The CAPM and anomalies.

Q: Suppose an investor has the following portfolio weights:

- small firms : 75%
- big firms : -25%
- recent winners : 75%
- recent losers : -25%

The average beta for each of the four parts of his portfolio is 1.2. The standard deviation of the marketportfolio is 0.25

a) On which anomalies (with respect to the CAPM) is this investor betting? Also give two economic arguments to support the continued existence of each anomaly.
b) Will a return above the risk free rate indicate a profit due to the anomaly? Explain.

Each portfolio only contains stocks beloning to the 10% highest 'scoring' assets on the relevant characteristic; for example the 'recent loser' stocks are a collection of the 10% worst performing stocks over the past year.

c) Argue which value (or range of values) the standard deviation of this portfolio should have. Assume the CAPM is valid.

A:

a) size effect; analyst attention and/or a liquidity effect and/or better management due to decreasing returns to scale.
   Momentum effect: transaction costs, liquidity effects, (group)psychology.
   NB: the first 2 were given during lectures, the latter and others are possible too, if well motivated.
b) No, the net invested amount is not zero, and the beta of the portfolio is positive (1.2),so based on the CAPM he should get a return above the risk free rate.
c) If the portfolio is on the efficient frontier, it would have a standard deviation of 1.2 (the beta) times 0.25 (standard deviation of the market) = 0.3. However, since this portfolio is not very well diversified (only thew top 10 and bottom 10% arte taken into account), it is likely that the standard deviation is actually higher. (the portfolio would be *inside* the bullet).

Q: Explain if the Stochastic Discount Factor approach works well for the momentum anomaly.

A: It isn't really applicable; the SDF indicates in which situations returns/payoffs are the most desirable. There is no economic argument to support the idea that returns are less desirable because the stock has increased in value in the past period. The SDF is capturing risk, while the momentum anomaly is almost impossible to explain using (only) the risk of momentum-sorted portfolios.

Q: see Figure 1. Explain if these results are consistent with:

- the CAPM
- The 3 factor model of Fama and French (1993) and their economic motivation.

Dependent Variable: MEANS
Method: Least Squares
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.641384	0.340908	-4.814736	0.0030
BETAS	3.583342	0.620898	5.771225	0.0012
SMB	-1.203885	0.282449	-4.262310	0.0053
HML	9.21E-06	1.13E-06	8.185318	0.0002

R-squared	0.997680	Mean dependent var	0.988711
Adjusted R-squared	0.996520	S.D. dependent var	0.191832
S.E. of regression	0.011316	Akaike info criterion	-5.835965
Sum squared resid	0.000768	Schwarz criterion	-5.714930
Log likelihood	33.17982	F-statistic	860.0840
Durbin-Watson stat	2.398071	Prob(F-statistic)	0.000000

Beta, SMB and HML are defined as usual in the 2-pass regression approach [i.e., they're regression coefficients for the marketporfolio, a small-minus-big portfolio and a high-minus-low portfolio]

A: The results are not consistent with the CAPM, as other factors then beta are relevant in the cross-section. (p-values below 5%, even below 1%) The results are not completely consistent with the F&F 3 factor model either; the 3 factors are significant, but the sign of the SMB coefficient is negative, while the size anomaly predicts a positive sign. The magnitude of the HML effect is very suspicious too.