

**Economics of Post Office Networks:
Strategic Issues and the Impact on Mail Demand**

**Martin Buser
Christian Jaag
Urs Trinkner**

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Swiss Economics SE AG
Abeggweg 15
CH-8057 Zürich

T: +41 (0)44 500 56 20
F: +41 (0)44 500 56 21

office@swiss-economics.ch
www.swiss-economics.ch

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1. INTRODUCTION

Postal market liberalization is a current issue in Switzerland as well as in the European Union. The reserved area has been the traditional means to finance the provision of universal postal services at uniform prices. There is, therefore, a concern that further reductions in the reserved area could undermine the ability of the incumbent postal operator to finance its universal service obligation (USO). Hence, the traditional USO has come under scrutiny in many countries. The two most important cost factors in the postal sector related to the USO are ubiquity of delivery at a uniform price and a network of post offices that is sufficient to enable accessibility to postal services for all citizens.

In our paper, we discuss the role of the post office in the marketplace. It not only adds to the incumbent's cost, but also serves as its important and traditionally established hallmark. Hence, the optimization of the postal outlet network is of significant strategic and political importance. While some post offices may be converted into agencies, franchises and specialized counters for business customers, households beyond the reach of a postal outlet may also be served with postal products by the postman during his mail delivery tour.

After an assessment of post office reorganization programs in selected countries in Section 2, we focus in Section 3 on Swiss Post's optimization program in recent years that aimed at aligning its postal network to emerging competition and changing consumer needs. Whereas a significant fraction of post offices have been closed, the remaining ones now offer a far broader range of products. Further, besides new business customer solutions in collection, a number of specialized outlets for advanced financial services have been created. These measures have seen political and regulatory counteractions which resulted in heavier regulations. In our assessment we briefly present the effects on Swiss Post's customer satisfaction and channel costs. To identify the impact of post office closures on overall mail volumes, we use time-series techniques with quarterly data between 1980 and 2006. We find – in contrast to variables that capture the effect of the Internet – no significant effect of post office closures on overall mail volumes.

* The views expressed are those of the authors and do not necessarily reflect the opinion of the institutions with which they are affiliated.

In Section 4 we identify key strategic issues of post office realignments. We conclude in Section 5 that diversifying into financial services helps to sustain a comparably larger post office network. If no such option is available, agencies run by third parties seem to be the only long-term solution under competition. In either case, economies of scope play a vital role for sustaining self-financed access points for postal services.

2. REVIEW OF THE LITERATURE AND RECENT RESTRUCTURINGS IN REFERENCE COUNTRIES

2.1 Literature Review

In the recent stages of the liberalization process, the idea of universal service has become increasingly contested since the abolishment of partial monopolies severely questions its financing. Crew and Kleindorfer (2007) model the interaction of maintaining the USO and opening postal markets. They argue that a broad USO (with e.g. severe restrictions on post office restructuring) implies large mark-ups to pay for the USO. Hence, restructuring may not only serve as a cost-cutting but also as a price-cutting instrument.

The current debate is about the appropriate extent of the USO and the most efficient way to provide it, thereby making it as compatible with competition as possible. Cremer et al. (2007) assess alternative economic justifications of the USO. A USO may be used as a remedy for network externalities, and as a redistributive pricing policy. It has some aspects of a public good and serves as an instrument of regional policy. They argue that the largest benefits of a USO are related to the role of postal products as inputs and thus to business mail. Replacing it by other means of regional policy or redistributive channels is not an option. In that sense, it is important that postal services are universally provided at a reliably high quality. However, it does not imply that these services have to be supplied through the traditional channels on the traditional postal network.

The focus of our analysis is an exploration into whether and how a high service level can be maintained notwithstanding deep restructuring of the physical network. It is inspired by the work by Boldron et al. (2007) who analyze the accessibility of the postal network compared to other industries in France. They find that "...the presence of commercial [postal] services combined with public [postal] services creates demand for postal services..." (p.15). Moreover, they argue that the high territory presence of postal counters creates a positive externality on their immediate environment and therefore contributes to economic development. However, currently, the net cost of the high postal accessibility is borne by the Universal Service Provider through a statutory monopoly on letters. The introduction of competition introduces the need for alternative funding or deep restructuring of the network – without damaging its social value, if possible.

Cohen et al. (2008) illustrate that many (historical) post office networks lack the alignment to competitive needs. The authors show that both Italy and the United States have a disproportionate percentage of their post offices located in rural areas as compared with banks (IT) or pharmacies (US) and argue that the distribution of post offices has a similar pattern in most postal administrations. Further, they state that "in order to have competitive prices, incumbents will have

to allocate costs based on causation, and bulk mail will pay only for the small portion of the retail network cost that it imposes". They conclude that under a competitive scenario, there will be "considerable pressure to move toward a more commercial distribution of retail services, outsourcing, or both" because of the otherwise heavy financing burden of single-piece mail.

Our discussion embraces international experiences in post office restructuring, but focuses on the Swiss market. Thereby, it adds to previous analyses of the Swiss postal market, e.g. in Dietl et al. (2005) and Jaag (2007).

2.2 Developments in (partly) liberalized markets

Recent restructuring experience of postal networks varies. They are driven by regulatory constraints as well as by the chosen business models. We briefly present stylized cases from New Zealand, Sweden, France, Italy, Germany, and the UK.

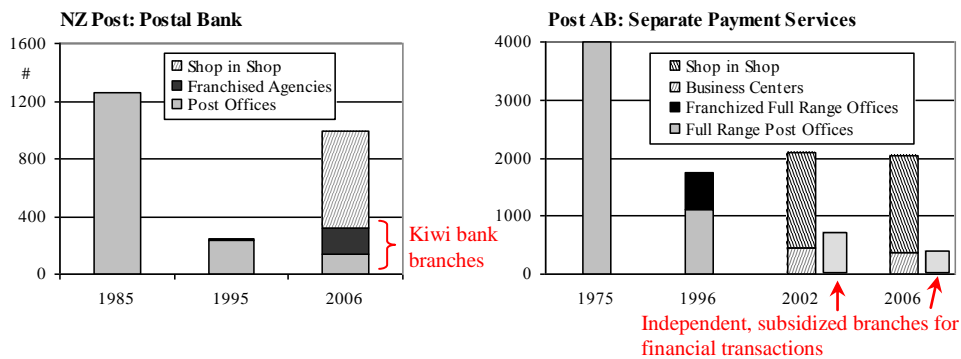
New Zealand Post (NZ Post) started to restructure its retail network in 1988, one year ahead of a first liberalization step in 1989. It started with more than 1200 self-operated post offices. Three years before full market opening in 1998, about 85% of the post offices had been shut down and the first experiences with franchised post offices were successfully completed. Nowadays, New Zealand Post's retail network has grown again and consists of two different kinds of access points *that exploit two different kinds of economies of scope*. First, postal services as well as banking services are provided in 142 post offices operated by NZ Post and 181 franchised agencies. Thereby, economies of scope are exploited between postal services and Kiwibank, a subsidiary from NZ Post that was founded in 2002. Second, 672 additional sales points are available, where third parties sell selected postal services besides their core business ("shop in shop"). Again, economies of scope are exploited – here between postal services and other products such as groceries. Hence, traditional post offices that supply just postal services seem not to be an option for NZ Post. Kiwibank appears to be a story of success with more than 550'000 customers as of September 2007 and strong yearly growth in deposits (64%), lending (39%), and mortgages. Newly, mobile banking, insurance products, personal loans, and foreign currency services have been launched. Kiwibank also considerably contributed to the financial performance of NZ Post, which improved its value added from NZ\$ 2.7 Million in 2002 steadily up to NZ\$ 28.1 Million in 2007. Importantly, Kiwibank increases New Zealand Post Group's EBITDA margin, i.e. Kiwibank's EBITDA margin lies well over 13.1%.²

The realignment of Sweden's **Posten AB** exhibits similar patterns but also important differences. In Sweden, the market was completely liberalized in 1993. Similar as NZ Post, Posten AB quickly reduced its original network of approximately 4000 self-run full-range post offices. Additionally, it started franchising some of the remaining ones. However, in contrast to New Zealand Post, Posten AB did in 2002 not opt for starting a bank but chose to completely shut down its traditional post office network and to *separate its postal services from financial transactions*. For postal services, business centers were established for business customers whereas for small customers "shop in shop" solutions were on the agenda. At the same time a new network for financial services called

² New Zealand Post, Group Annual Report 2007

“Swensk Kassaservice” built. The latter remains in a serious financial position despite subsequent branch closures, the opening for other financial suppliers, and government subsidies of SEK 300 Million (about 40% of net sales!). In 2007, Sweden Post submitted a closure schedule for its Cashier Service which suffered from steadily declining transaction volumes of about 20% per year.³ Subsequently, Posten AB decided to shut down Swensk Kassaservice entirely.

Figure 1: Different Approaches by New Zealand Post and Posten AB



In 2004, **La Poste**, the national postal operator of France, planned to overhaul its post office branch network by slating 6’000 of its 17’000 offices for closure. Furthermore, La Poste intended to convert some of the remaining offices into ‘sub post offices’ run by grocery stores or located in town halls. Hence, La Poste intended to move into a similar direction as New Zealand Post. These ideas faced stiff resistance from both labor unions and local elected officials. Under heavy political pressure, La Poste was forced to put forward an alternative reorganization plan. Thereby, La Poste changed its strategy and is now adding additional services to their offices in order to increase revenues. This strategy was made easier by the decision of the French government to allow La Poste to expand its financial services by launching a *bank*. These initiatives are supported with the development of new post office concepts that aim at combining the different business lines like banking, letters and parcel and retail in a modern environment.

Poste Italiane follows a similar path to the French post. Instead of trying to restructure the office network by closing down or outsourcing post offices, the Italian Post focused from the beginning of its overhaul process on financial services. Starting in 2002, the Italian post used its 14’000 outlets to add bank accounts and loans to its product range. This strategy proved to be very successful turning around the national incumbent into a profit making company. Poste Italiane could be even more profitable when provided with a banking license. So far, the company still has to remarket loans from other banks.

The transformation of **Deutsche Post**’s post office network followed two main directions that exhibit patterns similar to the ones from New Zealand Post. On the one hand, small and medium sized post offices were transformed into agencies; on the other hand, larger offices were developed into bank branches. Like in many other European postal organizations, the agency concept is used to replace existing

³ Posten AB, Interim Report 2007

post offices. With the agency concept, postal services are provided at retail locations of existing businesses. Deutsche Post has two different types of agencies in place. Either a partner (e.g. a grocery store) combines the postal services with its own business or Deutsche Post provides the services with its own personnel at a partner location. The second type of agency is required in order to fulfill the regulatory obligation of maintaining 5'000 self-run branches. In 2005, Deutsche Post sold 850 of its biggest branches to its subsidiary Postbank. With this move, Postbank aims at strengthening its position in the retail financial services market. These branches are gradually transformed into bank branches by adding consulting capacities and financial services know-how. The strategy of Deutsche Post and its subsidiary Postbank is obviously to either generate higher profits by selling more high margin products (financial services) or to cut cost by outsourcing the services to third parties (agencies).

The case of **Royal Mail**, UK's incumbent postal organization, shows that maintaining a post office network that provides postal services without the help of high margin financial services leads to considerable problems. Between 2001 and 2005, Royal Mail closed over 3'000 post offices, close to 20% of its network. For a long time, Royal Mail post offices acted as a provider of benefit and pension payments besides the classic letter and parcel business. The transfer of these payments to direct payments into bank accounts and the full market opening for letters and parcels at the beginning of 2006 left Royal Mail and its subsidiary Post Office Ltd. with an increasingly unprofitable network. Although Royal Mail added additional services to its product line, this seemed not to be sufficient to maintain a post office network of this size and scope as a viable business. Royal Mail has recently put in place a new initiative which will involve a closure of up to 2'500 branches. Partially, these will be replaced by mobile post offices, hosted and partner services, and home delivery services. Despite these efforts Royal Mail still draws on government subsidies of currently £ 150 Million in order to keep its post office network in place. Meanwhile, an additional £ 1.7 Billion government reorganization is on the table.

Table 1 provides further background for the country studies discussed above as well as for Switzerland which we discuss in detail in Section 3.

Table 1: Post office networks in selected countries as of 2006

	Regulation			Network features						
	Market opening	Selected regulatory restrictions related to post office network	Banking License	Financial transactions / Financial Services	Subsidies	Number of postal access points	Thereof agencies	Thereof postal services	Thereof financial transactions/services	
France	Monopoly 50 Grams*	No formal requirements. Accessibility must, however, be in line with the needs of local population, taking account of demographic, economic and social changes.	Yes	Yes / Yes	Yes (for "service de proximité")	17000	4800	17000	17000	
Italy	Monopoly 50 Grams*	No requirements.	No	Yes / Yes	Yes	13900	0	13900	13900	
United Kingdom	Open*	Not less than 95% of users within 5km of an access point capable of receiving the largest relevant postal packets and registered mail, and that the premises of not less than 95% of users in each postcode area are within 10km of such access points.	No	Yes / Yes	Yes (for rural post offices)	14200	1360	14200	14200	
Germany	Open*	Since 1.1.2008 no formal requirements	Yes	Yes / Yes	No	12600	7000	12600	6500	
Sweden	Open	Accessible to everyone at a reasonable distance from one's home or workplace. The density of the access points must take into account the needs of users. Legal mandate to provide nationwide financial transaction services.	No	Yes / No	Yes (for financial transactions)	2000	1630	2000	0	
New Zealand	Open	Minimum 880 postal shops and centres (at least 240 postal outlets to be full service outlets).	Yes	Yes / Yes	No	990	850	990	320	
Switzerland	Monopoly 100 Grams	90% of population in 20 Minutes by foot/public transport	No	Yes / Yes	No	2469	150	2469	2300	

* VAT exemption for USO-Provider/historical operator

3. THE SWISS CASE: RECENT RESTRUCTURINGS AND VOLUME EFFECTS

3.1 Main developments and policy responses over the past decade

At the beginning of 1998, PTT, Switzerland's postal and telecommunication organization was divided into two separate state owned companies. The telecommunication part became Swisscom while the postal and financial services part was transformed into Swiss Post.

Between 1998 and 2001 Swiss Post made several attempts to restructure and optimize the postal network. These attempts faced political and public resistance but resulted in an optimization project that was started in 2001. Under this project, roughly 1000 post offices were closed until 2005 (see Figure 2 below). In most cases a "doorstep service" (postal services upon request at the doorstep of each household provided by delivery personnel) was put in place instead of the post office. During that time Swiss Post also introduced the agency concept to its postal network. In an agency, postal services are provided through third party contractors

like grocery stores or other existing retail businesses. Furthermore, Swiss Post started selling additional products like stationary goods, mobile phones or lottery tickets in selected outlets. At the same time PostFinance, Swiss Post's financial services unit developed from a payment transactions provider to a provider of financial services by adding savings accounts, funds and mortgages (the latter two backed by banks as PostFinance lacks a banking license). These products were also distributed through the post office network. Last but not least, Swiss Post steadily complemented its post office network with automated, electronic or hybrid services. Examples include ATM's, payment orders, online banking, electronic stamps, or online counters.

Importantly, these restructurings provoked political resistance. At its peak in 2004, a public vote targeting at preventing further restructurings was only rejected by a small majority of 50.1% of the Swiss population. In anticipation to this vote, the parliament had already amended the postal act with an "infrastructure obligation" that obliged Swiss Post to operate a physical post office network throughout the country. That is, a new "input regulation" was put into place aiming at restricting Swiss Post in its possibilities of closing or substituting post offices or agencies by other forms of access points such as doorstep service or electronic/hybrid alternatives. Currently, the regulatory authority translates this obligation into the rule that 90% of the population have to be able to reach a post office within 20 minutes by foot or public transport. Where a doorstep service is available, the time range is extended to 30 minutes.

Table 2: Swiss Post Network (as of 31.12.2007)

Access points for retail customers	#
Post offices and agencies	2469
of which post offices with payment services	2300
of which post offices without payment services	12
of which agencies with payment services	136
of which agencies without payment services	14
of which PostMobile stops	7
Routes with doorstep services	1043

Despite these political developments, Swiss Post decided in 2003 that the results of the aforementioned optimization project were not sufficient to adapt the post office network to the changing consumer needs. Therefore, a new project called "Ymago" was launched in order to further reduce the cost of the post office network while improving the customer satisfaction at the same time. Several new concepts were tested in pilot studies and two of them, a new agency concept and a new way of organizing post offices, were implemented starting 2007. Table 2 shows Swiss Post's network by the end of 2007.

Politicians reluctant to those plans have already started new successful actions. In 2008, the Swiss parliament will vote whether physical financial transactions (i.e. in payments, out payments) shall be provided in agencies too. Such regulations would affect the profitability of agencies strongly negative as one can not expect from grocery stores to invest in expensive security installations, counter concepts and anti-money laundering measures.

The political opposition against post office restructuring appears astonishing in relation to its minor impact on customer satisfaction and channel efficiency against

the effects on overall mail volumes. We discuss those issues in the following two Chapters.

3.2 Impact on Customer Satisfaction and Channel Costs

Swiss Post measures its **customer satisfaction** through a standardized process every year. Interestingly, the two major reorganization projects seem not to have a negative effect on customer satisfaction. Total customer satisfaction being at 87 points (out of 100) for private customers in the year 2000 (before the first project), the value dropped slightly to 85 points in 2001. Subsequently, the customer satisfaction oscillated between 86 and 85 points until 2004. After that it increased to 88 in 2005 and 89 in 2006. Despite the political resistance, Swiss Post obviously managed to maintain or even increase its customer satisfaction during these times of changes.

On the financial side, Swiss Post was able to reduce its **channel costs** significantly to save CHF 100 million annually with the first restructuring project and with the Ymago project, additional savings of another CHF 50 million annually are projected after its full implementation at the end of 2008. So far the data shows that the conversion of a post office into a partner agency reduces the operating costs clearly. For more details see the econometrical analysis of Koller and Trinkner (2008). These restructuring initiatives of the post office network are one of several factors boosting Swiss Posts profit to CHF 837 Mio in 2006 up from CHF 118 Mio in 2000.

3.3 Impact on Overall Mail Volumes

The size of the network is going to influence demand for postal products. In the following, we empirically discuss the impact of postal network restructuring on mail volumes using time-series techniques with quarterly Swiss data between 1980 and 2006. Thereby, we operate with an updated data set as used by Trinkner and Grossmann (2006) and newly introduce a series of postal counters. Table 3 gives an overview of the data set used in our empirical assessment. For a more detailed description of the various variables see Trinkner and Grossmann (2006).

Although mail volumes in Switzerland have increased in the observed period, they started to decline starting from 2001 (see Figure 2). Apart from GDP and prices, electronic alternatives and restructurings of the postal network may have influenced on mail volumes. It is difficult to ascribe volume changes to one of the two latter potential sources of impacts, however, *as they emerged around the same time*.

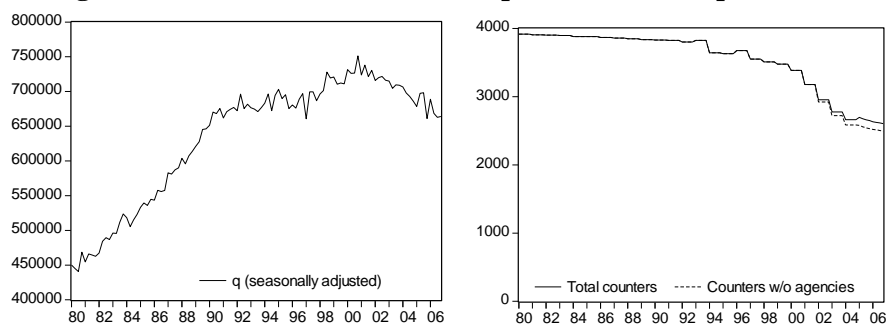
On the one hand, beginning with the break-through of the internet, the use of e-mail and online platforms increased steadily. Whereas the use of the Internet (*eUse*) exhibits an S-shaped penetration curve, e-banking platforms like the one from PostFinance (*eBank*) grow almost linearly. Similarly, digital networks as mobile telephony or broadband (*eBand*) datastreaming emerged. Both are likely to affect mail volumes negatively as they present potential substitutes for physical mail. On the other hand, the number of post offices started decreasing already in the 1980, albeit at a low rate. Only in the late 1990s, a more pronounced decline started. In 2001, Swiss Post started converting full post offices into agencies. Due to fewer access points and negative effects on customer loyalty, such closures could affect volumes negatively. Time series econometric techniques offer a

powerful tool to separate these two effects. More specifically, they allow us to determine whether mail volumes are shrinking due to “e-substitution”, i.e. market share losses of letters to emerging digital substitutes, or due to post offices closures, or both.

Table 3: The Data

Time Series (shortcuts in brackets)	Data Source	CAGR p.a.	Sample Period	Order of Integration
Mail Volumes and GDP				
Total Mail Volume (q)	Swiss Post	1.50%	1980Q1-2006Q4	I(1)
Nominal GDP	SECO	3.60%	1981Q1-2006Q4	I(1)
Real GDP (gdp)	SECO	1.70%	1981Q1-2006Q4	I(1)
Prices				
Mail Real Price Index (p)	Swiss Post	1.76%	1981Q1-2006Q4	I(1)
Substitutes Real Price Index (s)	BFS	-2.36%	1981Q1-2006Q4	I(1)
Consumer Price Index (CPI)	SECO	1.86%	1981Q1-2006Q4	I(1)/I(2)
Infrastructure				
No. of self-operated Post Offices (s_office)	Swiss Post	-1.37%	1980-2006	I(1)
No. of Postal Agencies (agency)	Swiss Post	35.43%	1980-2006	I(1)
Total number of postal offices (office)	Swiss Post		1980-2006	I(1)
Substitution Proxies				
Online accounts with PostFinance (eBank)	Swiss Post		1998Q3-2006Q4	I(1)
% active internet users (eUse)	BFS		1994Q1-2006Q4	
% broadband internet access (eBand)	BFS		2001Q1-2006Q4	
Other				
dAB	Reflects the Introduction of A- (priority) and B- (economy) class Mail in 1991			
dq2, dq3, dq4	Seasonal Dummies			
The data on online accounts with PostFinance is available on a monthly basis. Up to present, it exhibits a constant linear trend. Other substitution proxies are available on a yearly basis. For data quality reasons, we therefore only use the number of online accounts in our estimations.				

Figure 2: Overall mail volumes and post office development



We first estimate the impact of the postal network and e-substitution on mail volumes by means of a static regression of the form

$$\ln(q) = \beta_0 + trend(t) + \beta_1 \ln(gdp) + \beta_2 \ln(p) + \beta_3 \ln(s) + \beta_4 (eproxy) + \beta_5 (office).$$

In order to eliminate seasonal effects and possible volume effects of changes in the product structure, we include appropriate dummy variables or adjust the data seasonally. For seasonal adjustments, in Model 1, we include $dq2$, $dq3$, $dq4$ and consider the introduction of A- and B-Post in 1991 with dAB . In Model 2, we also use dAB but seasonally adjust GDP and q . The trend variable serves to avoid spurious regression (which is likely given the I(1) property of most variables). However, one can assume a close relationship between economic activity, measured by GDP , and overall mail volumes.

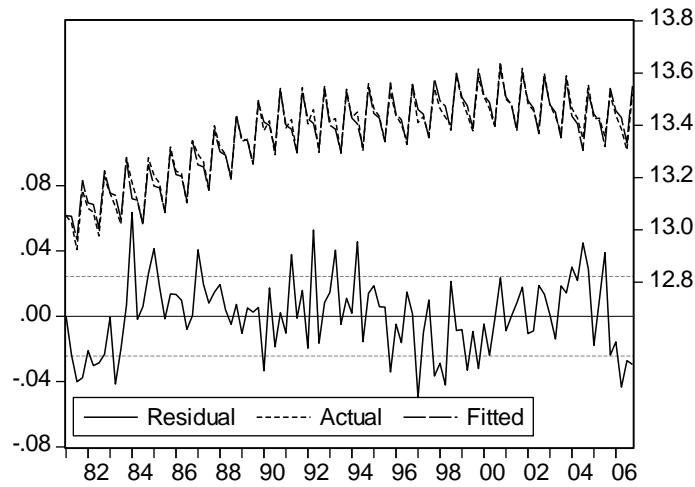
We tried several specifications and combinations of the various e-proxies. The results appear quite robust. We prefer $eBank$ over the other e-proxies because of better data quality. Further, the series exhibits a more direct impact on overall mail volumes as customers of e-banking solutions usually are incentivized by banks to opt for electronic bank-statements. The results are also robust with regards to self-operated post offices (s_office) or the sum of post offices and agencies ($office$). As the latter reflects the availability for postal service better, we include it in our preferred static regression (in real terms). The regression output is given in Table 4. We prefer Model 1 as it exhibits better Durbin-Watson statistics.

Table 4: Estimation results linear regression

	Model 1 (seasonal dummies)	Model 2 (seasonal adjustment)
Variable	Coefficient [t-statistic]	Coefficient [t-statistic]
C	8.16 [4.66]**	6.92 [4.70]**
trend	0.01 [6.48]**	0.01 [6.33]**
log(p)	-0.34 [-7.38]**	-0.33 [-8.24]**
log(gdp)	0.38 [2.29]*	0.51 [3.60]**
log(s)	0.05 [1.79]	0.06 [2.45]*
office	8.17e-5 [1.78]	4.17e-5 [1.00]
eBank	-1.71e-7 [-5.01]**	-1.97e-7 [-6.20]**
dAB	0.02 [1.21]	0.02 [2.01]*
dQ2	-0.03 [-4.29]**	
dQ3	-0.13 [-20.36]**	
dQ4	0.08 [11.24]**	
Adjusted R ²	0.98	0.98
Durbin-Watson	1.50	1.00
Standard Errors are White heteroskedasticity-consistent; t-Statistic in parenthesis. Included observations: 104 ** significant at 99% level * significant at 95% level		

We hence confirm older estimates on the price-elasticity of mail demand with a value of -0.34/-0.33. The estimate for the GDP-elasticity of demand is lower than earlier estimates. This deviation is explained by our introduction of a trend and quarterly dummies which absorb much of the explanatory power of GDP (see VEC model below). Figure 3 displays the actual time series for volume, the fitted series and residuals.

Figure 3: Fit and residuals of linear regression (Model 1)



We also use a long-run vector error correction (VEC) model to assess the long-run equilibrium relationship between the non-stationary series of mail demand, GDP, prices, substitutes, and counter availability. The model allows us to discern between long-run equilibrium effects and short-run off-equilibrium adjustments. It assumes no constant nor trend in the cointegrating equation and the VAR. The estimated functional form is⁴

$$\begin{aligned} \Delta q_t = & \alpha(q_{t-1} - \beta_1 gdp_{t-1} - \beta_2 p_{t-1} - \beta_3 s_{t-1}) \\ & + \gamma_1 dAB + \gamma_2 eproxy_t + \gamma_3 office_t \\ & + \sum_L (\gamma_{4,L} \Delta q_{t-L} + \gamma_{5,L} \Delta gdp_{t-L} + \gamma_{6,L} \Delta p_{t-L} + \gamma_{7,L} \Delta s_{t-L}) + \varepsilon. \end{aligned}$$

The first summand contains the error correction term, which is also the cointegration relationship. The Johansen cointegration test indicates that there is one cointegrating relation.⁵

Table 5 reports the results obtained from Johansen's two-step procedure. The long-run equation (error correction term) is estimated first, second, the VAR is estimated, incorporating the cointegrating relation from the first step.

In this empirical model, we find that mail volume is highly correlated with GDP. The estimated coefficient 1.19 is close to the one found by Trinkner and Grossmann (2006), which is 1.09. The price-elasticity of demand is -0.42, which is also in the range usually found in the empirical literature: From his survey of studies, Robinson (2007) concludes that price elasticity measures for mail products

⁴ It is similar to the one estimated by Trinkner and Grossmann (2006) and Harding (2004).

⁵ According to econometric theory, a long-run equilibrium relationship may exist for nonstationary series if they are cointegrated, i.e., that a stationary linear combination of the variables is I(0). Under such conditions, a so-called (vector) error correction model (VEC) gives efficient estimates.

typically range between -0.2 and -0.8.⁶ The cross-elasticity with respect to substitute prices is not significantly different from zero. Note that – as in the static model – the distinction between priority and economy mail in 1991 had a (non-significant) positive impact on overall mail volumes.

Table 5: Estimation results VEC

Long-run equilibrium equation				
Variable	Coefficient	Std. Error	t-Statistic	
log(gdp)	1.19	0.03	-41.04	
log(p)	-0.42	0.10	4.27	
log(s)	0.03	0.11	-0.26	
Short-run equation				
α	-0.12	0.05	-2.27	
dab	-0.01	0.01	-0.95	
eBank	-4.87e-8	1.3e-8	-3.68	
office	-8.78e-6	7.6e-6	-1.15	
	t-1	t-2	t-3	t-4
$\Delta\log(q)$	-0.87 [-8.53]	-0.68 [-5.58]	-0.48 [-4.15]	-0.30 [-3.08]
$\Delta\log(gdp)$	0.21 [0.87]	0.36 [1.58]	0.18 [0.74]	-0.33 [-1.46]
$\Delta\log(p)$	-0.11 [-2.52]	-0.09 [-2.16]	-0.06 [-1.33]	-0.10 [-2.44]
$\Delta\log(s)$	0.16 [1.94]	-0.11 [-1.37]	-0.09 [-1.12]	-0.16 [-2.07]
t-Statistic in parenthesis				
Adjusted R ² : 0.53				
Johansen cointegration test (number of cointegrating relations)				
H ₀	Trace	Max. EV		
none	40.93	26.77		
at most 1 relation	14.17	10.54		
at most 2 relations	3.63	3.62		
All endogenous variables are Granger-causal and according to lag-exclusion Wald tests, all lags are significant.				

We therefore find with both approaches that *the decline in the number of post offices had no significant influence on mail volumes*. Rather, we have to reject the null-hypothesis that e-substitutes had no effect on overall mail volumes: The emergence of electronic substitutes structurally changed the pattern of mail demand in a negative way. The result on post office closures does not come as a surprise: Private customers only reflect a small fraction of total mail volumes (about 15%) and as a collection channel for private customers, letter boxes are a valuable and very accessible alternative to post offices.

3.4 Impact on Parcel Volumes and Financial Services

In the above section we have extensively discussed the impact of post office restructurings on overall mail volumes. The reason for our empirical exercise with respect to mail volume was to explore whether resizing the post office network will induce customers to change their mailing behavior such that it may backfire in competition. If there had been a large impact of post office closures on volumes, the existing network may well have been optimal in size and scope.

Similar or even more pronounced effects may be expected with respect to parcel volumes and financial services, as these are counter-intensive services as well. Empirically addressing these issues is beyond the scope of this paper mainly

⁶ Cf. also Fève et al. (2006) for a recent study on mail price elasticities.

for two reasons: First, The estimation is made possible by clean time-series, especially with respect to mail volumes, which are still in monopoly. In the parcels and financial services markets, however, such clean time-series are not available over a long enough period of time. Further, as volumes are affected by various other factors, such as competition (third-party networks, services, prices, etc.) which cannot be properly controlled for. Hence, an empirical assessment fails through data availability.

Second, in order to answer the initial question, a similar empirical assessment for the parcel and financial services markets is not necessary. In both of these markets, the postal network holds its ground against competing networks which can serve as a benchmark in our analysis. Recent analyses, e.g. by Cohen et al. (2008) show that compared to other networks, posts often have a disproportionate percentage of their post offices located in rural areas as compared with banks or pharmacies. In 2007, Swiss Post operated 2'469 post offices offering financial services. Compared to private banking networks in Switzerland, this is obviously an excessive number: The largest private banking network (operated by the Raiffeisen Group) consists of 1'162 offices (there are plans to reduce those 800); the second largest (operated by cantonal banks) consists of 727 offices. Hence, considering this competitive benchmark, a reduction in self-operated post offices is not expected to greatly affect demand in the market for financial services.

A similar argument applies to the parcels market: In Switzerland, presence in self-operated outlets does not seem to be necessary at all to attract customers: Private competitors do not operate retail offices themselves: They are present in selected train stations, gas stations or stationary shops. However, all suppliers operate altogether about 100 outlets only, indicating that the present network of Swiss Post is hardly too small. This is in contrast to Germany, where Hermes now operates about 13'000 agencies for its parcels business.

4. Key Strategic Issues

In this Section, we identify key strategic issues of post office realignments. The review of the literature suggests the need of such restructurings in light of increasing competitive pressure as most historical post office networks seem to exhibit a disproportionate percentage of their post offices located in rural areas which rather reflects the distribution of public services than competitive goods. However, minimal coverage regulations usually hamper the possibilities of commercial realignments. Hence, regulatory restrictions and (potential) political responses to optimization projects significantly determine the available options. We therefore treat such minimal coverage restrictions as given and explore the basic options available for postal incumbents in light of the various country studies as described above (New Zealand, Sweden, France, Italy, Germany, UK, and Switzerland). Note that minimal coverage restrictions also preclude hybrid electronic means to deliver selected services. We hence concentrate on a feasible set of post office strategies, given a realistic set (at least for Switzerland) of input-oriented regulation.

A comprehensive restructuring requires postal operators to value various issues that are interrelated. On the services side, restrictions on product offerings,

cross-selling potential, credibility, and other revenues effects are important. On the cost side, channel selection, potential partners, IT and other infrastructure in place, economies of scale and scope, outsourcing possibilities, estimated savings, existing contractual arrangements, and possible external financing mechanisms play an important role. We do not explore these factors in detail. Rather we derive three postal network models that are sustainable in a fully competitive scenario.

The first model, the “**postal network**” focuses on the efficient provision of the postal core business and requires a complete shut down of the traditional post office network. Instead, retail customers are offered a basic range of services in agencies run by partners countrywide. Thereby, the necessary economies of scope are exploited between postal services and a standalone partner core business such as the retailing of groceries. At the same time, regulatory accessibility restrictions are met. In contrast, business customers are served in tailored business centers that exhibit the necessary economies of scale and fulfill the specific needs of large customers. If no agencies are available, the model can be complemented with doorstep services. The main example of this model is Sweden’s Posten AB. The model requires a broad absence of input regulations that aim at preserving traditional post offices.

The second model, the “**universal network**” basically consists of classical, countrywide post offices that are extended with payments and financial services. This requires a respective IT infrastructure in place. Additionally, the network can be opened for other complex, but standardized services as insurance policies or community services. Thereby, remote “universal post offices” will likely develop into regional centers for “high value retailing” and services that require personal identification. To meet the needs of large postal customers, the model should be complemented with selected specialized business counters and collection services. Examples include La Poste from France or Australian Post. Royal Mail in the UK seems to develop into this direction too. However, the model goes along with costs of the Universal Service Obligation (USO): In remote areas, closures of such universal post offices will most probably bring net benefits. The reason is that for signing a mortgage once in their lifetime people are ready to drive into the next town – the network will be too dense in a commercial sense. That is, the respective cost of the USO is positive and calls for external financing (we assume a fully competitive scenario and hence no financing through a residual monopoly on light letters). The model applies for countries with high input regulations in terms of number of non-franchised post offices and respective possibilities to diversify into “high value retailing”.

In the third model, the “**postal bank network**”, selected post offices are converted into banks that also perform postal services. To meet the regulatory coverage constraints, the network is complemented by agencies that are run by independent partners as well as doorstep services. Hence, economies of scope are exploited either with the own bank or with partners such as grocery stores. Again, the network is to be complemented with selected large customers’ solutions. The model exists in real world in the mostly deregulated postal market of New Zealand. However, it requires the postal operators the regulatory possibility and commercial capability to run a bank.

Table 6 provides an overview of the three basic strategic models.

Table 6: Three stylized sustainable models of post office networks

	Postal Network	Universal Network	Postal Bank Network
Leading example	Sweden	France	New Zealand
Required authorizations		Supply of Financial Services / Banking license	Banking license
Offered Products (by incumbent)	Postal Services only	Postal Services Financial Transactions Financial Services Other	Postal Services Financial Transactions Banking Services
Agency types	- Business Centers Agencies Doorstep Services	Full range offices Postal business counters	Full range offices Postal business counters Agencies Doorstep Services
Franchising	Only Agencies	No	Mixed
External Financing	No	Yes	No
Ideal for incumbents that are not allowed to provide financial services	... that can count on external financing and are limited in outsourcing possibilities	... that have a banking license

Which model postal services can opt for is hence essentially determined by regulatory restrictions. For the case of Switzerland, Swiss Post is currently moving towards Model 3 and intends to provide a full coverage “postal bank network” free from the need of government subsidies but still securing the nationwide provision of postal services. However, the issue will be discussed in parliament very controversially, as banks fear the postal banking license, right wing parties fear subsidies, and left wing parties and unions fear the conversion of post offices into agencies for its impact on employment conditions.

5. SUMMARY AND CONCLUSIONS

Post offices constitute an important part of the Universal Service and its cost. Whereas post offices might play a vital role for communities, local labor markets, and social cohesion, the operators providing them increasingly face competition - be it through electronic substitutes or opening postal markets. Therefore postal incumbents strive to align their networks to competitive pressure and changing consumer needs.

This paper aimed to contribute to a better understanding of post office network optimization and to identify its key strategic issues based on sound economics.

We first examined recent realignments of postal incumbent networks in various countries in the face of upcoming or increasing competition. It turns out that none of the incumbents has left its network unchanged. In light of the realignments, the exploitation of economies of scope of postal products with other retail products seems to be at the heart of every restructuring. In other words, operating counters with postal services alone seems not to be a viable option. We observe two kinds of complementary products: (a) counter-based financial transactions/services needing support and security; (b) shop-based consumer goods as in grocery stores. For the latter category, counters seem inappropriate. Hence, incumbents have either started to supplement their post offices with mainly financial products or substituted their post offices by agencies run by third parties

such as grocery stores. In the latter case, some operators have complemented those agencies with mobile postal services such as collection services by the mailman.

Secondly, to understand the impact of such restructurings on volumes and profitability we assessed recent realignments of Swiss Post in more detail. By use of time-series techniques we found that the considerable decline in the number of post offices in Switzerland had no significant influence on mail volumes. Rather, the recent decline of overall mail volumes is due to the rise of electronic substitutes. At the same time, Swiss Post's profitability increased steadily, (partly) due to channel costs savings in collection related to the post office restructuring, and consumer satisfaction remained high. It is important to note that those restructurings, despite their success, faced heavy political resistance and resulted in new regulations: Swiss Post's universal service obligation was extended with a new requirement to run an area-wide physical post office network and respective detailed input regulations which hampered further optimization. Hence, Swiss Post's network currently in place represents only a politically constrained second best solution.

Thirdly, against this background we identified key strategic issues. Given regulatory constraints being present in the investigated countries, we derive three basic network strategies for fully liberalized postal markets. Depending on the respective national regulations, incumbents will opt either for (1) a pure postal collection network that requires a radical realignment and in effect a complete shut down of the traditional (counter) network, or (2) for a "universal postal network" where traditional post offices are complemented with high value retailing such as financial services, or (3) a postal bank network where a large part of post offices will be converted into third-party agencies and the remaining one developed into postal banks offering the basic postal services as well. For the case of Switzerland, the necessary political decisions are not taken yet and it is unclear whether Swiss Post will end up in model (2) or (3).

We conclude that diversifying into financial services helps to sustain a comparably larger and "classic" post office network based on the counter concept. If no such option is available, the substitution of traditional post offices by agencies run by third parties seems to be the only long-term solution under competition. In either case, economies of scope play a vital role for sustaining self-financed access points for postal services. Hence, national regulations regarding a) the possibility of postal operators to offer financial services and b) the accessibility of postal services and eventually counters play a key role for both the incumbent's feasible network strategies and the degree of freedom within the chosen one. If alternative and hybrid forms of service provisions are allowed to substitute physical access points, the network will more likely be fully aligned to competitive needs and exhibit a more diverse range of collection services.

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