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Preferences for thermal retrofit measures in multi-owner buildings: A discrete choice experiment with landlords and owner-occupiers in France

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Act Think Impact

BACKGROUND

- Condominiums

  …....account for 28% of the building stock in France; 50% of which were built before 1914

  ….....represent less than 18% of the annual stock retrofitted
- Retrofit rates must increase rapidly if France wants to meet its target to make all buildings nearly zero emission buildings by 2050
- Retrofitting multi-owner buildings is particularly challenging because they involve multiple co-owners with heterogeneous
  - preferences
  - financial capabilities
  - incentives to invest (e.g. owner-occupiers and landlords)

OBJECTIVES

Empirically analyse co-owners' preferences for thermal retrofit measures via discrete choice experiments (DCEs), thereby focussing on

- Equity financing versus loan financing (private or 'collective' loans)
- Transferability of loans, i.e., the possibility to transfer the payment obligations to the next owner in case the condominium is sold
- Split incentive problems in multi-owner buildings
  - Owner-occupiers vs. landlords (landlord-tenant problem in multi-owner buildings?)
  - Asymmetric distribution of benefits across co-owners

CONTRIBUTION

Literature on financing of retrofit measures

- Little is known about homeowners‘ preferences for different forms of capital provisions for retrofit measures, including on-bill financing and property assessed clean energy financing (PACE) (Brown, 2019)

  → We consider different financing schemes and transferability of loan

  → We consider debt aversion (Prelec & Lowenstein, 1998; Schleich et al., 2021)

- Studies on financial barriers focus on owner-occupiers (Albrecht & Hamels, 2021; Broers et al., 2019; Wilson et al., 2015); exception is Phillips (2012);

  → We consider both, owner-occupiers and landlords

CONTRIBUTION

Literature on split incentives

- Previous studies are based on samples of owners and tenants (Charlier, 2015; Davis, 2012; Gillingham et al., 2012; Krishnamurthy & Kristrom, 2015)

  → Our sample includes owner-occupiers and landlords (not tenants)

- Little is known about other split incentive problems in multi-owner buildings

  → We explore the effect of an asymmetric distribution of benefits across co-owners

CONTRIBUTION

DCEs for retrofit measures suggest that investors prefer

- Lower upfront costs, and higher heating cost savings (all)
- Longer warranty periods (Achtnicht, 2011; Achtnicht & Madlener, 2014; Schleich et al., 2022)
- Measures recommended by peers/experts (Scarpa & Willis, 2010; Schleich et al., 2022; Willis et al., 2011)
- Technologies they are familiar with (Lang & Lanz, 2021)
- ‘Environmentally friendly’ technologies (Achtnicht, 2011; Achtnicht & Madlener, 2014; Banfi et al., 2008; Franceschinis et al., 2017; Ruokamo, 2016)
- Technologies with co-benefits (comfort, noise reduction) (Banfi et al., 2008; Galassi & Madlener, 2017)
- Lower transaction costs such (installation time, inconveniences) (Franceschinis et al., 2017; Ruokamo, 2016; Scarpa & Willis, 2010; Willis et al., 2011; Schleich et al., 2022)

METHODOLOGY

- Discrete choice experiment on retrofit measures in multi-owner buildings with a representative sample of the French adult population in June 2021
  - 744 owner-occupiers
  - 524 landlords
- Costs, financing mechanisms, absolute heating cost savings, relative heating cost savings,
  - ➢ Three financing mechanisms (private equity, private loan, collective loan)
  - ➢ Loan-based financing mechanisms: 15 years, zero interest rate, repaid monthly either via regular instalments (private loan) or condominium fees (collective loan)
    - Transferable or not transferable

METHODOLOGY

« cheap talk »

Financing mechanism

Parmi les options suivantes, laquelle est-ce que vous préférez ?

(Veuillez prendre svp en considération la manière dont cet investissement affectera votre budget.)

	Option A : Via les charges de copropriété	Option B : Par prêt immobilier	Option C : Financement par capital
Reste à charge	14 000 € (**Augmentation des charges de 78€/mois** pendant 15 ans)	9 000 € (**Remboursement de 50€/mois** pendant 15 ans)	9 000 € (9 000€ en **une seule échéance**)
Réduction de la facture de chauffage	70 %	40 %	40 %
Comparées à la plupart des autres foyers, vos économies d'énergie sont	similaires	supérieures	inférieures
En cas de vente	**futur acquéreur continuera à payer** les coûts	**je continuerai à payer** les coûts	

Costs

Absolute savings

Relative savings

Loan transferability

	Option A : via les charges de copropriété	Option B : par prêt immobilier	Option C : financement par capital
Je préfère :	○	○	○

RESULTS OF MIXED LOGIT MODEL

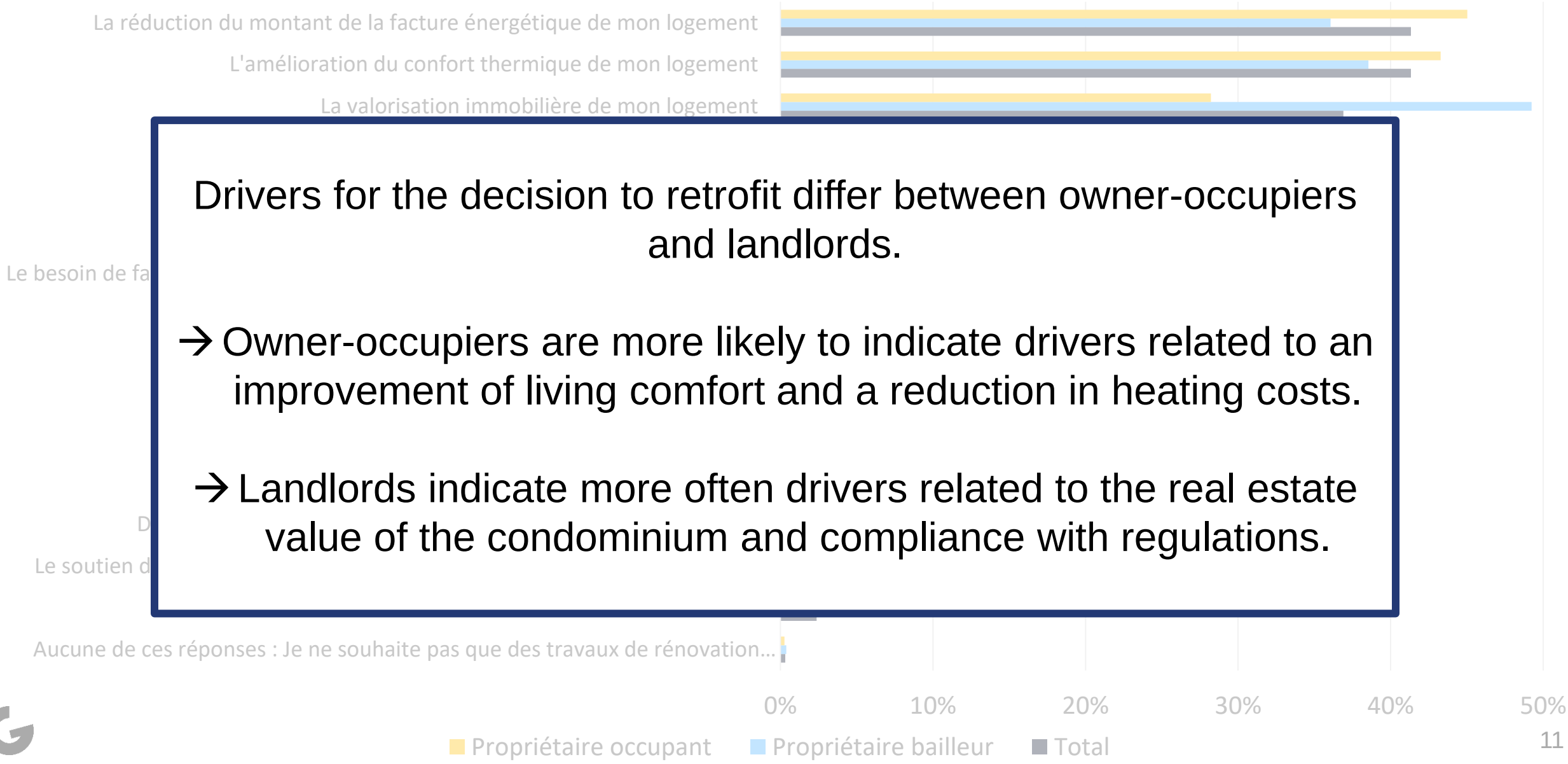
Mean		
costs	-0.0166***	prefer lower upfront costs and higher heating cost savings
	(0.000)	
savings	0.0248***	
	(0.000)	
moresaving	0.3562***	prefer higher heating cost savings for own condominium (split incentives? behavioral?)
	(0.000)	
samesaving	0.2054***	
	(0.000)	
transfer	0.8322***	prefer loan that can be transfered
	(0.000)	
ASCcollectiveloan	-0.1716*	prefer equity capital and collective loan to private loan
	(0.073)	
ASCprivateloan	-0.4323***	
	(0.000)	
ASC	-9.2054***	prefer to invest rather than not invest
	(0.000)	

RESULTS OF LATENT CLASS MODEL

	Class1 ("loan lovers")	Class2 ("equity lovers")
Attributes		
costs	-0.0083***	-0.0138***
	(0.000)	(0.000)
savings	0.0121***	0.0264***
	(0.000)	(0.000)
moresaving	0.2373***	0.4895***
	(0.000)	(0.000)
samesaving	0.1559***	0.2087***
	(0.000)	(0.002)
transfer	0.4901***	0.6786***
	(0.000)	(0.000)
ASCcollectiveloan	1.3677***	-2.2349***
	(0.000)	(0.000)
ASCprivateloan	1.1760***	-2.1081***
	(0.000)	(0.000)
ASC	-2.2591***	-5.2437***
	(0.000)	(0.000)
Shares	64.3%	30.5%

Membership	Class1 ("loan lovers")	Class2 ("equity lovers")	
Female	0.5105*	0.5176*	
	(0.086)	(0.094)	
H_inc	0.0831	0.3702	
	(0.795)	(0.266)	
Occupier	-0.0826	-0.2932	landlord tenant
	(0.809)	(0.408)	
Age	-0.0003	0.0133	
	(0.976)	(0.255)	
Grad	-0.1682	0.0577	
	(0.585)	(0.857)	
Hh_members	-0.0283	-0.2036	
	(0.836)	(0.162)	
H_debtav	-1.1533***	-0.5851*	debt aversion
	(0.000)	(0.066)	
H_envid	-0.0654	-0.0835	
	(0.826)	(0.786)	
H_risk	0.2742	0.2114	
	(0.379)	(0.513)	
H_time	0.3782	0.2398	
	(0.224)	(0.456)	
Homesize	-0.0070	-0.0045	
	(0.143)	(0.367)	
Likelymove	-0.0864	-0.1786	
	(0.635)	(0.344)	
Renov_cond	-0.0117	0.5017	
	(0.969)	(0.113)	
Renov_building	-0.1381	-0.6472*	
	(0.664)	(0.053)	
N_cond	-0.0006	-0.0029	
	(0.799)	(0.271)	

ADDITIONAL SURVEY RESULTS



Drivers for the decision to retrofit differ between owner-occupiers and landlords.

→ Owner-occupiers are more likely to indicate drivers related to an improvement of living comfort and a reduction in heating costs.

→ Landlords indicate more often drivers related to the real estate value of the condominium and compliance with regulations.

CONCLUSIONS

1) Heterogeneous preferences over financing mechanisms
   - equity > collective loan > private loan
     - correlated with debt aversion

       → facilitate collective loans
   - preference for loans that can be transferred if condominium is sold

     → facilitate transfer of loans

2) No evidence for landlord-tenant problem

   → b/c of policies, ‘confounding factors’ (e.g. income), hassle costs, different motivational factors, … ?

3) Relative heating cost savings matter

   → split incentives, behavioural (reference-dependent preferences)?

   → more research needed

THANK YOU !

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DEBT AVERSION SCALE

Adapted from (Walters et al., 2016):

“If I have debts, I like to pay them as soon as possible”

“If I have debts, I prefer to delay paying them if possible, even if it means paying more in total”

“If I have debts, it makes me feel uncomfortable”

“If I have debts, it does not bother me” (reversed)”

“I dislike borrowing money”

(1 = “Strongly disagree” to 5 = “Strongly agree”)

Dummy equal to 1 if participant has a higher debt aversion score than the median, 0 otherwise.