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5. Describe carrying out cointegration analysis within a VAR framework by formulating an error correction model. Discuss the identification of the individual long-run relationships when the cointegrating rank is greater than one, with reference to a specific empirical example. Describe what are meant by overidentifying restrictions. How would you test whether these restrictions hold?
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6. Explain the sense in which ordinary least squares (OLS) and instrumental variables (IV) are method of moment estimators. Outline the conditions under which IV is to be preferred to OLS, and describe an empirical application of IV that you are familiar with.
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7. What are the main advantages and disadvantages of simulation methods such as Monte Carlo and the bootstrap? Assume a GARCH(1,1) model for return volatility. Assuming fixed and known parameters, describe how you would estimate by simulation $\theta = \Pr(S_{n+h} > C)$ where S_t is the stock price on which the returns are based, C is a specified threshold and we have observed the returns only up to time n , i.e. $S_1, S_2, \dots, S_n$.
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8. What are the properties that we would expect to observe in a sequence of 'good' interval forecasts? Describe in detail how we can test whether a particular sequence of interval forecasts possess those properties, when we have available the sequence of outcomes. Describe how such intervals would be constructed for a GARCH(1,1) model with known parameters and a conditional t distribution for returns with parameter ν , that is $r_t / \sigma_t \sim t_\nu$ where r_t is the return.
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