

hw1

2025-03-01

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qn16:

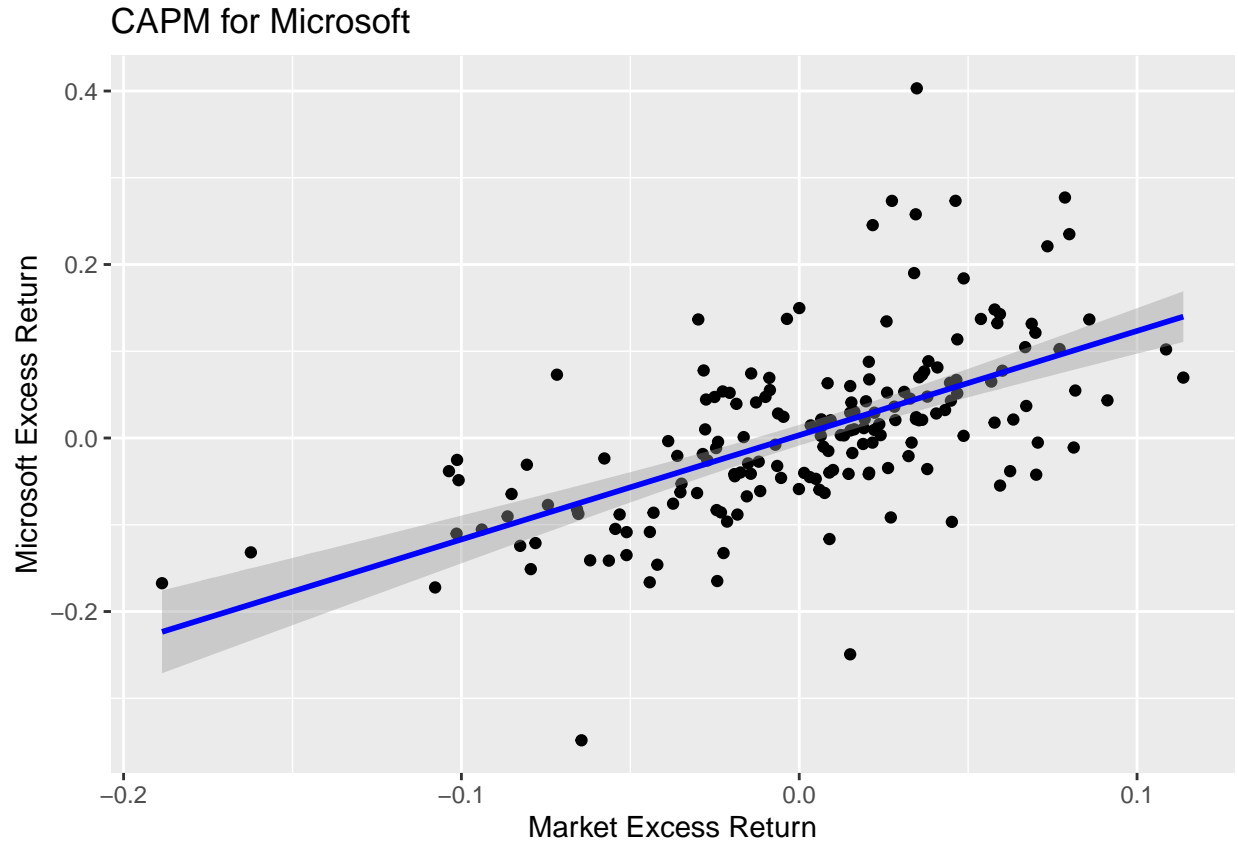
- a. Explain why the econometric model above is a simple regression model like those discussed in this chapter.

the model : $r_j - r_f = \alpha_j + \beta_j(r_m - r_f) + e_j$ This is a simple regression model because it has a single independent variable, which is $(r_m - r_f)$. and also a dependent variable, which is $r_j - r_f$. The coefficient β_j represents the slope, indicating the stock's sensitivity to the market. The intercept is α_j captures deviations from CAPM. There is also the error term e_j to account for the variability not explained in the dependent variable.

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b.Which firm appears most aggressive? Which firm appears most defensive?

From betas printed above, we can conclude that: The firm with the highest beta value, which is Ford with a beta of 1.5 appears most aggressive. And the firm with the lowest beta value, which is ExxonMobil with a beta of 0.7 appears most defensive.

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c.Finance theory says that the intercept parameter α_j should be zero. Does this seem correct given your estimates? For the Microsoft stock, plot the fitted regression line along with the data scatter.



CAPM predicts that $\alpha = 0$, meaning stock returns should be fully explained by beta. And the printed intercepts, are quite close to zero, it supports the finance theory. Just in case if they are significantly off from zero, it may indicate that the model contains flaws or that there are other factors affecting the returns.

The plot shows Microsoft's excess returns and the market's excess returns. We see the blue line represents the fitted regression. The line fits the data, fairly well, that suggests the CAPM model is a good fit for Microsoft's returns.

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d.Estimate the beta for each firm under the assumption that $\alpha = 0$, do the estimates of the beta values change much?

##		Firm	Beta	Beta_Zero_Int
##	GE.mkt_excess	GE.mkt_excess	1.1479521	1.1467633
##	IBM.mkt_excess	IBM.mkt_excess	0.9768898	0.9843954
##	Ford.mkt_excess	Ford.mkt_excess	1.6620307	1.6667168
##	Microsoft.mkt_excess	Microsoft.mkt_excess	1.2018398	1.2058695
##	Disney.mkt_excess	Disney.mkt_excess	1.0115207	1.0128190
##	ExxonMobil.mkt_excess	ExxonMobil.mkt_excess	0.4565208	0.4630727

After comparing the beta values with and without the intercept, it seems like the values did not change much, suggesting that the intercept term does not significantly affect the estimation of beta. BTW if there are significant changes, it would indicate that the intercept term plays an important role in the model.