Journal of Air Transport Management 27 (2013) 29–33

Contents lists available at SciVerse ScienceDirect

Journal of Air Transport Management

journal homepage: www.elsevier.com/locate/jairtraman

Is European benchmarking methodology favouring a narrow segment of air navigation service providers?

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Keywords:
Composite flight hours
Air navigation service provider
Air traffic management

A B S T R A C T

This paper looks at the calculation of composite flight hours used input to performance benchmarking of European air navigation service providers. The way the en-route part of the composite flight hours is obtained, potentially rewards busy air navigation service providers serving larger airports with additional composite flight hours, thus making them more productive and financially cost-efficient. We also examine the financial effect of the methodology and link it to economic cost-effectiveness.

1. Introduction

European air traffic management (ATM) has emerged as relatively inefficient and costly compared to other similar systems in the world (Eurocontrol, 2012a). In 1998 The European Organisation for the Safety of Air Navigation (EUROCONTROL), established the Performance Review Commission (PRC), supported by the Performance Review Unit (PRU), to facilitate more efficient management of the European ATM and to introduce strong, transparent and independent performance review and target setting.

In December 2010, the European Commission adopted a decision establishing EU-wide performance targets for the provision of air navigation services for 2012 to 2014. PRU ATM cost-effectiveness (ACE) benchmarking, is seen as one of the main inputs for determining the EU-wide cost-efficiency target to play a major role in the assessment of national/functional airspace blocks performance plans (Eurocontrol, 2011, 2012b). In turn, it will be used by the European Commission to set the first priorities for Member States to revise their individual performance plans. For benchmarking purposes PRU established the following key performance indicators (KPIs):

(a) Financial cost-effectiveness – European air traffic management/communication, navigation, surveillance (ATM/CNS) provision costs per composite flight hour with the sub-set of KPIs:
- Air traffic control officer (ATCO) hour productivity – efficiency with which an ANSP utilizes the ATCO manpower;
- ATCO employment costs per ATCO hour;
- ATCO employment costs per composite flight hour;
- Support costs per composite flight hour;

(b) Forward looking Cost-Effectiveness – forward looking plans and projections for five years;

(c) Economic cost-effectiveness, taking into account both financial cost-effectiveness and quality of service (air traffic flow management ground delays, airborne holding, horizontal flight-efficiency and the resulting route length extension, vertical flight-efficiency and the resulting deviation from optimal vertical flight profile).

As composite flight hours (CFH) are common used as denominators for benchmarking the financial cost-effectiveness, ATCO hour productivity, ATCO employment costs per CFH and support costs per composite flight hour, they can have a significant impact on results of any benchmarking exercise.

2. Composite flight hours

CFH in Equation (1) is the summation of the en-route flight hours (EFH) and instrument flight rules (IFR) airport movements (IAM) weighted by a factor that reflected the relative (monetary) importance of terminal and en-route costs in the cost base (Eurocontrol, 2012b).

$$\mathrm{CFH} = \mathrm{EFH} + 0.26\mathrm{IAM} \tag{1}$$

Data on CFH, EFH, IAM and number of over flights (N_{ovf}) are available in all ACE Reports, whereas data on average transit time ($\bar{t}_{\mathrm{ovf}}$) are only available in ACE Reports until 2009 (Table 1). Since the Report for 2010 does not provide full information on capacity and productivity indicators at area control centre level (in particular, the important, average transit time, $\bar{t}_{\mathrm{ovf}}$), the impact of CFH on

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http://dx.doi.org/10.1016/j.jairtraman.2012.11.007

Table 1
Data for calculations of $\bar{t}_{of}$, EFH and CFH.

ANSP name	CFH	IAM	Novf	$\bar{t}_{ovf}$	AH	C	EFH $\frac{N_{ovf}\bar{t}_{ovf}}{60}$	CFH_R $EFH_R - 0.26\ IAM$	EFH_R $\frac{N_{ovf}\bar{t}_{ovfR}}{60}$	$\bar{t}_{ovfR}$ $\frac{60\ EFH}{N_{ovf}}$	$N_{ovf}\bar{t}_{ovfR}/60$
	[h]	[/]	[/]	[min]	[h]	[€1000]	[h]	[h]	[h]	[min]	[/]
DSNA	2,608,943	1,825,955	2,700,262	24.08	3,491,423	1,157,658	2,128,651	1,558,453	1,083,705	47.30	1.96
NATS	1,780,323	1,788,687	2,230,255	18.32	1,761,911	686,714	1,309,834	1,146,030	680,971	35.24	1.92
UkSATSE	350,897	164,641	377,616	26.25	1,152,216	137,114	307,591	208,014	165,207	48.87	1.86
Avinor	461,124	601,428	527,555	19.46	593,808	158,022	302,927	327,475	171,104	34.45	1.77
DFS	1,860,706	2,005,398	2,727,654	17.64	1,943,240	887,594	1,333,214	1,323,334	801,930	29.33	1.66
LVNL	261,508	452,659	529,600	10.00	288,156	178,864	142,442	205,958	88,267	16.14	1.61
LFV	533,250	507,838	650,664	23.27	814,920	166,213	399,670	384,387	252,349	36.85	1.58
ENAV	1,332,441	1,128,421	1,532,885	25.60	1,783,287	648,610	1,035,626	947,420	654,031	40.54	1.58
Aena	1,751,600	1,830,254	1,681,639	28.66	3,374,412	1,187,505	1,270,178	1,279,129	803,263	45.32	1.58
Skyguide	446,306	451,172	1,154,649	11.47	414,866	217,815	327,631	338,035	220,730	17.02	1.48
Belgo-control	203,500	350,081	542,404	9.00	300,804	150,222	111,416	172,382	81,361	12.32	1.37
DHMİ	896,279	682,590	828,059	38.05	1,432,518	242,508	716,733	702,601	525,127	51.93	1.36
Finavia	175,159	253,615	230,097	22.21	287,052	57,118	108,449	151,114	85,174	28.28	1.27
NAV Portugal	326,994	258,820	402,052	31.00	356,202	134,269	258,915	275,020	207,727	38.64	1.25
ARMATS	16,326	18,698	48,120	12.00	140,460	6284	11,408	14,485	9624	14.22	1.19
PANSA	399,485	283,303	552,173	30.00	456,766	117,984	324,966	349,745	276,087	35.31	1.18
MATS	49,004	29,115	85,294	25.00	103,663	13,499	41,346	43,109	35,539	29.08	1.16
ANS CR	266,155	180,152	629,249	18.00	284,748	107,636	218,769	235,614	188,775	20.86	1.16
Austro Control	386,571	369,881	888,732	17.00	408,592	165,934	289,279	347,976	251,807	19.53	1.15
HCAA	525,775	205,566	637,923	39.00	779,100	178,065	471,704	468,097	414,650	44.37	1.14
M-NAV	24,362	12,441	125,148	9.00	98,088	10,722	21,090	22,007	18,772	10.11	1.12
MoldATSA	14,680	12,184	43,778	14.00	82,734	6630	11,475	13,383	10,215	15.73	1.12
NAVIAIR	283,701	328,788	587,298	18.00	303,519	112,009	197,218	261,674	176,189	20.15	1.12
Oro Navigacija	51,375	31,642	157,404	15.00	125,208	18,704	43,052	47,578	39,351	16.41	1.09
ROMATSA	307,889	167,860	433,848	34.00	716,758	147,767	263,736	289,491	245,847	36.47	1.07
Hungaro Control	223,735	109,203	607,452	18.00	265,716	74,035	195,011	210,628	182,236	19.26	1.07
LGS	76,768	59,858	204,012	17.00	123,073	20,134	61,023	73,366	57,803	17.95	1.06
Slovenia Control	51,524	40,235	233,298	10.00	129,794	24,224	40,941	49,344	38,883	10.53	1.05
DCAC Cyprus	137,863	62,146	267,591	26.00	181,384	40,717	121,516	132,114	115,956	27.25	1.05
EANS	60,218	29,074	150,624	20.00	62,160	9826	52,570	57,767	50,208	20.94	1.05
Croatia Control	191,291	86,246	420,613	23.00	304,169	64,323	168,605	183,659	161,235	24.05	1.05
LPS	86,442	40,382	336,097	13.00	148,217	46,367	75,820	83,320	72,821	13.54	1.04
SMATSA	224,356	62,942	505,889	24.00	301,184	69,502	207,800	218,721	202,356	24.65	1.03
MUAC	531,873	0	1,484,804	21.00	291,265	134,603	531,873	519,681	519,681	21.49	1.02
IAA	317,166	233,641	525,810	29.12	364,632	106,922	255,710	315,940	255,193	29.18	1.00
BULATSA	185,907	93,814	485,313	20.00	285,039	76,951	161,231	186,163	161,771	19.93	1.00
NATA Albania	40,038	20,583	161,444	13.00	69,919	16,462	34,624	40,331	34,980	12.87	0.99

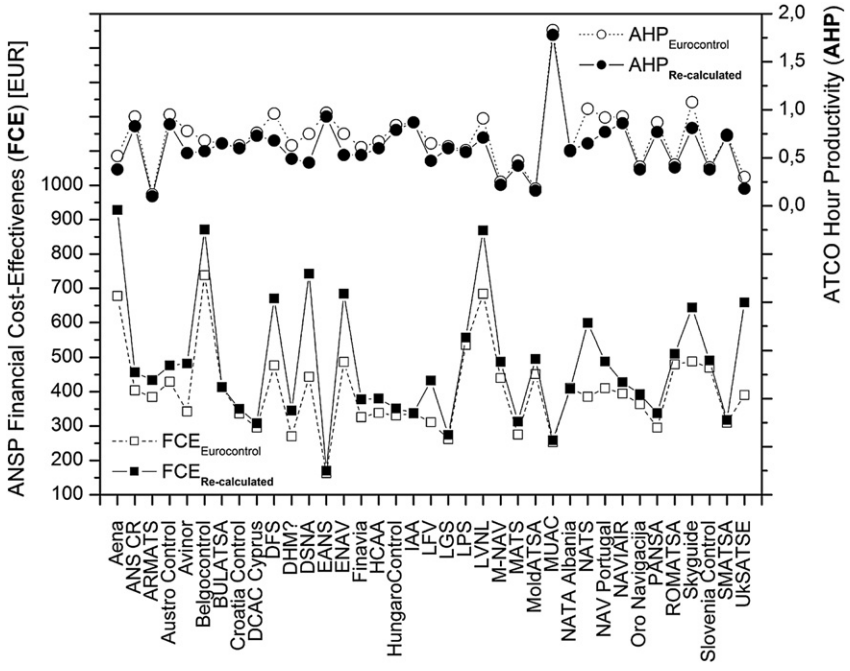

Fig. 1. Comparison of FCE and AHP – EUROCONTROL reported and recalculated.