

CORPORATE CLIMATE POSTURES

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Setting

- “Should we choose the green(er) or the brown(er) path?”
 - While this question has been studied considerably for individuals in their investment behavior (e.g., Riedl and Smeets, 2017; Heeb et al., 2023) it has not really been studied for companies at all, because it is usually unobservable
- We may have found a research design that can observe such Corporate Climate Posture

Setting:

Value Relevance of How Firms Face Climate Transitions

Opposing Views

1. Brown firms >> higher expected returns

Two channels.

- Brown firms >> higher exposure to transition risks >> holding risk premium
 - Bolton-Kacperczyk 2021; Faccini et al 2023; Giglio et al 2021; Huij et al 2021; Li et al 2023; Sautner et al 2023
- Green preference investors are willing to accept lower returns due to the increased utility
 - e.g., Pedersen et al., 2021.

2. Green preference >> increased demand for green equities >> short-term outperformance. Short-lived: disappear into a green-brown equilibrium (Pástor et al., 2021).

These views define firms as green or brown rather than studying the **decisions of firms to choose green or brown paths.**

Innovation literature (within-firm positioning toward green or brown):

- Cohen et al 2023: Brown firms do the green patenting
- Bolton et al 2022: Green innovation is increasingly by within-sector lower emitting firms

What We Add: Competitive Strategy

- Motivation: Classic Model of Roy (1951)
 - Optimal Strategic Sorting
 - Best Hunters end up Hunting and Best Fishers end up Fishing
- Our Question:
 - Are there value-optimizing competitive strategies being played out whereby some firms position their strategy and business development in the status quo economy and some within the transition economy, both in a value-enhancing way?
 - And some maybe both
 - e.g., Oil companies doubling down on extraction and investing in hydrogen
- What is a climate posture in this setup?
 - **Status Quo Economy firms:** Efficiently manage costs and risks vis-à-vis climate change and climate policy
 - **Transition Economy firms:** Seeking market-share (or value) -enhancing opportunities in transition

Outline

- I. Framing: Gordon Growth Model
- II. Identification: Environment and Labor indicators active management
- III. Empirical Results
 - Latent climate postures and their effect on valuation

Overall Objective:

- Can we provide evidence as to value-relevant climate postures
 - Are the “best fishers” fishing? – i.e., optimal strategic sorting that is value relevant?
- Focus on “industrial base” sectors: Energy, Industrials, Metals & Mining

Gordon-Shapiro (1956) formulation of Gordon growth model

- A set of firms within a sector have valuation V :

$$V = \frac{\text{earnings}_1 \times k}{r - g}$$

Where $(1-k)$ is the amount of retained earnings needed to keep the long-term growth rate at g

- A second set of firms instead have V^* :

$$V^* = \frac{\text{earnings}_1 \times k^*}{r - g^*},$$

Where $k^* < k$, and $g^* > g$. These firms retain a higher portion of earnings to invest in higher long-term growth.

- Firms self-sort into transition economy opportunity set if

$$\frac{k^*}{k} > \frac{(r - g^*)}{(r - g)}.$$

- Market should reward such sorting when retained earnings drop, but the market cannot see the relative growth prospects among firms

Identification

- Goal: Evidence of value-relevant climate postures
 - It's a joint proposition :
(1) Taking actions toward a climate posture, and (2) the posture is value relevant
- Climate postures are latent variables
 - Measures of what firms say they do can be fraught with intentional mis-directions
- Latent Structural Equation Modeling Approach
 - Key: Edit Management Data
 - + Measures that Climate Strategies were being Conceived

Data Novelty: Edit Management

- Intentional, manual changes made by firms to their environmental and workforce scores in London Stock Exchange data
- Flows to market via API feeds for automatic portfolio rebalancing
- 9 snapshots: Sep/2020-Jan/2021
- Aside: Why would a firm do edit management, exerting effort to monitor and correct (either upwards or downwards) ESG data?
 - Always possible to do no edits
 - Can control for ESG fundamentals, ex ante & ex post

- Signaling of Transition Opportunities: Edit Better* editing as signal of high transition growth opportunities
- Signaling of Being Climate Cost Efficient: Edit Worse* editing to signal keeping climate costs low within competitive positioning in the status quo economy

Data

Within Industry Distribution	Industrials and Basic Materials	Energy	Mining and Metals
Edit	900	227	295
No edit	585	126	60
Total	1,484	402	355

Let's see if we can find climate postures and then look at the effect of climate postures on returns.

Focus on Industrials sectors

Control for Fama-French 5 factors and sector fixed effects

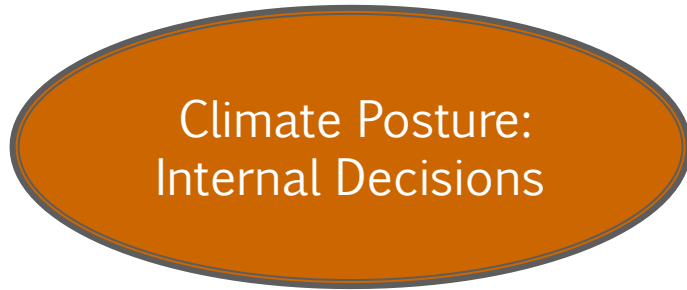
Heckman, Stixrud, and Urzua (2006): Confirmatory Factor Analysis

Structural Equation Modeling / Labor econometrics approach:

- Capture the shared variance of measurement variables of a latent concept, while restricting that shared variance to be that which in turn correlates with a dependent variable according to an economic model.
- Can be interpreted in causal terms, as long as exogeneity conditions are satisfied
- Our “confirmatory factor” = Environmental & Workforce Scores (E&S) **Edit Management** Activity

Ex Post Measures of strategic climate posture decisions.
Timeline is sufficiently short so that planning for M&A, etc
would have been in motion at t

Latent Corporate
Strategy Decisions



Gordon Growth (g^*, k^*) shifts

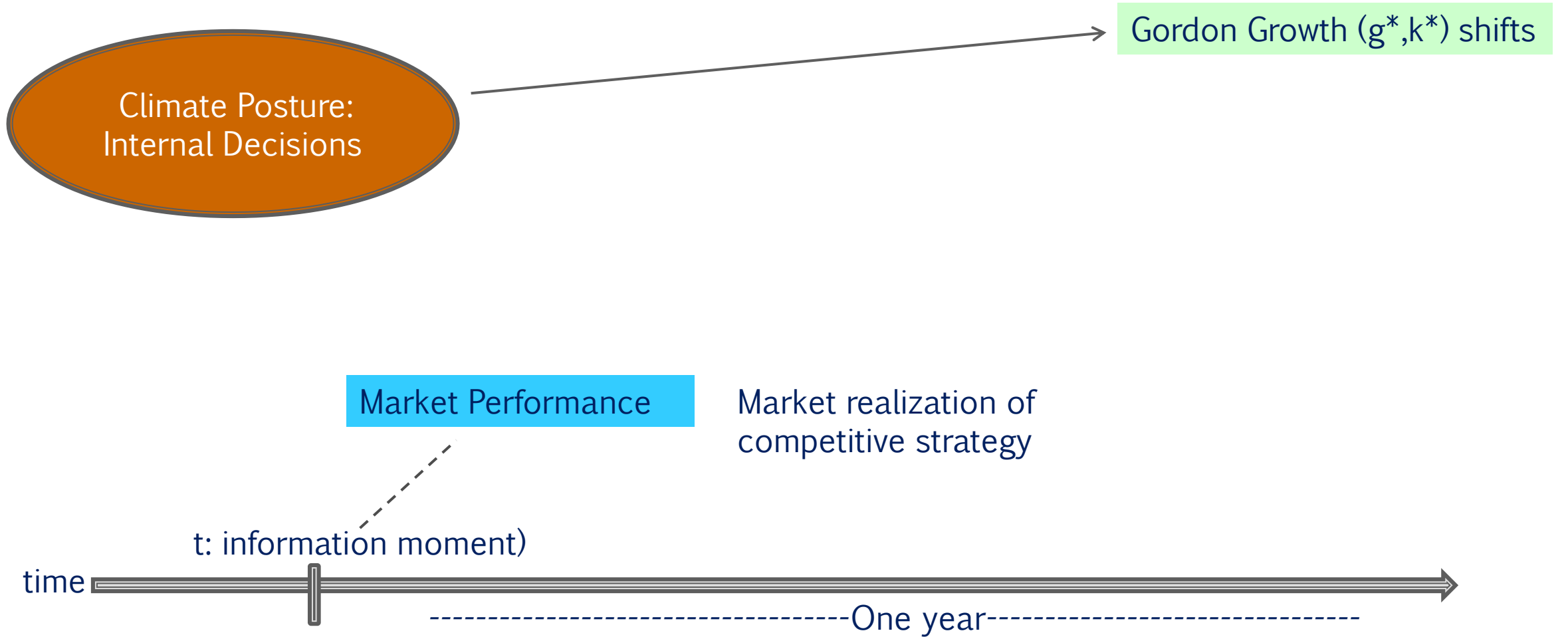
Market Performance

Market realization of
competitive strategy

t: information moment)

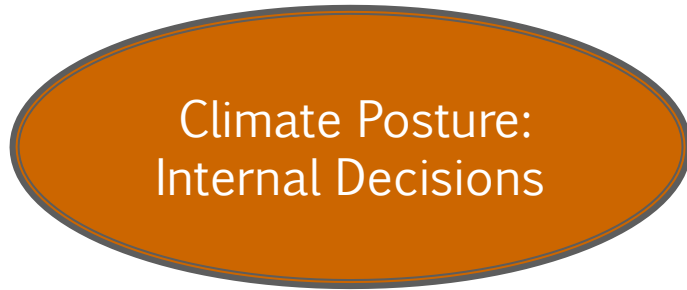
time

One year



Ex Post Measures of strategic climate posture decisions.
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Latent Corporate
Strategy Decisions



Gordon Growth (g^*, k^*) shifts

How do we identify climate postures
in an endogenous system of
corporate decision-making and
outcomes?

Market Performance

Market realization of
competitive strategy

t: information moment)

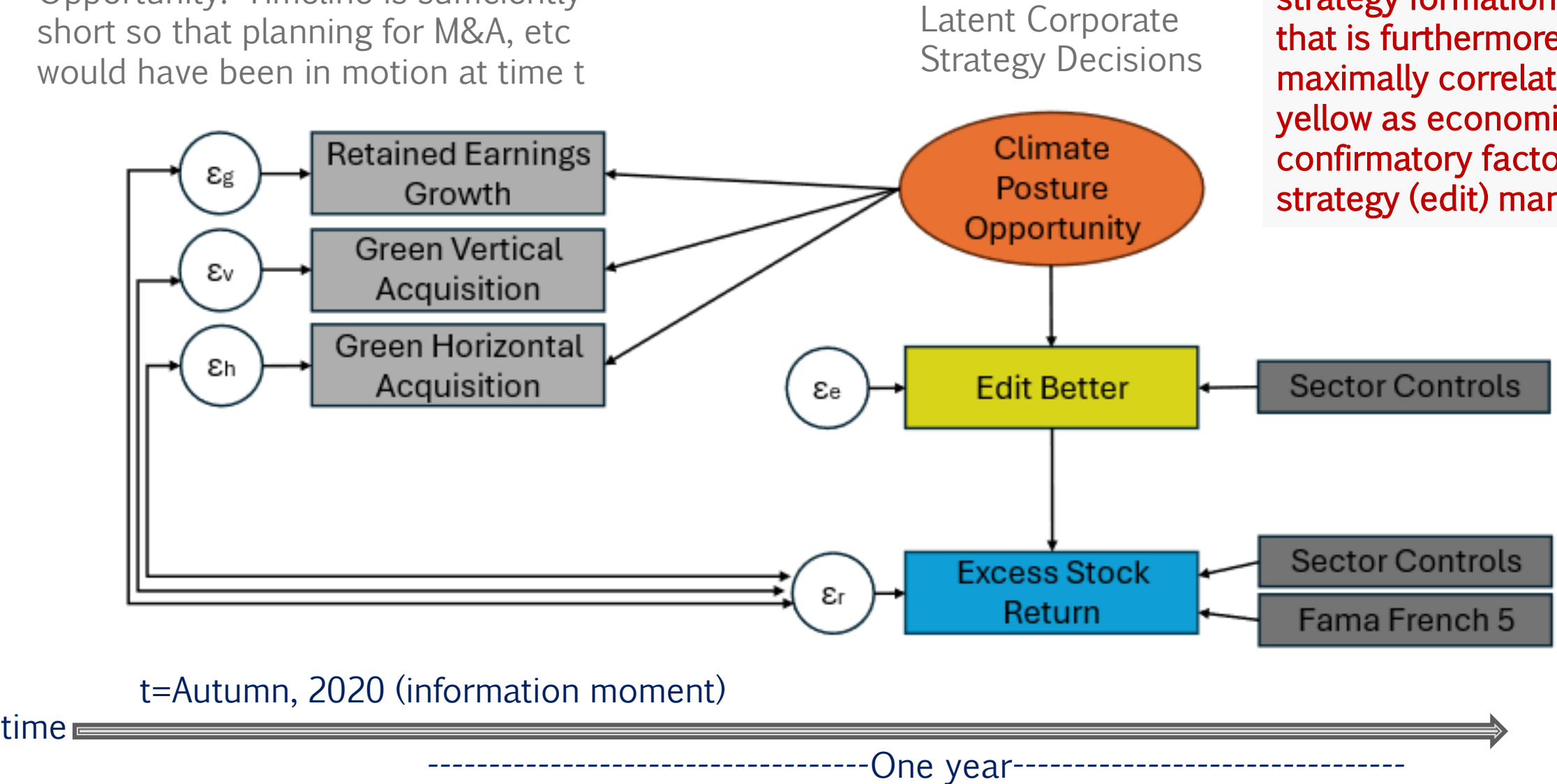
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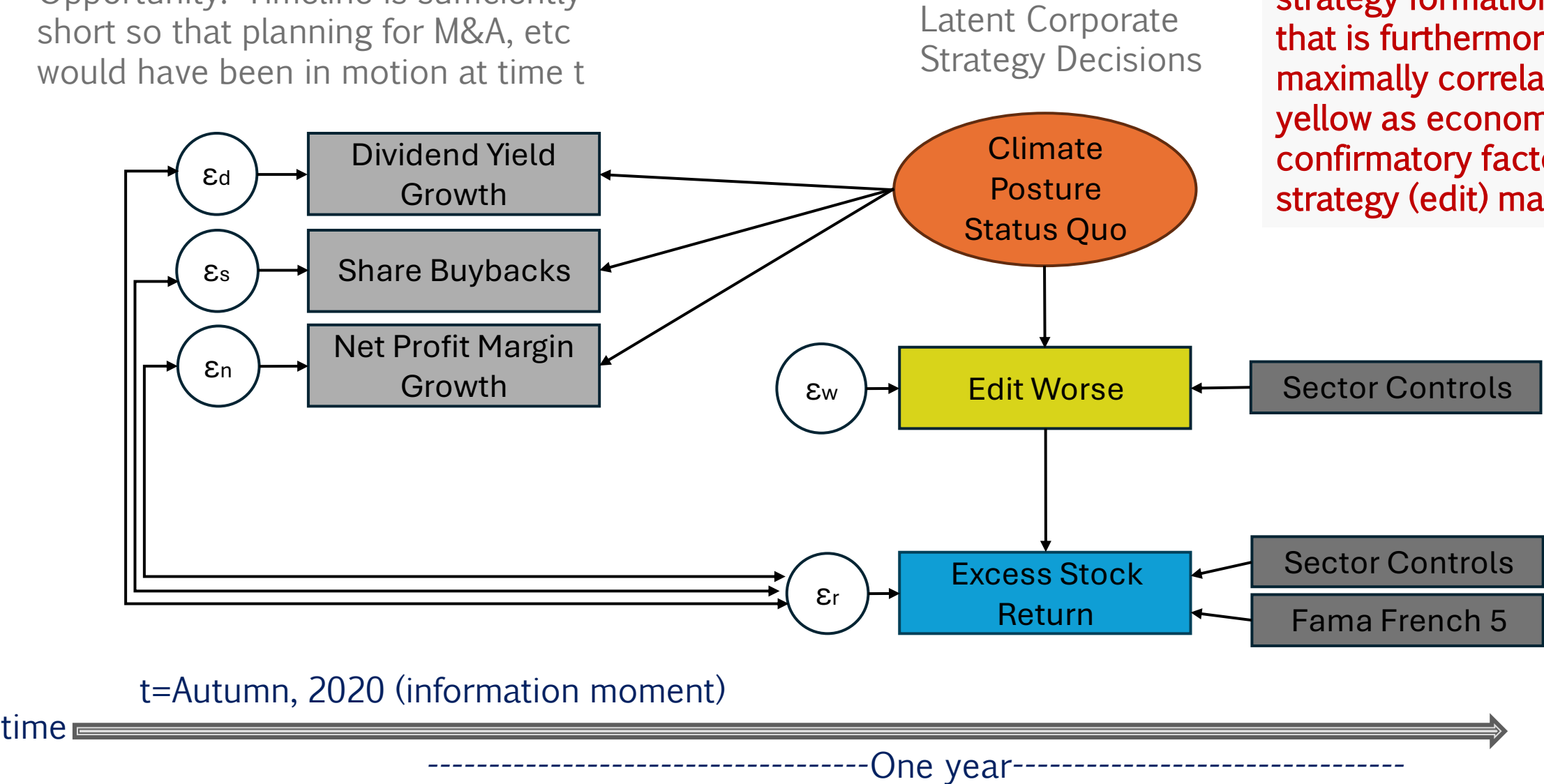
Ex-Post Measures of strategic decisions re: Climate Posture Opportunity. Timeline is sufficiently short so that planning for M&A, etc would have been in motion at time t

Take a common component of the gray as measures of strategy formation at time t that is furthermore maximally correlated with yellow as economic confirmatory factor of strategy (edit) management



Ex-Post Measures of strategic decisions re: Climate Posture Opportunity. Timeline is sufficiently short so that planning for M&A, etc would have been in motion at time t

Take a common component of the gray as measures of strategy formation at time t that is furthermore maximally correlated with yellow as economic confirmatory factor of strategy (edit) management



	Retained Earnings Growth	Green Acquisitions- Vertical	Green Acquisitions- Horizontal	Edit Better	Two-Week Return, Post Edit
Climate Posture Opportunity (latent)	2.006*** (0.586)	1.822*** (0.528)	2.777*** (0.825)	1 constrained	
Edit (Endogenous)					-0.009*** (0.003)
Energy * Edit					0.025* (0.014)
Industrials/ Basic Materials * Edit					0.016*** (0.006)
Mining and Metals * Edit					-0.027** (0.012)
Δ Category Score					-0.000 (0.000)
FF5 Factors					Yes
Sector F.E.				Yes	Yes
Observations: 58,498					

Editing explained by climate posture transition opportunity leads to a 1.6% increase in valuation for Industrials/Basic Materials and 2.5% for Energy.

	Dividend Yield Growth	Stock Buybacks	Net Profit Margin Growth	Edit Worse	Two-Week Return, Post Edit
Climate Posture Status Quo (latent)	6.322*** (0.000)	6.461*** (0.000)	0 (0.000)	1 constrained	
Edit (Endogenous)					-0.002 (0.002)
Energy * Edit					-0.002 (0.012)
Industrials/ Basic Materials * Edit					0.001 (0.006)
Mining and Metals * Edit					-0.008 (0.011)
Δ Category Score					-0.000 (0.000)
FF5 Factors					Yes
Sector F.E.				Yes	Yes
Observations: 56,871					

Editing explained by climate posture status quo does not affect valuation

Intensive & Extensive Margins	Retained Earnings Growth	Green Acquisitions-Vertical	Green Acquisitions-Horizontal	Edit Better	Two-Week Return, Post Edit
Climate Posture Opportunity (latent)	1.278*** (0.306)	1.153*** (0.273)	1.800*** (0.440)	1 constrained	
Edit (Endogenous)					-0.008*** (0.002)
Energy * Edit					0.019 (0.013)
Industrials/ Basic Materials * Edit					0.016*** (0.005)
Mining and Metals * Edit					-0.020* (0.010)
Δ Category Score					-0.000 (0.000)
FF5 Factors					Yes
Sector F.E.				Yes	Yes
Observations: 58,498					

Editing explained by climate posture transition opportunity leads to a 1.6% increase in valuation for Industrials/Basic Materials.

Edit by Subcategory	Retained Earnings Growth	Green Vertical Acquisition	Green Horizontal Acquisition	Edit	2-Week Stock Return	2-Week Stock Return	2-Week Stock Return
Climate Posture (latent) Resource/Emissions	1.390*** (0.293)	1.233*** (0.256)	1.926*** (0.417)	1 constrained			
Climate Posture (latent) Emissions/Workforce	1.725*** (0.504)	1.562*** (0.453)	2.430*** (0.722)	1 constrained			
Climate Posture (latent) Resource/Workforce	1.326*** (0.312)	1.204*** (0.280)	1.864*** (0.448)	1 constrained			
Edit (Endogenous)					-0.010*** (0.003)	-0.007*** (0.002)	-0.008*** (0.002)
Energy * Edit					0.018 (0.015)	0.011 (0.013)	0.015 (0.014)
Industrials and Basic Materials * Edit					0.017*** (0.006)	0.015*** (0.005)	0.016*** (0.005)
Mining and Metals * Edit					-0.020 (0.013)	-0.030** (0.012)	-0.028** (0.012)
Δ Category Score					-0.000* (0.000)	-0.000 (0.000)	-0.000 (0.000)
Fama-French 5					Yes	Yes	Yes
Sector FE				Yes	Yes	Yes	Yes
Edited Indicators					RRS&ERS	ERS&WOS	RRS&WOS
Observations: 58,498							

Editing explained by climate posture transition opportunity leads to a 1.5% to 1.7% increase in valuation for Industrials/Basic Materials.

Edit by Region

	Retained Earnings Growth	Green Vertical Acquisition	Green Horizontal Acquisition	Edit	2-Week Stock Return	2-Week Stock Return
Climate Posture (latent) Higher EPS	1.069*** (0.328)	0.994*** (0.301)	2.331*** (0.766)	1 constrained		
Climate Posture (latent) Lower EPS	1.780** (0.681)	1.293** (0.494)	1.525** (0.584)	1 constrained		
Edit (Endogenous)					0.002 (0.004)	-0.015*** (0.003)
Energy * Edit					0.030 (0.040)	0.028** (0.014)
Industrials and Basic Materials * Edit					0.013 (0.008)	0.017*** (0.006)
Mining and Metals * Edit					0.010 (0.019)	-0.026** (0.012)
Δ Category Score					0.000 (0.000)	-0.000 (0.000)
Fama-French 5 Sector FE				Yes	Yes	Yes
Region					Higher EPS	Lower EPS
Observations: Higher EPS 20,112; Lower EPS 30,694						

Editing explained by climate posture transition opportunity leads to a 1.7% increase in valuation for Industrials/Basic Materials and a 2.8% increase for Energy firms in lower environmental policy stringency countries.

Conclusion

- We find evidence of value-optimizing competitive strategies being played out — some firms position their strategy in the transition economy
- Some firms have competitive strategies in the status quo economy, but we do not find evidence that this is value-relevant
- Our research contributes valuable insights into the dynamic relationship between firms' climate postures, market signals, and their impact on shareholder value.