Compensating the Net Cost of Universal Postal Services

Christian Jaag, Swiss Economics and University of St. Gallen

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Agenda

• Introduction
• Related literature
• The model
• Four notions of unfairness
• Conclusion
Introduction: USO costing and financing

“Where a Member State determines that the universal service obligations [...] entail a **net cost [...]** and represent an **unfair financial burden** on the universal service provider(s), it may introduce:
(a) a mechanism to compensate the undertaking(s) concerned from public funds; or
(b) a mechanism for the sharing of the net cost of the universal service obligations between providers of services and/or users.”

What to do:

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**Net cost?**

- Yes → **Unfair burden?**
  - Yes → Compensation
  - No → no problem?

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**Contribution of this paper:**
Notions of unfairness and how financing mechanisms interfere
Related literature

- Profitability cost:
  Panzar (2000), Cremer et al. (2000)

- Practical implementations:
  e.g. Copenhagen Economics (2008), Bergum (2008), Frontier Economics (2008), Cohen et al. (2010)

- Endogenous market structure:
  Jaag et al. (2009), Boldron et al. (2009)

- Net cost vs. unfair burden:
  Boldron et al. (2009), De Donder et al. (2010)
What amount of net cost represents unfair burden? (I)

- CERP: Fundamental deviation from reference scenario; current service level must not exceed requirements of the USO.
- In which case is there an unfair burden?

De Donder et al. (2009) CERP

<table>
<thead>
<tr>
<th>Case</th>
<th>w/o USO</th>
<th>w/ USO</th>
<th>w/o USO</th>
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<th>w/o USO</th>
<th>w/ USO</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Donder et al. (2009)</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>CERP</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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</tr>
</tbody>
</table>
What amount of net cost represents an unfair burden? (II)

1. **Ex ante perspective**
   (before implementation of financing mechanism):
   What is the criterion for implementing a compensation or cost sharing mechanism? – as in CERP and De Donder et al. (2010)

2. **Ex post perspective**
   (after implementation of financing mechanism)
   What is the appropriate compensation such that there is no remaining unfair burden?
The model I

• Two postal operators: Incumbent, competitor
• One aggregate mail category per operator (imperfect substitutes)
• Continuum of (regionally) different mail markets which are independent of each other
• Assumption on the sequence of decisions:
  1. Incumbent chooses market coverage
  2. Competitor chooses market coverage
  3. Price competition
• Operators’ cost structures and qualities are symmetric
• One-dimensional USO: Delivery coverage
The model II

unserved market segment
monopolistic market segment
competitive market segment

marginal surplus (single operator)
marginal surplus (two operators)
marginal fixed cost

Market Coverage

USP profit: $\alpha + \beta + \gamma$
competitor profit: $\alpha$
USO net cost: $-\gamma$
Three potential financing mechanisms

1. **Public funds / external financing**
   
   General government budget
   
   \[ \tau_{e}^{ext} = \tau_{i}^{ext} = 0 \]

2. **USO fund**
   
   Uniform profit tax on all operators
   
   \[ \tau_{e}^{fund} = \tau_{i}^{fund} \rightarrow \text{tax base is } 2\alpha + \beta + \gamma \]

3. **Pay or play mechanism**
   
   Profit tax on the competitor only
   
   \[ \tau_{e}^{pop} \neq \tau_{i}^{pop} = 0 \rightarrow \text{tax base is } \alpha \]
Four notions of unfairness

1. Absolute net cost level
2. Absolute profit level
3. Absolute difference to competitor’s profit
4. Relative difference to competitor’s profit
Notions of unfairness
Criterion 1: Absolute net cost level

According to criterion 1, universal service provision imposes an unfair burden if it reduces the USP’s profit compared to a situation without USO (by at least a certain amount). — cf. CERP

Ex ante perspective: \( \pi_i + T^m = \pi_i^{nUSO} \)
- Pay or play: \( \tau^{pop,ea}_{\alpha} \alpha = -\gamma \)
- Fund: \( \tau^{fund,ea}_{\alpha}[2\alpha + \beta + \gamma] = -\gamma \)

Ex post perspective: \( \pi_i^m = \pi_i^{nUSO} \)
- Pay or play: \( \alpha + \beta + \gamma + \tau^{pop,ep}_{\alpha} \alpha = \alpha + \beta \)
- Fund: \( (1 - \tau^{fund,ep}_{\alpha})[\alpha + \beta + \gamma] + \tau^{fund,ep}_{\alpha}[2\alpha + \beta + \gamma] = \alpha + \beta \)
Criterion 1: Absolute net cost level
Distribution of profits after compensation

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<tr>
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<th>Competitor profit $\pi_e^m$</th>
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<td>$\alpha + \beta$</td>
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Criterion 1: Absolute net cost level
Distribution of profits after compensation

Issues:

- What ist the correct threshold for the introduction of a compensation?
- Incentive problem with ex ante compensation through a fund
Notions of unfairness

Criterion 2: Absolute profit level

According to criterion 2, universal service provision imposes an unfair burden if the USP’s profit is negative. – cf. De Donder et al (2010)

Ex ante perspective: \( \pi_i + T^m = 0 \)

- Pay or play \( \tau^{\text{pop,ea}} \alpha = -(\alpha + \beta + \gamma) \)
- Fund \( \tau^{\text{fund,ea}} [2\alpha + \beta + \gamma] = -(\alpha + \beta + \gamma) \)

Ex post perspective \( \pi_i^m = 0 \)

- Pay or play \( \alpha + \beta + \gamma + \tau^{\text{pop,ep}} \alpha = 0 \)
- Fund \( (1 - \tau^{\text{fund,ep}})[\alpha + \beta + \gamma] + \tau^{\text{fund,ep}}[2\alpha + \beta + \gamma] = 0 \)
**Criterion 2: Absolute profit level**

**Distribution of profits after compensation**

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<td>$(\alpha + \beta + \gamma)^2 / 2\alpha + \beta + \gamma$</td>
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Criterion 2: Absolute profit level
Distribution of profits after compensation

Issues:

• Why calculate the USO net cost in the first place?
• Which is the relevant business unit to which the break-even constraint applies?
Notions of unfairness

Criterion 3: Absolute difference to competitor’s profit

According to criterion 3, universal service provision imposes an unfair burden if the USP’s profit is lower than the competitor’s profit.

Ex ante perspective: \( \pi_i + T^m = \pi_e \)

- Pay or play
  \[ \tau^{\text{pop,ea}} \alpha = -(\beta + \gamma) \]
- Fund
  \[ \tau^{\text{fund,ea}} [2\alpha + \beta + \gamma] = -(\beta + \gamma) \]

Ex post perspective: \( \pi_i^m = \pi_e^m \)

- Pay or play
  \[ \alpha + \beta + \gamma + \tau^{\text{pop,ep}} \alpha = (1 - \tau^{\text{pop,ep}}) \alpha \]
- Fund
  \[ (1 - \tau^{\text{fund,ep}})[\alpha + \beta + \gamma] + \tau^{\text{fund,ep}} [2\alpha + \beta + \gamma] = (1 - \tau^{\text{pop,ep}}) \alpha \]
Criterion 3: Absolute difference to competitor’s profit
Distribution of profits after compensation

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Criterion 3: Absolute difference to competitor’s profit
Distribution of profits after compensation

Issues:
• Implicit competitor profit regulation
• Incentive problem is extended to competitor

\[ \alpha = 15, \beta = 10, \gamma \in [0, -30] \]
Notions of unfairness
Criterion 4: Relative difference to competitor’s profit

According to criterion 4, universal service provision imposes an unfair burden if it reduces the USP’s profit compared to a situation without USO by more than the competitor’s profit is reduced due to its contribution to USO funding.

Ex ante perspective  \[ \pi_i + T^m = \pi_i^{nUSO} \]

Ex post perspective:

\[ \pi_i^{nUSO} - \pi_i^m = \pi_e^{nUSO} - \pi_e^m \]

\[ \frac{\pi_i^{nUSO}}{\pi_i^m} = \frac{\pi_e^{nUSO}}{\pi_e^m} \]
Criterion 4: Relative difference to competitor’s profit
Distribution of profits after compensation

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<tr>
<td>b) pop ex post</td>
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<td>b) fund ex post</td>
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Criterion 4: Relative difference to competitor’s profit

Distribution of profits after compensation

Issues:

• Again: Incentive problems
• Complexity (also competitor’s counterfactual profit needed)
Conclusions

1. A priori, no criterion for unfairness is “simply the best”.
2. It is important to differentiate between the two perspectives “ex ante” and “ex post”.
3. Only a compensation with government funds yields robust results under all criteria.
4. With a fund to which all operators contribute, there is a systematic bias in the compensation of the USP.
5. Issues for further research:
   - Extension (fully fledged USO, asymmetric operators, contributions based on turnover or per unit)
   - Implementation
Thank you.

Christian Jaag, PhD
christian.jaag@swiss-economics.ch

Swiss Economics
Abeggweg 15
CH-8057 Zürich
Switzerland
www.swiss-economics.ch