KEY Exam Asset Pricing 4.1

Vrije Universiteit Amsterdam

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Question 1: The Basics

a. Pro Banks: Lower costs, closer monitoring, interest deductibility
Pro Markets: Larger pool of capital, risk sharing, equity

1 pro, 1 con; 3 points each

b. Portfolio theory prescribes that everybody, irrespective of utility function, invests in the market portfolio. Index funds provide exactly that, the market portfolio, for low costs (3 points). The critique implies that the full index also includes bad companies. Portfolio theory implies that the bad companies will be compensated for by very good companies (2 points).

c. There is a positive relation between risk aversion b and price of risk gamma. Reason is that if investors are more risk averse (b is higher), they demand a higher compensation for bearing a certain amount of risk. As such, the price of risk is higher (gamma is higher). (4 points). This is only be the case for gamma_1, as beta is the only risk factor in CAPM (2 points).

Question 2: Four Factor Model

a. The table shows that there is a relationship between size (ME) and expected return ,and between book-to-market and expected return. This should not be the case because in CAPM the market beta is the only source of risk and therefore the only priced factor (5 points).

b. Risk factors are persistent; therefore, if BTM was a proper risk factor, it should not disappear. Characteristics are mispricing, and could therefore disappear if enough investors trade on the anomaly. This is what we see for the value factor: it disappears over time (4 points). This occurs in large caps because this is where the asset management industry is mostly active (2 points).

c. Jegadeesh and Titman show that momentum results are mainly driven by **winner** portfolio. DeBondt and Thaler show that results are mainly driven by **loser** portfolio. Hence, these are **not** the same companies. This suggests that the momentum effect in J&T is driven by **underreaction**, otherwise DeB&T results should have been driven by winner portfolio stocks being overpriced. (6 points).

Question 3: Market Frictions

a. Performance based arbitrage implies that arbitrage pressure goes down as the price moves against the position of the arbitrageur in the short run. This is caused by the fact that the investors of the arbitrageurs pull out capital because of losses (1 point).
Create space implies that noise traders increase market risk, thereby reducing arbitrage pressure by sophisticated traders because of risk aversion (1 point).

Effects are effectively the same: Noise traders cause prices to move away from fundamental (=against position of arbitrageur), causing arbitrageurs to lose money and investors to pull out capital. Due to the risk of this happening, arbitrageurs will take smaller positions (3 points).

b. Executing a large order in one trade is fast, but will have a large price impact (3 points).
Other option is to split up the order into smaller trades. This is slower, but causes less price impact (3 points).

c. There is only a relationship between funding liquidity and market liquidity in times of **tight** funding liquidity. When funding liquidity is abundant, the two are not related. This implies that the relationship between the two is not linear, but conditional on the level of funding liquidity (6 points)

Question 4: Behavioral Finance

a. 1. Estimate sentiment betas using time-series regressions over some initial period (say 4 years)
2. Sort stocks on sentiment betas and form portfolios
3. Estimate portfolio sentiment betas over some period (say 4 years, non-overlapping with period in step 1), and update periodically using rolling regressions.
4. Estimate cross-sectional regressions for each period, with stock return as dependent and sentiment beta as explanatory variable (include controls, such as size, btm, mom, etc).
5. Calculate average and st.dev. of estimated coefficients from step 4.

6 points; 1 point deduction for each missing or wrong step.

b. High positive skewness implies a long right tail of the distribution of returns. Therefore, especially small **positive** returns will be **over**weighted due to probability transformation. As such, the stock will be **over**priced (6 points).

c. Investors dislike negative skewness (larger probability of negative return). Therefore, the demand for this types of stocks will be lower, so prices will be lower. Given a certain expected price, this will cause higher expected returns (5 points).

Other way of saying this: Investors want to be compensated for holding stocks with low skewness, so demand a higher expected return.

Question 5: Disagreement

a. D5: High dispersion, so there are many investors with a negative outlook that are limited in their trading due to short sale constraints. This causes stocks in the D5 portfolio to be overpriced, resulting in lower expected returns. Hence, negative alpha (3 points).
D1: Low dispersion portfolio. Alpha is not significant for 3-factor model; only marginally significant for 4-factor model. Low dispersion means no or little restrictions in trading, so no mispricing (2 points).

b. Market makers are more reluctant to provide bid and asks for small stocks in the first place. When confronted with short sale bans, they will shift focus away from smaller riskier stocks (6 points).

c. High disagreement on the market factor -> high disagreement on stocks with high beta. High disagreement -> overpricing -> lower expected returns. Hence, high beta implies: 1) higher expected return due to risk (CAPM), but also 2) lower expected returns due to overpricing. So, short sale constraints + disagreement might cause failure of CAPM (6 points).

Question 6: Delegated Asset Management

a. Asset managers prefer to invest in large cap stocks because of higher liquidity -> they have a preference for the large cap characteristic -> prices of large caps are pushed up relative to small caps. This cause expected returns of large caps to be lower than expected returns of small caps (4 points).

b. Persistence in raw returns implies that funds tend to be persistent in how much risk they take (high risk takers continue to be high risk takers). However, the balance between risk and returns, as measured by alpha, says that funds are not persistent in how successful they are in taking risks (5 points).

c. High performance -> attracting capital inflows -> Lower performance due to **decreasing returns to scale** (6 points; drs must be mentioned).