Compliance decisions on voluntary energy conservation agreements in Hong Kong’s shopping malls

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Research question

- Why do different voluntary energy conservation agreements have different participation and compliance rates?
Behavioral response to thermal comfort

Fig. 7. Probit regression models for thermal preferred temperature.
Voluntary energy conservation agreements

1. 25.5°C thermostat setting
2. Earth Hour
3. De-lamp (indoor lighting reduction)
4. Voluntary Charter Scheme on external lighting reduction
Focused energy consumers

Energy consumption in retail sector

- Lighting (%)
- Space conditioning (%)

Source: Electrical & Mechanical Services Department, 2014

Monthly average electricity consumption (left axis, expressed in percentage terms relative to the monthly average over a year) and temperature (right axis) in Hong Kong from 1981 to 2010

Source: Hong Kong Observatory, 2012; Census and Statistics Department, 2013
Theoretical framework

- Economic theory on crime and punishment
  - Expected costs
  - Expected benefits
Formal survey

- Dates: from 29 June to 16 August 2015, for every other week from Monday to Thursday and from Saturday to Sunday
- Time: between 2:00pm and 7:00pm, with a one-hour break from 4:00pm to 5:00pm
- Number of people approached: 4029
- Number of samples: 1868
- Response rate: 46.4%
Selected shopping malls

1. Pacific Place (HK)
2. Harbour City (Kowloon)
3. Festival Walk (Kowloon)
4. New Town Plaza (NT)
5. Uptown Plaza (NT)
6. New Jade Shopping Arcade (HK)
7. Wong Tai Sin Plaza (Kowloon)

- High-end malls
- Low-end malls
Basic information on samples

- **Tourists, 345, 18%**
- **New Territories, 533, 29%**
- **Kowloon, 684, 37%**
- **Hong Kong Island, 296, 16%**

![Bar chart and pie chart](image-url)
Income category of local visitors

- Uptown Plaza
- New Town Plaza
- Wong Tai Sin Plaza
- Harbour City
- New Jade Shopping Arcade
- Pacific Place
- Festival Walk
- Hong Kong Population

- >$60000
- $30000-$60000
- <$30000
Origins of tourists

Tourists over June-August 2015:
14.9 million in total, 11.7 million (79%) from Mainland China,
6.9 million (46%) overnight visitors
Source: HKTB, 2015
EXPLAINING COMPLIANCE DECISIONS
Perception on indoor air temperature

![Graph showing satisfaction on indoor air temperature]

- Not satisfied (14.7%)
- Satisfied (85.3%)

-0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0%

Percent

-3 Cold -2 Cool -1 Slightly Cool 0 Neutral 1 Slightly Warm 2 Warm 3 Hot

Satisfaction on indoor air temperature
Response to indoor air temperature

**Response to Hotness**
- Leave this mall: 18%
- Leave this spot: 3%
- Complain to the manager: 35%
- Take off clothes: 18%
- Do nothing: 26%

**Response to Coldness**
- Leave this mall: 9%
- Leave this spot: 1%
- Complain to the manager: 29%
- Put on clothes: 41%
- Do nothing: 20%
The advertisement effect of external lighting
Probability of confirming non-compliance

Easiness of information acquisition on the mall’s participation in the agreements

- Very difficult
- Difficult
- Average
- Easy
- Very easy

- [25.5°C]
- [De-lamp]
- [Earth Hour]
- [Voluntary Charter Scheme]
Voluntary penalty on non-compliance

Potential penalty of non-compliance

- [25.5°C]
- [De-lamp]
- [Earth Hour]
- [Voluntary Charter Scheme]
Conclusion

People tend to react more strongly to hotness than to coldness.

It is difficult for the public to detect voluntary compliance.

Voluntary penalty on non-compliance is universally low.
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The postdoctoral fellow should have received a Ph.D. degree in energy economics, energy policy or related fields. **He/she should be familiar with at least one of the major bottom-up models**, such as TIMES (The Integrated MARKAL-EFOM System) developed by the International Energy Agency Energy Technology Systems Analysis Program (IEA-ETSAP) and GAINS (The Greenhouse Gas and Air Pollution Interactions and Synergies) developed by the International Institute for Applied Systems Analysis (IIASA). He/she should have the ability to work independently. Salary is about HK$30,000/month (~US$3,900/month).