

Quiz A for 2:30 Class: 9/4/13

Name Key

Short Answer 1: Assume Kellogg's current stock price is \$60.81 and that it will pay a dividend per share of \$0.45 on 11/29/13, 2/28/14, 5/30/14, and 8/30/14. Ignoring transaction costs, what price on 3/5/14 will lead to a loss for you if you short-sell Kellogg's stock today and close out your position on 3/15/14?

Break even = $+60.81 - .45 - .45 - P = 0 \Rightarrow P = 59.91 \Rightarrow \text{loss if } P > 59.91$

Short Answer 2: Assume a risk-free bond pays \$250 one year from today. What is the no-arbitrage price if the risk-free rate is 1.1%?

$250 / (1.011)^1$

Problem: Assume that each share of the Balanced Bond ETF holds one ST Bond and two LT bonds. Assume also that you have the following bid and ask prices, the number of bonds at each price, and the payment information for the ETF and the bonds. What is the maximum total arbitrage profit you can earn today? What trades today will set up the arbitrage? What cash flows will each of your positions generate? What transactions will be required two years from today? Show that the conditions of arbitrage are met. Notes: 1) I recommend building a table. 2) Use "+" for inflows and "-" for outflows. I will assume "+" if you do not write either one.

Security	Bid		Ask		Payments in	
	Price	Number	Price	Number	Year 1	Year 2
Balanced Bond ETF	409.90	500	410.00	300	200	250
ST Bond	141.40	600	141.60	400	100	50
LT Bond	138.65	700	138.85	900	50	100

Wall Street Journal Questions are on the back of this page.

Buy ETF + short bonds: $CF_0 = -410 + 141.4 + 2(138.65) = +8.70$

Short ETF + long bonds: $CF_0 = +409.90 - 141.60 - 2(138.85) = -9.40$

Trans ₀	CF ₀	CF ₁	CF ₂	Trans ₂
+5 Buy 300 ETF	-410×300	$+200 \times 300$	$+250 \times 300$	+5 ETF matures
	= -123,000	= +60,000	= +75,000	
+5 Short 300 STB	$+141.40 \times 300$	-100×300	-50×300	+5 Buy to cover STB (or return cash)
	= +42,420	= -30,000	= -15,000	
+5 Short 600 LTB	$+138.65 \times 600$	-50×600	-100×600	+5 Buy to cover LT B (or return cash)
	= +83,190	= -30,000	= -60,000	
	<u>+26,10</u>	<u>0</u>	<u>0</u>	
	+3	+3	+3	