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Some Further Results from the UK on the Impact of E-substitution on the Demand for Mail

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Introduction

- Mail volumes in decline due to e-substitution
- In this paper we build on previous work and report further empirical results on e-substitution in the UK
- Examine trends in e-substitution of B2C business mail overall and also disaggregated by main segmentations of traffic
- Provide some high level preliminary conclusions

Estimating the Overall Trend in E-substitution of B2C Business Mail

- Estimates based on econometric model of form reported in Veruete-Mckay *et al.* (2011)

- In stylised form this can be written as:

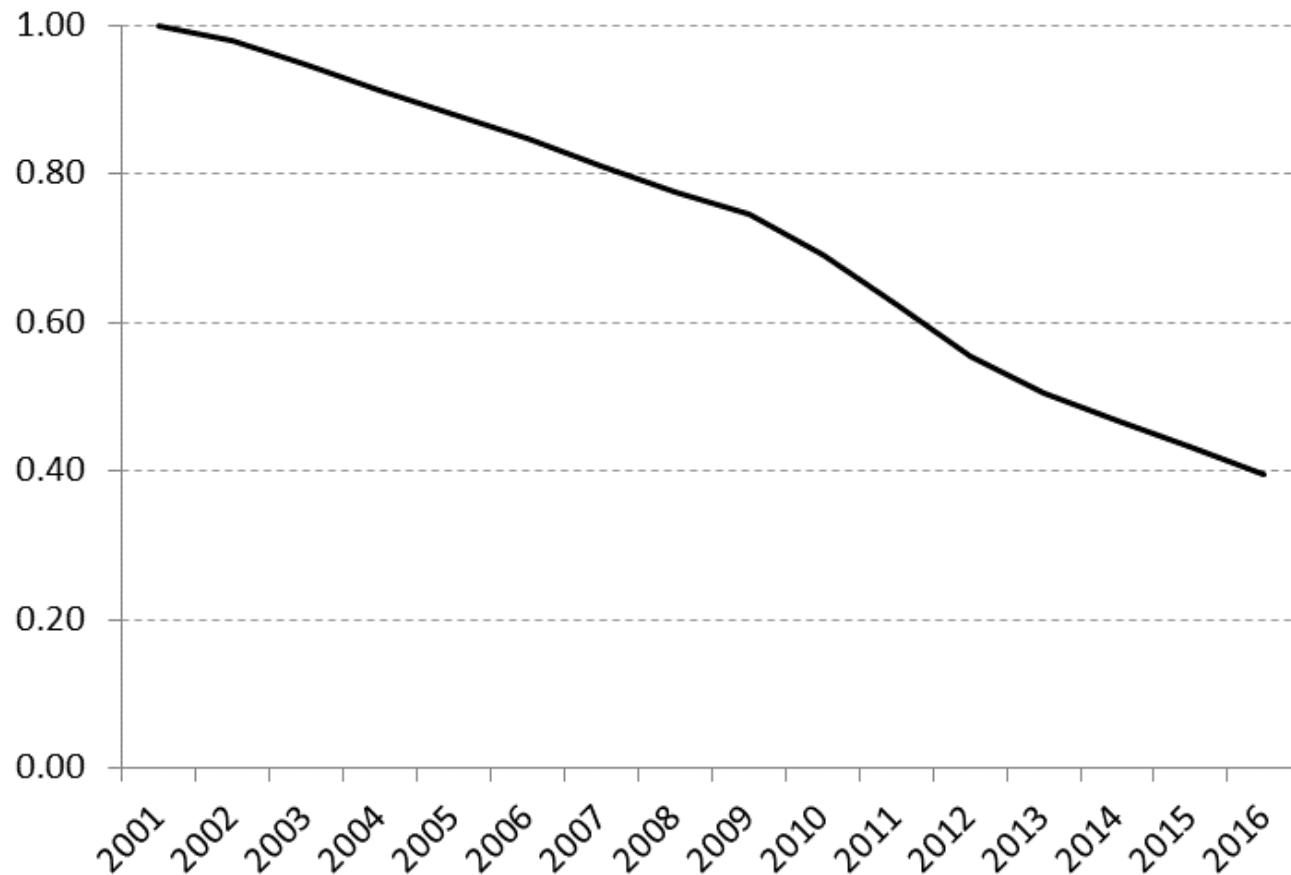
$$Q_t = Q_{t=0} \cdot E_t \cdot (1 + g \cdot G_t) \cdot (1 + p \cdot P_t)$$

- The e-substitution index, E_t , is defined as:

1 – proportionate loss of mail to e-substitution

- Proxy E_t by the “unexplained” time trends in the econometric model of approximately 3% pa from 2002 and 9% pa in total from 2010 and prices whose effect over the period as a whole negligible (Rodriguez *et al.*, 2016)

Estimates of Overall Trend in E-substitution Index, E_t , for B2C Business Mail (2001 = 1)



Source: Royal Mail

¹ E_t equals (1 - proportionate loss of mail to e-substitution) where $E_t = 1$ implies no e-substitution (last such year estimated as 2001) and $E_t = 0$ implies complete loss of all mail. Estimates for E_t based on econometric equation in Table 1 of Rodriguez, Soteri and Tobias (2016).

Estimates of E-substitution at Disaggregated Level

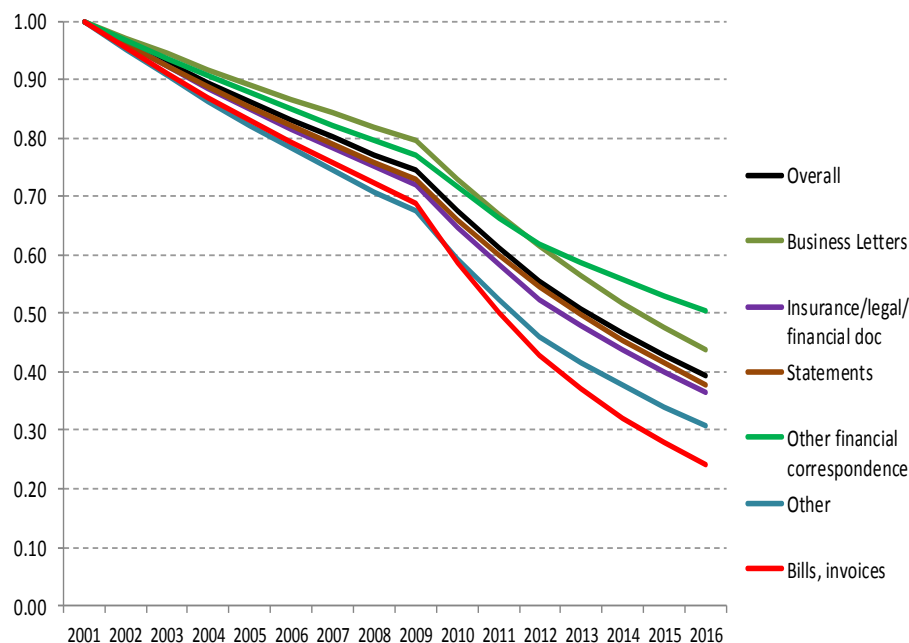
- How has the overall impact of e-substitution in the UK varied across different segments of B2C business mail?
- Empirical estimates produced by content type (6), sender group (6) and age group of recipients (5) or 180 segments in total
- We estimate E-indices at this level which equal the overall index multiplied by 3 factors reflecting:
 - changes in the volume share of a segment (180, internal survey data)
 - relative movements in sectoral economic activity (ONS, applied to sender group)
 - relative movements in population size (ONS, applied to age group of recipients)

given by:

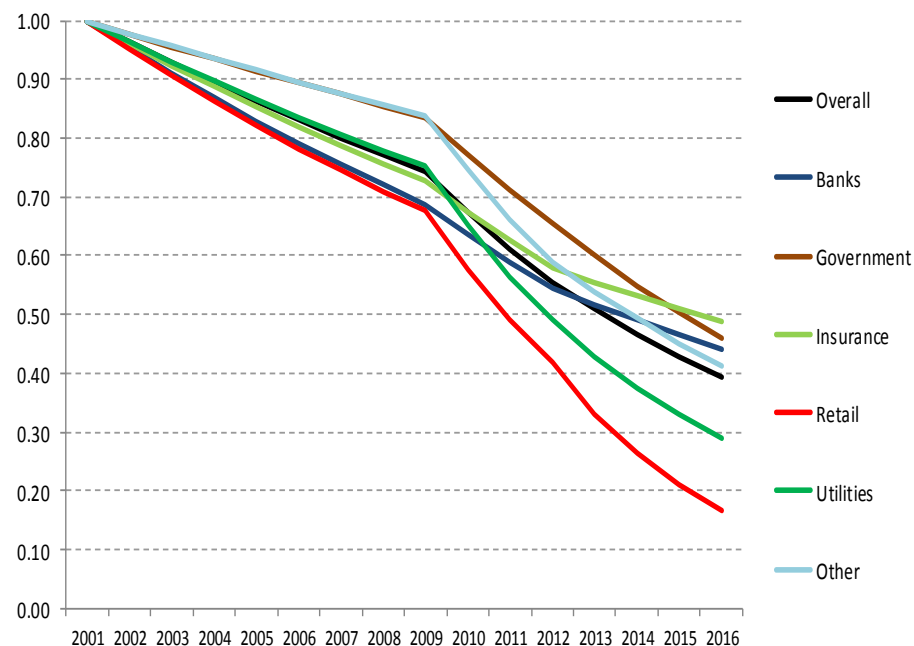
$$E_{st} = E_t \cdot \left(\frac{a_{st}}{a_{s,t=0}} \right) \cdot \left(\frac{1 + g \cdot G_t}{1 + g_s \cdot G_{st}} \right) \cdot \left(\frac{1 + p \cdot P_t}{1 + p_s \cdot P_{st}} \right)$$

E-Index (E_t) Estimates by Letter Content and Sender Group

E-index estimates by letter content, 2001 to 2016 (2001=1)



E-index estimates by sender group, 2001 to 2016 (2001=1)

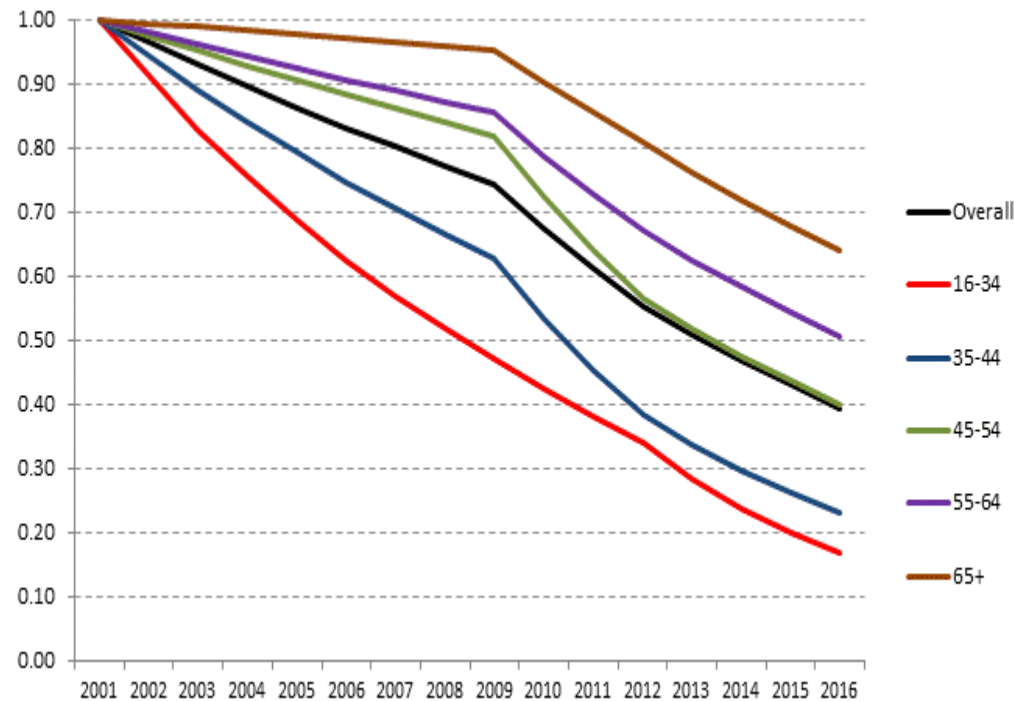


Source: Royal Mail

¹ E_t equals $(1 - \text{proportionate loss of mail to e-substitution})$ where $E_t = 1$ implies no e-substitution (last such year estimated as 2001) and $E_t = 0$ implies complete loss of all mail. Estimates for E_t based on econometric equation in Table 1 of Rodriguez, Soteri and Tobias (2016).

E-Index (E_t) Estimates by Age-Group and Ability/Willingness to Receive E-communications

E-index estimates by age-group of recipient, 2001 to 2016 (2001=1)



Source: Royal Mail

Estimates of access by individuals to the Internet by age group, %*

Age group	2012	2016
16-34	97	99
35-44	94	98
45-54	88	95
55-64	78	88
65+	41	58
All	81	88

*Percentage of individuals using the Internet by any device in preceding 3 months,
Source: Office for National Statistics

Summary and Conclusions

- Econometric estimates suggest letter volumes are determined by four key factors: economic activity, demographics, prices and E-substitution
- Our E-Index estimates suggest that by 2016 Business mail was about 40% of the level it would have been in the absence of e-substitution
- Indicative E-indices by letter content, senders and age of recipient suggest:
 - Physical bill/invoice communications declined to a greater extent than those for ad hoc business letters and financial correspondence
 - E-sub. in retail & utilities sectors is more advanced than government & insurance
 - There is a pronounced difference in the extent of e-substitution by age of recipient
- Our analysis suggests that over the short to medium the rate of letter volume declines in the UK will primarily depend on:
 - The extent to which senders and recipients of ad hoc and non-standard transactions (especially high value added business activities relating to insurance, legal and financial transactions) are able and willing to replace mail by e-communications
 - The Government's digital communications strategy
 - The extent to which a slow moving population "ageing effect" and an increasing "acceptance" effect impact older individuals willingness to receive e-communications
- A key question we would like to explore further is the relative importance of each of the three categories we have examined (content type, sender group and age-of recipient) in impacting the overall rate of UK e-substitution