Face-to-Face Interactions, Tenant Resilience, and Commercial Real Estate Performance

Chongyu Wang[1] Tingyu Zhou[2]

[1]Concordia University

[2]Florida State University

AREUEA-ASSA, January 2021

Motivation

The COVID-19 pandemic has introduced **an unexpected shock** to...

- the face-to-face (**FTF**) economy
  - the ability to work remotely (Dingel & Neiman, 2020, DN)
  - interactions (Koren & Peto, 2020, KP)
  - and...
- the use of commercial space
  - Geographic exposure to the pandemic $\xrightarrow{\textbf{(-)}}$ **Commercial real estate prices** (Ling et al. 2020)
  - The way tenants' businesses function should affect CRE performance
    - ...but a tenant's location and leasing decisions are endogenously determined by its business operations
    - COVID-19: **an exogenous shock** to this relationship

Motivation

Research Questions

- Tenants with larger % employees who can work remotely are less vulnerable to severe disruptions during the pandemic
  - DN, Favilukis et al. (2020), Papanikolaou & Schmidt (2020)
  - and are **more likely to meet rental obligations**
- Property values depend upon quality tenants and consistency
  - ...REITs are only as strong as their properties
  - Is telework flexibility a desired feature of quality tenants?
  - Interactions with co-workers vs. with customers (KP)
  - Social distancing policies & reopenings
  - Critical & non-critical industries (PS)
- Does tenants' telework ability explain shifts in **long-term** expectations?

Motivation

Headlines

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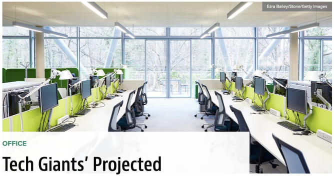
CORONAVIRUS - COVID-19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OFFICE

Tech Giants' Projected Headcount Growth Means They Won't Be Giving Up on Office Space

Many large tech companies have vocally praised remote working. In the meantime, they've been expanding their office holdings.

Patricia Kirk | Sep 22, 2020

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Research

Office Market Could Shed 145M Square Feet in the Next Two Years

Demand for office space has decreased 20% more during the pandemic than it did during the Great Financial Crisis.

By **Kelsi Maree Borland** | September 24, 2020 at 07:20 AM

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FAMILY

The Pandemic Is Changing Work Friendships

Co-workers had little choice but to bond when they spent 40 hours a week together. But if widespread remote work sticks around, those relationships will never be the same.

NICOLE MO JULY 21, 2020

Major Takeaways

- We construct a **new dataset** that links tenants, buildings, and stakeholders in these buildings. Sample
- Firms holding properties with tenants that are **less resilient** to social distancing experienced...
  1. greater declines in returns in response to the COVID shock Baseline Critical

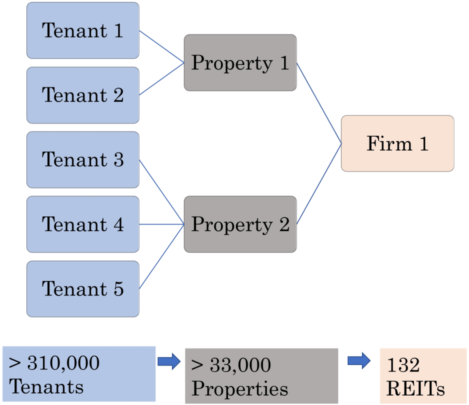
     and
  2. more negative market reactions around lockdown and reopening announcements Policy

     and
  3. lower analyst earnings expectations Earnings
- In addition, cost of mortgages might be higher for those properties. Mortgage

Research Design

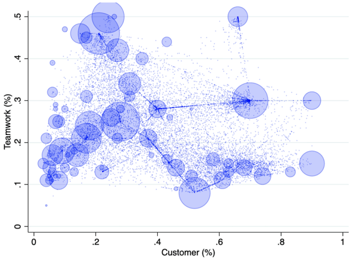
- FTF indices: 2017 O*NET Surveys (NAICS Industry)
  - DN: *Nonremote* (1-% work remotely)
  - KP: Communication between co-workers (*Teamwork*) & with customers (*Customer*)
- Matching tenant listings to the face-to-face (**FTF**) indices (2019Q4)
  - using 4-digit NAICS industry classification
- Matching tenant listings with commercial properties (same city)
  1. Standardize the text portion of street addresses
  2. Exact match using street addresses, i.e. 123 ABC St.
  3. Fuzzy match (similarity scores ≥ 0.7 & distance ≤ 1 mile)

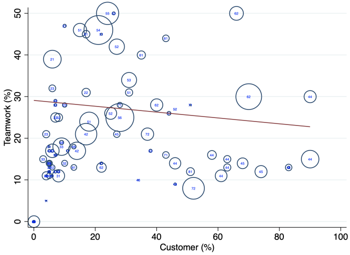
Research Design



Face-to-Face (FTF) Indices

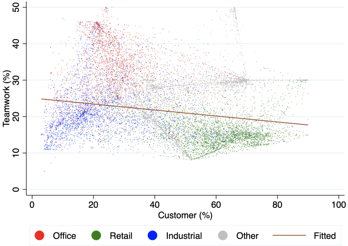
- These two figures plot tenant-level (weighted by % SF) *Teamwork* against *Customer*.
- Demand for commercial spaces is driven by commercial tenants whose business operations **tilt toward one type of interaction over the other**.
    - This is likely explained by clustering and tenant sorting (Liu et al. 2020)

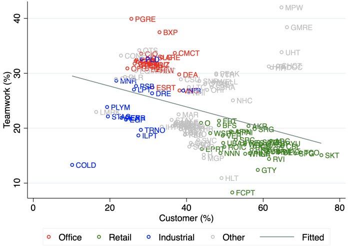




Face-to-Face (FTF) Indices

- These two figures plot property-level and firm-level *Teamwork* against *Customer*.
- There is **significant variation** along either FTF index within property types
  - an average REIT that is classified under one property type also holds five other property types
  - According to Costar, Apple Inc. is ranked #1 in terms of retail sales per square foot





Baseline Analysis

- Regress 1-day abnormal returns (ARs) on each REIT's $GeoCOVID_{t-1} \times FTF$ (Ling et al. 2020).
- Controlling for...
  - Inputs of epidemiological models
    - # Days since outbreak, population density
  - Asset-specific controls
    - Geographic HHI, property type HHI
  - Firm characteristics
    - Leverage, cash, size, Tobin's Q, lagged returns, institutional ownership, investment, EBITDA/TA
  - ... and property type fixed effects

Baseline Analysis

Table 2: Social Distancing Indices & Abnormal Returns

Critical Policy Earnings Mortgage

Ret (1-day)	(1) *Nonremote*	(2) *Teamwork*	(3) *Customer*
GeoCOVID $\times$ *FTF*	-0.120***	0.225***	-0.136***
	(-4.73)	(3.55)	(-3.72)
Controls	Yes	Yes	Yes
FE	Prop type	Prop type	Prop type
R Squared	0.022	0.021	0.021
Observations	7,198	7,198	7,198

Critical versus Non-Critical Industries

Table 2: Social Distancing Indices & Abnormal Returns

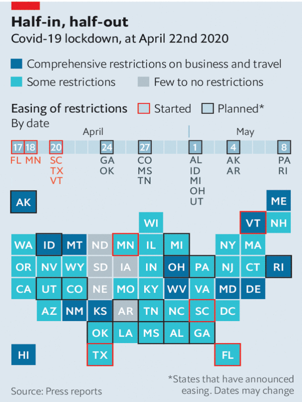
Baseline Policy Earnings Mortgage

Ret (1-day)	(1) **Nonremote** *Critical*	(2) *Non-Critical*	(3) **Teamwork** *Critical*	(4) *Non-Critical*	(5) **Customer** *Critical*	(6) *Non-Critical*
GeoCOVID × *FTF*	-0.074***	-0.131***	0.107*	0.273***	-0.088**	-0.159***
	(-2.65)	(-4.75)	(1.72)	(3.71)	(-2.47)	(-4.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
FE	Prop type	Prop type	Prop type	Prop type	Prop type	Prop type
R Squared	0.021	0.022	0.020	0.021	0.021	0.022
Observations	7,198	7,198	7,198	7,198	7,198	7,198

Policy Interventions

Lockdowns & Reopenings

- During March and April 2020, local lockdowns were announced across the U.S.
  - Supply-side disruptions
- The associated social distancing policies were lifted in late April and early May

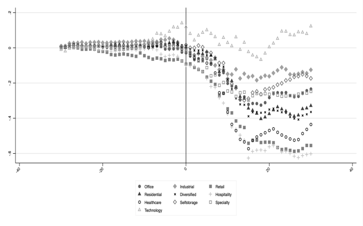


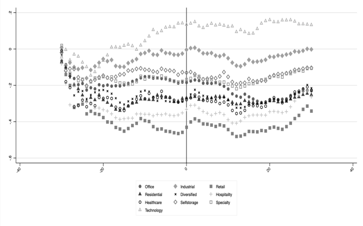
The Economist

Policy Interventions

Lockdowns & Reopenings

- We examine **market reactions** around lockdown announcements and subsequent reopenings
  - **Lockdowns:** the first dates on which major NPIs were announced at any jurisdiction level (data source: Jataware).
  - **Reopenings:** the date the state government allowed the first set of businesses to reopen (data source: Chetty et al. 2020; Nguyen et al. 2020)
  - Two types of cumulative abnormal returns (CARs)
    - 3-day (t-1 to t+1) & 5-day (t-2 to t+2)





Policy Interventions

Table 4: Market Reactions to Policy Interventions

Baseline Critical Earnings Mortgage

	(1)	(2)	(3)
Panel A: Lockdown			
	Nonremote	*Teamwork*	*Customer*
CAR (3-day)	-0.286***	0.723**	-0.235*
	(-3.50)	(2.43)	(-1.98)
Panel B: Reopen			
	Nonremote	*Teamwork*	*Customer*
CAR (3-day)	-0.003***	0.007**	-0.002*
	(-3.50)	(2.32)	(-1.98)

FTF Interactions & Earnings Expectations

- We adopt a **difference-in-differences (DID)** setting
  - using COVID-19 as an unexpected shock (Albuquerque et al. 2020)
  - Sample starts in 2017
  - $Post_t$: **Jan 21, 2020 or the earliest date of NPI (or reopening)**
- We retrieve historical earnings per share (EPS) forecasts from I/B/E/S
  - **1 Year**: forecast period indicator = "1"
  - **Long Term**: forecast period indicator = "0"
- Include analyst FEs, firm FEs, and week FEs.

FTF Interactions & Earnings Expectations

Table 5: Social Distancing Indices & Analyst Forecast

Baseline | Critical | Policy | Mortgage

	(1)	(2)	(3)
Panel A: 1-Year Forecasts			
	Nonremote	*Teamwork*	*Customer*
Post $\times$ *FTF*	-0.924***	1.674***	-0.433*
	(-4.62)	(4.40)	(-1.79)
Panel B: Long-Term Forecasts			
	Nonremote	*Teamwork*	*Customer*
Post $\times$ *FTF*.	-0.280**	0.469	-0.145
	(-2.35)	(1.61)	(-1.37)

Property-Level Analysis

- We adopt a **difference-in-differences (DID)** setting
  - Sample starts in 2017
  - $Post_t$: **2020Q1 & 2020Q2**
- We downloaded property-level encumbrance data from S&P Global
  - **Mortgage spreads**: mortgage rates - Treasury rates with the same/closest maturity
  - Treasury rates are downloaded from the Federal Reserve System website
  - Median spreads increased from 2.16 in the pre-COVID period to 3.16 in the post-COVID period
- Include a large set of other property and loan characteristics as controls
  - Property: book value, less than 10 years old, class A, renovated
  - Mortgage: LTV, time to maturity, cross-collateralization, fixed rate
- and date FEs, state FEs, property type FEs, and firm FEs.

Property-Level Analysis

Table 6: Property-Level Social Distancing Indices & Mortgage Spreads

Baseline Critical Policy Earnings

Mortgage Spread	(1) *Nonremote*	(2) *Teamwork*	(3) *Customer*
$POST \times FTF(Building)$	-0.122	**-0.567*****	0.036
	(-1.37)	**(-2.70)**	(0.46)
Property controls	Yes	Yes	Yes
Mortgage controls	Yes	Yes	Yes
Date FE	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Prop FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
R Squared	0.573	0.574	0.574
Observations	17,773	17,773	17,773

Summary

- We build a granular dataset linking CRE firms and mortgage lenders to...
  - their underlying properties Sample
    and
  - tenants that operate within these properties
- We study how FTF interactions affect CRE performance...
  - using COVID-19 as an unexpected shock
  - % tenants who can work remotely *positively* predicts performance
  - % *Teamwork*-intensive tenants *positively* predicts performance
  - % *Customer*-intensive tenants *negatively* predicts performance
    Baseline Critical Policy
- FTF indices have much weaker effects on long-term performance Earnings Mortgage

THANK YOU!

- **SSRN:** https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3743818
- Questions and Comments?
- Email: chongyu.wang@concordia.ca