

Assume that you can buy or sell (or short-sell) any of the following securities:

Risk-free bonds: bonds that mature one year from today earn 3% per year and bonds that mature two years from today earn 5% per year.

Risky securities:

Security	Prices Today:		Payoff one year from today if the economy is:		Payoff two years from today if the economy is:	
	Bid	Ask	Strong	Weak	Strong	Weak
Private Dell	\$203	\$207	\$100	\$50	\$200	\$100
MS Machine	\$183	\$186	\$0	\$0	\$300	\$100

Golden Fleece ETF: Golden Fleece ETF holds the following positions (per share): long 3 shares of Private Dell, short 1 share of MS Machine, short \$100 of risk-free bonds that mature one year from today, and long \$200 of risk-free bonds that mature two years from today. The bid price for this ETF is \$495 and the ask price for the ETF is \$500.

What set of transactions today will generate an arbitrage profit for you today. In your answer list all transactions required today and all individual and total cash flows today, a year from today, and two years from today. Use a "+" for an inflow of cash and a "-" for an outflow of cash. Note: I recommend setting up a table like is in the notes.

Payoff on ETF: Yr 1: $S = 3(100) - 100 = 200$; $W = 3(50) - 100 = 50$
 Yr 2: $S = 3(200) - 300 + 200 = 500$; $W = 3(100) - 100 + 200 = 400$

Cost of bonds: 1-yr = $\frac{100}{1.03} = 97.09$; 2-yr = $\frac{200}{(1.05)^2} = 181.41$

Cost to buy equiv port = $3(207) - 183 - 97.09 + 181.41 = 522.32$

Proceeds from selling equiv port = $3(203) - 186 - 97.09 + 181.41 = 507.32$

⇒ Arbitrage = buy ETF + short port + folio CF_2

Trans	CF_0	CF_1	CF_2
+3 Buy ETF	-500	+200	+500
+3 Short 3 PD	+609	-300	-600
+3 Buy MS.M	-186	0	+300
+3 Buy 1-yr risk-free	-97.09	+100	0
+3 Short 2-yr risk-free	+181.41	0	-200
<u>Total</u>	<u>+7.32</u>	<u>0</u>	<u>0</u>