
REFERENCES

- Abeygunawardana, A. (2008). Viability of coal and oil-fired power plants in Sri Lanka. *Economic Review*, 34, pp. 10-12.
- Alexander, G., & Baptisa, A. (2002). Economic implications of using a mean-VaR model for portfolio selection: a comparison with mean-variance analysis. *Journal of Economic Dynamics & Control*, Vol. 26, No. 7-8, 1159-1193.
- Awerbuch, S. (2004). *building capacity for portfolio-based energy planning in developing countries*. Paris: Renewable Energy & Energy Efficiency Partnership, United Nations Environment Programme.
- Awerbuch, S., & Berger, M. (2003). *Applying portfolio theory to EU electricity planning and policy making*, IEA/EET working paper EET/2003/03. Paris: International Energy Agency.
- Baron, P. (1977). On the utility theoretic foundations of mean-variance analysis. *Journal of Finance*, Vol. 32, No. 5, 1683-1697.
- Bates W. (2007). *A mean-variance portfolio optimization of California's generation mix to 2020 - Draft consultant report*. California: California Energy Commission.
- Bates, W. (2007). *A mean-variance portfolio optimization of California's generation mix to 2020; Draft consultation report*. California energy commission.
- Beltran H. (2008). *Modern portfolio theory applied to electricity generation planning*. Urbana: university of Illionois.
- Bhalla, V. (2004). *Investment management - security analysis and portfolio management*. New Delhi: S. Chand & Company Ltd.
- Bhattacharyya, C. (2009). Fossil-fuel dependence and vulnerability of electricity generation: Case of selected European countries. *Energy Policy*, Vol. 37, Issue 6, 2411-2420.
- Bodie, Z., Kane, A., & Marcus, A. J. (2005). *Investments, sixth ed*. New York: McGraw-Hills Irwin.
- Brown, G. (1991). *Propoerty investment and the capital markets*. London: E & FN Spon.
- Campbell et al. (2001). Optimal portfolio selection in a Value-at-risk framework. *Elsevier*.
- Campbell, J., Lo, A., & Mackilay, A. (1997). *The econometrics of financial markets*. New Jerdey: Princeton University Press.
- Campbell, R., Huisman, R., & Koedijk, K. (2001). Optimal portfolio selection in a value-at-risk framework. *Journal of Banking & Finance*, Vol.25, 1789-1804.
- Ceylon Electricity Board. (2008). *Lond term generation expansion plan*. Ceylon Electricity Board.
- Cohen, M. H., & Natoi, V. D. (2003). Risk and utility in portfolio optimization. *Elsevier*.

- ECA, RMA and ERM . (2010). *Environmental impacts on power sector - draft report*.
- Eillis, E. (1996). *Portfolio analysis of Japans "best mix" electricity generation resource diversification policy*. Massachusetts Institute of Technology, Department of Mechanical Engineering. Massachusetts Institute of Technology.
- Elton, E., & Gruber, M. (1997). *Modern Portfolio theory & investment analysis, 3rd Edition*. John wiley and sons.
- Elton, E., & Gruber, M. (1997). *Modern portfolio theory and investment analysis, fifth ed*. John wiley & sons.
- Engelbertus, O. (1988). Masterplans for the electricity supply - objectives and approach. *The third regional GTZ symposium on long-term power system planning* (pp. 2-3). Colombo: CEB, GTZ.
- Huanga, Y., & Wu, J. (2008). A portfolio risk analysis on electricity supply planning. *Energy Policy* 36 , 627-641.
- Jansen, J., Beurskens, L., & Tilburg, X. v. (2006). *Application of portfolio analysis to Dutch generating mix*. Energy Research Centre of the Netherlands.
- Kienzle, F., Koepfel, G., Stricker, P., & Anderson, G. (2007). Efficient electricity production portfolios taking into account physical boundaries. *27th USAEE/IAEE Northe Americal Conference*. Houston, TX. University of Moratuwa, Sri Lanka.
- Liu, M., & Wu, F. (2007). Risk management in a competitive electricity market. *Elsevier* .
- Malhotra N. (2004). *Marketing research*. Pearson Education.
- Malhotra, N. (2004). *Marketing research fourth ed*. Pearson Education Inc.
- Markowitz, H. (1952). Portfolio selection. *Journal of Finance* (1).
- Metron, R. (1972). An analytic derivation of the efficient portfolio frontier. *The journal of finance and quantitative analysis* , Vol. 7, No. 4 , 1851-1872.
- Ranganatham, M., & Madhumathi, R. (2006). *Investment analysis and portfolio management*. New Delhi: Dorling Kindersley (India) .
- Sustainable Energy Authority . (2007). *Energy balance*. Sustainable Energy Authority .
- Wickramasinghe, H. (2008). Renewable energy development in Sri Lanka. *Economic review*, Vol. 34 , pp. 16-19.
- Wijetunga, P. (2009, May 05). Significance of risk based electricity generating portfolio optimization. (M. I, Interviewer)
- World nuclear association. (2007). *Nuclear power in France*.
- Zweifel, P., & Krey, B. (2005). Efficient electricity portfolios for switzerland .

APPENDIX A I

APPENDIX A1: ELECTRICITY GENERATING PORTFOLIO

ENERGY PRICE ESCALATIONS AND HOLDING PERIOD RETURNS

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DIESEL (US\$/bbl)	32.58	28.54	26.58	24.13	21.08	20.89	22.48	23.88	16.30	20.20	31.04	52.64	26.83	33.70	46.49	61.08	72.02
Holding period returns	-0.12	-0.07	-0.09	-0.13	-0.01	0.08	0.06	-0.32	0.24	0.54	0.70	-0.49	0.26	0.38	0.31	0.18	0.13
LNG			1.15	1.12	1.23	1.05	1.10	1.13	1.22	1.34	0.90	1.19	1.08	0.85	0.82	0.67	0.61
Holding period returns			-0.03	0.10	-0.15	0.05	0.03	0.08	0.10	-0.33	0.32	-0.09	-0.21	-0.04	-0.18	-0.09	0.02
NAPHTHA (US\$/bbl)	23.72	22.62	20.27	17.22	16.34	17.61	20.22	21.91	14.83	19.37	28.26	23.78	24.89	30.44	41.23	50.74	61.81
Holding period returns	-0.05	-0.10	-0.15	-0.05	0.08	0.15	0.08	-0.32	0.31	0.46	-0.16	0.05	0.22	0.35	0.23	0.22	0.29
GAS OIL 1.0% S (US\$/bbl)	29.32	28.25	25.13	23.79	20.65	21.54	26.98	24.18	15.46	19.07	32.20	27.20	27.32	32.31	32.31	67.45	67.45
Holding period returns	-0.04	-0.11	-0.05	-0.13	0.04	0.25	-0.10	-0.36	0.23	0.69	-0.16	0.00	0.18		1.09		
FO 380CST (US\$/mt)	103.21	88.26	79.97	71.03	79.76	92.96	102.77	97.52	65.34	97.70	152.30	128.75	144.55	165.97	180.41	254.10	329.03
Holding period returns	-0.14	-0.09	-0.11	0.12	0.17	0.11	-0.05	-0.33	0.50	0.56	-0.15	0.12	0.15	0.09	0.41	0.29	0.15
Coal	28.48	31.48	30.35	27.98	25.67	21.64	25.09	28.06	26.47	30.14	33.19	35.28	28	25.00	40.00	46.00	40.00
Holding period returns	0.11	-0.04	-0.08	-0.08	-0.16	0.16	0.12	-0.06	0.14	0.10	0.06	-0.21	-0.11	0.60	0.15	-0.13	0.35

APPENDIX A I

GENERATING TECHNOLOGY COMBINATIONS

	Mean	Standard deviation	Correlation	Weights	Portfolio - mean	Portfolio -standard deviation
Diesel & Heavy Fuel	14.08	0.43	0.93	0%	11.15	0.32
	11.15	0.33		20.00%	11.74	0.34
				40.00%	12.32	0.36
				60.00%	12.91	0.38
				80.00%	13.49	0.40
				100.00%	14.08	0.42
Diesel & Coal	14.08	0.43	0.78	0%	6.40	0.26
	6.40	0.29		20.00%	7.94	0.28
				40.00%	9.47	0.31
				60.00%	11.01	0.33
				80.00%	12.54	0.36
				100.00%	14.08	0.38
Diesel & Hydro	14.08	0.43	-0.09	0%	8.47	0.20
	8.47	0.20		20.00%	9.59	0.17
				40.00%	10.71	0.20
				60.00%	11.84	0.26
				80.00%	12.96	0.34
				100.00%	14.08	0.43
Diesel & Naphtha	14.08	0.43	0.94	0%	8.73	0.30
	8.73	0.30		20.00%	9.80	0.32
				40.00%	10.87	0.35
				60.00%	11.94	0.37
				80.00%	13.01	0.40
				100.00%	14.08	0.43



University of Moratuwa Sri Lanka.
 Electronic Theses & Dissertations
 www.mrt.ac.lk

APPENDIX A1

Diesel & Wind	14.08	0.43	-0.09	0%	13.31	0.20
	13.31	0.20		20.00%	13.46	0.17
				40.00%	13.62	0.20
				60.00%	13.77	0.26
				80.00%	13.93	0.34
				100.00%	14.08	0.43
Diesel & LNG	14.08	0.43	-0.91	0%	8.67	0.45
	8.67	0.45		20.00%	13.46	0.28
				40.00%	13.62	0.13
				60.00%	13.77	0.12
				80.00%	13.93	0.27
				100.00%	14.08	0.43
Heavy & Fuel Coal	11.15	0.33	0.86	0%	6.40	0.29
	6.40	0.29		20.00%	13.46	0.29
				40.00%	13.62	0.30
				60.00%	13.77	0.30
				80.00%	13.93	0.32
				100.00%	14.08	0.33
Heavy Fuel & Hydro	11.15	0.33	-0.36		8.47	0.20
	8.47	0.20		20.00%	9.01	0.15
				40.00%	9.54	0.14
				60.00%	10.08	0.19
				80.00%	10.61	0.25
				100.00%	11.15	0.33
Heavy & Fuel Naphtha	11.15	0.33	0.99		8.73	0.30
	8.73	0.30		20.00%	9.21	0.31
				40.00%	9.70	0.31
				60.00%	10.18	0.32
				80.00%	10.67	0.32
				100.00%	11.15	0.33



University of Moratuwa Sri Lanka.
Electronic Theses & Dissertations
www.mrt.ac.lk

APPENDIX A I

Heavy Fuel & Wind	11.15	0.33	-0.36		13.31	0.20
	13.31	0.20		20.00%	12.88	0.15
				40.00%	12.45	0.14
				60.00%	12.01	0.19
				80.00%	11.58	0.25
				100.00%	11.15	0.33
Coal & Hydro	6.40	0.29	-0.19		8.47	0.20
	8.47	0.20		20.00%	8.06	0.16
				40.00%	7.64	0.15
				60.00%	7.23	0.18
				80.00%	6.81	0.23
				100.00%	6.40	0.29
Coal & Naphtha	6.40	0.30	-0.19		8.73	0.30
	8.73	0.30		20.00%	8.26	0.30
				40.00%	7.80	0.29
				60.00%	7.33	0.29
				80.00%	6.87	0.29
				100.00%	6.40	0.29
Coal & Wind	6.40	0.29	-0.19		13.31	0.20
	13.31	0.20		20.00%	11.93	0.16
				40.00%	10.55	0.15
				60.00%	9.16	0.18
				80.00%	7.78	0.23
				100.00%	6.40	0.29



University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
www.lib.mrt.ac.lk

