

Financial Econometrics

Hilary Term Overview

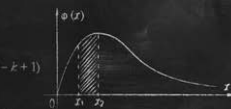
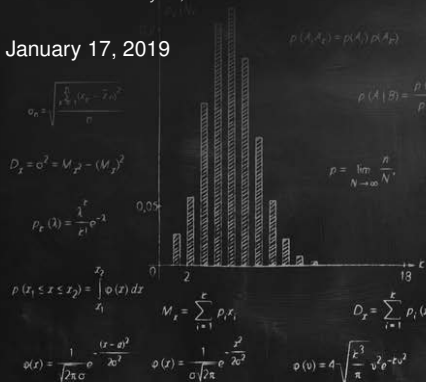
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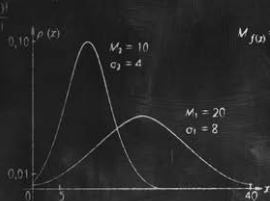
This version: January 14, 2019

January 17, 2019



$$D_x = \int_{-\infty}^{+\infty} (x - M_x)^2 \phi(x) dx$$

$$M_x = \int_{-\infty}^{+\infty} x \cdot \phi(x) dx$$



$$M_{f(x)} = \int_{-\infty}^{+\infty} f(x) \phi(x) dx$$

$$S = v \sigma^2 + \frac{\sigma^4}{2}$$

$$F = G \frac{m_1 m_2}{\rho^2}$$

$$f(v) = 4\pi \left(\frac{m_0}{2\pi k T} \right)^{3/2} v^2 e^{-\frac{m_0 v^2}{2kT}}$$

$$\phi(\ln x) d(\ln x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(\ln x - \mu)^2}{2\sigma^2}} d(\ln x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(\ln x - \mu)^2}{2\sigma^2}} dx$$

$$p(A|B) = \frac{p(A \cap B)}{p(B)}$$

$$p = \lim_{N \rightarrow \infty} \frac{n}{N}$$

$$\langle v \rangle = \frac{\langle v \rangle t}{n \sqrt{2\pi d^2}}$$

$$C = 4\pi \epsilon_0 \frac{r_1 r_2}{r_2 - r_1} I$$

$$C = \frac{\epsilon \epsilon_0 S}{d}$$

$$B = \frac{U_0 I}{2\pi b} (\cos \alpha_1 - \cos \alpha_2)$$

$$A^2 = A_1^2 + A_2^2 + 2A_1 A_2 \cos(\Phi_2 - \Phi_1)$$

$$h\nu = A + \frac{m\nu^2}{2}$$

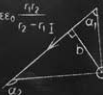
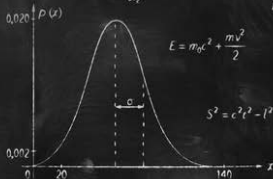
$$0.020 \uparrow \rho(v)$$

$$E = m_0 c^2 + \frac{m\nu^2}{2}$$

$$m = m_0 \sqrt{1 - \frac{v^2}{c^2}}$$

$$S^2 = c^2 t^2 - l^2 = \ln v$$

$$r_n = \frac{4\pi \epsilon_0 n^2 a^2}{m Z e^2}$$



$$R^2 = \frac{n!}{(n-k)!}$$



$$Q_t = \int_{-\infty}^{+\infty} (x - M_t) f(x) dx$$

- Topics this term:
 - ▶ Volatility measurement and modeling
 - ▶ Value-at-Risk
 - ▶ Modeling the mean multiple time series
 - ▶ Measuring and forecasting correlation and non-linear dependence
- Each module is scheduled for 2 weeks
- Course is highly cumulative
 - ▶ Heavy reliance on the material in the time-series chapter

$$R^2 = \frac{r^2}{(1-r^2)}$$



$$Q_2 = \int_{-\infty}^{\infty} (x - M_2)^2 f(x) dx$$

- Two group empirical assignments
 - ▶ Each 10% of final grade
 - ▶ Week 5
 - ▶ Week 9

Group Work

Please make sure you have a group now if you do not. Teamwork is an essential part of the course. Exceptions to the group requirement will only be made in the most extraordinary circumstances.

- Final Exam in April
 - ▶ 60% of total mark with minimum required grade
 - ▶ 3 parts
 - Multiple Choice – new this year
 - Short Answer – similar to sub-problems on weekly assignments
 - Long answer – most weekly assignments are former exam problems

$$R^2 = \frac{m}{(m+2)}$$



$$Q_1 = \int_{-\infty}^{Q_1} (x - M_2) f(x) dx$$

- Microsoft Teams is the main avenue for support
 - ▶ Like Slack: desktop, tablet, phone or browser
 - ▶ Monitored by both class teacher and me
 - ▶ Please drop in any time and post questions or issues
 - ▶ You should have received an invitation in your email
 - Link also on Canvas course home
- Online office hours via Teams
 - ▶ Friday 10 – 12
 - ▶ Also by appointment
- Weekly problem sheets
 - ▶ These are the best preparation for the exam in April
- Weekly multiple choice quizzes on Canvas
 - ▶ Simple method to assess concept knowledge
 - ▶ Not a substitute for weekly long problems