

# INFORMATION, TENURE AND ENERGY EFFICIENCY

## Research Questions

Is there significant evidence of the problems of split incentives and moral hazard as indicated by an empirically observed association between workspace lease types and energy efficient investment as measured by NABERS ratings?

Which of these two problems is of the greater significance?

## Need for the Research

There are two principal-agent problems: “split incentives” and “moral hazard” which are implicated as barriers to investment in commercial office building energy-efficiency.

Split incentives occur in leases net of energy utilities. When the tenant (principal) pays the utility bills, the lessor (the agent) tends to underinvest in energy efficiency.

Moral hazard occurs in leases gross with energy utilities. When the tenants don't pay utility bills they tend to overconsume energy. This creates a preference for net leases and associated underinvestment.

Principal-agent theory supports the existence of these problems, and describes their mitigation by ex-post disclosure. Ex-post disclosure is the sharing of energy consumption information between landlord and tenant during the lease tenure period. Past empirical research has, however, been inconclusive.

## Research Method

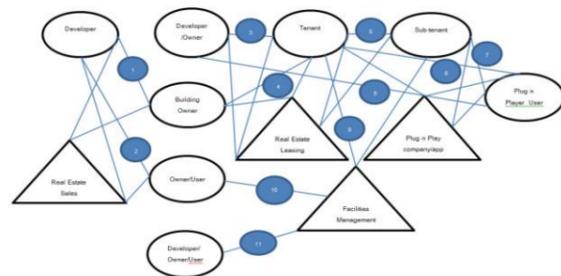
A unique conceptual framework of workspace identifies two variables of interest:

**Bundling:** Whether the workspace is offered net of utilities, bundled gross with utilities, or bundled gross with utilities and other information goods and human services into a bundled work-architecture offering.



Bundled Work-architecture Offering

**Splitting:** the number of sequential contracts between investor in energy efficiency and beneficiary of that investment along the pathway through the workspace supply chain network.



Work-architecture Supply Chain Network

This unique conceptual framework accommodates both extant and emergent information age forms of workspace tenure.

Extant tenure offerings have a low degree of bundling and splitting, eg. Workspace net of energy utilities with a single lease contract splitting energy efficiency investor and beneficiary on the workspace supply chain.

Emergent information age offerings, for example “co-working space”, have a high degree of splitting and bundling. Workspace is bundled gross with energy utilities and sits on a supply chain with multiple sequential leasing contracts splitting energy efficiency investor and beneficiary.



Co-working workspace offered by WeWork. NYC, USA

## Data

Data on the degree of splitting and bundling and the NABERS rating of each workspace, is collected by online surveys answered by the facilities managers of Brookfield Global Integrated Solutions.

This data populates the splitting and bundling matrix.

		Bundling			
		0 Net of utilities	1. Gross with utilities limited by expense stops	2. Gross with utilities, furniture and fittings	3. Gross with utilities, fittings and concierge
Splitting	0. Investor is beneficiary	Tenancy Base-b			
	1. contract between investor and beneficiary				
	2. contracts between investor and beneficiary				
	3. contracts between investor and beneficiary				

Bundling and Splitting Matrix

The hypotheses: that there is a positive correlation between bundling and the NABERS ratings, and that there is a negative correlation between splitting and NABERS, are tested through regression analysis. The relative significance of each problem is tested through hierarchical regression analysis.

## Anticipated impacts

This research informs

1. Mandatory information disclosure policy.
2. The inclusion of information sharing clauses within green leases.
3. Policy recommending either gross or net leases to lower barriers to investment

## Results and Conclusions

... forthcoming

Is there empirical evidence of split incentives and moral hazard as barriers to energy efficiency investment?

Do emergent information age workspace tenure types incentivize energy efficiency investment?

What does this mean for energy-efficiency information disclosure policy and green lease design in the information age?

## Further information

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