

CAN SYDNEY FUTURES EXCHANGE PRICES BE EXPLOITED PROFITABLY?

by

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This note tests for weak form efficiency of log price changes in 1982 daily for gold, silver, US\$, interest rates, wool and cattle December futures for the last six months only to ensure active contracts are studied. It finds a very high degree of randomness and almost no evidence of inefficiency, which implies that short term price changes cannot be exploited profitably.

Efficiency of markets is discussed in Ball, Brown, Finn and Officer (1980). Weak form efficiency means that past prices by themselves cannot be systematically exploited for economic profit. This can be tested statistically or mechanically e.g. charts or filters. However, this note uses only statistical methods.

TABLE 1

Correlation Coefficients for Sydney Futures Returns
Daily for Last Six Months of December 1982 Contracts: n = 121

Correlation Coefficients	Contracts					
	Gold	Silver	US\$	Interest Rates	Wool	Cattle
day 1	-.13	-.06	.06	.12	-.03	-.07
day 2	.23	.10	-.05	-.08	-.07	.08
day 3	.03	.07	.01	-.10	.04	-.02
day 4	-.09	-.09	.17	-.00	-.00	.16
day 5	.00	-.03	-.09	.05	.20	-.03
day 6	-.09	-.10	-.11	-.17	-.05	-.01
day 7	.04	-.03	.19	-.12	.01	.06
day 8	-.10	-.07	.07	-.01	.05	.09
day 9	.03	-.05	-.01	.12	-.08	-.13
day 10	.09	.05	-.03	.03	.11	.01

REFERENCE:

Ball, R., Brown P., Finn F. and Officer, R., "Share Markets and Portfolio Theory", University of Queensland Press, 1980.

Table 1 has correlation coefficients of log price changes from 1 to 10 days. They have a mean of 0, standard deviation of $1/\sqrt{n}$ (sample size n) when there is no correlation, so values beyond $\pm .24$ are significant at the 1 per cent level.

There are no significant correlation coefficients. Even the largest, .23, leaves unexplained $(1 - (.23)^2)$ i.e., 95.3 per cent of total variation in any model, so they are not exploitable. If the futures have a weekly pattern, this shows as large positive values of the correlation coefficients at day 5 and day 10. Clearly, this is not happening here as randomness is rampant.

The high degree of randomness in daily returns in the short term is as expected given our theory that active markets are fairly close to efficiency. Certainly, statistical attempts to model dependence such as in Table 1 will fail and mechanical methods such as charts and filters will probably do no better.

Charts are hard to interpret, which is well illustrated by Chapter 11 of Ball, Brown, Finn and Officer, which is called "Try this on your chartist".

Chapter 10 of Ball, Brown, Finn and Officer discusses how filter rules do not, in general, generate excess profits for their users.

The April 1983 editorial of this journal asks if a mathematical basis for share price, commodity and index movements can be demonstrated. Based on the present analysis, then for short term movements, the answer seems to be no. Share prices and indices presumably have a similar degree of unpredictability.