



The Income Statement Channel of Monetary Policy

Oliver Binz, Peter Joos, Matt Kubic

Powell says the Fed will not hesitate to keep raising rates until inflation comes down

PUBLISHED TUE, MAY 17 2022-2:19 PM EDT | UPDATED TUE, MAY 17 2022-9:22 PM EDT



Jeff Cox @JEFF.COX.7528 @JEFFCOXCNBCCOM



Jerome Powell, chairman of the U.S. Federal Reserve, arrives for a Senate Banking Committee hearing in Washington, D.C., on Thursday, July 15, 2021. Al Drago | Bloomberg | Getty Images

The Fed's Dual Mandate



Goal of monetary policy: Maintain stable employment and prices
➢ Prevent losses, bankruptcy and exit during busts
➢ Prevent economy from overheating during booms



What are the firm-level effects of monetary policy and how do these effects vary in the cross-section?

Lack of evidence that monetary policy has a large impact on investment decisions.





Research Questions

How does MP affect consumers and corporate revenues?

How does MP affect managers and corporate expenses?

What are the consequences for firm profits?

The New Keynesian Model



- Consumers: max $U = \sum \beta^t E[u(C_t)]$ > Subject to budget constraint: $C_t + S_t \le (1 + r_{t-1})S_{t-1} + Y_t$
- Managers: max $V = \sum \Delta^t (E[A_t F(K_t)] (1 + r_{t-1})I_{t-1})$ > Subject to capital accumulation equation: $K_{t+1} = I_t + (1 - \delta)K_t$
- Central banks: Set rates following Taylor Rule based on private information
- Nominal rigidity breaks classical dichotomy (nominal variables matter)







Managers' Euler Equation







Research Design



• Regress profitability components on federal funds rate changes during FOMC meetings and controls (Hou et al. 2012, Binz 2019)

 $\Delta DV_{i,t+d} = \beta_1 \Delta r_t + Controls_{i,t} + \Gamma_i + \varepsilon_{i,t+1}$

- DV = Change in {Total/Cash/Accrual Revenues, Expenses, Earnings} scaled by assets
- Controls = {Macro Uncertainty, GDP, Inflation, Unemployment, Size, Dividend Yield, Dividend Payer Indicator, Loss Indicator, Accruals}

Identification Strategy



- Lucas critique: Rational agents will react only to the unexpected component of rate changes
- Expected rate changes and consumption and investment are simultaneously determined
- Split Δr in its expected and unexpected components

$$\Delta DV_{i,t+d} = \beta_1 \Delta r_{u,t} + \beta_2 \Delta r_{e,t} + Controls_{i,t} + \Gamma_i + \varepsilon_{i,t+1}$$

• Derive unexpected component from CME futures contract price changes (Kuttner 2001)

Federal Funds Rate





Main Results



	(1)	(2)	(3)	(4)	(5)	(6)
Variable	∆Rev	venue	ΔExp	venses	∆Ear	nings
Same Quarter						
Δr	0.004*		0.001		0.003*	
	(1.75)		(0.45)		(1.90)	
Δr_{μ}		-0.010**		-0.024***		0.013***
		(-2.01)		(-3.14)		(3.12)
Δr_{e}		0.010***		0.012***		-0.002
		(4.25)		(3.39)		(-0.85)
One Quarter Ahead						
Δr	0.006*		0.001		0.004***	
	(1.83)		(0.30)		(2.87)	
Δr_u		-0.007		-0.018***		0.011***
		(-1.25)		(-2.89)		(2.87)
Δr_e		0.011***		0.009***		0.001
		(4.02)		(3.09)		(0.79)
Two Quarters Ahead						
Δr	0.013***		0.010***		0.003**	
	(6.24)		(4.10)		(2.16)	
Δr_u		0.013**		0.008		0.006
		(2.41)		(1.16)		(1.35)
Δr_e		0.014***		0.011***		0.002
		(5.60)		(3.81)		(1.00)
Controls & Firm FE	YES	YES	YES	YES	YES	YES

Cash & Accruals



	(1)	amuala offect	(3)	(4)	(5)	(6)
Variable	A	ceruais onset	ΔExp	penses	∆Ear	nings
	<u> </u>	ll in revenue	Cash	Accruals	Cash	Accruals
Same Quarter						
Δr_u	-0.014** (-2.48)	0.003 (1.35)	-0.022*** (-3.04)	-0.004 (-1.01)	0.006* (1.97)	0.007* (1.67)
Δr_e	0.010*** (3.71)	0.001 (0.69)	0.012*** (2.95)	0.001 (0.34)	-0.002 Current	-0.000 t cash &
One Quarter Ahead					accrual	earnings [
Δr_u	-0.016*** (-3.15)	0.009*** (3.23)	-0.009 (-1.22)	-0.010** (-2.31)	incr	ease
Δr_{ρ}	0 011***	-0.000	0 010***	-0.001	0.000	0.001
Two Quarters Fal	ll in revenu	e is (-0.14)	Cash &	accrual –	- Future	earnings
Δr_u	entirely "rea	al" .005**	expenses	s decrease	increase	e entirely
Δr_{e}	0.013***	(2.01) 0.001	(1.1 <i>3)</i> 0.012***	-0.001	from a	ccruals
ť	(6.18)	(0.75)	(3.03)	(-0.17)	(0.15)	(0.33)
Controls & Firm FF	E YES	YES	YES	YES	YES	YES

14

Testing the Credit Channel : Household Debt



 $\Delta Revenue_{i,t+k} = \beta_{l} \Delta r_{t}^{u} \times Household \ Debt_{t} + \beta_{2} \Delta r_{t}^{u} + Controls + \Gamma_{i} + \varepsilon_{i,t}$

	(1)	(2)	(3)	(4)	(5)
Variable	ΔRev_t	ΔRev_{t+1}	ΔRev_{t+2}	$\triangle Rev_{t+3}$	$\triangle Rev_{t+4}$
$\Delta r_t^u \times Household Debt_t$	-0.024*** (-3.25)	-0.032*** (-3.30)	0.020* (1.86)	0.023 (1.62)	-0.024*** (-3.25)
$\Delta r_t^{\ u}$	-0.002 (-0.28)	0.001 (0.22)	0.009* (1.70)	0.010 (1.61)	-0.002 (-0.28)
Controls & Firm FE	YES	YES	YES	YES	YES

Household Debt: Indicator that the consumer debt to GDP ratio is above the 75th percentile of the sample distribution

Testing the Revenue Channel: Business-to-Consumer Firms



$$\Delta Revenue_{i,t+k} = \beta_1 \Delta r_t^u \times B2C_t + \beta_2 \Delta r_t^u + Controls + \Gamma_i + \varepsilon_{i,t}$$

	(1)	(2)	(3)	(4)	(5)
Variable	ΔRev_t	ΔRev_{t+1}	ΔRev_{t+2}	ΔRev_{t+3}	$\triangle Rev_{t+4}$
$\Delta r_t^{\ u} \times B2C_t$	-0.008 (-1.18)	-0.017*** (-2.67)	-0.025*** (-3.36)	-0.023*** (-3.17)	-0.008 (-1.18)
$\Delta r_t^{\ u}$	-0.010* (-1.82)	-0.005 (-0.90)	0.015*** (2.79)	0.017*** (2.74)	-0.010* (-1.82)
Controls & Firm FE	YES	YES	YES	YES	YES

B2C: Indicator the firm is a member of an industry that directly sells more than 75% of its output to consumers

Testing the Accounting Channel: Technology Firms



$\Delta Expenses_{i,t+k} = \beta_l \Delta r_t^u \times$	Technology _t + $\beta_2 \Delta r_t^u$ +	<i>Controls</i> + Γ_i + $\varepsilon_{i,t}$
---	--	--

	(1)	(2)	(3)	(4)	(5)
Variable	ΔExp_t	ΔExp_{t+1}	ΔExp_{t+2}	ΔExp_{t+3}	ΔExp_{t+4}
$\Delta r_t^{\ u} \times Technology_t$	-0.020** (-2.43)	-0.020*** (-2.80)	-0.007 (-0.83)	-0.004 (-0.54)	-0.020** (-2.43)
$\Delta r_t^{\ u}$	-0.022*** (-2.85)	-0.016** (-2.50)	0.008 (1.31)	0.015* (1.84)	-0.022*** (-2.85)
Controls & Firm FE	YES	YES	YES	YES	YES

Technology: Indicator the firm is a member of the communications, computer, or measuring equipment Fama and French (1997) 48 industry

Specific Expense Accounts: COGS



	(1)	(2)	(3)	(4)	(5)
Variable	$\triangle COGS_t$	$\triangle COGS_{t+1}$	$\triangle COGS_{t+2}$	$\triangle COGS_{t+3}$	$\triangle COGS_{t+4}$
$\Delta r_t^{\ u}$ $\Delta r_t^{\ e}$	-0.008** (-2.07) 0.008*** (4.14)	-0.004 (-1.04) 0.007*** (3.65)	0.010** (2.59) 0.009*** (5.02)	0.010** (2.63) 0.009*** (4.33)	-0.008** (-2.07) 0.008*** (4.14)
Observations Adjusted R-squared Fixed Effects	223,487 0.184 Firm	211,726 0.191 Firm	203,922 0.182 Firm	196,687 0.189 Firm	223,487 0.184 Firm
Controls	YES	YES	YES	YES	YES

Specific Expense Accounts: SG&A



	(1)	(2)	(3)	(4)	(5)
Variable	ΔSGA_t	ΔSGA_{t+1}	ΔSGA_{t+2}	ΔSGA_{t+3}	ΔSGA_{t+4}
Δr_t^{u}	-0.009*** (-3.94)	-0.005** (-2.25)	0.001 (0.37)	0.002 (0.82)	-0.009*** (-3.94)
Δr_t^e	0.004***	0.004***	0.004***	0.005***	0.004***
L	(3.80)	(4.91)	(5.23)	(3.62)	(3.80)
Observations	223,487	212,052	203,300	195,282	223,487
Adjusted R-squared	0.162	0.163	0.163	0.171	0.162
Fixed Effects	Firm	Firm	Firm	Firm	Firm
Controls	YES	YES	YES	YES	YES

Specific Expense Accounts: Depreciation



	(1)	(2)	(3)	(4)	(5)
Variable	$\Delta Depr_t$	$\Delta Depr_{t+1}$	$\Delta Depr_{t+2}$	$\Delta Depr_{t+3}$	$\Delta Depr_{t+4}$
$\Delta r_t^{\ u}$	-0.002***	-0.002***	-0.001**	-0.000	-0.002***
	(-2.83)	(-4.10)	(-2.21)	(-0.71)	(-2.83)
Δr_t^{e}	-0.000	-0.000	-0.000	0.000	-0.000
	(-0.72)	(-0.32)	(-0.04)	(1.43)	(-0.72)
Observations	223,487	209,506	199,717	190,769	223,487
Adjusted R-squared	0.134	0.143	0.145	0.161	0.134
Fixed Effects	Firm	Firm	Firm	Firm	Firm
Controls	YES	YES	YES	YES	YES

Conclusion



- Lack of firm-level and cross-sectional evidence on the effects of monetary policy → We address this void
- Consumers: Consistent with the substitution dominating income & signaling effects, rate shocks are negatively associated with revenues
- Managers: Consistent with the cost of capital dominating the signaling effect, rate shocks are negatively associated with expenses
- Profits relate positively to rate shocks as the expense effect exceeds the revenue effect
- The revenue and expense effects vary with consumers' and firms' financial constraints, firms' business models, and firms' accounting

Thank you!

Testing the Credit Channel: Ottonello and Winberry (2020)





FIGURE 2.—Response to monetary policy for risk-free and risky firms. Notes: Marginal benefit and marginal cost curves as a function of capital investment k' for firms with same productivity. Left panel is for a firm with high initial net worth and right panel is for a firm with low initial net worth. Marginal cost curve is the left-hand side of (10) and marginal benefit the right-hand side of (10). Dashed black lines plot the curves before an expansionary monetary policy shock, and solid blue lines plot the curves after the shock.