

Measuring Organizational Capital in Japan

Kaede Hanazawa¹ Ritsu Kitagawa² Akseli Palomäki²

¹University of Tokyo

²Columbia University

December 20, 2025

Motivation

- Similar firms differ in productivity (Syverson, 2011).
- Diff. b/w firms at the 10%tile and 90%tile $\simeq 200\%$.
- Why?
- Observably similar firms are heterogeneous in *unobservables*.
- We focus on **Organizational Capital** (OC).

What is Organizational Capital?

- OC is one of the *intangible assets* (Crouzet et al., 2022).
- First proposed as accumulated info. (Prescott and Visscher, 1980).
- Four properties of OC based on Dessein and Prat (2022):
 1. affects firm performance;
 2. changes slowly over time;
 3. being intangible, not perfectly observable; and
 4. produced inside the firm by the top management.
- An umbrella term for many things (Cai et al., 2025a):
management practices, relational contracts, corporate culture, FSHC, etc.

Research Questions

Main RQ: *How can we measure firms' organizational capital?*

- Can we measure it from publicly available data?
- Do we see different patterns of OC in Japan vis-à-vis US?
- What is the scalable and comparable way of measuring OC?

Contribution

- Measure OC in Japan (cf. Kambayashi et al., 2021).
- Replicate CPY.
- Develop a general measurement protocol/pipeline.

Prior work on OC:

- OC as internally accumulated knowledge (Prescott and Visscher, 1980).
- A dynamic firm model with OC (Dessein and Prat, 2022).
- Measuring OC using Glassdoor data (Cai et al., 2025a).

Related concepts:

- Intangible capital (Crouzet et al., 2022; Corrado et al., 2022).
- Corporate culture (Kreps et al., 1990; Hermalin, 2012; Gorton et al., 2022).
- Management practices (Bloom and Van Reenen, 2007).
- CEO behavior (Bandiera et al., 2020).

Measuring intangibles:

- Corporate culture w/ employee surveys (Guiso et al., 2015).
- Corporate culture w/ executive surveys (Graham et al., 2022).
- Corporate culture w/ ML + employee reviews (Li et al., 2021).
- Customer capital w/ LLM + financial statements (He et al., 2024).
- OC w/ LLM/ML + Glassdoor data (Cai et al., 2025a).

Measuring abstracts w/ ML:

- Worker rights (Arold et al., 2025).
- Non-wage amenities (Sockin, 2022; Cai et al., 2025b).
- `work2vec` (Bana, 2022).
- Geoeconomic pressure (Clayton et al., 2025).

- CPY measure OC using **Glassdoor** employee reviews.
- CPY method:
 1. Apply **tokenization** (Bird, 2006).
 2. Identify **bigrams** (Řehůřek and Sojka, 2010).
 3. Apply **word embedding** (Mikolov et al., 2013).
 4. Generate **representative vectors** of OC.
 5. Compute **cosine similarity** b/w real reviews and rep. vec.
 6. Aggregate similarity measures at the firm-year level.

An Example of Glassdoor Employee Reviews

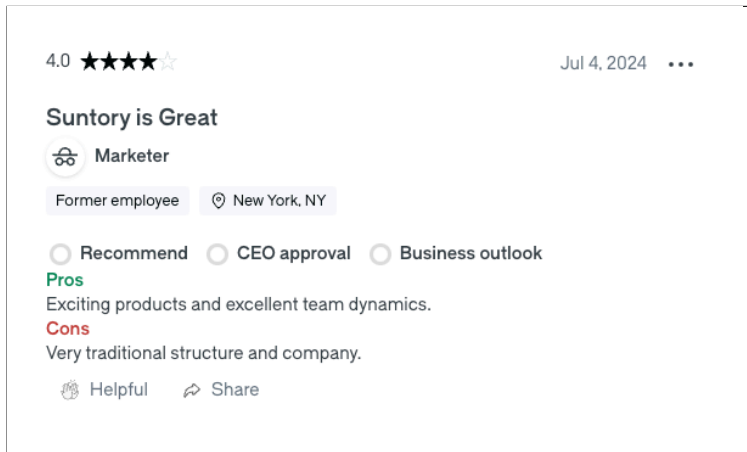


Figure 1: An Example of Glassdoor Employee Reviews

CPY Method: Tokenization

Tokenization is the process of breaking down a stream of text into individual units called “tokens” (usually words).

Example: “Management is great, but pay is low!”

- Step 1: Remove punctuation and convert to lowercase.
→ “management is great but pay is low”
- Step 2: Split the sentence into a list of words.
→ [management, is, great, but, pay, low]

CPY Method: Bigrams

- A bigram is a pair of consecutive tokens (two adjacent words) that are treated as a single unit.
- If a pair is frequent enough (e.g., appears at least 10 times in the full dataset), we merge it into one token.

Example:

- ▶ Review A: “Strong human capital due to training.”
- ▶ Review B: “We invest in human capital.”

Tokenized corpus:

[strong, human, capital, due, to, training, we, invest, in]

After bigram detection (appears ≥ 10 times):

[strong, **human_capital**, due, to, training, we, invest, in]

CPY Method: Word Embedding

- Word embedding maps each token (words and detected bigrams) into a numeric vector.
- **Distributional hypothesis**: a token's meaning is reflected by the words that tend to appear around it.
- word2vec learns embeddings via a self-supervised word-prediction task using local context windows.
- To make training efficient and informative, we also create negative pairs by sampling random tokens that did not appear nearby, and train the model to score those pairs low.
- Implementation in CPY: word2vec on pre-processed reviews; vector size = 300; window size = 5 (five tokens on each side); 20 iterations.

OC Measures (Seed Word-Based)

Identify key words that capture the essence of OC (Dessein and Prat, 2022):

- human capital,
- culture,
- relationship,
- intangible,
- management.

Refer these words as **seed words**.

OC Measures (Seed Word-Based)

- Let v_s be the embedding vector of seed word s .
- ($s \in \{\text{human capital, culture, relationship, intangible, management.}\}$)
- Define the **representative vector** v_R as follows:

$$v_R = \frac{1}{5} \sum_{s=1}^5 v_s.$$

- Let v be the embedding vec. of any token in the corpus.
- For all v , compute the **cosine similarity** w/ the rep. vec.:

$$\frac{v \cdot v_R}{\|v\| \|v_R\|}.$$

OC Measures (Seed Word-Based)

- Select the top 500 vectors ($v_1, \dots, v_{500}$) based on $\frac{v \cdot v_R}{\|v\| \|v_R\|}$.
- Call this set of words as the **expanded dictionary** for OC.
- Let D denote the set of words in the expanded dictionary.
- Index each employee review by r .
- Let B_r^{pros} be the set of tokens in the Pros section of review r .
- and B_r^{cons} be the set of tokens in the Cons section of review r .

Top 50 words in the Expanded Dictionary

Rank	Word	Similarity	Rank	Word	Similarity
1	culture	0.724	26	cooperation	0.445
2	leadership	0.671	27	behavior	0.444
3	management	0.616	28	behaviour	0.443
4	relationship	0.599	29	mangement	0.436
5	mgmt	0.536	30	connection	0.435
6	managment	0.534	31	mgt	0.432
7	atmosphere	0.523	32	ethic	0.431
8	relationships	0.504	33	approach	0.430
9	ethos	0.492	34	rapport	0.424
10	attitude	0.490	35	perception	0.423
11	communication	0.489	36	strategy	0.420
12	human_capital	0.484	37	leaders	0.420
13	interpersonal_relationships	0.483	38	mentality	0.418
14	teamwork	0.482	39	strategic_thinking	0.416
15	engagement	0.475	40	strategic_vision	0.416
16	team_spirit	0.473	41	business_model	0.415
17	environment	0.470	42	balance	0.412
18	relations	0.469	43	moral_compass	0.412
19	collaboration	0.469	44	synergy	0.411
20	integrity	0.467	45	image	0.411
21	ethics	0.466	46	camaraderie	0.408
22	philosophy	0.463	47	business_acumen	0.407
23	partnership	0.451	48	emotion	0.407
24	communications	0.450	49	employee_engagement	0.406
25	mindset	0.449	50	hierarchy	0.405

Figure 2: The Expanded Dictionary (Top 50 out of 500)

OC Measures (Seed Word-Based)

Compute

$$\text{Score}_r^{\text{pros}} = \sum_{b \in B_r^{\text{pros}}} \mathbb{1}\{b \in D\} \frac{v_b \cdot v_R}{\|v_b\| \|v_R\|},$$

and

$$\text{Score}_r^{\text{cons}} = \sum_{b \in B_r^{\text{cons}}} \mathbb{1}\{b \in D\} \frac{v_b \cdot v_R}{\|v_b\| \|v_R\|}.$$

OC Measures (Seed Word-Based)

Let $R_{i,t}$ be the set of emp. rev. written about firm i in year t .

The **seed word-based measure** of OC is defined as:

$$OC_{i,t}^{\text{Seed Word}} = \frac{1}{|R_{i,t}|} \sum_{r \in R_{i,t}} \text{Score}_r^{\text{pros}} - \frac{1}{|R_{i,t}|} \sum_{r \in R_{i,t}} \text{Score}_r^{\text{cons}}. \quad (1)$$

CPY Method: OC Measures (ChatGPT-Based)

- Ask ChatGPT to generate synthetic employee reviews.
- 100 rev. that are emblematic of strong OC.
- 100 rev. that are emblematic of weak OC.

Prompt to ChatGPT

This is the definition of organizational capital.

Organizational capital encompasses any intangible firm asset with four properties: (1) it affects firm performance; (2) it changes slowly over time; (3) being intangible, it is not perfectly observable; and (4) it must be produced at least partly inside the firm with the active participation of the firm's top management.

What could organizational capital be in practice? A leading example is the management practices analyzed by Bloom and Van Reenen (2007), which arguably affect firm performance (as in condition 1) and are slow-moving (as in condition 2). In support of the imperfect observability condition (condition 3), note that management practices are difficult to measure precisely (Bloom et al. [2019] estimate that 45% of the observed variance in management scores is due to measurement error). For condition 4, Simons (1994b) uses 10 years of observational data collected in over 50 US businesses to document how top managers use control systems—namely, mechanisms for influencing human endeavor within the company—to maintain or alter patterns in organizational activities; in particular, new CEOs use the first 18 months of their tenure to define and measure critical performance variables (Simons 1994a). There are other possible examples of organizational capital. Our definition includes at least partial constructs, such as relational contracts (Baker, Gibbons, and Murphy 2002), corporate culture (Schein 2010), firm-specific human capital (Prescott and Visscher 1980), or firm capabilities (Teece, Pisano, and Shuen 1997).

Based on the above definition, please give me 100 employee reviews of their company which indicate that their company has strong organizational capital, and 100 employee reviews of their company which indicate that their company does not have strong organizational capital. Each review is one or two sentences long. The language should be in the style of an employee's review of their company.

Figure 3: Prompt Given to ChatGPT

10 Sample Synthetic Reviews Indicating Strong Organizational Capital

Our company's management practices are top-notch and evolve with the times, ensuring we're always ahead of the curve in performance.
I'm continually impressed by how our leadership actively shapes our firm's direction, creating a unique and powerful organizational culture.
The way our management practices are integrated into every aspect of our work here makes a significant positive impact on our performance.
Our top executives are deeply involved in developing our company culture, which has led to a strong and cohesive work environment.
It's evident that our firm's success stems from the intangible assets we've cultivated over time, particularly our innovative management practices.
Our company's innovative approach and dynamic management practices really drive our success and growth.
The involvement of top management in cultivating our company culture is truly inspiring and motivates me every day.
I'm proud to work in a place where our intangible assets, like management practices, are given such importance.
The gradual yet impactful evolution of our organizational practices keeps us competitive and forward-thinking.
Our leadership's active role in shaping organizational activities translates into a highly productive and motivated workforce.

Figure 4: Examples of Synthetic Employee Reviews (Strong OC)

10 Sample Synthetic Reviews Indicating Weak Organizational Capital (Continued)

The lack of involvement from top management in shaping our work environment has led to a disorganized and uninspiring company culture.
It's difficult to see the impact of our so-called organizational capital when management practices feel outdated and ineffective.
There seems to be little evolution in our management practices, leaving us trailing behind industry standards.
Our company's lack of focus on developing internal practices and culture is evident in our stagnant performance.
The disengagement of top management from actively shaping our organizational culture has led to a demotivated workforce.
Our firm's intangible assets, like management practices, seem outdated and disconnected from our actual needs.
I feel there's a lack of strategic involvement from our leadership in developing effective organizational practices.

Figure 5: Examples of Synthetic Employee Reviews (Weak OC)

CPY Method: OC Measures (ChatGPT-Based)

- Tokenize those 200 synthetic employee reviews.
- Let R_s be the set of 100 synthetic positive emp. rev.
- Let R_w be the set of 100 synthetic negative emp. rev.
- Let B_r be the set of tokens in review r .
- Define

$$v_s = \frac{1}{|R_s|} \sum_{r \in R_s} \left(\frac{1}{|B_r|} \sum_{b \in B_r} v_b \right),$$

$$v_w = \frac{1}{|R_w|} \sum_{r \in R_w} \left(\frac{1}{|B_r|} \sum_{b \in B_r} v_b \right).$$

CPY Method: OC Measures (ChatGPT-Based)

- Consider an arbitrary real emp. rev. r .
- Let B_r^{pros} be the set of tokens in the Pros section of r .
- Let B_r^{cons} be the set of tokens in the Cons section of r .
- Define

$$v_r^{\text{pros}} = \frac{1}{|B_r^{\text{pros}}|} \sum_{b \in B_r^{\text{pros}}} v_b,$$

$$v_r^{\text{cons}} = \frac{1}{|B_r^{\text{cons}}|} \sum_{b \in B_r^{\text{cons}}} v_b.$$

CPY Method: OC Measures (ChatGPT-Based)

- Define

$$\text{Sim}_r^{\text{pros}} = \frac{v_r^{\text{pros}} \cdot v_s}{\|v_r^{\text{pros}}\| \|v_s\|},$$

$$\text{Sim}_r^{\text{cons}} = \frac{v_r^{\text{cons}} \cdot v_w}{\|v_r^{\text{cons}}\| \|v_w\|}.$$

CPY Method: OC Measures (ChatGPT-Based)

Let $R_{i,t}$ be the set of emp. rev. written about firm i in year t .

The **ChatGPT-based measure** of OC is defined as:

$$\text{OC}_{i,t}^{\text{ChatGPT}} = \frac{1}{|R_{i,t}|} \sum_{r \in R_{i,t}} \text{Sim}_r^{\text{pros}} - \frac{1}{|R_{i,t}|} \sum_{r \in R_{i,t}} \text{Sim}_r^{\text{cons}}. \quad (2)$$

CPY's Findings

- **Slow-moving & firm-specific:** Firm fixed effects explain >20% of variation, consistent with organizational capital evolving gradually.
- **CEO-driven:** CEO fixed effects explain 35% of variation, highlighting strong top-management influence.
- **Performance link:** Higher organizational capital is associated with higher ROA, ROE, and market-to-book ratios.
- **Beyond SG&A:** Text-based measures add explanatory power beyond SG&A-capitalized organizational capital.
- **CEO dynamics:** Increases with CEO tenure, falls after CEO turnover, and is lower with frequent CEO changes.

Our goal

- To develop a **scalable** measures à la Cai et al. (2025a).
- Ideally, one that can also work for other data and languages.
- Follow the CPY method as much as possible.
- Hopefully, this admits **comparability** to a certain degree.
- Our goal is to develop and validate measures of OC.
- Our goal is NOT to provide causal estimates.

Data

- Use employee reviews provided by **OpenWork**.
- OpenWork is the most popular emp. rev. website in Japan.
- Period: 2015-03-01 to 2025-10-31. (**10+ years**)
- Target firms: Listed companies in Japan & their subsidiaries.
- # of employee reviews: 604,298.
- # of unique firms: 9,591.
- Avg. # of reviews per firm-year: 9.50
- (Other variables sourced from NEEDS FinancialQUEST.)

An Example of OpenWork Employee Reviews

 サントリーホールディングスの就職・転職リサーチ

組織体制・企業文化

回答日：2025年11月21日

回答者：マーケティング、在籍20年以上、現職（回答時）、新卒入社、男性、サントリーホールディングス

★★★★☆ 4.3

やってみなはれ文化が社員一人一人に浸透しており、一体感が強くあり、愛社精神がとて高い会社です。離職率も低く、女性も含めてたいへん働きやすい職場環境だと思います。

また法令遵守、コンプライアンス意識もとても高いので、はたらいいて、信頼できる人間関係が構築しやすいと思います。

一方で転職されてきた方にとっては、サントリーの愛社精神のつよさは、ともするとウェットな組織に見えるかもしれません。

GOOD ! 0







報告する

記事URL

Figure 6: An Example of OpenWork Employee Reviews

Measurement Strategy

The challenge in implementing the CPY method is twofold:

- OpenWork reviews are written in Japanese.
- OpenWork reviews have a different format.

We use the LLM to :

- Translate OpenWork reviews to English.
- Label sentences as positive, negative, or neutral components.

LLM-Based Translation/Classification

We give the following prompt to GPT-5 Nano:

You are an information extraction system.

TASK:

Translate the following employee review written in Japanese into English WITHOUT summarizing.

Classify the translated content into three categories ABOUT THE COMPANY:

1. Pros: Positive statements about the company.
2. Cons: Negative statements about the company.
3. Neutral: Descriptive or factual statements about the company that are neither positive nor negative.

LLM-Based Translation/Classification

 大塚商会の就職・転職リサーチ

組織体制・企業文化

回答日：2017年07月31日

回答者： 営業、在籍3年未満、退社済み(2010年より前)、新卒入社、男性、大塚商会 10年以上前

★★★★☆ 1.9

昭和の営業会社。その一言に尽きる。新卒で入社した社員は創業者の自伝の本を買われ、読むよう強制される。研修などで度々社訓の唱和をさせられ、また年度末等で売上の上がらない営業は「たのめーる」にて自暴自棄をする事を推奨、美談とするような会社。また、これは退職して外に出たからわかる事だが、世間からの評判とは反して、社内(特に管理職に多い)は自社に対して誇りを持っている(会社を崇拝しているというレベル)人間も多く、ある意味半分宗教のような感じさえ漂っている。

※このクチコミは10年以上前について回答されたものです。

GOOD 1   

報告する 記事URL

Pros

There are many people in the company who take pride in the company (to the extent of worshipping the company) and some feel like the environment is almost religious in a way, especially among management.

Cons

The company makes new graduates buy and read the founder's autobiography, repeatedly enforces recitation of corporate motto during training, and at year-end or when sales are weak it recommends self-destructive purchases via the Tamare-ru service as a virtue; overall it is a Showa-era sales company with pressurized sales culture and little to no IT sales skills training; for those who want IT sales, joining is not recommended.

Figure 7: An Example of the LLM-Based Conversion

Expanded Dictionary

Table 1: Top 50 words in the Expanded Dictionary

Rank	Word	Similarity	Rank	Word	Similarity
1	culture	0.728	26	spirit	0.438
2	relationship	0.612	27	relationships	0.437
3	atmosphere	0.568	28	ethos	0.431
4	hierarchy	0.565	29	approach	0.426
5	climate	0.534	30	environment	0.420
6	organizational_structure	0.529	31	customer-first_mindset	0.419
7	temperament	0.524	32	relations	0.418
8	mindset	0.520	33	hierarchies	0.409
9	organization	0.518	34	strict_hierarchy	0.407
10	management	0.517	35	management_layer	0.406
11	mentality	0.514	36	absolute_authority	0.400
12	governance	0.500	37	rapport	0.399
13	attitude	0.484	38	posture	0.398
14	pyramid_structure	0.481	39	bottom-up_approach	0.395
15	stance	0.473	40	logic	0.394
16	vibe	0.471	41	senior-junior_hierarchy	0.393
17	structure	0.470	42	upper_management	0.393
18	vertical_hierarchy	0.463	43	customer-centric_approach	0.391
19	rigid_hierarchy	0.455	44	alignment	0.391
20	tradition	0.455	45	discipline	0.389
21	top-down_approach	0.454	46	autocratic_leadership	0.389
22	leadership	0.450	47	parent-subsidiary_relationship	0.388
23	communication	0.445	48	collaboration	0.386
24	image	0.442	49	family-like_atmosphere	0.384
25	character	0.438	50	job-for-life	0.384

LLM-Generated Employee Reviews

id	Pros
1	Leadership provides a clear vision and follows through, and everyone knows how their work contributes to long-term goals.
2	Management practices are consistent and transparent, and decisions are explained thoughtfully.
3	The company invests heavily in internal training and long-term capability building.
4	We have strong cross-department communication, so projects run smoothly without confusion.
5	Management metrics are stable and well-defined, which helps us focus on what matters most.
6	Cultural norms here are clear, supportive, and widely shared across teams.
7	The company has a deliberate onboarding process that sets up employees for long-term success.
8	Leadership listens carefully and acts on employee feedback rather than ignoring it.
9	Projects are planned with realistic expectations, and leadership sticks with commitments.
10	Internal systems and processes make it easy to do great work without wasted time.

Figure 8: Examples of Positive Synthetic Employee Reviews

LLM-Generated Employee Reviews

id	Cons
1	Leadership changes direction every week, and we never know what matters.
2	There are no clear goals and priorities constantly shift.
3	We don't have formal processes—everything is improvised last minute.
4	Management rarely communicates and decisions seem random.
5	The culture is chaotic and nobody is aligned on strategy.
6	We reinvent the wheel constantly because nothing is documented.
7	Leadership doesn't listen and feedback goes into a black hole.
8	Metrics change constantly and feel meaningless.
9	Processes are inconsistent across teams, leading to constant confusion.
10	Promotion criteria aren't clear and seem political rather than merit-based.

Figure 9: Examples of Negative Synthetic Employee Reviews

Descriptive Statistics: Time Variation



Figure 10: Time Variation in Average Organizational Capital

Variance Decomposition

Table 2: Variance Decomposition of Organizational Capital

No.	Fixed Effects	OC (Seed Word)	OC (ChatGPT)
1	Year Fixed Effects	0.2%	0.8%
2	Industry Fixed Effects	4.2%	4.2%
3	Industry Fixed Effects + Year Fixed Effects	4.3%	5.1%
4	Industry $\times$ Year Fixed Effects	21.2%	21.4%
5	Firm Fixed Effects	25.2%	23.5%
6	Firm Fixed Effects + Year Fixed Effects	25.3%	24.3%
7	CEO Fixed Effects	32.8%	31.8%
8	CEO Fixed Effects + Year Fixed Effects	32.8%	32.5%
9	CEO–Firm Fixed Effects	32.8%	31.8%
10	CEO–Firm Fixed Effects + Year Fixed Effects	32.9%	32.5%

Notes: Each entry reports the overall R^2 from a regression of organizational capital on the listed fixed effects only (no covariates). Values are shown as percentages.

Validating the Measures

- Check whether they behave as they are supposed to.
- OC exhibits four properties (Dessein and Prat, 2022):
 1. OC affects firm performance.
 2. OC changes slowly over time.
 3. Being intangible, OC is not perfectly observable.
 4. OC must be produced at least partly inside the firm with the active participation of the firm's top management.

Validating the Measures: Firm Performance

Estimate the following equation:

$$y_{i,t} = \beta_0 + \beta_1 OC_{i,t} + X'_{i,t} \gamma + \eta_{m(i)} + \varepsilon_{i,t}. \quad (3)$$

- $y_{i,t}$ = ROA or P/B ratio of firm i in year t .
- $OC_{i,t}$ = OC measure of firm i in year t .
- $X_{i,t}$ = A vec. consisting of the log of total asset and firm age.
- η_m = Industry fixed effect for industry m .
- $m(i)$ = Industry of firm i .
- Industry = two-digit JSIC.

Table 3: Organizational Capital and Firm Performance (ROA)

Dependent variable: ROA (%)						
OC (Seed)	0.576*** (0.100)					
OC (ChatGPT)		0.540*** (0.099)				
OC (Avg.)			0.795*** (0.123)			
OC (Seed, %)				0.017*** (0.003)		
OC (ChatGPT, %)					0.021*** (0.003)	
OC (Avg., %)						0.027*** (0.004)
log(Total Assets)	0.711*** (0.116)	0.707*** (0.117)	0.699*** (0.117)	0.708*** (0.116)	0.701*** (0.117)	0.692*** (0.116)
Firm Age	-0.045*** (0.007)	-0.044*** (0.007)	-0.044*** (0.007)	-0.045*** (0.007)	-0.044*** (0.007)	-0.044*** (0.007)
Observations	23,918	23,613	23,613	23,918	23,613	23,613
R ²	0.216	0.216	0.217	0.215	0.217	0.218
Industry-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors clustered at the firm level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 4: Organizational Capital and Firm Valuation (P/B Ratio)

Dependent variable: P/B Ratio						
OC (Seed)	0.095*					
	(0.055)					
OC (ChatGPT)		0.075				
		(0.053)				
OC (Avg.)			0.129*			
			(0.067)			
OC (Seed, %)				0.005**		
				(0.002)		
OC (ChatGPT, %)					0.002	
					(0.002)	
OC (Avg., %)						0.005**
						(0.002)
log(Total Assets)	-0.174***	-0.176***	-0.178***	-0.177***	-0.176***	-0.180***
	(0.046)	(0.047)	(0.046)	(0.046)	(0.046)	(0.046)
Firm Age	-0.037***	-0.038***	-0.037***	-0.037***	-0.037***	-0.037***
	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
Observations	24,063	23,757	23,757	24,063	23,757	23,757
R ²	0.188	0.188	0.189	0.189	0.188	0.189
Industry-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors clustered at the firm level are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Application: CEO Turnover and OC

- To showcase an application.
- Estimate the dynamic effects of CEO turnover on OC:

$$OC_{i,t} = \sum_{k=-3}^3 \beta_k (\text{CEO Turnover})_{i,t-k} + \alpha_i + \tau_t + X'_{i,t} \gamma + \xi_{i,t}.$$

Application: CEO Turnover and OC

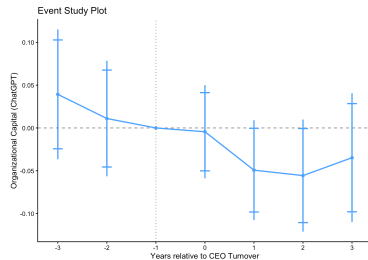
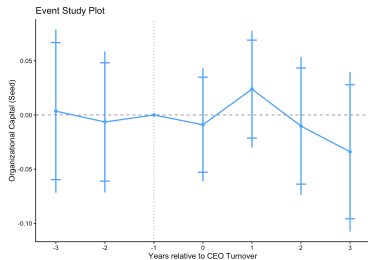


Figure 11: Event Study of CEO Turnover

Conclusion

- The measures seem to work well, exhibiting predicted patterns.
- OC is associated with ROA and P/B ratio (weaker than CPY).
- To do: Replicate other results of Cai et al. (2025a).
- Takeaway 1: OC seems to matter in Japan.
- Takeaway 2: Using LLMs, we can measure various concepts.

References I

- Arold, B. W., Ash, E., MacLeod, W. B., and Naidu, S. (2025). Worker rights in collective bargaining. Technical report, Cowles Foundation for Research in Economics, Yale University.
- Bana, S. H. (2022). Work2vec: using language models to understand wage premia.
- Bandiera, O., Prat, A., Hansen, S., and Sadun, R. (2020). Ceo behavior and firm performance. *Journal of Political Economy*, 128(4):1325–1369.
- Bird, S. (2006). Nltk: the natural language toolkit. In *Proceedings of the COLING/ACL 2006 interactive presentation sessions*, pages 69–72.
- Bloom, N. and Van Reenen, J. (2007). Measuring and explaining management practices across firms and countries. *The Quarterly Journal of Economics*, 122(4):1351–1408.

References II

- Cai, W., Prat, A., and Yu, J. (2025a). Measuring Organizational Capital.
- Cai, W., Prat, A., and Yu, J. (2025b). Mergers and Non-contractible Benefits: The Employees' Perspective.
- Clayton, C., Coppola, A., Maggiori, M., and Schreger, J. (2025). Geoeconomic pressure. *Columbia Business School Research Paper Forthcoming, Stanford University Graduate School of Business Research Paper Forthcoming*.
- Corrado, C., Haskel, J., Jona-Lasinio, C., and Iommi, M. (2022). Intangible capital and modern economies. *Journal of Economic Perspectives*, 36(3):3–28.
- Crouzet, N., Eberly, J. C., Eisfeldt, A. L., and Papanikolaou, D. (2022). The Economics of Intangible Capital. *Journal of Economic Perspectives*, 36(3):29–52.

References III

- Dessein, W. and Prat, A. (2022). Organizational Capital, Corporate Leadership, and Firm Dynamics. *Journal of Political Economy*, 130(6):1477–1536. Publisher: The University of Chicago Press.
- Gorton, G. B., Grennan, J., and Zentefis, A. K. (2022). Corporate culture. *Annual Review of Financial Economics*, 14(1):535–561.
- Graham, J. R., Grennan, J., Harvey, C. R., and Rajgopal, S. (2022). Corporate culture: Evidence from the field. *Journal of Financial Economics*, 146(2):552–593.
- Guiso, L., Sapienza, P., and Zingales, L. (2015). The value of corporate culture. *Journal of Financial Economics*, 117(1):60–76.
- He, B., Mostrom, L. I., and Sufi, A. (2024). Investing in customer capital. Technical report, National Bureau of Economic Research.

References IV

- Hermalin, B. E. (2012). Leadership and corporate culture. *Handbook of Organizational Economics*, pages 432–78.
- Kambayashi, R., Ohyama, A., and Hori, N. (2021). Management practices and productivity in japan: Evidence from six industries in jp mops. *Journal of the Japanese and International Economies*, 61:101152.
- Kreps, D. M. et al. (1990). Corporate culture and economic theory. *Perspectives on Positive Political Economy*, 90(109-110):8.
- Li, K., Mai, F., Shen, R., and Yan, X. (2021). Measuring Corporate Culture Using Machine Learning. *The Review of Financial Studies*, 34(7):3265–3315.
- Mikolov, T., Chen, K., Corrado, G., and Dean, J. (2013). Efficient Estimation of Word Representations in Vector Space. arXiv:1301.3781 [cs].

References V

- Prescott, E. C. and Visscher, M. (1980). Organization Capital. *Journal of Political Economy*, 88(3):446–461. Publisher: The University of Chicago Press.
- Řehůřek, R. and Sojka, P. (2010). Software Framework for Topic Modelling with Large Corpora. In *Proceedings of the LREC 2010 Workshop on New Challenges for NLP Frameworks*, pages 45–50, Valletta, Malta. ELRA.
<http://is.muni.cz/publication/884893/en>.
- Sockin, J. (2022). Show me the amenity: Are higher-paying firms better all around?
- Syverson, C. (2011). What Determines Productivity? *Journal of Economic Literature*, 49(2):326–365.