

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 \$530 and the ask price for the ETF is \$535.

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 part = $3(207) - 183 - 97.09 + 181.41 = 522.32$

Proceeds from selling eq part = $3(203) - 186 - 97.09 + 181.41 = 507.32$

⇒ Arbitrage = short ETF & buy portfolio

Trans	CF ₀	CF ₁		CF ₂	
		S	W	S	W
+3 Short ETF	+530	-200	-50	-500	-400
+3 Buy 3 PD	-621	+300	+150	+600	+300
+3 Short MSM	+183	0	0	-300	-100
+3 Short 1-yr risk free	+97.09	-100	-100	0	0
+3 Buy 2-yr risk free	-181.41	0	0	+200	+200
<u>Total</u>	<u>+7.68</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>