How to break the vicious circle? Monopoly bidding for public service obligation route networks in Norway

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Abstract:

The Norwegian government experiences ever increasing subsidies, thus social welfare losses, from payments towards private (although in some cases partially state-owned) companies for provision of transport services in remote regions and exclusive access to low demand air transport markets. The question arises how to change the status quo auction rules currently in practice and how to reverse the negative cost and subvention trends?

We present a methodology based on origin-destination matrices for estimating confidential bids and carrier operating costs, when network size, demand, revenues and compensations are known. Benchmarked operating costs from carriers operating in similar structured networks will be compared on a unit basis. We will discuss our findings and make recommendations for change in policy regarding the optimal tender design.

Keywords

Airports, Public service obligation, open auction, welfare maximization

Introduction

The current Norwegian airport network is kept vital to a large degree by cross-subsidisation within the Avinor airport system, serving as the nodes for origin, destination and transfer traffic, and the subsidization of airlines serving peripheral routes and linking the connected airports through a Public Service Obligation (PSO) framework. This form of interrelated governmental support of traffic strongly affects the cost side of the Norwegian air transport system, which is leaving its balance towards increasing PSO compensations by the Ministry of Transport and Communication. In this chapter we will explore the role of the demand side and we will deliver some critical determinants of evaluating the profitability of the Norwegian PSO network.

PSO routes have been established by the Norwegian government in form of public tenders from 1997 onwards to guarantee air service to the population residing in peripheral regions, which under a competitive market would unlikely be served. According to EU-Regulation 1008/2008 on PSO routes, these can be tendered out to one carrier, restricting market access by competitors, but may in fact be tendered under various rules. The PSO routes in Norway are served primarily by the regional network carrier Wideroe (a SAS subsidiary), but also by Danish Air Transport and its Lithuania based subsidiary DOT LT (EU Commission 2011), and the helicopter shuttle service Lufttransport.

The respective fleets consist of mainly small aircraft, such as the Bombardier DHC-8-103 ("Dash 8") with 39 seats and a maximum take-off weight (MTOW) of 16 tons, the DHC-8-311("Q 300") or the DHC-8-402 with 50 seats and 19.5 tons MTOW or with 78 seats and 29.5 tons MTOW, respectively. The 19, seven and seven aircraft in the Wideroe fleet are between two and 22 years old.
Danish Air Transport mainly flies five about 25-years old ATR-42 or two ATR-72 aircraft with 46 or 68 seats and about 17 or 22 tonnes MTOW, respectively. DOT LT flies only on two routes between Oslo and Fagernes, and Oslo and Roros, with its two about 25-years old Saab 340A aircraft with 34 seats and 12.7 tons MTOW.[1]
The shuttle service between Bodo and Vaeroy is flown by two Eurocopter with 4.3 tons MTOW and about 6 seats.

TOI report 1116/2010 (TOI 2010) correctly points to the fact that the numerous Short-Take-off and Landing (STOL) runways in the PSO network pose a significant limit to carrier competition for the offered tenders, since only very few European carriers are able to serve these runways with aircraft within their fleet, given the tender requirements. Therefore, Wideroe, being the sole provider in the region of adequate aircraft types, may exploits its quasi-monopolistic bargaining power when posing offers for such routes, by declaring operating costs and eventually required route compensations higher than current market levels.

Flights on PSO routes influence the economic performance of airports in many ways. First of all they create revenues which otherwise would not have been created at all or to a lesser degree, at the same time these produce operating cost for an airport and its terminal area for

[1] Jane's All The World's Aircraft 2011-2012

handling, maintenance and air traffic control (ATC). Especially the scheduling of the labour force around a few daily flights could be challenging for the airport management under the circumstance of low demand, since considerable idle labour capacity between flights and therefore high operating costs for the airport could be assumed. In Table 1 we can see that 16 airports rely fully on PSO traffic, 27 airports have a share higher than three-quarters of total flights during a sample week in March 2009.

In addition there are further less obvious factors which are also important regarding airport efficiency in a PSO network. The efficiency of PSO routes (that is that the given aim of regional access will be reached with minimal costs) influences also the efficiency of airports. Airport mangers cannot influence the efficiency of PSO routes because they cannot influence the type of aircraft, load factors and passenger demand. They can only influence the costs of the airport to serve these PSO routes. Increases or decreases in efficiency of PSO routes influence the performance of airports. More critically must be seen the lack of degrees of freedom for airport managers operating in the Avinor system with regard to pricing their offered services optimally, since the charges schemes and PSO rules are centralistic determined (please also see chapter on charges).

The dependency on PSO traffic is strengthened by a low number of available destinations and average daily performed flights, which limits the consumer choices of travelling. However, the main social target is the provision of connectivity to the main or regional capitals or at least to a nearby regional hub.

Airport	Max. Length of Runway(s) in Meters	PAX	Destinations	Airport within 150 km Radius	Average Daily Flights	Percentage PSO on Flights (incl. stop-overs)
(VRY) Stolport	1 Helipad	10,354	1	6	3	100.0%
(RET) Stolport	800	10,524	2	5	3	100.0%
(HAA) Hasvik	909	12,898	2	6	4	100.0%
(RRS) Roros	1580	13,271	1	2	2	100.0%
(BVG) Berlevag	888	16,071	3	6	5	100.0%
(SOJ) Sorkjosen	859	23,573	3	6	5	100.0%
(VAW) Vardoe	1070	24,918	3	5	7	100.0%
(BJF) Batsfjord	810	25,854	5	6	7	100.0%
(MEH) Mehamn	800	25,868	5	7	7	100.0%
(HVG) Valan	860	26,273	3	7	7	100.0%
(SVJ) Helle	876	75,402	2	8	12	100.0%
(HOV) Hovden	950	91,827	2	7	11	100.0%
(LKN) Leknes	799	99,532	3	7	12	100.0%

(VDS) Vadso	870	99,755	6	5	17	100.0%
(FRO) Flora	1199	118,188	2	6	15	100.0%
(HFT) Hammerfest	866	130,868	6	6	25	100.0%
(SOG) Haukasen	1000	93,974	5	9	16	99.1%
(FDE) Bringeland	979	81,141	2	6	11	95.0%
(SDN) Sandane	800	44,713	4	8	7	94.0%
(VDB) Valdres	1899	5,850	2	6	4	91.7%
(SSJ) Stokka	936	88,934	5	5	17	83.3%
(BNN) Bronnoy	1199	99,727	4	5	16	80.9%
(NVK) Framnes	799	33,984	2	8	7	79.2%
(LKL) Banak	2636	56,954	2	6	7	78.0%
(MQN) Mo I Rana	799	105,608	6	5	17	77.9%
(MJF) Kjaerstad	869	77,060	5	6	14	77.6%
(RVK) Ryumsjoen	800	35,377	4	6	7	76.1%
(OSY) Namsos	831	37,596	3	5	8	70.7%
(ALF) Alta	2027	334,132	6	5	20	69.0%
(KKN) Hoeybuktmoen	2055	277,678	6	5	19	68.4%
(SKN) Skagen	829	111,101	3	8	15	67.0%
(ANX) Andenes	2468	48,248	4	6	9	55.0%
(BOO) Bodo	2794	1,554,458	16	6	106	54.6%
(TOS) Tromso/Langnes	2391	1,629,967	17	7	86	47.5%
(TRD) Vaernes	2564	3,424,965	24	5	136	18.2%
(BGO) Flesland	2795	4,628,424	34	6	197	7.7%
(OSL) Oslo	3600	18,087,722	91	9	589	5.9%

*inclusive stop-overs

Table 1: Traffic Figures and Share of Traffic from Public Service Obligation (PSO) Routes in March 2009 at Avinor Airports (OAG 2009 and Avinor Data 2011)

When analysing the PSO network economics, structure and regulations, we observe a strong financial interdependency between the different stakeholders, namely passengers, carrier(s), the airports and its owner Avinor, and the Ministry of Transport and Communications.

Route demand by passengers is particularly determined by amount of fare, number of offered destinations and airport access time (Lian and Ronnevik 2011). Under the right incentives carriers are trying to lower their operating costs to reach profitability or to minimize the required PSO compensations (Santana 2009). Avinor and its airports have the equal objective to minimize operating costs while serving aircraft and guaranteeing a minimum level of service, such as clear runways under most weather conditions. Air navigation services also in form of Aerodrome Flight Information Service (AFIS) is usually provided by the tower and air traffic control centres, and must be purchased by the airports separately.

Finally, the Ministry of Transport and Communication has the function of subsidizing route losses, but it may in return get dividends from the profits generated by the Avinor airport system.

Table 2 shows the amounts of subsidies required to run the PSO network between 2007 and 2011, which increased by 46% from 474.0 to 692.6 million NOK per operating year and translate into around 10% increase per year.

Operating Year	Subsidy for PSO service in million Norwegian Kroners	Year-on-Year change
2007	474.0	-
2008	509.8	+7.6%
2009	589.6	+15.7%
2010	656.6	+11.4%
2011	692.6	+5.5%
Increase 2007 to 2011	**+218.6**	**+46.1 %**

Table 2: Required PSO subsidies

Norwegian airports rely to different degrees on public subsidies through PSO routes. In some cases, such as at Floro, Hasvik or Roros airport, PSO routes determine exclusively the amount of traffic which is generated at these airports (see Table 1). However, not all aeronautical revenues received from PSO traffic are *per se* subsidies. It is theoretically possible for airlines to make “zero tenders”, which governs the assumption that a particular PSO route could be served profitably solely by the income from passenger revenues on these routes without requiring compensation of operating losses by the Ministry of Transport and Communications.

Currently about 1.1 million passengers or 10 per cent of domestic air passengers travel on PSO-routes in Norway. As we can see from Table 2 more than half a billion Norwegian Kroners are spent on PSO routes by the Ministry of Transport and Communications each year. The larger portion of these subsidies flows primarily to the airline operating these routes in order to cover its operating costs. Secondarily, part of the subsidies then flow to the airports in form of aeronautical charges.

In 2010 the Institute of Transport Economics (TOI 2010) was commissioned by the Ministry of Transport and Communications to evaluate the tendering of PSO routes in Norway. The Institute recommended among other things:

a) To increase competition for the tender by loosening the size specification for aircrafts (allowing smaller aircrafts with non - pressurized cabins). This would be an option for routes with very low demand and utilization to better adjust capacities in available seat-kilometres (ASK) to demand in revenue-passenger kilometres (RPK).
b) To increase the runway length at some airports to allow for more types of aircrafts and airlines to compete in that market. This would in some instances require land reclamation in rugged coastal regions due to Norway's unique topography of small islands and fjords.
c) To set only a maximum average price so that airlines can offer discount fares and price according to the willingness of passengers to pay. However, discounts are already significantly in place and our calculations have shown that the average fares amounts to about 55% the maximum fares.

The recommendations of the Institute of Transport Economics (2010) are also highly relevant for the performance of airports. Less restrictive quality standards which would lead to the use of smaller aircrafts with higher seat load factors would not only give the government better value for its PSO subsidies, but can also increase the performance of airports through more effective generation of aviation output and revenues. Similar effects would occur from the use of more discount air fares on PSO routes. Both recommendations would lead to higher seat load factors which would increase efficiency at airports and have a particular strong effect at those airports with a large share of PSO routes.
However, from the supply side the requested number of seats and frequencies in the tender documents (especially after national holidays [Lian and Ronnevik 2011]) as well as the threshold load-factors in the 'production adjustment clause' (DOT 2011) to reduce available seats on a particular route may be too restrictive for a carrier.

The recent National Transport Plan 2014-2023 assessed what kind of infrastructure is necessary for the public to be able to reach nearby airports and increase competition among carriers serving these airports, such as runway extensions at certain STOL airports, bridges, tunnels, roads, ferry services or the construction of new alternative airports (Avinor 2012).

The Impact of Airline Operating Cost Developments on PSO Compensations - the Case of Regional PSO Network Finnmark and North-Troms and the Helicopter Route Vaeroy-Bodo

In order to understand the revenue and cost relationships of regional PSO routes in Norway, we will explore a few critical determinants of such networks on the example of routes in Finnmark and North-Troms, conducted by Wideroe, and the Helicopter shuttle route between Vaeroy and Bodo, conducted by Lufttransport.

Particularly the northern routes could be regarded as a 'social luxury' with regard to their compensation costs in relation to transported annual passengers. Since a service is desired from the public, but large growth rates of traffic numbers in these sparsely populated areas seem unrealistic, it is necessary to stabilize the costs given the level of average fares and demand.

The analysed routes require more than 1/3 of the total PSO compensation, but only with 13% of the total demand. About 240 million Norwegian Kroners (200 million NOK for Finnmark and North-Troms routes and 40 million for the service Vaeroy-Bodo) are spent annually in compensation on about 145,000 passengers flying these routes (Table 3).

Finnmark and North-Troms	Passengers	Average Fares in NOK per PAX	Subsidy in NOK per PAX (2011/2012)	Compensation in million NOK (2011/2012)
2007/2008	114,357	477	1,553	177.6
2008/2009	133,598	485	1,493	199.5
Vaeroy-Bodo (85 km)				
2008/2009	9,063	570	4,341	39.3

Table 3: Demand, Revenues and Subsidies on Finnmark and North-Troms and Vaeroy-Bodo PSO routes

Certainly the escalation of 10% annual increase in subsidies is worrying from a social point of view (Table 2), therefore we analysed the given documents with regard to unit revenues and costs on a per route basis to understand on which routes most subsidy per passenger is spent. This is a slightly different approach than the one taken in Lian (2010) regarding the changes in routing and pricing in the Norwegian PSO system, and Santana (2009), focusing on the impact on operational costs of carriers and different regulations in PSO networks in comparison with the Essential Air Services (EAS) programme in the U.S., however, a simpler approach than the one taken in chapter four and five in TOI report 1116/2010 (TOI 2010).

In the airline industry it is common to base the costs and revenues on either the capacity, measured in available seat-kilometres (ASK = Available seats * Distance in Kilometres), or the demand, measured in revenue passenger-kilometres (RPK = Passengers * Distance in Kilometres). Due to the lack of reliable capacity data, we have based our figures on the RPK's per route in 2009, namely costs per RPK, revenues per RPK and subsidies/profits per RPK.

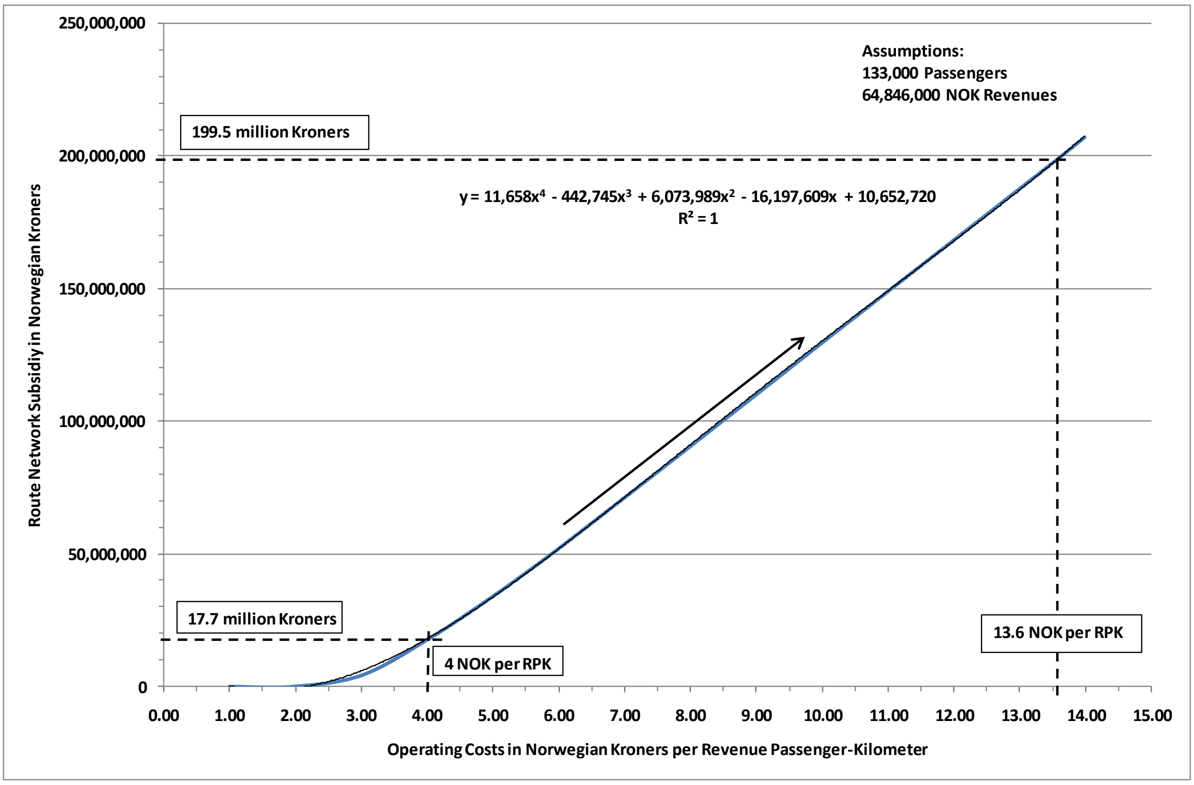

Figure 1: Dependency of Route Network Subsidy on Carrier Operating Costs for the Case of Wideroe operating in Finnmark and North-Troms Network

Knowing the historic revenues and passenger figures per individual route from the public tender documents and the subsidies per route area from an internal presentation published by the Ministry of Transport and Communications, we were able to calculate the relevant revenues per RPK (RRPK). By the technique of iteration we increased the unit costs per RPK until the level of total route area subsidy of 200 million Norwegian Kroners was reached (see Figure 1).

Figure 1 shows that the carrier Wideroe declared unit costs of around 14 Norwegian Kroners per RPK (CRPK) for the Finnmark and North-Troms network, given the 2009 levels of revenue and demand. These far outweigh the expected and historic RRPK's of around 3.7 Norwegian Kroners per RPK, which leads to a deficit of more than 10 Norwegian Kroners per RPK. Even Wideroe's own network cost of 4.02 Norwegian Kroners per RPK (CRPK) is far superseded by its declared costs for this particular tender. This deficit needs to be covered by the Ministry of Transport and Communications in the form of compensation/subsidies.

On a per passenger basis we now observe strongly varying subsidy levels of between 79 (HVG-BVG) and 5,800 (TOS – HVG) Norwegian Kroners per Passenger, at an average of 1,493 Norwegian Kroners per Passenger for the whole Finnmark and North-Troms network.

On the route Vaeroy – Bodo we can expect revenues of 6.7 Norwegian Kroners per RPK, which stand against approximated cost of 58 Norwegian Kroners per RPK, leaving a subsidy of 51.3 Norwegian Kroners per RPK. For the 85 Kilometre distance between the airports and the given demand of 9,063 passengers this amounts to the total route subsidy of around 39.5 million Norwegian Kroners. On this particular route the average fare of 570 Norwegian Kroners (which is 69% of the maximum fare requested by the Ministry of Transport and Communications) only amounts to 13% of the required subsidy of 4,341 Norwegian Kroners per passenger for this island shuttle service.

	TO												
FROM	**ALF**	**BJF**	**BVG**	**HFT**	**HVG**	**HAA**	**KKN**	**MEH**	**SOJ**	**TOS**	**VAW**	**VDS**	**Weighted Average**
ALF		2,892	2,722	776			2,654		893		2,989	2,727	**2,693**
BJF			282	2,448	1,528		876	873		4,044	335	549	**1,474**
BVG	2,801	361		2,273			1,260	468		4,176	946	940	**1,470**
HFT	824	2,526	2,246		699	620	2,788	1,526	1,613		3,094	2,654	**1,574**
HVG		1,559	79	716			2,322	767		3,377		1,974	**864**
HAA	587	2,707	2,285	603			2,590			1,426		2,839	**1,087**
KKN	2,702	884	1,227	2,796	2,130			1,729	3,731		786	257	**981**
MEH	2,316	850	389	1,547	718		1,838		3,475	3,865		1,362	**1,610**
SOJ	-207	3,071	2,758	1,443			3,994	3,493		707		3,661	**845**
TOS		4,550	4,295		3,710	1,544		3,773	728		5,844		**1,841**
VAW	3,365	426	851	3,260			794					471	**1,497**
VDS	2,637	554	961	2,682	1,855		265	1,441	3,909		514		**1,519**
Weighted Average	**2,303**	**1,835**	**2,306**	**1,800**	**879**	**901**	**1,050**	**1,854**	**748**	**1,115**	**736**	**1,531**	**1,493**

Number of Passengers	133,598
Revenue Passenger-Kilometers	19,418,968
Assumed Costs per Revenue Passenger-Kilometer in NOK per RPK	13.61
Operating Costs	264,373,714
Passenger Revenues	64,846,000
Total Routes Subsidy per Year	**199,491,099**

Table 4: Subsidy (or Profit (“-“)) per Route in NOK per Passenger April 2008 – March 2009

Route area Finnmark and North-Troms

Appendix:

	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Totalt
ALF		219	227	120			3113	2	10		1	9750	13442
BJF	8		17	1828	37		1774	74		300	11	1517	5566
BVG	14	32		864			863	19		26	3	1026	2847
HFT	2350	644	635		5507	2177	1669	3941	6		20	5316	22265
HVG	2	7	2	5794			226	88		9		466	6594
HAA	300	11	10	1219			31			1724		44	3339
KKN	2032	2534	1082	2497	406			1234	21		3713	12136	25655
MEH	228	45	38	5276	185		240		2	249		814	7077
SOJ	8	7	3	681			29	29		5392		55	6204
TOS		1070	758		3	953		1094	5930		2		9810
VAW	635	66	28	891			3366					292	5278
VDS	7594	784	182	4601	494		9573	1205	15		1073		25521
Total	13171	5419	2982	23771	6632	3130	20884	7686	5984	7700	4823	31416	133598
Number of passengers April 2008 – March 2009 Route areas 1 and 2													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Total
ALF		246	232	79	145	71	252	203	95	174	293	246	185
BJF	246		38	221	146	279	98	82	341	418	58	60	181
BVG	232	38		196	116	256	131	46	325	400	94	94	175
HFT	79	221	196		86	61	257	156	143	211	275	240	175
HVG	145	146	116	86		147	206	73	226	297	204	180	166
HAA	71	279	256	61	147		304	217	89	151	331	292	200
KKN	252	98	131	257	206	304		165	344	423	83	38	209
MEH	203	82	46	156	73	217	165		292	365	140	131	170
SOJ	95	341	325	143	226	89	344	292		79	388	341	242
TOS	174	418	400	211	297	151	423	365	79		466	420	309
VAW	293	58	94	275	204	331	83	140	388	466		55	217
VDS	246	60	94	240	180	292	38	131	341	420	55		191
Totalt	185	181	175	175	166	200	209	170	242	309	217	191	202
Distances in Kilometers													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Totalt
ALF		53,874	52,664	9,480			784,476	406	950		293	2,398,500	3,300,643
BJF	1,968		646	403,988	5,402		173,852	6,068		125,400	638	91,020	808,982
BVG	3,248	1,216		169,344			113,053	874		10,400	282	96,444	394,861
HFT	185,650	142,324	124,460		473,602	132,797	428,933	614,796	858		5,500	1,275,840	3,384,760
HVG	290	1,022	232	498,284			46,556	6,424		2,673		83,880	639,361
HAA	21,300	3,069	2,560	74,359			9,424			260,324		12,848	383,884
KKN	512,064	248,332	141,742	641,729	83,636			203,610	7,224		308,179	461,168	2,607,684
MEH	46,284	3,690	1,748	823,056	13,505		39,600		584	90,885		106,634	1,125,986
SOJ	760	2,387	975	97,383			9,976	8,468		425,968		18,755	564,672
TOS		447,260	303,200		891	143,903		399,310	468,470		932		1,763,966
VAW	186,055	3,828	2,632	245,025			279,378					16,060	732,978
VDS	1,868,124	47,040	17,108	1,104,240	88,920		363,774	157,855	5,115		59,015		3,711,191
Total	2,825,743	954,042	647,967	4,066,888	665,956	276,700	2,249,022	1,397,811	483,201	915,650	374,839	4,561,149	########
Number of revenue passenger kilometers (RPK) April 2008 – March 2009 Route areas 1 and 2													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Total
ALF		100	99	36			2419		4		1	6070	8729
BJF			4	1025	17		813	18		494	5	407	2782
BVG	5	5		342			452	3		33	1	349	1189
HFT	590	311	268		2597	458	1186	2356	2		13	3259	11041
HVG		3	3	2637			109	20		6		222	3001
HAA	114	12	12	277			48			1085		50	1598
KKN	1481	1140	602	1756	274			638	20		1279	3155	10344
MEH	102	12	9	3044	51		98		1	275		343	3935

SOJ	12	11	5	343			20	14		1987		54	2446
TOS		1221	872		1	488		1309	2063		1		5956
VAW	396	24	12	431			1132					81	2076
VDS	5408	206	58	2695	294		2414	413	11		252		11750
Totalt	8108	3045	1944	12585	3234	946	8690	4772	2100	3879	1552	13990	64846
Passenger revenues (NOK1000) April 2008 – March 2009 Route areas 1 and 2													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Total
ALF		457	436	300			777		400		1000	623	649
BJF			235	561	459		458	243		1647	455	268	500
BVG	357	156		396			524	158		1269	333	340	418
HFT	251	483	422		472	210	711	598	333		650	613	496
HVG		429	1500	455			482	227		667		476	455
HAA	380	1091	1200	227			1548			629		1136	479
KKN	729	450	556	703	675			517	952		344	260	403
MEH	447	267	237	577	276		408		500	1104		421	556
SOJ	1500	1571	1667	504			690	483		369		982	394
TOS		1141	1150		333	512		1197	348		500		607
VAW	624	364	429	484			336					277	393
VDS	712	263	319	586	595		252	343	733		235		460
Totalt	616	562	652	529	488	302	416	621	351	504	322	445	485
Passenger revenues per Passenger (Average Fare) April 2008 – March 2009 Route areas 1 and 2													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Totalt
ALF		1.86	1.88	3.80			3.08		4.21		3.41	2.53	2.97
BJF			6.19	2.54	3.15		4.68	2.97		3.94	7.84	4.47	4.47
BVG	1.54	4.11		2.02			4.00	3.43		3.17	3.55	3.62	3.18
HFT	3.18	2.19	2.15		5.48	3.45	2.77	3.83	2.33		2.36	2.55	3.03
HVG		2.94	12.93	5.29			2.34	3.11		2.24		2.65	4.50
HAA	5.35	3.91	4.69	3.73			5.09			4.17		3.89	4.40
KKN	2.89	4.59	4.25	2.74	3.28			3.13	2.77		4.15	6.84	3.85
MEH	2.20	3.25	5.15	3.70	3.78		2.47		1.71	3.03		3.22	3.17
SOJ	15.79	4.61	5.13	3.52			2.00	1.65		4.66		2.88	5.03
TOS		2.73	2.88		1.12	3.39		3.28	4.40		1.07		2.70
VAW	2.13	6.27	4.56	1.76			4.05					5.04	3.97
VDS	2.89	4.38	3.39	2.44	3.31		6.64	2.62	2.15		4.27		3.56
Total	4.50	3.71	4.84	3.15	3.35	3.42	3.71	3.00	2.93	3.54	3.81	3.77	3.74
Passenger Yield in NOK (RRPK) April 2008 – March 2009 Route areas 1 and 2													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Totalt
ALF		-11.76	-11.73	-9.82			-10.53		-9.40		-10.20	-11.08	-10.65
BJF			-7.42	-11.08	-10.47		-8.94	-10.65		-9.67	-5.78	-9.14	-9.14
BVG	-12.07	-9.50		-11.59			-9.62	-10.18		-10.44	-10.07	-10.00	-10.43
HFT	-10.44	-11.43	-11.46		-8.13	-10.17	-10.85	-9.78	-11.28		-11.25	-11.06	-10.58
HVG		-10.68	-0.68	-8.32			-11.27	-10.50		-11.37		-10.97	-9.11
HAA	-8.26	-9.70	-8.93	-9.89			-8.52			-9.45		-9.72	-9.21
KKN	-10.72	-9.02	-9.37	-10.88	-10.34			-10.48	-10.85		-9.46	-6.77	-9.77
MEH	-11.41	-10.36	-8.47	-9.92	-9.84		-11.14		-11.90	-10.59		-10.40	-10.45
SOJ	2.18	-9.01	-8.49	-10.09			-11.61	-11.96		-8.95		-10.73	-8.58
TOS		-10.88	-10.74		-12.49	-10.22		-10.34	-9.21		-12.54		-10.92
VAW	-11.49	-7.34	-9.05	-11.86			-9.56					-8.57	-9.65
VDS	-10.72	-9.23	-10.22	-11.17	-10.31		-6.98	-11.00	-11.46		-9.34		-10.05
Total	-9.12	-9.90	-8.78	-10.46	-10.26	-10.19	-9.90	-10.61	-10.68	-10.08	-9.81	-9.84	-9.88
Profit/Loss Margin in NOK per RPK (CRPK-RRPK) April 2008 – March 2009 Route areas 1 and 2 at 13.61 CRPK													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Totalt
ALF		-633	-618	-93			-8,261		-9		-3	-26,584	-36201
BJF			-5	-4,475	-57		-1,554	-65		-1,213	-4	-832	-8204
BVG	-39	-12		-1,963			-1,087	-9		-109	-3	-964	-4186
HFT	-1,937	-1,627	-1,426		-3,851	-1,350	-4,654	-6,014	-10		-62	-14,111	-35041
HVG		-11	0	-4,147			-525	-67		-30		-920	-5700
HAA	-176	-30	-23	-735			-80			-2,459		-125	-3628
KKN	-5,490	-2,241	-1,328	-6,981	-865			-2,134	-78		-2,917	-3,123	-25157
MEH	-528	-38	-15	-8,161	-133		-441		-7	-962		-1,109	-11394
SOJ	2	-21	-8	-983			-116	-101		-3,812		-201	-5243
TOS		-4,868	-3,256		-11	-1,471		-4,127	-4,315		-12		-18060
VAW	-2,137	-28	-24	-2,905			-2,672					-138	-7903

VDS	-20,025	-434	-175	-12,338	-917		-2,538	-1,736	-59		-551		-38774
Total	-30333	-9944	-6878	-42781	-5832	-2821	-21928	-14254	-4477	-8586	-3551	-48106	-199491
Profit/Loss per Route in NOK (thousands) April 2008 – March 2009 Route areas 1 and 2 at 13.61 CRPK													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Totalt
ALF		-2,892	-2,722	-776			-2,654		-893		-2,989	-2,727	-2,693
BJF			-282	-2,448	-1,528		-876	-873		-4,044	-335	-549	-1,474
BVG	-2,801	-361		-2,273			-1,260	-468		-4,176	-946	-940	-1,470
HFT	-824	-2,526	-2,246		-699	-620	-2,788	-1,526	-1,613		-3,094	-2,654	-1,574
HVG		-1,559	-79	-716			-2,322	-767		-3,377		-1,974	-864
HAA	-587	-2,707	-2,285	-603			-2,590			-1,426		-2,839	-1,087
KKN	-2,702	-884	-1,227	-2,796	-2,130			-1,729	-3,731		-786	-257	-981
MEH	-2,316	-850	-389	-1,547	-718		-1,838		-3,475	-3,865		-1,362	-1,610
SOJ	207	-3,071	-2,758	-1,443			-3,994	-3,493		-707		-3,661	-845
TOS		-4,550	-4,295		-3,710	-1,544		-3,773	-728		-5,844		-1,841
VAW	-3,365	-426	-851	-3,260			-794					-471	-1,497
VDS	-2,637	-554	-961	-2,682	-1,855		-265	-1,441	-3,909		-514		-1,519
Total	-2,303	-1,835	-2,306	-1,800	-879	-901	-1,050	-1,854	-748	-1,115	-736	-1,531	-1,493
Profit/Loss per Route in NOK per Passenger April 2008 – March 2009 Route areas 1 and 2 at 13.61 CRPK													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Totalt
ALF		-2.16	-2.14	-0.22			-0.93		0.19		-0.60	-1.48	-1.05
BJF			2.18	-1.48	-0.87		0.66	-1.05		-0.08	3.82	0.46	0.46
BVG	-2.48	0.10		-2.00			-0.02	-0.58		-0.84	-0.47	-0.40	-0.84
HFT	-0.84	-1.83	-1.86		1.47	-0.57	-1.25	-0.18	-1.68		-1.65	-1.46	-0.99
HVG		-1.08	8.92	1.28			-1.67	-0.90		-1.77		-1.37	0.48
HAA	1.34	-0.11	0.67	-0.29			1.08			0.15		-0.12	0.39
KKN	-1.12	0.57	0.23	-1.28	-0.74			-0.88	-1.25		0.13	2.83	-0.17
MEH	-1.81	-0.76	1.13	-0.32	-0.24		-1.54		-2.30	-0.99		-0.80	-0.85
SOJ	11.77	0.59	1.11	-0.49			-2.01	-2.36		0.65		-1.14	1.02
TOS		-1.29	-1.14		-2.89	-0.62		-0.74	0.39		-2.94		-1.32
VAW	-1.89	2.25	0.54	-2.26			0.04					1.03	-0.05
VDS	-1.12	0.36	-0.63	-1.58	-0.71		2.62	-1.40	-1.87		0.25		-0.45
Total	0.48	-0.30	0.82	-0.86	-0.66	-0.60	-0.30	-1.01	-1.09	-0.48	-0.21	-0.25	-0.28
Profit/Loss Margin in NOK per RPK (CRPK-RRPK) April 2008 – March 2009 Route areas 1 and 2 at 4.02 CRPK													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Totalt
ALF		-116	-112	-2			-731		0		0	-3,562	-4524
BJF			1	-597	-5		115	-6		-10	2	41	-618
BVG	-8	0		-338			-2	-1		-9	0	-38	-396
HFT	-156	-261	-232		695	-75	-536	-113	-1		-9	-1,864	-3247
HVG		-1	2	636			-78	-6		-5		-115	-204
HAA	28	0	2	-22			10			40		-2	-24
KKN	-575	143	33	-821	-62			-180	-9		41	1,303	-1647
MEH	-84	-3	2	-261	-3		-61		-1	-90		-85	-589
SOJ	9	1	1	-48			-20	-20		276		-21	-109
TOS		-575	-346		-3	-90		-295	182		-3		-1310
VAW	-351	9	1	-553			10					17	-904
VDS	-2,094	17	-11	-1,739	-63		953	-221	-10		15		-4137
Total	-3268	-956	-701	-4382	-135	-165	-1429	-841	-21	-113	-12	-5687	-17710
Profit/Loss per Route in NOK (thousands) April 2008 – March 2009 Route areas 1 and 2 at 4.02 CRPK													
	TO												
FROM	ALF	BJF	BVG	HFT	HVG	HAA	KKN	MEH	SOJ	TOS	VAW	VDS	Totalt
ALF		-531	-496	-17			-235		19		-177	-365	-337
BJF			83	-327	-127		65	-86		-32	222	27	-111
BVG	-575	4		-391			-2	-27		-337	-44	-37	-139
HFT	-66	-405	-365		126	-35	-321	-29	-241		-454	-351	-146
HVG		-158	1,034	110			-345	-66		-526		-246	-31
HAA	95	-29	172	-18			328			23		-36	-7
KKN	-283	56	30	-329	-152			-146	-429		11	107	-64
MEH	-368	-63	52	-50	-17		-254		-673	-361		-105	-83
SOJ	1,119	202	362	-71			-692	-690		51		-388	-18
TOS		-537	-456		-859	-94		-269	31		-1,371		-134
VAW	-553	131	51	-621			3					57	-171
VDS	-276	22	-59	-378	-128		100	-183	-636		14		-162
Total	-248	-176	-235	-184	-20	-53	-68	-109	-4	-15	-3	-181	-133
Profit/Loss per Route in NOK per Passenger April 2008 – March 2009 Route areas 1 and 2 at 4.02 CRPK													