Inflation, the Corporate Greed Narrative, and the Value of Corporate Social Responsibility

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In this paper...

What we do:

- ✓ We study the cross-sectional reactions of US stocks to inflation from January 2018 through December 2022.
- ✓ We analyze revisions of analyst earnings forecasts.

Key results so far:

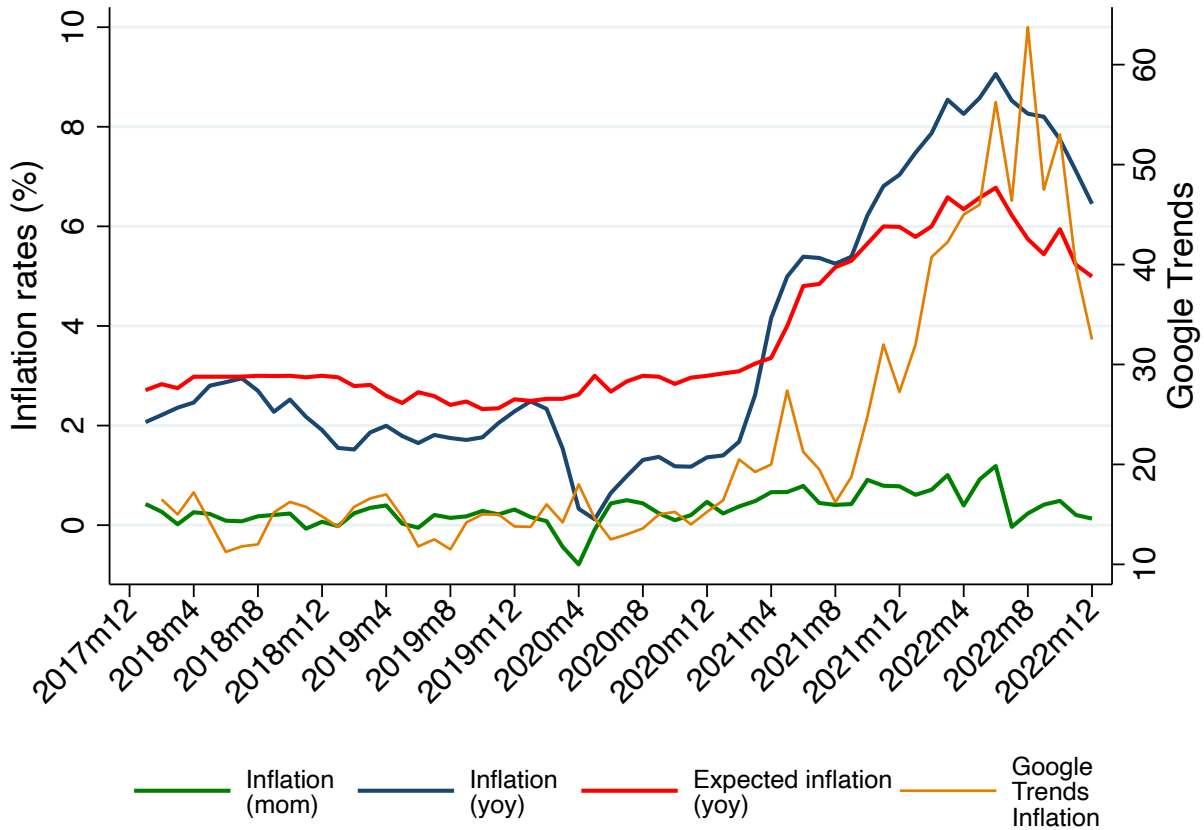
- → Following higher inflation, equity investors reward high-CSR firms.
- → Effect survives accounting for other "traditional" channels.
- → Earnings forecast revisions consistent with the inflation-hedging property of CSR driven by cash-flow considerations.

Contribution:

- ⋆ Spotlight inflation as a crisis in stakeholder trust and provide new insights into the importance of social capital for firm value.

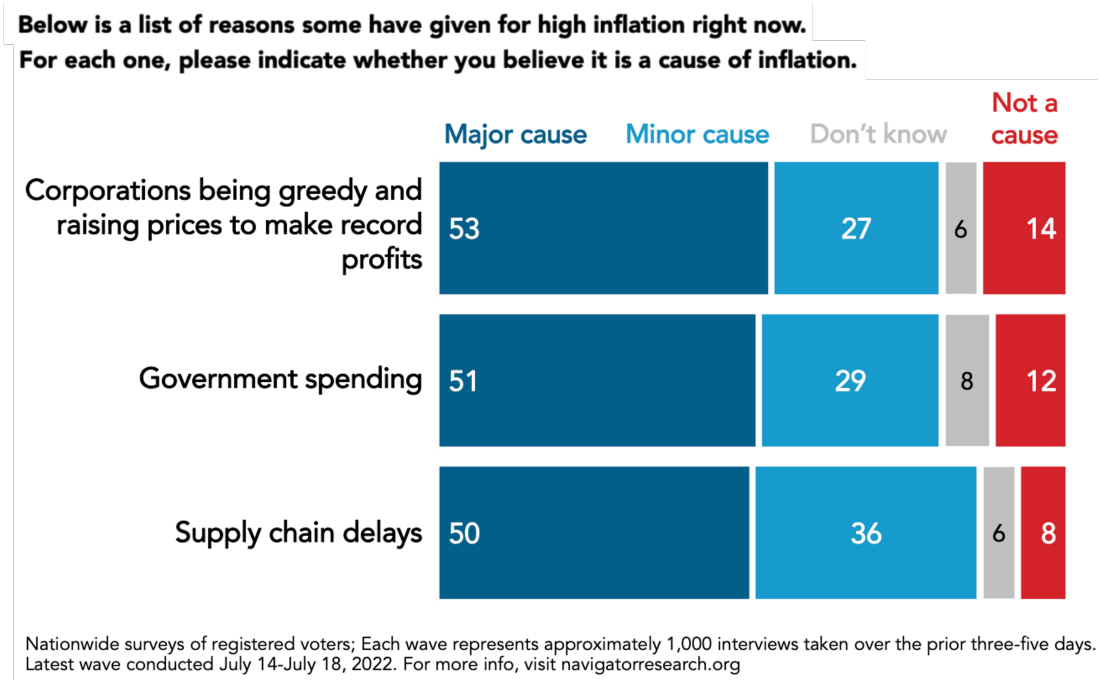
Motivation (1)

Inflation in 2021-2022 came as a surprise to many. This renewed interest in understanding how inflation affects firm value.



Motivation (2)

People hate inflation. Survey evidence (e.g., Deloitte, 2022; Data For Progress, 2022; Ipsos, 2022; Navigator Research, 2022) that most Americans blame "corporate greed" as the leading cause of inflation:



Motivated or not, narratives can have a first-order influence on individual behaviors and economic outcomes (Shiller, 2017).

Inflation as a crisis of trust between firms and stakeholders

- Firms with stronger **social capital** should be better prepared to preserve stakeholder trust and, hence, operating performance.
- **Corporate social responsibility** (CSR) as a proxy of firms' social capital (e.g., Lins, Servaes, and Tamayo, 2017; Albuquerque, Koskinen, Yang, and Zhang, 2020).

Potential channels linking social capital, firm value, and inflation:

✓ **Clients** may punish firms they perceive as raising prices opportunistically, leading to reduced sales. CSR as a form of product market differentiation (e.g., Luo and Bhattacharya, 2006).

✓ **Employees**' perception of the firm affects human capital. Employees may be happy to work in high-CSR firms even at lower (real) wages (e.g., Krueger, Metzger, and Wu, 2021). CSR can help preserve job satisfaction in crises, with positive effects on performance (Edmans, 2011).

Data and sample period

Main sample: non-financial and non-utility public firms in the US from January 2018 through December 2022. We collect:

- **Returns** — Based on monthly stock prices (Compustat).
- **Inflation** — Month-on-month (mom) and year-on-year (yoy) changes in the CPI (US BLS).
  - Robustness: Regional data; Consumers' inflation expectations (FRNYB Survey of Consumer Expectations); Google Searches of Inflation (Google Trends).
- **Corporate social responsibility** — ES scores from Refinitiv.
  - Robustness: ES scores from MSCI-KLD.
- **Standard firm characteristics** — Based on annual accounting data.
- **Analyst forecast revisions** — Based on monthly EPS and Sales estimates at different horizons (IBES). Similar to Landier and Thesmar (2020) and Derrien, Krüger, Landier, and Yao (2021).

Descriptive statistics

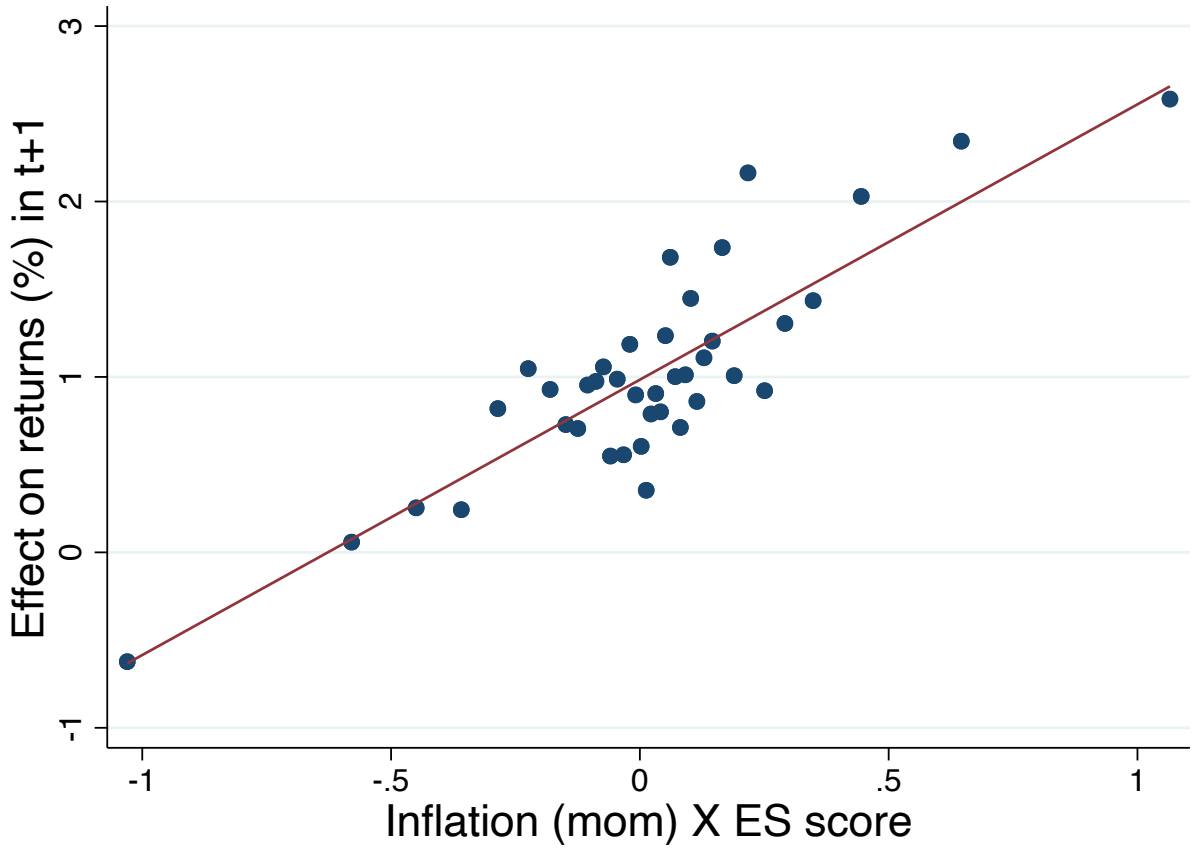
Main specification

We run the following regression:

$$Return_{i,t+1} = \alpha + \beta_1 Inflation_t \times ESscore_{i,t} + \beta_3 ESscore_{i,t} + \gamma' \mathbf{X}_{i,t} + \delta_t + I_i + \epsilon_{i,t}$$

- Our main variable of interest is the interaction between the inflation rate in time t and a firm's i environmental and social score ($ES_{i,t}$).
- $\mathbf{X}_{i,t}$ is a vector of lagged firm and stock characteristics (leverage, cash holdings, firm size, book-to-market, ROA, market beta and momentum).
- Month and industry fixed effects.
- Standard errors clustered at the firm level.

Inflation, CSR and stock returns



For an additional 1 p.p. of inflation mom in month t, companies with a 1-standard-deviation higher ES score experience a stock price outperformance of 1.57 p.p. in t+1, net of the effect of other firm characteristics.

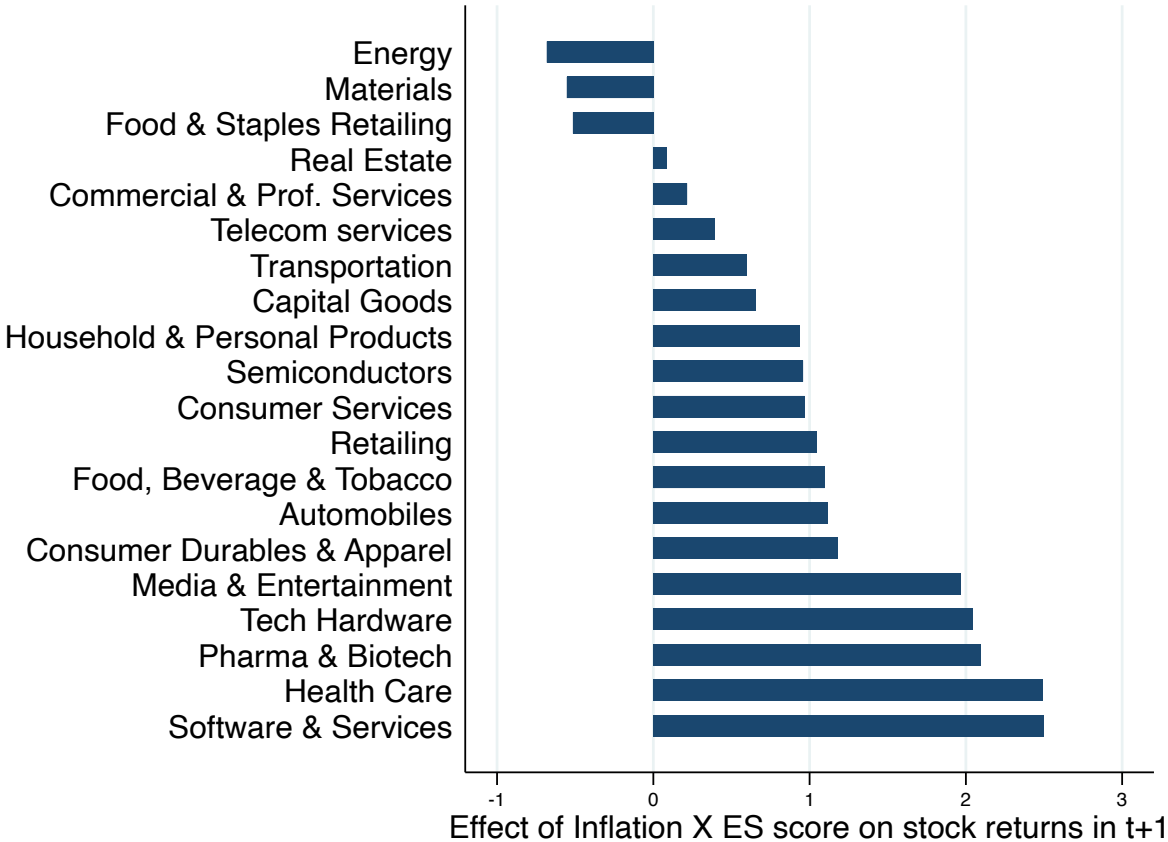
Baseline results

	Return (t+1)		
	(1)	(2)	(3)
Inflation (mom) × ES score	1.56***	1.57***	0.45***
	(12.44)	(12.57)	(2.80)
Inflation (mom) × Leverage			0.00
			(0.16)
Inflation (mom) × Cash holdings			-0.05***
			(-6.14)
Inflation (mom) × Market beta			-1.54***
			(-6.78)
Inflation (mom) × Book-to-market			0.89**
			(2.16)
Inflation (mom) × ROA			0.06***
			(6.45)
Inflation (mom) × Size			0.26**
			(2.22)
Inflation (mom) × Momentum			0.18***
			(4.33)
Inflation (mom)	-5.53***		
	(-35.10)		
ES score	-0.22***	-0.22***	0.10
	(-3.68)	(-3.79)	(1.44)
Firm controls	Yes	Yes	Yes
Month FE	No	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	110520	110520	110520
Adjusted R^2	0.017	0.235	0.239
Firm-clustered SE	Yes	Yes	Yes

OLS regressions of individual stock monthly returns on the interaction between the inflation rate and firms' CSR level. *t*-statistics in parentheses. Significance at 1% ***, 5% **, and 10% * levels.

Robustness: inflation | Robustness: returns | Robustness: ES scores

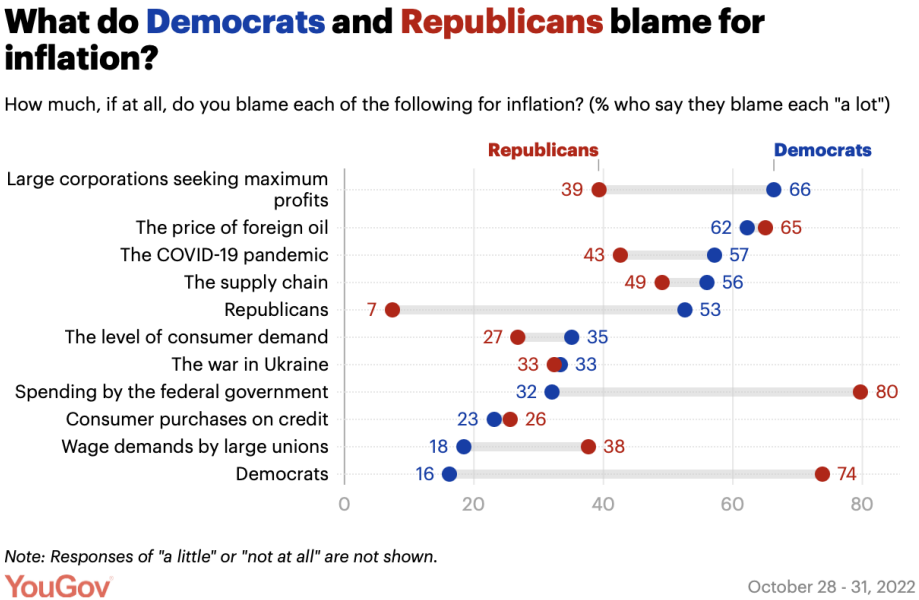
Results across industry

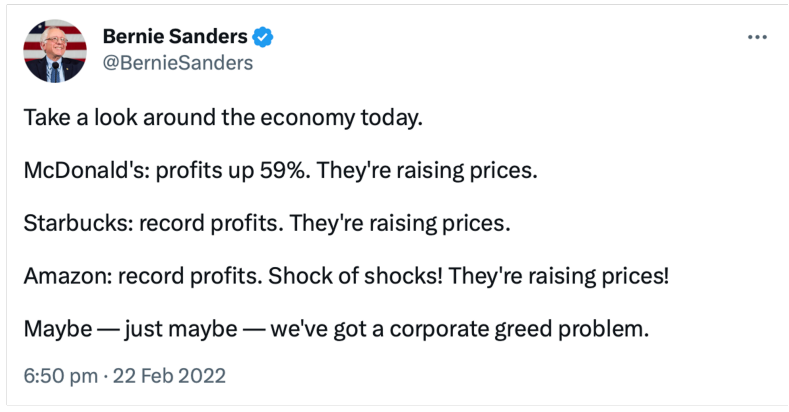


The coefficient of interest has a positive sign in most industries, confirming the broad relevance of our findings.

Exposure to the corporate greed narrative (1)

Democrats more likely to blame "corporate greed" for inflation:





If the results are driven (at least in part) by trust-related considerations, it should be stronger for firms most exposed to "corporate greed" narrative.

Exposure to the corporate greed narrative (2)

Effect is twice as large among firms with HQ in Democratic states:

	Return (t+1)	
	(1)	(2)
Inflation (mom) × ES score × Democratic state	1.02***	0.43*
	(3.91)	(1.78)
Inflation (mom) × ES score	0.89***	0.18
	(4.20)	(0.81)
Inflation (mom) × Democratic state	-1.61***	-0.66**
	(-5.23)	(-2.31)
ES score × Democratic state	-0.19*	-0.02
	(-1.91)	(-0.19)
ES score	-0.10	0.11
	(-1.18)	(1.15)
Democratic state	0.56***	0.27**
	(4.62)	(2.18)
Firm controls	Yes	Yes
Inflation (mom) x Firm controls	No	Yes
Month FE	Yes	Yes
Industry FE	Yes	Yes
Observations	109974	109974
Adjusted R^2	0.236	0.239
Firm-clustered SE	Yes	Yes

OLS regressions of individual stock monthly returns on the interaction between the inflation rate and firms' CSR level. *t*-statistics in parentheses. Significance at 1% ***, 5% **, and 10% * levels.

What channels are at play?

	Return (t+1)					
	Advertising		Intangibility		Net Leverage	
	(1) Low	(2) High	(3) Low	(4) High	(5) Low	(6) High
Inflation (mom) × ES score	0.94***	1.92***	1.40***	1.51***	1.76***	0.95***
	(3.79)	(7.77)	(7.18)	(9.44)	(9.23)	(5.91)
ES score	-0.16	-0.43***	-0.17*	-0.17**	-0.27***	-0.07
	(-1.38)	(-3.47)	(-1.79)	(-2.43)	(-2.80)	(-0.97)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23670	23495	54692	55243	55205	55315
Adjusted R^2	0.253	0.247	0.220	0.266	0.197	0.300
Firm-clustered SE	Yes	Yes	Yes	Yes	Yes	Yes
Statistically different		Yes		No		Yes

OLS regressions of individual stock monthly returns on the interaction between the inflation rate and firms' CSR level. *t*-statistics in parentheses. Significance at 1% ***, 5% **, and 10% * levels.

- Stronger effect among firms with high customer awareness (Servaes and Tamayo, 2013; Albuquerque, Koskinen, and Zhang, 2019) and firms with lower net leverage.

Earnings forecast revisions

So far, investor behavior. How do financial analysts react? → By expecting high-CSR firms to do better in high-inflation periods:

Panel A: EPS forecast revisions

	(1) Δ fEPS 1y	(2) Δ fEPS 2y	(3) Δ fEPS 3y
Inflation (mom) × ES score	0.72***	0.52***	0.52***
	(2.97)	(2.98)	(2.86)
ES score	-0.18	-0.11	0.03
	(-1.34)	(-1.12)	(0.28)
Firm controls	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	93248	92201	75178
Adjusted R^2	0.046	0.031	0.025
Firm-clustered SE	Yes	Yes	Yes

Panel B: Sales forecast revisions

	(1) Δ fSales 1y	(2) Δ fSales 2y	(3) Δ fSales 3y
Inflation (mom) × ES score	0.02	0.10*	0.14***
	(0.38)	(1.92)	(2.72)
ES score	-0.08***	-0.07**	-0.05*
	(-2.82)	(-2.53)	(-1.65)
Firm controls	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	91330	91209	75678
Adjusted R^2	0.080	0.064	0.045
Firm-clustered SE	Yes	Yes	Yes

Key takeaways

Still a lot to be done. But the results so far...

- Identify CSR as an important driver of firm value during periods of high inflation.
- Shed more light on when and how CSR/ESG matters for investors.
- Provide new insights into the economic consequences of how corporations are perceived in society.

Thank you for your attention!

You can read more about my research here:
anamaodeferro.wordpress.com
Comments are also welcome at: ana.ferro@bf.uzh.ch

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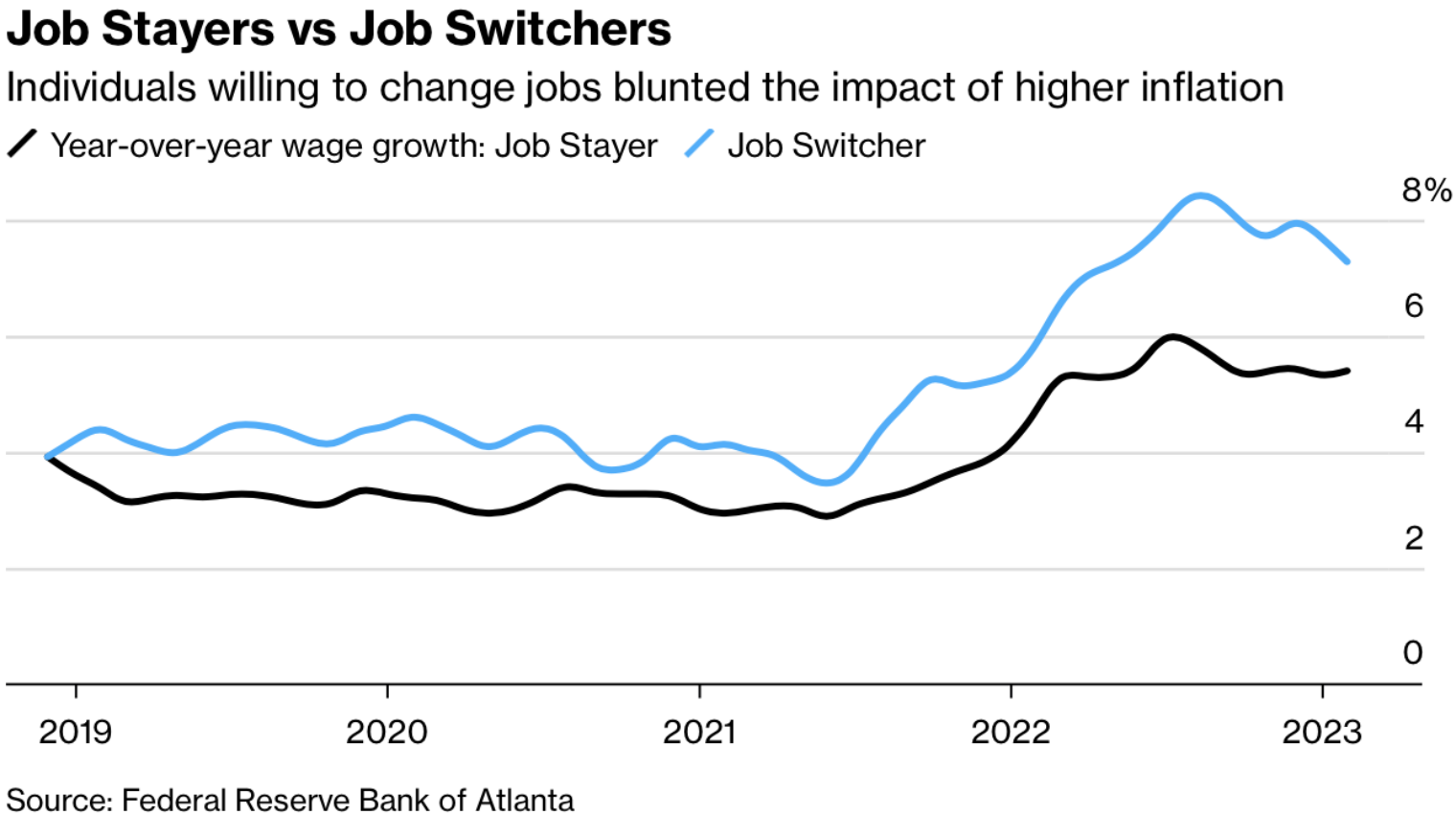
Job switching and pay rise



Bloomberg: "Half of Americans Who Switched Jobs Got a Pay Raise Higher Than Inflation", 15 February 2023

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Descriptive statistics

	Obs.	Min.	Pct.25	Mean	Pct.50	Pct.75	Max.	S.D.
Return (t+1)	112,168	-72.65	-7.04	1.03	0.44	7.87	163.57	15.32
CAPM-adj. Return (t+1)	106,460	-60.12	-6.99	-0.20	-0.63	5.73	164.92	13.52
Fama-French-adj. Return (t+1)	106,135	-64.50	-6.80	-0.04	-0.49	5.83	145.86	13.50
Leverage	113,575	0.00	11.00	30.63	29.29	44.93	116.17	23.47
Net leverage	113,575	-96.71	-16.03	7.48	15.27	36.39	96.86	41.07
Cash holdings	113,734	0.07	3.99	23.23	11.76	32.98	97.27	26.52
Market beta	113,312	-1.18	0.79	1.27	1.19	1.67	4.12	0.77
Book-to-market	113,674	-0.84	0.15	0.42	0.32	0.57	3.19	0.45
ROA	113,722	-226.29	-4.39	-4.08	2.65	6.85	30.70	25.53
Size	113,734	1.82	6.38	7.65	7.55	8.77	14.66	1.79
Momentum	112,862	-14.43	-1.11	1.47	1.16	3.58	23.78	4.94
R&D intensity	81,144	0.00	0.18	9.65	2.88	11.78	127.71	16.15
Advertising	48,678	0.00	0.28	2.60	0.95	2.82	27.11	4.45
Intangibility	113,139	0.00	1.21	21.23	13.47	36.47	93.94	22.26

For every month, we winsorize returns at the 1st and 99th percentiles to reduce the effect of outliers on our estimates. Control variables are also winsorized at the 1st and 99th percentile.
Requiring ESG data reduces our end sample by about 40%.

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Descriptive statistics

	Obs.	Min.	Pct.25	Mean	Pct.50	Pct.75	Max.	S.D.
Δ fEPS 1y	93,519	-164.79	-1.06	-1.44	0.00	0.94	88.89	17.51
Δ fEPS 2y	92,476	-121.84	-1.56	-1.43	0.00	0.97	70.37	14.21
Δ fEPS 3y	75,427	-135.71	-1.59	-1.39	0.00	0.99	84.62	15.79
Δ fSales 1y	91,597	-28.27	-0.22	-0.12	0.00	0.32	23.16	3.73
Δ fSales 2y	91,477	-29.50	-0.39	-0.19	0.00	0.42	23.90	4.00
Δ fSales 3y	75,901	-33.41	-0.45	-0.24	0.00	0.44	27.67	4.71

Formally, for each horizon h and firm i, we compute EPS (or sales) revisions as:

$$\Delta fEPS_{i,h} = \frac{\mathbb{E}_{t+1}[EPS_{i,h}] - \mathbb{E}_t[EPS_{i,h}]}{|\mathbb{E}_t[EPS_{i,h}]|} \times 100.$$

We trim the resulting values at the 1st and 99th percentiles.

By using the absolute value in the denominator of our delta variables, we avoid losing observations with negative average forecasts, which is particularly important given the macroeconomic environment during our sample period.

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With alternative measures of inflation

	Return (t+1)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ Inflation (mom) × ES score	0.58***	0.20						
	(3.97)	(1.05)						
Inflation (yoy) × ES score			0.17***					
			(10.74)					
Inflation (yoy, region) × ES score				0.16***				
				(9.67)				
Expected inflation (yoy) × ES score					0.32***			
					(11.21)			
Expected inflation (yoy, region) × ES score						0.28***		
						(9.63)		
Google SVI inflation (US) × ES score							0.02***	
							(6.51)	
Google SVI inflation (State) × ES score								0.02***
								(6.50)
ES score	0.26***	0.26***	-0.32***	-0.31***	-0.89***	-0.80***	-0.19**	-0.17**
	(5.23)	(5.22)	(-4.80)	(-4.50)	(-8.49)	(-7.26)	(-2.33)	(-2.14)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Δ Inflation (mom) × Firm controls	No	Yes	No	No	No	No	No	No
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	110520	110520	110520	90944	110520	90944	110520	110354
Adjusted R^2	0.234	0.235	0.235	0.236	0.235	0.235	0.234	0.235
Firm-clustered SE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

OLS regressions of individual stock monthly returns on the interaction between the inflation rate and firms' CSR level. *t*-statistics in parentheses. Significance at 1% ***, 5% **, and 10% * levels.

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With alternative measures of returns

	CAPM-adj. Return (t+1)			Fama-French-adj. Return (t+1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Inflation (mom) × ES score	1.38***	1.38***	0.50***	0.68***	0.68***	-0.08
	(11.45)	(11.47)	(3.02)	(6.12)	(6.15)	(-0.54)
Inflation (mom) × Leverage			0.01			-0.00
			(1.30)			(-0.54)
Inflation (mom) × Cash holdings			-0.05***			-0.01
			(-5.90)			(-0.63)
Inflation (mom) × Book-to-market			1.27***			0.29
			(2.91)			(0.72)
Inflation (mom) × ROA			0.06***			0.04***
			(6.30)			(3.80)
Inflation (mom) × Size			0.13			0.41***
			(1.10)			(3.71)
Inflation (mom) × Momentum			0.11**			0.33***
			(2.43)			(7.46)
Inflation (mom)	-1.34***			-0.76***		
	(-8.91)			(-5.68)		
ES score	-0.20***	-0.18***	0.06	-0.09	-0.08	0.15**
	(-3.38)	(-2.99)	(0.80)	(-1.53)	(-1.32)	(2.22)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	No	Yes	Yes	No	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	105800	105800	105800	105475	105475	105475
Adjusted R^2	0.003	0.042	0.046	0.002	0.010	0.012
Firm-clustered SE	Yes	Yes	Yes	Yes	Yes	Yes

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With alternative measures of ES scores: KLD

	Return (t+1)		
	(1)	(2)	(3)
Inflation (mom) × ES score (KLD)	0.74***	0.70***	0.21*
	(7.06)	(6.74)	(1.77)
Inflation (mom) × Leverage			-0.00
			(-0.39)
Inflation (mom) × Cash holdings			-0.05***
			(-6.21)
Inflation (mom) × Market beta			-1.58***
			(-6.67)
Inflation (mom) × Book-to-market			0.61
			(1.23)
Inflation (mom) × ROA			0.07***
			(5.27)
Inflation (mom) × Size			0.23**
			(2.35)
Inflation (mom) × Momentum			0.22***
			(4.57)
Inflation (mom)	-4.22***		
	(-30.13)		
ES score (KLD)	-0.11**	-0.07	0.08
	(-2.14)	(-1.42)	(1.40)
Firm controls	Yes	Yes	Yes
Month FE	No	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	88224	88224	88224
Adjusted R^2	0.013	0.272	0.275
Firm-clustered SE	Yes	Yes	Yes

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Full baseline results

	Return (t+1)	
	(1)	(2)
Inflation (mom) × ES score	1.56***	1.57***
	(12.44)	(12.57)
Inflation (mom)	-5.53***	
	(-35.10)	
ES score	-0.22***	-0.22***
	(-3.68)	(-3.79)
Leverage	0.02***	0.01***
	(6.09)	(3.15)
Cash holdings	-0.00	-0.01**
	(-0.49)	(-2.22)
Market beta	0.40***	0.27***
	(5.26)	(3.80)
Book-to-market	0.64***	0.29*
	(4.04)	(1.90)
ROA	-0.00	-0.00
	(-0.46)	(-0.40)
Size	-0.24***	-0.27***
	(-6.18)	(-6.73)
Momentum	0.05***	0.03***
	(3.96)	(2.66)
Month FE	No	Yes
Industry FE	Yes	Yes
Observations	110520	110520
Adjusted R^2	0.017	0.235
Firm-clustered SE	Yes	Yes

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With double clustering

	Return (t+1)		
	(1)	(2)	(3)
Inflation (mom) × ES score	1.36***	1.50***	0.50
	(2.93)	(3.29)	(1.37)
Inflation (mom) × Leverage			0.01
			(0.42)
Inflation (mom) × Cash holdings			-0.04*
			(-1.74)
Inflation (mom) × Market beta			-1.42
			(-1.34)
Inflation (mom) × Book-to-market			0.63
			(0.49)
Inflation (mom) × ROA			0.06***
			(3.19)
Inflation (mom) × Size			0.22
			(0.90)
Inflation (mom) × Momentum			0.16
			(1.19)
Inflation (mom)	-5.19		0.00
	(-1.54)		(0.00)
ES score	-0.14	-0.19	0.10
	(-1.03)	(-1.41)	(0.89)
Firm controls	Yes	Yes	Yes
Month FE	No	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	115942	115942	115942
Adjusted R^2	0.016	0.238	0.242
Month- and firm-clustered SE	Yes	Yes	Yes

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