

# Lessons from SEAI Programmes – Understanding what drives scheme uptake

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Behaviour and Decision Making: Driving Home Retrofit

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## “Improving Residential Energy Efficiency”

SEAI–ESRI Research Fellowship investigating:

- Better Energy Scheme data
  - Better Energy Homes
  - Better Energy Communities
- Building Energy Rating Register
- SEAI Survey data
- ESRI Survey data

# Better Energy Homes scheme

## Better Energy Homes

Attic Insulation

Cavity Wall Insulation

High Eff. Boiler with Heating Controls  
Heating Controls only

External Wall Insulation  
Internal Dry-Lining  
Detached Houses  
Semi-Detached/End-of-Terrace Houses  
Mid-Terrace Houses/Apartments  
(December-2011)

Solar Heating (May-2011)

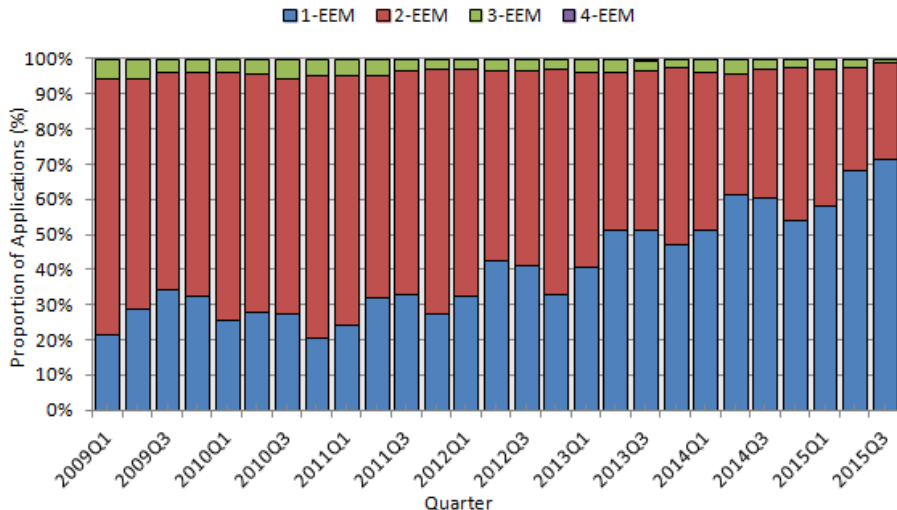
Building Energy Rating Assessment (Mandatory June-2010)

Bonus Payments for Multiple Measures (March-2015)

# “An examination of energy efficiency retrofit depth in Ireland”

# Retrofit Depth

- Proportion of applications of each number of measures:



- Neither the introduction of solar panels or bonus payments for multiple measures have led to deeper retrofits
- Some obligated parties appear to provide more measures but due to a focus on either Boiler or Attic/Cavity retrofits, they generally provide less comprehensive retrofits
- Implication:
  - OPs have a role to play - could be incentivised to provide deeper retrofits
  - Households do not appear sensitive to 'size' of incentive

# “Value for Money in energy efficiency retrofits in Ireland: Grant Provider and Grant Recipients”

# Value for Money

Household Value for Money:

$$VFM_{HH} = PV \text{ of Yearly Cost Savings} - (\text{Cost of Retrofit} - \text{Grant Aid})$$

- Yearly cost savings net of direct rebound (28%)

Grant Provider Value for Money:

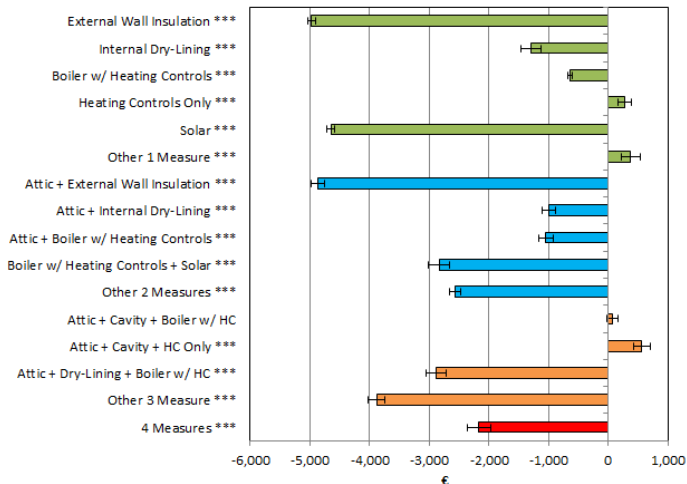
$$VFM_{GP} = \frac{\text{Grant Aid Awarded}}{\text{BER Improvement}}$$



# Value for Money

## By Retrofit Combination:

- Relative to 'Attic + Cavity' (NPV at mean values €1,600)

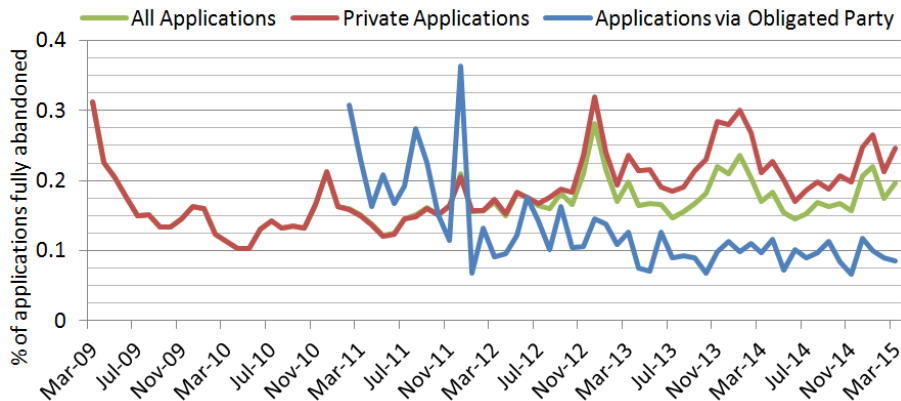


- Average VFM is positive but varies, less efficient and larger homes accrue better VFM
- Attic/Cavity/Boiler/HC best VFM, External Wall/Solar weakest
- Detached/Mid-Terrace best VFM, Apartments weakest
- Implication:
  - Should Mid-Terrace Houses and Apartments receive equal aid?

“An examination of the abandonment of applications for energy efficiency retrofit grants in Ireland”

# Application Abandonment

- Average abandonment rate among 1st-time applications of 15%:



# Abandonment of Applications

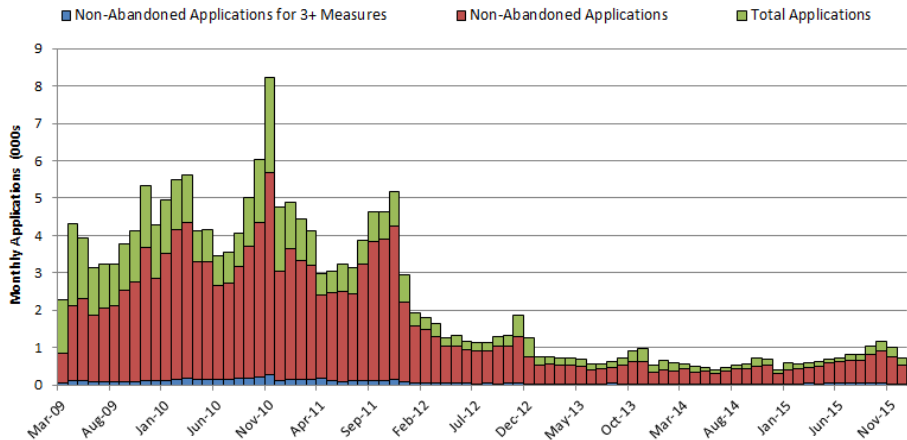
- Deeper retrofits more likely to be abandoned
- Applications via OPs less likely to be abandoned, but OPs possess 6 month learning phase
- Implication:
  - Organisational burden likely driving abandonment
  - Individual application risk can be identified

# Abandonment Risk Calculator

- BMW house, built 1981-2000, attic + cavity, obligated party application during spring
  - Risk score = 7.24% (low risk)
- Urban house, built 1961-1980, attic + cavity + boiler, private application during summer
  - Risk score = 41.23% (high risk)

“Advertising and investment spillovers in the diffusion of residential energy efficiency renovations: A revealed preference approach”

# Advertising and Investment

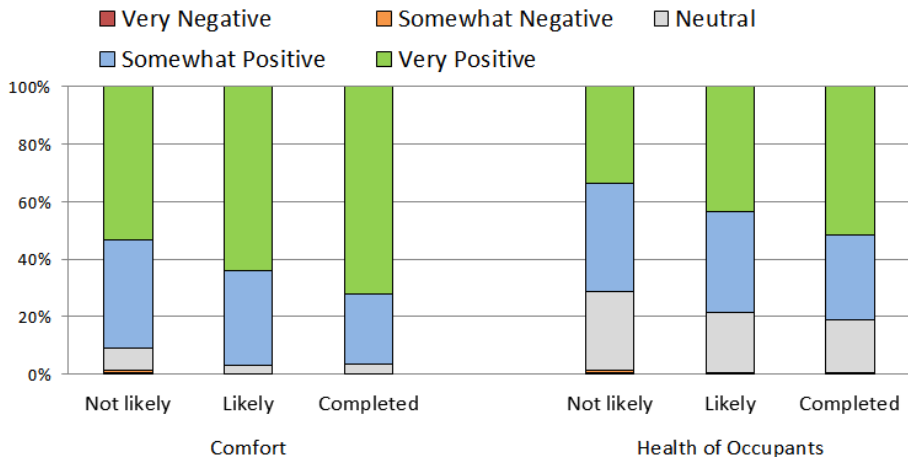




- Positive effect on Better Energy Homes applications:
  - National Print Advertising
  - Online Advertising
  - Better Energy Communities Retrofits
  
- No effect found:
  - Local Print Advertising
  - Local Radio Advertising
  - National Radio Advertising

“Identification of the information gap in residential energy efficiency: How information asymmetry can be mitigated to induce energy efficiency renovations”

## Perceived Effects of Insulation



## Energy Costs

- Draught-proofing, High Eff. Boiler, Heating controls, Solar

## Comfort

- Insulation, High Eff. Boiler, Heating Controls

## Occupant Health, Property Value, Mould/Condensation

- No relationship

## Efficiencies in Programme Expenditures

- Advertising
- Optimisation of Aid by Measure

## Understanding the Household

- Organisational Burden
- Informational Drivers of Retrofitting

## Obligated Parties

- Depth
- Abandonment

Thank You !

“An examination of energy efficiency retrofit depth in Ireland”

*Energy and Buildings*, 127(1): 170–182.

<http://www.sciencedirect.com/science/article/pii/S0378778816305011>

“An examination of the abandonment of applications for energy efficiency retrofit grants in Ireland”

*Energy Policy*, 100: 260–270.

[www.sciencedirect.com/science/article/pii/S0301421516305730](http://www.sciencedirect.com/science/article/pii/S0301421516305730)

“Value for money in energy efficiency retrofits in Ireland: Grant provider and grant recipients”

*Applied Economics*, forthcoming

<http://dx.doi.org/10.1080/00036846.2017.1302068>

“Evidence, drivers and sources of distortions in the distribution of building energy ratings prior to and after energy efficient retrofitting”

*ESRI Working Paper*

<http://www.esri.ie/pubs/WP535.pdf>

“Willingness-to-Pay and Free-Riding in a National Energy Efficiency Retrofit Grant Scheme: A Revealed Preference Approach”

*ESRI Working Paper*

<http://www.esri.ie/pubs/WP551.pdf>

“Identification of the information gap in residential energy efficiency: How information asymmetry can be mitigated to induce energy efficiency renovations”

*ESRI Working Paper*

<http://www.esri.ie/pubs/WP558.pdf>

“Residential energy efficiency retrofits: potential unintended consequences”

*ESRI Working Paper*

<http://www.esri.ie/pubs/WP554.pdf>



“Can tenants afford to care? Investigating the willingness-to-pay for improved energy efficiency of rental tenants in a stressed rental market and returns to investment for landlords”

*In Progress*

“Financial incentives for residential energy efficiency investments in Ireland: Should the status quo be maintained?”

*In Progress*

“Advertising and investment spillovers in the diffusion of residential energy efficiency renovations: A revealed preference approach”

*In Progress*