

Discussion of
"Leasing as a Mitigation Channel of
Capital Misallocation"
by Hu, Li, and Xu

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European Finance Association | August 2023

Overview

- Empirical observation: dispersion in MPKs – typically taken as evidence of misallocation – becomes smaller once you account for **leased** capital used in production
- Theoretical explanation: financial constraints cause MPK dispersion, leasing effectively relaxes those constraints, great news for welfare
- Very interesting, persuasive paper
- Simple Model
- Broader Context

An Alternative Two-Period Model

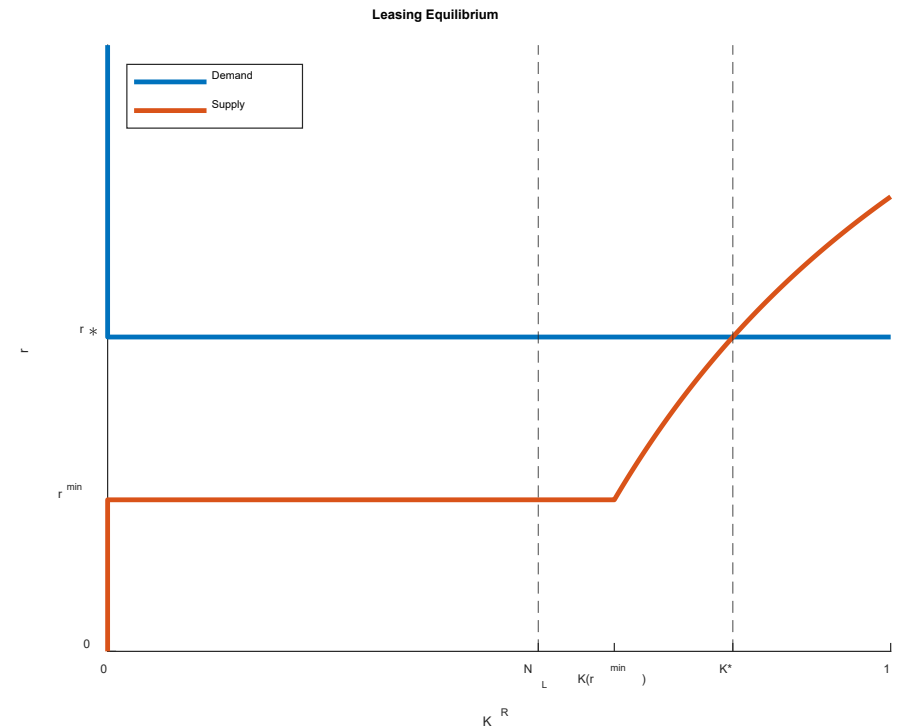
- Two types of firms $i \in \{H, L\}$ with initial endowments of consumption good satisfying $N_H + N_L = 1$
 - No household lessors like in the authors' model
- Timing
 - convert 1 unit of consumption good into 1 unit of capital i.e., $K^H + K^L < 1$
 - Produce subject to $A_i K^i$ where $A_H > A_L > 0$
 - Convert capital back into consumption and consume
 - Resource constraint: $C^H + C^L = A_H K^H + A_L K^L + K^H + K^L$
- Planner solution:
 - Convert all consumption goods into capital, give it all to Firm H to produce
 - $K^H = 1$ implies $C^H + C^L = 1 + A_H$

Decentralized Equilibrium

- Capital and bond markets
 - Each firm invests to produce K_0^i
 - Budget constraint: $p K^i = N_i - K_0^i + p K_0^i + q B^i$
 - Collateral constraint: $q B^i \leq \theta p K^i$
- If $N_L \leq \theta$, the planner allocation can be sustained in equilibrium
 - H firms borrow from L firms
 - Invest proceeds in capital such that $K^H = 1, C^H + C^L = 1 + A_H$
 - High interest rate $\frac{1}{q} = 1 + A^H$
- If $N_L > \theta$, H firms can't borrow enough: constraint binds
 - $K^H = \frac{1 - N_L}{1 - \theta} < 1$ so L firms keep some of their capital
 - Low interest rate $\frac{1}{q} = 1 + A^L$ and $C^H + C^L = 1 + A_H - (A_H - A_L) \frac{N_L - \theta}{1 - \theta}$
 - **Misallocation leads to suboptimal production**
 - Distortion increasing in productivity wedge $A_H - A_L$, net worth misallocation, constraint tightness

Can Leasing Help?

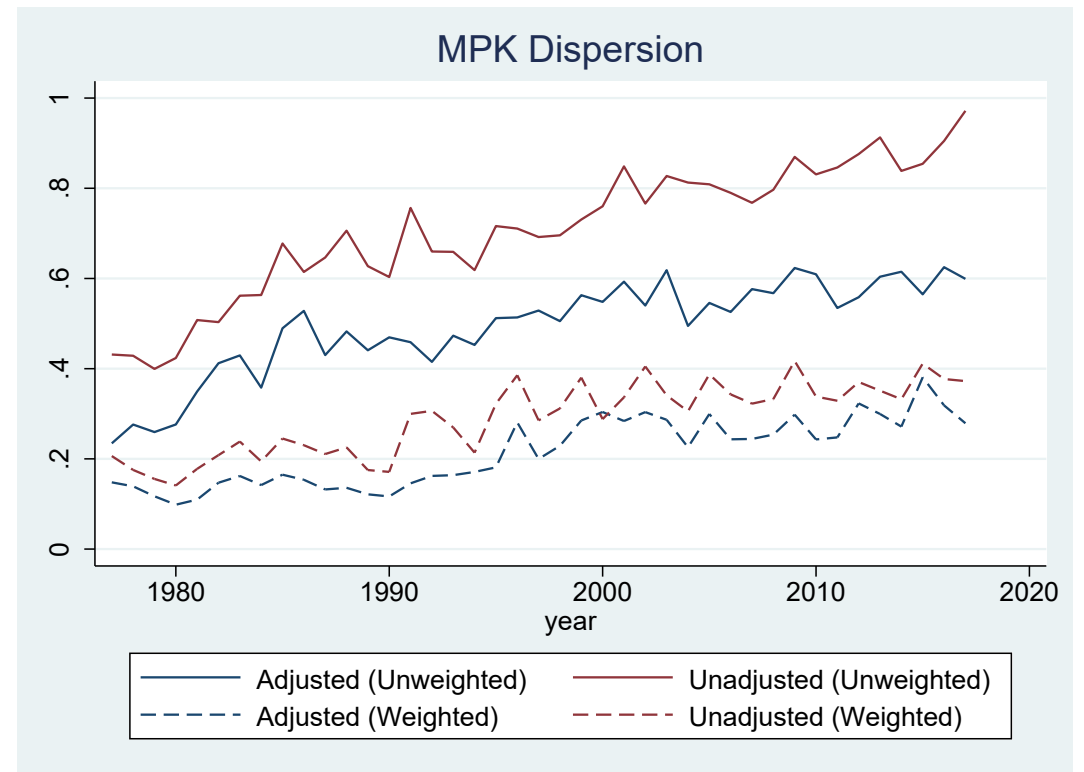
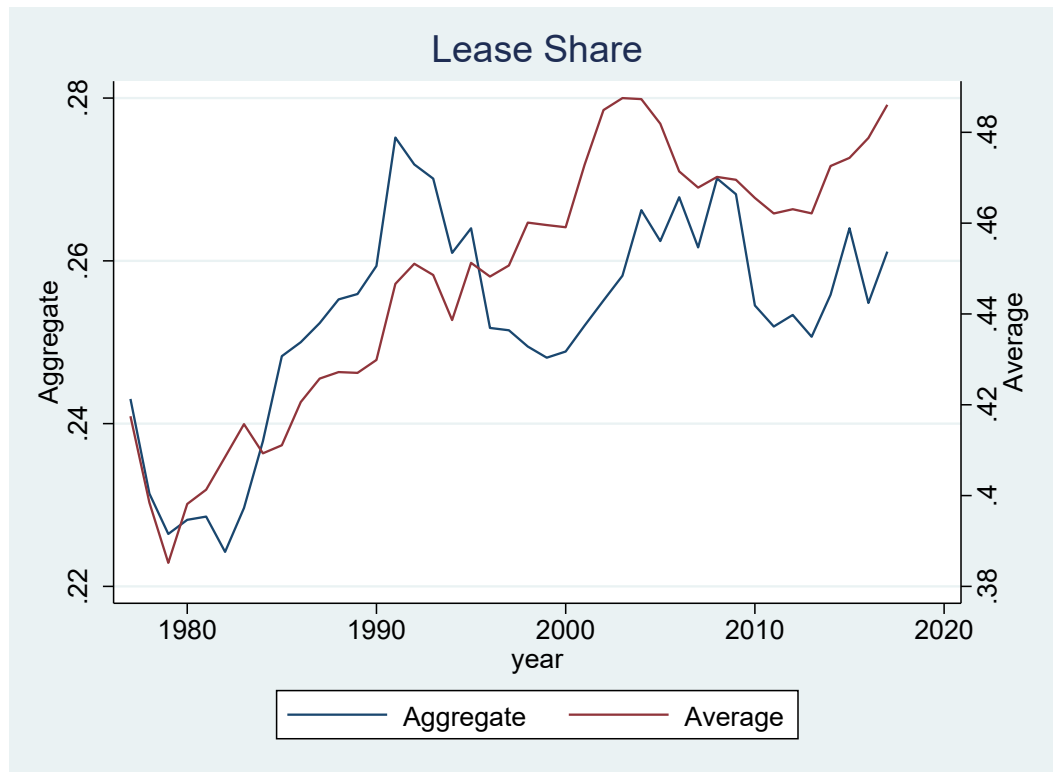
- Allow L firms to lease K^R to H firms at rate r
- After production, H firms return capital back to L firms subject to depreciation $m K^R$
 - renters don't take care of stuff!
- H firms now have a choice of what to do with their net worth
 - Invest to produce capital:
 - And relax constraint, borrowing more as a result
 - All-in marginal benefit $\frac{1+A_H}{1-\theta} - \theta \frac{1+A_L}{1-\theta}$
 - Lease capital from L: marginal benefit $\frac{A_H}{r}$
 - Will lease as long as $r \leq r^* = \frac{1-\theta}{1-\theta \frac{1+A_L}{1+A_H}} A_H$
- L firms face time 1 opportunity cost of leasing ($A_L + m$)
 - While time 0 benefit is r
 - Will lease as long as $r \geq r^{min} = q(A_L + m) = \frac{A_L+m}{1+A_L}$
- Leasing sustained if $r^* \geq r^{min}$
- L firms collect rental income, invest it + own net worth to produce K^* , rent it all out.
- H firms pay $r^* K^*$ rental income, invest the rest $N_H - r^* K^*$
- **First-best output A_H restored modulo deadweight losses mK^***



Takeaways

- Without leasing,
 - Output can be lower than first-best
 - Fluctuations in collateral constraints ("financial shocks") and fluctuations in net worth (all kinds of shocks) can amplify output fluctuations
 - Bad news for agents in the model
 - Good news for economists – an attractive explanation for why we can get large macro fluctuations from small shocks, why fin crises make for worse recessions, why there are large differences in TFP between countries
- With leasing,
 - Impact of financial frictions is mitigated
 - Good news for agents in the model
 - Bad news for economists – original puzzles restored

Accounting for leasing lowers MPK dispersion

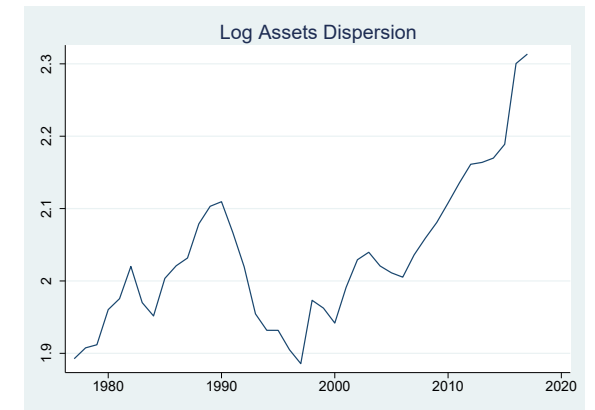
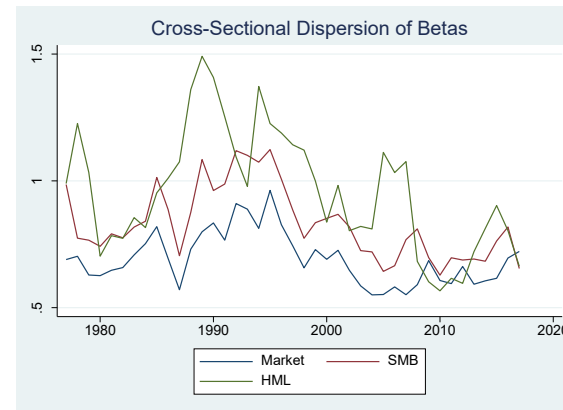
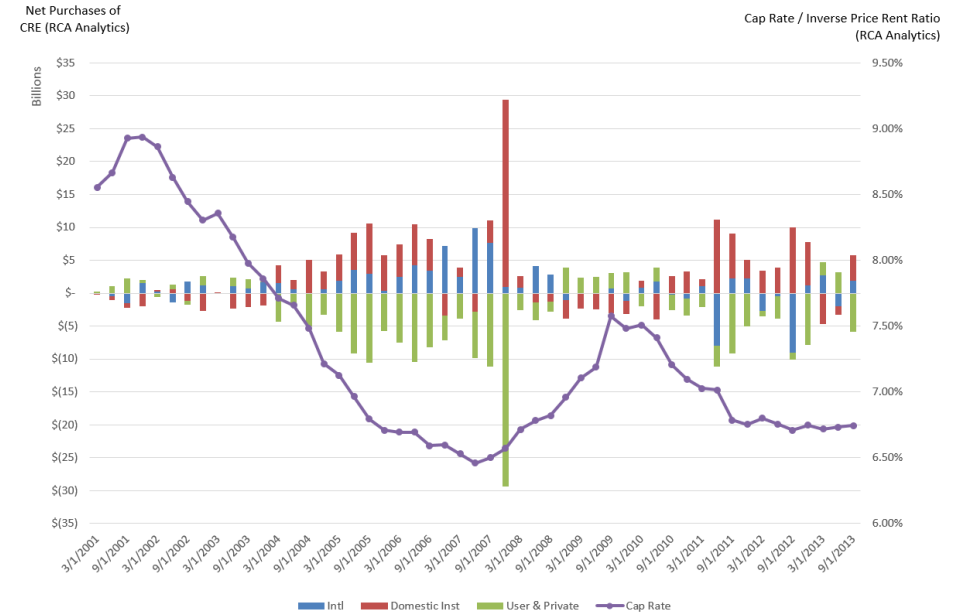


Long-run trend >> cyclicity (if any)

Why the trend?

- Why are lease shares going up?
 - Emergence of institutional lessors
 - Especially in real estate
 - May explain long run valuation trends...
- Why is MPK dispersion going up?
 - Whether or not you adjust for leases
 - Expected return dispersion going up (~ David, Schmid, Zeke)? It's not
 - Firm size dispersion going up? Maybe

Investor Composition Matters for Cap Rates

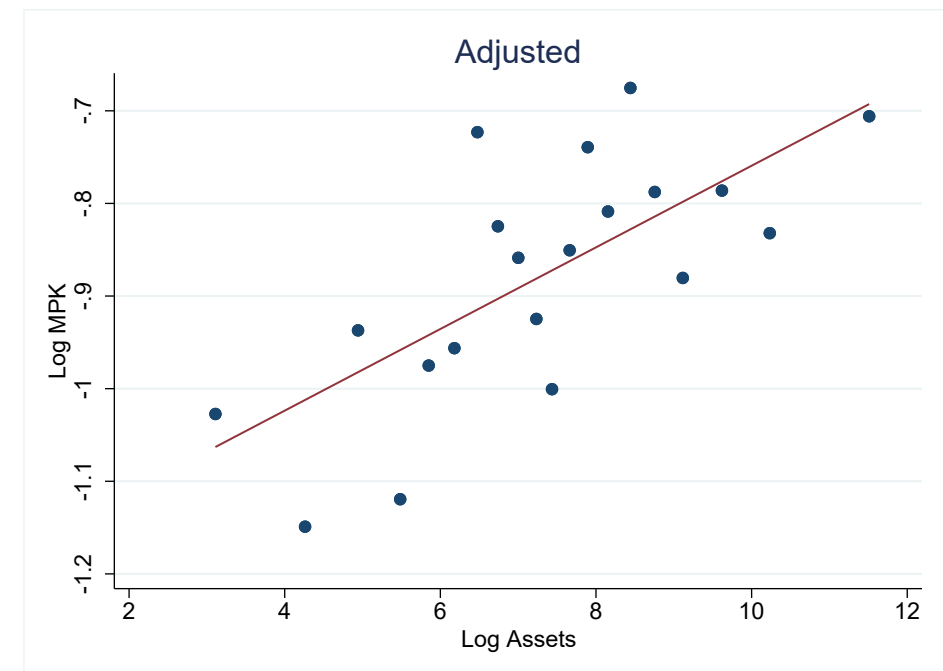
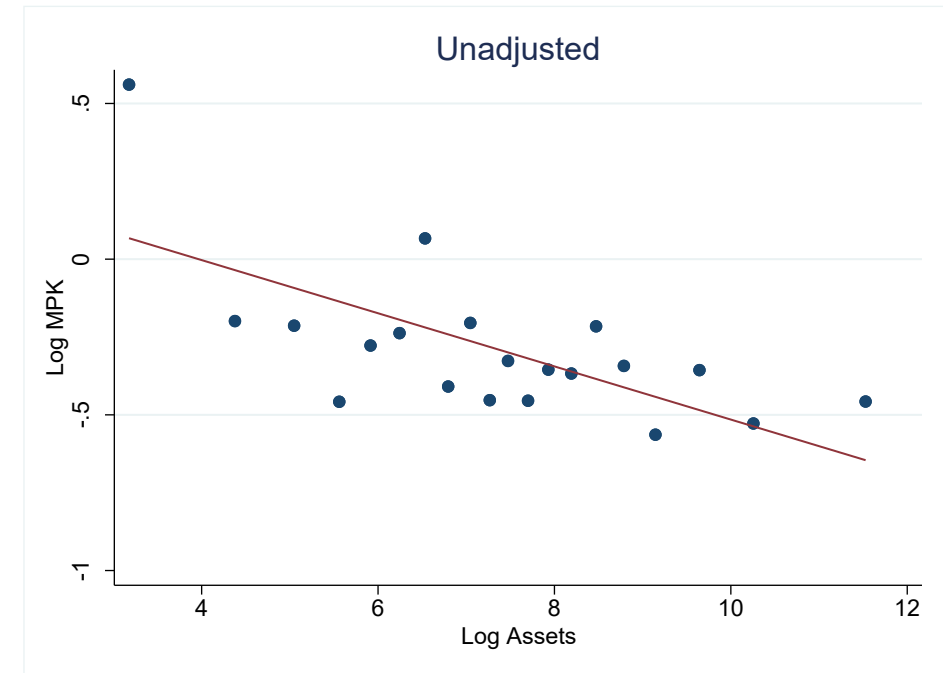


1 [Theory]: Who are the lessors?

- In my toy static model: unproductive (and hence unconstrained) firms
- In the authors' dynamic model: unconstrained households
 - Capital is effectively priced like a neoclassical model minus monitoring cost
 - Implies low, stable risk premia on capital → leasing is great!
- (Often) In the data: levered financial intermediaries: banks, specialized leasing companies, private equity, REITs, family real estate offices
 - Suggests volatile, occasionally high risk premia
 - Leasing replaces the misallocation resulting from idiosyncratic risk (dispersion of productivity across firms) with aggregate risk resulting from occasionally binding financial constraints
 - Is leasing still great?
 - Analogy: "Financial Fragility with SAM" by Greenwald, Landvoigt, Van Nieuwerburgh

2 [Empirics]: Measuring MPK

- Theory: Marginal (M)
- Data: Average (A)
- Model: CRS $\rightarrow M = A$
- What should be $\text{Cov}(\text{MPK}, \text{Assets})$?
 - No misallocation: constant
 - Misallocation: negative (smaller firms more constained)
- Unadjusted: negative ✓
- Adjusted: **positive!**
- Are rents contaminating the MPK measure?



3 [Both]: Substitutability of Capital

- Paper: Leased and owned capital are perfect substitutes
- Here's a (ridiculously simplified) mental model
 - Firms buy equipment, lease buildings
- Then Lease \leftrightarrow Owned infinite elasticity implies Equipment \leftrightarrow Structures infinite elasticity
 - Probably not the case
 - Makes leasing less of a panacea
- Appendix G argues that L-O elasticity is high
 - But empirical strategy requires assuming returns on leased capital are constant over time (or for a given firm) – evidence?

4 [Placement]: In defense of Hsieh and Klenow

- Lots of sentences like this in the paper:
 - *"Hence, prior literature, such as Hsieh and Klenow (2009) ... doesn't correctly adjust MPK for leased capital. Ignoring leased capital would overestimate the MPK."*
- "Correct" and "overestimate" must be interpreted in the context of a paper's objective.
- Hsieh and Klenow ask: how much greater would GDP be in China or India if their MPK dispersion dropped to U.S. levels?
 - The rationale for using U.S. rather than 0 as a baseline is precisely because of the empirical challenges
 - Similar magnitudes of bias from omitted factors (e.g. leasing) in all three countries is a much weaker assumption than no bias
 - If leasing is more widespread in the U.S. (it probably is, or was in their sample), it becomes a conservative assumption!