

## Referências Bibliográficas

ANEEL. *Nota Técnica* no. 097/2001/SRE.

ANEEL. *Resolução Normativa* no. 55/2004.

AFRIAT, S.N.. Efficiency estimation of production functions. *Internacional Economic Review*, XIII, p. 568-598, out, 1972.

BAGDADIOGLU, N.; PRICE, C.M.W.; WEYMAN-JONES, T.G. Efficiency and ownership in electricity distribution: A non-parametric model of the Turkish experience. *Energy Economics*: 18, 1-23. 1996.

BERG, V.S.; JEONG, J.. An evaluation of incentive regulation for electric utilities. *Journal of Regulatory Economics* 3, 45-55, 1991.

BERNSTEIN, J.I.; SAPPINGTON D.E.M. Setting the X factor in price cap regulation plans. *National Bureau of Economic Research Working Paper Series*, No. 6622 JEL No. L51, D24. 1998.

CHARNES, A., COOPER, W.W.; RHODES, E. Measuring the Efficiency of Decision-Making Units. *European Journal of Operational Research*: 2, 429-444. 1978.

CHERCHYE, Laurens & THIERRY Post. *Methodological Advances in DEA: A survey and an application for the Dutch electricity sector*, in Discussion Paper 111, Erasmus Research Institute of Management, Erasmus University Rotterdam, 2001.

CHO S.-B. (1997), "Self-Organizing Map with Dynamical Node Splitting: Application to Handwritten Digit Recognition", *Neural Computation*, 9, pp. 1345-1355.

COELLI, T.; PERLEMAN, S.; A Comparison of Parametric and Non-parametric Distance Functions: With Applications to European Railways, *European Journal of Operational Research* 177, pp. 326-339, 1999.

COELLI, T.. *A Guide to Frontier Version 4.1: A Computer Program for Stochastic Frontier Production and Cost Function Estimation*, Centre for Efficiency and Productivity Analysis, University of New England, 1996.

CREW, M. A.; KLEINDORFER, P. R.. Incentive regulation in the United Kingdom and the United States: some lessons. *Journal of Regulatory Economics*. V9, 211-225, 1996.

- DTe. *Price cap regulation in the electricity sector*. Hague. Dutch Electricity Regulator Service, 1999.
- DTe. *Guidelines for price cap regulation of the Dutch electricity sector: In the period from 2000 to 2003 - Consultation Document*. Netherlands Electricity Regulatory Service. 2000.
- DTe. *Price-Cap Regulation Gas Distribution Companies 2002/2003 - Consultation document*. Office of Energy Regulation. 2001.
- DE CASTRO, L. N. & VON ZUBEN, F. J. An Improving Pruning Technique with Restart for the Kohonen Self-Organizing Feature Map, *Proc. do IJCNN*, 3, (1999a), pp. 1916-1919.
- DE CASTRO, L. N. & VON ZUBEN, F. J., “Neural Networks with Adaptive Activation Functions: A Second Order Approach”, *Proc. do SCI/ISAS'99*, 3, (1999b), pp. 574-581.
- DE CASTRO, L. N., IYODA, E. M., Santos, E. P. & VON ZUBEN F. J.. “Redes Neurais Construtivas: Uma Abordagem Comparativa”, *Anais do IV CBRN*, 1999, pp. 102-107.
- DE CASTRO, L. N., RAMÍREZ, L. A., GOMIDE, F. A. C. & VON ZUBEN, F. J., “Hybrid Tuning of Activation Functions in Feedforward Networks”, *Proc. do IJCNN'99*, 6, 1999, pp. 4263-4267.
- DE CASTRO, L.N, VON ZUBEN, F.J., MARTINS, W.. Hybrid and Constructive Learning Applied to a Prediction Problem in Agriculture. Proceedings of the IEE WCCI'98, Anchorage-AK/USA, vol.3, pp. 1932-1926, 1998.
- DOS SANTOS, E. P. & VON ZUBEN, F. J.. “Efficient Second-Order Learning Algorithms for Discrete-Time Recurrent Neural Networks”, L.R. Medsker and L.C. Jain (Eds.), *Recurrent Neural Networks: Design and Applications*, CRC Press, 2000, pp. 47-75.
- ESAA. *International Performance Measurement for the Australian Electricity Supply Industry 1990-1991*. Sydney. ESAA, 1994.
- FENG-YU Lo, CHEN-FU Chen, JAMES, T.Lin; A DEA Study to evaluate the relative Efficiency and Investigate the District reorganization of the Taywan Power Co., *IEEE Transactions on Power Systems*, Vol 16 , No 1, february 2001.
- FERREIRA, F. C.. *Regulação Econômica, Fronteira Eficiente e Clusters Dinâmicos: Desenvolvimento e Aplicação para o Cálculo do Fator X*. Tese de Doutorado. Florianópolis, Santa Catarina, out. 2003, 137 p.

- FREIXAS, X.R. GUESNERIE; TIROLE, J.. Planning under Asymmetric Information and the Ratchet Effect, *Review of Economic Studies*: LII, 173-191. 1985.
- FRITZKE, B.. “Growing Cell Structures – A Self-Organizing Network for Unsupervised and Supervised Learning”, *Neural Networks*, 7(9), 1994, pp. 1441-1460.
- GOTO, M.; TSUTSUI, M.. Comparison of productive and cost efficiencies among Japanese and US electric utilities. *Omega*: 26 (2), 177-194. 1998.
- HAYKIN, S.. *Neural networks; a comprehensive foundation*. 2. ed. : New Jersey. Prentice Hall. 1998.
- IPART. *Efficiency and Benchmarking Study of the NSW Distribution Businesses. Sydney*. Commissioned by the Independent Pricing and Regulatory Tribunal of New South Wales – Prepared by London Economics. 1999.
- JASMAB, T. and POLLITT, M. *Benchmarking and Regulation of Electricity Distribution and Transmission Utilities: Lessons from International Experience*, DAE Working Paper 01/01, Department of Applied Economics, University of Cambridge, 2001a.
- JAMASB, T.; e POLLIT, M.. Benchmarking and regulation: international electricity experience. *Utilities Policy*: 9, 107-130. 2001b.
- JAMASB, T.; POLLITT, M.. *Benchmarking and regulations of electricity transmissions and distribution utilities: lessons from international experience*. Universidade de Cambridge. Preliminar version. 2000.
- JOHNSON, R. A.; WICHERN, D. W.. *Applied Multivariate Statistical Analysis*. 4. ed. New Jersey: Prentice Hall. 1998.
- JOSKOW, P.J.; SCHMALENSEE, R.. Incentive regulation for electric utilities. *Yale Journal on Regulation*, v4(1), 1-49, 1986.
- KASKI, S.; KOHONEN, T.. *Exploratory data analysis by the self-organizing map: structures of welfare and poverty in the world*, In: *Neural Networks in the Capital Markets*, World Scientific. 1996.
- KOHONEN, T.. *Self-organizing maps*. Third Edition. Springer. 2000.
- KUMBHAKAR, S. C.; LOVELL, C.A.K.. *Stochastic Frontier Analysis*, Cambridge University Press, 2000.
- KWOK, T. Y., & YEUNG, D. Y.. Constructive Algorithms for Structure Learning in Feedforward Neural Networks for Regression Problems, *IEEE Trans. on Neural Networks*, 8(3), 1997, pp. 630-645.

- LITTLECHILD, S.. *Regulation of British Telecommunications Profitability*. London, Department of Industry. 1983.
- MCCULLOCH W. & PITTS W.. A Logical Calculus of the Ideas Immanent in Nervous Activity, *Bulletin of Mathematical Biophysics*, 5, 1943, pp. 115-133.
- MILIOTIS, P.A. Data Envelopment Analysis to Electricity Distribution Districts. *Journal of the Operational Research Society*: 43, Issue 5, 1992, 549-555.
- PARENTE, V.; ZANINI, A.; HERNANDES, E. D. M.; SOUZA, R. C.. Utilização de redes neurais como ferramenta quantitativa na regulação tarifária do setor elétrico. Anais do III Congresso Brasileiro de Regulação de Serviços Públicos Concedidos, 25 a 28 de maio, Gramado, RS, 2003.
- PESSANHA, J. F. M.; SOUZA, R. C.. Modelos de fronteira estocástica na definição de metas globais de continuidade das distribuidoras de energia elétrica. Estudo Orientado, PUC-RJ, 2003.
- RICHMOND, J. Estimating the efficiency of production. *International Economic Review*: 15(2) June, 515-521. 1974.
- SAWKINS, J. W.. Yardstick competition in the English and Welsh water industry. *Utilities Policy*, v5, n1, 27-36, 1995.
- SCHMALENSEE, R. *The control of natural monopolies*. Lexington, MA. Lexington Books, 1979.
- SHLEIFER, A.. A theory of yardstick competition. *Rand Journal of Economics*. V16, 319-327, 1985.
- THANASSOULIS, E.. The use of data envelopment analysis in the regulation of UK water utilities: Water distribution. *European Journal of Operational Research*: 126, 2000a, 436-453.
- THANASSOULIS, E.. DEA and its use in the regulation of water companies. *European Journal of Operational Research*: 127, 2000b, 1-13.
- THANASSOULIS, E.. Comparative performance measurement in regulation: the case of English and Welsh sewerage services. *Journal of the Operational Research Society*: 53, 2002, 292-302.
- UMS. *Operating expenditure benchmarking: study undertaken for the Regulator General of Victoria*. UMS Group Australia, Government Strain, 1999.
- YAISAWARNG, S.; KLEIN, J. D.. The effects of sulfur dioxide controls on productivity change in the U.S. electric power industry. *Review of Economics and Statistics* (76(3), agosto, 1994, 447-460.

- WEITZMAN, M.. The “Ratchet Principle” and Performance Incentives. *Bell Journal of Economics* (Spring), 302-308. 1980.
- WEYMAN-JONES, T.. *Problems of yardstick regulation in electricity distribution in the regulatory challenge*, edited by M. Bishop, J. Kay e C. Mayer. Oxford-New York. Oxford, University Press, 1995.
- WHITEMAN, J.. Benchmarking developing country electricity systems using data envelopment analysis. *Asia-Pacific Economic Review*: 1 (3), 71-78. 1995.
- WHITEMAN, J.W.. The potential benefits of Hilmer and related reforms: Electricity supply. *The Australian Economic Review*: 32 (1), 1999, 17-30.
- ZANINI, A., SOUZA, R. C., MATTOS, R. S. An approach to define frontier efficiency in the setting of economic regulation: the case of the electrical energy sector in Brazil In: *7th CEMAPRE (Mathematics Applied to Economics and Management)*, 2003, Lisboa, Portugal.
- ZANINI, A.; SOUZA, R. C.; MATTOS, R. S.. Economic regulation in the brazilian electric power supply sector: a methodology for defining production efficiency frontier and estimating the X-factor. *Anais do 8<sup>th</sup> Annual Meeting LACEA (Latin American and Caribbean Economic Association)*, 9 a 11 outubro, Puebla, México, 2003.
- ZANINI, A.; PEROBELLI, F. S.; PEDREIRA, C. E.; PEREIRA, F. M.. Uma investigação das potencialidades de desenvolvimento de municípios através do uso de redes neurais. *Anais do XXXI Simpósio Brasileiro de Pesquisa Operacional*, 20 a 22 de outubro, Juiz de Fora, MG, 1999, p.448-463.

Concessionária	OPEX (1000 R\$)	Consumo (MWh)	Ncons	Rede (Km)
AES-SUL	71078	7210207	945758	30618
BANDEIRANTES	224515	18190382	1256051	11442
BOA VISTA	19245	272988	52147	700
BRAGANTINA	15058	568207	89990	2638
CAIUÁ	26004	693894	172411	4227
CAT- LEO	32405	909697	283214	15577
CEA	22414	450311	103728	1582
CEAL	63825	1716664	589634	10701
CEB	145797	3220449	594749	8071
CEEE	314731	6083952	1239523	25300
CELB	11440	455613	120787	1669
CELESC	298866	12424970	1772221	57911
CELG	259062	5957214	1650166	121725
CELPA	191828	3660284	1048235	15407
CELPE	146498	6768699	2244483	38984
CELTINS	43563	665081	245377	11470
CEMAR	105760	2294546	1089195	23978
CEMAT	122108	3015825	597359	56137
CEMIG	664659	34279987	5395922	294022
CENF	9877	263154	75228	891
CEPISA	59854	1244252	598927	14863
CERJ	171248	6632670	1924552	21395
CERON	51300	1098511	327205	14476
CFLO	5099	194883	38067	423
CHESP	2441	58741	23063	2030
COCEL	3960	161612	28045	979
COELBA	253846	8533268	2858271	32839
COELCE	155384	5356489	1881919	45648
COPEL	198014	8600422	2952251	150194
COSERN	56943	2562271	710348	15796
CPEE	5847	230183	42285	1708
CPFL	262031	18386196	2936710	38597
CSPE	6402	296201	56000	2228
DEMEI	2421	81780	22585	110
ELEKTRO	151626	9996081	1757598	70861
ELETROACRE	14540	361584	127044	2071
ELETROCAR	4112	129222	27568	1293
ELETROPAULO	647659	32563414	5584566	17749
ENERGIPE	39048	1661057	403232	7294
ENERSUL	71250	2647522	572272	95652
ESCELSA	97563	5790063	910676	32572
JAGUARI	5636	339742	23691	505
JOÃO CESA	393	19647	2025	14
LIGHT	395162	20916104	3477668	17035
MANAUS	68067	2622032	345955	1670
MOCOCA	4569	156390	33229	747
MUXFELDT	478	20271	5437	54
NACIONAL	9185	344838	79251	609
NOVA PALMA	1171	46654	12212	593
PANAMBI	2076	55158	11218	164
PIRATININGA	99920	9258348	1138768	8399
POÇOS DE CALDAS	8257	253696	51356	6368
RGE	72134	5766016	1001638	37323
SAELPA	64546	1946799	869309	16909
SANTA CRUZ	21123	674281	146410	5826
SANTA MARIA	8171	241305	59014	4091
SULGIPE	6322	157908	77067	3220
URUSSANGA	1737	47182	3507	93
V. PARANAPANEMA	22547	551396	131361	4027
XANXERÊ	5135	131661	22286	887