

Macroeconomic Shocks and Cross-Sectional Stock Returns

Andrew J. Fieldhouse

Mays Business School

Texas A&M University

Hagen Kim

Mays Business School

Texas A&M University

Arvind Mahajan

Mays Business School

Texas A&M University

Midwest Finance Association Annual Meeting

March 12, 2026

Motivation

Fundamental equity valuation ties share prices to expected future cash flows and the stochastic discount factor

- Exogenous **macroeconomic shocks** offer clean identifying variation in investor expectations
- Share prices should respond through **cash flow news** and/or **discount rate news**

Motivation

Fundamental equity valuation ties share prices to expected future cash flows and the stochastic discount factor

- Exogenous **macroeconomic shocks** offer clean identifying variation in investor expectations
- Share prices should respond through **cash flow news** and/or **discount rate news**

Recently: tariff news shocks, **oil supply news shocks**, **defense spending news**

- Heterogeneous firm/industry exposure \Rightarrow cross-sectional return effects
- Macro shocks \Rightarrow natural laboratory to quantify any differential responses of well-known anomaly portfolios (value, momentum, investment, profitability)

Motivation

Fundamental equity valuation ties share prices to expected future cash flows and the stochastic discount factor

- Exogenous **macroeconomic shocks** offer clean identifying variation in investor expectations
- Share prices should respond through **cash flow news** and/or **discount rate news**

Recently: tariff news shocks, **oil supply news shocks**, **defense spending news**

- Heterogeneous firm/industry exposure \Rightarrow cross-sectional return effects
- Macro shocks \Rightarrow natural laboratory to quantify any differential responses of well-known anomaly portfolios (value, momentum, investment, profitability)

Research Questions: Do exogenous macro shocks cause differential returns across well-known anomaly portfolios? Do they carry a **risk premium**, i.e., are they **missing pricing factors**?

Contributions and Punchlines

Contributions:

- **Bridging literatures:** Exploit 12 established exogenous shocks from empirical macro to identify causal dynamic effects on cross-sectional stock returns
- **Methodological:** Study risk-premia by estimating dynamic Fama-MacBeth regressions in the impulse response space
- **Data:** New (soon to be publicly available) database of macro news shocks (monthly frequency) and estimated impulse responses for portfolio returns

Contributions and Punchlines

Contributions:

- **Bridging literatures:** Exploit 12 established exogenous shocks from empirical macro to identify causal dynamic effects on cross-sectional stock returns
- **Methodological:** Study risk-premia by estimating dynamic Fama-MacBeth regressions in the impulse response space
- **Data:** New (soon to be publicly available) database of macro news shocks (monthly frequency) and estimated impulse responses for portfolio returns

Punchlines:

- Nearly every macro shock significantly affects numerous cross-sectional return measures (6+ consecutive months, all significant at 95% level), vice versa
- Macro shocks carry risk premia, find distinct term structure with different shocks become dominant pricing factors at different horizons
- Collectively, shocks explain $\sim 10\%$ of residual variance on average in portfolios

DATA AND MACROECONOMIC SHOCKS

Data Sources

Cross-sectional stock return measures (1968m1–2024m12):

- Extensions of [Campbell and Vuolteenaho \(2004\)](#) cash flow vs. discount rate news decomposition, [Stambaugh and Yuan \(2016\)](#) mispricing factors
- Ken French data library: [Fama and French \(2015\)](#) research factors, major anomaly long/short portfolios, 12 industry portfolio returns

Data Sources

Cross-sectional stock return measures (1968m1–2024m12):

- Extensions of [Campbell and Vuolteenaho \(2004\)](#) cash flow vs. discount rate news decomposition, [Stambaugh and Yuan \(2016\)](#) mispricing factors
- Ken French data library: [Fama and French \(2015\)](#) research factors, major anomaly long/short portfolios, 12 industry portfolio returns

Macroeconomic shocks: compile a monthly dataset of 12 frontier structural shocks

- Monetary: [Bauer and Swanson \(2023\)](#), [Aruoba and Drechsel \(forthcoming\)](#)
- Credit: [Gilchrist and Zakrajsek \(2012\)](#) excess bond premium (EBP), [Fieldhouse and Mertens \(2017\)](#) agency mortgage purchase shocks
- Oil: [Kanzig \(2021\)](#) oil supply news shocks
- Fiscal: [Mertens and Ravn \(2012\)](#) anticipated/unanticipated tax shocks, [Mertens and Ravn \(2013\)](#) corporate/personal income tax shocks, [Ramey \(2016\)](#) defense news shocks, [Fieldhouse and Mertens \(2023\)](#) defense/nondefense R&D news shocks

BENCHMARK REGRESSION FRAMEWORK

Jordà (2005) Local Projections Framework

Direct forecasting regression for each horizon $h = 0, 1, \dots, 47$ over 1968–2024:

$$\Delta \ln(y_{i,t+h}) = \alpha_{i,h} + \beta_{i,k,h} z_{k,t} + \sum_{j=1}^p \gamma_h^j \ln(y_{i,t-j}) + \sum_{j=1}^p \phi_h^j z_{k,t-j} + \sum_{j=1}^p \zeta_h^{j'} \mathbf{x}_{t-j} + \epsilon_{i,t+h}$$

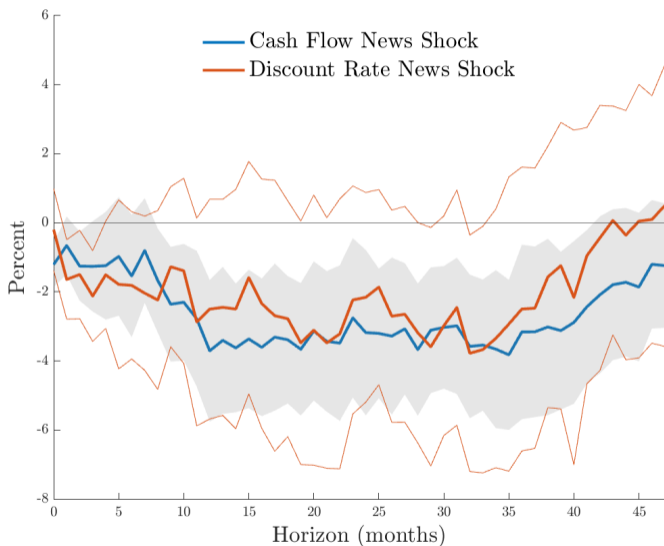
where $\Delta \ln(y_{i,t+h})$ is cumulative portfolio return measure i over horizon h , $z_{k,t}$ is macro shock k , \mathbf{x}_{t-j} are lagged cyclical controls ($p = 12$)

- **Baseline:** $\mathbf{x}_{t-j} = \{\ln(\text{IP}), \text{UR}, \Delta \ln(\text{CPI}), \text{3-month T-bill}, \text{BAA-AAA}\}$
- **Simple:** No lagged macro controls, only keep lags of $y_{i,t-j}, z_{k,t-j}$

Inference: 95% HAR confidence intervals (Lazarus et al. 2018); impulse responses identified up to scale factor following original papers

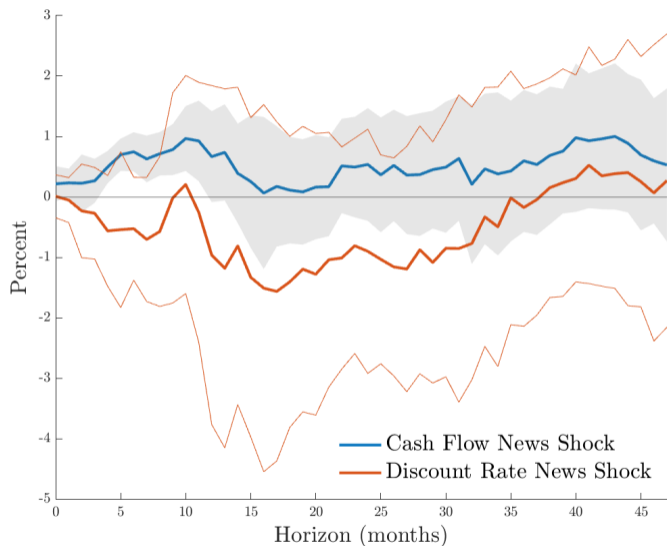
DYNAMIC CAUSAL EFFECTS ON MARKET RETURNS:
CASH FLOW NEWS VS. DISCOUNT RATE NEWS

Decomposition of Market Returns: BS2023 Monetary Surprises



Notes: Shaded areas and finer bands are [Lazarus et al. \(2018\)](#) 95% HAR confidence intervals

Decomposition of Market Returns: R16 Defense News Shock



Notes: Shaded areas and finer bands are [Lazarus et al. \(2018\)](#) 95% HAR confidence intervals

► Unanticipated Tax

► Anticipated Tax

Summarizing Results: “Significant Streaks”

Challenge: Cannot display impulse responses for 12 shocks \times 35 portfolio return measures \times 48 months \times various control sets

Solution: Only report “significant streaks” — 6+ consecutive months of statistically significant responses (all 95% level), robust to redefining as 4+ or 8+

- Report average coefficient over streak and the corresponding horizon
- Focus on first streak; flag subsequent streaks (‘†’ same sign, ‘#’ opposite sign)
- Eventually publish full dataset of all impulse responses and confidence intervals

TABLE 3: EFFECTS OF MACROECONOMIC SHOCKS ON STOCK MARKET RETURNS

Macro Shock	Cash Flow	Discount Factor	Market Return
Monetary surprise shock (BS23)	-2.77*** (0-6) [†]	-7.67*** (16-24)	-12.37*** (11-30)
Residual monetary shock (AD25)	-0.48*** (0-8)	-	-
Excess bond premium (GZ12)	-0.75*** (0-16) [†]	-2.22*** (0-39)	-3.23*** (0-39)
Agency purchase shock (FM17)	-	-1.95*** (29-36)	-
Oil supply news shock (K21)	-	-	-
Personal income tax cut (MR13a)	7.16*** (4-12)	7.02*** (2-10)	14.72*** (3-11)
Corporate income tax cut (MR13b)	0.63*** (12-33)	-0.61*** (4-10) [#]	1.63*** (22-29)
Anticipated tax cut (MR12a)	-	-4.01*** (3-9)	-6.96*** (4-9)
Unanticipated tax cut (MR12b)	3.52*** (18-24)	8.89*** (18-28)	-
Defense news shock (R16)	0.74*** (4-11)	-	-
Defense R&D shock (FM23a)	1.39*** (37-45)	-1.29*** (6-11)	-
Nondefense R&D shock (FM23b)	-	-4.78*** (17-22) [†]	6.02*** (3-8)

Notes: The ‘†’ (‘#’) symbol denotes a subsequent streak of the same (opposite) sign.

DYNAMIC CAUSAL EFFECTS ON CROSS-SECTIONAL RETURNS:
ANOMALY AND MISPRICING FACTOR PORTFOLIO RETURNS

TABLE 6: EFFECTS OF MACROECONOMIC SHOCKS ON ANOMALY RETURNS

	MOM	STREV	LTREV	EP	CFP	DP	AC	BETA	NI	VAR	RESVAR
BS23	-7.91 [†] (26-33)	-4.97 [†] (6-13)	-	-	-	-	-	-	-	-	-
AD25	-	-	-	-	-	-	-	-	-1.47 (20-34)	-1.92 [†] (30-35)	-1.95 [†] (29-38)
GZ12	1.07 (0-5)	-0.73 (0-11)	-	-	-	1.90 [†] (10-38)	-	-2.18 [†] (0-12)	-2.42 (42-47)	-2.42 [†] (0-8)	-2.38 (0-6)
FM17	-	-	-1.62 (21-30)	-	-	-	-	3.38 (31-47)	-2.13 (35-40)	-	5.27 (39-47)
K21	-	-	2.30 (16-47)	-	2.62 (30-38)	-	1.51 (11-24)	-	-1.61 (6-12)	-	-
MR13a	-	-	-	-	-	-	-	12.99 (2-10)	-	24.07 [†] (0-14)	21.23 [†] (0-13)
MR13b	1.10 (13-33)	-1.27 (15-24)	-0.90 (3-11)	-	-	-	-	-	0.97 (1-13)	-	-
MR12a	-	-	7.16 (5-38)	-	-	-	-	-8.46 [†] (1-18)	-8.06 (20-40)	-11.98 [†] (1-21)	11.23 [†] (1-20)
MR12b	-	7.54 (37-47)	4.14 (3-9)	-	-	-	-	-	-	-	-
R16	-2.76 (40-47)	2.19 (33-47)	-	2.40 (0-40)	1.31 [†] (4-10)	-	-	-	-	-2.76 (24-29)	-
FM23a	-	2.80 (9-47)	1.03 (1-7)	2.466 [†] (2-22)	1.93 (5-12)	2.24 (1-18)	-	-	-	-	-
FM23b	-	-	-	-	-	-	-	7.81 (4-10)	-	11.73 (31-37)	11.84 (31-38)

Notes: The ‘†’ (‘#’) symbol denotes a subsequent streak of the same (opposite) sign.

▶ Robustness: Lagged Shocks

▶ Robustness: Drop Controls

TABLE 7: EFFECTS OF MACROECONOMIC SHOCKS ON RETURNS SORTED BY THE STAMBAUGH-YUAN MISPRICING RISK FACTORS

	MKT-RF	SMB	MGMT	PERF
BS23	-10.66 (16-21)	-	-	-
AD25	-1.90 (30-35)	-	-	1.58 (18-35)
GZ12	-1.36 (0-12)	1.92 (18-47)	2.10 (0-47)	1.46 (0-5)
FM17	-	-	-	2.64 (15-33)
K21	-	2.13 (12-26)	-	-
MR13a	24.26 (2-32)	-	-12.92 (2-28)	-
MR13b	1.54 (12-23)	-	-	0.75 (21-28)
MR12a	-4.68 (0-9)	-	4.02 (5-13) [†]	-8.78 (21-44)
MR12b	14.67 (12-28)	-	-	-
R16	-	-	-	-
FM23a	-	1.46 (12-21) [†]	1.91 (0-17)	-
FM23b	-	-	-	-

Notes: The ‘†’ (‘#’) symbol denotes a subsequent streak of the same (opposite) sign.

DO MACROECONOMIC SHOCKS CARRY A RISK PREMIUM?

Fama-MacBeth Regressions in Impulse Response Space

First stage (baseline local projections):

$$\Delta \ln(y_{i,t+h}) = \alpha_{i,h} + \beta_{i,k,h} z_{k,t} + \Gamma_h X_{t-1} + \epsilon_{i,t+h}$$

Second stage:

$$R_{i,t \rightarrow t+h} = \lambda_{0,t,h} + \lambda_{k,t,h} \hat{\beta}_{i,k,h} + \nu_{i,t,h}$$

where

- $R_{i,t \rightarrow t+h}$ is a cross-sectional regression of the realized cumulative returns of the anomaly portfolios for every month t
- $\bar{\lambda}_{k,h}$ is the time-series average of the $\hat{\lambda}_{k,t,h}$ coefficients, which represents the risk prices associated with macroeconomic shock k at horizon h

TABLE 8: TERM STRUCTURE OF MACROECONOMIC RISK PRICES

Macroeconomic Shock	Risk Price λ (<i>t</i> -statistic)			
	H = 1	H = 3	H = 12	H = 24
<i>Credit & Monetary Shocks</i>				
Excess Bond Premium (GZ)	0.073** (2.03)	0.036* (1.96)	0.010 (1.56)	0.005 (1.53)
Agency Purchase (FM)	0.320* (1.73)	0.256** (2.04)	0.019 (0.86)	0.004 (0.56)
Monetary Surprise (BS)	0.039* (1.83)	0.013* (1.71)	0.004 (1.65)	0.001 (0.40)
Monetary Shocks (AD)	0.027 (0.09)	0.066 (0.59)	-0.028 (-1.37)	-0.010 (-0.98)
<i>Fiscal Policy Shocks</i>				
Defense News (RZ)	0.276** (1.97)	0.120** (2.46)	0.024*** (2.91)	0.008** (2.19)
Corp. Income Tax (MR)	-0.335* (-1.74)	-0.144** (-2.52)	-0.010 (-0.55)	0.001 (0.09)
Pers. Income Tax (MR)	-0.021* (-1.85)	-0.008* (-1.91)	-0.001* (-1.91)	-0.001* (-1.79)
Unanticipated Tax (MR)	-0.043* (-1.67)	-0.030** (-2.34)	-0.005 (-1.11)	-0.001 (-0.37)
Anticipated Tax (MR)	0.030 (1.04)	0.016* (1.72)	0.003* (1.95)	0.001** (2.19)
Defense R&D (FM)	0.131 (0.95)	0.042 (1.16)	0.009 (1.65)	0.005** (2.06)
Nondefense R&D (FM)	-0.017 (-0.38)	-0.011 (-0.81)	-0.002 (-0.98)	-0.001 (-0.78)
<i>Oil Supply Shocks</i>				
Oil News (Känzig)	0.230 (1.31)	0.135** (2.15)	0.021** (2.18)	0.005 (0.96)

MARGINAL R^2 ANALYSIS:
HOW MUCH VARIANCE DO MACRO SHOCKS EXPLAIN?

Marginal R^2 Analysis

1. Orthogonalize return measure k at horizon h to lagged controls \mathbf{w}_t :

$$\Delta \ln(y_{i,t+h})^\perp = \Delta \ln(y_{i,t+h}) - \text{Proj}(\Delta \ln(y_{i,t+h}) | \alpha_{i,h}, \mathbf{w}_t), \quad h = 0, \dots, 47$$

2. Regress on full vector of macro shocks \mathbf{z}_t ; recover R^2 at each horizon h :

$$\Delta \ln(y_{i,t+h})^\perp = \beta'_{i,h} \mathbf{z}_t + \epsilon_{i,t+h}^\perp$$

Baseline: $\mathbf{w}_t = \{y_{i,t-j}, \mathbf{x}_{t-j}\}$

TABLE 9: SUMMARY STATISTICS FOR PROPORTION OF VARIANCE IN ANOMALY PORTFOLIOS EXPLAINED BY MACROECONOMIC SHOCKS

	6mo	12mo	18mo	24mo	30mo	36mo	Mean	Median	Min	Max
MOM	0.06	0.11	0.08	0.06	0.09	0.14	0.09	0.09	0.04	0.14
STREV	0.07	0.08	0.08	0.12	0.11	0.10	0.10	0.09	0.06	0.15
LTREV	0.11	0.22	0.29	0.17	0.05	0.04	0.15	0.13	0.04	0.29
EP	0.15	0.08	0.03	0.03	0.09	0.10	0.08	0.08	0.03	0.17
CFP	0.18	0.12	0.04	0.02	0.06	0.07	0.09	0.07	0.02	0.22
DP	0.13	0.17	0.05	0.07	0.07	0.07	0.10	0.09	0.05	0.20
AC	0.12	0.05	0.08	0.10	0.12	0.10	0.10	0.10	0.05	0.15
BETA	0.16	0.19	0.06	0.08	0.05	0.10	0.12	0.10	0.04	0.22
NI	0.28	0.39	0.22	0.17	0.21	0.24	0.25	0.23	0.17	0.39
VAR	0.14	0.12	0.05	0.04	0.02	0.08	0.07	0.07	0.02	0.17
RESVAR	0.13	0.13	0.06	0.04	0.03	0.10	0.08	0.09	0.03	0.17
Mean	0.13	0.14	0.09	0.08	0.07	0.10	0.10	0.09	0.04	0.19

Notes: See notes to Table 6 for definition of anomaly portfolios in the top row. R^2 values for each monthly horizon are calculated from the local projections in (33). Mean, median, minimum, and maximum values are calculated over the first 36 months for each anomaly portfolio. Sample: 1988m2-2007m12.

CONCLUDING THOUGHTS

Takeaways

- **Pervasive causal effects:** Nearly every macro shock significantly affects a wide range of cross-sectional return measures through both cash flow and discount rate channels
- **Mispricing:** Almost all FF5, anomaly, and SY mispricing portfolios respond significantly; macro shocks can cause and exacerbate mispricing in equities (Stambaugh and Yuan 2016)
- **Risk premia:** Macro shocks carry significant risk premia with a distinct term structure — different shocks become dominant pricing factors at different horizons
- **Explanatory power:** Shocks collectively explain 5–50% (~10% on average) of residual variance; results robust to streak length, control sets, and alternative shocks

APPENDIX SLIDES

Panel B: Pairwise Correlation P-Values

	BS23	GZ12	FM17	K21	MR12a	MR12b	R16	FM23a	FM23b
BS23	0.0%	0.0%	77.5%	8.9%	5.9%	10.3%	52.6%	85.2%	52.2%
GZ12	-	0.0%	38.4%	82.3%	24.5%	25.0%	19.6%	16.4%	14.9%
FM17	-	-	0.0%	22.5%	99.5%	97.6%	96.4%	21.6%	72.5%
K21	-	-	-	0.0%	62.8%	82.0%	20.0%	51.6%	56.8%
MR12a	-	-	-	-	0.0%	0.0%	71.0%	98.7%	30.9%
MR12b	-	-	-	-	-	0.0%	76.1%	88.7%	2.9%
R16	-	-	-	-	-	-	0.0%	12.3%	0.2%
FM23a	-	-	-	-	-	-	-	0.0%	45.0%
FM23b	-	-	-	-	-	-	-	-	0.0%

Notes: ‘BS23’ = [Bauer and Swanson \(2023\)](#); ‘GZ12’ = [Gilchrist and Zakrajsek \(2012\)](#) EBP; ‘FM17’ = [Fieldhouse and Mertens \(2017\)](#); ‘K21’ = [Kanzig \(2021\)](#); ‘MR12a/b’ = [Mertens and Ravn \(2012\)](#); ‘R16’ = [Ramey \(2016\)](#); ‘FM23a/b’ = [Fieldhouse and Mertens \(2023\)](#).

[▶ Correlation Coefficients](#)

[▶ Back](#)

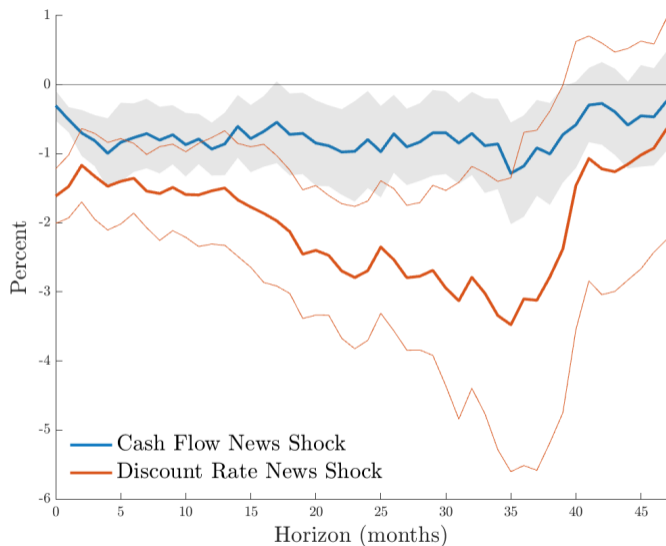
TABLE 1: CROSS-CORRELATIONS OF MACROECONOMIC SHOCKS

Panel A: Pairwise Correlation Coefficients

	BS23	GZ12	FM17	K21	MR12a	MR12b	R16	FM23a	FM23b
BS23	1.000	-0.183	0.016	0.082	-0.093	0.080	0.035	0.010	0.033
GZ12	-	1.000	0.039	-0.009	-0.048	0.047	-0.057	0.059	0.061
FM17	-	-	1.000	-0.056	0.000	0.001	-0.002	0.052	0.015
K21	-	-	-	1.000	0.020	-0.010	0.058	-0.028	-0.025
MR12a	-	-	-	-	1.000	-0.341	0.016	-0.001	-0.041
MR12b	-	-	-	-	-	1.000	-0.013	-0.006	0.088
R16	-	-	-	-	-	-	1.000	0.065	-0.132
FM23a	-	-	-	-	-	-	-	1.000	-0.030
FM23b	-	-	-	-	-	-	-	-	1.000

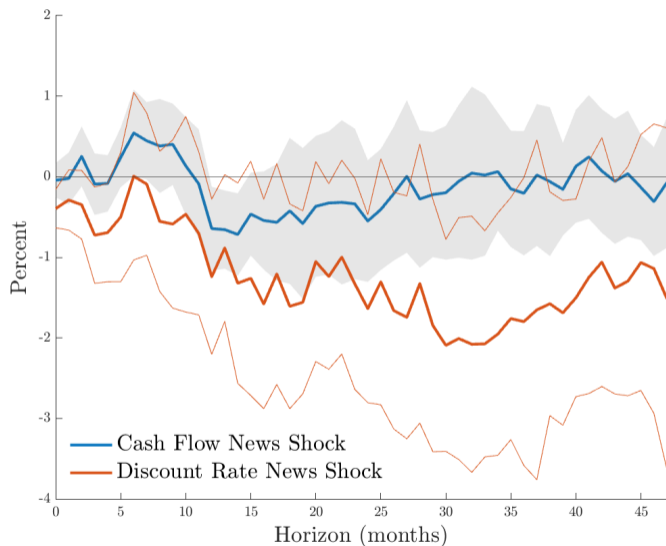
Notes: ‘BS23’ = [Bauer and Swanson \(2023\)](#); ‘GZ12’ = [Gilchrist and Zakrajsek \(2012\)](#) EBP; ‘FM17’ = [Fieldhouse and Mertens \(2017\)](#); ‘K21’ = [Kanzig \(2021\)](#); ‘MR12a/b’ = [Mertens and Ravn \(2012\)](#); ‘R16’ = [Ramey \(2016\)](#); ‘FM23a/b’ = [Fieldhouse and Mertens \(2023\)](#).

Decomposition of Market Returns: GZ12 Excess Bond Premium



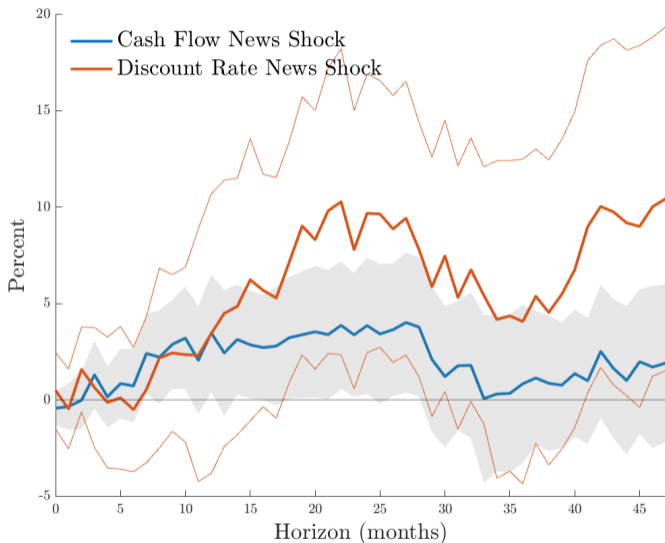
Notes: Shaded areas and finer bands are [Lazarus et al. \(2018\)](#) 95% HAR confidence intervals

Decomposition of Market Returns: FM17 Agency Purchase Shock



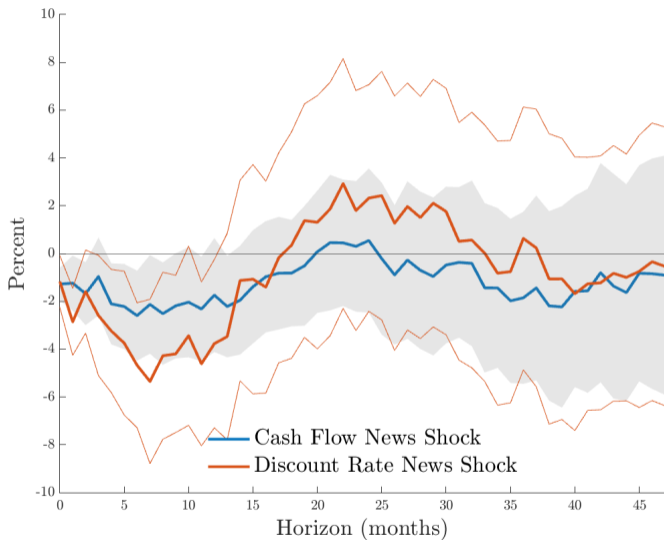
Notes: Shaded areas and finer bands are [Lazarus et al. \(2018\)](#) 95% HAR confidence intervals

Decomposition of Market Returns: MR12 Unanticipated Tax Shock



Notes: Shaded areas and finer bands are [Lazarus et al. \(2018\)](#) 95% HAR confidence intervals

Decomposition of Market Returns: MR12 Anticipated Tax Shock



Notes: Shaded areas and finer bands are [Lazarus et al. \(2018\)](#) 95% HAR confidence intervals

TABLE C.7: ANOMALY RETURN RESPONSES WITHOUT LAGGED CONTROL VARIABLES

	MOM	STREV	LTREV	EP	CFP	DP	AC	BETA	NI	VAR	RESVAR
BS23	-6.64 (20-27)	-	-	-	-	-	-	-	-	-	-
AD25	-	-	-	-	-	-	-	-	-	-	-
GZ12	1.24 [#] (0-5)	-0.81 (0-5)	-	-	-	1.63 [†] (33-38)	-	-2.39 (0-12)	-	-2.94 (0-10)	-2.69 (0-9)
FM17	-	-	-	-	-	-1.92 (22-31)	-	5.10 (20-47)	-	-	-
K21	-	-	-	-	-	-	1.75 (10-27)	-	-	-	-
MR13a	-	-	-	-	-	-	10.72 (37-47)	11.95 (2-8)	-	21.95 [†] (0-13)	20.39 [†] (0-12)
MR13b	-	-1.22 (15-35)	-0.73 (3-11)	-	-	-	-	1.77 [†] (12-27)	1.32 (1-47)	-	-
MR12a	3.79 (5-23)	-	3.97 (4-35)	2.98 (6-12)	-	2.77 (3-12)	-1.48 (9-16)	-5.55 (0-14)	-	-6.84 (0-19)	-6.68 (0-16)
MR12b	-	6.19 (37-43)	2.93 (0-8)	-	-	-	4.26 (38-47)	-	-	-	5.01 (0-6)
R16	-	-	1.66 (30-40)	0.99 [†] (1-7)	2.42 (25-33)	-	-	-	-	-	-
FM23a	-1.97 (36-47)	2.23 (25-47)	1.15 (1-6)	2.21 [†] (2-23)	-	2.14 (1-23)	-	-2.69 (20-28)	-	-	-
FM23b	-	-	-	-	-	-	-	-	-5.38 [†] (10-15)	-	-

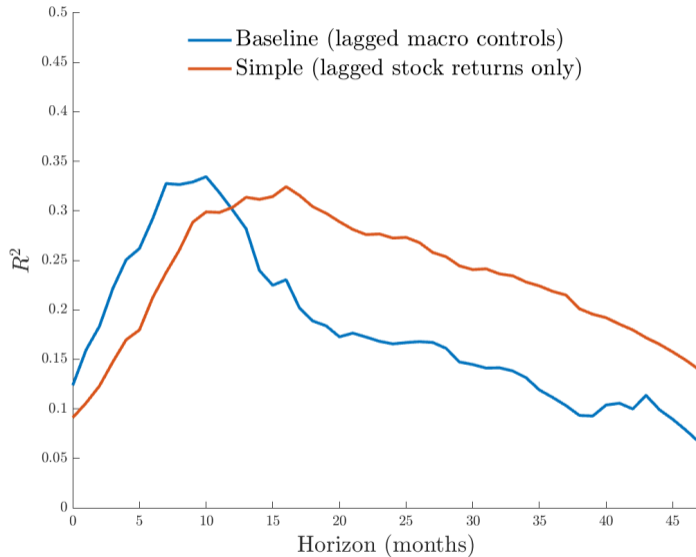
Notes: The ‘†’ (‘#’) symbol denotes a subsequent streak of the same (opposite) sign.

TABLE C.8: EFFECTS OF MACROECONOMIC SHOCKS ON ANOMALY RETURNS CONTROLLING FOR OTHER LAGGED MACROECONOMIC SHOCKS: SPECIFICATION I

	MOM	STREV	LTREV	EP	CFP	DP	AC	BETA	NI	VAR	RESVAR
BS23	- -	- -	- -	-6.27 (5-11)	- -	12.22 (36-47)	-6.60 (8-13)	-18.18 (40-47)	- -	- -	- -
AD25	- -	1.17 (31-47)	- -	2.52 (29-47)	1.92 [†] (10-19)	1.38 (27-34)	- -	-1.07 [†] (0-5)	-2.23 (18-35)	- -	- -
GZ12	-2.34 (34-40)	- -	1.58 (16-21)	- -	- -	1.93 (33-39)	- -	- -	- -	-4.13 [†] (0-8)	-4.14 [†] (0-15)
FM17	-5.58 (41-46)	-3.36 (18-27)	-3.37 (12-29)	-4.92 (9-47)	-5.94 (15-47)	- -	-1.83 [†] (0-12)	- -	- -	- -	- -
K21	- -	-3.03 [†] (2-11)	- -	- -	- -	5.18 (31-36)	3.26 (11-44)	- -	- -	- -	- -
MR13a	- -	38.93 (21-44)	-50.08 (28-35)	45.81 (2-28)	41.11 (2-23)	41.32 (0-47)	- -	-77.17 (10-42)	- -	-55.52 [†] (1-7)	-45.88 [†] (1-7)
MR13b	- -	-15.01 (21-43)	- -	-11.97 [†] (12-17)	- -	- -	- -	23.60 (20-26)	- -	44.10 (16-41)	41.67 (12-41)
MR12a	- -	24.59 (18-43)	- -	36.61 (2-38)	26.74 (5-23)	27.47 (37-47)	- -	-43.23 (10-16)	-43.38 (30-47)	-80.61 (10-47)	-71.74 (10-42)
MR12b	- -	17.95 (28-37)	- -	24.73 (0-34)	22.94 (0-24)	25.63 (29-47)	17.09 (34-43)	35.70 [†] (8-21)	- -	-54.84 [†] (8-21)	-47.85 [†] (8-21)
R16	1.75 [†] (4-12)	- -	1.76 (9-18)	4.31 (1-47)	3.51 (6-43)	2.72 (20-47)	1.63 (10-24)	-3.93 (18-32)	- -	-6.76 (17-34)	- -
FM23a	4.39 (10-36)	- -	-6.08 (21-47)	- -	- -	3.09 (20-28)	- -	-5.13 (22-30)	- -	- -	- -
FM23b	-14.40 [†] (14-22)	- -	31.28 (22-47)	- -	17.36 (28-34)	- -	16.47 (28-47)	- -	- -	- -	- -

Notes: The ‘†’ (‘#’) symbol denotes a subsequent streak of the same (opposite) sign.

Marginal R^2 for Portfolio Returns Sorted by Investment Factor



Marginal R^2 for Portfolio Returns Sorted by Net Issuance

