Local budgets and care homes quality in England
A duration analysis

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Local government and public funding reform

- Local authorities are organised in two main administrative levels
  - **Counties**: ≈150 manage policies at wider scale
  - **Districts**: ≈320 manage local services

- Main funding sources: local revenues and central grants

- In 2010 funding reform of based on a *localisation of resources*
  - Reduction of central grants received by local authorities
  - Equal distribution of the cuts accross authorities
  - Disregard of relative funding or needs of the authorities

- Effects varied geographically accross districts

- About 30% decrease of spending power in real terms during 2009-10 to 2017-18 (National Audit Office, 2018)
What is this about?

How variations in revenue spending power affect the quality of formal long term care services?

Organisation of long term care services

- Managed by 152 local authorities that commission the services
- 90% of the providers in the market are private
- Two types of clients: self-funded and publicly funded

Quality of long term care services

- Systematic inspections
- Monitor 5 core issues of the business + overall rating
- Quality ratings include 4 categories: outstanding, good, requires improvement and inadequate
What do we do and what has been done?

Analysis of effects of changes of revenue spending power on the frequency of quality inspections and transitions of quality ratings

- Fixed effects
- Semi-parametric hazard model
  - Factors affecting the length of stay in care homes (Forder and Fernandez, 2011)
  - Differences in quality by ownership (Chou, 2002)

Previous evidence on the association of public funding and health for England.

- Unmet needs - particularly people in community based services (Ismail et al., 2014; Iparaguirre, 2017)
- Funding of private vs public clients (Allan et al., 2018)
- Changes in long term care expenditure and mortality rates (Watkins et al., 2017)
- Changes of public funding on social care and the use of A&E health services (Crawford et al., 2018)
Our results in a nutshell

- Negative changes in spending power affect the frequency of quality inspections at local authority level
  1. Care homes in local authorities that have negative changes in spending power have less propensity of being inspected
  2. Increase the number of inspections with a bad rating
  3. Decrease the number of inspections with a good rating

- Care homes with an initial good rating are not negatively affected by public funding constraints

- Care homes with an initial bad rating are in general negatively affected by public funding constraints
Sample of analysis

- Information from the Care Quality Commission (CQC) from October 2014 - June 2017
  - 24,000 observations on 16,000 care homes
- Definition of transitions (e.g. events) between ratings
  - If *Require improvement or Inadequate* after *Good or Outstanding*
    - Quality deterioration
  - If *Good or Outstanding* after *Require improvement or Inadequate*
    - Quality improvement
- Local finance data from the Department of Local Government and Communities (DLGC)
  - Data on changes in the spending power based on fiscal years
  - Categorisation of the change - e.g. negative (positive) change.
- Controls at local authority level
Methodology

Effect of changes of spending power on the frequency of inspections.

\[ Y_{lt} = \beta_0 + \beta_1 SP_{lt} + \gamma X_{lt} + D_t + \mu_l + \epsilon_{lt} \]  

- \( Y \): number of inspections in a local authority
- \( SP \): negative change in spending power
- \( X \): controls local authority
- \( D \): fixed effect for years
- \( \mu \): fixed effect for local authorities

Effects of changes in the spending power on quality transitions

\[ \lambda_{il}(t) = \lambda_0(t) \exp(X_{il}\beta + \alpha_{jl}) \]  

- \( \lambda(t) \): probability of leaving a state (e.g. quality rating) conditional on remaining in the same state
- \( \lambda_0(t) \): base-line hazard function
- \( \alpha_{jl} \): random effect
Effects of negative changes in the spending power on quality inspections

<table>
<thead>
<tr>
<th></th>
<th>FE Bad Inspections</th>
<th>FE Good Inspections</th>
<th>Cox model</th>
<th>Mixed model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative change revenue spending power (1 = yes)</td>
<td>0.759* (0.403)</td>
<td>-0.712** (0.358)</td>
<td>0.3***</td>
<td>0.32***</td>
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<tr>
<td>Observations</td>
<td>1053</td>
<td>1203</td>
<td>50037</td>
<td>50037</td>
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<tr>
<td>Adj.R2</td>
<td>0.417</td>
<td>0.761</td>
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<tr>
<td>Events</td>
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<td></td>
<td>6852</td>
<td>6852</td>
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<tr>
<td>Log-lik</td>
<td></td>
<td></td>
<td>-56168.18</td>
<td>-55857.46</td>
</tr>
</tbody>
</table>

Source: CQC, DWP and Census, author’s own calculations. Robust standard errors in parentheses. Local controls, year FE and local authority FE included in all regressions. *** p < 0.01, ** p < 0.05, * p < 0.1.
**Figure:** Kaplan Meier estimates on quality transitions

## Quality deterioration

<table>
<thead>
<tr>
<th></th>
<th>Quality deterioration; cluster level</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Care home</td>
<td>Local authority</td>
</tr>
<tr>
<td>Panels</td>
<td>Changes revenue spending power (1 = yes)</td>
<td>Changes revenue spending power (1 = yes)</td>
</tr>
<tr>
<td></td>
<td>-0.903*** (0.2)</td>
<td>-0.066 (0.104)</td>
</tr>
<tr>
<td></td>
<td>-0.903*** (0.2)</td>
<td>-0.065 (0.116)</td>
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<tr>
<td>Log-lik</td>
<td>-10358.68</td>
<td>-10373.38</td>
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<tr>
<td>Observations</td>
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<tr>
<td>Events</td>
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</table>

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Panel A. Cox regression

Panel B. Mixed regression
Quality improvement

<table>
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<tr>
<th></th>
<th>Negative changes revenue spending power</th>
<th>Positive changes revenue spending power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quality improvement; cluster level</td>
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<tr>
<td></td>
<td>Care home</td>
<td>Care home</td>
</tr>
<tr>
<td></td>
<td>Local authority</td>
<td>Local authority</td>
</tr>
<tr>
<td>Changes revenue spending power (1 = yes)</td>
<td>0.739***</td>
<td>-0.915***</td>
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<tr>
<td></td>
<td>(0.085)</td>
<td>(0.106)</td>
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<tr>
<td>Log-lik</td>
<td>-14772.72</td>
<td>-14750.68</td>
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<tr>
<td>Panel A. Cox regression</td>
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<tr>
<td>Changes revenue spending power (1 = yes)</td>
<td>1.399***</td>
<td>-0.782***</td>
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<td></td>
<td>(0.133)</td>
<td>(0.189)</td>
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<td>Log-lik</td>
<td>-14679.84</td>
<td>-10235.44</td>
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<tr>
<td>Panel B. Mixed regression</td>
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<td></td>
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<tr>
<td>Observations</td>
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<tr>
<td>Events</td>
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<td>1961</td>
</tr>
</tbody>
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Source: CQC, DWP and Census, author’s own calculations. Robust standard errors in parentheses. Local controls, year FE and local authority FE included in all regressions. *** p < 0.01, ** p < 0.05, * p < 0.1.
Why this may be happening?

Care homes with an initial good rating are not negatively affected by negative changes in the spending power

- Allocation of funds by local authorities
- Shift towards private clientele
- Competition through quality

Care homes with an initial bad rating are in general negatively affected by negative changes in the spending power

- Care homes in a bad situation, remain in bad situation
- Substitutes of residential care.

Caveats and further work

- Data are highly censored
- Additional information on other quality dimensions
Thank you!

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