Quiz A for 2:30 Class: 9/11/13 Name Key

Short Answer 1: What three things might cause the risk premium on a security to fall?

market risk falls, investors become less risk averse, security varies less w/ market

Short Answer 2: Assume the risk-free interest rate equals 2% and that $300 investment in the market might pay off $355 one year from today and might pay off $275 one year from today. These two outcomes are equally likely. Set up the calculations required to determine the market risk premium.

$$\frac{\left(\frac{1}{2}(355)+\frac{1}{2}(275)\right)-300}{300}-.02 \quad \text{or} \quad \left(\frac{1}{2}\left(\frac{355-300}{300}\right)+\frac{1}{2}\left(\frac{275-300}{300}\right)\right)-.02$$

Problem: Given the following information show how you could generate the highest possible arbitrage profit today. Be sure to list all individual transactions, the resulting cash flows from each transaction, and all total cash flows. Use a "+" for inflows and a "-" for outflows. I will assume a "+" if you show neither. I recommend building a table.

Risk-free bonds: You can buy or short-sell any amount of risk-free bonds. The rate on risk-free bonds maturing in 1 year is 1.5% and on risk-free bonds maturing in two years is 1.75%.

Risky securities: The prices and number of shares available at each price are as shown below.

	Bid		Ask		Payments in one year if economy is		Payments in two years if economy is	
Security	Price	Number	Price	Number	Weak	Strong	Weak	Strong
Market	$929	500	$931	200	$100	$150	$900	$1000
van Gogh Inc.	$872	300	$874	400	$150	$200	$800	$900

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

Equiv to van Gogh = market + rf bond maturing for $50 in 1yr − rf bond that matures for $100 in 2yrs

Arbitrage: (49.26 = 50/1.015, 96.59 = 100/(1.0175)²)

Buy van Gogh + short port = $-874+929+\frac{50}{1.015}-\frac{100}{(1.0175)^2} = +7.67$

Short van Gogh + buy port = $+872-931-49.26+96.59 = -11.67$

Trans	CF_0	W	S	W	S
Buy van Gogh	(-874×400) $=-349,600$	$+150\times400$ $=+60,000$	$(+200\times400)$ $=+80,000$	$(+800\times400)$ $=+320,000$	$+900\times400$ $=+360,000$
Short Market	$(+929)\times400$ $=+371,600$	-100×400 $=-40,000$	(-150×400) $=-60,000$	(-900×400) $=-360,000$	$-1,000\times400$ $=-400,000$
Short 1-yr Treasury	$(+50)\times400/(1.015)$ $=+19,704$	-50×400 $=-20,000$	(-50×400) $=-20,000$	$\emptyset$	$\emptyset$
Buy 2-yr Treasury	$(-100\times400/(1.0175)^2)$ $=-38,636$	$\emptyset$	$\emptyset$	$+100\times400$ $=+40,000$	$+100\times400$ $=+40,000$
Total	$+3068$	$\emptyset$	$\emptyset$	$\emptyset$	$\emptyset$