Household burglary victimisation and protection measures:
Who can afford security against burglary and in what context does it matter?

Andromachi Tseloni (NTU)

Crime Surveys User Meeting

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Research Question

- Is domestic burglary negatively affected by security

- …for all socio-economic groups and area types?

Outline

- Definitions

- Motivation – Context

- Data - Levels of analysis

- Statistical model - Analysis

- Results - Discussion

- Policy Implications

- Limitations

- Questions - Suggestions

Security and Visible home protection

- No security

- Less than basic security (any)

  - Burglar alarm, Dummy alarm box, Security chains, Indoor lights on a timer or sensor switch, Outdoor lights on a timer or sensor switch, Bars or grills on windows, Bars, a metal grill or a bar door, Dog, Double or deadlocks, OR Window locks

- Basic security

  - Double or deadlocks AND
  - Window locks

- Enhanced security

  - Basic security plus any other device
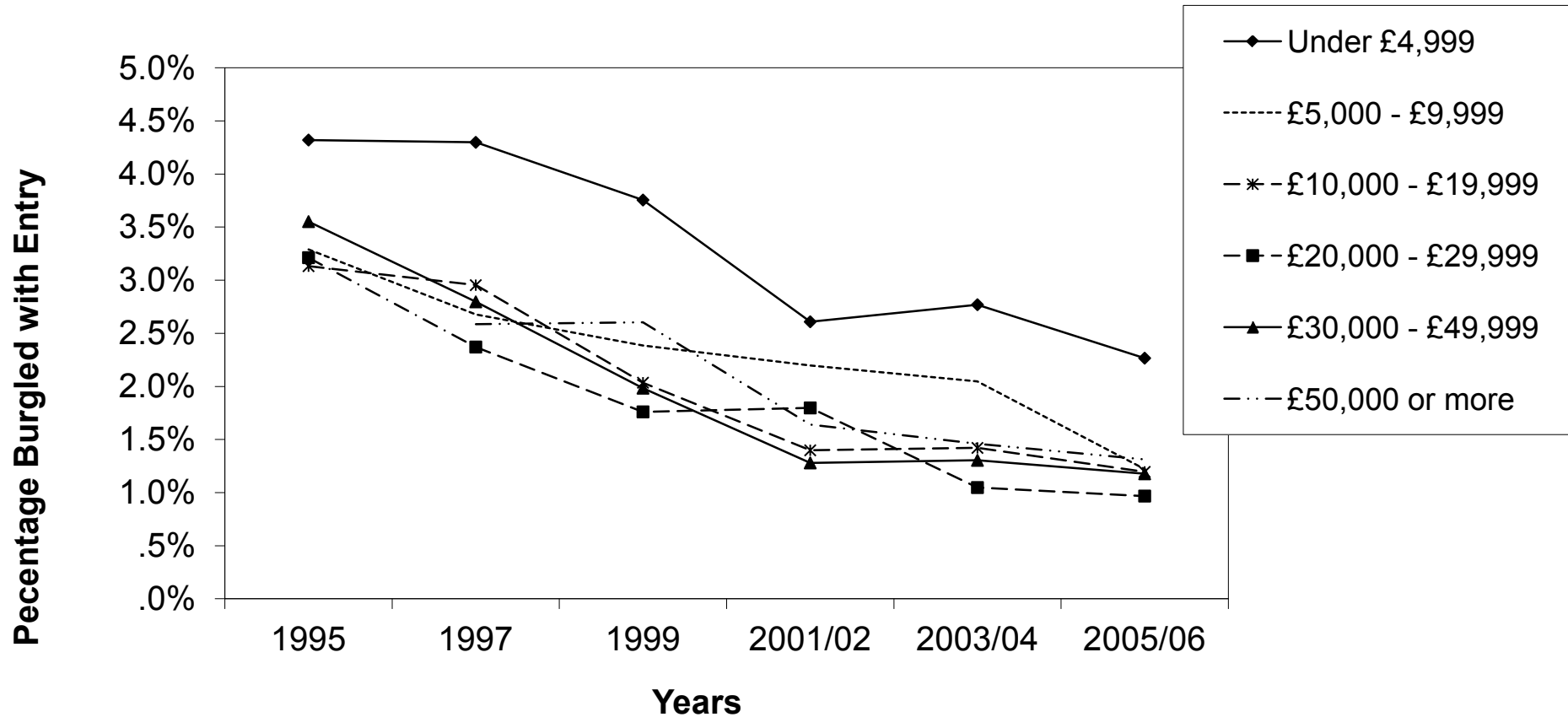
Visible from the outside (any) :

- Burglary alarm

- Security gate

- Bars/ grills on any window

- CCTV camera

- Security gate at entrance to property/ estate

- Estate/ Block security lodge /guards
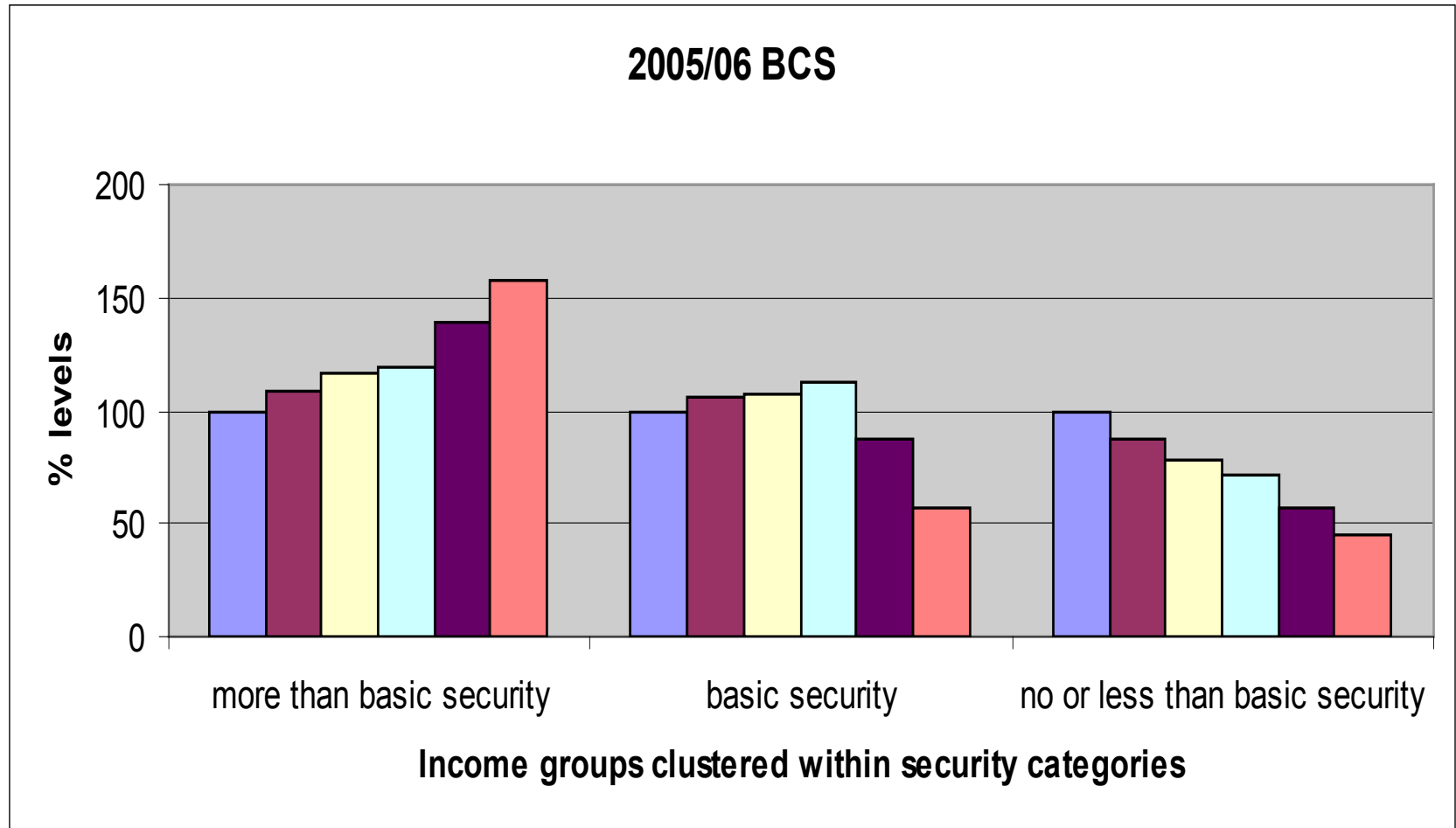
- Entry phone

- Other

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Motivation

- Crime is a distributive harm

- Security from crime is a distributive good

- Enhanced security contributes to burglary falls, especially for the lower income groups.

- Burglary risk and incidence are positively associated with visible home protection.

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Trends in domestic burglary with entry risk across income groups, 1995-2005/06 (Source: Tilley et al. 2011)

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Security indexed to lowest income group (ibid.)

2005/06 BCS

Chart showing % levels by income groups clustered within security categories: more than basic security, basic security, no or less than basic security.

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The data

- 2008-09 Special Licence British Crime Survey (BCS)
  - Background household information
  - Neighbourhood attributes
  - **Visible home protection**
  - Routine activities
  - Victim module: Crime experiences, Burglary with entry
  - (my) Sample size: 39,841

- Module C on Crime Prevention, BCS 2008/9
  - **Security devices**
  - (my) Sample size: 9,886

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Levels of analysis: max 3

1. Households (N=39,841) are nested within

2. Lower Super Output Areas (LSOA's N=11,830) which in turn are nested within

3. Crime and Disorder Reduction Partnerships (CDRP's, N=372)

Household Characteristics   Level 1

Region   Level 2 or 3

Multivariate multilevel logit of joint binary outcomes (Yang et al. 2000)

$$\log it(\pi_{ijk}) = \sum_{s=1}^{s=3} z_{sijk} \left(\beta_{0s} + \sum_{p=1}^{p=P} \beta_{ps} x_{pjk} + u_{sjk} + v_{sk} \right)$$

$$i, s = 1,2,3; \; j = 1,2,...9886; \; k = 1,2,...371$$

$$Y_{ijk} = \text{Response variable or outcome} \sim \text{Bin}(1, \pi_{ij})$$

$$z_{sijk} \begin{array}{l} = 1, s = i \\ = 0, s \neq i \end{array} : \text{flags for outcomes, responses;}$$

$$x_{pjk} : \text{covariates; } p=1,2...,P$$

$$\beta_{0s}, \beta_{ps} : \text{intercept and fixed effects on each response variable}$$

$$u_{sjk} : \text{random variation of response variables between households}$$

$$v_{sk} : \text{random variation of response variables between CDRP's}$$

Endogenous (dependent) variables - Responses or Outcomes for each household, $Y_{ijk, \, i=1, \, 2, \, 3}$:

- Burglary with entry risk

- Security type
  - **Enhanced security**
  - Basic security
  - Less than basic security
  - No security

- Visible home protection

Exogenous (independent - control) variables, X_{pjk}

- Demographic (male, age, non-white ethnicity of HRP)

- Social (number of adults, children, social class)

- Tenure and accommodation type

- **Household income** and number of cars

- Length of residence in the area

- Routine activities (hours home left empty on a typical day)

- **Location** (main/side road, cud-de-sac, housing estate)

- **Neighbourhood watch**

- Area type (inner city, urban)

- Government Regions of England and Wales, X_k

Analysis

- Model Types:
  - Single equation multilevel model of burglary with entry risk over household attributes including security and visible home protection (Module C data).
  - Two equations (bivariate) multilevel of burglary with entry risk and visible home protection (entire BCS 2008-09 data) or security (Module C data) over household attributes including visible home protection.
  - Three equations (trivariate) multilevel of burglary with entry risk, enhanced security and visible home protection over household attributes (Module C data).

- Adding gradually covariates starting from income, location and (where relevant) burglary prevention.

- All coefficients of variables with p-value of $\chi^2_{n-1} < 0.10$ in at least one equation of the model were retained.

Security direct effects on the odds of burglary with entry risk from single equation models (BCS2008-09, Module C)

Unconditional effects

Conditional effects (excl. visible home protection)

- Enhanced security: -80%

- -83% (-79%)

- Security type:

  1. Enhanced security: ns
  2. No or less than basic security +405%
  3. Basic security

  1. ns
  2. +348% (+426%)
  3. base

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Burglary with entry risk is correlated with:
(correlation values from bivariate unconditional +*household characteristics* +regional dummies models, BCS2008-09, Module C)

Between CDRP's

- Enhanced security +0.73, +*0.76,* 0

- At least basic security +0.36 (p-value ~ 0.10)

- Less than basic security

-0.36 (p-value ~ 0.10)

- No security ns

Between households

- Enhanced security –0.10 -*0.09*, -0.09

- At least basic security -0.12

- Less than basic security +0.12

- No security +0.20

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Estimated fixed effects of income on joint burglary with entry risk and enhanced security availability (lighter bar=ns) BCS 2008-09, Module C.
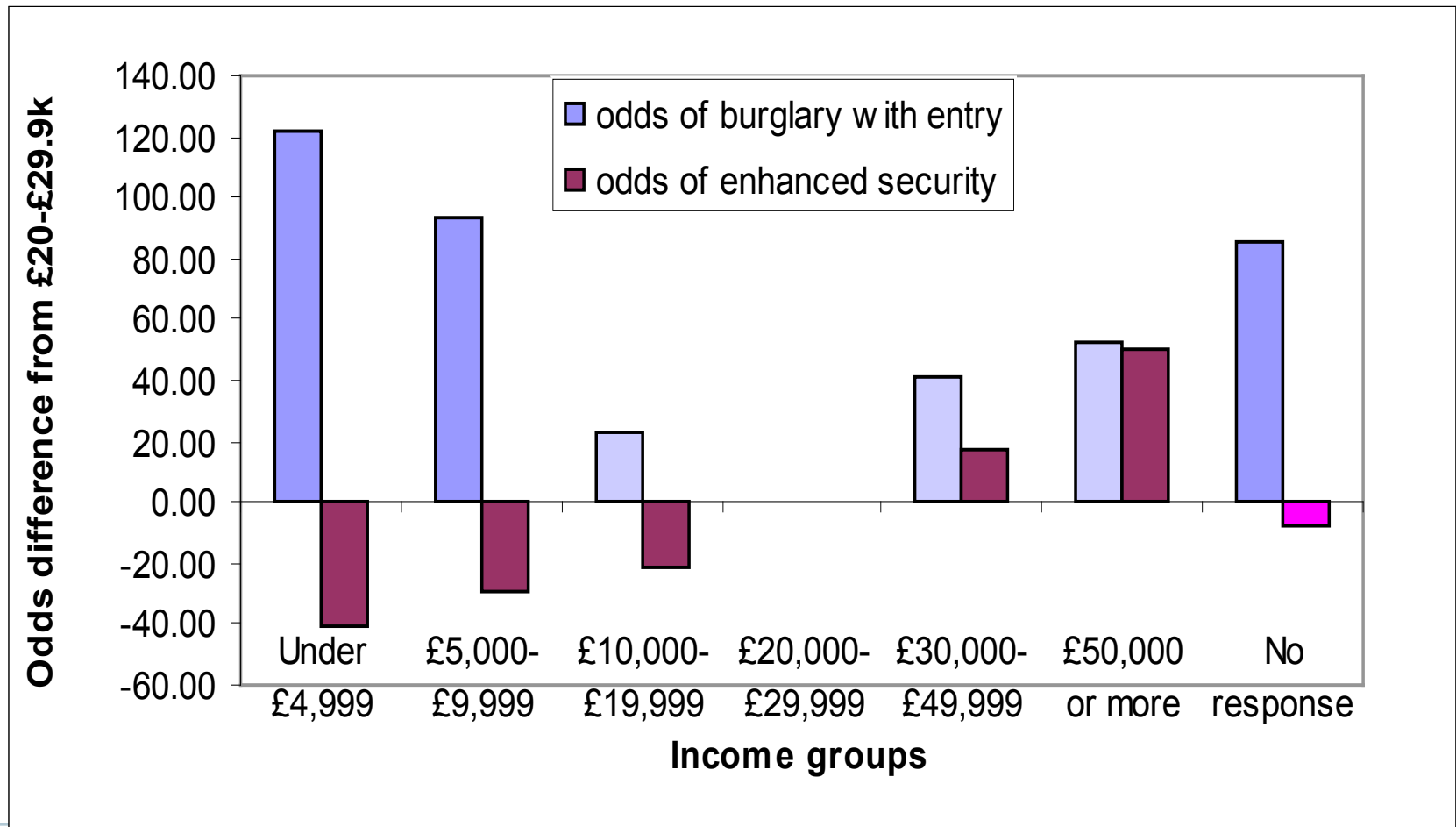
Risk (R) and protective (P) factors of ...

Burglary with entry risk

- No car (R+)
- Children (R+)
- Semi-detached house (R+)
- Neighbourhood watch in the area (P-)
- Professional social class (R+)
- 2-5 years in the area (P-)
- Urban area (R+)
- Older age of HR person (P-)
- Single adult household (R+)
- No household income response (R+)
- Living in the South West or Wales (P-)

Enhanced security (*excl. VHP*)

- Inner city or Urban area resident (R+)
- Private (& *social*) renting (P-)
- Single or 3+ adults household (P-)
- Annual household income <£20,000 (P-)
- Ethnic minority HR person (P-)
- Non-detached house (P-)
- No or just one car (P-)
- 5-10 years in the area (R+)
- Indefinable social class HRP (P-)
- Older age of HR person (R+)
- Housing estate (R+)
- *Neighbourhood watch in the area* (R+)
- Living in the South West or Wales (P-)

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Burglary with entry risk and visible home protection
(correlation values from bivariate unconditional +*household characteristics including routine activities* +regional dummies models, BCS2008-09)
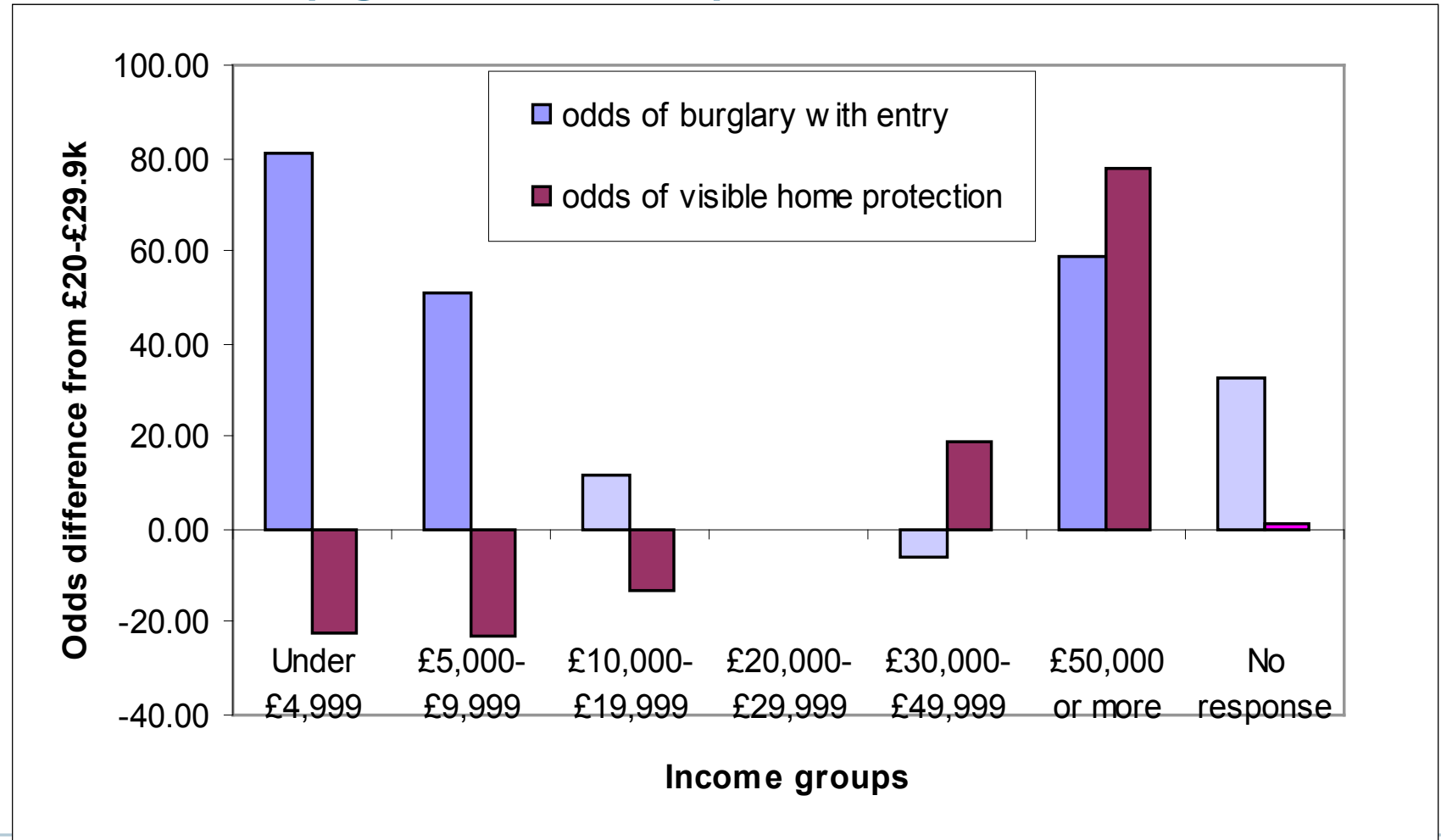
Between CDRP's
- +0.41, +*0.42,* +0.46

Between LSOA's
- −0.18, -*0.03*, -0.01

Between households
- +0.05 ns, +*0.01,* +0.01

Estimated fixed effects of income on joint burglary with entry risk and visible home protection (lighter bar=ns) BCS 2008-09.

Chart legend:
- odds of burglary with entry
- odds of visible home protection

Y-axis: Odds difference from £20-£29.9k (−40.00 to 100.00)

X-axis (Income groups): Under £4,999 | £5,000-£9,999 | £10,000-£19,999 | £20,000-£29,999 | £30,000-£49,999 | £50,000 or more | No response

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Risk (R) and protective (P) factors of …

Burglary with entry risk

- Social Renting (R+)

- Single adult household, Annual household income ≥ £50,000, Inner city or Urban area resident (R+)

- No car, Ethnic minority HR person, Side road property (R+)

- Main road property, Private renting, Home empty on a typical day 3 - 5 hours (R+)

- Flat or maisonette, Living in the South West (P-);

  No household income response (R+)

- Older age of HR person (P-)

Visible home protection

- Living in the North (North East, North West, Yorkshire & Humberside) (R+)

- Living in the Midlands (R+); Terraced house (P-)

- Semi-detached house (P-); Flat or maisonette, Neighbourhood watch in the area, Living in Greater London (R+)

- Owner – occupied property, Annual household income ≥ £50,000, Inner city, Less than 2 or between 5 and 10 years at the address (R+); No car (P-)

- One car, Indefinable social class HRP, Living in Wales (P-); 3+ cars, Urban area, Main road or Cul-de-sac property, between 2 and 5 years at the address (R+)

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Discussion

- Less than basic security significantly increases burglary with entry risk *ceteris paribus*.

- A household's lack of security is moderately related to increased burglary risk *overall*.

- Household and area characteristics are mediating factors between security availability and burglary risk.

- The (negative) association between households' burglary risks and their access to enhanced security is low (overall and net).

- Enhanced security across CDRP's closely follows the areas' burglary risk. This high (positive) association is totally explained by area type and region of England and Wales.

- Therefore investment in security is proportionate to area burglary risks but household vulnerability offers a mixed bag.

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Policy Implications

- The profile of households which lack enhanced security (BCS, Module C) or visible home protection roughly matches that of households at greatest burglary risk (from the entire BCS data models). They are unsurprisingly households which cannot afford it…

- Prevention efforts should be tailored to match household vulnerability to burglary (as they do with area risks) rather being indiscriminately applied and to be more than generic 'window dressing'.

- Security devices and levels should be proportionate to what triggers the crime: Opportunity-driven burglaries against low income households may be thwarted by basic security (double or deadlocks AND window locks) but the organised breaks-in against the richest can be addressed by more than enhanced security and /or specific super-clever devices.

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Limitations

- The burglary with entry models which draw on the BCS Module C data offer only a partial picture of household types at risk. Need to extent the Crime Prevention BCS Module to the entire BCS sample and ask security questions to all burglary victims.

- Middle Super Output Area identification does not exist in the Special Licence data set. The variation of burglary and security between MSOA's has not been examined.

- Area characteristics, i.e. demography, economy, housing standards etc., have not been incorporated in the analysis.

- Households with high burglary incidence (the mean number of crimes) have partially different profile than those at high risk. Security has not been examined with respect to repeat burglaries .

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Thank you

Comments – Suggestions

email: andromachi.tseloni@ntu.ac.uk

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