The Transformation of Post Offices in Partner Offices: Analysis of Effects on Demand

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I - Introduction
II - Some international comparisons
III - The French post office network activity
IV - An econometric model
V - Some empirical results
VI - Extensions: toward a structural model
I – Introduction

Last 10/20 years: all postal operators transform their post office network:
- a reduction in the size of the network
- an increase in the number of partnerships, replacing owned post offices

Why? To optimize postal networks in a context of
- decreasing volume of mail
- and market liberalization

Postal activity decline ⇒ infrastructures larger than necessary

⇒ Efforts
• to modernize retail networks
• to adapt retail networks to customers’ needs
In France: transformation of the postal network since 2002

→ No reduction in network size but owned post offices transformed into partner points

→ This paper: to analyze the impact of the transformation on postal activities
  - a decrease ? an increase ? no impact on the demand for postal services (on activity level)

- Question: what is the impact on the activity of a transformation of an owned post office into a partner ?

→ Econometric study at the micro level (history of the activity of post offices).
II – Some international comparisons

financial reasons & adaptation to customers’ needs:
modernization of their network

several tools:
- Modernizing branches and making them more relevant for customers: reducing queues, extending opening hours, improving customer service
- Reducing/optimizing the size of the network
- Transforming branches into partner points
- Offering new products and developing online services and multi-channel solutions

• Reduction of the size of the network?
• Developments of partnerships?
• Or both?

Various strategies within European countries...
Table 1. Postal networks in 2010
Source: UPU Statistical Database, January 2012.

<table>
<thead>
<tr>
<th></th>
<th>Post-owned offices</th>
<th></th>
<th>Partners points</th>
<th></th>
<th>Total</th>
</tr>
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<tr>
<td></td>
<td>number</td>
<td>%</td>
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<td>%</td>
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<tr>
<td>Austria</td>
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<td>60,4%</td>
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<td>Greece</td>
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<td>726</td>
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<td>95,1%</td>
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<td>86,5%</td>
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<td>87,5%</td>
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<td>Portugal</td>
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<td>12,0%</td>
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</tbody>
</table>
III – The French post office network and its activity

- 17,000 « points de contact » (legal obligation)

- Two services of general economic interest (SGEI)
  - Accessibility related to universal service
  - Regional planning mission

- Partner points contribute to the regional planning mission:
  - First consideration when establishing a partnership: to fulfill the SGEI in “the best economic and social efficiency” conditions (not to simply maximize profits in purely commercial conditions).
• Collect data on post offices transformed into “Agence Postale Communale” (APC) between January 2007 and December 2010.

• Offices transformed in RPC: no comparable data due to different processes. This type of partners were eliminated from the sample (problem of selection bias – to be analyzed).

• General evolution of the activity in the two categories of post offices:
  2 graphs
  - Wholly-owned post offices (over the whole studied period)
  - Post offices transformed into APC over the period
Evolution of average activity in transformed branches into APC
(before December 31th, 2010)
• General reduction of mail activity and financial activity in wholly owned post offices.
• More stability in the parcel activity.

• Observe a stronger reduction in % in transformed offices.

Some explanations?
- transformation strategy applied to the smallest offices in terms of activity (number of operations a month)
- or with a decreasing trend in activity
  Selection bias
- effect of the transformation itself
Econometric model: to determine if the transformation negatively impacted on demand or not
IV – An econometric model

- $Y_{ti}$ activity of office $i$ at time $t$
  
  $t = \text{month (4 years of observations)}$

- Set of observations: the set of offices owned by La Poste at the beginning of the period (01/2007) at risk for a transformation into an APC (“small” post offices)

- Explanatory variables: $N_{ti}$ (counting process / “jump”)

- $N_{ti}$ may be 0 for some $i$ during all the period (right censoring).

- Model: 
  $Y_{ti} = \alpha + \beta Y_{t-1i} + aN_{ti} + b\left( N_{ti} - N_{t-1i} \right) + U_{t-i}$
Long term permanent effect:

\[
\frac{a}{1-\beta}
\]

Long term instantaneous effect:

\[
\frac{b}{1-\beta}
\]

- Two analysis
  - \( N_{ti} \) exogenous – usual OLS estimation
  - \( N_{ti} \) endogenous – Instrumental variable estimation

Instruments:
- the activity at the beginning of the period (mean of the activity of the office)
- the growth rate of the activity of the office

\( N_{ti} \) replaced by its expectation

\[
E\left( N_{ti} \mid N_{t-1i}, \ldots, N_{1i}, Y_{1i} \right)
\]

\[
Y_{ti} = \alpha + \beta E(Y_{t-1i} \mid Wt) + aE(N_{ti} \mid Wt) + bE\left( N_{ti} - N_{t-1i} \mid Wt \right) + Ut
\]

evaluated using a Cox proportional hazard model.
Transformed into APC in October 2008
(total activity)
Important shock at the date of the transformation. To be interpreted: behavior of the consumers? Data collection?

Shock disappears in the long term (1/2 years).

Very simple model relevant for the analysis of the impact of the transformation. Not for long term predictions.
VI - forthcoming: Toward a structural model

Relation between La Poste and local public authorities (mayors) considered in a principal / agent framework with adverse selection and moral hazard.

Introduction of two non observable variables:
- heterogeneity of the post office district
- effort of the city administration to maintain & develop the postal activity (opening hours, welcome....)

endogeneity of the choice of transformation or not
endogeneity of the impact of the transformation
La Poste decision \( N_t \) (a date for a transformation or \( + \infty \))

| 1 office |

- Gain: cost reduction – amount paid to local partner
  \[ - (Y_t^{NT} - Y_t^{T}) \]

- Function of an heterogeneity element (unknown from La Poste):
  is this a sensitive office?

- Asymptotic level of the gap
- Speed of catch-up

- Effort of the municipality (reducing queues, extending opening hours, improving customer service....)

Municipality: determines the effort
- Cost / benefit
- Effort function
- Knows heterogeneity component