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Ten years of price evaluation in a renovation market with volatile financial incentives: The effect of Energy Efficiency Obligation on residential market prices

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Summary

1. EEO scheme

2. Price study

3. Conclusion

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French EEO scheme

Energy Efficiency Obligation



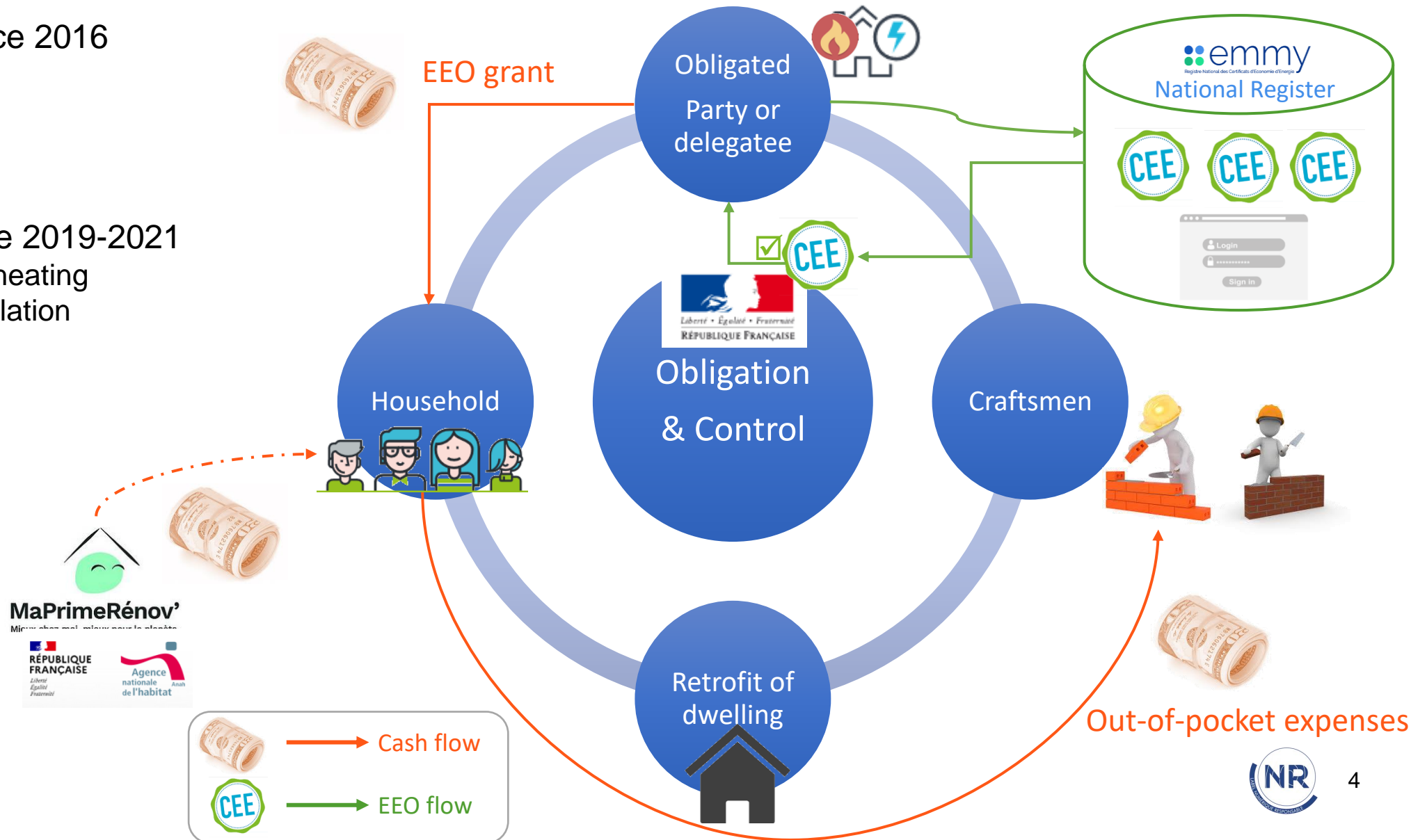
Energy Efficiency Obligation and retrofit markets

3 types of EEOs since 2016

- Standard
- Low-income
- Very low-income
- Bonus programme 2019-2021
 - 788,00 space heating
 - 1,960,000 insulation

Additional subsidies

- Tax credit
- Soft loans
- Reduced VAT...



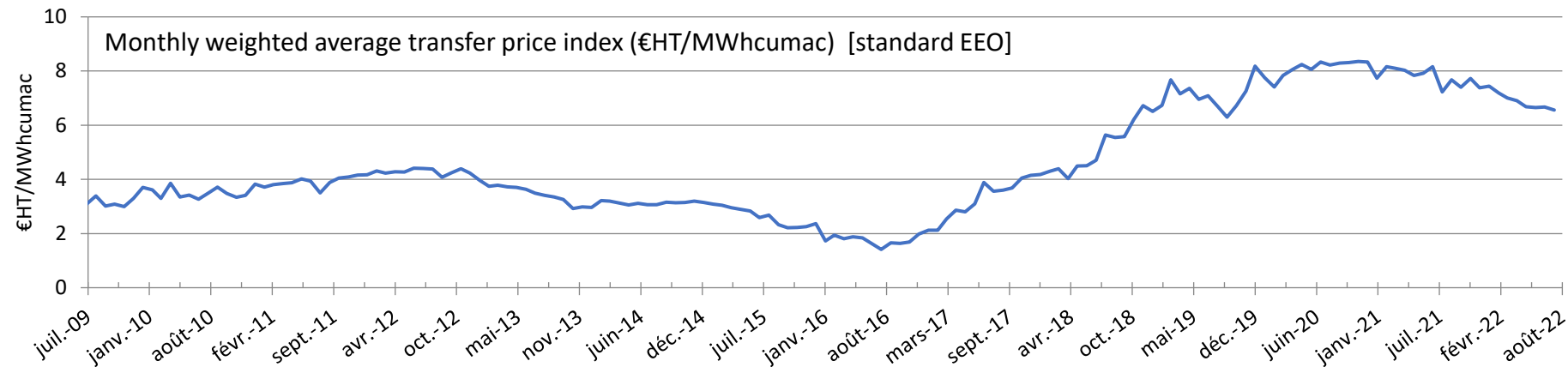
1. EEO incentive change over time

Various reasons for the changes in the financial incentive:



EEO price:

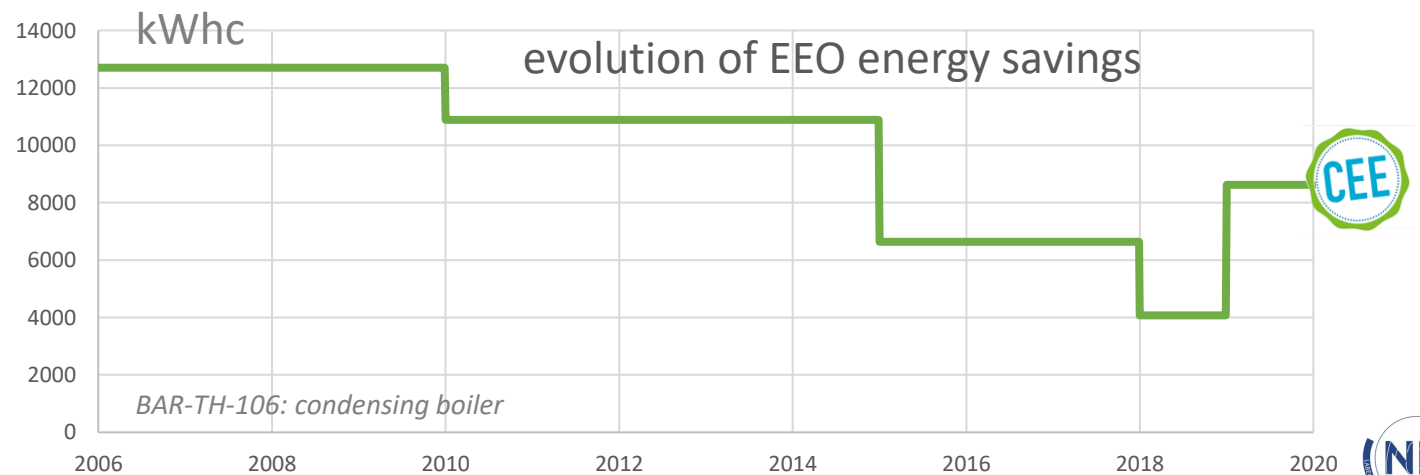
- Max = 8,3 €/MWhc 
- Min = 1,4 €/MWhc 

X



EEO volume and bonus:

- Bonus programme → x2 - x5 
- EEO spreadsheet update 



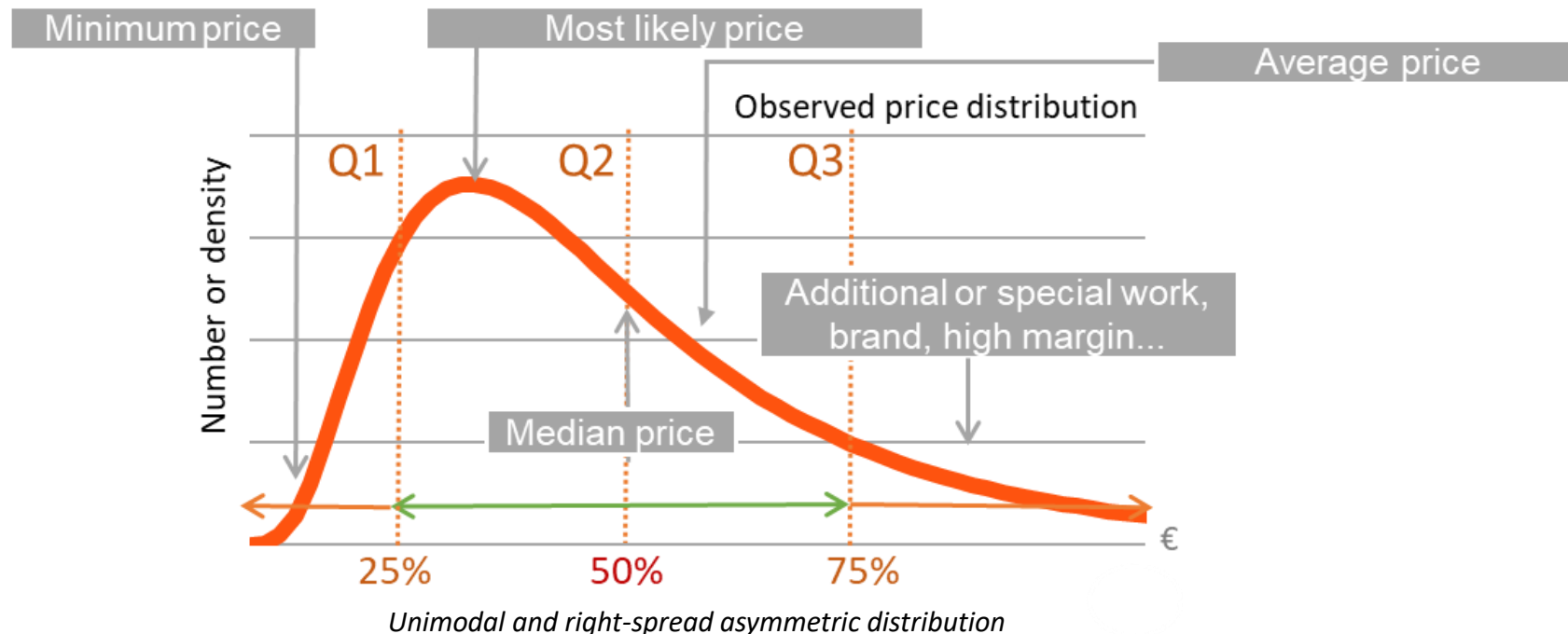
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Retrofit price study

Invoice analysis

1. Retrofit price distribution

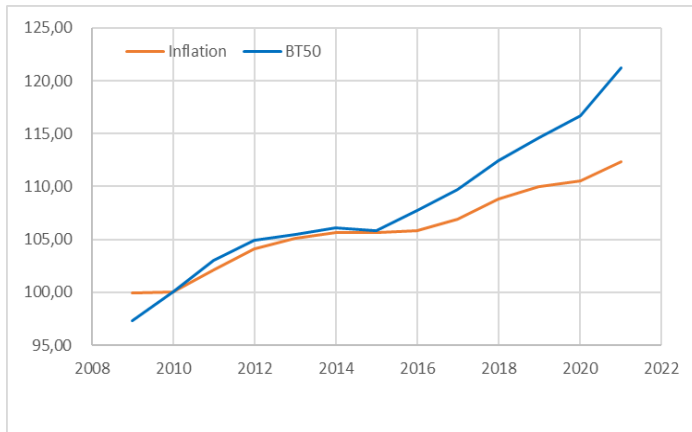
- 1 retrofit measure only
- Observed price = EEO premium + out-of-pocket expenses
- Variability of price difficult to explain:
 - Quantitative variables: at best 50%
 - Qualitative dimensions (accessibility, work quality...)
- Many actors along the value-chain (manufacturer, wholesaler, distributor, installer, craftsmen...)



Energy efficiency retrofit measures

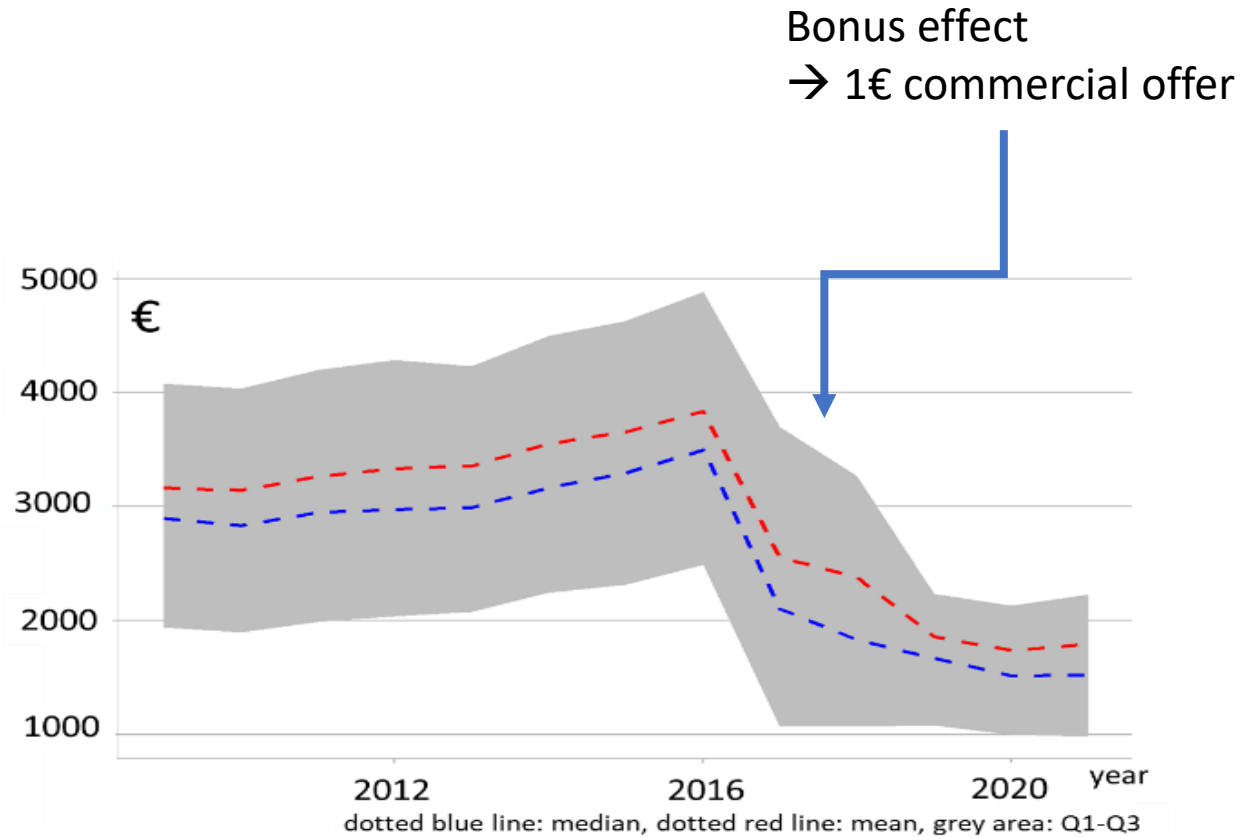
- Large-scale analysis of invoice (price inc.VAT of supplied and installed works)
- Monitoring over the period 2009-2021
- Sample size: 100 – 10,000 invoices

Reference index



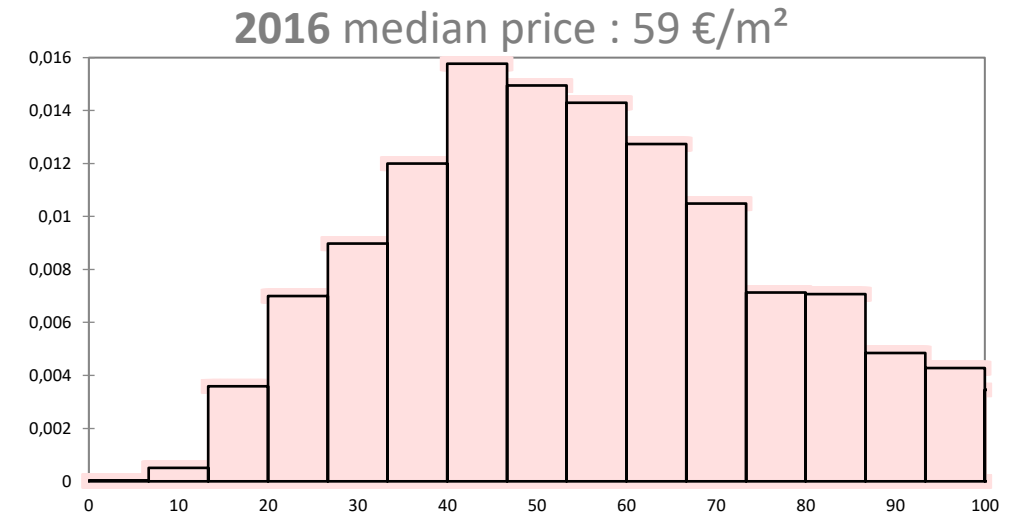
Retrofit work	Median price 2021 (€ inc.VAT)	Median price change 2018-2021 (in %)	
Roof and loft insulation	1,541	-54	↓
Wall insulation (inc. ITI and ETI)	15,877	+28	↑
Floor insulation	1,364	-23	↓
Double glazing windows	3,858	-20	↓
Air-to-water heat pump	13,258	-17	↓
High efficiency fossil boiler	4,100	-4	↓
Wood stove or insert	5,150	+3	↑
Biomass boiler	15,167	+61	↑
Air-to-air heat pump	3,131	-31	↓
Heat pump water heater	2,868	-45	↓
Individual solar water heater	6,957	+11	↑

Roof and loft insulation



EEO premiums:

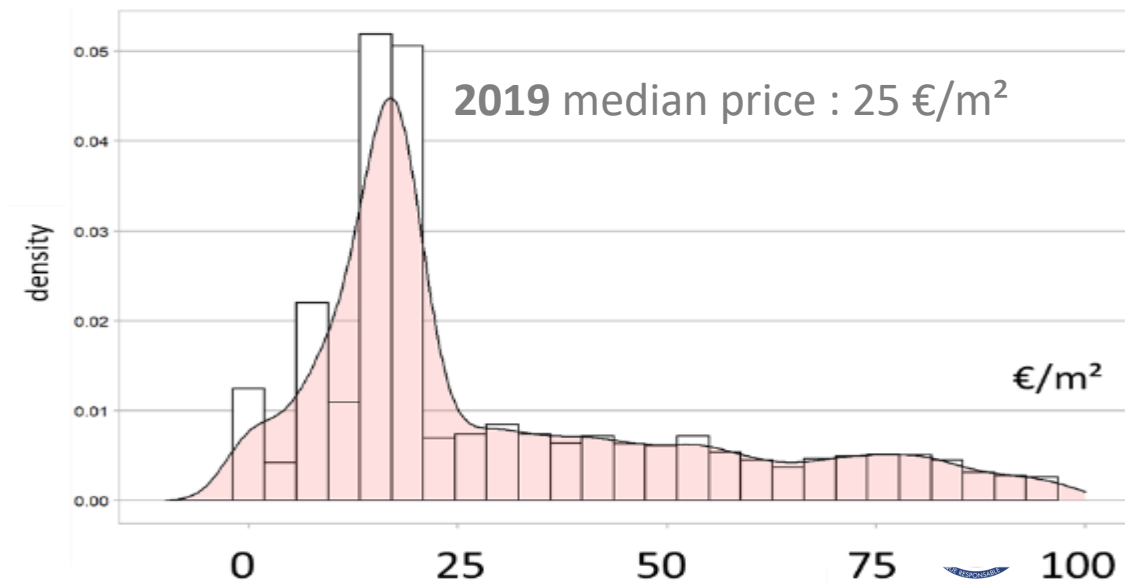
- 13-17€/m² between 2014-2018
- 27€/m² between 2018-2021
- 10 €/m² since January 2022



blown-in roof

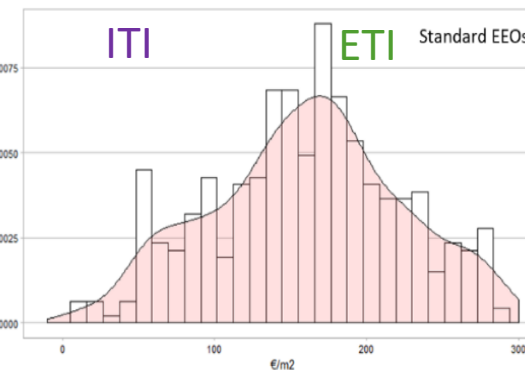
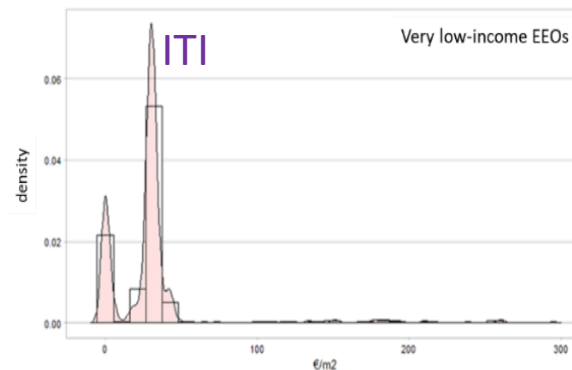
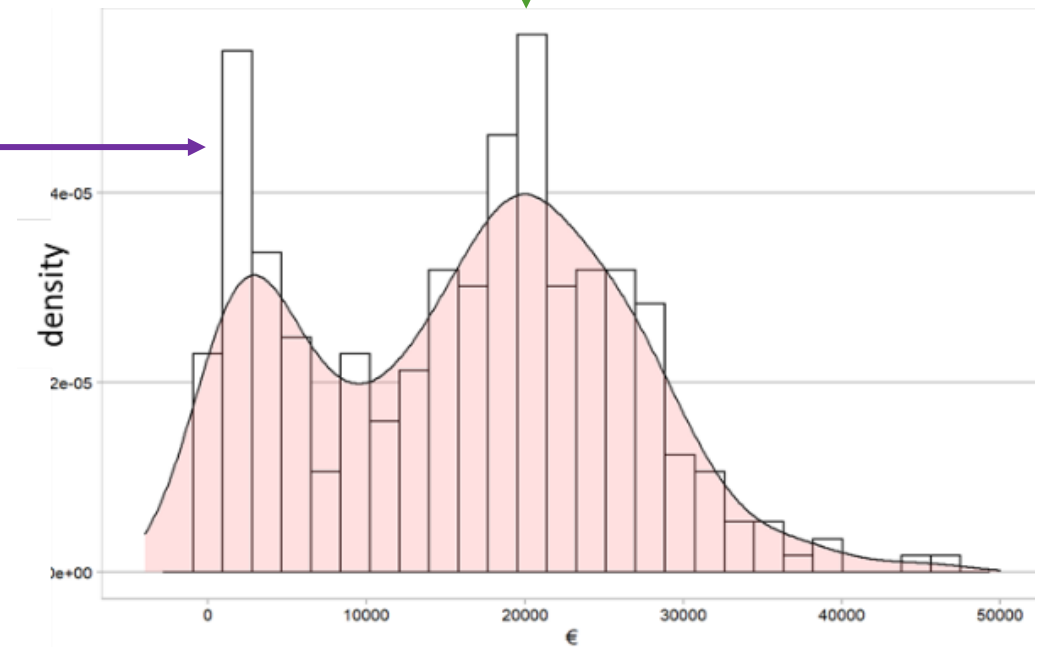
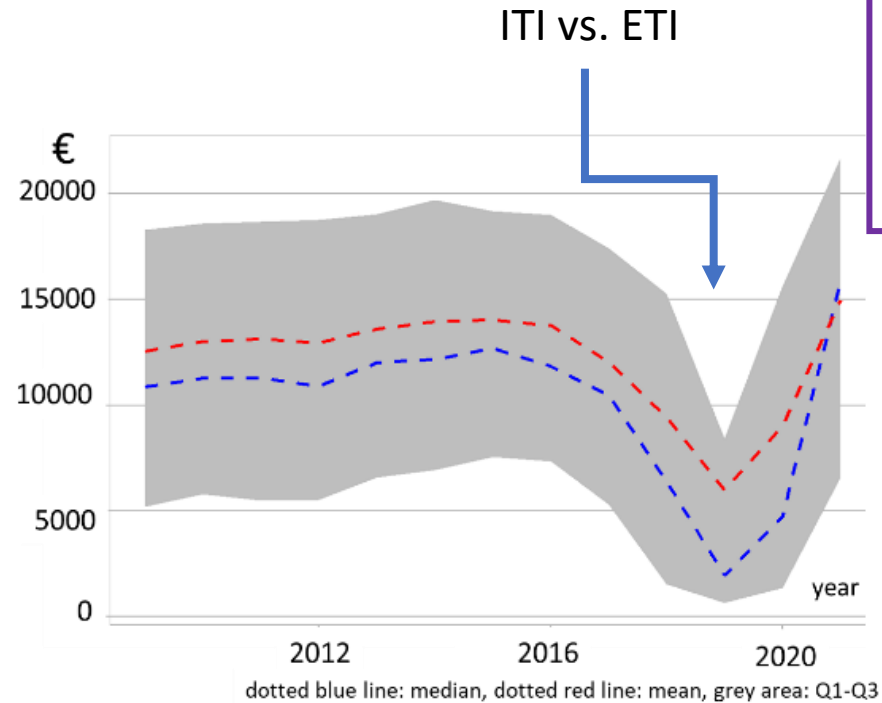
unrolled wool

converted loft

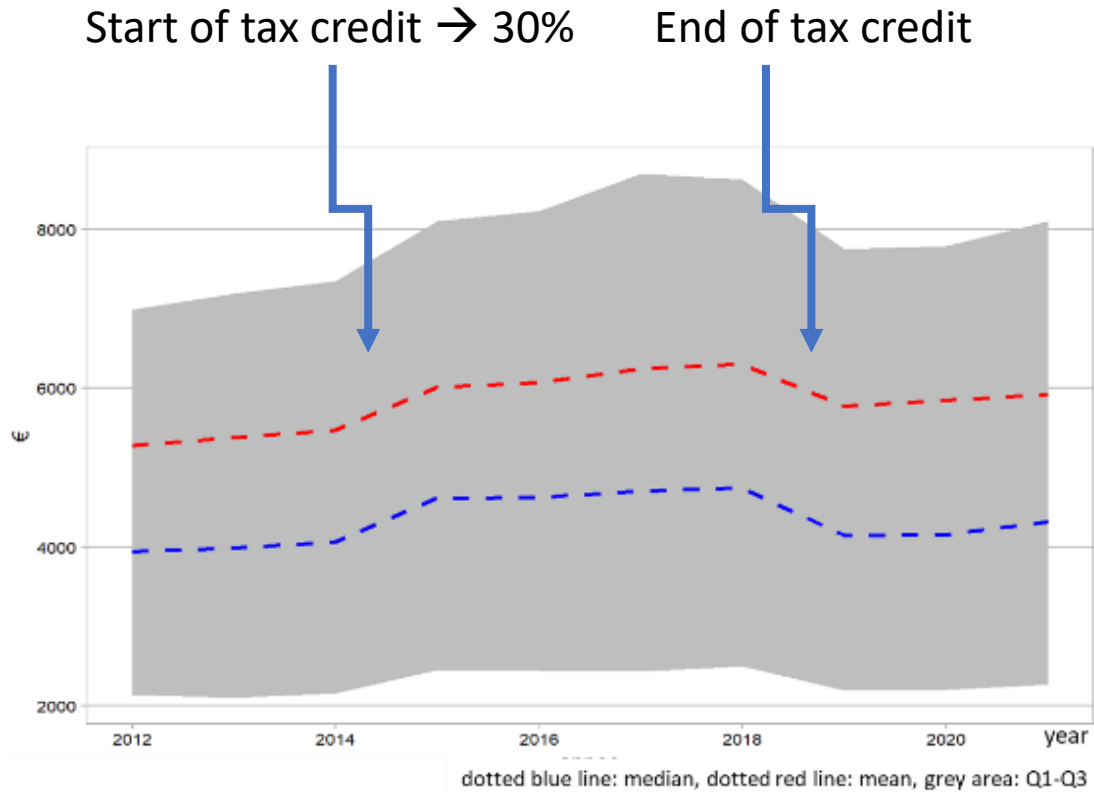


Source: EDF-R&D, Batirama

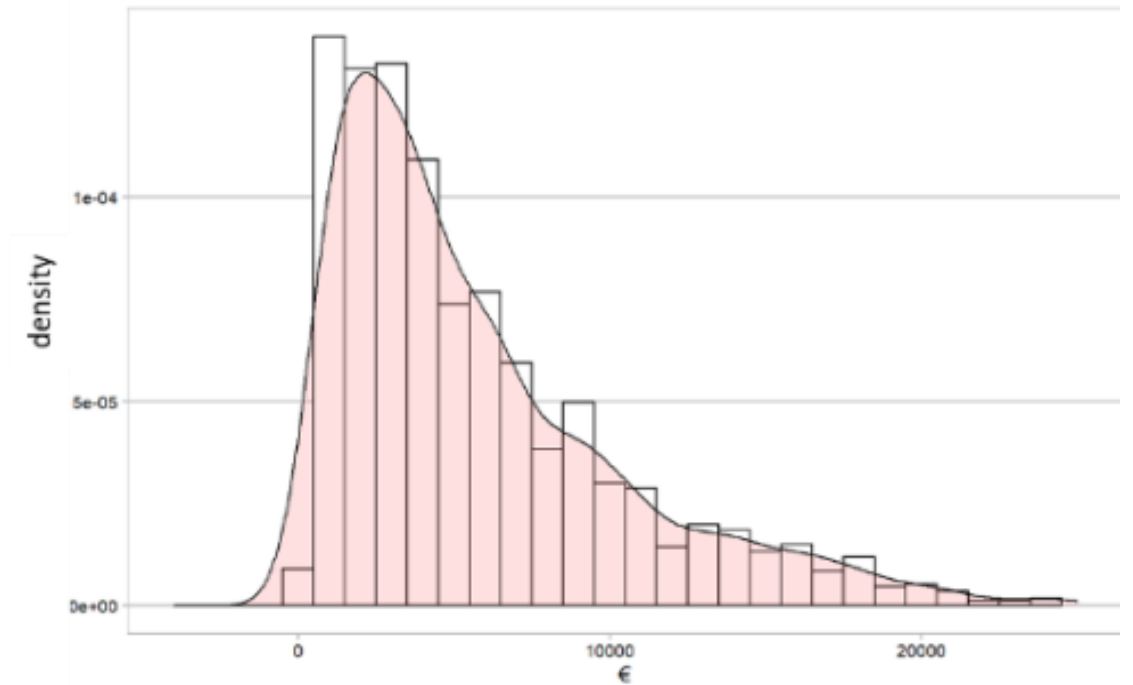
Wall insulation (inc. Internal or External Thermal Insulation)



Double glazed windows

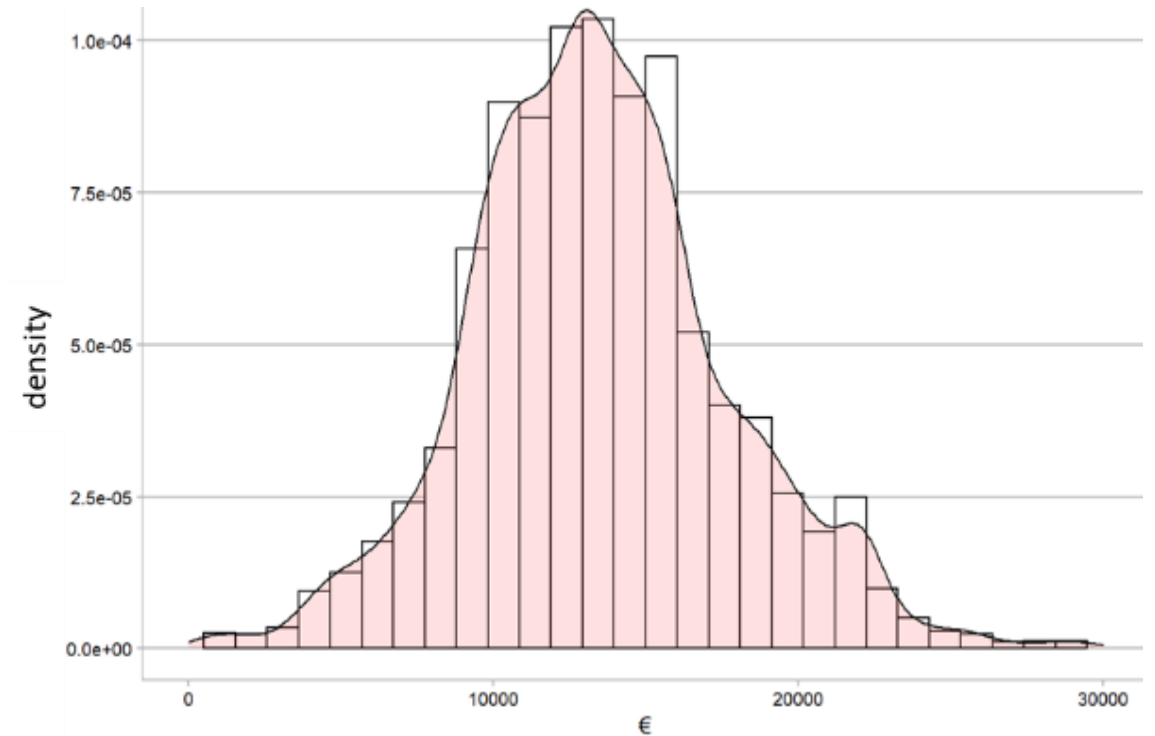
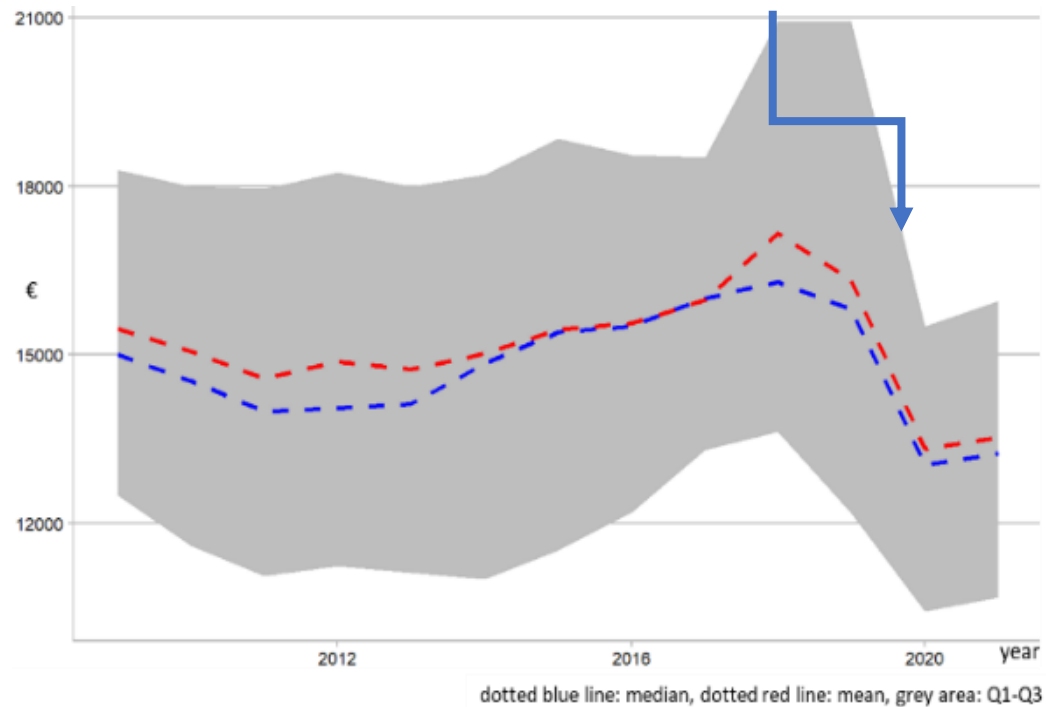


Number of windows installed: on average 4 units



Air-to-water heat pump

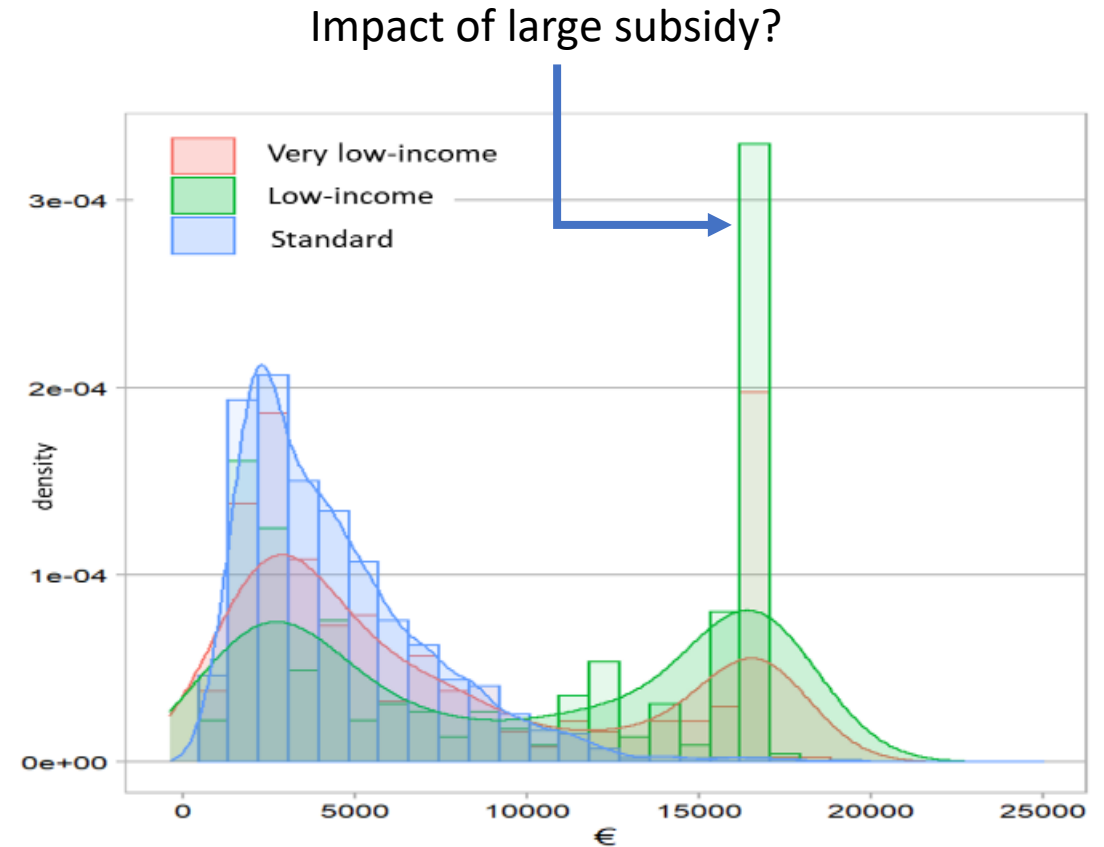
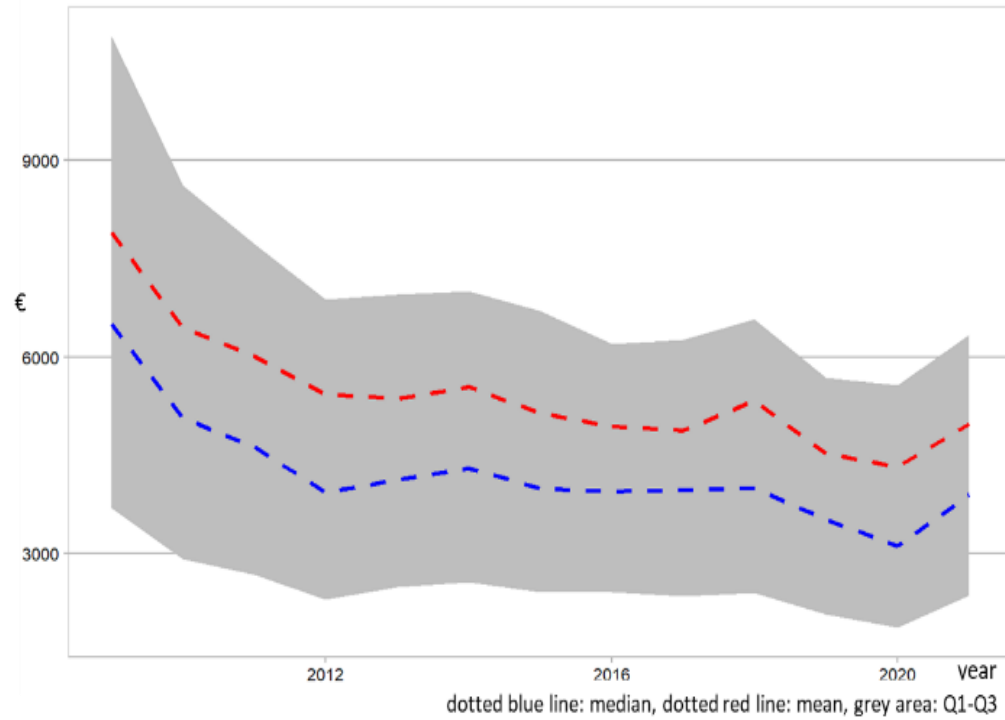
Bonus effect? → +500%



Air-to-water Heat Pump Market– space heating retrofit:

- 26,000 units in 2018
- 187,000 units in 2021

Air-to-air heat pump

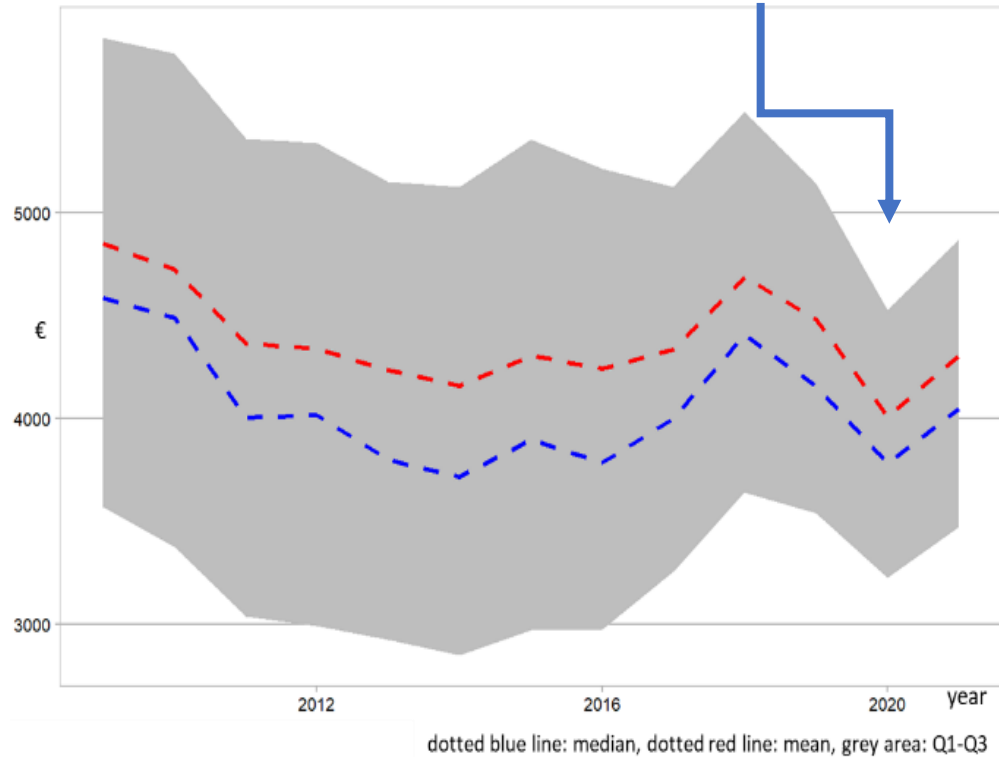


Air-to-air Heat Pump Market – space heating retrofit:

- 43,000 units in 2013
- 377,000 units in 2021

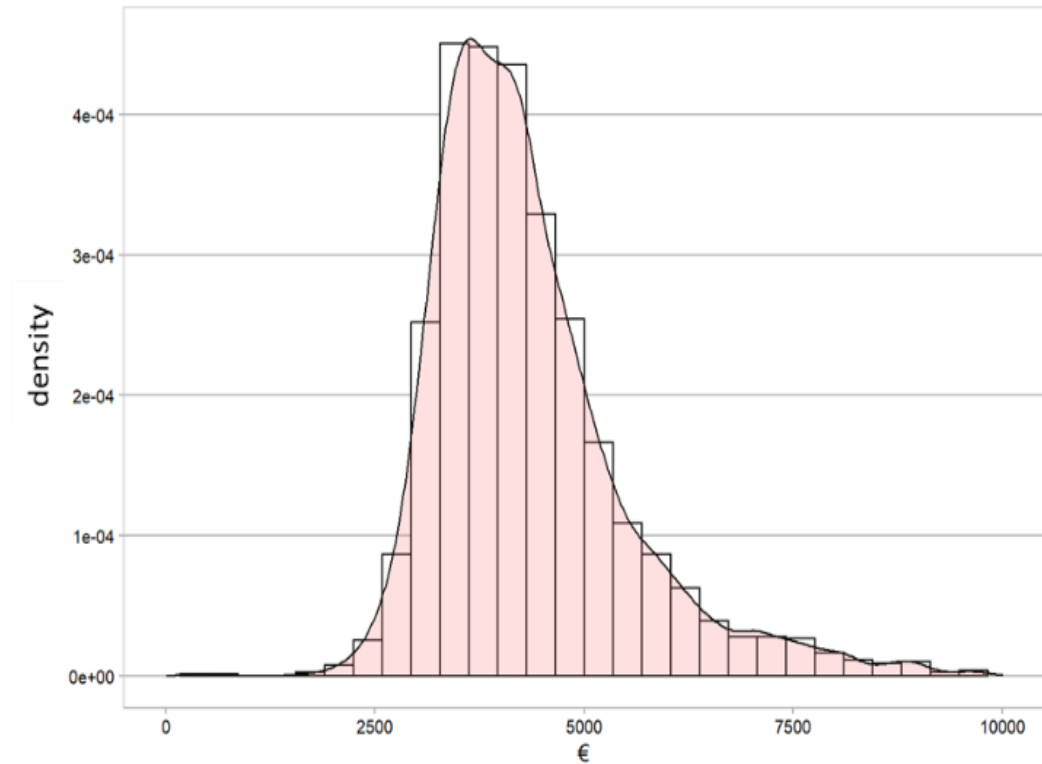
Efficient fossil boiler

Market volume effect?



Annual sales of condensing boiler

- 2018: 544,000
- 2019: 515,000
- 2020: 510,000
- 2021: 634,000



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Conclusion

So what !

1. Conclusion



Difficult to establish causal links between past events and price changes

Price increase different from inflation or building index and EE measure dependant

Market volume effect

Impact of EEO scheme changes on the retrofit markets

- Adaptation of techniques to achieve low-income EEO with a small out-of-pocket expenses
- Price adjustment according to level of subsidy
- Market development effect
- Effect on company and job creation/destruction

