

Commercial Real Estate as an Asset Class

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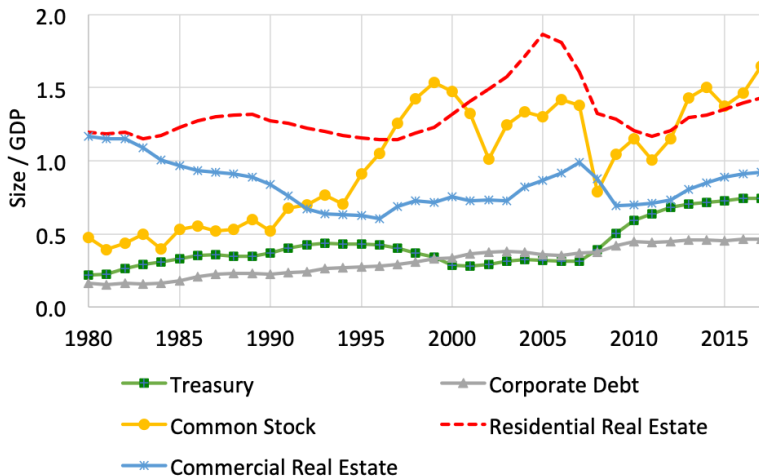
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Institute for Private Capital Spring Research Symposium

March 29, 2019

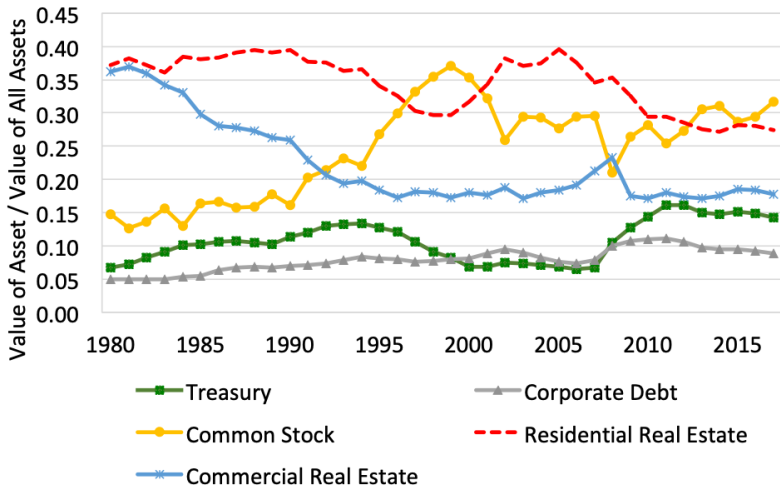
Commercial Real Estate's Importance

CRE is Big Relative to the US Economy



Commercial Real Estate's Importance

CRE is Big Relative to other Asset Classes



Double counting somewhat since 1) some CRE owned by public firms, 2) small share of real estate is publicly-traded...

CRE in the Portfolio

Market Portfolio is Common Stock, CRE, Corporate Bonds, and Treasuries

What do returns to a portfolio with and without CRE look like?

- Treasury returns: 10-yr Treasury Yield
- Corporate Bonds: ICE BAML US Corporate Master Total Return Index
- Stock: Wilshire 5000 Total Market Full Cap Index
- CRE: NAREIT All Equity REIT Returns

Exclude residential real estate since, historically, not readily investible for the average portfolio manager

Very simple asset allocation: Allocate portfolio according to weights in the 'market' portfolio

CRE in the Portfolio

Portfolio Returns with and without CRE

	Market Portfolio	Portfolio without CRE
1980-2017:		
Mean	11.8	11.2
Std. Dev.	11.0	10.6
Ratio	1.08	1.05
1980-1996:		
Mean	14.7	14.4
Std. Dev.	10.5	10.8
Ratio	1.39	1.34
1997-2017:		
Mean	9.7	8.8
Std. Dev.	10.8	9.9
Ratio	0.90	0.89

Conclusion: Higher risk-adjusted returns by including CRE!

Returns on CRE *Indices*

Annualized Nominal Returns on Private and Public CRE

	Private CRE		Public CRE		Stocks
	NCREIF	CPPI	NAREIT	ZIMAN	CRSP
Mean	9.0	11.9	10.7	11.9	10.7
σ	4.2	5.2	17.4	16.5	15.2
AR(1)	0.782	0.937	0.061	0.095	0.07
Years	1978-2018	2002-2018	1972-2018	1980-2017	1964-2018

- Mean returns similar across private and public markets
- More predictability in private market indices
- Similar patterns using same sample period for each series (in paper)

Comparing Public and Private CRE Return Indices

1. Means are similar but private market returns *appear* lower σ
 - Private market series are subject to appraisal smoothing!
 - Cannon and Cole (2011): Average of 12% difference between appraisal and transaction value
2. Adjusting for leverage, property type mix, and fees, literature finds REIT indices outperform private market return indices
 - Riddiough et al. (2005): 300 bp
 - Ling and Naranjo (2015): 50bp
 - No adjustment for much greater liquidity of REITs
3. Public market indices generally lead private market indices
 - Gyourko and Keim (1992), Yavas and Yildirim (2011), Ling and Naranjo (2015), and Ghent, Torous, and Valkanov (2018)

Returns on CRE *Indices*

Income and Price Appreciation Components

	Private CRE		Public CRE	
	NCREIF	CPPI	NAREIT	ZIMAN
Total Return				
Mean	9.0	11.9	10.7	11.9
σ	4.2	5.2	17.4	16.5
AR(1)	0.782	0.937	0.061	0.095
Income Return				
Mean	7.05	7.30	7.74	6.92
σ	0.65	0.30	1.43	0.96
AR(1)	0.989	0.951	0.088	-0.047
Price Appreciation				
Mean	1.97	4.54	2.91	5.00
σ	4.09	5.26	17.26	16.43
AR(1)	0.777	0.940	0.067	0.105

- Most of the return comes from the income component
- Volatility comes from capital gains

CRE Illiquidity

CRE transacts **very** infrequently

- Fisher et al. (2003): In NCREIF data, 4-18% of property stock turns over annually
- Ghent (2019): In RCA data, about 5% of property stock turns over annually

Aggregate annual turnover in other FI classes:

- Corporate bonds: $\approx 100\%$
- Treasuries: $\approx 1000\%$
- Muni bonds: $\approx 90\%$

Search model-based estimate of illiquidity premium to an MSA-level portfolio of CRE : ≈ 200 basis points (Ghent (2019))

Property-Level Returns

Much less is known about returns to investing in an individual property

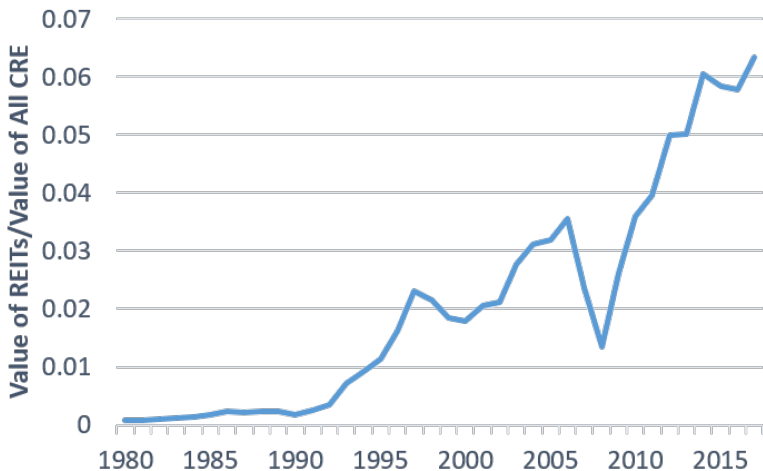
- Data quality
- Infrequency of transactions itself

Main risk with investing in an individual property is actually *transaction* risk

- Sagi (2017)

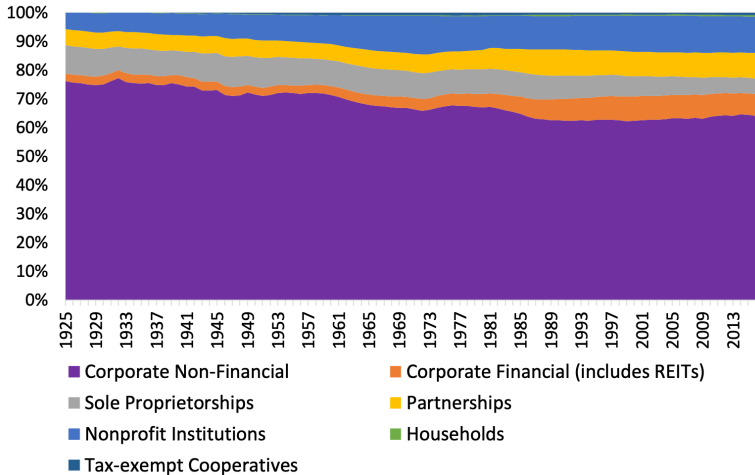
Who Owns CRE?

Not REITs, mostly



Who Owns CRE?

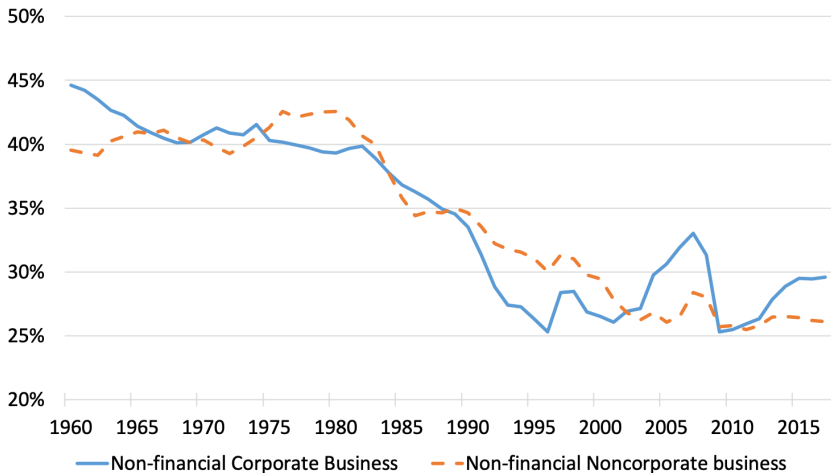
Broad Categories from BEA



- Mostly owned by firms that use it as an input into production

CRE Large Share of Firm Assets

Still 30% of Firm Assets



Investible CRE

Portfolio calculation assumed that manager invested 25-30% of portfolio in CRE..

- Is this really feasible?

If 65% of CRE is owner-occupied, what is right allocation to CRE?

Perhaps, investible CRE is only $25\% * (1 - 0.65) \approx 9\%$ of market portfolio

- Similar to what Andonov and Rauh (2018) report for pension funds' CRE allocation

Limits to Increasing Investible CRE

Anecdotally, lack of 'institutional-quality' CRE

Potential barriers to increasing institutional share of CRE?

1. Delegated managers need liquidity
 - Outside investors don't let you just have the money indefinitely!
 - Might limit their ability to own assets that are highly user-specific that will turn over infrequently
2. End users may face hold-up problem if they lease instead of own
 - Can long-term leases not solve this problem?
3. Delegated managers need credit tenants
 - Usually, companies that are publicly traded
 - Mitigates potential agency issues with outside investors
 - Less than a third of employment in US in publicly traded firms

Conclusions

1. CRE as a fraction of the market portfolio is \approx 20-25% (arguably)
2. Including CRE in the portfolio can increase average risk-adjusted returns
3. Public CRE index returns generally lead private returns but small fraction of CRE owned by REITs
4. Illiquidity of CRE makes transaction risk a major risk if investing in individual properties
5. Investible CRE is a much smaller asset class if corporate real estate is not investible

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