Energy poverty and deprivation in Ireland

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The Community Foundation for Ireland

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Presentation overview

- Past
  - What can we learn from past trends in energy poverty and deprivation
- Present
  - How have recent price changes affected households across the income spectrum
    - Updated to October 2022
- Future
  - Ongoing theoretical work to assess electricity market interventions

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Past trends in Energy Poverty and Deprivation

Past

Past trends

Energy poverty: expenditure-based methods

- Household budget survey data
- 10 per cent share of disposable income

Energy Deprivation: self-reported metrics

- EU SILC data
- e.g. Inability to keep home adequately warm; Go without adequate heat in the home

What can we learn from comparing the incidence of energy poverty and the incidence of energy deprivation?

Two pieces of insight

To what extent are some energy poverty statistics driven by:

- Insufficient heat in the home
- Burdensome non-heat expenditure

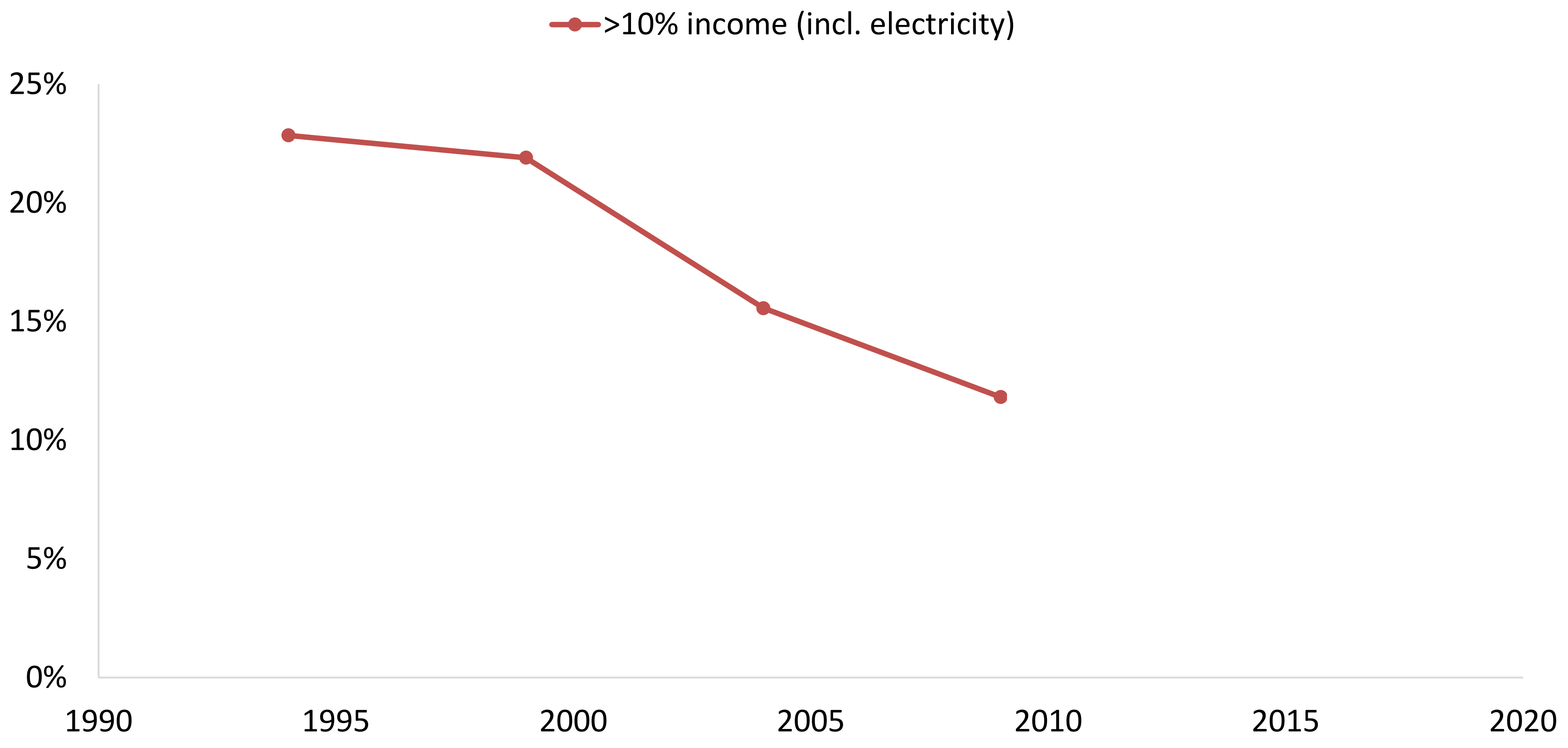
Two pieces of insight

Which households respond by

- Cutting back their energy expenditure - “energy deprivation”
- Incurring more burdensome expenditures - “energy poverty”

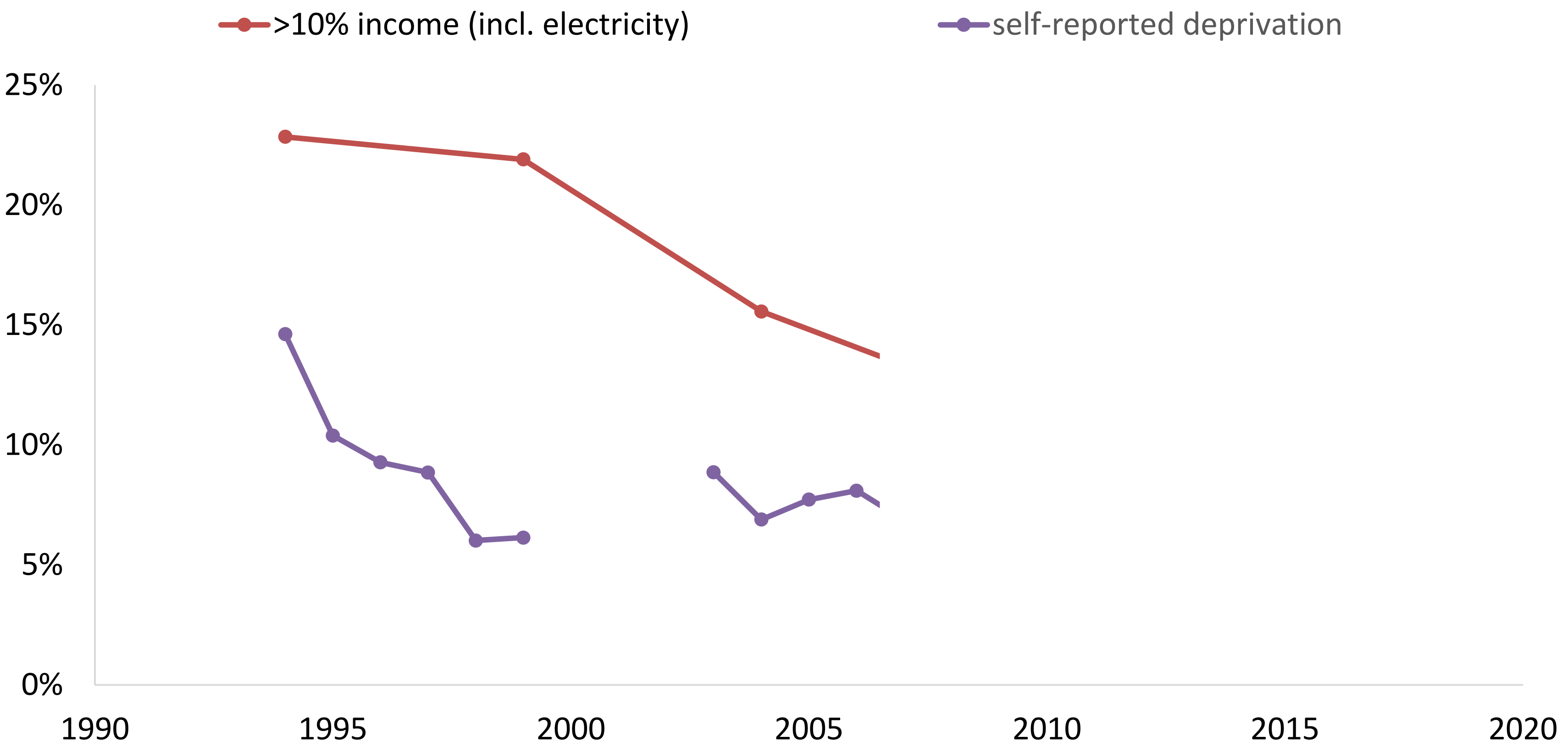
Headline trends of Energy Poverty and Deprivation

Headline rates of energy poverty and deprivation



Source: Authors' calculations using the Household Budget Survey, Living in Ireland Survey, and Survey of Income and Living Conditions.

Headline rates of energy poverty and deprivation



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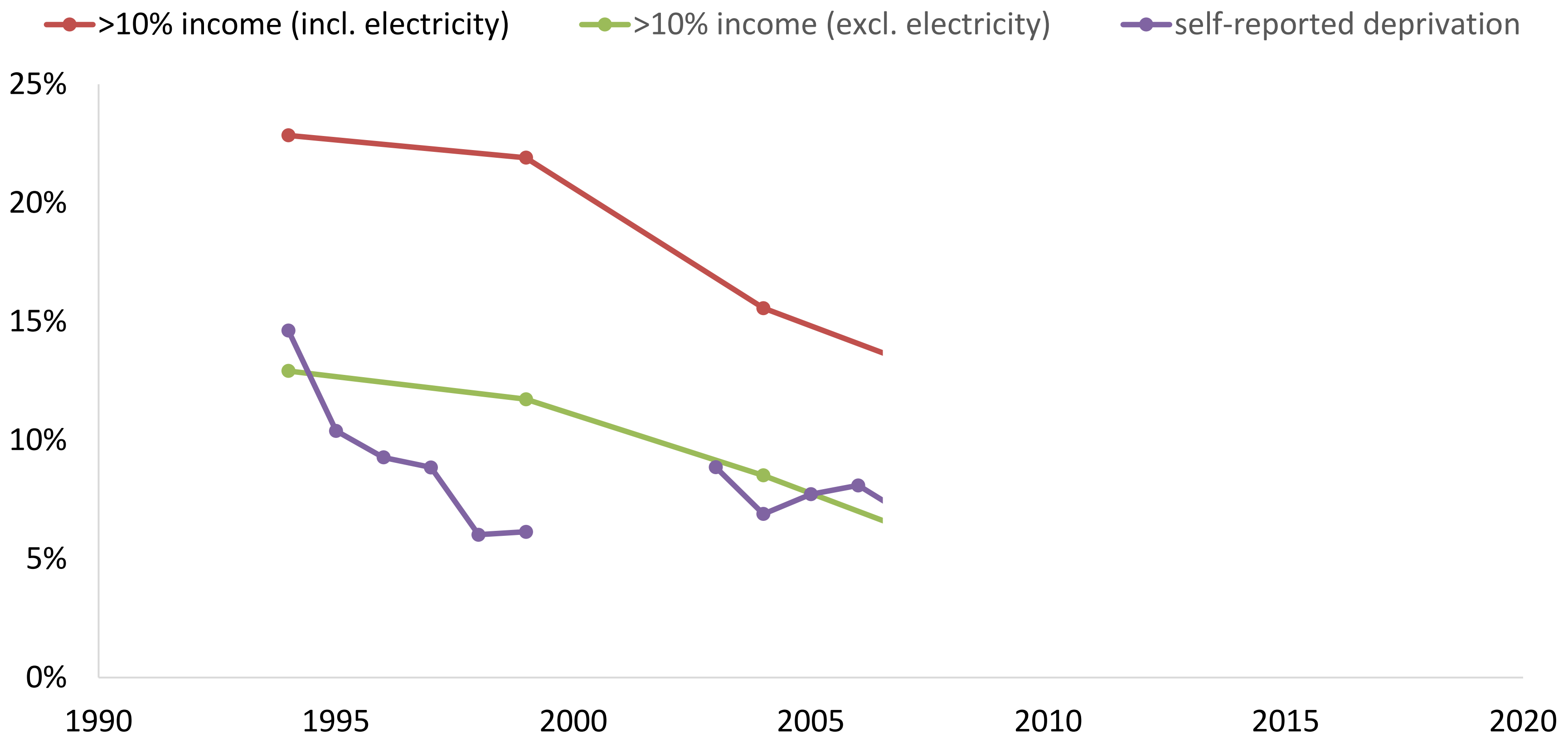

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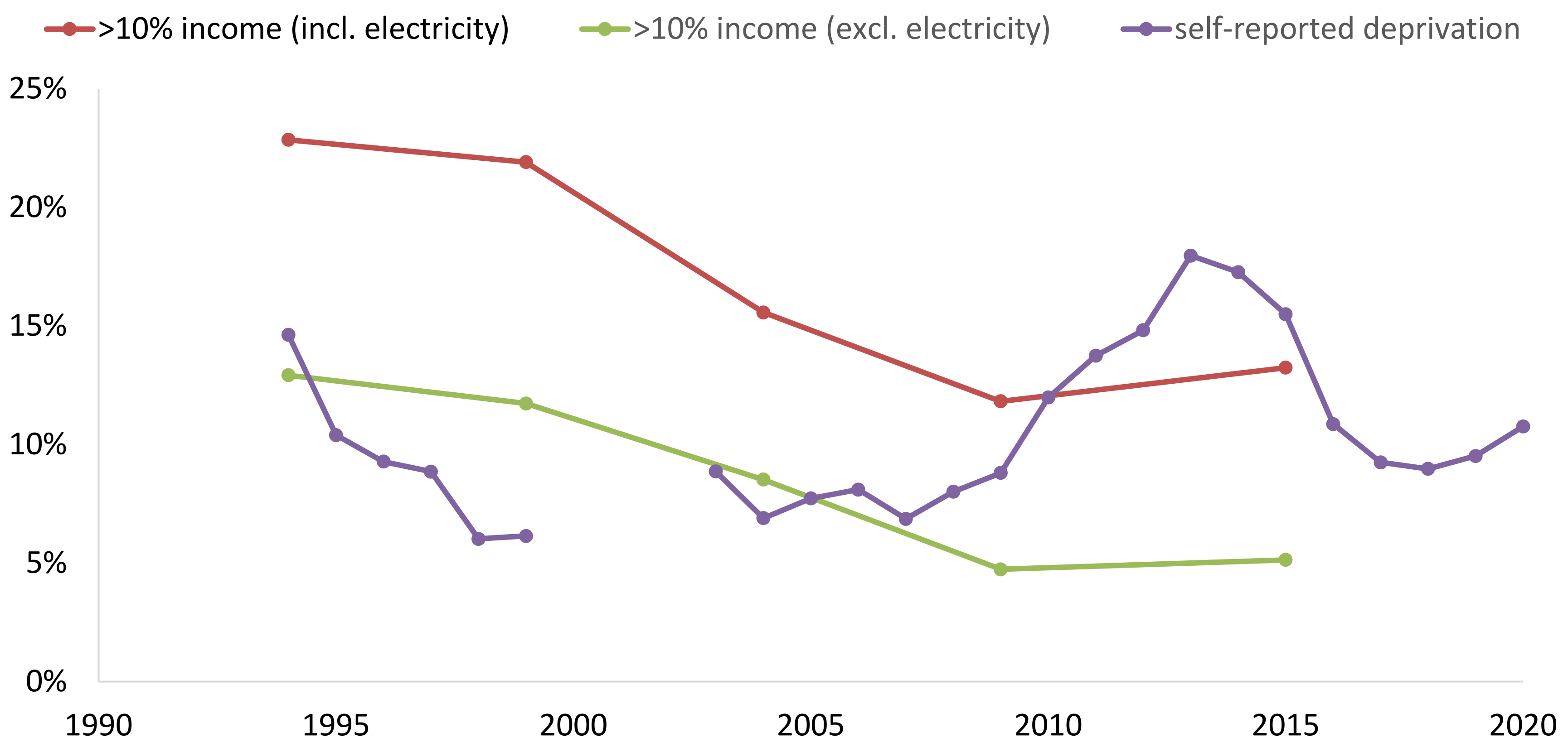

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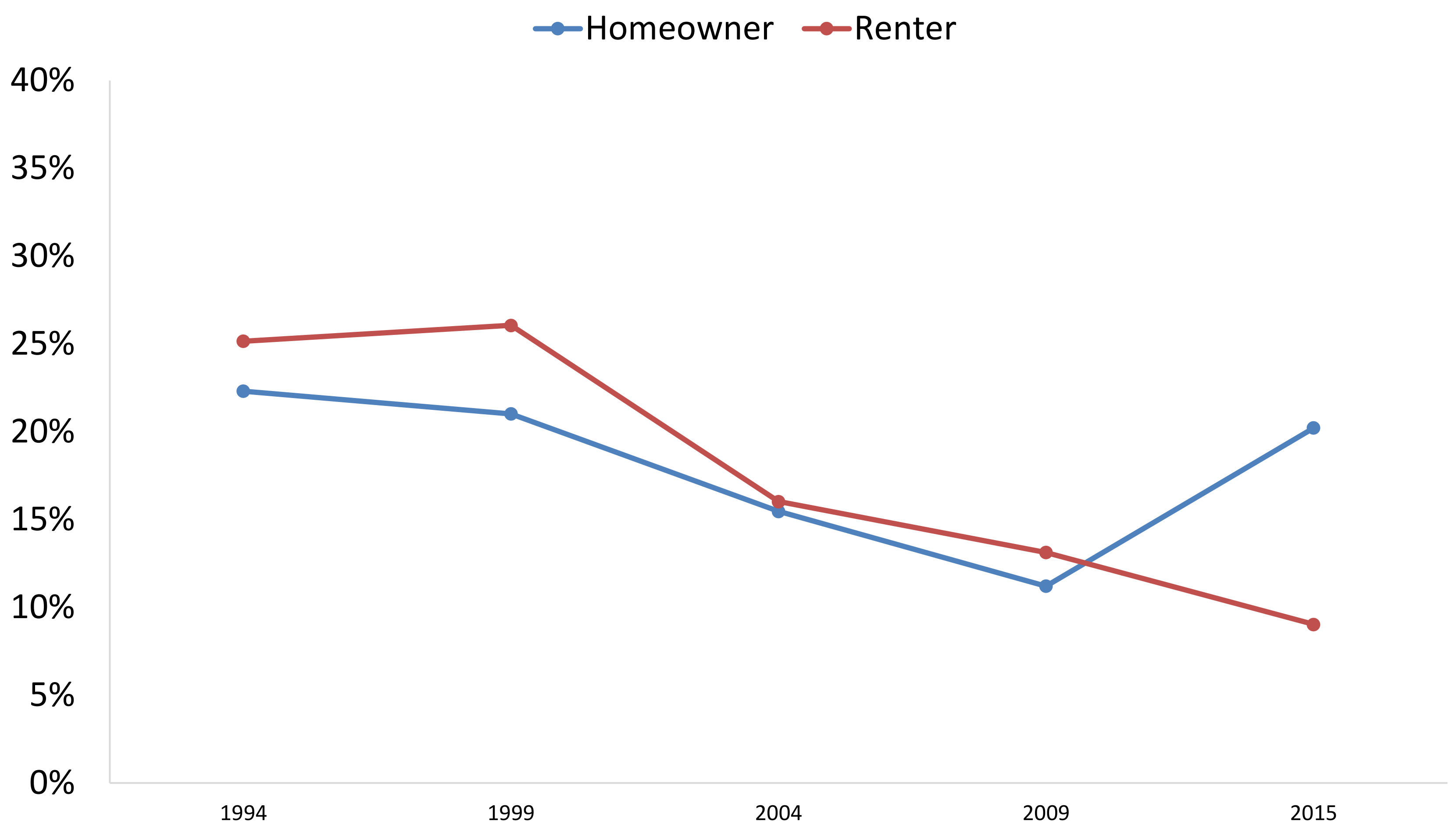
Energy poverty and deprivation by socioeconomic group

Rates of energy poverty by household tenure



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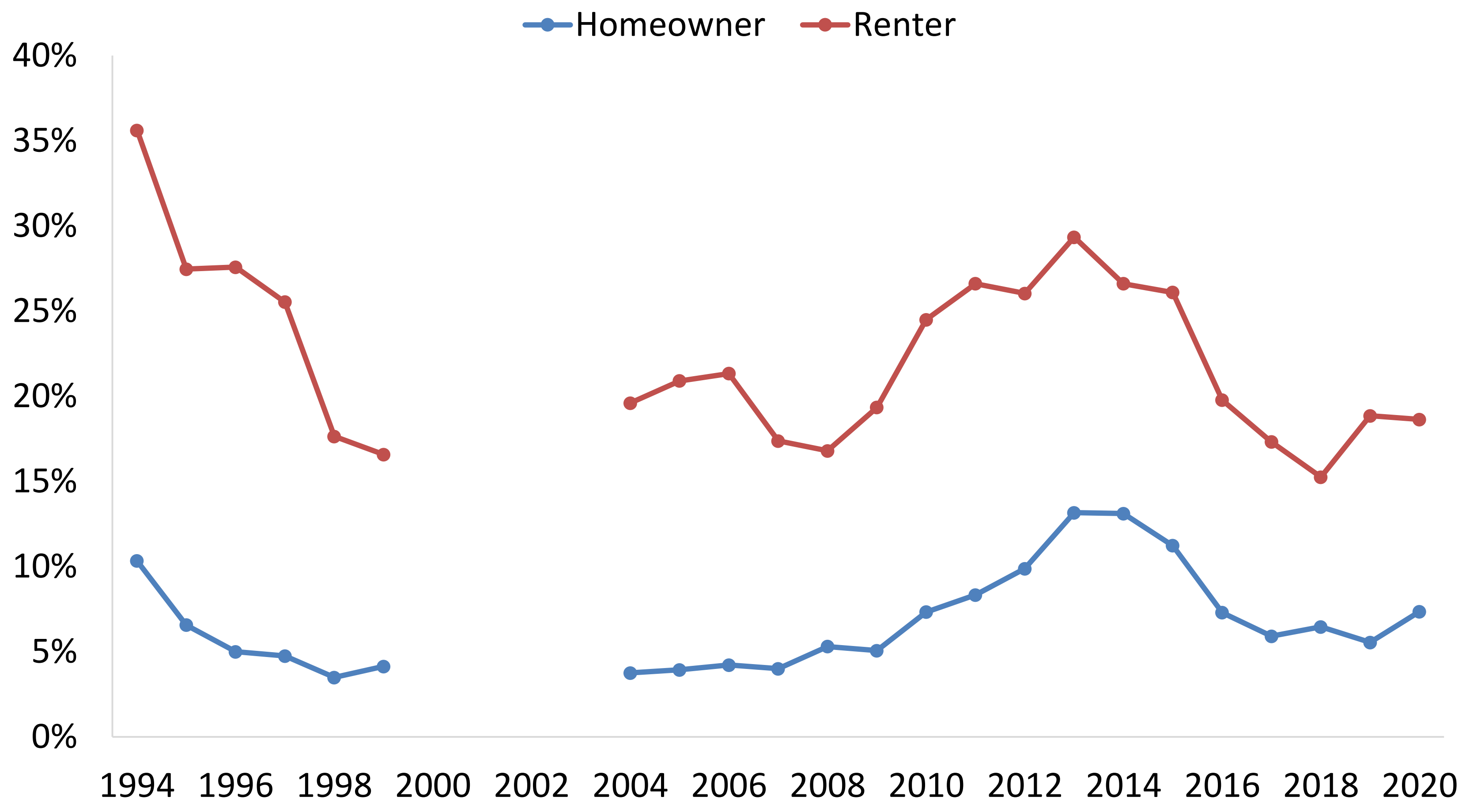
Rates of energy deprivation by household tenure



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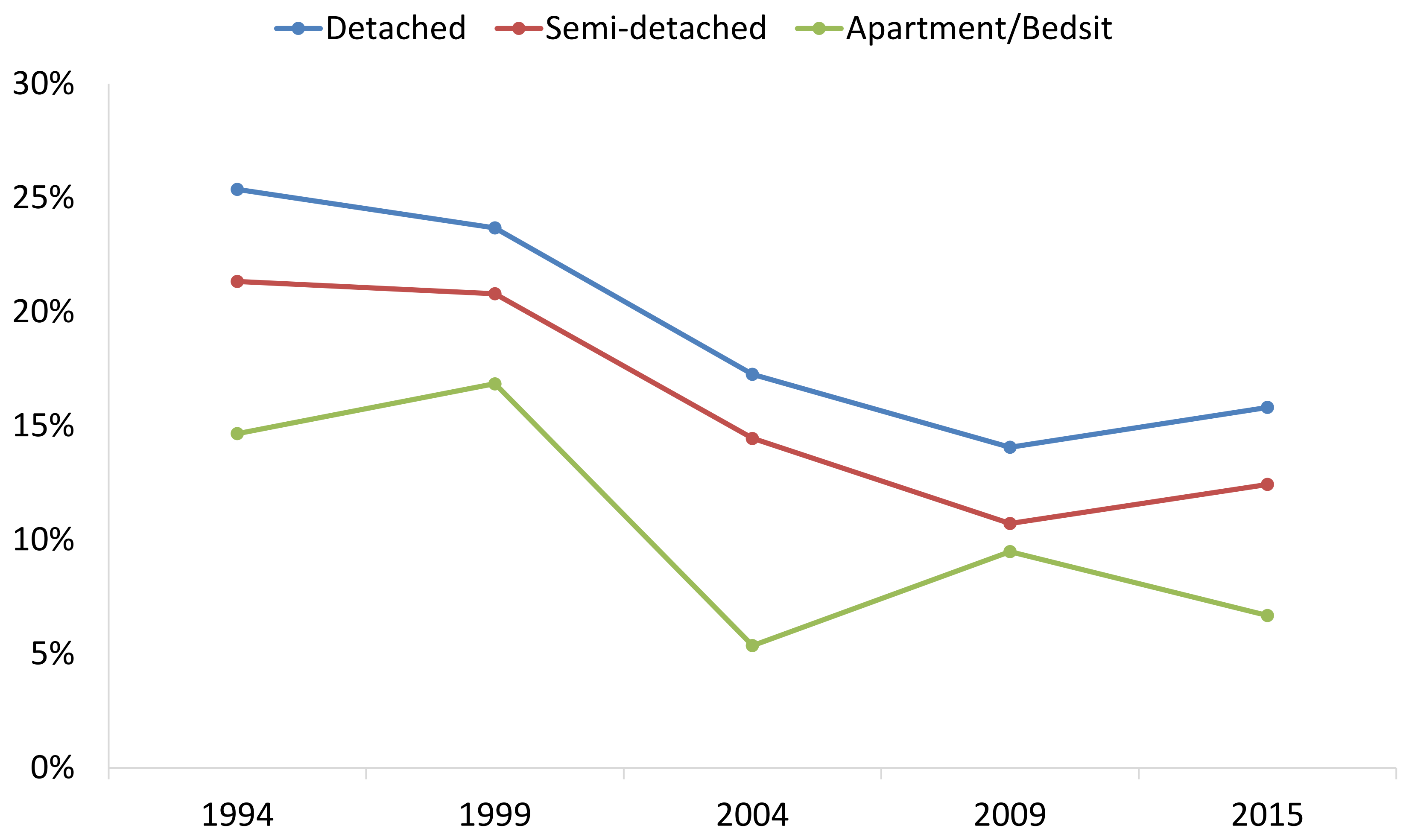
Rates of energy poverty by dwelling type



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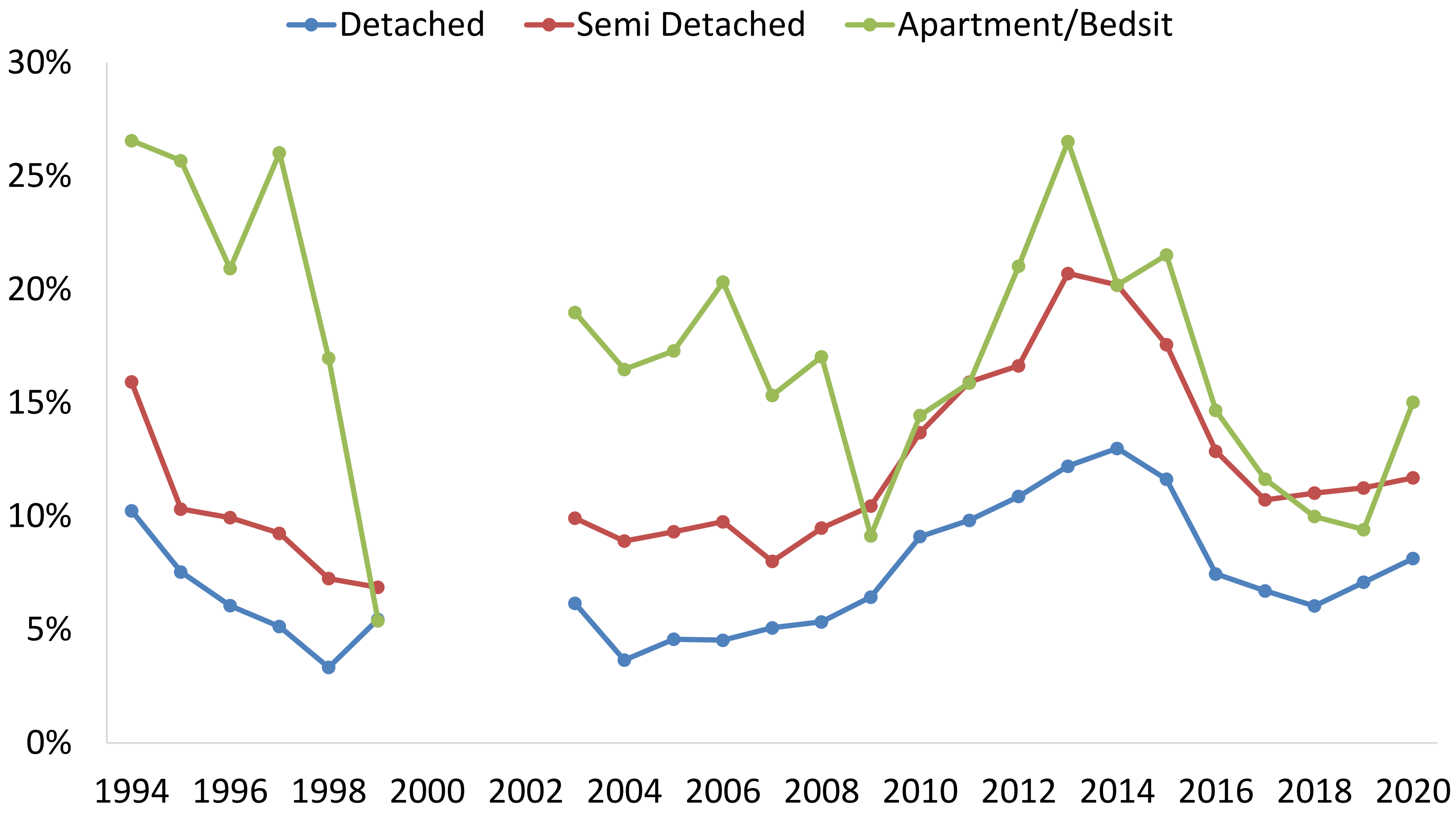
Rates of energy deprivation by dwelling type



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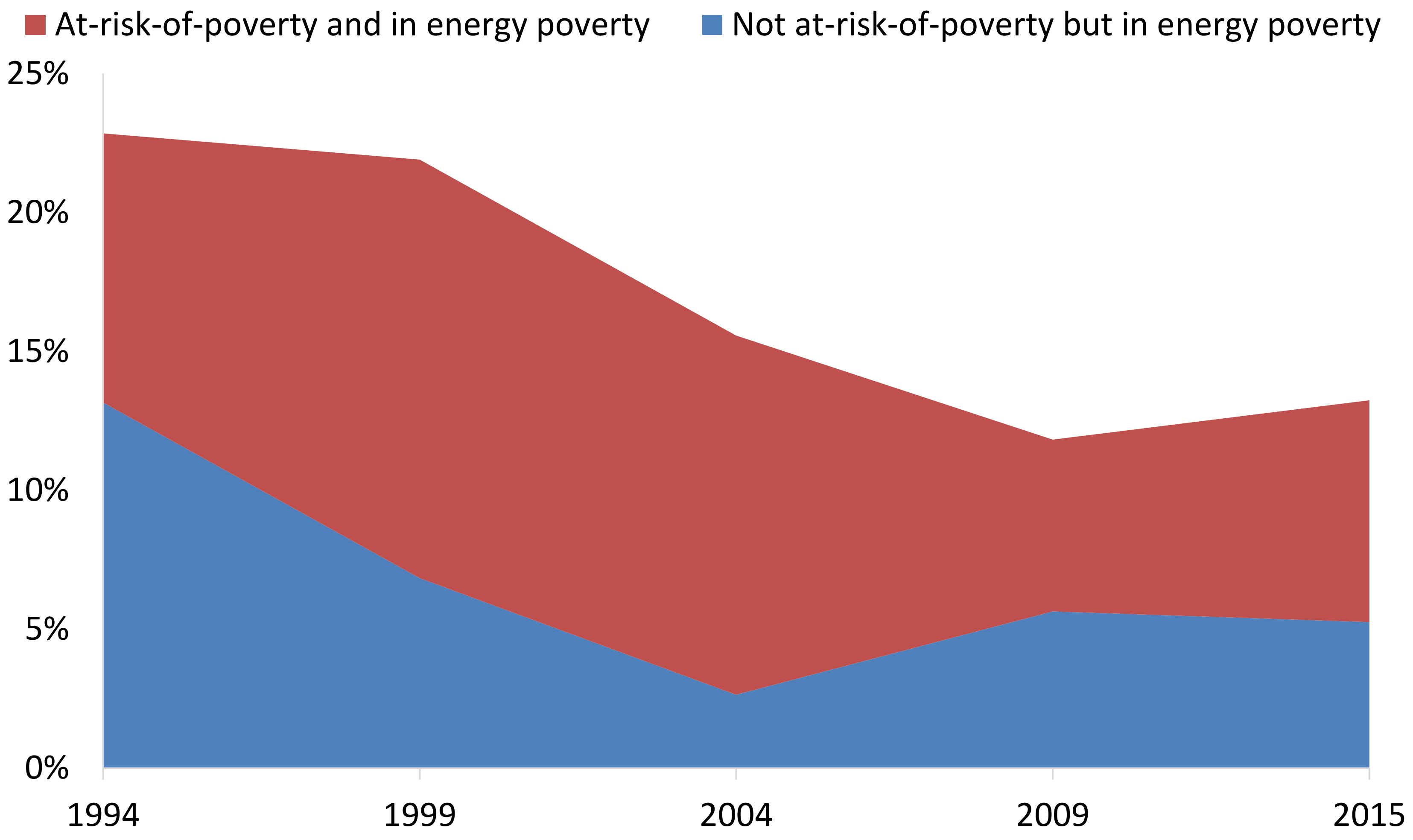
Decomposition of energy poverty by at-risk-of-poverty status



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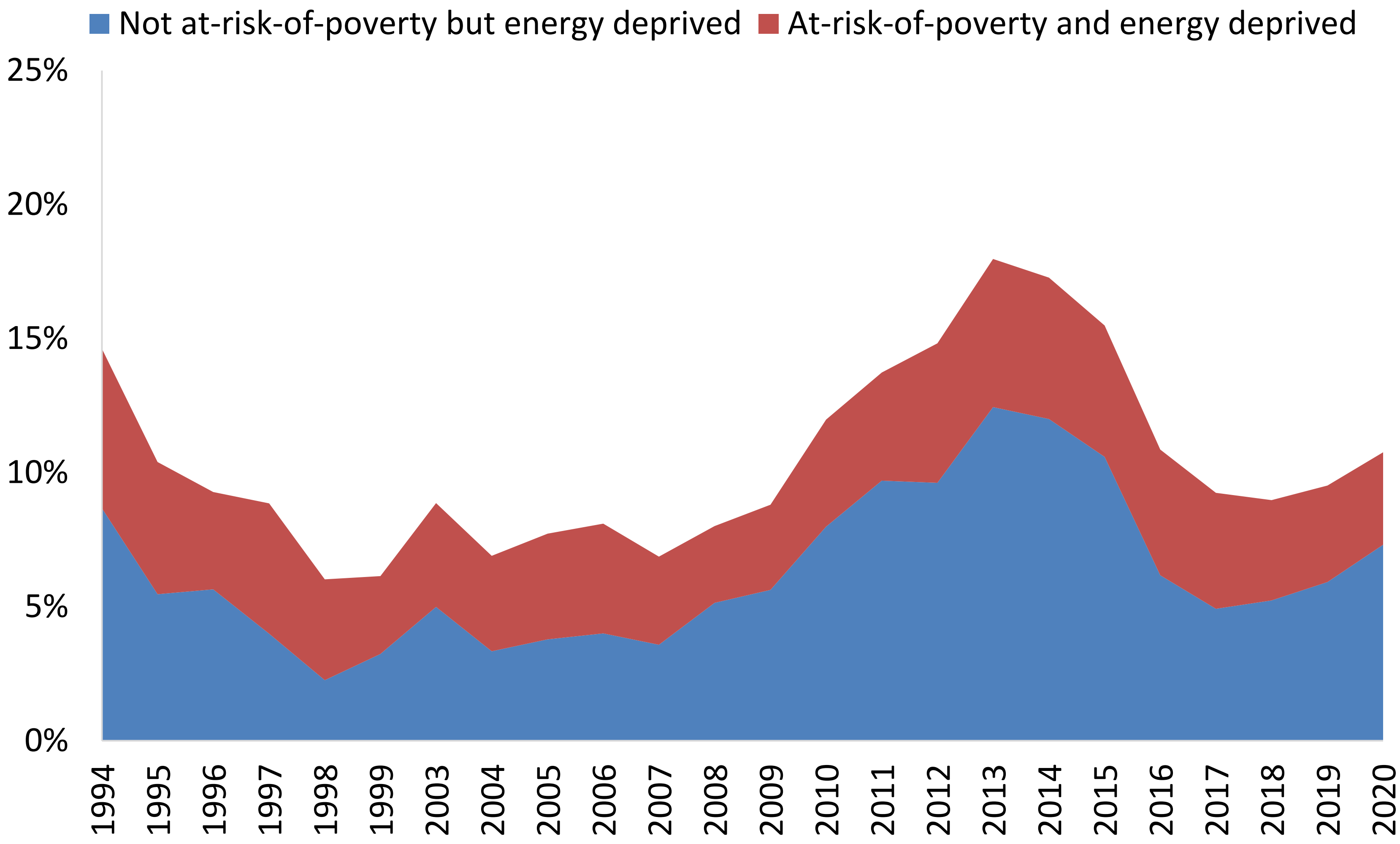
Decomposition of energy deprivation by at-risk-of-poverty status



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Impact of recent price changes

Present

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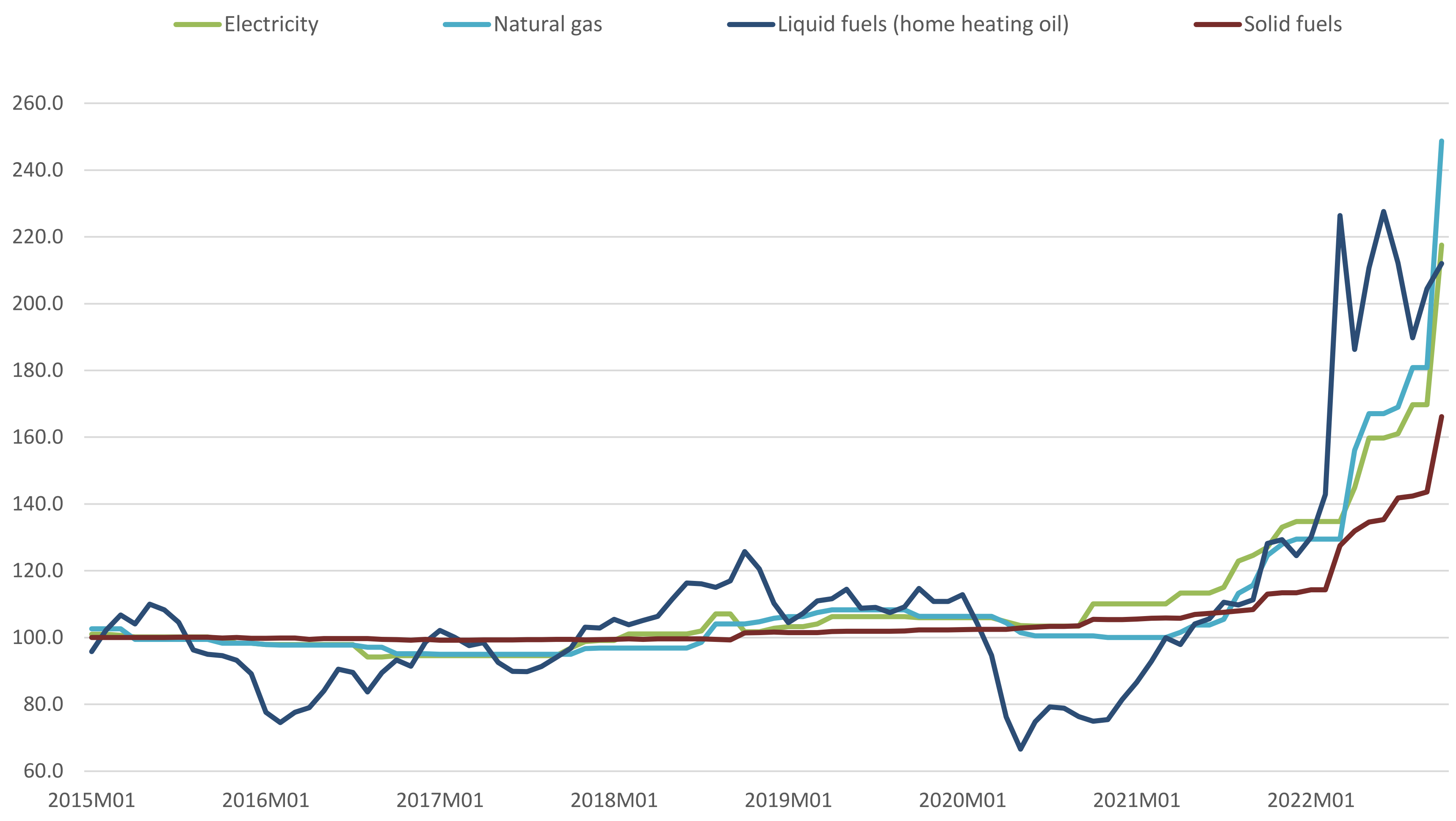
Changes in fuel prices



Note: Calculated using CSO Table CPM16, indexed to average value in 2015.

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Methodology

SWITCH Microsimulation model

- Detailed information on taxes and benefits
- Energy expenditures imputed
- Expenditures uprated according to consumer price index

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Impact of price increases: Jan 2021-Oct. 2022

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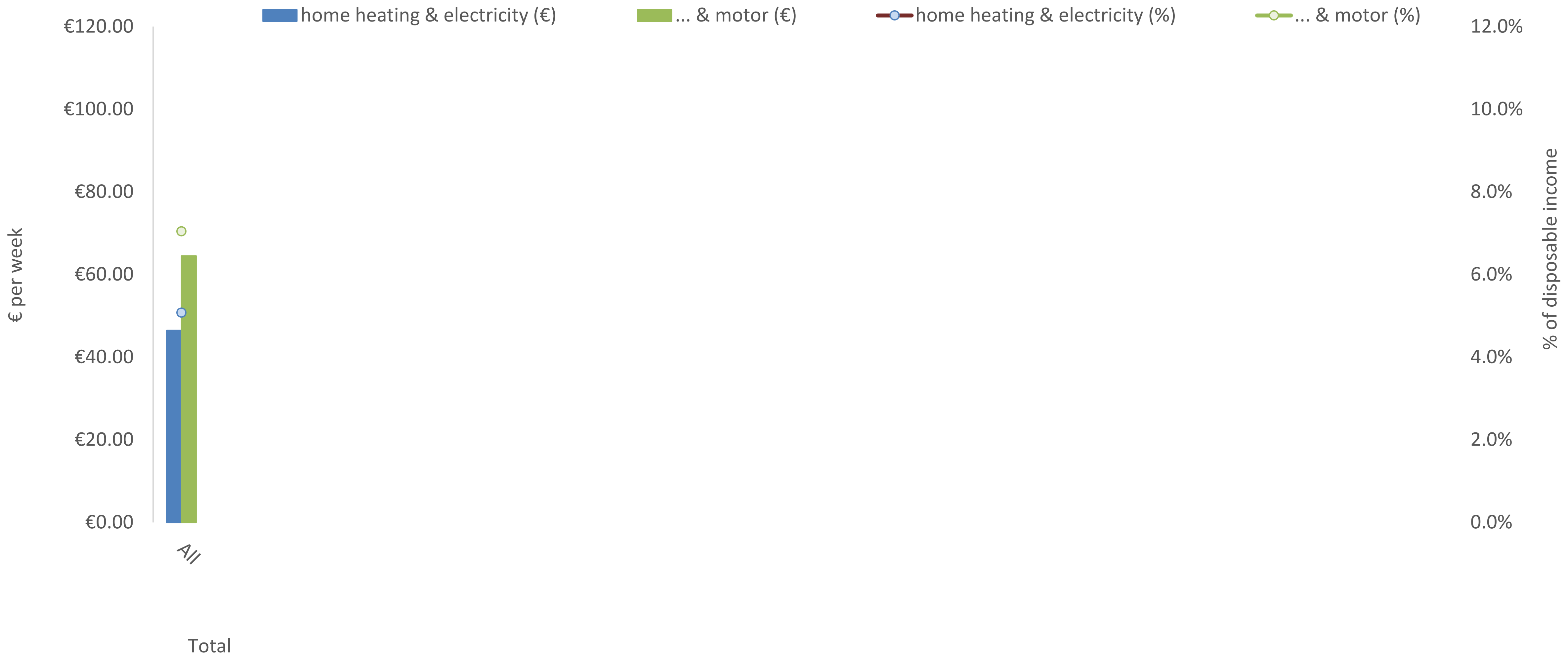
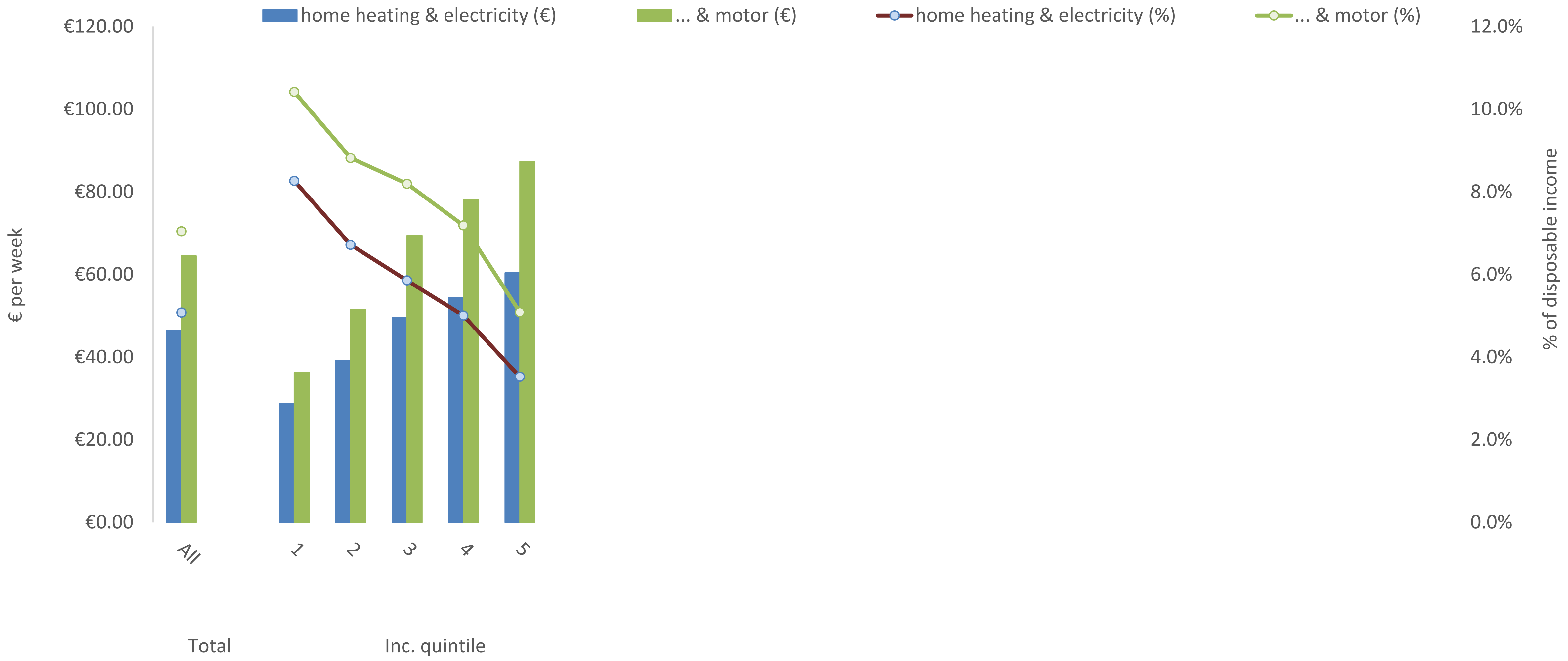
January 2021 - October 2021



Sources: Authors' calculations using eSWITCH version 4.6 run on 2019 SILC data uprated to 2022 terms.
Note: Deciles constructed equivalising income using modified OECD equivalence scale. Spending imputed using approach detailed in Barrett et al. (2022) with change in energy CPI sub-indices between January 2021 and October 2022 used to simulate price rise.

January 2021 - October 2021



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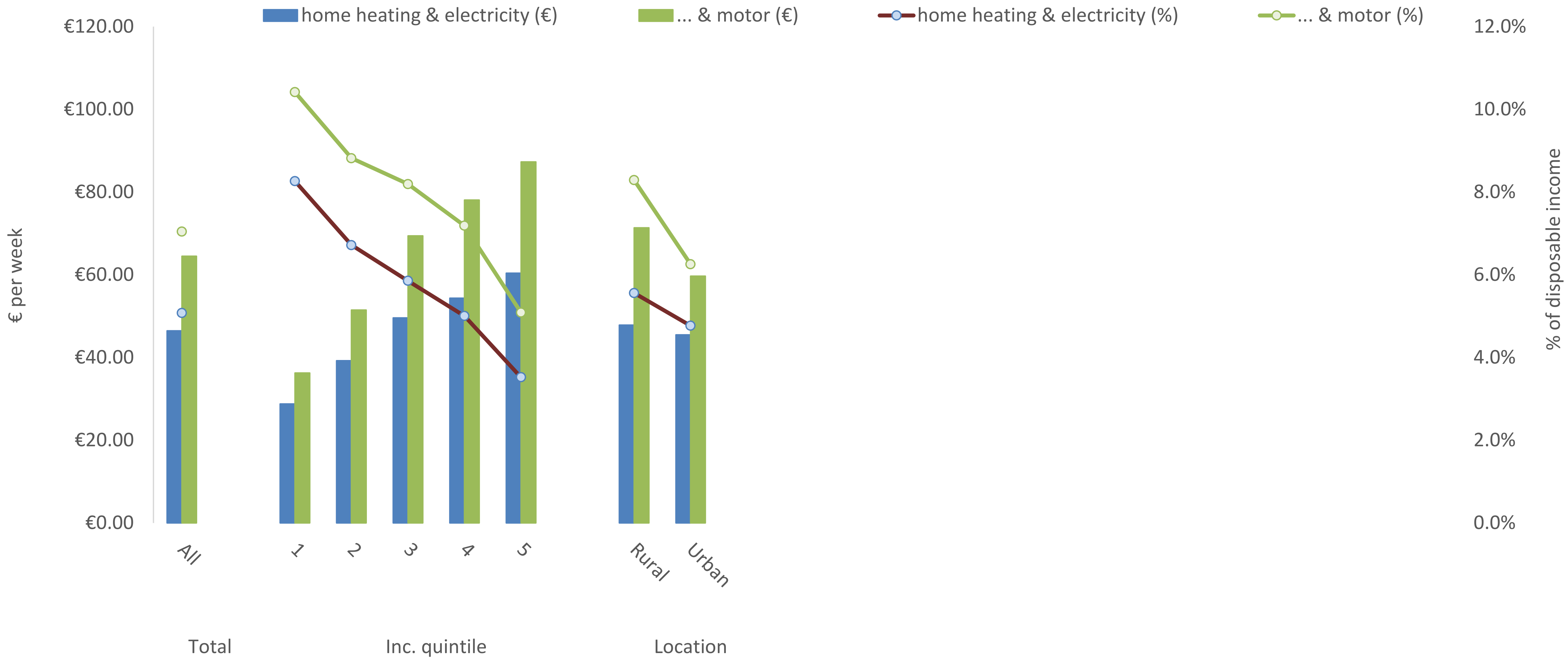

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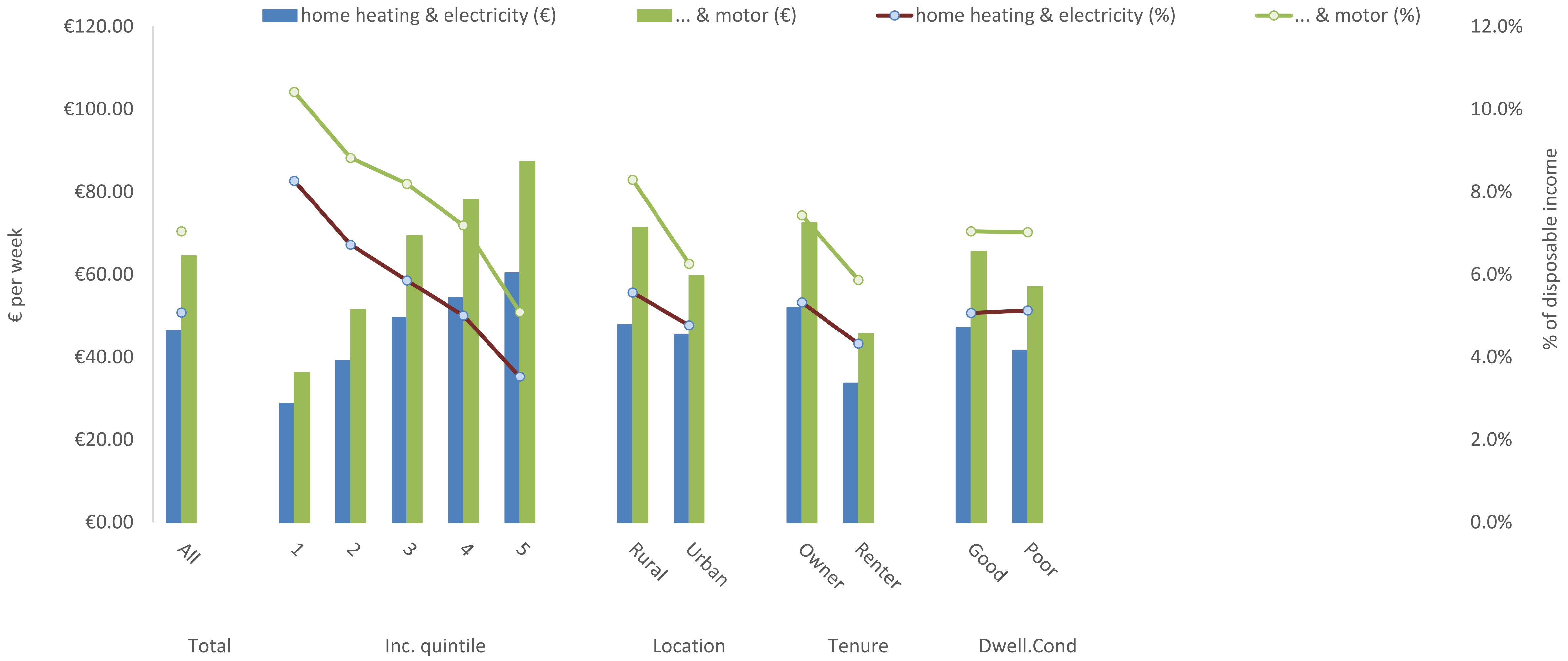

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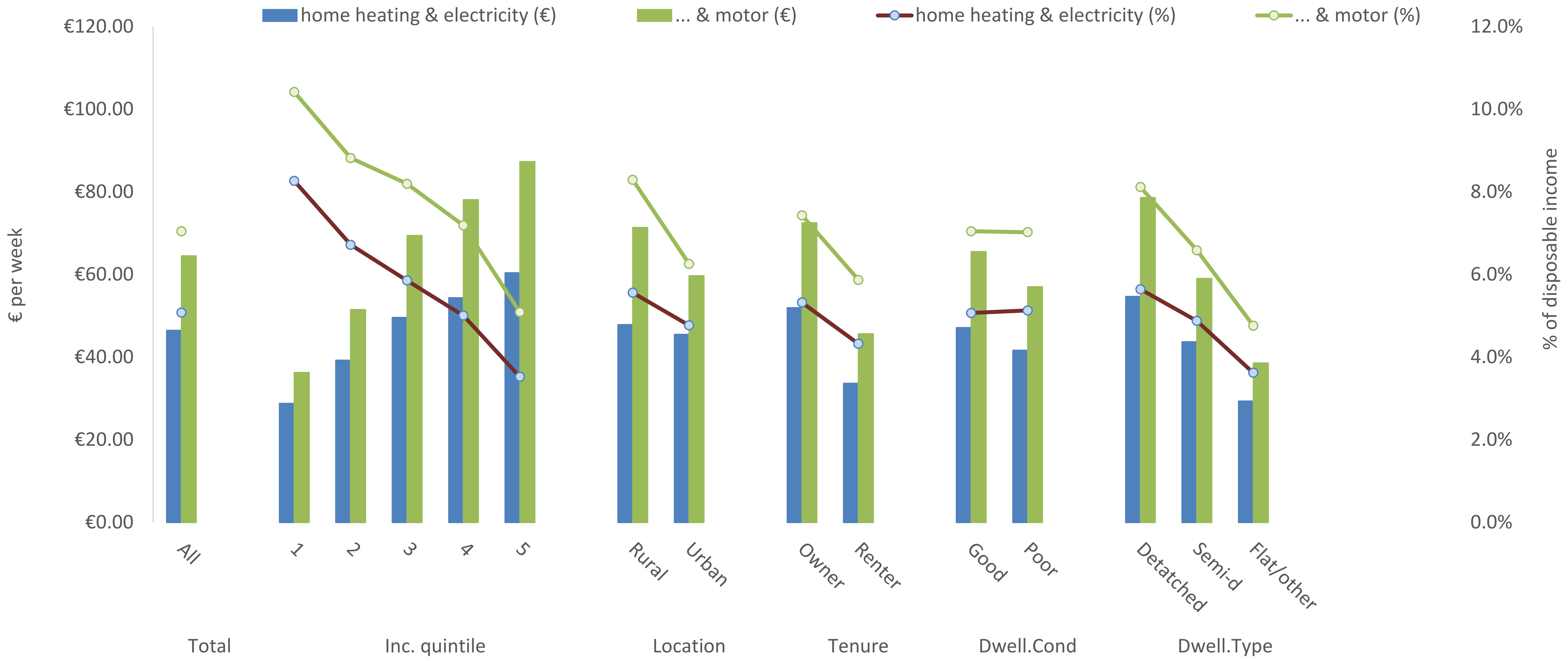

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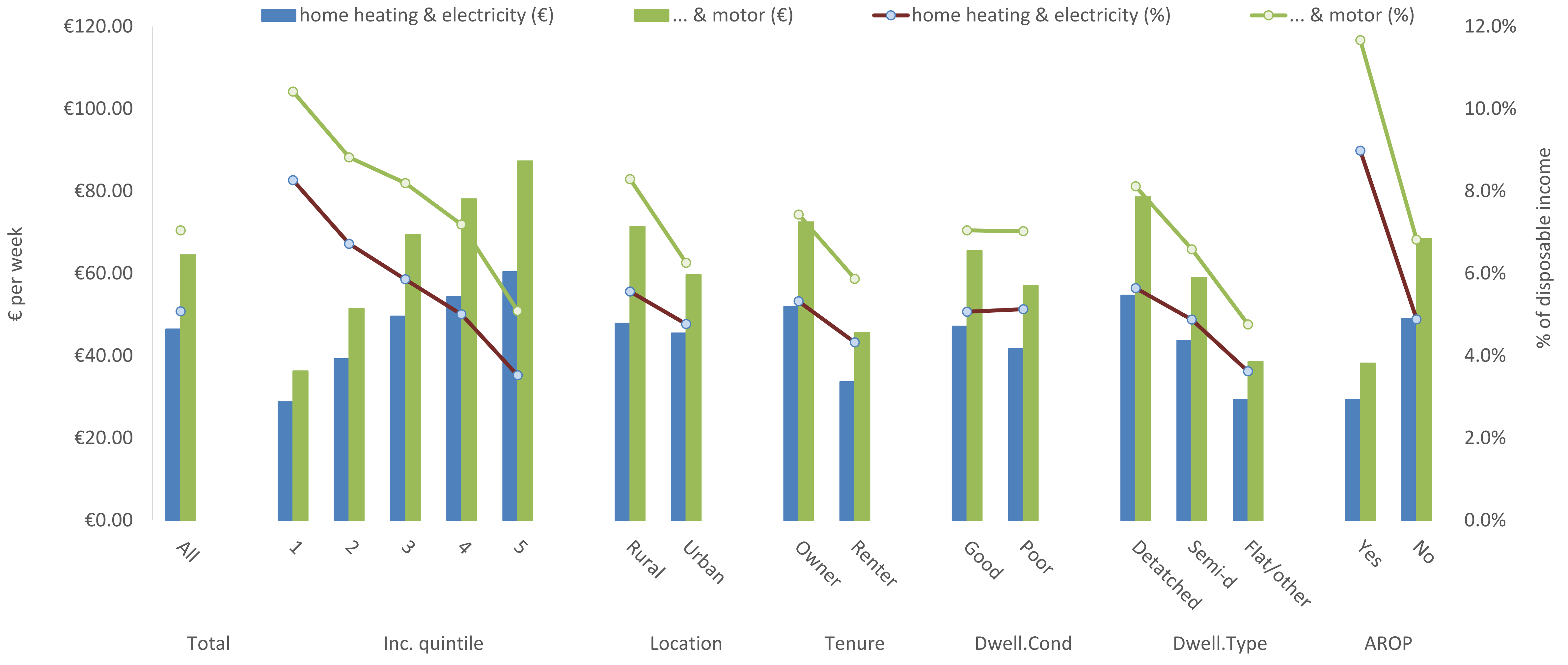

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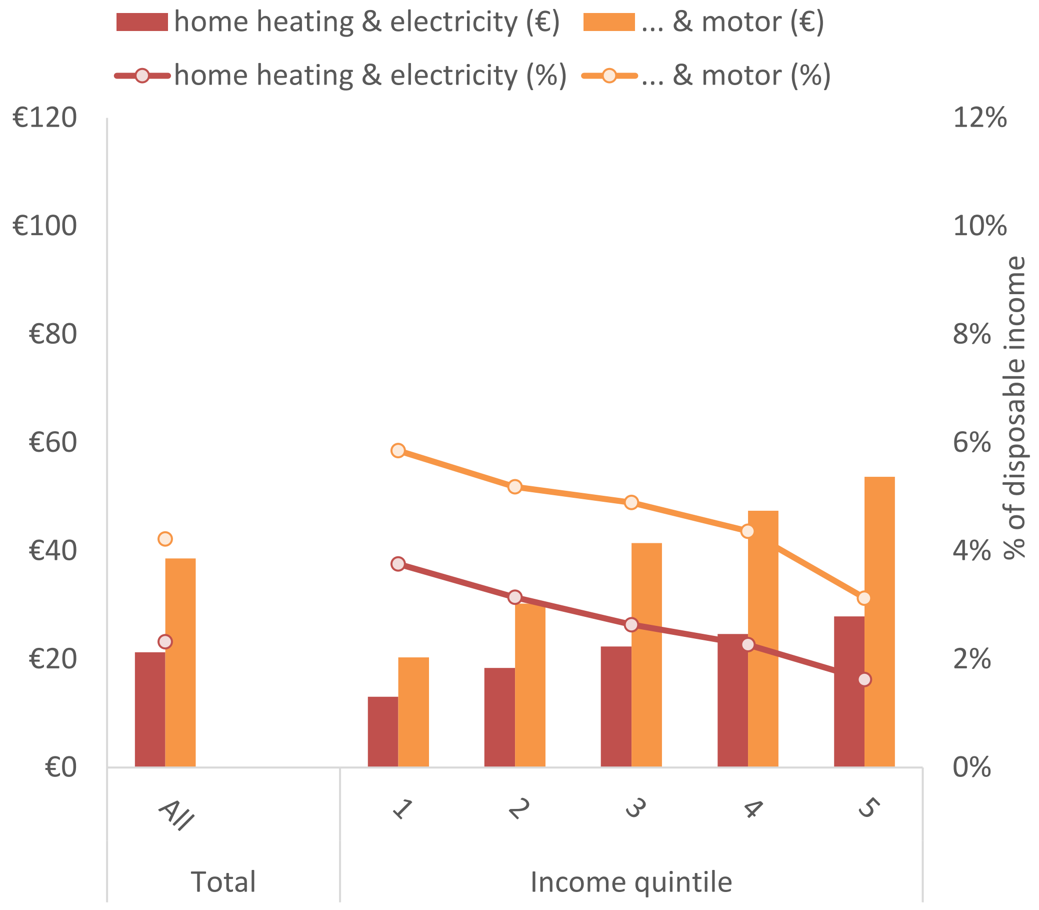
January 2021 – April 2021



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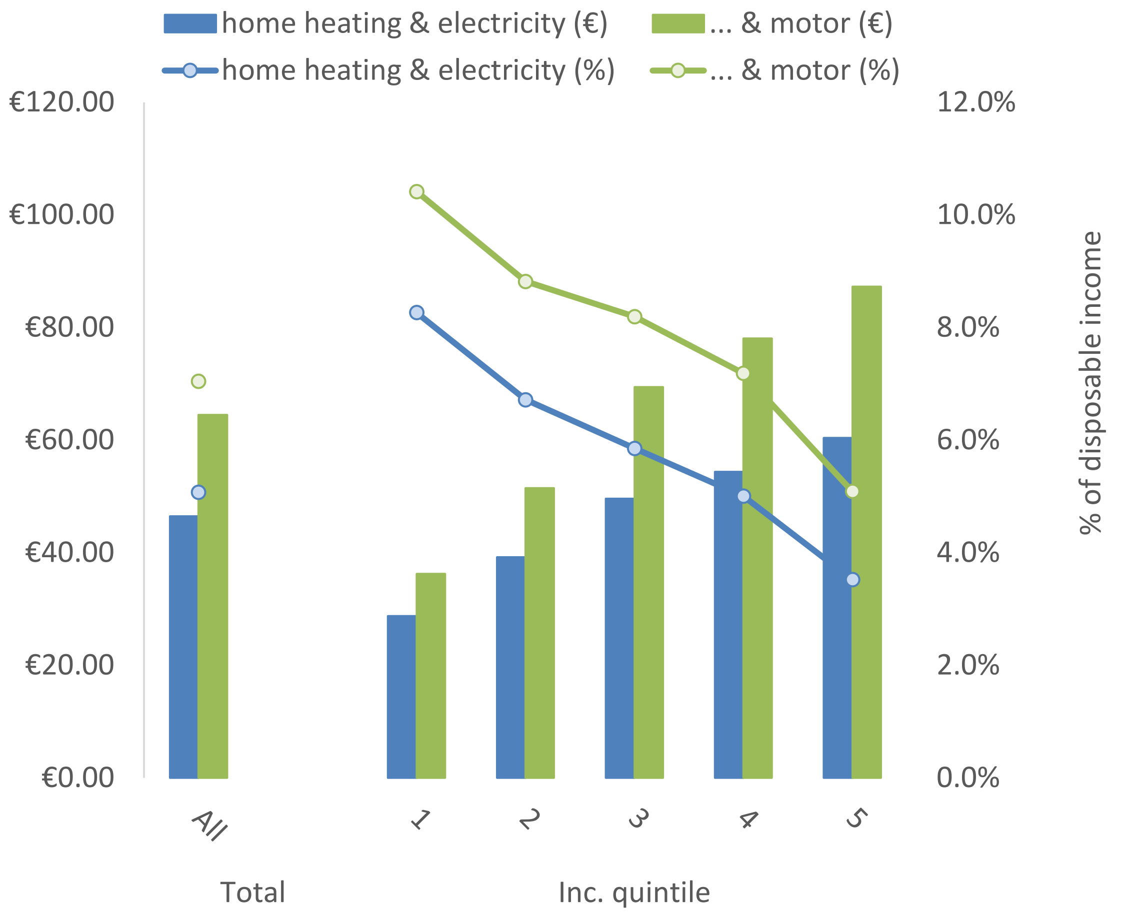

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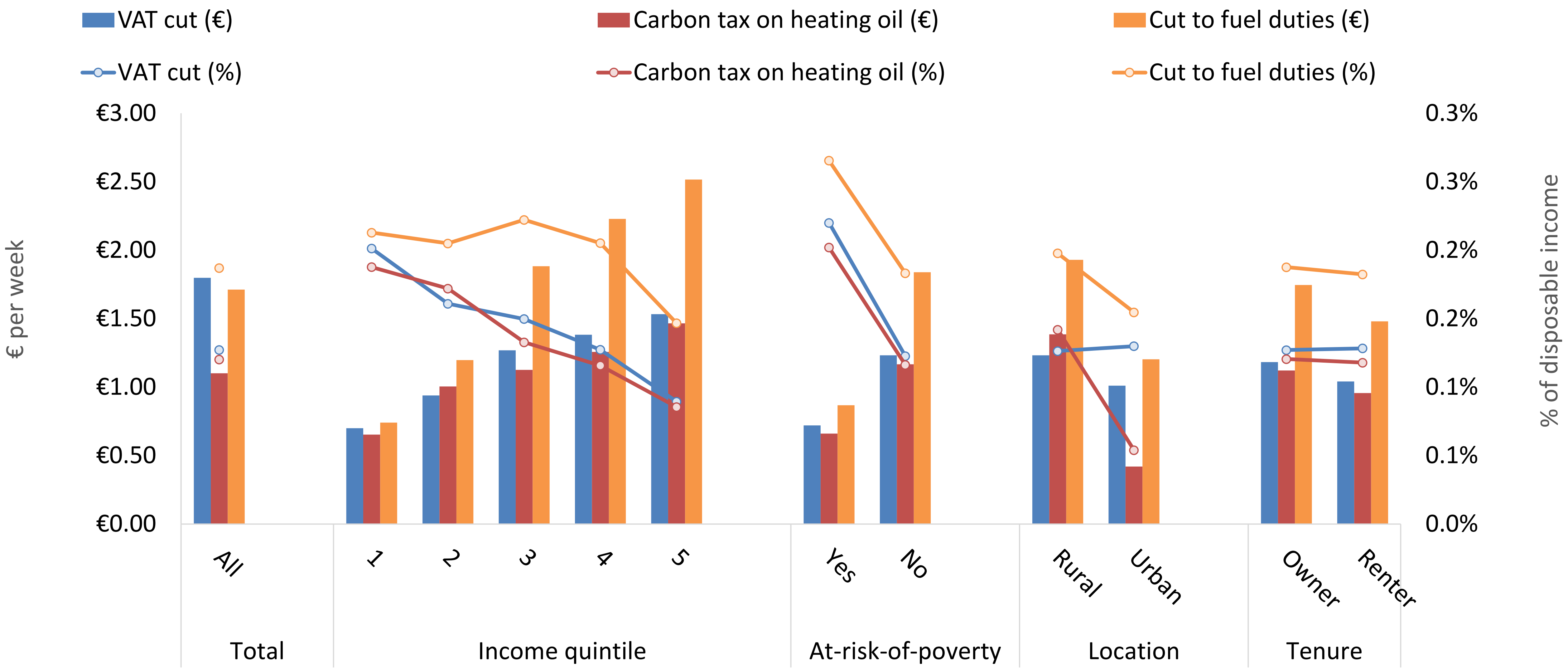
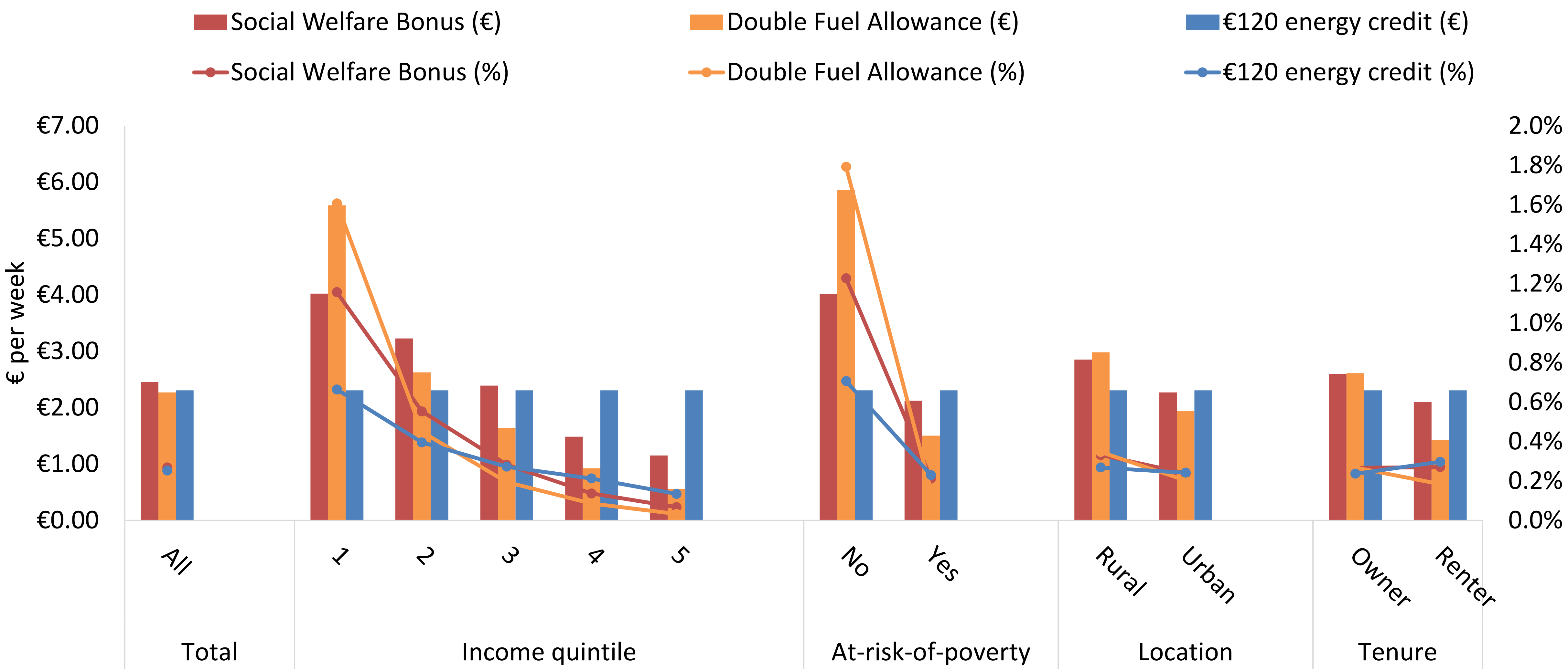
Potential Compensatory Measures

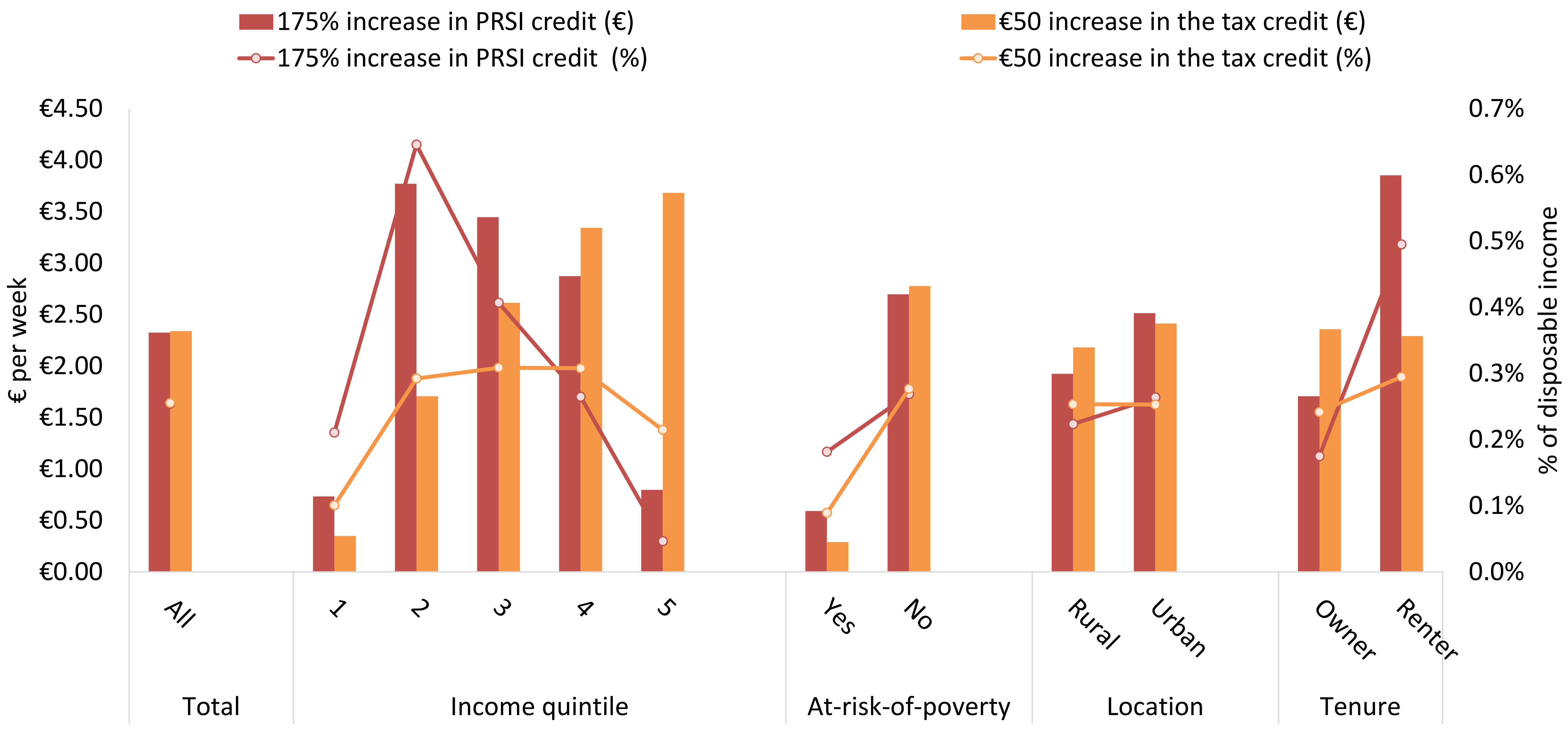
Changes to indirect taxes



Direct transfers



Capturing the remaining households



Further work: Theoretical insight

Future

Some theoretical findings

- Work in progress

Equity effects of energy affordability interventions

Niall Farrell*†[1,2]

[1] *Economic and Social Research Institute, Dublin, Ireland*
[2] *Trinity College Dublin, Ireland*

Further work: Theoretical insight

- Cons
  - Can be limiting - ordinal ranking of policy options

- Pros
  - Can offer flexibility
    - Can give general insight
    - Can add greater nuance to our understanding
    - Easier to directly link electricity market and household

Theoretical findings

Theoretical findings

Analysis:

- Distributional impact of:
    - Lump sum transfer (e.g. electricity credit)
    - Price cap (e.g. explicit price cap or change to VAT)
    - Electricity market intervention (e.g. revenue cap)

- Distributional impacts driven by subsistence consumption

Further work: Theoretical insight

- Evidence to inform policy
  - Models, but this time not populated by numbers.

ratio when a publicly-funded price cap is in place; (U_i^L/U_j^L) as the ratio for a publicly-funded lump-sum transfer; (U_i^{RP}/U_j^{RP}) as the ratio for a market intervention where extracted rents are redistributed through prices and (U_i^{RL}/U_j^{RL}) as the ratio for a market intervention where extracted rents are redistributed by a lump sum:

$$\frac{U_i^{RP}}{U_j^{RP}} = \left(\frac{\phi_j}{\phi_i}\right)^{\gamma} \left(\frac{\phi_i w(1-t_0) - E_0(P_E)}{\phi_j w(1-t_0) - E_0(p_E)}\right) \quad (15)$$

$$\frac{U_i^C}{U_j^C} = \left(\frac{\phi_j}{\phi_i}\right)^{\gamma} \left(\frac{\phi_i w(1-t_0-t_c) - E_0(P_E - \psi_c)}{\phi_j w(1-t_0-t_c) - E_0(p_E - \psi_c)}\right) \quad (16)$$

$$\frac{U_i^L}{U_j^L} = \left(\frac{\phi_j}{\phi_i}\right)^{\gamma} \left(\frac{\phi_i w(1-t_0-t_L) - E_0(P_E) + L_i^c}{\phi_j w(1-t_0-t_L) - E_0(P_E) + L_i^c}\right) \quad (17)$$

$$\frac{U_i^{RP}}{U_j^{RP}} = \left(\frac{\phi_j}{\phi_i}\right)^{\gamma} \left(\frac{\phi_i w(1-t_0) - E_0(p_E - \psi_R)}{\phi_j w(1-t_0) - E_0(p_E - \psi_R)}\right) \quad (18)$$

$$\frac{U_i^{RL}}{U_j^{RL}} = \left(\frac{\phi_j}{\phi_i}\right)^{\gamma} \left(\frac{\phi_i w(1-t_0) - E_0(p_E) + L_i^R}{\phi_j w(1-t_0) - E_0(p_E) + L_i^R}\right) \quad (19)$$

Proposition 1:

When funded by a linear tax increase, a lump-sum transfer is more progressive than a price cap if:

(a) *a price cap is applied to all units of electricity and both policies are of equal cost (i.e. $\sum_i \phi_i w(1-l_i)t_c = \sum_i \phi_i w(1-l_i)t_L$)*

(b) *a price cap is applied to all units of electricity and both policies have an equivalent impact on the affordability of subsistence consumption (i.e. $L_i = E_0\psi_c$)*

The utility ratios of equations (16) and (17) consist of utility-increasing and utility-

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1) Lump sum preferred to price cap in most circumstances

Proposition 1:

When funded by a linear tax increase, a lump-sum transfer is more progressive than a price cap if:

a price cap is applied to all units of electricity and both policies are of equal cost (i.e. $\sum_i \phi_i w(1-l_i)t_c = \sum_i \phi_i w(1-l_i)t_L$)

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2) Lump sum equal to price cap if price cap applied to subsistence consumption only

Proposition 2:

When funded by a linear tax increase, a lump-sum transfer is equally as progressive as a price cap if a price cap is applied to subsistence units of electricity only and both policies are of equal cost $\sum_i \phi_i w(1-l_i)t_c = \sum_i \phi_i w(1-l_i)t_L$.

What are the effects of market interventions (e.g. Revenue cap)?

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Cap on electricity firms' revenue signed off by Cabinet

Updated / Tuesday, 22 Nov 2022 22:09

my.europe EUROPE NEWS

EU approves mandatory energy savings and cap on company revenues

COMMENTS

By **Jorge Liboreiro** & **Alice Tidey** • Updated: 30/09/2022

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3) Market revenue cap, redistributed to households, is more progressive than a lump-sum transfer

Proposition 4:
A lump-sum transfer is less progressive than an equivalent market revenue cap (i.e. where $\sum_i L_i = \sum_i E_0 \psi_R$*).*

4) Redistribution of revenue cap revenues through welfare payments preferred to price adjustments

Proposition

It is more progressive to redistribute firm inframarginal rent through a lump sum transfer than through an equivalent retail price adjustment on all units of electricity.

Conclusion

Takeaways

– Electricity expenditure appears to be a strong component of energy poverty rates.

– Certain households more likely to go without adequate heat, particularly renters and apartment dwellers.

– Recent price increases have led to a considerable burden on low-income households

Conclusion

Takeaways

– If the objective is to shield vulnerable households:

- Targeted transfers > Lump-sum transfers > Price transfers

– A revenue cap is a more progressive way of financing transfers

- Must be carefully designed: must avoid creating perverse electricity market incentives

Thank you!

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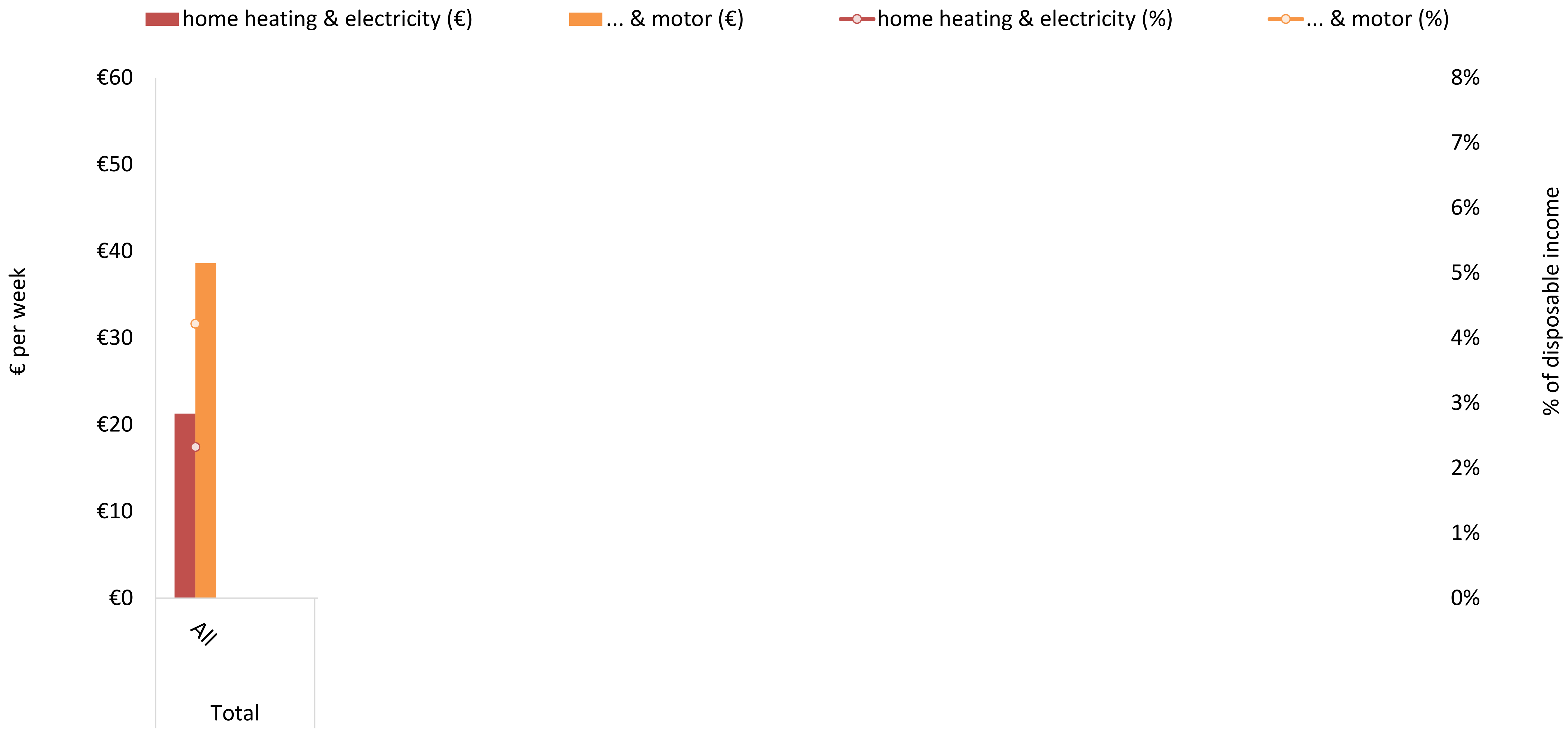
Impact of price increases: Jan 2021 – April 2022



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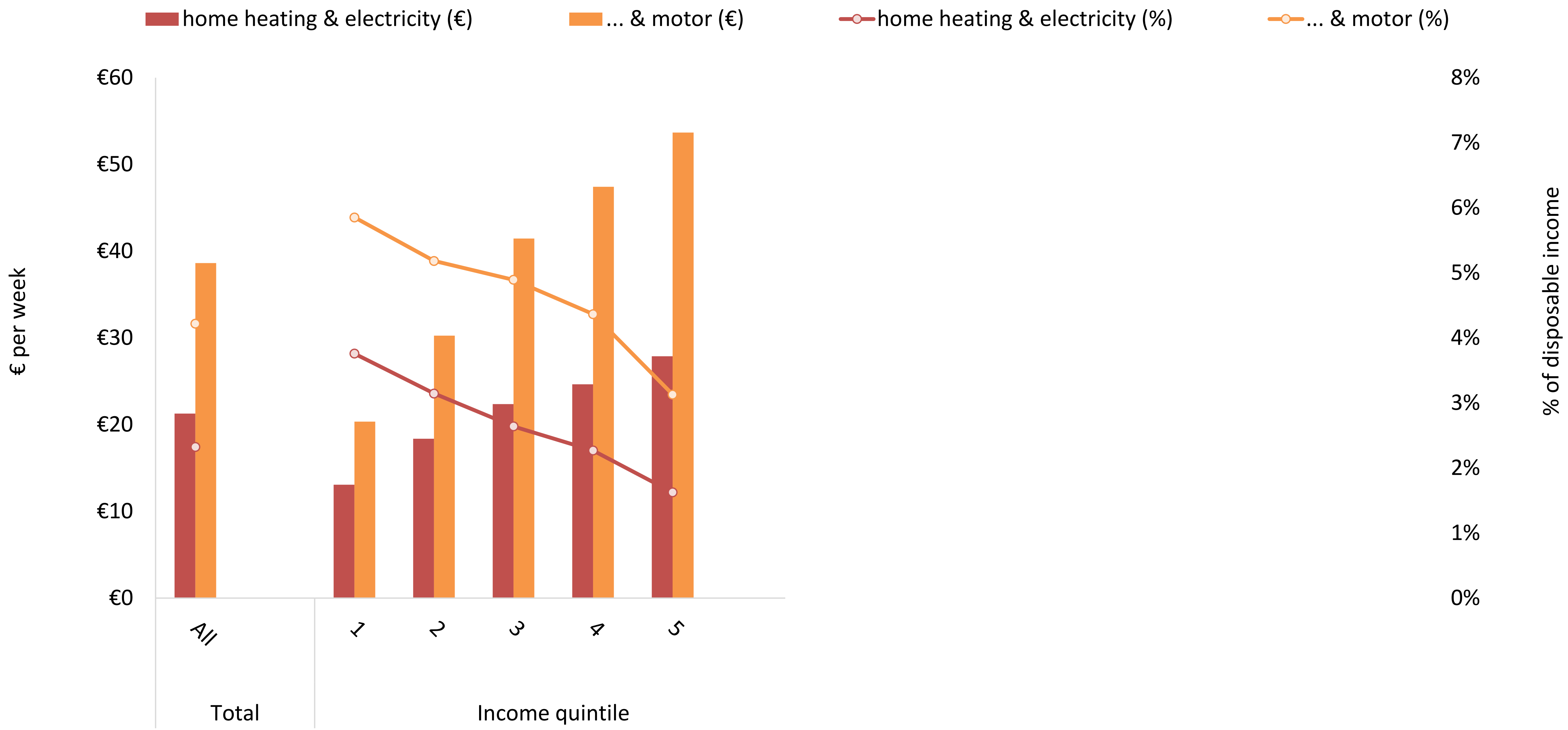

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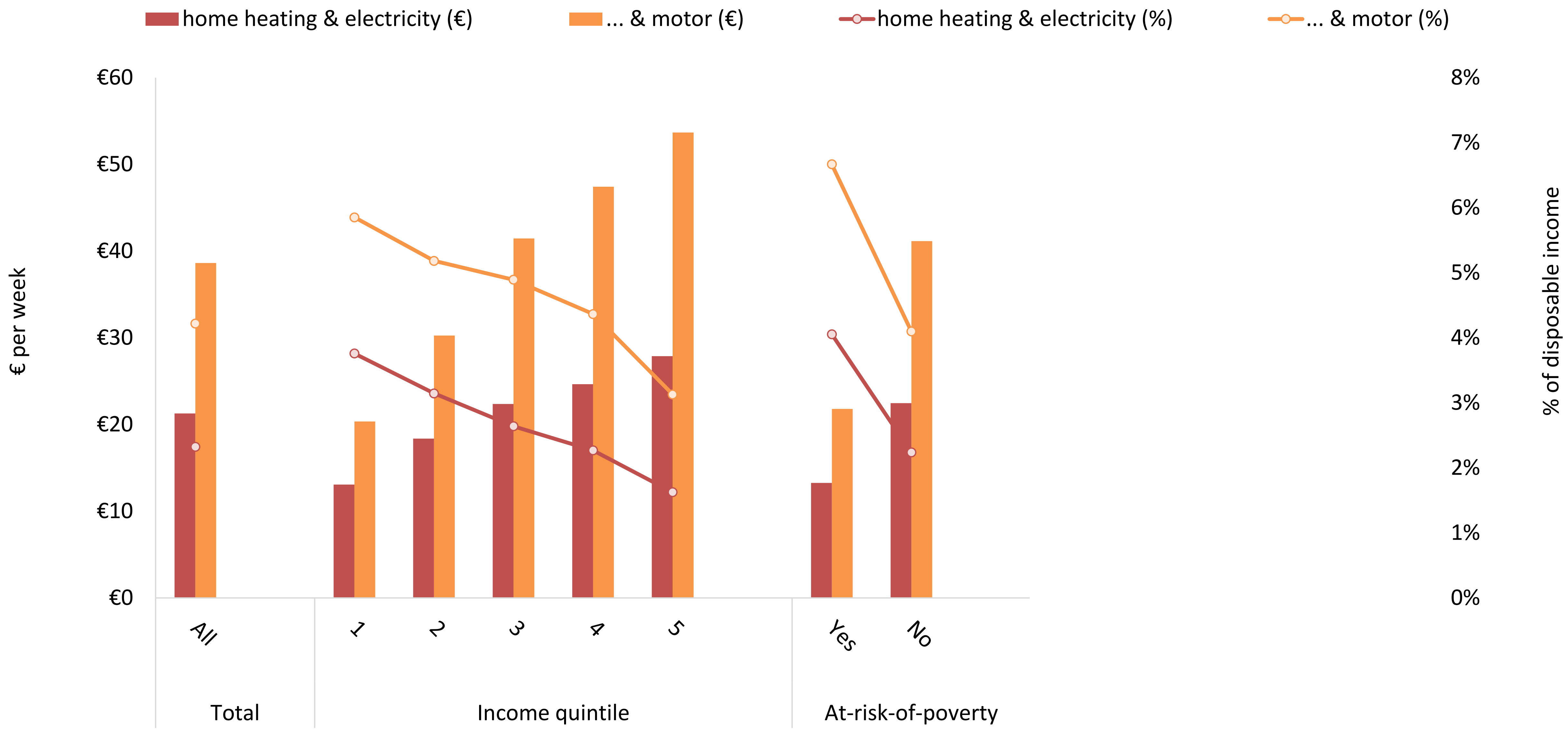

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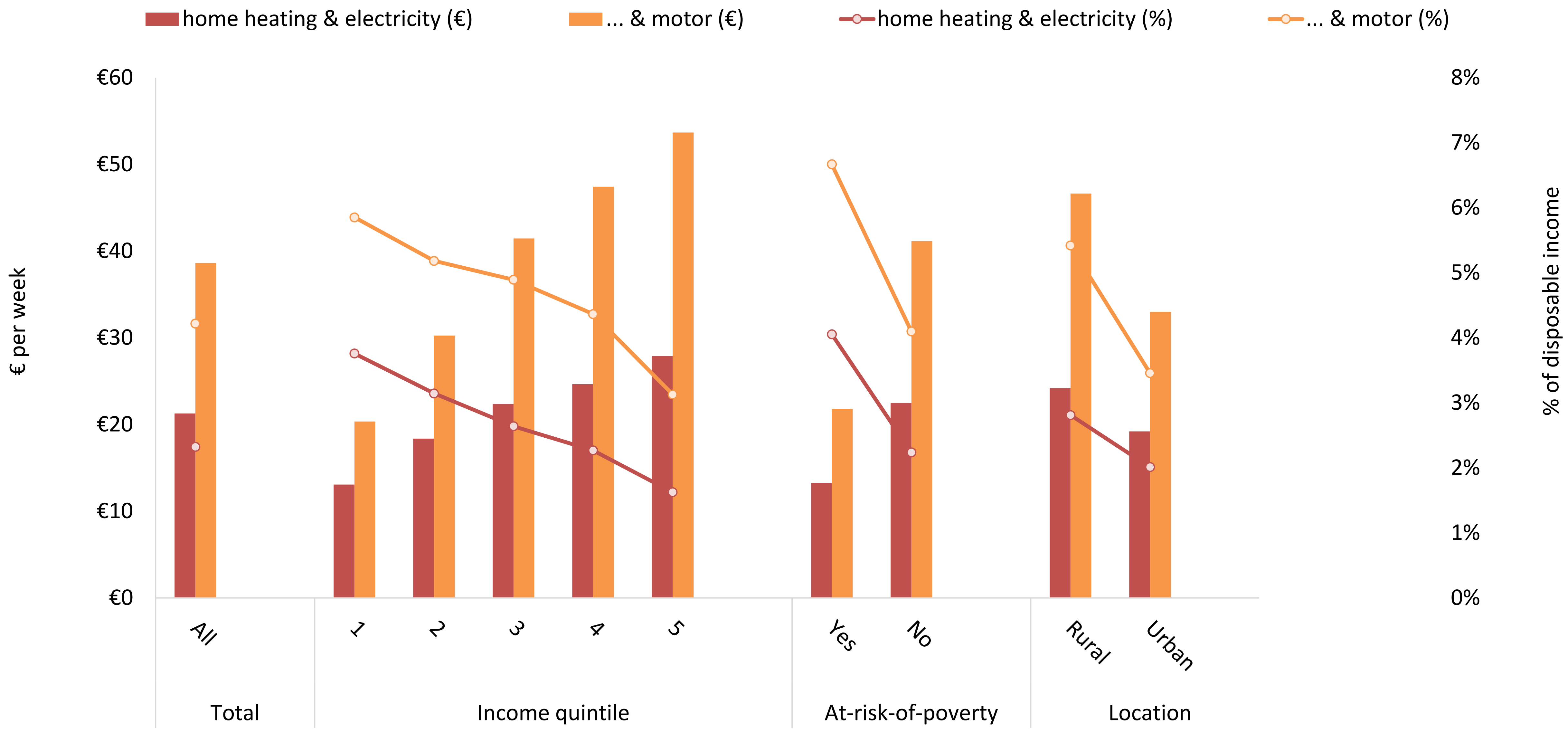

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