TP 4 Aalises Modelos Baseado em folgas

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Table of contents

List of Tables

Definição do Tp

Rode o modelo baseado em folgas e compare com o resultado dos modelos BCC, CCR, e Pareto-Koo
obtidos nos laboratórios I a III. Analise os resultados e identifique os itens abaixo:

- a eficiência (pura,total e escala) das DMUs
- identifique em que escala as DMUs operam para cada modelo
- histograma das eficiências
- identifique as DMUs dentro das eficiências do histograma
- os benchmarks para cada DMU
- os pesos relativos dos inputs e outputs

Resultado da Analise:

O modelo SBM puro, aparentemente gera muitos empates, antes apenas a 8, 11 e 13 eram eficien
agora a 3 e do 5 ao 14, porém o valor da função objetiva não é exatamente a eficiencia.
Um detalhe interessante é que t sempre tendeu a valer 1.
Mas no modelo orientado os resultados forám muito parecidos com os modelos anteriores, menos

Os Dados usados são:

Table 1: dados de Provisão

DMU	codigo	I1	I2	O1
Air Canada	1	2293	7217121	13028613
ANA All Nippon Airways	2	2591	14651828	14683532
American Airlines	3	1112	26310000	34707729
British Airways	4	4624	19279420	21401581
Delta Air Lines	5	6628	23357000	27292425
Emirates	6	3457	20837627	27369447
Garuda Indonesia	7	102	4736127	2834184
KLM	8	4850	6706203	15090771
Lufthansa	9	1979	31867956	27007957
Malaysia Airlines	10	3762	3953020	7292543
Qantas	11	6074	15118143	17368244
SAS Scandinavian Airlines	12	2047	2954620	4152670

DMU	codigo	I1	I2	O1
Singapore Airlines	13	438	22323127	21286125
TAM	14	2789	8314066	7840248
Thai Airways	15	4620	33144669	10441041
United Airlines	16	4897	12195000	29065589

Table 2: dados de Distribuição

DMU	codigo	I1	I2	I3	O1	O2
Air Canada	1	8352	1302813	3060770.35	6420786	1157081
ANA All Nippon Airways	2	6479	1468332	2556513.78	4286268	2059289
American Airlines	3	23102	3470729	8654892.94	17866791	2417898
British Airways	4	16563	2140181	5304411.47	10079586	4438214
Delta Air Lines	5	17408	2729225	7349946.47	14571329	1671083
Emirates	6	13153	2736947	4717271.61	11276662	6531110
Garuda Indonesia	7	2187	283484	676346.53	1514745	282129
KLM	8	8101	1509071	3027818.18	7347192	4093466
Lufthansa	9	33288	2700757	5759785.56	12398774	6928900
Malaysia Airlines	10	5231	729243	1606904.02	2997171	2072022
Qantas	11	12156	1736844	3156052.26	9945797	2623457
SAS Scandinavian Airlines	12	4046	415270	1108178.33	2304528	344994
Singapore Airlines	13	9467	2128625	3513668.99	7733939	6559460
TAM	14	6810	784048	2015096.39	3935997	155797
Thai Airways	15	7374	1044141	2417856.19	4725671	2157255
United Airlines	16	18460	2906589	7647835.29	14645900	2340509

Modelo SBM para Distribuição

DMU	Obj	t	si(0)	si(1)	si(2)	so(0)	so(1)
1	46.32%	0.5108748961414721	0.048	0.0	0.057	-0.0	0.4
2	68.63%	0.9999999999999998	0.12	0.35	0.2	0.0	0.0
3	100.00%	0.9999999999991719	-0.0	0.0	0.0	-0.0	0.0
4	80.50%	1.0000000000000002	0.39	0.019	0.39	0.0	0.0
5	100.00%	0.9999999999999999	0.0	0.0	-0.0	0.0	0.0
6	100.00%	1.0	-0.0	0.0	0.0	0.0	0.0
7	100.00%	1.0000000000002103	0.0	0.0	0.0	-0.0	0.0
8	100.00%	1.0000000000003015	0.0	0.0	0.0	-0.0	0.0
9	100.00%	1.000000000000171	0.0	-0.0	0.0	-0.0	0.0

DMU	Obj	t	si(0)	si(1)	si(2)	so(0)	so(1)
10	100.00%	1.0000000000000002	0.0	-0.0	0.0	0.0	0.0
11	100.00%	1.000000000000095	0.0	0.0	0.0	-0.0	0.0
12	100.00%	1.0000000000000655	0.0	0.0	0.0	-0.0	0.0
13	100.00%	1.0	0.0	0.0	0.0	0.0	0.0
14	100.00%	1.0	0.0	0.0	0.0	0.0	0.0
15	81.21%	1.0	0.15	0.062	0.13	0.0	0.0
16	93.76%	1.0	0.0024	0.082	0.27	0.0	0.0

DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	0.0	0.0	0.0	0.0	0.0	0.0	0.089	0.4	0.0	0.0	0.019	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.53	0.46	0.0	0.0	0.011	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	1.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.41	0.0	0.16	0.0	0.0	0.44	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	-0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0
6	0.0	0.0	-0.0	0.0	0.0	1.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	-0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	-0.0	0.0	0.0	-0.0	0.0	0.0	0.0	-0.0	1.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	-0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	0.0	1.0	0.0	0.0	-0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	1.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.48	0.45	0.0	0.0	0.07	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.48	0.0	0.19	0.0	0.0	0.0	0.0	0.0	0.33	0.0	0.0	0.0	0.0	0.0

Metas

DMU	Meta-Inputs(0)	Meta-Inputs(1)	Meta-Inputs(2)	Meta-Outputs(0)	Meta-Outputs(1)
1	-13.63%	0.00%	-14.37%	-0.00%	191.49%
2	-22.63%	-41.26%	-30.22%	0.00%	0.00%
3	0.00%	-0.00%	-0.00%	-0.00%	0.00%
4	-27.99%	-1.55%	-28.94%	0.00%	0.00%
5	-0.00%	-0.00%	0.00%	0.00%	0.00%
6	0.00%	-0.00%	-0.00%	0.00%	-0.00%
7	-0.00%	-0.00%	-0.00%	-0.00%	-0.00%
8	-0.00%	-0.00%	-0.00%	-0.00%	0.00%

DMU	Meta-Inputs(0)	Meta-Inputs(1)	Meta-Inputs(2)	Meta-Outputs(0)	Meta-Outputs(1)
9	-0.00%	0.00%	-0.00%	-0.00%	0.00%
10	-0.00%	0.00%	-0.00%	0.00%	0.00%
11	-0.00%	-0.00%	-0.00%	-0.00%	0.00%
12	-0.00%	0.00%	-0.00%	-0.00%	0.00%
13	-0.00%	-0.00%	-0.00%	-0.00%	0.00%
14	-0.00%	-0.00%	-0.00%	0.00%	-0.00%
15	-24.83%	-10.38%	-21.16%	-0.00%	-0.00%
16	-0.16%	-4.98%	-13.58%	0.00%	-0.00%

Modelo SBM orientado

Orientado a Inputs

DMU	Obj	t	si(0)	si(1)	si(2)	so(0)	so(1)
1	82.20%	0.0	0.042	0.1	0.26	0.0	0.19
2	65.85%	0.0	0.13	0.35	0.23	0.0	0.0
3	83.31%	0.0	0.11	0.2	0.76	0.0	0.8
4	77.37%	0.0	0.41	0.11	0.39	0.0	0.0
5	88.09%	0.0	0.0	0.046	0.62	0.0	1.1
6	93.80%	0.0	0.051	0.21	0.0087	0.0	0.0
7	83.01%	0.0	0.028	0.011	0.05	0.0	0.041
8	100.00%	0.0	0.0	0.0	0.0	0.0	0.0
9	74.78%	0.0	1.6	0.085	0.17	0.0	0.0
10	81.51%	0.0	0.15	0.0098	0.08	0.0	0.0
11	100.00%	0.0	0.0	0.0	0.0	0.0	0.0
12	77.51%	0.0	0.1	0.0073	0.096	0.0	0.092
13	100.00%	0.0	0.0	0.0	-0.0	0.0	0.0
14	73.43%	0.0	0.17	0.055	0.2	0.0	0.31
15	78.55%	0.0	0.16	0.07	0.16	0.0	0.0
16	81.91%	0.0	0.047	0.2	0.77	0.0	0.53

DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.65	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.43	0.0	0.0	0.11	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.83	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0

DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.46	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.11	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.15	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0093	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.22	0.0	0.0	0.0	0.0	0.18	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	-0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.23	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	1.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	-0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.42	0.0	0.0	0.16	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0

Orientado a Output

DMU	Obj	t	si(0)	si(1)	si(2)	so(0)	so(1)
1	50.51%	0.0	0.1	0.0	0.12	0.0	0.79
2	58.57%	0.0	0.0	0.0066	0.039	0.12	0.85
3	46.17%	0.0	0.22	0.0	0.49	0.0	2.0
4	85.40%	0.0	0.42	0.0	0.26	0.041	0.48
5	45.94%	0.0	0.026	0.0	0.55	0.0	1.4
6	94.85%	0.0	0.0	0.079	0.0	0.0	0.25
7	65.42%	0.0	0.034	0.0	0.035	0.0	0.1
8	100.00%	0.0	0.0	0.0	0.0	0.0	0.0
9	94.44%	0.0	1.6	0.0	0.087	0.091	0.14
10	96.17%	0.0	0.13	0.0	0.06	0.029	0.0
11	100.00%	0.0	0.0	0.0	0.0	0.0	0.0
12	64.17%	0.0	0.11	0.0	0.086	0.0	0.13
13	100.00%	0.0	-0.0	0.0	-0.0	0.0	-0.0
14	14.72%	0.0	0.2	0.0	0.12	0.0	0.63
15	83.73%	0.0	0.15	0.0	0.083	0.043	0.24
16	49.11%	0.0	0.16	0.0	0.49	0.0	1.7

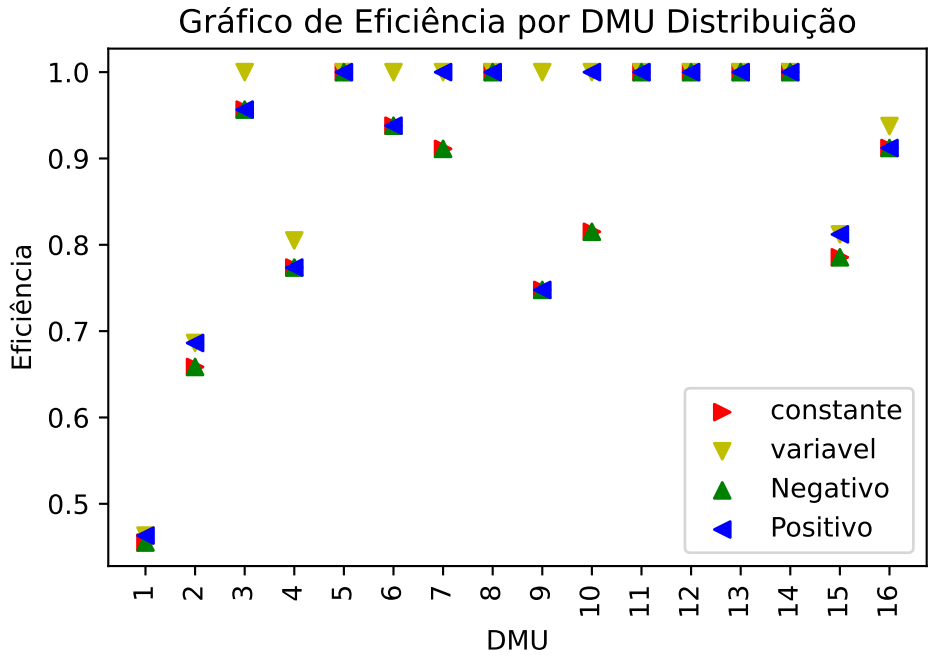
DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.052	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.68	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.65	0.0	0.0	0.0	0.0	0.0

DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.82	0.0	0.0	0.86	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.73	0.0	0.0	0.13	0.0	0.6	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.084	0.0	0.0	0.09	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.31	0.0	0.0	0.0	0.0	0.12	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	-0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.057	0.0	0.0	0.19	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.43	0.0	0.0	0.08	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.33	0.0	0.0	0.0	0.0	0.0

Retorno de Escala

DMU	CRS ef	BCC ef	DRS ef	IRS ef	Retorno
1	45.50%	46.30%	45.50%	46.30%	Crescente
2	65.90%	68.60%	65.90%	68.60%	Crescente
3	95.70%	100.00%	95.70%	95.70%	Crescente
4	77.40%	80.50%	77.40%	77.40%	Crescente
5	100.00%	100.00%	100.00%	100.00%	Constante
6	93.80%	100.00%	93.80%	93.80%	Constante
7	91.10%	100.00%	91.10%	100.00%	Crescente
8	100.00%	100.00%	100.00%	100.00%	Constante
9	74.80%	100.00%	74.80%	74.80%	Constante
10	81.50%	100.00%	81.50%	100.00%	Crescente
11	100.00%	100.00%	100.00%	100.00%	Constante
12	100.00%	100.00%	100.00%	100.00%	Constante
13	100.00%	100.00%	100.00%	100.00%	Constante
14	100.00%	100.00%	100.00%	100.00%	Constante
15	78.60%	81.20%	78.60%	81.20%	Crescente
16	91.20%	93.80%	91.20%	91.20%	Crescente

Grafico da eficiencia, de acordo com cada fator de escala



Modelo SBM para Provisão

DMU	Obj	t	si(0)	si(1)	so(0)
1	100.00%	1.0	0.0	0.0	0.0
2	52.75%	0.9999999999999994	0.65	0.12	0.0
3	100.00%	1.0	0.0	0.0	0.0
4	52.34%	1.0	1.2	0.12	0.0
5	52.19%	1.0	1.8	0.13	0.0
6	65.53%	0.9999999999999999	0.73	0.0	0.0
7	100.00%	1.0	0.0	0.0	0.0
8	100.00%	1.0	0.0	-0.0	0.0
9	55.03%	0.9999999999999999	0.34	0.68	0.0
10	100.00%	1.0000000000000002	0.0	-0.0	0.0
11	52.04%	1.0	1.0	0.4	0.0
12	100.00%	1.0	0.0	-0.0	0.0
13	100.00%	1.0	0.0	0.0	0.0
14	53.53%	1.0000000000000002	0.77	0.012	0.0
15	18.62%	1.0	1.3	1.5	0.0

DMU	Obj	t	si(0)	si(1)	so(0)
16	100.00%	1.0	-0.0	0.0	0.0

DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.37	0.0	0.0	0.0	0.63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.58	0.0	0.0	0.0	0.42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.77	0.0	0.0	0.0	0.23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.73	0.0	0.0	0.0	0.22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.049
7	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.76	0.0	0.0	0.0	0.24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.55
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
14	0.0	0.0	0.16	0.0	0.0	0.0	0.84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.24	0.0	0.0	0.0	0.76	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	-0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0

Metas

DMU	Meta-Inputs(0)	Meta-Inputs(1)	Meta-Outputs(0)
1	-0.00%	-0.00%	-0.00%
2	-81.57%	-12.94%	0.00%
3	-0.00%	-0.00%	-0.00%
4	-85.07%	-10.25%	0.00%
5	-86.77%	-8.85%	0.00%
6	-68.93%	0.00%	-0.00%
7	0.00%	0.00%	0.00%
8	-0.00%	0.00%	0.00%
9	-56.14%	-33.79%	0.00%
10	-0.00%	0.00%	-0.00%
11	-54.58%	-41.34%	0.00%
12	-0.00%	0.00%	-0.00%
13	-0.00%	-0.00%	-0.00%
14	-90.66%	-2.28%	0.00%

DMU	Meta-Inputs(0)	Meta-Inputs(1)	Meta-Outputs(0)
15	-92.57%	-70.18%	0.00%
16	0.00%	-0.00%	-0.00%

Modelo SBM orientado

Orientado a Inputs

DMU	Obj	t	si(0)	si(1)	so(0)
1	82.48%	0.0	0.25	0.0	0.0
2	47.06%	0.0	0.65	0.22	0.0
3	100.00%	0.0	0.0	0.0	0.0
4	49.49%	0.0	1.2	0.19	0.0
5	50.88%	0.0	1.8	0.17	0.0
6	62.47%	0.0	0.79	0.0057	0.0
7	59.97%	0.0	0.013	0.11	0.0
8	73.42%	0.0	0.71	0.024	0.0
9	53.98%	0.0	0.34	0.72	0.0
10	55.03%	0.0	0.78	0.057	0.0
11	48.12%	0.0	1.7	0.12	0.0
12	46.57%	0.0	0.41	0.077	0.0
13	100.00%	0.0	0.0	-0.0	0.0
14	40.25%	0.0	0.78	0.15	0.0
15	15.56%	0.0	1.3	1.6	0.0
16	100.00%	0.0	0.0	-0.0	0.0

DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	0.0	0.0	0.15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.27
2	0.0	0.0	0.42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.13	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.52
9	0.0	0.0	0.78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.25

DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
11	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.14
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	-0.0
14	0.0	0.0	0.23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0

Orientado a Output

DMU	Obj	t	si(0)	si(1)	so(0)
1	84.55%	0.0	0.0	0.0	0.14
2	58.34%	0.0	0.0	0.0	0.6
3	100.00%	0.0	0.0	0.0	0.0
4	58.29%	0.0	0.0	0.0	0.87
5	57.43%	0.0	0.0	0.0	1.2
6	77.93%	0.0	0.0	0.0	0.44
7	60.79%	0.0	0.0	0.0	0.1
8	94.41%	0.0	0.66	0.0	0.051
9	61.50%	0.0	0.0	0.0	0.96
10	77.40%	0.0	0.67	0.0	0.12
11	48.20%	0.0	0.00098	0.0	1.1
12	58.97%	0.0	0.26	0.0	0.16
13	100.00%	0.0	0.0	0.0	0.0
14	43.11%	0.0	0.0	0.0	0.59
15	19.60%	0.0	0.0	0.0	2.4
16	100.00%	0.0	0.0	0.0	0.0

DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	0.0	0.0	0.064	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.45
2	0.0	0.0	0.35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.45
3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.87
5	0.0	0.0	0.29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
6	0.0	0.0	0.52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.59
7	0.0	0.0	0.015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.19	0.0	0.0	0.0
8	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.55
9	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.14

DMU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.32
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	-0.0
14	0.0	0.0	0.058	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.56
15	0.0	0.0	0.92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.73
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0

Retorno de Escala

DMU	CRS ef	BCC ef	DRS ef	IRS ef	Retorno
1	82.50%	100.00%	82.50%	100.00%	Crescente
2	47.10%	52.70%	47.10%	52.70%	Crescente
3	100.00%	100.00%	100.00%	100.00%	Constante
4	49.50%	52.30%	49.50%	52.30%	Crescente
5	50.90%	52.20%	50.90%	52.20%	Crescente
6	62.50%	65.50%	62.50%	65.50%	Crescente
7	60.00%	100.00%	60.00%	100.00%	Crescente
8	73.40%	100.00%	73.40%	100.00%	Crescente
9	54.00%	55.00%	54.00%	55.00%	Crescente
10	55.00%	100.00%	55.00%	100.00%	Crescente
11	48.10%	52.00%	48.10%	52.00%	Crescente
12	46.60%	100.00%	46.60%	100.00%	Crescente
13	100.00%	100.00%	100.00%	100.00%	Constante
14	40.20%	53.50%	40.20%	53.50%	Crescente
15	15.60%	18.60%	15.60%	18.60%	Crescente
16	100.00%	100.00%	100.00%	100.00%	Constante

Grafico da eficiencia, de acordo com cada fator de escala