Temple University

Department of Economics

Econometrics I

Economics 615

Basic Statistical Inference

1. The mean return on a fund's portfolio is 9.05% (.0905) annually with a variance of .25 percent^2. A manager of the fund claims that the mean return can be increased with a new investment strategy. To test this claim he is permitted to run the portfolio for 40 weeks. Using the new strategy the annualized mean weekly return is found to be 9.30% (.0930). Test the managers claim at the .05 level. State the null and alternate hypothesis and justify. State clearly any assumptions you are making in order to do this problem.

2. The time taken to complete a particular step in the production of the Mistral has had a standard deviation of 35 minutes. Such variability in production times causes disruption to the scheduling of the rest of the production process. A new method is introduced and a sample of 20 times is taken. The sample standard deviation proves to be 28 minutes. On the basis of this evidence, is the new method an improvement? What assumptions did you have to make in order to do this problem?

3. Guy Wire's firm has two production methods for producing fiber optic cable. In a time and motion study the completion times taken by 10 workers using the first method had a standard deviation of s_1=50 minutes, while the 15 workers using the other method had a standard deviation of s_2=20 minutes. Test whether there is a difference in production time variability between the two methods at the 1% level.

4. Let $\bar{x}$ be the mean of a random sample of size n=15 from a distribution with mean = 80 and variance ^{2}=60. Use Chebyshev's Inequality to find a lower bound for $P(75<\bar{x}<85)$.