Food Price Volatility" in Seattle, WA*.

Balduzzi, P., E. J. Elton, and T. C. Green (2001). Economic news and bond prices: Evidence from the us treasury market. *Journal of Financial and Quantitative analysis 36*(4), 523–543.

Basak, S. and A. Pavlova (2016). A model of financialization of commodities. *Journal of Finance 71*(4), 1511–1556.

Baur, D. G. and B. M. Lucey (2010). Is gold a hedge or a safe haven? An analysis of stocks, bonds and gold. *Financial Review 45*(2), 217–229.

Bernile, G., J. Hu, and Y. Tang (2016). Can information be locked up? informed trading ahead of macro-news announcements. *Journal of Financial Economics 121*(3), 496–520.

Boehm, C. and N. Kroner (2020). The US, economic news, and the global financial cycle. *Economic News, and the Global Financial Cycle (January 10, 2020)*.

Boyd, J. H., J. Hu, and R. Jagannathan (2005). The stock market's reaction to unemployment news: Why bad news is usually good for stocks. *Journal of Finance 60*(2), 649–672.

Boyd, N. E., J. H. Harris, and B. Li (2018). An update on speculation and financialization in commodity markets. *Journal of Commodity Markets 10*, 91–104.

Bredin, D., T. Conlon, and V. Potì (2015). Does gold glitter in the long-run? gold as a hedge and safe haven across time and investment horizon. *International Review of Financial Analysis 41*, 320–328.

Brunetti, C. and B. Buyuksahin (2009). Is speculation destabilizing? *SSRN eLibrary*.

Brunetti, C., B. Büyükşahin, and J. H. Harris (2016). Speculators, prices, and market volatility. *Journal of Financial and Quantitative Analysis 51*(5), 1545–1574.

Brunetti, C. and D. Reiffen (2014). Commodity index trading and hedging costs. *Journal of Financial Markets 21*, 153–180.

Bryan, M. F. and S. G. Cecchetti (1993). The consumer price index as a measure of inflation. *Economic Review-Federal Reserve Bank of Cleveland 29*(4), 15.

Bryant, H. L., D. A. Bessler, and M. S. Haigh (2006). Causality in futures markets. *Journal of Futures Markets 26*(11), 1039–1057.

Büyükşahin, B. and M. A. Robe (2010). It matters who trades: Hedge funds, swap dealers, and cross-market linkages.

Büyükşahin, B. and M. A. Robe (2014). Speculators, commodities and cross-market linkages. *Journal of International Money and Finance 42*, 38–70.

Cai, J., Y.-L. Cheung, and M. C. Wong (2001). What moves the gold market? *Journal of Futures Markets 21*(3), 257–278.

Chang, E. C., J. M. Pinegar, and B. Schachter (1997). Interday variations in volume, variance and participation of large speculators. *Journal of Banking & Finance 21*(6), 797–810.

Cheng, I.-H., A. Kirilenko, and W. Xiong (2015). Convective risk flows in commodity futures markets. *Review of Finance 19*(5), 1733–1781.

Cheng, I.-H. and W. Xiong (2014). Financialization of commodity markets. *Annual Review of Financial Economics 6*(1), 419–441.

Christie-David, R., M. Chaudhry, and T. W. Koch (2000). Do macroeconomics news releases affect gold and silver prices? *Journal of Economics and Business 52*(5), 405–421.

Clark, T. E. et al. (1997). US inflation developments in 1996. *Economic Review-Federal Reserve Bank of Kansas City 82*, 11–30.

Couleau, A., T. Serra, and P. Garcia (2020). Are corn futures prices getting 'jumpy'? *American Journal of Agricultural Economics 102*(2), 569–588.

Daigler, R. T. and M. K. Wiley (1999). The impact of trader type on the futures volatility-volume relation. *Journal of Finance 54*(6), 2297–2316.

Erb, C. B. and C. R. Harvey (2013). The golden dilemma. *Financial Analysts Journal 69*(4), 10–42.

Fishe, R. P. and A. Smith (2012). Identifying informed traders in futures markets. *Journal of Financial Markets 15*(3), 329–359.

Fleming, M. J. and E. M. Remolona (1997). What moves the bond market? *Federal Reserve Bank of New York Economic Policy Review 3*(4).

Fleming, M. J. and E. M. Remolona (1999). Price formation and liquidity in the us treasury market: The response to public information. *Journal of Finance 54*(5), 1901–1915.

Frankel, J. A. and G. A. Hardouvelis (1985). Commodity prices, money surprises and fed credibilit. *Journal of Money, Credit and Banking 17*(4), 425–438.

Garbade, K. D. and W. L. Silber (1983). Price movements and price discovery in futures and cash markets. *Review of Economics and Statistics 65*(2), 289–297.

Getz, P. M. and M. G. Ulmer (1990). Diffusion indexes: a barometer of the economy. *Bureau of Labor Statistics Monthly Labor Review*, 13.

Goldberg, L. S. and C. Grisse (2013, October). Time variation in asset price responses to macro announcements. Working Paper 19523, National Bureau of Economic Research.

Goldstein, I. and L. Yang (2022). Commodity financialization and information transmission. *The Journal of Finance 77*(5), 2613–2667.

Gu, C. and A. Kurov (2018). What drives informed trading before public releases? evidence from natural gas inventory announcements. *Journal of Futures Markets 38*(9), 1079–1096.

Haigh, M. S., J. Hranaiova, and J. A. Overdahl (2007). Hedge funds, volatility, and liquidity provision in energy futures markets. *Journal of Alternative Investments 9*(4), 10–38.

Hamilton, J. D. and J. C. Wu (2014). Risk premia in crude oil futures prices. *Journal of International Money and Finance 42*, 9–37.

Hammoudeh, S. and Y. Yuan (2008). Metal volatility in presence of oil and interest rate shocks. *Energy Economics 30*(2), 606–620.

Hautsch, N., D. Hess, and D. Veredas (2011). The impact of macroeconomic news on quote adjustments, noise, and informational volatility. *Journal of Banking & Finance 35*(10), 2733–2746.

Hedegaard, E. (2011). How margins are set and affect asset prices. *Job Market Paper*.

Hess, D., H. Huang, and A. Niessen (2008). How do commodity futures respond to macroeconomic news? *Financial Markets and Portfolio Management 22*(2), 127–146.

Hollstein, F., M. Prokopczuk, and C. Würsig (2020). Volatility term structures in commodity markets. *Journal of Futures Markets 40*(4), 527–555.

Horan, S. M., J. H. Peterson, and J. Mahar (2004). Implied volatility of oil futures options surrounding OPEC meetings. *The Energy Journal 25*(3), 103–125.

Hördahl, P., E. M. Remolona, and G. Valente (2020). Expectations and risk premia at 8: 30 am: Deciphering the responses of bond yields to macroeconomic announcements. *Journal of Business & Economic Statistics 38*(1), 27–42.

Hu, G. X., J. Pan, and J. Wang (2013). Noise as information for illiquidity. *Journal of Finance 68*(6), 2341–2382.

Humphreys, D. (2010). The great metals boom: A retrospective. *Resources Policy 35*(1), 1–13.

Irwin, S. H. and B. W. Brorsen (1987). A note on the factors affecting technical trading system returns. *Journal of Futures Markets 7*(5), 591–595.

Irwin, S. H. and B. Holt (2004). The effect of large hedge fund and CTA trading on futures market volatility. In *Commodity trading advisors: Risk, performance analysis and selection*. New York, NY: John Wiley and Sons, Inc.

Irwin, S. H. and D. R. Sanders (2011). Index funds, financialization, and commodity futures markets. *Applied Economic Perspectives and Policy 33*(1), 1–31.

Irwin, S. H. and D. R. Sanders (2012a). Financialization and structural change in commodity futures markets. *Journal of Agricultural and Applied Economics 44*(1379-2016-113661), 371–396.

Irwin, S. H. and D. R. Sanders (2012b). Testing the Masters hypothesis in commodity futures markets. *Energy Economics 34*(1), 256–269.

Irwin, S. H., D. R. Sanders, and R. P. Merrin (2009). Devil or angel? the role of speculation in the recent commodity price boom (and bust). *Journal of Agricultural and Applied Economics 41*(2), 377–391.

Irwin, S. H. and S. Yoshimaru (1999). Managed futures, positive feedback trading, and futures price volatility. *Journal of Futures Markets 19*(7), 759–776.

Kang, W., K. G. Rouwenhorst, and K. Tang (2020). A tale of two premiums: the role of hedgers and speculators in commodity futures markets. *Journal of Finance 75*(1), 377–417.

Kellogg, R. (2014). The effect of uncertainty on investment: evidence from texas oil drilling. *American Economic Review 104*(6), 1698–1734.

Kilian, L. and D. P. Murphy (2014). The role of inventories and speculative trading in the global market for crude oil. *Journal of Applied econometrics 29*(3), 454–478.

Kilian, L. and C. Vega (2011). Do energy prices respond to us macroeconomic news? a test of the hypothesis of predetermined energy prices. *Review of Economics and Statistics 93*(2), 660–671.

Knuth, S. (2018). "breakthroughs" for a green economy? financialization and clean energy transition. *Energy Research & Social Science 41*, 220–229.

Kothari, S. P. and J. B. Warner (2007). Econometrics of event studies. In *Handbook of Empirical Corporate Finance*, pp. 3–36. Elsevier.

Kurov, A., A. Sancetta, G. Strasser, and M. H. Wolfe (2019). Price drift before us macroeconomic news: Private information about public announcements? *Journal of Financial and Quantitative Analysis 54*(1), 449–479.

Känzig, D. R. (2021, April). The macroeconomic effects of oil supply news: Evidence from OPEC announcements. *American Economic Review 111*(4), 1092–1125.

Lee, K., S. Ni, and R. A. Ratti (1995). Oil shocks and the macroeconomy: the role of price variability. *The Energy Journal 16*(4), 39–56.

Lin, S. X. and M. Tamvakis (2010). OPEC announcements and their effects on crude oil prices. *Energy Policy 38*(2), 1010–1016.

Lucey, B. M. and S. Li (2015). What precious metals act as safe havens, and when? some US evidence. *Applied Economics Letters 22*(1), 35–45.

Masters, M. W. (2009). Testimony before the commodity futures trading commission. *Testimony to the Commodity Futures Trading Commission*.

Pescatori, A. and Y. Nazer (2022). OPEC and the oil market. *IMF Working Paper*.

Scholtus, M., D. Van Dijk, and B. Frijns (2014). Speed, algorithmic trading, and market quality around macroeconomic news announcements. *Journal of Banking & Finance 38*, 89–105.

Scotti, C. (2016). Surprise and uncertainty indexes: Real-time aggregation of real-activity macro-surprises. *Journal of Monetary Economics 82*, 1–19.

Shanker, L. (2017). New indices of adequate and excess speculation and their relationship with volatility in the crude oil futures market. *Journal of Commodity Markets 5*, 18–35.

Singleton, K. J. (2014). Investor flows and the 2008 boom/bust in oil prices. *Management Science 60*(2), 300–318.

Stoll, H. R. and R. E. Whaley (2010). Commodity index investing and commodity futures prices. *Journal of Applied Finance (Formerly Financial Practice and Education) 20*(1).

Tang, K. and W. Xiong (2012). Index investment and the financialization of commodities. *Financial Analysts Journal 68*(6), 54–74.

Wirl, F. and A. Kujundzic (2004). The impact of OPEC conference outcomes on world oil prices 1984-2001. *The Energy Journal 25*(1), 45–62.

Working, H. (1960). Speculation on hedging markets. *Food Research Institute Studies 1*(2), 185–220.

Yang, J., R. B. Balyeat, and D. J. Leatham (2005). Futures trading activity and commodity cash price volatility. *Journal of Business Finance & Accounting 32*(1-2), 297–323.

Ye, W., R. Guo, B. Deschamps, Y. Jiang, and X. Liu (2021). Macroeconomic forecasts and commodity futures volatility. *Economic Modelling 94*, 981–994.

Zhang, J. (2018). Informed options trading prior to dividend change announcements. *Financial Management 47*(1), 81–103.

Zorn, S. A. (1983). Permanent sovereignty over natural resources. *Natural Resources Forum 7*(4), 321–328.

Table 1: Summary of the literature: Effect of financialization and speculation on volatility

References	Proxy used for financialization or speculation	Impact on volatility
Chang et al. (1997)	CFTC's definition of speculators	**Positive**
Daigler and Wiley (1999)	CFTC's definition of speculators	
Irwin and Holt (2004)	Set speculators	
Tang and Xiong (2012)	Commodity index trader (CIT) positions	
Irwin and Brorsen (1987)	Amount of money invested in traded futures funds	**Neutral**
Irwin and Yoshimaru (1999)	Trading volume of large-commodity pool operators	
Bryant et al. (2006)	CFTC's definition of speculators	
Haigh et al. (2007)	Number and positions of commodity pool operators and hedge funds	
Brunetti et al. (2016)	The net positions of hedge funds and floor brokers	**Negative**
Aulerich et al. (2012)	Commodity index trader (CIT) positions	

Table 2: Details of the macroeconomic announcements used in the study

Announcement	Frequency	Source*	Unit	Time
GDP advance	Quarterly	BEA	%	8:30
GDP preliminary	Quarterly	BEA	%	8:30
GDP final	Quarterly	BEA	%	8:30
Personal income	Monthly	BEA	%	8:30
ADP employment	Monthly	ADP	Number of jobs	8:15
Initial jobless claims	Weekly	ETA	Number of claims	8:30
Non-farm employment	Monthly	BLS	Number of jobs	8:30
Factory orders	Monthly	BC	%	10:00
Industrial production	Monthly	FRB	%	9:15
Construction spending	Monthly	BC	%	10:00
Durable goods orders	Monthly	BC	%	8:30
Advance retail sales	Monthly	BC	%	8:30
Consumer credit	Monthly	FRB	USD	15:00
Personal consumption	Monthly	BEA	%	8:30
Building permits	Monthly	BC	Number of permits	8:30
Existing home sales	Monthly	NAR	Number of homes	10:00
Housing starts	Monthly	BC	Number of homes	8:30
New home sales	Monthly	BC	Number of homes	10:00
Pending home sales	Monthly	NAR	%	10:00
Trade balance	Monthly	BEA	USD	8:30
Consumer price index	Monthly	BLS	%	8:30
Producer price index	Monthly	BLS	%	8:30
CB Consumer confidence index	Monthly	CB	Index	10:00
UM Consumer sentiment	Monthly	TR/UM	Index	9:55
Weekly Crude Oil Stock	Weekly	EIA	number of barrels	10:30
Weekly Natural Gas Stock	Weekly	EIA	number of cubic feet	11:00

Shows the category, frequency, source, unit of measure, and release time for each macroeconomic announcements. *(Automatic Data Processing, Inc. (ADP), Bureau of the Census (BC), Bureau of Economic Analysis (BEA), Bureau of Labor Statistics (BLS), Conference Board (CB), Employment and Training Administration (ETA), Federal Reserve Board (FRB), Institute for Supply Management (ISM), National Association of Realtors (NAR), Thomson Reuters/University of Michigan (TR/UM), and U.S. Department of the Treasury (USDT).)

Table 3: Descriptive statistics: Standardized surprises for each of the macroeconomic announcements

Announcements	Nb. obs.	Min.	1st Qu.	Med.	Mean	3rd Qu.	Max.
Initial jobless claims	672	-3.117	-0.059	0.000	0.076	0.066	20.746
ADP Employment	154	-2.549	-0.040	0.005	0.054	0.070	11.931
CB Consumer	155	-2.590	-0.638	-0.018	0.053	0.821	2.371
Advance retail sales	154	-4.458	-0.304	-0.051	-0.025	0.203	9.828
Building permit	155	-2.065	-0.589	0.000	0.117	0.743	3.496
Construction spending	155	-2.884	-0.698	-0.093	-0.155	0.372	4.093
Consumer_credit	154	-6.213	-0.511	0.116	0.010	0.588	1.741
Consumer price index	155	-3.799	-0.760	0.000	-0.152	0.000	3.039
Durable goods orders	161	-3.479	-0.467	0.042	0.051	0.551	6.406
Existing home sales	155	-4.586	-0.449	0.000	0.007	0.598	2.393
Factory orders	153	-2.978	-0.496	0.000	0.015	0.496	2.647
GDP	153	-2.861	-0.204	0.000	0.088	0.409	4.292
Housing starts	154	-2.389	-0.708	-0.028	-0.037	0.514	3.556
Industrial production	291	-4.486	-0.641	-0.214	-0.186	0.427	2.563
Michigan Sentiment Index	155	-3.271	-0.414	0.075	-0.021	0.508	2.519
New home sales	154	-3.374	-0.394	-0.066	0.018	0.482	2.914
Non-farm employment	155	-0.690	-0.053	-0.001	0.094	0.056	12.069
Pending home sales	155	-3.905	-0.413	0.000	0.034	0.558	5.669
Personal consumption	154	-9.063	-0.363	0.000	-0.131	0.363	2.538
Personal income	154	-4.828	-0.241	0.000	-0.036	0.241	10.380
Producer price index	155	-3.138	-0.571	0.000	0.011	0.571	2.853
Trade balance	154	-3.010	-0.417	-0.027	0.036	0.466	3.878
Weekly crude oil stocks	656	-3.512	-0.575	-0.011	0.036	0.693	5.360
Weekly natural gas stock	631	-12.746	-0.445	0.000	-0.028	0.445	5.437

This table presents descriptive statistics for the standardized surprise $(A_{kt} - E_{kt})/\sigma_{kt}$ for each of the macroeconomic announcements. The column (Nb. Observations) shows the number of individual surprises that can be calculated over the whole analysis period. The columns (Min.), (1st Qu.), (Median), (Mean), (3rd Qu.) and (Max) present respectively the minimum value, the first quartile, the median, the mean, the third quartile and the maximum value for the standardized surprise of each macroeconomic announcement

Table 4: Details of the commodity futures contracts in the study

Commodity name	Commodity Ticker	Commodity Exchange	Price quotation	Contract unit
Crude Oil	CL	New York Mercantile Exchange	U.S. dollars and cents per barrel	1,000 barrels
Gold	GC	Commodity Exchange Inc.	U.S. dollars and cents per troy ounce	100 troy ounces
Copper	HG	Commodity Exchange Inc.	U.S. dollars and cents per pound	25,000 pounds
Natural Gas	NG	New York Mercantile Exchange	U.S. dollars and cents per MMBtu	10,000 MMBtu
Palladium	PA	New York Mercantile Exchange	U.S. dollars and cents per troy ounce	100 troy ounces
Silver	SI	Commodity Exchange Inc.	U.S. dollars and cents per troy ounce	5,000 troy ounces

This table presents information about the futures contracts of the 6 selected commodities: Crude Oil, Gold, (High-Grade) Copper, Natural Gas, Palladium and Silver. For each commodity, the commodity ticker, commodity exchange, price quotation and contract unit are presented.

Table 5: Descriptive statistics: 5-minute intraday futures price returns

Commodity Futures	Min (%)	1st Qu. (%)	Med. (%)	Mean (%)	3rd Qu. (%)	Max (%)
Crude Oil (CL=F)	-33.908	-0.0441	0.00	0.00	0.0447	41.641
Gold (GC=F)	-2.782	-0.0241	0.00	0.0001	0.0244	3.064
Copper (HG=F)	-4.534	-0.0363	0.00	-0.0001	0.0365	8.877
Natural Gas (NG=F)	-6.735	-0.0528	0.00	-0.0003	0.0532	15.62
Palladium (PA=F)	-13.35	-0.034	0.00	0.0001	0.0348	9.467
Silver (SI=F)	-7.504	-0.0394	0.00	0.0001	0.0415	4.242

Shows descriptive statistics of the 5-minute intraday returns, for each commodity futures. The columns (Min.), (1st Qu.), (Median), (Mean), (3rd Qu.) and (Max) present respectively the minimum value, the first quartile, the median, the mean, the third quartile and the maximum value for the 5 minute intraday returns.

Table 6: Descriptive statistics: MSCT, NLS and Working's T financialization variables

	CL	**GC**	**HG**	**SI**	**PA**	**NG**
			MSCT			
Min.	0.0629	0.166	0.1223	0.1552	0.05845	0.03741
1st Qu.	0.1472	0.2702	0.2344	0.2078	0.3627	0.1292
Median	0.1652	0.3052	0.2826	0.2527	0.4062	0.2344
Mean	0.1642	0.3045	0.2915	0.2606	0.3916	0.217
3rd Qu.	0.1855	0.3412	0.353	0.3079	0.4386	0.2724
Max.	0.2431	0.4504	0.4968	0.4593	0.5955	0.4023
			NLS			
Min.	-0.1129	-0.082	-0.3238	-0.1364	-0.3508	-0.2745
1st Qu.	0.0358	0.2285	-0.1067	0.1547	0.3181	-0.1731
Median	0.1084	0.3302	0.0171	0.2452	0.4532	-0.08146
Mean	0.1107	0.3098	0.02039	0.2425	0.4213	-0.09439
3rd Qu.	0.1834	0.4012	0.1417	0.3334	0.5652	-0.03211
Max.	0.2941	0.5269	0.4413	0.57478	0.7343	0.07936
			Working's T			
Min.	1.0219	1.0437	1.0244	1.0143	1.00	1.0044
1st Qu.	1.0766	1.0907	1.1522	1.0762	1.1065	1.132
Median	1.10056	1.1401	1.2345	1.1178	1.1557	1.2097
Mean	1.1032	1.161	1.2541	1.1509	1.1931	1.2375
3rd Qu.	1.1244	1.1974	1.3569	1.1881	1.2348	1.3415
Max.	1.2479	1.6638	1.6554	1.6048	1.9384	1.5589

This table descriptive statistics of the financialization variables, for each commodity futures contract. The line (Min.), (1st Qu.), (Median), (Mean), (3rd Qu.) and (Max) present respectively the minimum value, the first quartile, the median, the mean, the third quartile and the maximum value for the 5-minute intraday returns. CL: crude oil, GC: gold, HG: high-grade copper, SI: silver, PA: palladium, NG: natural gas.

Table 7: Announcement (macro & commodity-specific) and financialization effects on futures returns

Commodities	Crude Oil		Gold		Copper		Natural Gas		Palladium		Silver	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Macroeconomic Announcements												
Initial jobless claims	-0.002***	0.010***	0.007***	-0.013***	-0.0001	-0.001	0.0001	0.0004	0.0001	0.0004	0.005***	-0.022***
ADP Employment	0.007***	-0.022***	-0.015***	0.031***	0.0003***	0.0004	-0.001***	-0.025**	-0.006***	0.026***	-0.006***	0.026***
CB Consumer	0.001***	-0.005***	-0.0004***	0.001**	0.0001***	0.001*	0.0004*	0.001	-0.001***	0.001*	-0.001***	0.001*
Advance retail sales	0.002***	-0.007***	-0.004***	0.008***	0.0001**	-0.002	0.00001	-0.001	-0.001***	0.004**	-0.001***	0.004**
Building permit	-0.00004	0.0004	-0.0004***	0.001***	0.00003	-0.0003	0.001***	0.004**	-0.0002	0.00001	-0.0002	0.00001
Construction spending	0.001**	-0.005**	-0.001***	0.002***	0.00004	-0.002***	-0.0002	-0.00002	-0.001***	0.003***	-0.001***	0.003***
Consumer credit	-0.0001	0.001	-0.0001	0.0003	0.00002	0.0003	-0.0001	-0.001	-0.0001	0.0005	-0.0001	0.0005
Consumer price index	-0.001***	0.003***	-0.001***	0.003***	-0.0001	-0.002***	0.0002	0.002	-0.001***	0.003***	-0.001***	0.003***
Durable goods orders	0.002***	-0.008***	-0.001***	0.001**	0.0001	-0.00000	-0.001**	-0.005**	-0.0002	0.0001	-0.0002	0.0001
Existing home sales	0.001***	-0.006***	-0.00001	-0.00001	0.0002***	-0.0005	0.0002	0.001	0.00002	0.0002	0.00002	0.0002
Factory orders	-0.001**	0.005***	-0.001*	0.001	0.0001	-0.001	0.001***	0.004	-0.001***	0.004***	-0.001***	0.004***
GDP	0.001**	-0.003*	-0.001***	0.001	0.0003***	0.0003	-0.0002	-0.003	-0.002***	0.003***	-0.002***	0.003***
Housing starts	0.001*	-0.003*	-0.001***	0.001***	0.0001	0.001	-0.0004*	-0.001	-0.001***	0.002**	-0.001***	0.002**
Industrial production	0.0003	-0.001	0.0002	-0.001*	-0.00001	0.0002	-0.0001	-0.001	0.00002	-0.001	0.00002	-0.001
Michigan Sentiment Index	0.0004	-0.001	-0.0001	-0.0003	0.00005	0.001	-0.0003	-0.002	-0.0004***	0.0004	-0.0004***	0.0004
New home sales	0.001**	-0.003	-0.001***	0.001**	0.0002***	-0.001	0.0003	0.0002	-0.0005***	0.0001	-0.0005***	0.0001
Non-farm employment	0.036***	-0.136***	-0.046***	0.100***	-0.0001	-0.006	-0.002***	-0.071***	-0.009***	0.041***	-0.009***	0.041***
Pending home sales	0.001***	-0.005***	-0.0002	0.0001	0.0002**	-0.001	-0.0002	-0.006*	0.00001	-0.0003	0.00001	-0.0003
Personal consumption	0.0003	-0.001	-0.0003*	0.001	0.0001	0.001	0.0001	0.002	0.0002	-0.001	0.0002	-0.001
Personal income	0.006***	-0.025***	-0.008***	0.016***	-0.0002*	-0.001	-0.0004	-0.009**	-0.002***	0.009***	-0.002***	0.009***
Producer price index	0.001***	-0.003***	-0.001***	0.002***	0.00005	-0.00000	-0.0004	-0.002	-0.0003	0.001	-0.0003	0.001
Trade balance	-0.0004	0.002	-0.001***	0.002***	0.00003	-0.001**	0.0001	0.001	-0.001**	0.003***	-0.001**	0.003***
Announcements specific to commodity markets												
Weekly crude oil stocks	-0.001**	0.003**	0.0001	-0.0002	0.00004	-0.001**	0.0001	0.001	0.00002	-0.0001	0.00002	-0.0001
Weekly natural gas stocks	-0.001	0.005	0.00003	-0.00001	0.00003	0.0001	-0.001	-0.005	0.0001	-0.0003	0.0001	-0.0003
R^2**(%)**	0.1		0.2		0.03		0.03		0.1		0.1	
Observations	971,990		968,656		917,529		880,021		960,063		960,063	

This table presents estimates of eq. 6, $R_t^{t+\tau} = \alpha + \sum_{m=1}^{22} \gamma_m S_{m,t} + \delta X_{t,i} + \sum_{m=1}^{22} \theta_m (S_{m,t} \cdot X_t) + \beta R_{t-\tau}^t + \epsilon_t$ using the method proposed by Kurov et al. (2019) and financialization variable $X_{t,2} = NLS_t$. The γ_m coefficients capture the instantaneous change in return due to a surprise in the announcement release (i.e., unanticipated news). The θ_m coefficients capture the instantaneous change in return due to the interaction effect between an announcement surprise and the financialization variable (here, NLS_{it}).

Table 8: Announcement (macro & commodity-specific) and financialization effects on futures conditional variance

Commodities	Crude Oil		Gold		Copper		Natural Gas		Palladium		Silver	
Announcements	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m
Macroeconomic announcements												
Initial jobless claims	0.001***	-0.003***	0.0003***	0.0002	0.0002***	-0.0003	-0.0003***	-0.0003	0.001***	-0.002***	0.001***	-0.001***
ADP Employment	0.0002	-0.001	0.001***	-0.001***	0.0003***	-0.0001	0.0003	0.001	-0.001	0.001	-0.006***	0.026***
CB Consumer	0.001***	-0.004***	0.0003***	-0.0001	0.0003***	-0.001***	0.0002*	0.001	0.0001	0.00000	-0.001***	0.001*
Advance retail sales	0.002***	-0.008***	0.001***	-0.002***	0.0003***	-0.001***	0.0003	0.003*	-0.0004	0.002**	-0.001***	0.004**
Building permit	0.0002	-0.007	0.001***	-0.001	-0.0001	0.001	0.0005	0.003	0.019***	-0.033***	-0.0002	0.00001
Construction spending	0.001***	-0.005***	0.001***	-0.00001	0.0004***	-0.001***	0.00002	-0.003**	0.001**	-0.0003	-0.001***	0.003***
Consumer credit	0.0004	-0.002	0.00004	0.00004	0.0001	0.001	0.0001	0.0002	-0.001	0.001	-0.0001	0.0005
Consumer price index	0.0002	-0.0001	0.001***	-0.001***	0.00002	-0.00001	-0.0001	-0.001	0.0005	-0.001	-0.001***	0.003***
Durable goods orders	0.001***	-0.003*	0.001***	-0.001**	0.00005	-0.0003	-0.0001	-0.001	0.0004	-0.0001	-0.0002	0.0001
Existing home sales	0.0001	0.002	0.0001	0.0004	0.0001	-0.002***	0.0001	-0.002	0.003***	-0.005***	0.00002	0.0002
Factory orders	0.001**	-0.002	0.0001	0.001	0.0003***	-0.001**	0.0001	-0.004***	0.0003	-0.0002	-0.001***	0.004***
GDP	0.001***	-0.008***	0.0004***	0.0003	0.0003***	0.001	-0.001***	-0.002	0.0001	0.001	-0.002***	0.003***
Housing starts	0.001	0.001	-0.0004	0.001	0.0001	-0.001	-0.001	-0.004	-0.019***	0.033***	-0.001***	0.002**
Industrial production	0.001***	-0.006***	0.0002**	0.0001	0.0001	-0.001*	-0.0003*	-0.002	0.001***	-0.003***	0.00002	-0.001
Michigan Sentiment Index	0.0004*	-0.003**	-0.0002**	0.001***	0.00001	0.0002	0.0001	0.002**	0.0001	0.0001	-0.0004***	0.0004
New home sales	0.001***	-0.004**	0.0005***	-0.0002	0.0002***	0.001	-0.0004**	-0.004***	0.002***	-0.003***	-0.0005***	0.0001
Non-farm employment	0.004***	-0.021***	0.004***	-0.004***	0.001***	-0.005***	-0.001**	-0.016***	0.002***	-0.001	-0.009***	0.041***
Pending home sales	0.001**	-0.003*	0.0002	-0.0005	0.0002***	-0.001	0.0002	-0.003*	0.0003	-0.001	0.00001	-0.0003
Personal consumption	0.0001	0.0001	-0.00003	0.0003	-0.00001	0.0001	-0.0003	-0.006***	0.001	-0.0002	0.0002	-0.001
Personal income	0.0003	0.005	-0.001***	0.004***	0.0004***	0.005***	0.001***	0.015***	-0.001*	0.002**	-0.002***	0.009***
Producer price index	0.0002	-0.001	-0.00005	0.001	0.0001	0.001	0.0001	-0.001	0.001***	-0.001	-0.0003	0.001
Trade balance	0.0004	0.0002	-0.001***	0.004***	-0.0003***	0.001	0.0004*	0.001	0.0004	0.0001	-0.001**	0.003***
Announcements specific to commodity markets												
Weekly crude oil stocks	0.0001	0.001	-0.0001	0.00005	-0.0001***	0.001***	-0.00004	-0.0001	-0.0001	0.00001	0.00002	-0.0001
Weekly natural gas stocks	0.0001	-0.002	-0.0002	0.001	-0.0001	0.001	0.0002	-0.001	-0.0003	0.0002	0.0001	-0.0003

This table presents estimates of eq. 10 using financialization variable $X_{2,t} = NLS_t$. The equation is $\sigma_t^2 = \alpha_0 + \alpha_1\sigma_{t-1}^2 + \alpha_2\epsilon_t^2 + \sum_{m=1}^{22}\Phi_m D_{m,t} + \beta X_{i,t} + \sum_{k=1}^{n}\phi_k I_{kt}$ where $I_{kt} = D_{m,t} \cdot X_{i,t}$ and $D_{m,t}$ is a macro announcement dummy variable for release m. The Φ_m coefficients capture the instantaneous change in conditional variance due to a surprise in the announcement release (i.e., unanticipated news). The ϕ_m coefficients capture the instantaneous change in conditional variance due to the interaction effect between an announcement surprise and the financialization variable (here, NLS_{it}).

Table 9: Announcement (macro & commodity-specific) and financialization effects on futures returns: Results based on a financialization variable constructed using money manager positions only

Commodities	Crude Oil		Gold		Copper		Natural Gas		Palladium		Silver	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Macroeconomic announcements												
Initial jobless claims	-0.0003	0.0002	0.003***	-0.009***	-0.0002**	-0.0010	0.0001	0.0010	-0.001***	0.007***	-0.0010	0.005**
ADP Employment	0.006***	-0.029***	-0.0003	-0.0002	0.0003***	0.001	-0.0003*	-0.005	0.0003	-0.003*	0.00001	-0.004
CB Consumer	0.001***	-0.006***	-0.0002***	-0.0001	0.0001**	0.001**	0.0004***	0.002*	-0.001***	0.001**	-0.0005***	0.001*
Advance retail sales	0.002***	-0.010***	-0.0002	-0.002**	0.0002**	-0.002*	0.0004*	0.007**	-0.0001	0.0004	-0.001***	0.003
Building permit	-0.0002	0.002	-0.0003***	0.001***	0.00004	-0.0002	0.0003*	0.002	-0.0002	-0.0002	-0.0002*	-0.00004
Construction spending	0.001**	-0.009***	-0.001***	0.002***	0.0001	-0.002***	-0.0002	0.0001	0.001*	-0.001*	-0.0004**	0.003***
Consumer credit	-0.00004	0.001	-0.0001	0.0003*	0.00001	0.0002	0.00001	0.00002	0.001***	-0.001**	-0.0001	0.0005
Consumer price index	-0.001***	0.005***	-0.001***	0.001**	0.00005	-0.002***	0.0001	0.002	0.0002	-0.001***	-0.001***	0.003***
Durable goods orders	0.001**	-0.006**	-0.0005***	0.001***	0.0001*	-0.001	-0.0001	-0.001	0.0003	0.00000	-0.0002	0.0002
Existing home sales	0.001***	-0.009***	-0.00003	0.0001	0.0002***	0.0001	0.0001	0.0001	-0.0001	-0.00004	0.0001	-0.0001
Factory orders	-0.002***	0.017***	-0.0004*	0.001	0.0001	-0.001	0.001***	0.002	-0.001	0.001	-0.001***	0.004***
GDP	0.001**	-0.004*	-0.001***	-0.0005	0.0002**	0.001	0.0001	-0.001	-0.002***	0.003***	-0.001***	0.001
Housing starts	-0.0003	0.002	-0.0004***	0.0003	0.00004	0.001	-0.0003*	-0.0003	-0.001***	0.001**	-0.001***	0.001
Industrial production	-0.0001	0.002	-0.0001	-0.001	0.00002	-0.0004	0.00003	0.0005	-0.001*	0.001	-0.0001	-0.001
Michigan Sentiment Index	0.0002	-0.0001	-0.0002***	-0.0001	0.00003	0.0004	-0.0001	-0.001	-0.001**	0.001**	-0.0004***	0.0003
New home sales	0.0001	0.001	-0.001***	0.001***	0.0002***	0.00000	0.0003*	0.0004	-0.0003	0.001	-0.0004***	-0.0003
Non-farm employment	0.021***	-0.112***	0.0004	-0.004	-0.00003	-0.005	-0.0002	-0.024	0.001**	-0.008**	-0.004***	0.024**
Pending home sales	0.002***	-0.010***	-0.0001	-0.0004	0.0002*	-0.0002	0.0003	-0.005*	-0.0001	0.0004	-0.00002	-0.0002
Personal consumption	-0.0005	0.004	-0.0001	0.00001	0.00003	0.001	-0.00005	0.003	0.001***	-0.002***	0.0001*	-0.001
Personal income	0.003***	-0.022***	-0.002***	0.008***	-0.0002*	-0.001	0.0002	-0.009**	0.001**	-0.003***	-0.0005*	0.002
Producer price index	0.001***	-0.005***	-0.001***	0.002***	0.0001	-0.0001	-0.0003	-0.002	-0.001***	0.002***	-0.0001	-0.001
Trade balance	-0.0003	0.002	-0.0003**	0.001**	0.0001	-0.001*	0.00003	0.002	0.001	-0.001	-0.0002	0.002*
Announcements specific to commodity markets												
Weekly crude oil stocks	-0.001***	0.005**	0.00003	-0.0001	0.0001*	-0.0004**	-0.00003	0.001	0.0002	-0.0003	0.00001	-0.0001
Weekly natural gas stocks	-0.0004	0.003	0.00003	-0.00001	0.00002	0.00003	-0.0003	-0.004*	-0.0002	0.001	0.0001	-0.0002

This table presents estimates of eq. 6, using the method proposed by Kurov et al. (2019) and financialization variable $X_{t,2} = NLS_t$. Only the positions of money managers are included in the NLS index. The γ_m coefficients capture the instantaneous change in returns due to a surprise in the announcement release (i.e., unanticipated news). The θ_m coefficients capture the instantaneous change in returns due to the interaction effect between an announcement surprise and the financialization variable (here, NLS_{it}). For all regressions reported in this table, we include the NBER recession indicator variable to control for the business cycle.

Table 10: Announcement (macro & commodity-specific) and financialization effects on futures returns: Results based on a financialization variable constructed using swap dealer positions only

Commodities	Crude Oil		Gold		Copper		Natural Gas		Palladium		Silver	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Macroeconomic announcements												
Initial jobless claims	-0.002***	-0.009***	0.004***	0.011***	0.001**	-0.006**	0.000	0.001	0.0003	-0.002	0.0001	0.001
ADP Employment	0.005***	0.019***	-0.008***	-0.020***	-0.001	0.004	-0.001**	0.019	-0.001**	0.006**	-0.002***	-0.036***
CB Consumer	0.001***	0.004***	-0.0003***	-0.0002	-0.0005***	0.002***	0.0004**	-0.001	-0.0002**	-0.001	-0.0003***	0.00002
Advance retail sales	0.002***	0.007***	-0.002***	-0.006***	-0.001**	0.004**	-0.00003	0.003	0.0001	-0.001	-0.0004***	0.003
Building permit	0.0002*	0.002*	-0.0002***	-0.001**	0.00003	0.0001	0.001***	-0.006***	-0.0002**	0.001	-0.00001	0.003**
Construction spending	0.0003*	0.003***	-0.0004***	-0.002***	-0.001***	0.003***	0.0001	-0.003	0.0004**	0.002**	-0.0001	-0.004***
Consumer credit	0.0001	0.0001	0.00001	-0.00001	-0.0001	0.0004	-0.0002	0.002	0.0002***	0.001**	0.00000	0.00002
Consumer price index	-0.001***	-0.003***	-0.001***	-0.002**	-0.001*	0.002**	0.0001	-0.002	-0.0003***	0.001	-0.001***	-0.002
Durable goods orders	0.001***	0.004***	-0.0003***	-0.001	0.00002	0.0002	-0.001	0.003	0.001***	0.002***	0.00000	0.004***
Existing home sales	0.0002*	0.003***	0.0001	0.001*	-0.001***	0.004***	0.0004	-0.002	-0.0002	-0.001	0.0001	0.002*
Factory orders	-0.0001	-0.002	-0.0004***	-0.002*	-0.00004	0.001	0.001*	-0.001	-0.0003	-0.002	-0.0003***	-0.004***
GDP	0.0004***	0.002**	-0.001***	0.002***	-0.0001	0.001	-0.0002	0.002	-0.001***	-0.001	-0.001***	-0.002
Housing starts	0.0002*	0.001	-0.001***	-0.001***	-0.0001	0.001*	-0.0004	0.001	-0.0002***	-0.002***	-0.001***	-0.003***
Industrial production	0.0003*	0.002*	0.0001	0.002***	-0.0002	0.001	0.0001	-0.001	-0.0001	-0.001	-0.0002**	0.001
Michigan Sentiment Index	0.0002*	0.001	-0.0001*	0.001*	0.0002	-0.001	-0.0003	0.002	-0.0001	-0.001	-0.0004***	0.0004
New home sales	0.001***	0.003***	-0.0002***	0.001*	-0.0004*	0.003***	0.0004	-0.002	-0.00004	-0.001	-0.0005***	0.0004
Non-farm employment	0.024***	0.117***	-0.034***	-0.093***	-0.017***	0.088***	-0.001**	0.056***	-0.003***	0.012***	-0.001*	-0.021
Pending home sales	0.0005***	0.003***	-0.0001	-0.00002	-0.0004	0.002**	0.0001	0.004	0.0001	0.0003	-0.00003	0.001
Personal consumption	0.00005	0.00004	-0.0002*	-0.001*	-0.0003	0.002	-0.00003	-0.001	0.0002	0.002***	0.0002*	0.005***
Personal income	0.003***	0.019***	-0.005***	-0.015***	-0.003***	0.012***	-0.0001	0.005	-0.0005**	0.004***	-0.0003*	-0.022***
Producer price index	0.0001	0.001	0.00004	0.001	-0.001**	0.002**	-0.00001	-0.0004	-0.0004***	-0.001	-0.0002**	0.003**
Trade balance	-0.0002	-0.001**	-0.001***	-0.005***	-0.0002	0.001	-0.0001	0.001	0.0002	0.001	0.0001	-0.005***
Announcements specific to commodity markets												
Weekly crude oil stocks	-0.0002	-0.001	0.00002	0.0001	0.00001	0.0002	0.00004	-0.001	0.0001	0.0001	-0.00001	-0.0001
Weekly natural gas stocks	-0.001	-0.004	0.00003	-0.00002	0.0002	-0.001	-0.0005	0.005	-0.00003	-0.001	0.0001	0.0003

This table presents the estimates of eq. 6, using the method proposed by Kurov et al. (2019) and financialization variable $X_{t,2} = NLS_t$. Only the positions of the swap dealers are included in the NLS index. The γ_m coefficients capture the instantaneous change in returns due to a surprise in the announcement release (i.e., unanticipated news). The θ_m coefficients capture the instantaneous change in returns due to the interaction effect between an announcement surprise and the financialization variable (here, NLS_{it}). For all regressions reported in this table, we include the NBER recession indicator variable to control for the business cycle.

Table 11: Announcement (macro & commodity-specific) and financialization effects on commodity futures conditional variance: Results based on a financialization variable built using money manager positions only

Commodities	Crude Oil		Gold		Copper		Natural Gas		Palladium		Silver	
Announcements	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m
Macroeonomic Announcements												
Initial jobless claims	0.001***	-0.003***	0.0003***	0.0002	0.0002***	-0.0003	-0.0003***	-0.001	0.002***	-0.002***	0.001***	-0.001***
ADP Employment	-0.0001	0.001	0.0005***	-0.001*	0.0002***	0.0004	0.0002	0.001	-0.0005	0.001	0.001***	-0.0004
CB Consumer	0.001***	-0.007***	0.0002***	0.0001	0.0003***	-0.0005	0.0002**	0.0003	0.0001	0.0001	0.0004***	0.00001
Advance retail sales	0.001***	-0.010***	0.001***	-0.002***	0.0003***	-0.001**	0.00002	0.002	-0.0003	0.002**	0.001***	-0.001
Building permit	0.001	-0.016	0.001***	-0.002	-0.0002	0.0002	0.0005	0.005	0.017***	-0.034***	0.001	-0.002
Construction spending	0.001***	-0.007**	0.001***	-0.0001	0.0004***	-0.001***	0.0002**	-0.004***	0.001***	-0.002**	0.001***	-0.0001
Consumer credit	0.0003	-0.002	0.00005	0.00005	0.0001	0.001	0.00004	0.0001	-0.0004	0.001	0.0001	0.001
Consumer price index	0.0003	-0.001	0.001***	-0.001*	0.00002	0.0002	-0.0001	-0.001	0.0002	-0.0003	0.001***	-0.002**
Durable goods orders	0.0002	0.001	0.0004***	-0.0004	0.0001	-0.001	0.0001	0.0003	0.001	-0.0003	0.0005***	-0.001
Existing home sales	0.001***	-0.007**	0.0002**	0.0001	0.0002**	-0.002***	0.0003**	-0.002**	0.002***	-0.005***	0.0003**	-0.001
Factory orders	0.001***	-0.007**	0.00004	0.001**	0.0003***	-0.001***	0.0004***	-0.004***	0.0001	0.0002	-0.00004	0.002**
GDP	0.001**	-0.010**	0.0004***	0.0004	0.0003***	0.001	-0.001***	-0.001	0.001	-0.0002	0.001***	-0.0003
Housing starts	-0.00002	0.010	-0.001**	0.002	0.0002	-0.0004	-0.001	-0.005	-0.017***	0.032***	-0.0003	0.001
Industrial production	0.001***	-0.012***	0.0002***	0.0002	0.0001**	-0.001**	-0.0002	-0.002**	0.002***	-0.003***	0.0004***	-0.001
Michigan Sentiment Index	0.0003	-0.003	-0.00003	0.001***	0.00000	0.0001	-0.0001	0.001*	-0.00001	0.0004	0.0001	0.001*
New home sales	0.001	-0.004	0.0004***	-0.0003	0.0002***	0.00004	-0.0001	-0.003***	0.002***	-0.003***	0.0005***	-0.0004
Non-farm employment	0.003***	-0.020***	0.002***	0.0003	0.001***	-0.003***	0.001***	-0.012***	0.002***	-0.002	0.004***	0.0004
Pending home sales	0.001***	-0.006**	0.0001	-0.0003	0.0003***	-0.0003	0.0004***	-0.004***	0.0003	-0.0005	-0.00001	0.0003
Personal consumption	0.0004	-0.003	0.0002	-0.0003	0.00001	-0.0002	0.0003**	-0.003**	0.001**	-0.001	0.0001	0.00004
Personal income	0.001	0.005	-0.0001	0.001**	0.0003**	0.003***	-0.0003	0.010***	-0.001*	0.002*	-0.0002	0.001
Producer price index	0.001	-0.003	0.0002**	-0.0003	0.00005	0.0005	0.0002*	-0.001	0.001***	-0.002**	0.0003**	-0.0001
Trade balance	0.001	-0.002	-0.0005***	0.003***	-0.0004***	0.0005	0.0003**	0.002	-0.00000	0.001	-0.0003**	0.003***
Announcements specific to commodity markets												
Weekly Crude Oil Stock	0.001**	-0.002	-0.00003	-0.00005	-0.0001***	0.001**	-0.00002	-0.0004	-0.00001	-0.0001	0.00003	-0.0004
Weekly Natural Gas Stock	0.0002	-0.004	-0.0002	0.001	-0.0002	0.001	0.0003	-0.001	-0.0005	0.0005	-0.0001	0.001

This table presents estimates of eq. 10 using financialization variable NLS (for money manager positions). The equation is $\sigma_t^2 = \alpha_0 + \alpha_1\sigma_{t-1}^2 + \alpha_2\epsilon_t^2 + \sum_{m=1}^{22}\Phi_m D_{m,t} + \beta X_{i,t} + \sum_{k=1}^{n}\phi_k I_{kt}$ where $I_{kt} = D_{m,t} \cdot X_{i,t}$ and $D_{m,t}$ is a macro announcement dummy variable for release m. The Φ_m coefficients capture the instantaneous change in conditional variance due to a surprise in the announcement release (i.e., unanticipated news). The ϕ coefficients capture the instantaneous change in conditional variance due to the interaction effect between an announcement surprise and the financialization variable (here, NLS_{it}). For all regressions reported in this table, we include the NBER recession indicator variable to control for the business cycle.

Table 12: Announcement (macro & commodity-specific) and financialization effects on commodity futures conditional variance: Results based on a financialization variable built using swap dealer positions only

Commodities	Crude Oil		Gold		Copper		Natural Gas		Palladium		Silver	
Announcements	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m
Macroeconomic announcements												
Initial jobless claims	0.0004***	0.002***	0.0003***	-0.0005**	-0.0002*	0.001***	-0.0002*	-0.001	0.001***	0.002***	0.001***	0.002***
ADP Employment	0.0001	0.001	0.0004***	0.0003	-0.0002	0.002**	0.0004**	-0.003*	-0.0001	-0.001	0.001***	-0.0003
CB Consumer	0.001***	0.002***	0.0003***	0.0003	-0.001***	0.004***	0.0003**	-0.001	0.0001	-0.0003	0.0004***	0.001**
Advance retail sales	0.001***	0.006***	0.001***	0.001**	-0.001***	0.004***	0.0003	-0.003**	0.0002*	-0.001*	0.001***	-0.001
Building permit	-0.0003	0.005	0.0004	-0.001	0.001	-0.004	-0.0001	0.001	0.006***	0.109***	0.001**	-0.012*
Construction spending	0.001***	0.001	0.0005***	-0.001***	-0.001***	0.004***	0.0003*	0.001	0.001***	0.002**	0.001***	0.003***
Consumer credit	0.0002	0.002	0.00003	-0.0002	0.0002	-0.001	-0.00003	0.001	-0.0002	-0.002*	0.0002**	-0.001
Consumer price index	0.0002	0.001	0.001***	0.001*	-0.0001	0.0005	-0.00005	0.0002	0.0002	0.001	0.001***	0.0001
Durable goods orders	0.001***	0.003***	0.0003***	-0.0003	-0.0003	0.002*	-0.0001	0.002	0.0005***	0.001	0.0004***	0.003***
Existing home sales	0.0002	-0.003**	0.0002**	-0.001	-0.0003*	0.002***	0.001***	-0.002	0.001***	0.007***	0.0003***	0.003**
Factory orders	0.001***	0.001	0.0003***	-0.0002	-0.0001	0.001	0.0005**	0.002	0.0001	-0.001	0.0002*	-0.002**
GDP	0.0004**	0.005***	0.0002*	-0.003***	0.0003	0.0002	-0.001*	0.0004	0.001***	0.001	0.001***	0.002
Housing starts	0.001	-0.002	-0.0001	0.001	-0.001	0.006	-0.00000	0.0002	-0.005***	-0.108***	-0.001*	0.013*
Industrial production	0.0003*	0.003***	0.0004***	0.001	-0.0001	0.001	-0.0002	0.001	0.0003**	0.003***	0.0003***	0.0001
Michigan Sentiment Index	0.0001	0.002**	0.00002	-0.001***	0.0001	-0.0002	0.0001	-0.002**	0.0001	-0.001*	0.0002***	-0.0004
New home sales	0.0004**	0.003**	0.0004***	0.0003	-0.0002	0.001*	-0.0004**	0.004**	0.0005***	0.003***	0.0005***	0.002***
Non-farm employment	0.002***	0.014***	0.003***	0.002***	-0.002***	0.011***	0.001*	0.004	0.002***	0.004***	0.004***	0.007***
Pending home sales	0.0004**	0.002*	0.0002*	0.001**	-0.0005**	0.003***	0.001***	-0.006***	0.0001	0.001	0.00003	-0.001
Personal consumption	0.0001	-0.0001	0.0002**	0.001*	-0.0001	0.0003	-0.0002	0.006***	0.001***	0.002	0.0001	0.001
Personal income	0.001	-0.006**	-0.0005***	-0.004***	0.001***	-0.003**	0.00004	-0.005*	0.0001	-0.002	0.0001	0.004**
Producer price index	0.0001	0.001	-0.00002	-0.001**	0.0001	-0.0002	0.0002	0.00002	0.001***	0.002**	0.0003***	-0.002**
Trade balance	0.0004**	0.0002	-0.001***	-0.005***	-0.00005	-0.001	0.0001	0.001	0.0004***	-0.001	0.00003	-0.008***
Announcements specific to commodity markets												
Weekly Crude Oil Stock	0.0003***	0.0002	-0.00004	0.0001	0.0001	-0.001*	-0.00004	0.0001	-0.0001	0.0002	-0.00000	0.001**
Weekly Natural Gas Stock	-0.0003	-0.001	-0.0001	0.0001	0.0001	-0.001	0.0001	0.002	-0.0002	0.0001	-0.0001	0.0003

This table presents estimates of eq. 10 using financialization variable NLS (for swap dealer positions). The equation is $\sigma_t^2 = \alpha_0 + \alpha_1\sigma_{t-1}^2 + \alpha_2\epsilon_t^2 + \sum_{m=1}^{22}\Phi_m D_{m,t} + \beta X_{i,t} + \sum_{k=1}^{n}\phi_k I_{kt}$ where $I_{kt} = D_{m,t} \cdot X_{i,t}$ and $D_{m,t}$ is a macro announcement dummy variable for release m. The Φ coefficients capture the instantaneous change in conditional variance due to a surprise in the announcement release (i.e., unanticipated news). The ϕ coefficients capture the instantaneous change in conditional variance due to the interaction effect between an announcement surprise and the financialization variable (here, NLS_{it}). For all regressions reported in this table, we include the NBER recession indicator variable to control for the business cycle.

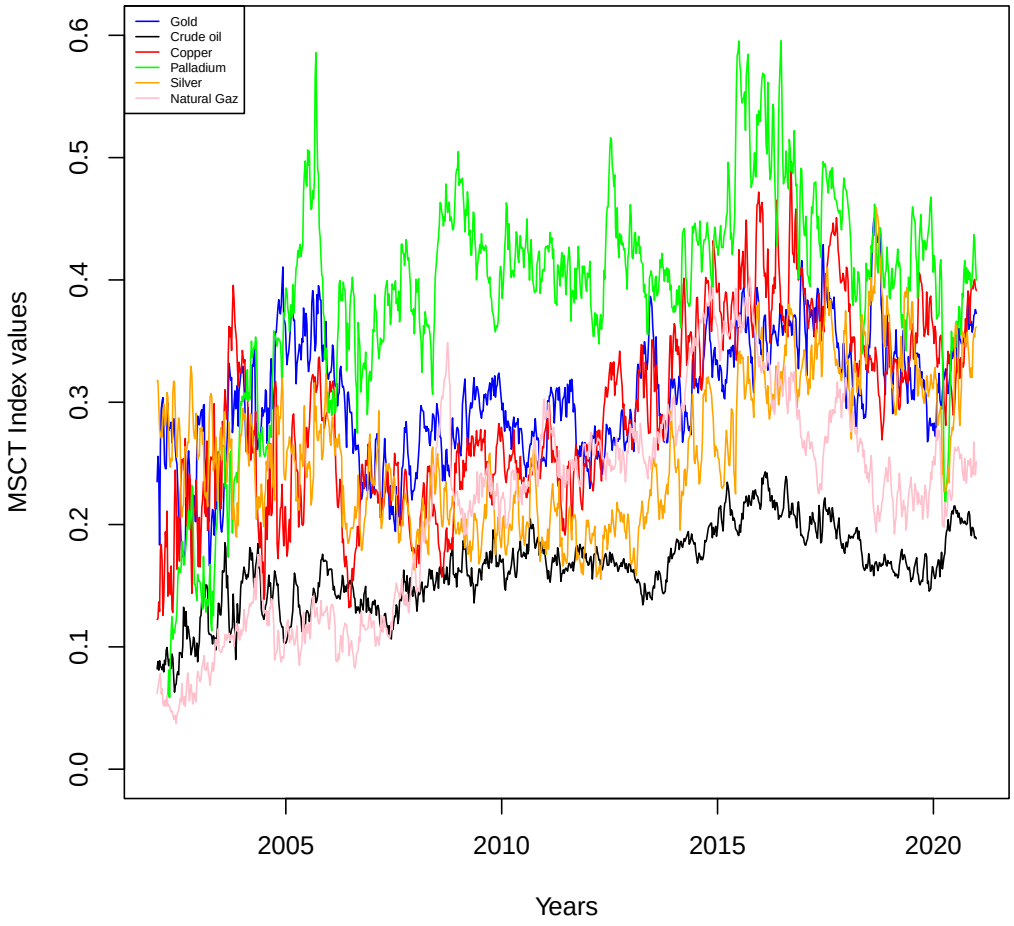

Figure 1: Time series showing the evolution of the Market Share of Non-Commercials (MSCT) index for all commodities in our sample, 4/2007–12/2020.

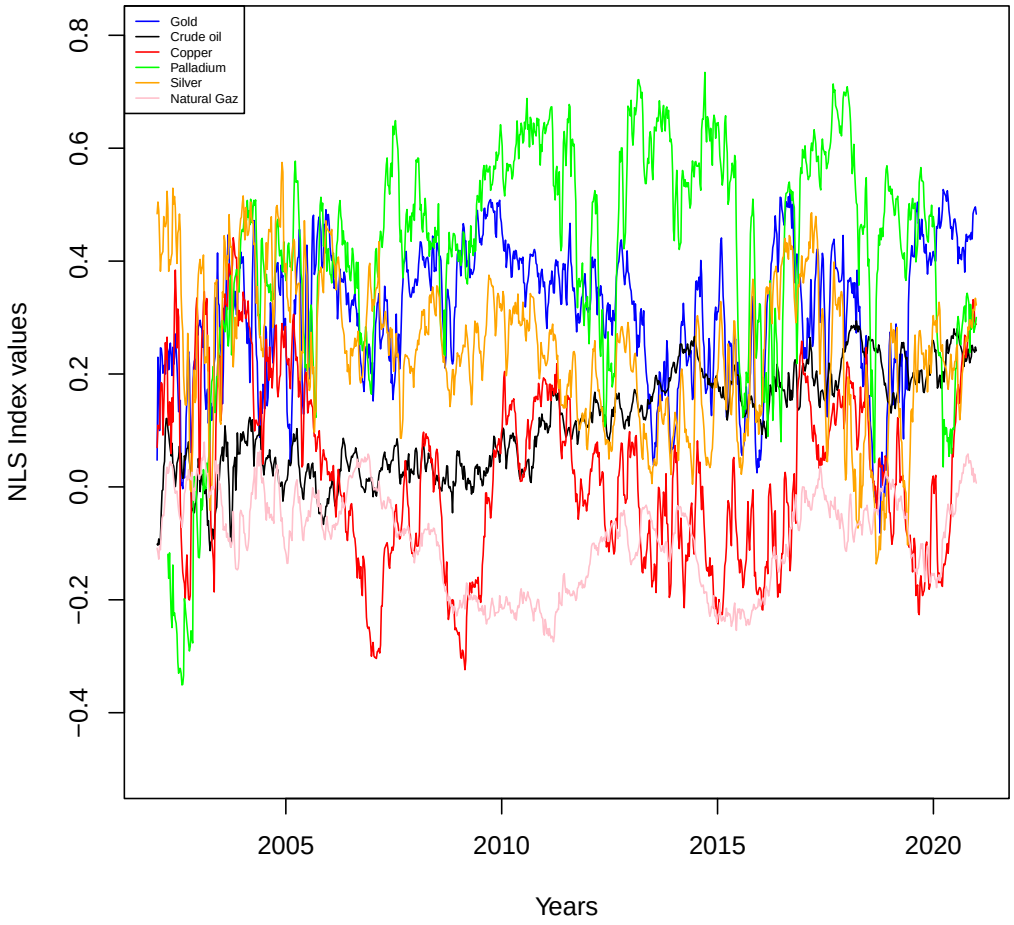

Figure 2: Time series showing the evolution of the Net Long Short (NLS) index for all commodities in our sample, 4/2007–12/2020.

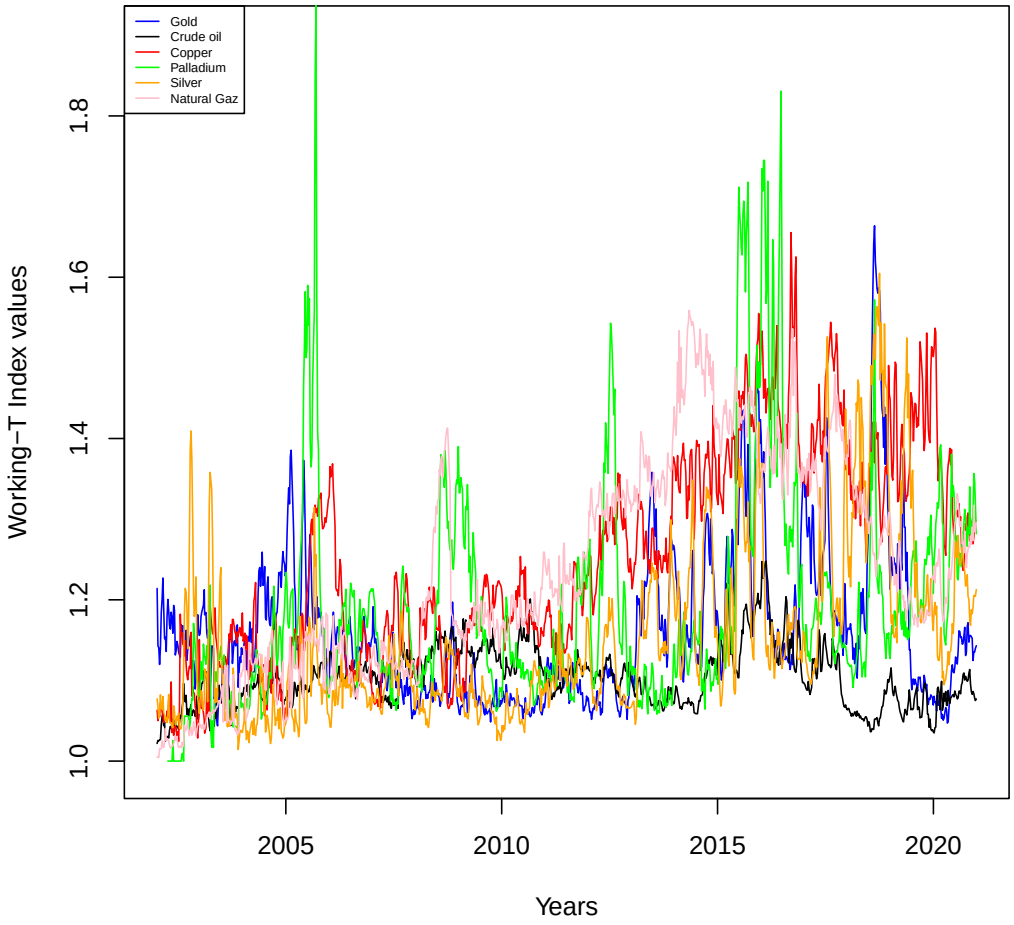

Figure 3: Time series showing the evolution of the Working's T index for all commodities in our sample, 4/2007–12/2020.

Appendix

This appendix presents tables for additional results across model specifications.

Table 13: Announcement and financialization effects on futures returns using the MSCT variable and the Kurov et al. (2019) approach

Commodities	**Crude Oil**		**Gold**		**Copper**		**Silver**		**Palladium**		**Natural Gas**	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	-0.006	0.033	-0.015*	0.051*	-0.002	0.002	-0.002	0.013	0.059***	-0.141***	-0.011	0.041
ADP Employment	0.020***	-0.092***	-0.006*	0.016*	0.009***	-0.029***	0.010***	-0.038***	0.016***	-0.043***	-0.0005	0.001
CB Consumer	0.0002	0.001	0.0004	-0.002**	0.001*	-0.001	0.0004	-0.003***	0.0004	-0.001	0.0003	0.00002
Advance retail sales	0.005***	-0.021***	-0.002**	0.004	0.003***	-0.010***	0.0002	-0.002	0.001	-0.002	0.002	-0.010
Building permit	-0.002***	0.009***	0.001***	-0.005***	0.001**	-0.002**	0.001**	-0.004***	0.001*	-0.002**	0.001*	-0.004*
Construction spending	0.002**	-0.014**	-0.001*	0.002	0.001	-0.002	0.001	-0.003*	-0.001	0.002	-0.00002	-0.001
Consumer_credit	-0.001	0.006	0.0001	-0.0001	0.001**	-0.002**	0.001***	-0.002***	0.001**	-0.002*	-0.001*	0.004*
Consumer price index	-0.001	0.005	0.003***	-0.011***	0.0002	-0.0004	0.002***	-0.009***	-0.003***	0.005***	-0.001	0.004
Durable goods orders	0.002***	-0.013***	0.004***	-0.012***	0.003***	-0.010***	0.003***	-0.011***	0.001	-0.001	-0.001	0.002
Existing home sales	-0.001	0.006	0.0005	-0.002	0.001***	-0.002**	0.001*	-0.002*	0.00002	-0.0004	0.001	-0.005
Factory orders	-0.003**	0.019**	-0.001	0.002	-0.001**	0.004**	-0.0001	-0.001	-0.001	0.001	-0.002*	0.010**
GDP	0.0003	-0.0004	-0.0002	-0.002	0.002***	-0.006***	-0.002***	0.003*	-0.001	0.001	0.0002	-0.001
Housing starts	0.001	-0.004	-0.0003	-0.0002	0.001***	-0.004***	-0.002***	0.005***	-0.003***	0.006***	0.001	-0.003
Industrial production	0.001	-0.005	-0.001	0.001	0.001	-0.002	-0.001**	0.003*	0.0003	-0.001	-0.0003	0.001
Michigan Sentiment Index	0.0002	-0.0003	-0.0003	0.0003	0.0001	-0.0001	-0.0003	-0.0003	-0.00002	-0.0001	-0.001	0.002
New home sales	0.002	-0.008	0.001	-0.004**	0.002***	-0.004***	-0.001	0.001	-0.0001	0.0005	-0.001	0.004
Non-farm employment	0.080***	-0.384***	-0.040***	0.117***	0.020***	-0.064***	0.022***	-0.081***	0.010***	-0.027***	-0.005	0.024
Pending home sales	0.004***	-0.021***	-0.0003	0.001	0.0001	0.0003	-0.0001	0.0002	0.001	-0.002	0.0003	0.001
Personal consumption	0.00003	0.00002	0.002***	-0.007***	0.0005	-0.001	0.0001	0.00005	0.002***	-0.005***	0.001	-0.003
Personal income	0.010***	-0.051***	0.001	-0.002	0.003***	-0.009***	0.002	-0.010*	0.004***	-0.011***	0.001	-0.003
Producer price index	0.002***	-0.013***	0.002***	-0.007***	0.001***	-0.003***	0.002***	-0.008***	0.001	-0.003*	0.0002	-0.001
Trade balance	0.001	-0.004	-0.001	0.002	0.0001	-0.0001	-0.0005	0.002	-0.0004	0.001	-0.001	0.003
$R^2(\%)$	0.1		0.1		0.04		0.1		0.04		0.03	
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

This table presents the estimates of the mean equation, using the method proposed by Kurov et al. (2019) and financialization variable $X_{t,1} = MSCT_t$. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 14: Announcement and financialization effects on futures returns using the NLS variable and the Kurov et al. (2019) approach

Commodities	**Crude Oil**		**Gold**		**Copper**		**Silver**		**Palladium**		**Natural Gas**	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	0.0004	-0.009	-0.004	0.012	-0.001	-0.002	0.001	0.008	-0.014*	0.021	-0.007*	-0.036
ADP Employment	0.007***	-0.022***	-0.015***	0.031***	0.0003***	0.0004	-0.006***	0.026***	0.0002	-0.003**	-0.001***	-0.025**
CB Consumer	0.001***	-0.005***	-0.0004***	0.001**	0.0001***	0.001*	-0.001***	0.001*	-0.001***	0.001***	0.0004*	0.001
Advance retail sales	0.002***	-0.007***	-0.004***	0.008***	0.0001**	-0.002	-0.001***	0.004**	-0.0001	0.0003	0.00001	-0.001
Building permit	-0.00004	0.0004	-0.0004***	0.001***	0.00003	-0.0003	-0.0002	0.00001	-0.0002	-0.0001	0.001***	0.004**
Construction spending	0.001**	-0.005**	-0.001***	0.002***	0.00004	-0.002***	-0.001***	0.003***	0.001*	-0.001*	-0.0002	-0.00002
Consumer_credit	-0.0001	0.001	-0.0001	0.0003	0.00002	0.0003	-0.0001	0.0005	0.001***	-0.001*	-0.0001	-0.001
Consumer price index	-0.001***	0.003***	-0.001***	0.003***	-0.0001	-0.002***	-0.001***	0.003***	0.0002	-0.001**	0.0002	0.002
Durable goods orders	0.002***	-0.008***	-0.001***	0.001**	0.0001	-0.00000	-0.0002	0.0001	0.0003	-0.00004	-0.001**	-0.005**
Existing home sales	0.001***	-0.006***	-0.00001	-0.00001	0.0002***	-0.0005	0.00002	0.0002	-0.0003	0.0003	0.0002	0.001
Factory orders	-0.001**	0.005***	-0.001*	0.001	0.0001	-0.001	-0.001***	0.004***	-0.001	0.001	0.001***	0.004
GDP	0.001**	-0.003*	-0.001***	0.001	0.0003***	0.0003	-0.002***	0.003***	-0.002***	0.002**	-0.0002	-0.003
Housing starts	0.001*	-0.003*	-0.001***	0.001***	0.0001	0.001	-0.001***	0.002**	-0.001**	0.001**	-0.0004*	-0.001
Industrial production	0.0003	-0.001	0.0002	-0.001*	-0.00001	0.0002	0.00002	-0.001	-0.0004	0.001	-0.0001	-0.001
Michigan Sentiment Index	0.0004	-0.001	-0.0001	-0.0003	0.00005	0.001	-0.0004***	0.0004	-0.001**	0.001*	-0.0003	-0.002
New home sales	0.001**	-0.003	-0.001***	0.001**	0.0002***	-0.001	-0.0005***	0.0001	-0.0003	0.001	0.0003	0.0002
Non-farm employment	0.036***	-0.136***	-0.046***	0.100***	-0.0001	-0.006	-0.009***	0.041***	0.0004	-0.004	-0.002***	-0.071***
Pending home sales	0.001***	-0.005***	-0.0002	0.0001	0.0002**	-0.001	0.00001	-0.0003	-0.00002	0.0003	-0.0002	-0.006*
Personal consumption	0.0003	-0.001	-0.0003*	0.001	0.0001	0.001	0.0002	-0.001	0.001***	-0.001***	0.0001	0.002
Personal income	0.006***	-0.025***	-0.008***	0.016***	-0.0002*	-0.001	-0.002***	0.009***	0.0005*	-0.002***	-0.0004	-0.009**
Producer price index	0.001***	-0.003***	-0.001***	0.002***	0.00005	-0.00000	-0.0003	0.001	-0.001***	0.002***	-0.0004	-0.002
Trade balance	-0.0004	0.002	-0.001***	0.002***	0.00003	-0.001**	-0.001**	0.003***	0.001**	-0.002**	0.0001	0.001
$R^2(\%)$	0.1		0.2		0.03		0.1		0.03		0.03	
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

This table presents the estimates of mean equation, using the method proposed by Kurov et al. (2019) and financialization variable $X_{t,2} = NLS_t$. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 15: Announcement and financialization effects on futures returns using the Working's T variable and the Kurov et al. (2019) approach

Commodities	**Crude Oil**		**Gold**		**Copper**		**Silver**		**Palladium**		**Natural Gas**	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	-0.072	0.065	0.012	-0.010	-0.004	0.002	-0.004	0.005	0.060***	-0.050***	-0.026	0.020
ADP Employment	-0.002	0.002	0.022***	-0.020***	0.018***	-0.013***	0.035***	-0.031***	-0.005	0.003	0.005	-0.004
CB Consumer	-0.006**	0.005**	0.001*	-0.001***	0.002***	-0.002***	0.002***	-0.002***	0.002**	-0.001**	-0.0005	0.001
Advance retail sales	-0.015**	0.014**	0.006***	-0.006***	0.009***	-0.007***	0.007***	-0.007***	0.001	-0.001	-0.001	0.001
Building permit	-0.004**	0.004**	0.001***	-0.001***	0.001	-0.001	0.001	-0.001	0.001*	-0.001**	0.002	-0.002
Construction spending	-0.002	0.002	0.001	-0.001	0.002	-0.001	0.003***	-0.002***	-0.002*	0.002*	-0.001	0.0004
Consumer_credit	0.001	-0.001	0.0002	-0.0002	0.001*	-0.001*	0.001***	-0.001***	0.00003	0.0002	-0.002	0.001
Consumer price index	0.006**	-0.006**	0.005***	-0.005***	0.001	-0.001	0.010***	-0.009***	-0.003***	0.002***	-0.004*	0.003*
Durable goods orders	-0.004	0.004	0.005***	-0.004***	0.007***	-0.005***	0.005***	-0.004***	0.001	-0.0003	0.001	-0.0004
Existing home sales	-0.009***	0.008***	-0.00001	-0.00001	0.002***	-0.001**	0.001	-0.001	0.0002	-0.0002	0.002	-0.002
Factory orders	0.005	-0.004	0.0001	-0.0002	-0.003***	0.003***	0.003**	-0.003**	0.001	-0.001	-0.007***	0.006***
GDP	-0.004	0.004	-0.0003	-0.0005	0.003**	-0.002*	0.0002	-0.001	0.001	-0.001	0.001	-0.0004
Housing starts	0.0003	-0.0002	0.001	-0.001*	0.003***	-0.002***	-0.002*	0.001	-0.001	0.0005	0.002	-0.002
Industrial production	-0.0003	0.0004	-0.002**	0.001**	0.001	-0.001	-0.004***	0.003***	0.001	-0.001	0.001	-0.0005
Michigan Sentiment Index	-0.001	0.001	-0.001	0.0004	0.0005	-0.0003	-0.0001	-0.0002	0.001	-0.001	-0.001	0.001
New home sales	0.002	-0.002	0.001	-0.001**	0.005***	-0.003***	-0.001	0.001	0.001	-0.001	-0.001	0.001
Non-farm employment	-0.231***	0.214***	0.073***	-0.066***	0.095***	-0.069***	0.094***	-0.082***	0.005	-0.004	0.017	-0.013
Pending home sales	-0.007	0.007	-0.0001	-0.00005	0.001	-0.001	-0.0001	-0.00000	0.001	-0.001	0.001	-0.0003
Personal consumption	-0.0004	0.0004	0.003***	-0.002***	0.002	-0.001	-0.0002	0.0003	-0.003**	0.002***	0.0001	-0.0002
Personal income	-0.040***	0.037***	0.017***	-0.016***	0.021***	-0.016***	0.019***	-0.017***	0.004**	-0.003**	0.008*	-0.006*
Producer price index	-0.003	0.003	0.003***	-0.003***	0.002**	-0.002**	0.004***	-0.004***	0.003***	-0.003***	0.002	-0.002
Trade balance	0.005*	-0.005*	0.001	-0.001	-0.001	0.001	0.0004	-0.0003	-0.002*	0.002*	-0.003	0.002
$R^2(\%)$	0.1		0.2		0.1		0.1		0.04		0.03	
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

This table presents the estimates of the mean equation, using the method proposed by Kurov et al. (2019) and financialization variable $X_{t,3} = WORKINGTS_t$. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 16: Announcement and financialization effects on futures returns using the MSCT variable and the Andersen et al. (2007) approach

Commodities	**Crude Oil**		**Gold**		**Copper**		**Silver**		**Palladium**		**Natural Gas**	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	-0.034	0.183	-0.018	0.062	-0.001	0.0004	-0.006	0.027	0.064**	-0.149**	-0.015	0.064
ADP Employment	0.028**	-0.131**	-0.007	0.019	0.004	-0.013	0.008**	-0.033***	0.017**	-0.046**	-0.005	0.023
CB Consumer	0.002	-0.010	0.0004	-0.002*	0.001***	-0.002*	0.001	-0.003**	0.001	-0.003	-0.0003	0.003
Advance retail sales	0.009***	-0.041***	-0.003**	0.006	0.006***	-0.019***	0.0004	-0.002	0.002	-0.005	0.002	-0.009
Building permit	-0.001	0.007	0.002***	-0.007***	0.001**	-0.004**	0.001	-0.004	0.001**	-0.003***	0.001	-0.003
Construction spending	0.002	-0.014*	0.00003	-0.001	0.001**	-0.004*	0.0005	-0.003	0.0005	-0.001	0.001	-0.005
Consumer_credit	0.001	-0.005	0.0005*	-0.001	0.001**	-0.002*	0.001***	-0.004***	0.0001	-0.0001	-0.001*	0.004*
Consumer price index	-0.002	0.007	0.003***	-0.010***	-0.00004	0.0004	0.001	-0.006*	-0.001	0.001	-0.001	0.005
Durable goods orders	0.003*	-0.019*	0.005***	-0.016***	0.004***	-0.010***	0.003***	-0.013***	0.00005	0.001	-0.001	0.001
Existing home sales	0.0005	0.0002	0.001***	-0.004***	0.001***	-0.003***	0.001***	-0.003***	0.001	-0.004	0.001	-0.003
Factory orders	-0.001*	0.006**	-0.001***	0.003**	-0.002***	0.008***	-0.001	0.002	0.001	-0.002	-0.003**	0.013**
GDP	0.001	-0.005	0.003***	-0.011***	0.002**	-0.005*	-0.001	0.001	-0.002	0.004	-0.0002	0.001
Housing starts	0.001	-0.005	-0.001	0.001	0.002*	-0.004*	-0.002**	0.005*	-0.002**	0.005*	0.001	-0.003
Industrial production	0.001	-0.003	-0.001	0.001	0.00003	-0.0003	-0.001	0.002	-0.002*	0.004*	0.001	-0.003
Michigan Sentiment Index	0.001	-0.006	0.0002	-0.001	0.001	-0.001	0.0002	-0.002	0.001	-0.002	-0.001	0.003
New home sales	0.002	-0.007	0.001	-0.004	0.003***	-0.007***	0.0001	-0.003	0.0004	-0.001	-0.001	0.004
Non-farm employment	0.093***	-0.443***	-0.014***	0.040***	0.027***	-0.088***	0.014**	-0.051**	0.002	-0.005	-0.014	0.062
Pending home sales	0.003*	-0.015*	-0.001	0.003	0.001	-0.003	-0.0002	0.001	0.001	-0.004	0.002	-0.007
Personal consumption	0.001	-0.004	0.002	-0.007*	0.001	-0.002	-0.0002	0.0004	-0.00000	0.001	-0.001	0.004
Personal income	0.019***	-0.092***	0.0001	0.0001	0.004**	-0.012**	-0.001	0.011	0.003***	-0.008***	-0.0001	0.001
Producer price index	0.002	-0.014	0.002**	-0.007***	0.001**	-0.003*	0.002***	-0.011***	0.001	-0.003	0.0002	-0.0004
Trade balance	0.002	-0.010	0.001	-0.003*	0.0003	-0.001	-0.0003	-0.0003	-0.007**	0.015**	-0.002	0.007
$R^2(\%)$	2.1		0.1		0.03		0.1		0.04		0.04	
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

This table presents the estimates of the mean equation, using the method proposed by Andersen et al. (2007) and financialization variable $X_{t,1} = MSCT_t$. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 17: Announcement and financialization effects on futures returns using the NLS variable and the Andersen et al. (2007) approach

Commodities	**Crude Oil**		**Gold**		**Copper**		**Silver**		**Palladium**		**Natural Gas**	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	-0.004	0.014	-0.003	0.010	-0.0003	-0.003	0.0003	0.008	-0.005	0.014	-0.005	-0.028
ADP Employment	0.010***	-0.034**	-0.015***	0.033***	0.0003***	-0.001	-0.009***	0.036***	0.0002	-0.004	-0.001	-0.018
CB Consumer	0.001***	-0.007***	-0.001***	0.001***	0.0003***	0.0001	-0.001***	0.002**	-0.001*	0.002**	0.0004	0.001
Advance retail sales	0.003***	-0.008***	-0.004***	0.007***	0.0003***	-0.005***	-0.001	0.003	0.0001	-0.001	0.00000	-0.001
Building permit	0.001	-0.002	-0.00004	0.0003	-0.00004	-0.0002	0.00003	-0.001	0.001*	-0.002**	0.001*	0.006*
Construction spending	0.0004	-0.004*	-0.0001	-0.0003	0.0001	-0.003***	-0.001	0.002	0.001	-0.001	-0.0002	-0.002
Consumer_credit	0.0004***	-0.002***	0.0002	-0.0002	0.0001	-0.0003	-0.00003	0.0004	0.0005	-0.001	0.0003	0.001
Consumer price index	-0.001**	0.003	-0.002***	0.004***	-0.0001	-0.002**	-0.001***	0.002***	0.001	-0.002	0.0002	0.003
Durable goods orders	0.001**	-0.007**	-0.001**	0.002**	0.0002	-0.001	-0.001**	0.004**	0.0004	-0.0001	-0.001*	-0.005*
Existing home sales	0.001***	-0.002	0.0001	0.0003	0.0004***	-0.002*	0.001***	-0.0004	-0.00002	-0.001	-0.0002	-0.001
Factory orders	-0.0004	0.004*	-0.001***	0.003***	-0.0001	-0.0002	-0.001**	0.004**	-0.0002	0.0002	0.002***	0.011***
GDP	0.001**	-0.005*	-0.001***	0.002***	0.0004***	-0.0001	-0.002***	0.006***	-0.001	0.002	-0.001	-0.005
Housing starts	0.001	-0.005	-0.001***	0.001	0.0001	0.001	-0.001**	0.001	-0.002***	0.004***	-0.0004	-0.002
Industrial production	0.0001	-0.001	-0.0001	-0.001	-0.00002	0.001	0.00001	-0.002	-0.001*	0.001*	0.00004	0.0002
Michigan Sentiment Index	0.0005	-0.002	-0.0002	0.0001	0.0001	0.001	-0.001*	0.001	-0.001**	0.002**	-0.0004	-0.003
New home sales	0.002***	-0.008***	-0.001**	0.001	0.0003***	-0.001	-0.001**	0.001	-0.001	0.001	0.0002	0.001
Non-farm employment	0.036***	-0.135***	-0.040***	0.086***	-0.0001***	-0.006	-0.002	0.009	-0.00005	0.004	-0.004***	-0.129***
Pending home sales	0.001**	-0.004*	-0.001	0.001	-0.00001	-0.003***	0.0001	-0.0003	0.0001	-0.001	-0.0005	-0.005**
Personal consumption	0.0002	-0.002	-0.0004	0.001	0.0001	0.002	0.0001	-0.001	0.00005	0.001	-0.0003	-0.003
Personal income	0.009***	-0.036***	-0.007***	0.016***	-0.0004*	-0.003*	-0.0001	0.002	0.001***	-0.003**	-0.0002	-0.009
Producer price index	0.0004	-0.003	-0.001***	0.002***	0.0003**	0.0005	0.0001	-0.001	-0.004***	0.007***	0.00005	-0.0001
Trade balance	-0.001	0.004	-0.001***	0.003***	0.00001	-0.002*	-0.001**	0.006***	0.002*	-0.003*	0.001	0.006
$R^2(\%)$	2.1		1.4		0.03		0.1		18.3		1.7	
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

This table presents the estimates of the mean equation, using the method proposed by Andersen et al. (2007) and financialization variable $X_{t,2} = NLS_t$. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 18: Announcement and financialization effects on futures returns using the Working's T variable and the Andersen et al. (2007) approach

Commodities	**Crude Oil**		**Gold**		**Copper**		**Silver**		**Palladium**		**Natural Gas**	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	0.011	-0.011	0.005	-0.004	-0.003	0.001	-0.008	0.008	0.077**	-0.063**	-0.034	0.028
ADP Employment	-0.066	0.062	0.022***	-0.020***	0.017**	-0.012**	0.034***	-0.030***	-0.004	0.003	-0.016	0.013
CB Consumer	-0.004	0.004	0.001**	-0.001***	0.003***	-0.002***	0.003***	-0.003***	0.003**	-0.002**	-0.001	0.001
Advance retail sales	-0.014	0.013	0.004*	-0.004**	0.016***	-0.012***	0.011***	-0.010***	-0.001	0.0003	0.002	-0.001
Building permit	-0.007	0.006	0.002**	-0.001**	0.001	-0.001	0.001	-0.001	0.001	-0.001	-0.00004	0.0002
Construction spending	-0.003	0.002	0.001*	-0.001**	0.003**	-0.002*	0.002	-0.001	-0.001	0.001	0.004	-0.003
Consumer_credit	-0.007***	0.007***	0.00003	0.00002	0.001	-0.001	0.002**	-0.002**	-0.001	0.001	-0.003**	0.003**
Consumer price index	0.006	-0.006	0.006***	-0.005***	0.001	-0.001	0.007***	-0.007***	-0.003	0.002	-0.005	0.003
Durable goods orders	-0.003	0.003	0.009***	-0.008***	0.008***	-0.006***	0.009***	-0.008***	0.0002	0.0001	0.001	-0.001
Existing home sales	-0.003	0.003	0.001	-0.001	0.002**	-0.001**	0.002**	-0.001*	0.0002	-0.0004	0.002	-0.002
Factory orders	0.001	-0.0004	0.001	-0.001	-0.005***	0.004***	0.002	-0.002	0.0002	-0.0002	-0.013***	0.010***
GDP	-0.004	0.004	0.003***	-0.003***	0.002	-0.002	0.006**	-0.006**	0.001	-0.001	0.0003	-0.0001
Housing starts	-0.003	0.003	0.0004	-0.001	0.003**	-0.002*	-0.003	0.002	0.0004	-0.001	0.003	-0.002
Industrial production	0.004	-0.003	-0.002	0.001	0.0001	-0.0001	-0.004	0.003	0.001	-0.001	0.004	-0.003
Michigan Sentiment Index	0.002	-0.002	0.00002	-0.0002	0.001	-0.001	0.001	-0.002	0.003*	-0.003**	-0.001	0.001
New home sales	-0.013*	0.012**	0.001	-0.001	0.007***	-0.005***	0.001	-0.001	0.002	-0.002	-0.002	0.001
Non-farm employment	-0.293***	0.271***	0.069***	-0.063***	0.086***	-0.062***	0.098***	-0.086***	0.006	-0.004	0.031	-0.025
Pending home sales	-0.011	0.010	0.0004	-0.0004	0.001	-0.001	-0.001	0.001	0.0003	-0.0004	0.004	-0.003
Personal consumption	0.001	-0.001	0.003	-0.002	0.002	-0.001	-0.001	0.0005	0.001	-0.0002	-0.003	0.002
Personal income	-0.049***	0.045***	0.017***	-0.014***	0.020***	-0.015***	-0.013***	0.012***	0.006*	-0.004	0.005	-0.004
Producer price index	-0.0003	0.0003	0.004***	-0.004***	0.002	-0.001	0.005**	-0.005**	0.006***	-0.006***	0.002	-0.001
Trade balance	0.008	-0.007	0.002***	-0.002***	0.0002	-0.0001	-0.0002	-0.00002	-0.006**	0.005**	-0.007**	0.005**
$R^2(\%)$	0.5		0.1		0.03		0.1		0.02		0.05	
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

This table presents the estimates of mean equation, using the method proposed by Andersen et al. (2007) and financialization variable $X_{t,3} = WORKING T_t$. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 19: Announcement and financialization effects on futures conditional variance, using the MSCT variable

\textbf{Commodities}	Crude Oil		Gold		Copper		Silver		Palladium		Natural Gas	
Announcements	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m
Initial jobless claims	0.004	-0.024	0.001	-0.005*	-0.001	0.001	0.001	-0.005*	-0.002	0.005	0.001	-0.004
ADP Employment	-0.001	0.006	-0.001	0.003***	0.001***	-0.002**	0.0001	0.002	-0.002**	0.006**	0.001**	-0.004**
CB Consumer	0.002**	-0.007	0.001**	-0.001	0.001***	-0.003***	0.001***	-0.003***	0.0003	-0.0003	0.001	-0.002
Advance retail sales	-0.001	0.006	-0.001***	0.007***	0.001**	-0.001	-0.0005	0.005***	0.001	-0.001	0.0001	-0.001
Building permit	-0.006	0.029	0.003**	-0.009*	0.001	-0.006**	0.001	-0.002	-0.032***	0.081***	-0.0003	0.001
Construction spending	0.004***	-0.018***	0.001***	-0.002*	0.002***	-0.004***	0.001***	-0.003**	0.0004	0.0005	0.001	-0.001
Consumer_credit	0.001	-0.003	-0.0002	0.001	0.0002	-0.0005	-0.0001	0.001	-0.00001	0.00004	-0.00005	0.0003
Consumer price index	0.001	-0.004	-0.001***	0.007***	-0.0001	0.0004	-0.001**	0.007***	0.001	-0.003	0.002*	-0.006*
Durable goods orders	0.001	-0.002	-0.001*	0.003**	0.001**	-0.003**	0.001**	-0.001	0.0001	0.001	-0.0005	0.002
Existing home sales	0.003**	-0.012*	0.001***	-0.003***	0.001**	-0.002**	0.001***	-0.003***	0.011***	-0.025***	0.002***	-0.005**
Factory orders	-0.003**	0.020***	0.001	-0.001	0.002***	-0.005***	0.001*	-0.002	-0.002	0.005*	0.0005	0.001
GDP	-0.0002	0.001	0.0003	0.001	0.001**	-0.002	0.002***	-0.003**	-0.0001	0.001	-0.001*	0.004
Housing starts	0.007	-0.035	-0.001	0.003	-0.0003	0.003	0.0003	-0.002	0.032***	-0.080***	-0.00003	0.0001
Industrial production	0.003**	-0.014***	0.0003	-0.0001	0.001***	-0.002**	0.0001	0.0005	-0.00005	0.001	0.001	-0.003
Michigan Sentiment Index	-0.001	0.004	-0.0001	0.001	0.0003	-0.001	0.001***	-0.002*	-0.001**	0.004**	0.0001	-0.001
New home sales	0.001	-0.004	0.002***	-0.004***	0.001***	-0.003***	0.002***	-0.006***	-0.001	0.004*	0.00004	-0.00000
Non-farm employment	0.007***	-0.035***	0.003***	-0.002	0.003***	-0.006***	0.009***	-0.019***	-0.001	0.005*	0.005***	-0.017***
Pending home sales	0.0001	0.001	0.001***	-0.004***	0.002***	-0.004***	0.0002	-0.001	0.001	-0.003	0.004***	-0.012***
Personal consumption	-0.001	0.006	0.001**	-0.003*	0.001***	-0.004***	0.001**	-0.003**	0.0003	0.0004	-0.0004	0.003
Personal income	-0.0001	0.008	-0.0004	0.002	0.003***	-0.007***	-0.004***	0.016***	0.004***	-0.009***	-0.002	0.007
Producer price index	0.001	-0.003	-0.001	0.002**	0.0003	-0.001	-0.0002	0.002	-0.002**	0.006***	0.001	-0.002
Trade balance	-0.001	0.009	-0.001*	0.002**	-0.001**	0.002	-0.0003	0.002	-0.002**	0.006***	0.00000	0.001
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

Presents the estimate of variance equation using financialization variable $X_{1,t} = MSCT_t$. The Φ_m coefficients capture the instantaneous change in the conditional variance when an announcement has just occurred. The ϕ_m coefficients capture the conditional variance when an announcement has just occurred in conjunction with the level of financialization.

Table 20: Announcement and financialization effects on futures conditional variance, using the NLS variable

\textbf{Commodities}	Crude Oil		Gold		Copper		Silver		Palladium		Natural Gas	
Announcements	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m
Initial jobless claims	-0.001	0.006	-0.0002	-0.00005	-0.0002	0.0003	0.00002	-0.001	0.0003	-0.001	-0.0004	0.001
ADP Employment	0.0002	-0.001	0.001***	-0.001***	0.0003***	-0.0001	0.001***	-0.001	-0.001	0.001	0.0003	0.001
CB Consumer	0.001***	-0.004***	0.0003***	-0.0001	0.0003***	-0.001***	0.0004***	0.0001	0.0001	0.00000	0.0002*	0.001
Advance retail sales	0.002***	-0.008***	0.001***	-0.002***	0.0003***	-0.001***	0.001***	-0.001	-0.0004	0.002**	0.0003	0.003*
Building permit	0.0002	-0.007	0.001***	-0.001	-0.0001	0.001	-0.0003	0.004	0.019***	-0.033***	0.0005	0.003
Construction spending	0.001***	-0.005***	0.001***	-0.00001	0.0004***	-0.001***	0.001***	-0.001	0.001**	-0.0003	0.00002	-0.003**
Consumer_credit	0.0004	-0.002	0.00004	0.00004	0.0001	0.001	0.0002	0.00002	-0.001	0.001	0.0001	0.0002
Consumer price index	0.0002	-0.0001	0.001***	-0.001***	0.00002	-0.00002	0.001***	-0.002**	0.0005	-0.001	-0.0001	-0.001
Durable goods orders	0.001***	-0.003*	0.001***	-0.001**	0.00005	-0.0003	0.0004**	-0.0002	0.0004	-0.0001	-0.0001	-0.001
Existing home sales	0.0001	0.002	0.0001	0.0004	0.0001	-0.002***	0.0004**	-0.001	0.003***	-0.005***	0.0001	-0.002
Factory orders	0.001**	-0.002	0.0001	0.001	0.0003***	-0.001**	-0.0003	0.002***	0.0003	-0.0002	0.0001	-0.004***
GDP	0.001***	-0.008***	0.0004***	0.0003	0.0003***	0.001	0.001***	-0.001	0.0001	0.001	-0.001***	-0.002
Housing starts	0.001	0.001	-0.0004	0.001	0.0001	-0.001	0.001	-0.005	-0.019***	0.033***	-0.001	-0.004
Industrial production	0.001***	-0.006***	0.0002**	0.0001	0.0001	-0.001*	0.0003	0.00002	0.001***	-0.003***	-0.0003*	-0.002
Michigan Sentiment Index	0.0004*	-0.003**	-0.0002**	0.001***	0.00001	0.0002	0.00002	0.001**	0.0001	0.0001	0.0001	0.002**
New home sales	0.001***	-0.004**	0.0005***	-0.0002	0.0002***	0.001	0.0004***	-0.0001	0.002***	-0.003***	-0.0004**	-0.004***
Non-farm employment	0.004***	-0.021***	0.004***	-0.004***	0.001***	-0.005***	0.003***	0.001	0.002***	-0.001	-0.001**	-0.016***
Pending home sales	0.001**	-0.003*	0.0002	-0.0005	0.0002***	-0.001	-0.0002	0.001	0.0003	-0.001	0.0002	-0.003*
Personal consumption	0.0001	0.0001	-0.00003	0.0003	-0.00001	0.0001	0.0002	-0.0003	0.001	-0.0002	-0.0003	-0.006***
Personal income	0.0003	0.005	-0.001***	0.004***	0.0004***	0.005***	0.001***	-0.005***	-0.001*	0.002**	0.001***	0.015***
Producer price index	0.0002	-0.001	-0.00005	0.001	0.0001	0.001	0.0002	0.001	0.001***	-0.001	0.0001	-0.001
Trade balance	0.0004	0.0002	-0.001***	0.004***	-0.0003***	0.001	-0.001***	0.004***	0.0004	0.0001	0.0004*	0.001
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

Presents the estimate of variance equation using financialization variable $X_{2,t} = NLS_t$. The Φ_m coefficients capture the instantaneous change in the conditional variance when an announcement has just occurred. The ϕ_m coefficients capture the conditional variance when an announcement has just occurred in conjunction with the level of financialization.

Table 21: Announcement and financialization effects on futures conditional variance, using the Working's T variable

\textbf{Commodities}	Crude Oil		Gold		Copper		Silver		Palladium		Natural Gas	
Announcements	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m
Initial jobless claims	0.014	-0.012	0.0001	-0.0003	-0.002	0.002	0.001	-0.001	-0.004	0.003	0.002	-0.002
ADP Employment	-0.002	0.002	-0.001***	0.001***	0.002***	-0.002***	-0.001	0.001	-0.0004	0.0003	0.002	-0.001
CB Consumer	-0.002	0.002	0.0003	-0.0001	0.003***	-0.002***	0.002***	-0.002***	-0.0002	0.0003	0.0004	-0.0002
Advance retail sales	-0.014***	0.013***	-0.002***	0.003***	0.002**	-0.001**	-0.002**	0.003***	0.002**	-0.002**	-0.0003	0.0002
Building permit	-0.028*	0.025*	0.0004	0.00001	0.005*	-0.004*	0.003	-0.002	-0.038***	0.034***	-0.001	0.001
Construction spending	0.001	-0.001	0.001***	-0.001	0.003***	-0.002***	0.002**	-0.001	0.0004	0.0002	0.002	-0.001
Consumer_credit	-0.002	0.002	-0.0002	0.0002	0.001	-0.0003	-0.0005	0.001	0.001	-0.001	-0.0003	0.0003
Consumer price index	0.002	-0.002	-0.003***	0.003***	-0.0005	0.0004	-0.006***	0.006***	-0.0004	0.0004	0.003	-0.002*
Durable goods orders	-0.002	0.002	-0.001	0.001*	0.002**	-0.001**	0.001	-0.0002	0.001	-0.0001	-0.002	0.002
Existing home sales	0.012***	-0.010***	0.002***	-0.001***	0.002**	-0.001**	0.001*	-0.001	0.002**	-0.001*	0.004***	-0.003**
Factory orders	-0.014***	0.013***	0.001**	-0.001*	0.003***	-0.002***	0.003***	-0.003***	-0.002	0.002	0.002*	-0.001
GDP	-0.012**	0.011**	0.001**	-0.001	0.002**	-0.001*	0.003**	-0.002*	0.001	-0.001	-0.002	0.001
Housing starts	0.024	-0.020	0.001	-0.001	-0.003	0.003	-0.001	0.001	0.038***	-0.034***	0.001	-0.001
Industrial production	-0.003	0.002	0.0004	-0.0001	0.001*	-0.001*	-0.0003	0.0005	-0.003***	0.002***	0.003**	-0.002**
Michigan Sentiment Index	-0.005*	0.004*	0.001***	-0.001***	-0.0001	0.0001	0.002***	-0.001**	-0.001	0.001	-0.001	0.0004
New home sales	-0.003	0.002	0.001**	-0.001*	0.003***	-0.002***	0.004***	-0.003***	-0.005***	0.004***	0.001	-0.001
Non-farm employment	-0.047***	0.043***	0.0002	0.002***	0.008***	-0.005***	0.012***	-0.007***	-0.003*	0.004***	0.016***	-0.011***
Pending home sales	-0.010**	0.009**	0.0003	-0.0003	0.004***	-0.003***	0.001	-0.001	0.001	-0.0003	0.008***	-0.006***
Personal consumption	-0.003	0.003	0.001	-0.001	0.003***	-0.002***	0.002	-0.001	0.0003	0.0002	0.001	-0.0001
Personal income	0.038***	-0.033***	0.005***	-0.004***	0.002	-0.001	-0.009***	0.007***	0.008***	-0.007***	-0.008***	0.006***
Producer price index	-0.005	0.005	-0.0001	0.0002	0.001	-0.001	-0.0004	0.001	-0.002	0.002**	0.001	-0.001
Trade balance	0.004	-0.003	0.003***	-0.003***	-0.001	0.001	0.001	-0.001	-0.001	0.001	0.001	-0.001
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

Presents the estimate of variance equation using financialization variable $X_{3,t} = WORKINGT_t$. The Φ_m coefficients capture the instantaneous change in the conditional variance when an announcement has just occurred. The ϕ_m coefficients capture the conditional variance when an announcement has just occurred in conjunction with the level of financialization.

Table 22: Announcement and financialization effects on futures returns, with an alternative financialization variable NLS constructed from money manager positions and using the Kurov et al. (2019) approach

\{Commodities}	Crude Oil		Gold		Copper		Silver		Palladium		Natural Gas	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	-0.002	0.018	0.0005	0.001	-0.001	-0.002	0.003	-0.003	-0.021**	0.040**	-0.004	-0.024
ADP Employment	0.006***	-0.029***	-0.0003	-0.0002	0.0003***	0.001	0.00001	-0.004	0.0003	-0.003*	-0.0003*	-0.005
CB Consumer	0.001***	-0.006***	-0.0002***	-0.0001	0.0001**	0.001**	-0.0005***	0.001*	-0.001***	0.001**	0.0004***	0.002*
Advance retail sales	0.002***	-0.010***	-0.0002	-0.002**	0.0002**	-0.002*	-0.001***	0.003	-0.0001	0.0004	0.0004*	0.007**
Building permit	-0.0002	0.002	-0.0003***	0.001***	0.00004	-0.0002	-0.0002*	-0.00004	-0.0002	-0.0002	0.0003*	0.002
Construction spending	0.001**	-0.009***	-0.001***	0.002***	0.0001	-0.002***	-0.0004**	0.003***	0.001*	-0.001*	-0.0002	0.0001
Consumer_credit	-0.00004	0.001	-0.0001	0.0003*	0.00001	0.0002	-0.0001	0.0005	0.001***	-0.001**	0.00001	0.00002
Consumer price index	-0.001***	0.005***	-0.001***	0.001**	0.00005	-0.002***	-0.001***	0.003***	0.0002	-0.001***	0.0001	0.002
Durable goods orders	0.001**	-0.006**	-0.0005***	0.001***	0.0001*	-0.001	-0.0002	0.0002	0.0003	0.00000	-0.0001	-0.001
Existing home sales	0.001***	-0.009***	-0.00003	0.0001	0.0002***	0.0001	0.0001	-0.0001	-0.0001	-0.00004	0.0001	0.0001
Factory orders	-0.002***	0.017***	-0.0004*	0.001	0.0001	-0.001	-0.001***	0.004***	-0.001	0.001	0.001***	0.002
GDP	0.001**	-0.004*	-0.001***	-0.0005	0.0002**	0.001	-0.001***	0.001	-0.002***	0.003***	0.0001	-0.001
Housing starts	-0.0003	0.002	-0.0004***	0.0003	0.00004	0.001	-0.001***	0.001	-0.001***	0.001**	-0.0003*	-0.0003
Industrial production	-0.0001	0.002	-0.0001	-0.001	0.00002	-0.0004	-0.0001	-0.001	-0.001*	0.001	0.00003	0.0005
Michigan Sentiment Index	0.0002	-0.0001	-0.0002***	-0.0001	0.00003	0.0004	-0.0004***	0.0003	-0.001**	0.001**	-0.0001	-0.001
New home sales	0.0001	0.001	-0.001***	0.001***	0.0002***	0.00000	-0.0004***	-0.0003	-0.0003	0.001	0.0003*	0.0004
Non-farm employment	0.021***	-0.112***	0.0004	-0.004	-0.00003	-0.005	-0.004***	0.024**	0.001**	-0.008**	-0.0002	-0.024
Pending home sales	0.002***	-0.010***	-0.0001	-0.0004	0.0002*	-0.0002	-0.00002	-0.0002	-0.0001	0.0004	0.0003	-0.005*
Personal consumption	-0.0005	0.004	-0.0001	0.00001	0.00003	0.001	0.0001*	-0.001	0.001***	-0.002***	-0.00005	0.003
Personal income	0.003***	-0.022***	-0.002***	0.008***	-0.0002*	-0.001	-0.0005*	0.002	0.001**	-0.003***	0.0002	-0.009**
Producer price index	0.001***	-0.005***	-0.001***	0.002***	0.0001	-0.0001	-0.0001	-0.001	-0.001***	0.002***	-0.0003	-0.002
Trade balance	-0.0003	0.002	-0.0003**	0.001**	0.0001	-0.001*	-0.0002	0.002*	0.001	-0.001	0.00003	0.002
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

Presents the estimates of mean equation, using the method proposed by Kurov et al. (2019) and financialization variable $X_{t,2} = NLS_t$. Only the positions of the money managers are included in the NLS index. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 23: Announcement and financialization effects on futures returns, with an alternative financialization variable NLS constructed from swap dealer positions and using the Kurov et al. (2019) approach

\{Commodities}	Crude Oil		Gold		Copper		Silver		Palladium		Natural Gas	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	-0.0004	0.008	-0.002	-0.012	-0.003	0.010	0.002	0.007	-0.003	0.002	-0.006	0.041
ADP Employment	0.005***	0.019***	-0.008***	-0.020***	-0.001	0.004	-0.002***	-0.036***	-0.001**	0.006**	-0.001**	0.019
CB Consumer	0.001***	0.004***	-0.0003***	-0.0002	-0.0005***	0.002***	-0.0003***	0.00002	-0.0002**	-0.001	0.0004**	-0.001
Advance retail sales	0.002***	0.007***	-0.002***	-0.006***	-0.001**	0.004**	-0.0004***	0.003	0.0001	-0.001	-0.00003	0.003
Building permit	0.0002*	0.002*	-0.0002***	-0.001**	0.00003	0.0001	-0.00001	0.003**	-0.0002**	0.001	0.001***	-0.006***
Construction spending	0.0003*	0.003***	-0.0004***	-0.002***	-0.001***	0.003***	-0.0001	-0.004***	0.0004**	0.002**	0.0001	-0.003
Consumer_credit	0.0001	0.0001	0.00001	-0.00001	-0.0001	0.0004	0.00000	0.00002	0.0002***	0.001**	-0.0002	0.002
Consumer price index	-0.001***	-0.003***	-0.001***	-0.002**	-0.001*	0.002**	-0.001***	-0.002	-0.0003***	0.001	0.0001	-0.002
Durable goods orders	0.001***	0.004***	-0.0003***	-0.001	0.00002	0.0002	0.00000	0.004***	0.001***	0.002***	-0.001	0.003
Existing home sales	0.0002*	0.003***	0.0001	0.001*	-0.001***	0.004***	0.0001	0.002*	-0.0002	-0.001	0.0004	-0.002
Factory orders	-0.0001	-0.002	-0.0004***	-0.002*	-0.00004	0.001	-0.0003***	-0.004***	-0.0003	-0.002	0.001*	-0.001
GDP	0.0004***	0.002**	-0.001***	0.002***	-0.0001	0.001	-0.001***	-0.002	-0.001***	-0.001	-0.0002	0.002
Housing starts	0.0002*	0.001	-0.001***	-0.001***	-0.0001	0.001*	-0.001***	-0.003***	-0.0002***	-0.002***	-0.0004	0.001
Industrial production	0.0003*	0.002*	0.0001	0.002***	-0.0002	0.001	-0.0002**	0.001	-0.0001	-0.001	0.0001	-0.001
Michigan Sentiment Index	0.0002*	0.001	-0.0001*	0.001*	0.0002	-0.001	-0.0004***	0.0004	-0.0001	-0.001	-0.0003	0.002
New home sales	0.001***	0.003***	-0.0002***	0.001*	-0.0004*	0.003***	-0.0005***	0.0004	-0.00004	-0.001	0.0004	-0.002
Non-farm employment	0.024***	0.117***	-0.034***	-0.093***	-0.017***	0.088***	-0.001*	-0.021	-0.003***	0.012***	-0.001**	0.056***
Pending home sales	0.0005***	0.003***	-0.0001	-0.00002	-0.0004	0.002**	-0.00003	0.001	0.0001	0.0003	0.0001	0.004
Personal consumption	0.00005	0.00004	-0.0002*	-0.001*	-0.0003	0.002	0.0002*	0.005***	0.0002	0.002***	-0.00003	-0.001
Personal income	0.003***	0.019***	-0.005***	-0.015***	-0.003***	0.012***	-0.0003*	-0.022***	-0.0005**	0.004***	-0.0001	0.005
Producer price index	0.0001	0.001	0.00004	0.001	-0.001**	0.002**	-0.0002**	0.003**	-0.0004***	-0.001	-0.00001	-0.0004
Trade balance	-0.0002	-0.001**	-0.001***	-0.005***	-0.0002	0.001	0.0001	-0.005***	0.0002	0.001	-0.0001	0.001
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

Presents the estimates of mean equation, using the method proposed by Kurov et al. (2019) and financialization variable $X_{t,2} = NLS_t$. Only the positions of the swap dealers are included in the NLS index. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 24: Announcement and financialization effects on futures returns, with an alternative financialization variable constructed from money manager positions and using the Andersen et al. (2007) approach

\{Commodities}	Crude Oil		Gold		Copper		Silver		Palladium		Natural Gas	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	-0.007	0.071	0.0002	0.001	-0.0001	-0.003	0.002	0.001	-0.021	0.050	-0.002	-0.014
ADP Employment	0.011***	-0.058***	0.001	-0.006	0.0003***	0.0003	0.001	-0.010	0.0003	-0.004	-0.0003***	-0.005
CB Consumer	0.001***	-0.006	-0.0002	-0.0001	0.0003***	0.001	-0.001***	0.003***	-0.001	0.002*	0.001***	0.003**
Advance retail sales	0.003***	-0.011**	0.0001	-0.003*	0.0003***	-0.004***	-0.0001	0.0004	0.0004	-0.003***	0.0003	0.004
Building permit	0.0001	0.001	0.0002	0.0003	-0.00003	-0.0002	0.00002	-0.001	0.002***	-0.005***	0.0004	0.003
Construction spending	0.001	-0.009**	-0.0004***	0.001**	0.0003**	-0.002***	-0.001**	0.003*	0.0005	-0.001	-0.0001	-0.002
Consumer_credit	0.001***	-0.004***	0.00000	0.0002	0.0001	-0.0002	0.00001	0.0004	0.0003	-0.0003	0.0002	0.001
Consumer price index	-0.001***	0.007	-0.001***	0.003***	0.0001	-0.002**	-0.001***	0.002***	0.001	-0.002	0.0001	0.003
Durable goods orders	0.001	-0.005	-0.001***	0.004***	0.0003**	-0.002*	-0.0005**	0.004*	0.0004	-0.0001	-0.0001	-0.003
Existing home sales	0.001***	-0.007*	0.00005	0.0004	0.0004***	-0.001	0.0004**	0.0001	0.0005	-0.002	-0.0002	-0.002
Factory orders	-0.001***	0.012***	-0.001**	0.001	-0.00003	-0.001	-0.001***	0.006***	-0.0005	0.001	0.001***	0.010***
GDP	0.001*	-0.006	-0.0003***	0.002***	0.0005***	0.001	-0.001***	0.003*	-0.001	0.002	0.0001	-0.001
Housing starts	-0.0001	0.001	-0.0004*	-0.0002	0.0001	0.001	-0.001*	-0.0005	-0.003***	0.006***	-0.0002	-0.002
Industrial production	-0.001*	0.010**	-0.0003	-0.0004	-0.0001	0.0004	-0.0004	-0.001	-0.0005	0.001	0.0001	0.001
Michigan Sentiment Index	0.0001	0.001	-0.0003**	0.0003	0.00005	0.0005	-0.0004*	0.001	-0.001**	0.002**	-0.0001	-0.001
New home sales	0.002***	-0.012**	-0.001***	0.001	0.0004***	-0.0004	-0.001**	0.0002	-0.001	0.002	0.0001	0.001
Non-farm employment	0.020***	-0.110***	0.003*	-0.013**	-0.0001	-0.003	0.001	-0.011	0.0003	-0.002	-0.0005**	-0.058***
Pending home sales	0.002***	-0.009**	-0.0004	0.001	0.00000	-0.003***	0.0001	-0.0005	0.0001	-0.001	-0.0002	-0.004**
Personal consumption	-0.0002	-0.0001	-0.0001	-0.001	0.00001	0.001	0.00005	-0.001	-0.00004	0.001	0.00001	0.001
Personal income	0.007***	-0.043***	-0.003***	0.014***	-0.0003*	-0.002*	0.001	0.005	0.001***	-0.004**	0.0004	-0.007
Producer price index	0.0002	-0.002	-0.001***	0.003***	0.0003***	-0.0001	0.00005	-0.001	-0.004***	0.009***	0.00003	-0.001
Trade balance	-0.001	0.006	-0.001***	0.002***	0.0001	-0.001*	-0.0004*	0.003	0.001	-0.001	0.0004	0.006*
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

Presents the estimates of mean equation, using the method proposed by Andersen et al. (2007) and financialization variable $X_{t,2} = NLS_t$. Only the positions of the money managers are included in the NLS index. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 25: Announcement and financialization effects on futures returns, with an alternative financialization variable NLS constructed from swap dealer positions, and the Andersen et al. (2007) approach

\{Commodities}	Crude Oil		Gold		Copper		Silver		Palladium		Natural Gas	
Announcements	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m	γ_m	θ_m
Initial jobless claims	-0.002	-0.003	-0.001	-0.009	-0.002	0.007	0.003	0.012	0.001	-0.011	-0.002	0.016
ADP Employment	0.005**	0.021**	-0.007***	-0.020***	-0.001	0.007	-0.003***	-0.062***	-0.001	0.006	-0.001	0.012
CB Consumer	0.001***	0.006***	-0.0004***	-0.001***	-0.001**	0.003***	-0.0003**	0.001	-0.0001	-0.002**	0.0002	0.001
Advance retail sales	0.002***	0.007***	-0.002***	-0.006***	-0.002***	0.011***	-0.0001	0.003	-0.0001	0.0001	0.00003	0.001
Building permit	0.001**	0.003*	-0.00002	-0.001	-0.00005	0.0002	0.0001	0.004*	-0.00005	0.002	0.001**	-0.008**
Construction spending	-0.00001	0.003	-0.0001*	0.0004*	-0.001***	0.005***	-0.0001	0.0003	0.0002	0.002	0.0002	-0.002
Consumer_credit	0.0002**	0.002***	0.0001	0.0001	-0.0001	0.001	0.0001	0.00003	0.0001	0.001	0.0001	0.0004
Consumer price index	-0.001**	-0.003	0.0002*	-0.00004	-0.001	0.002	-0.0003***	-0.003***	-0.0001	0.002	0.0001	-0.002
Durable goods orders	0.001**	0.004**	-0.0003	-0.001	-0.0003	0.002	0.00003	0.004**	0.001*	0.002	-0.001	0.005
Existing home sales	0.0005***	0.001	0.0002*	0.0003	-0.001	0.004**	0.0005***	0.004***	-0.0003	0.001	0.00003	-0.00003
Factory orders	0.0001	-0.003**	-0.001***	-0.003***	0.001**	-0.003***	-0.0002**	-0.006***	-0.0002	-0.0002	0.002***	-0.010***
GDP	0.001**	0.003*	0.001***	0.007***	-0.0002	0.002	-0.001***	-0.004*	-0.0004	-0.001	-0.0003	0.004
Housing starts	0.0005	0.003	-0.001***	-0.001*	-0.0001	0.001	-0.001***	-0.002	-0.001**	-0.004***	-0.0003	0.001
Industrial production	0.0003	0.003	-0.00003	0.002***	-0.0002	0.001	-0.0005***	0.003	-0.0001*	-0.002**	0.0002	-0.002
Michigan Sentiment Index	0.0003	0.001	-0.0001	0.001	-0.00001	0.0003	-0.0003**	0.0004	-0.0002	-0.002	-0.0004	0.003
New home sales	0.001*	0.004**	-0.00003	0.002**	-0.001**	0.005***	-0.001***	-0.0002	-0.0003	-0.002	0.0002	-0.002
Non-farm employment	0.025***	0.121***	-0.029***	-0.079***	-0.020***	0.104***	0.001	0.018	-0.001	0.007	-0.002***	0.099***
Pending home sales	0.001***	0.003*	0.0001	0.001	0.0003	-0.002	0.00000	0.0004	-0.0001	0.001	0.00001	0.003
Personal consumption	-0.00002	0.001	-0.0005*	-0.001	0.00001	0.0003	-0.0001	0.003	0.0003	-0.001	-0.0003	0.003
Personal income	0.004***	0.023***	-0.004***	-0.013***	-0.002***	0.011***	-0.0003	-0.032***	-0.0002	0.005***	0.00003	0.006
Producer price index	0.0002	0.0001	0.0001	0.001	0.0002	0.00002	-0.0003*	0.005**	-0.001***	-0.002	0.0002	-0.002
Trade balance	-0.0003	-0.001	-0.001***	-0.007***	-0.0003	0.001	-0.0002	-0.002	0.0001	-0.0003	0.001	-0.003
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

This table presents the estimates of the mean equation, using the method proposed by Andersen et al. (2007) and financialization variable $X_{t,2} = NLS_t$. Only the positions of the swap dealers are included in the NLS index. The γ_m coefficients capture the instantaneous change in return when an announcement has just occurred and especially if that announcement was unanticipated. The coefficients θ_m capture the instantaneous change in return when an announcement has just occurred in conjunction with the level of financialization.

Table 26: Announcement and financialization effects on conditional variance, with an alternative financialization variable constructed from money manager positions

\{Commodities}	Crude Oil		Gold		Copper		Silver		Palladium		Natural Gas	
Announcements	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m
Initial jobless claims	0.001	-0.006	-0.0003	0.0003	-0.0002	-0.0005	-0.0001	-0.001	0.001	-0.002	-0.0005*	-0.0002
ADP Employment	-0.0001	0.001	0.0005***	-0.001*	0.0002***	0.0004	0.001***	-0.0004	-0.0005	0.001	0.0002	0.001
CB Consumer	0.001***	-0.007***	0.0002***	0.0001	0.0003***	-0.0005	0.0004***	0.00001	0.0001	0.0001	0.0002**	0.0003
Advance retail sales	0.001***	-0.010***	0.001***	-0.002***	0.0003***	-0.001**	0.001***	-0.001	-0.0003	0.002**	0.00002	0.002
Building permit	0.001	-0.016	0.001***	-0.002	-0.0002	0.0002	0.001	-0.002	0.017***	-0.034***	0.0005	0.005
Construction spending	0.001***	-0.007**	0.001***	-0.0001	0.0004***	-0.001***	0.001***	-0.0001	0.001***	-0.002**	0.0002**	-0.004***
Consumer_credit	0.0003	-0.002	0.00005	0.00005	0.0001	0.001	0.0001	0.001	-0.0004	0.001	0.00004	0.0001
Consumer price index	0.0003	-0.001	0.001***	-0.001*	0.00002	0.0002	0.001***	-0.002**	0.0002	-0.0003	-0.0001	-0.001
Durable goods orders	0.0002	0.001	0.0004***	-0.0004	0.0001	-0.001	0.0005***	-0.001	0.001	-0.0003	0.0001	0.0003
Existing home sales	0.001***	-0.007**	0.0002**	0.0001	0.0002**	-0.002***	0.0003**	-0.001	0.002***	-0.005***	0.0003**	-0.002**
Factory orders	0.001***	-0.007**	0.00004	0.001**	0.0003***	-0.001***	-0.00004	0.002**	0.0001	0.0002	0.0004***	-0.004***
GDP	0.001**	-0.010**	0.0004***	0.0004	0.0003***	0.001	0.001***	-0.0003	0.001	-0.0002	-0.001***	-0.001
Housing starts	-0.00002	0.010	-0.001**	0.002	0.0002	-0.0004	-0.0003	0.001	-0.017***	0.032***	-0.001	-0.005
Industrial production	0.001***	-0.012***	0.0002***	0.0002	0.0001**	-0.001**	0.0004***	-0.001	0.002***	-0.003***	-0.0002	-0.002**
Michigan Sentiment Index	0.0003	-0.003	-0.00003	0.001***	0.00000	0.0001	0.0001	0.001*	-0.00001	0.0004	-0.0001	0.001*
New home sales	0.001	-0.004	0.0004***	-0.0003	0.0002***	0.00004	0.0005***	-0.0004	0.002***	-0.003***	-0.0001	-0.003***
Non-farm employment	0.003***	-0.020***	0.002***	0.0003	0.001***	-0.003***	0.004***	0.0004	0.002***	-0.002	0.001***	-0.012***
Pending home sales	0.001***	-0.006**	0.0001	-0.0003	0.0003***	-0.0003	-0.00001	0.0003	0.0003	-0.0005	0.0004***	-0.004***
Personal consumption	0.0004	-0.003	0.0002	-0.0003	0.00001	-0.0002	0.0001	0.00004	0.001**	-0.001	0.0003**	-0.003**
Personal income	0.001	0.005	-0.0001	0.001**	0.0003**	0.003***	-0.0002	0.001	-0.001*	0.002*	-0.0003	0.010***
Producer price index	0.001	-0.003	0.0002**	-0.0003	0.00005	0.0005	0.0003**	-0.0001	0.001***	-0.002**	0.0002*	-0.001
Trade balance	0.001	-0.002	-0.0005***	0.003***	-0.0004***	0.0005	-0.0003**	0.003***	-0.00000	0.001	0.0003**	0.002
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

Presents the estimate of variance equation using financialization variable NLS (for Money Manager positions). The Φ_m coefficients capture the instantaneous change in the conditional variance when an announcement has just occurred. The ϕ_m coefficients capture the conditional variance when an announcement has just occurred in conjunction with the level of financialization.

Table 27: Announcement and financialization effects on conditional variance, with an alternative financialization variable NLS constructed from swap dealer positions

\{Commodities}	Crude Oil		Gold		Copper		Silver		Palladium		Natural Gas	
Announcements	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m	Φ_m	ϕ_m
Initial jobless claims	-0.001	-0.007**	-0.00000	0.002*	0.0004	-0.002	-0.0002	0.002	-0.0004	-0.0005	-0.0002	-0.003
ADP Employment	0.0001	0.001	0.0004***	0.0003	-0.0002	0.002**	0.001***	-0.0003	-0.0001	-0.001	0.0004**	-0.003*
CB Consumer	0.001***	0.002***	0.0003***	0.0003	-0.001***	0.004***	0.0004***	0.001**	0.0001	-0.0003	0.0003**	-0.001
Advance retail sales	0.001***	0.006***	0.001***	0.001**	-0.001***	0.004***	0.001***	-0.001	0.0002*	-0.001*	0.0003	-0.003**
Building permit	-0.0003	0.005	0.0004	-0.001	0.001	-0.004	0.001**	-0.012*	0.006***	0.109***	-0.0001	0.001
Construction spending	0.001***	0.001	0.0005***	-0.001***	-0.001***	0.004***	0.001***	0.003***	0.001***	0.002**	0.0003*	0.001
Consumer_credit	0.0002	0.002	0.00003	-0.0002	0.0002	-0.001	0.0002**	-0.001	-0.0002	-0.002*	-0.00003	0.001
Consumer price index	0.0002	0.001	0.001***	0.001*	-0.0001	0.0005	0.001***	0.0001	0.0002	0.001	-0.00005	0.0002
Durable goods orders	0.001***	0.003***	0.0003***	-0.0003	-0.0003	0.002*	0.0004***	0.003***	0.0005***	0.001	-0.0001	0.002
Existing home sales	0.0002	-0.003**	0.0002**	-0.001	-0.0003*	0.002***	0.0003***	0.003**	0.001***	0.007***	0.001***	-0.002
Factory orders	0.001***	0.001	0.0003***	-0.0002	-0.0001	0.001	0.0002*	-0.002**	0.0001	-0.001	0.0005**	0.002
GDP	0.0004**	0.005***	0.0002*	-0.003***	0.0003	0.0002	0.001***	0.002	0.001***	0.001	-0.001*	0.0004
Housing starts	0.001	-0.002	-0.0001	0.001	-0.001	0.006	-0.001*	0.013*	-0.005***	-0.108***	-0.00000	0.0002
Industrial production	0.0003*	0.003***	0.0004***	0.001	-0.0001	0.001	0.0003***	0.0001	0.0003**	0.003***	-0.0002	0.001
Michigan Sentiment Index	0.0001	0.002**	0.00002	-0.001***	0.0001	-0.0002	0.0002***	-0.0004	0.0001	-0.001*	0.0001	-0.002**
New home sales	0.0004**	0.003**	0.0004***	0.0003	-0.0002	0.001*	0.0005***	0.002***	0.0005***	0.003***	-0.0004**	0.004**
Non-farm employment	0.002***	0.014***	0.003***	0.002***	-0.002***	0.011***	0.004***	0.007***	0.002***	0.004***	0.001*	0.004
Pending home sales	0.0004**	0.002*	0.0002*	0.001**	-0.0005**	0.003***	0.00003	-0.001	0.0001	0.001	0.001***	-0.006***
Personal consumption	0.0001	-0.0001	0.0002**	0.001*	-0.0001	0.0003	0.0001	0.001	0.001***	0.002	-0.0002	0.006***
Personal income	0.001	-0.006**	-0.0005***	-0.004***	0.001***	-0.003**	0.0001	0.004**	0.0001	-0.002	0.00004	-0.005*
Producer price index	0.0001	0.001	-0.00002	-0.001**	0.0001	-0.0002	0.0003***	-0.002**	0.001***	0.002**	0.0002	0.00002
Trade balance	0.0004**	0.0002	-0.001***	-0.005***	-0.00005	-0.001	0.00003	-0.008***	0.0004***	-0.001	0.0001	0.001
Observations	971,990		968,656		917,529		960,063		609,496		880,021	

Presents the estimate of variance equation using financialization variable NLS (for swap dealers positions). The Φ_m coefficients capture the instantaneous change in the conditional variance when an announcement has just occurred. The ϕ_m coefficients capture the conditional variance when an announcement has just occurred in conjunction with the level of financialization.