Monetary Policy Surprises

From expected actions to target news, path news, and immediate global repricing

Macro-Finance · Lecture 3 · Trinity Term 2026

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The lecture moves from actions to news

01 **Define the surprise**

Policy news is the revision between what markets expected before an announcement and what they price after it.

02 **Isolate current-target news**

Kuttner uses federal funds futures to separate anticipated target actions from unexpected actions.

03 **Recover future-path news**

Gürkaynak, Sack, and Swanson show that one factor is not enough: statements also reshape expected future rates.

> **Identification begins by replacing the observed action with the expectation revision.**

Then take the surprise across borders

04 **Measure global spillovers**

Hausman and Wongswan trace U.S. target and path news into foreign equities, currencies, and interest rates.

05 **Align the traded asset and window**

Kansoy uses U.S.-listed country ETFs to observe impact repricing while foreign cash markets are closed.

06 **Compare the estimands**

The synthesis shows how each paper answers a richer measurement question without abandoning the surprise principle.

> **The object becomes richer—target, path, foreign assets, closed-market impact—but it remains policy news.**

Part I

Introduction

Why surprises, not changes?

The policy object can be a target or a path

Markets price an entire expected policy sequence, not only today's rate. For any payoff-relevant policy object,

$$g_t \equiv g\left(r_t^*, r_{t+1}^*, \ldots, r_{t+H}^*\right).$$

r_{t+h}^*
The central-bank target for date $t+h$.

H
The horizon over which expected policy matters.

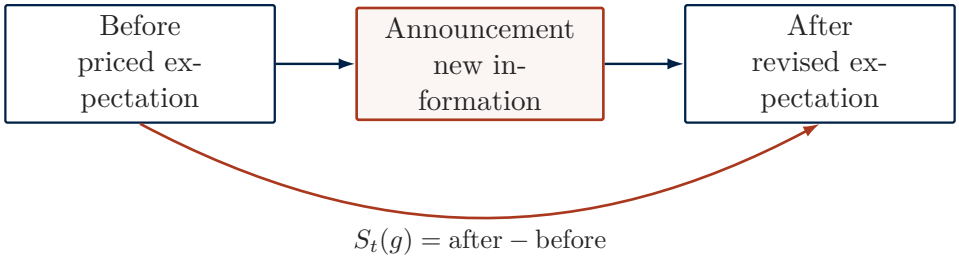
g_t
Current target, future path, or an average expected rate.

The measured surprise depends on which policy object the asset is pricing.

Policy news is a filtration revision

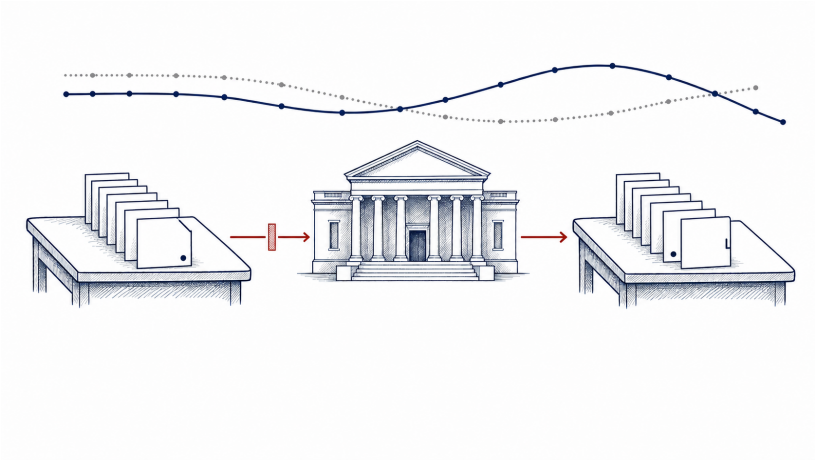
Let $\mathcal{F}_{t^-}$ and $\mathcal{F}_{t^+}$ be the information sets just before and just after an announcement.

$$S_t(g) \equiv \mathbb{E}[g_t \mid \mathcal{F}_{t^+}] - \mathbb{E}[g_t \mid \mathcal{F}_{t^-}] .$$



An action is news only to the extent that it changes the conditional expectation.

Policy news reorders what the market had already priced



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The surprise is unpredictable before the event

The same expectation-revision object appears again:

$$S_t(g) = \mathbb{E}[g_t \mid \mathcal{F}_{t^+}] - \mathbb{E}[g_t \mid \mathcal{F}_{t^-}].$$

By construction,

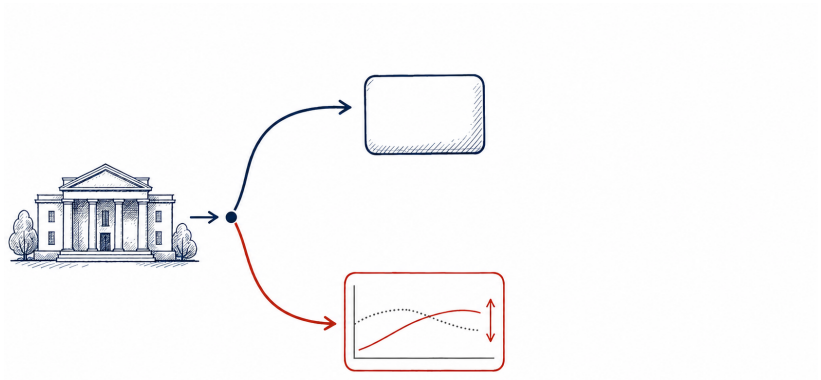
$$\mathbb{E}[S_t(g) \mid \mathcal{F}_{t^-}] = 0.$$

Positive surprise
More hawkish expected policy for the chosen object g_t.

Zero surprise
The announcement confirms what was already priced.

Unpredictable does not mean economically small; it means orthogonal to the pre-announcement information set.

Only the unexpected branch moves the market on impact



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Target news and path news are different revisions

Current-target news

$$S_t^{\text{target}} = r_t^* - \mathbb{E}[r_t^* \mid \mathcal{F}_{t^-}]\,.$$

The unexpected part of today's target decision.

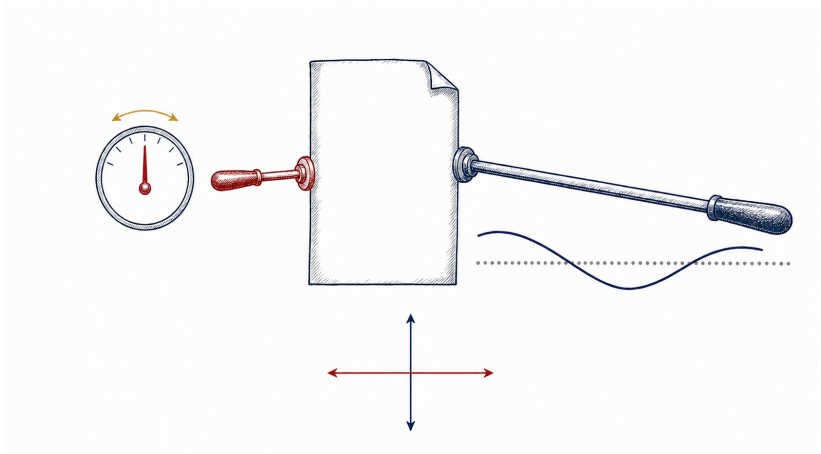
Future-path news

$$S_{t,h}^{\text{path}} = \mathbb{E}[r_{t+h}^* \mid \mathcal{F}_{t^+}] - \mathbb{E}[r_{t+h}^* \mid \mathcal{F}_{t^-}], \qquad h > 0.$$

The revision to a future policy rate.

A meeting can contain almost no target news and still deliver large path news.

One announcement can move two independent policy dimensions



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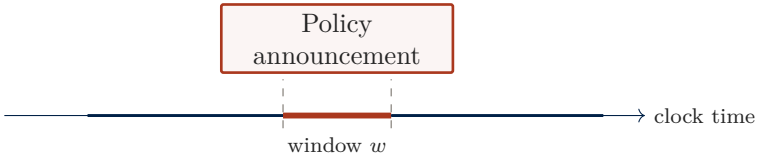
The event-study object is an intrawindow change

For announcement window $w = [t^-, t^+]$, define

$$\Delta_w x_t \equiv x_{t^+} - x_{t^-}.$$



- Before: the old expectation is embedded in the price.
- Inside: the announcement is processed.
- After: the new expectation is embedded in the price.

Window alignment turns a price change into an event-study outcome.

Long yields price a path plus a term premium

For a nominal n-period yield,

$$i_t^{(n)} \approx \frac{1}{n} \sum_{j=0}^{n-1} \mathbb{E}\left[i_{t+j}^{(1)} \mid \mathcal{F}_t \right] + \mathrm{TP}_t^{(n)} .$$

Expected short-rate path
The average of current and expected future one-period rates.

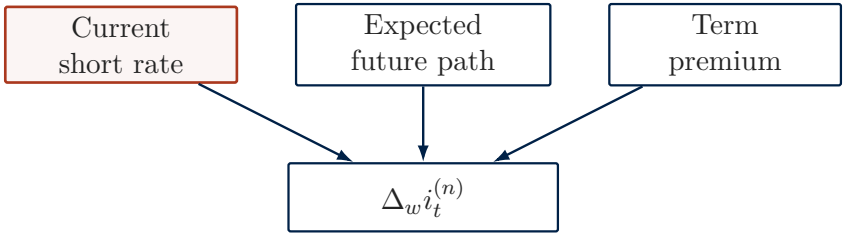
Term premium
Compensation for duration, inflation, and other risks embedded in the long bond.

A long yield can move even when the current target does not.

A yield surprise has three additive pieces

Apply Δ_w to the term-structure identity:

$$\Delta_w i_t^{(n)} \approx \underbrace{\frac{1}{n}\Delta_w i_t^{(1)}}_{\text{current short rate}} + \underbrace{\frac{1}{n}\sum_{j=1}^{n-1}\Delta_w \mathbb{E}[i_{t+j}^{(1)} \mid \mathcal{F}_t]}_{\text{expected future path}} + \underbrace{\Delta_w \, \mathrm{TP}_t^{(n)}}_{\text{term premium}} .$$



The decomposition is an accounting identity; identification requires a measure of the policy-news components.

The path term is itself an expectation revision

For each future short rate,

$$\Delta_w \mathbb{E}\left[i^{(1)}_{t+j} \mid \mathcal{F}_t\right] = \mathbb{E}\left[i^{(1)}_{t+j} \mid \mathcal{F}_{t^+}\right] - \mathbb{E}\left[i^{(1)}_{t+j} \mid \mathcal{F}_{t^-}\right].$$

- A predictable action produces no revision.
- A statement can revise distant expected short rates.
- A term-premium change can also move the long yield.

The long-yield response does not identify target news by itself; it is an outcome that the surprise measure must explain.

Monthly regressions mix policy and macro news

A low-frequency regression,

$$\Delta y_t = \alpha + \beta \Delta r_t + \varepsilon_t,$$

does not isolate the causal response to policy news.

Failure	Why it enters	Consequence
Reverse causality	The bank reacts to financial conditions while markets react to the bank.	$\mathrm{Cov}(\Delta r_t, \varepsilon_t) \neq 0$.
Omitted macro news	Inflation, employment, output, and risk news move both the rate and the asset.	β absorbs non-policy information.
Anticipation	Expected policy is priced before the meeting.	The observed action is not the news.

The solution is a different regressor, not merely a different estimator.

High-frequency identification changes the regressor

Let S_t be the policy-news vector extracted from futures prices:

$$\boxed{\Delta_w y_t = \alpha + \theta' S_t + \varepsilon_{t,w}.}$$

The local identifying restriction is

$$\mathbb{E}[\varepsilon_{t,w} \mid S_t] = 0.$$

- The window is short enough to exclude unrelated news.
- It is long enough for markets to price the announcement.
- S_t is an expectation revision, not a raw action.

A market surprise can still combine target news, path news, and central-bank information about the economy.

Part II

Kuttner (2001)

The target surprise from federal funds futures.

Raw target changes make policy look weak

Cook and Hahn estimate

$$\Delta R_{j,t} = \alpha_j + \beta_j \Delta r_t^* + \varepsilon_{j,t}.$$

Yield response to 100 bp	3-month	2-year	10-year
Cook–Hahn, 1974–79	55	–	about 10
Kuttner, 1989–2000	26.8	18.2	4.3

The post-1989 coefficient is weaker because the raw target change combines what was expected with what was new.

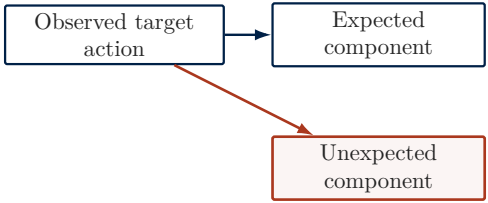
The puzzle is the regressor, not the disappearance of monetary-policy transmission.

A target action has expected and surprise parts

$$\Delta r_t^* = \underbrace{\Delta r_t^e}_{\text{anticipated}} + \underbrace{\Delta r_t^u}_{\text{surprise}} .$$

If asset prices respond only to the surprise,

$$\Delta R_t = \beta \Delta r_t^u + \varepsilon_t, \qquad \text{Cov}(\Delta r_t^u, \varepsilon_t) = 0.$$



Only the unexpected component is new policy information at the announcement.

Expected variation attenuates the raw coefficient

Regressing on Δr_t^* instead of Δr_t^u gives

$$\operatorname{plim} \widehat{\beta}_{\text{raw}} = \beta \frac{\operatorname{Var}(\Delta r_t^u)}{\operatorname{Var}(\Delta r_t^u) + \operatorname{Var}(\Delta r_t^e)}.$$

- The numerator is variation in true policy surprises.
- The denominator is variation in all observed target changes.
- More predictable policy raises the anticipated share.
- The raw-action coefficient falls even if β is unchanged.

Predictability is good policy communication but bad measurement when expected actions are treated as shocks.

The variance ratio is the surprise share

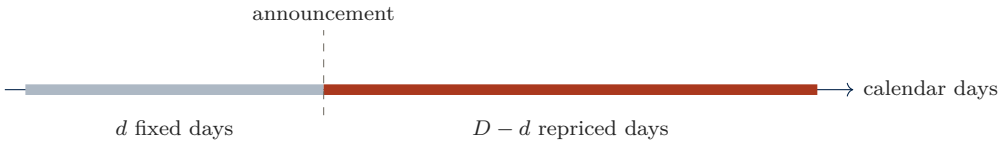
$$\frac{\mathrm{Var}(\Delta r_t^u)}{\mathrm{Var}(\Delta r_t^u) + \mathrm{Var}(\Delta r_t^e)} = \frac{\text{variation in surprises}}{\text{variation in actual target changes}}.$$

Meeting	Actual Δr_t^*	Expected Δr_t^e	Surprise Δr_t^u
1	+25	+25	0
2	+25	+20	+5
3	0	0	0
4	−50	−45	−5

Actual policy can vary substantially while announcement surprises remain small.

The current-month contract prices a monthly average

Let D be days in the month and d the days whose rates are already fixed when the announcement arrives. Then $D - d$ days can be repriced.



The contract settles on the monthly average effective federal funds rate. A target surprise affects only the remaining $D - d$ days.

Monthly averaging dilutes the observed futures-rate change.

Before and after share the same fixed days

Let r^{old} be the target before the announcement.

$$f^0_{s,t^-} = \underbrace{\frac{d}{D}\bar{r}_{\le d}}_{\text{fixed part}} + \frac{D-d}{D}\left(r^{\text{old}} + \mathbb{E}[\Delta r^*_t \mid \mathcal{F}_{t^-}]\right) + \mu^0_{s,t^-},$$

$$f^0_{s,t^+} = \underbrace{\frac{d}{D}\bar{r}_{\le d}}_{\text{same fixed part}} + \frac{D-d}{D}\left(r^{\text{old}} + \Delta r^*_t\right) + \mu^0_{s,t^+}.$$

Before the event, the remaining-month rate contains the expected action; after it, the action is known.

Differencing removes the common fixed component

Subtract the pre-announcement contract rate from the post-announcement rate:

$$\Delta_w f^0_{s,t} = \frac{D-d}{D}\left(\Delta r^*_t - \mathbb{E}[\Delta r^*_t \mid \mathcal{F}_{t^-}]\right) + \Delta_w \mu^0_{s,t}.$$

- The historical d-day average cancels.
- The old target cancels.
- What remains is a diluted surprise plus the intrawindow premium change.

The futures-rate change isolates a revision; the monthly-average weight determines its scale.

Kuttner rescales the futures movement

If the futures premium does not jump in the event window,

$$\Delta_w \mu^0_{s,t} \approx 0,$$

and

$$\Delta r^u_t \equiv \Delta r^*_t - \mathbb{E}[\Delta r^*_t \mid \mathcal{F}_{t-}].$$

Therefore,

$$\boxed{\text{mp1}_t \equiv \Delta r^u_t = \frac{D}{D-d}\left(f^0_{s,t^+} - f^0_{s,t^-}\right).}$$

mp1 **is the futures-implied unexpected current-target change.**

The scale factor reverses monthly averaging

If half the month remains,

$$\frac{D}{D-d} = 2.$$

A 5 bp futures-rate movement implies

$$\text{mp1} = 2 \times 5 = 10 \text{ bp}.$$

Kuttner's original window
Previous-day futures close to announcement-day futures close.

Later implementation
A narrow intraday window around the announcement.

The economic object is unchanged; later data make the window more local.

Read the implied rate, not the futures price

The contract convention is

$$f = 100 - \text{futures price}.$$

Reversing the price/rate sign reverses the economic interpretation.

Month-end scaling amplifies noise

Near month-end, $D - d$ is small:

$$\frac{D}{D-d} \quad \text{becomes large.}$$

- Bid–ask and intrawindow premium noise are multiplied by the same scale factor.
- Kuttner therefore switches to the next-month contract when the current month has too few repriced days.

Once the surprise is measured, the expected component is

$$\Delta r_t^e = \Delta r_t^* - \Delta r_t^u.$$

Implementation discipline protects the conceptual split between priced-in policy and new policy information.

Estimate expected and surprise responses separately

For each maturity j, Kuttner estimates

$$\Delta R_{j,t} = \alpha_j + \beta_{e,j}\Delta r_t^e + \beta_{u,j}\Delta r_t^u + \varepsilon_{j,t}.$$

With Δr in percentage points and ΔR in basis points,

$$\beta_{u,j} = \text{bp response of maturity } j \text{ to a 100 bp surprise tightening.}$$

The regression asks whether yields respond to the expected action or to the news inside it.

A rate cut can still be hawkish news

Suppose the Fed cuts 25 bp but markets expected a 50 bp cut:

$$\Delta r_t^u = -25 - (-50) = +25 \text{ bp.}$$

Observed action
A 25 bp easing.

Unexpected component
25 bp tighter than expected.

Hawkish and dovish describe news relative to the counterfactual expectation, not the sign of the action.

The yield response reappears in the surprise

Maturity	3m	2y	5y	10y
Raw action	26.8	18.2	10.4	4.3
Anticipated component	4.4	−0.4	−5.8	−7.4
Surprise component	**79.1**	**61.4**	**48.1**	**31.5**

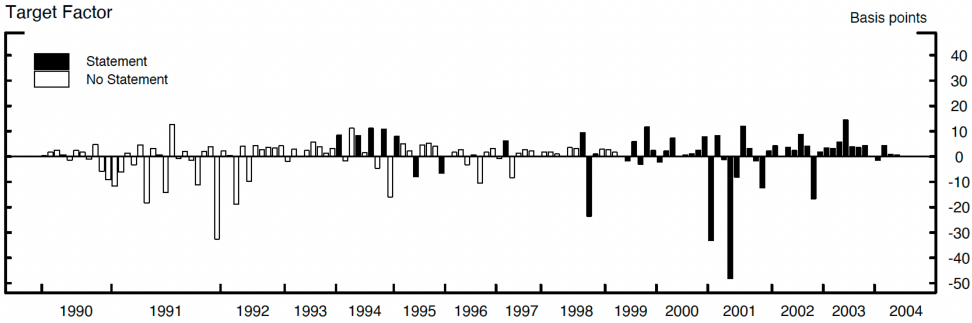
A 25 bp surprise tightening raises the two-year yield by about

$$0.25 \times 61.4 \simeq 15 \text{ bp.}$$

- The anticipated component is small.
- The surprise component is large across the curve.

Source: Kuttner (2001), Tables 1 and 3. Coefficients are bp per 100 bp target component.

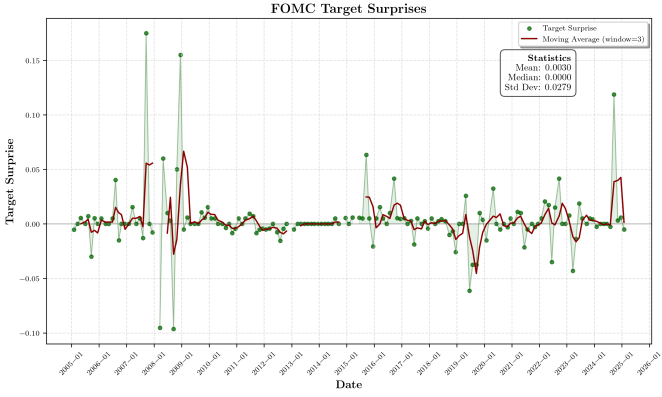
Target surprises, 1990–2004



Source: Gürkaynak, Sack, and Swanson (2005); supplied course chart.

Target news varies sharply across meetings and is often small even when policy actions occur.

Target surprises, 2005–2025



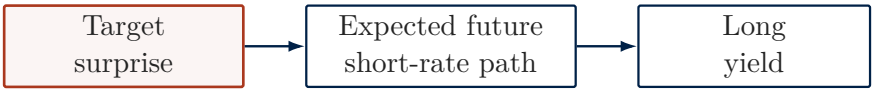
Source: Kansoy (2025); supplied course chart.

The modern sample preserves the same object: the target revision around each FOMC announcement.

A target surprise matters through the expected path

A long yield responds only if target news changes expected future short rates or the term premium:

$$\Delta_w i_t^{(n)} \approx \frac{1}{n} \sum_{h=0}^{n-1} \Delta_w \mathbb{E}[i_{t+h}^{(1)} \mid \mathcal{F}_t] + \Delta_w \, \mathrm{TP}_t^{(n)} .$$



The current-target surprise is economically important when it changes beliefs about what comes next.

Nearby futures reveal timing news

Kuttner estimates

$$\Delta f_{h,t} = a_h + \lambda_h \Delta r_t^u + u_{h,t}.$$

Horizon	1m	2m	3m	4m	5m
$\widehat{\lambda}_h$	0.64	0.62	0.55	0.61	0.57

Every displayed estimate is below one and similar across nearby horizons. The legacy prose says "above one-for-one," which conflicts with its own 0.55–0.64 table. The economic reading here follows the numbers: target news often changes policy *timing*, not the whole path forever.

Source: Kuttner (2001), Table 7.

Limit 1: current-target news is one dimension

Kuttner maps the current-month contract into

$$\Delta_w f^0_{s,t} \Longrightarrow S^{\text{target}}_t .$$

Yet

$$i^{(n)}_t \approx \frac{1}{n} \sum_{h=0}^{n-1} \mathbb{E}[i^{(1)}_{t+h} \mid \mathcal{F}_t] + \text{TP}^{(n)}_t .$$

A statement can move $\mathbb{E}[i^{(1)}_{t+h}]$ for $h > 0$ while $S^{\text{target}}_t \approx 0$.

A scalar target surprise omits path news when the future-rate revision arrives without current-target news.

Limit 2: no target action is not no policy news

Kuttner's current-target surprise is

$$\Delta r_t^u = \Delta r_t^* - \mathbb{E}[\Delta r_t^* \mid \mathcal{F}_{t-}].$$

If no change was expected and delivered,

$$\Delta r_t^* = 0, \qquad \Delta r_t^u \approx 0.$$

The statement may still reveal

- how long the stance will last;
- the future path of rates;
- the Fed's assessment of the economy.

GSS therefore replace the scalar target surprise with target and path dimensions.

Part III

Gürkaynak, Sack, and Swanson (2005)

Target and path: two dimensions of policy news.

28 January 2004: no target news, large market move

The FOMC kept the target at 1%, exactly as expected:

$$\Delta r_t^* = 0, \qquad \text{mp1}_t \simeq 0.$$

The statement replaced "considerable period" with "patient" when describing the removal of accommodation.

30-minute response	2y Treasury	5y Treasury	10y Treasury	S&P 500
Announcement window	+20 bp	+25 bp	+15 bp	about −1%

> Markets inferred that the first rate hike had moved closer, even though the current target did not change.

A target-only measure records almost no policy news; prices reveal path news.

GSS observe a five-variable intraday vector

For each FOMC announcement, GSS use

$$w = [-10, +20] \text{ minutes}$$

and collect

$$X_t = \left[\text{mp1}_t,\ \text{mp2}_t,\ \Delta\text{ed2}_t,\ \Delta\text{ed3}_t,\ \Delta\text{ed4}_t\right].$$

Dimensionality is visible when short- and longer-horizon futures do not move together.

The instruments span the target and the next year

Component	Instrument	Horizon captured
mp1_t	current-month fed funds futures	current target decision
mp2_t	second-month fed funds futures	next FOMC meeting
Δed2_t	Eurodollar futures	about 2 quarters ahead
Δed3_t	Eurodollar futures	about 3 quarters ahead
Δed4_t	Eurodollar futures	about 4 quarters ahead

If all five series move together, one common factor is enough. If the current and future rates move differently, the announcement has multiple news dimensions.

The cross-horizon covariance pattern determines how many policy-news factors are needed.

Second-month futures contain two meeting effects

Let the next FOMC meeting occur on day d_2 of a D_2-day contract month. Then

$$\Delta_w FF2_t \equiv FF2_t^{\text{after}} - FF2_t^{\text{before}}.$$

The contract change decomposes as

$$\Delta_w FF2_t = \underbrace{\frac{d_2}{D_2}\text{mp1}_t}_{\text{today's target news}} + \underbrace{\frac{D_2 - d_2}{D_2}\text{mp2}_t}_{\text{rate after next meeting}} + \Delta_w \rho_t.$$

Today's target surprise mechanically affects every day before the next meeting; mp2 is the incremental news after it.

Strip out mp1 to recover next-meeting news

If the intrawindow premium change is negligible,

$$\Delta_w \rho_t \approx 0.$$

Solve the contract decomposition for

$$\boxed{\text{mp2}_t = \left[\Delta_w FF2_t - \frac{d_2}{D_2}\text{mp1}_t\right]\frac{D_2}{D_2 - d_2}.}$$

- Subtract today's mechanical target effect.
- Undo averaging over the post-meeting days.
- Interpret the result as a raw next-meeting surprise.

mp2 **is an input to the factor model, not yet the GSS path factor.**

A rank test asks how many news dimensions are needed

GSS write

$$X_t = F_t\Lambda + \eta_t, \qquad F_t \in \mathbb{R}^k.$$

H_0: number of factors	Wald statistic	p-value
$k = 0$	36.61	0.00007
$k = 1$	17.19	0.004
$k = 2$	1.06	0.304

$k = 1$ is rejected, $k = 2$ is not rejected.

One Kuttner-style target factor cannot summarize the covariance structure; two factors can.

Rotate two statistical factors into target and path

PCA produces

$$F_t = (F_{1,t}, F_{2,t}).$$

GSS rotate the two-dimensional space:

$$Z_t = F_t U, \qquad Z_t = (Z_{1,t}, Z_{2,t}).$$

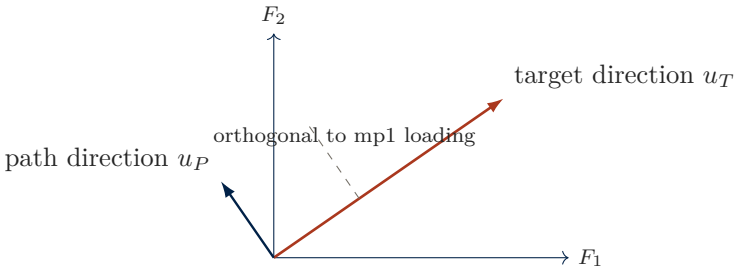
Factor	Restriction / normalization	Interpretation
Z_1	moves mp1 one-for-one	**Target news**
Z_2	no effect on mp1	**Path news**

Rotation gives economic labels to the two empirical directions.

The path direction is orthogonal to mp1

If γ is the loading of mp1 on the PCA factors, choose the path direction u_P so that

$$\gamma' u_P = 0.$$

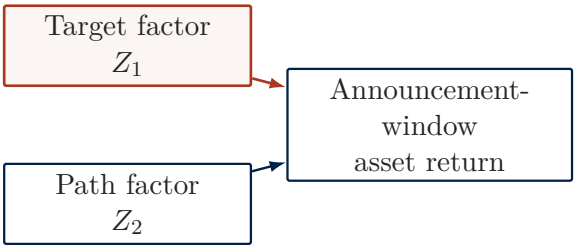


Target and path are empirical announcement dimensions; the rotation does not separate every deeper structural shock.

Regress asset prices on both policy-news factors

For each asset y,

$$\Delta y_t = \alpha + \beta \underbrace{Z_{1,t}}_{\text{target}} + \gamma \underbrace{Z_{2,t}}_{\text{path}} + \varepsilon_t.$$



The coefficients separate the current-target response from the future-path response.

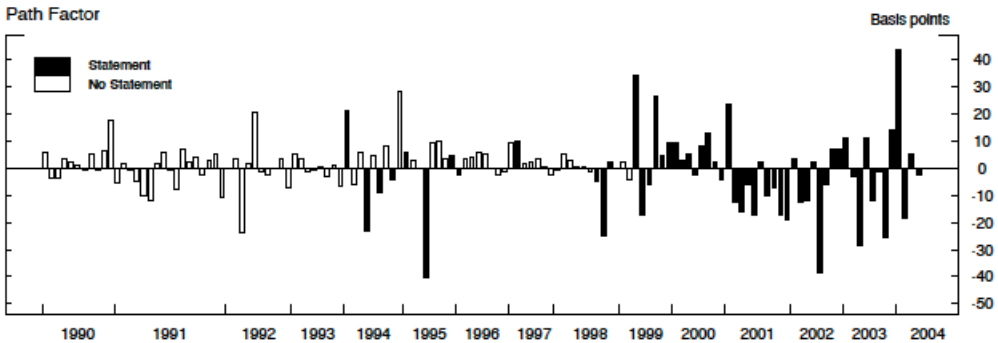
Path news moves medium and long yields

Asset	Target	Path	R^2
S&P 500	−4.28	−0.97	0.40
2-year Treasury	0.48	0.41	0.94
5-year Treasury	0.28	0.37	0.80
10-year Treasury	0.13	0.28	0.74
5y forward 5y ahead	−0.10	0.16	0.34

- Target news is strongest at the short end: 0.48 at two years, 0.13 at ten.
- Path news remains strong at five and ten years.
- Two factors explain most announcement-window Treasury movements.

Source: Gürkaynak, Sack, and Swanson (2005), Table 5.

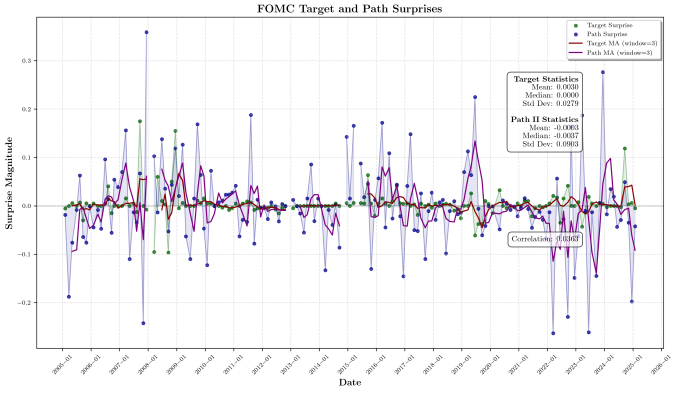
GSS path factor, 1990–2005



Source: Gürkaynak, Sack, and Swanson (2005); supplied course chart.

Statement language creates substantial path news even when current-target news is small.

Target and path surprises, 2005–2025



Source: Kansoy (2025); supplied course chart.

The two series remain distinct in the modern sample, preserving the target–path representation.

Part IV

Hausman and Wongswan (2011)

U.S. monetary-policy surprises and global asset prices.

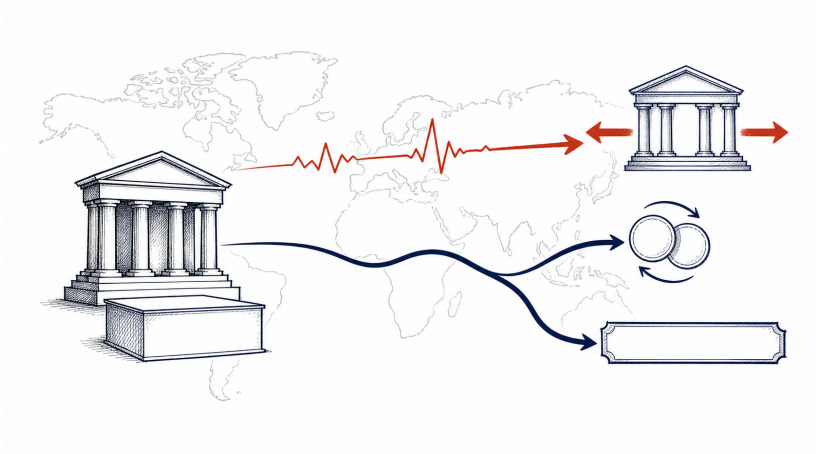
Take the Kuttner–GSS logic outside the United States

Event set	FOMC announcements, February 1994–March 2005
Countries	49 countries for equities and exchange rates; smaller interest-rate sample
Outcomes	Foreign equity returns, exchange rates, 3-month rates, and 10-year yields
Window	Daily local-market window around the FOMC announcement

The question is whether U.S. target and path news move foreign assets, and which asset absorbs each dimension.

A U.S. surprise becomes a global shock when it changes foreign discount rates, currencies, or risk appetite.

Target and path news route through different foreign assets



Editorial marker illustration generated for this lecture.

Use target news and a one-year-ahead path revision

The paper uses two U.S. policy-news measures:

$$TS_t = \underbrace{\text{current-target surprise}}_{\text{fed funds futures}}.$$

$$PS_t^I = \Delta \text{ one-year-ahead Eurodollar rate.}$$

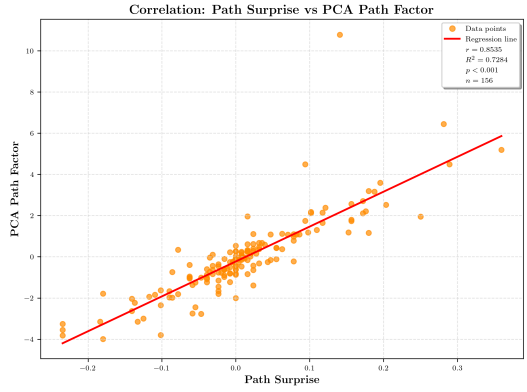
Path revision

Orthogonalize the path measure:

$$PS_t^I = \omega_0 + \omega_1 TS_t + PS_t^{II}.$$

PS^{II} **is one-year-ahead path news not explained by the current-target surprise.**

Regression and PCA path surprises are closely related



Source: Kansoy (2025); supplied course chart.

The regression residual and the rotated PCA path factor capture a similar cross-meeting direction.

Estimate asset-specific foreign responses

For asset class a, country i, and announcement t,

$$R^a_{i,t} = \alpha^a + \beta^a_T TS_t + \beta^a_P PS_t + \varepsilon^a_{i,t}.$$

β^a_T
Target-news response for asset class a.

β^a_P
Path-news response for asset class a.

Panel
Pools announcement responses across countries.

The same U.S. shock is allowed to load differently across foreign asset classes.

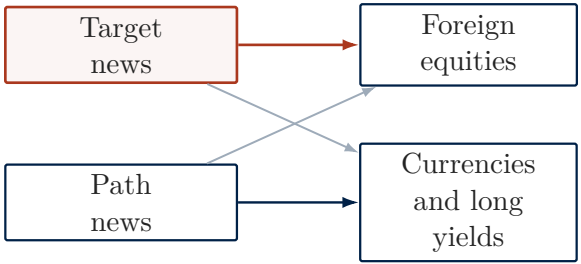
Target news moves equities; path news moves long yields

Foreign asset	Target	Path II	Main channel
Equity index	−4.13%	−0.89%	target
Exchange rate	−0.16%	+2.61%	path
3-month rate	+21 bp	+19 bp	both
10-year yield	+12 bp	+31 bp	path

- Results use the 20-country interest-rate sample and Path Surprise II.
- Returns are percentages; rate responses are basis points.
- Exchange rates are foreign currency per dollar.

Source: Hausman and Wongswan (2011), Table 3, Path Surprise II.

Read the cross-asset pattern, not one coefficient



- Contractionary target news compresses foreign equities most strongly.
- Path news produces the larger currency and long-yield response.
- A positive exchange-rate coefficient means dollar appreciation.

Target and path factors transmit through different foreign prices and horizons.

Country characteristics determine where adjustment appears

Let $X_{i,t-1}$ be known before the announcement:

$$R^a_{i,t} = \alpha^a + \beta^a S_t + \gamma^a (S_t \times X_{i,t-1}) + \varepsilon^a_{i,t}.$$

Characteristic	Main implication
Less flexible exchange rate	Larger equity and interest-rate responses
More flexible exchange rate	Larger currency response
Higher U.S. equity ownership	Larger foreign-equity response
Trade and bank exposure	Some additional cross-country variation

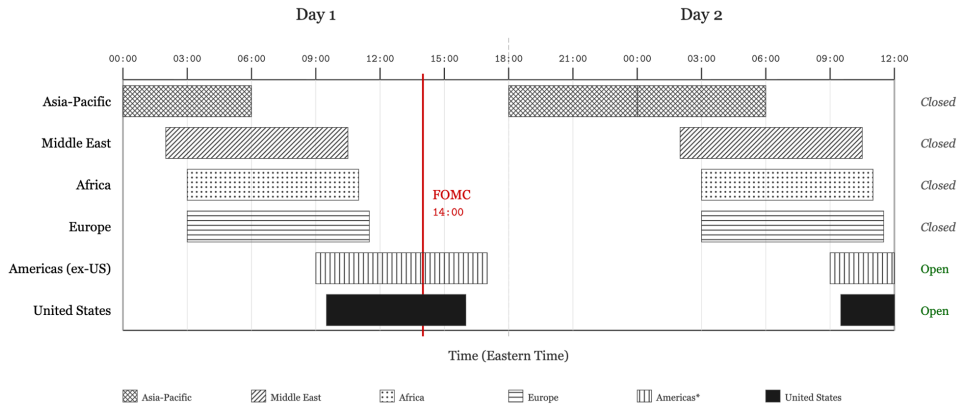
The exchange-rate regime helps determine whether the shock is absorbed by the currency, domestic rates, or equities.

Part V

Kansoy (2026)

Country ETFs, impact repricing, and dollar issuance.

At 14:00 ET, much of the foreign cash market is closed



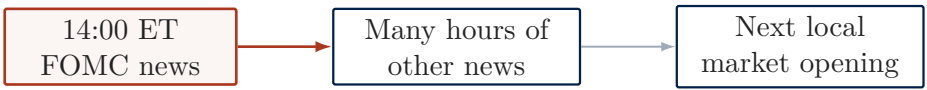
Source: Kansoy (2026); supplied course timeline.

The same FOMC announcement reaches open U.S. markets now and many foreign cash markets only at their next opening.

The measurement problem is a timing mismatch

Many foreign cash-equity markets do not trade during the FOMC window:

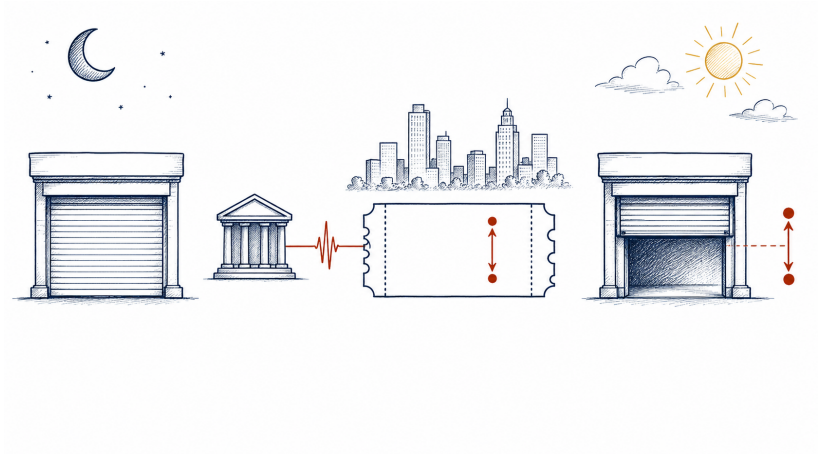
$$\underbrace{\text{New York FOMC window}}_{\text{shock occurs}} \neq \underbrace{\text{local cash-market window}}_{\text{price observed}}.$$



A daily local-index return therefore combines the U.S. policy shock with unrelated news arriving before the local market reopens.

A clean shock measure still needs an outcome observed inside the same window.

The ETF reprices while the foreign cash exchange is closed



Editorial marker illustration generated for this lecture.

A U.S.-listed country ETF supplies the impact price

A country ETF trades in New York even while its underlying foreign cash market may be closed.

$$R_{i,\tau}^{ETF,USD} = \alpha_i + \beta_i S_\tau + \varepsilon_{i,\tau}.$$

$R_{i,\tau}^{ETF,USD}$
Immediate dollar return on a tradable claim on country i.

S_τ
High-frequency U.S. monetary-policy surprise.

β_i
Country i's impact response inside the announcement window.

The ETF aligns the foreign equity claim with the shock clock.

Four checks make the ETF an impact measure

Check	What should happen
Closed-market timing	ETF returns predict the next local opening gap when the local market was closed
Open-market placebo	The same prediction is weak when the local market was open
Cross-asset coherence	ADRs, FX, currency futures, and non-U.S. equity futures move consistently
Residual basis	After removing FX, the ETF–futures wedge does not load on the policy shock

The validation question is whether the ETF reveals price discovery, not a shock-correlated wrapper premium.

The next local opening gap provides a timing test

Estimate

$$Gap_{i,t+1}^{LC} = \alpha_i + \gamma R_{i,\tau}^{ETF,USD} + \delta X_{\tau}^{US} + \nu_{i,t+1}.$$

Local market closed
The ETF discovers information first, so the expected pattern is

$$\gamma > 0.$$

Local market open
Both prices absorb the news together, so the placebo pattern is

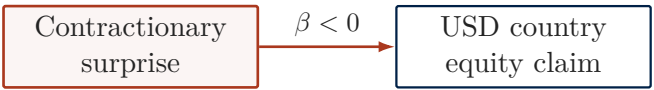
$$\gamma \simeq 0.$$

Predictive content should appear precisely where asynchronous trading creates it.

Estimate the impact response in a common window

Let $MPS_\tau > 0$ denote a contractionary surprise:

$$R_{i,\tau}^{USD} = \alpha + \beta\, MPS_\tau + \varepsilon_{i,\tau}.$$



Daily local indexes, daily country ETFs, and 30-minute country ETFs use progressively better alignment between shock and outcome.

The empirical contribution is window alignment, not simply another asset-price regression.

Intraday ETFs recover a larger, cleaner response

Outcome	$\widehat{\beta}$	R^2	1 SD shock
Daily local index	-0.021^{**}	0.010	-0.13%
Daily country ETF	-0.064^{**}	0.038	-0.38%
30-minute country ETF	$\mathbf{-0.076}^{***}$	**0.333**	$\mathbf{-0.46}\%$

- Moving from the local index to the ETF changes the traded object.
- Moving from the daily ETF to 30 minutes changes the event window.
- The aligned outcome raises both the coefficient magnitude and explanatory power.

Source: Kansoy (2026); 1 SD monetary surprise = 6.01 bp.

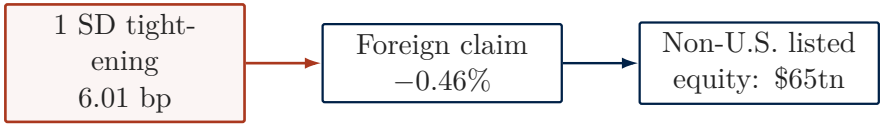
Separate the traded object from the event window

Index → ETF
Recovers much of the coefficient magnitude by observing a tradable country claim in New York.

Daily → 30 minutes
Recovers the impact signal and sharply increases explanatory power.

Measurement improves twice: first the asset, then the clock.

A small rate shock produces a large immediate valuation change



The benchmark maps the impact response into roughly

$150–300 billion

of foreign equity-market value within thirty minutes.

This is a valuation benchmark, not a realized cash-flow loss or a causal estimate of welfare.

High-frequency identification turns a few basis points of policy news into an economically legible global repricing.

Synthesis

A sequence of estimands

Actions, news, dimensions, spillovers, and synchronized outcomes.

Domestic measurement moves from actions to dimensions

Kuttner
Question: actions or surprises?
Object: futures-implied unexpected current-target change.
Lesson: expected changes do little.

GSS
Question: is one surprise enough?
Object: futures vector rotated into target and path factors.
Lesson: statements move the path.

The first step replaces the observed action; the second enriches the policy-news vector.

Global measurement moves from spillovers to impact

Hausman–Wongswan
Question: do U.S. shocks transmit abroad?
Object: target and orthogonal path surprises in foreign-asset panels.
Lesson: channels differ by asset.

Kansoy
Question: what if local markets are closed?
Object: intraday U.S.-listed country ETF return, with FX, local-equity, and basis components as extensions.
Lesson: country claims reprice now; exposure predicts dollar issuance.

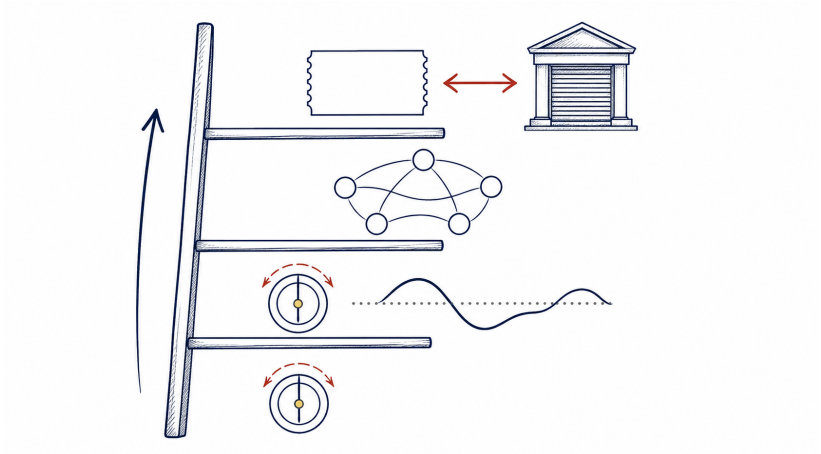
The estimand evolves when the previous outcome no longer shares the shock clock.

The lecture is one identification ladder

1. Remove what markets expected before the announcement.
2. Separate current-target news from future-path news.
3. Match each factor to the asset and horizon it should move.
4. Align the outcome window with the shock window.

Good event studies synchronize the information set, the shock, the asset, and the clock.

Each rung adds a richer estimand, not a positive return



Editorial marker illustration generated for this lecture.

Four questions to ask before reading any coefficient

1. What was expected?
The action itself is not the shock.

2. Which horizon moved?
Current target and future path are distinct.

3. Which price absorbs it?
Equities, currencies, and yields load differently.

4. Is the outcome synchronized?
Closed markets require a tradable impact proxy.

Interpretation begins with the measurement design, not the sign of $\widehat{\beta}$.

Sources: core papers

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- Hausman, J. and J. Wongswan (2011). "Global Asset Prices and FOMC Announcements." *Journal of International Money and Finance* 30(3), 547–571.
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These five references are the active lecture spine.

Sources: domestic transmission

- Bernanke, B. S. and K. N. Kuttner (2005). "What Explains the Stock Market's Reaction to Federal Reserve Policy?" *Journal of Finance* 60(3), 1221–1257.
- Nakamura, E. and J. Steinsson (2018). "High-Frequency Identification of Monetary Non-Neutrality: The Information Effect." *Quarterly Journal of Economics* 133(3), 1283–1330.
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- Bauer, M. D. and E. T. Swanson (2023). "A Reassessment of Monetary Policy Surprises and High-Frequency Identification." *NBER Macroeconomics Annual* 37(1), 87–155.

These readings extend the domestic identification and information-effect discussion.

Sources: international spillovers

- Wongswan, J. (2009). "The Response of Global Equity Indexes to U.S. Monetary Policy Announcements." *Journal of International Money and Finance* 28(2), 344–365.
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- Rey, H. (2015). "Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence." *NBER Working Paper* 21162.
- Miranda-Agrippino, S. and H. Rey (2020). "U.S. Monetary Policy and the Global Financial Cycle." *Review of Economic Studies* 87(6), 2754–2776.

These readings broaden the foreign-asset and global-financial-cycle context.

Sources: measurement extensions

- Altavilla, C., L. Brugnolini, R. S. Gürkaynak, R. Motto, and G. Ragusa (2019). "Measuring Euro Area Monetary Policy." *Journal of Monetary Economics* 108, 162–179.
- Bauer, M. D., B. S. Bernanke, and E. Milstein (2023). "Risk Appetite and the Risk-Taking Channel of Monetary Policy." *Journal of Economic Perspectives* 37(1), 77–100.

Source boundary
The legacy file contains two fully commented-out frames: "Why a one-day change rather than a level forecast" and "Decomposing the ETF response." Their equations and results remain recorded in `day3.txt`, but they are not presented as active lecture slides.

All documentary charts in this deck are normalized copies of the six supplied local assets; analytical diagrams are native TikZ.