BEC 30325: MANAGERIAL ECONOMICS Tutorial 04 <u>Demand Estimation Part II</u>

1) The output of a simple regression model run using a software is given below. The dependent variable is CASES_18PK which represents the demand for 18PK type bottle cases and the independent variable is PRICE_18PK which is the price of such a bottle

Model:	Simple regres	sion model					
Dependent Vari	iable:	CASES_18PH	<				
Independent Va	riables:						
PRICE_18PK							
Equation:							
Predicted CASE	S_18PK = 1,8	12 - 93.007*P	RICE_18PK				
Regression Sta	tistics: Sim	ple regressio	n model for CA	ASES 18PK	(1 variable,	n=52)	
	R-Squared	Adj.RSqr	Std.Err.Reg.	# Cases	# Missing	t(2.50%,50)	Conf. level
	0.751	0.746	130.529	52	0	2.009	95.0%
Summary Table	e: Simple re	gression mod	lel for CASES	18PK (1 v	ariable, n=52	1	
Variable	Coefficient	Std.Err.	t-Stat.	P-value	Lower95%	Upper95%	
Intercept	1,812	128.070	14.150	0.000	1,555	2,069	
PRICE_18PK	-93.007	7.581	-12.269	0.000	-108.234	-77.781	
Analysis of Vari	iance: Simp	le regression	model for CA	SES 18PK	(1 variable,	<u>n=52)</u>	
Source	df	Sum Sqrs	Mean Sqr	F	P-value		
Regression	1	2,564,636.6	2,564,636.6	150.527	0.000		
Residual	50	851,884.8	17,037.7				
Total	51	3,416,521.4					

case.

- a) Interpret the estimated demand function.
- b) What is implied by the t-statistic value of the estimate of PRICE_18PK.
- c) Using the P-value, discuss the significance of the independent variable.
- d) Discuss the overall explanatory power of the model for bottle cases.

2) The Kramer Corporation's marketing manager calculates a regression, where the quantity demanded of the firm's product (designated as "C1") is the dependent variable and the price of the product (designated as "C2") and consumers' disposable income (designated as "C3") are independent variables. The Minitab results for this regression follows:

NTB > regress The regressio C1 = 40.8 - 1	s cl on 2 pred on equation is .02 C2 + 0.00	lictors in c2 667 C3	and c3		
Predictor Constant C2 C3	Coef 40.833 -1.02500 0.006667	Stdev 1,112 0,06807 0,005558	t-ratio 36.74 -15.06 1.20	0.000 0.000 0.244	
s=1.361 Analysis of w	variance	R-sq - 91.6 %	R-S	28.00-((b6)p	
SOURCE Regression Error Total	DF 2 21 23	\$\$ 422.92 38.92 461.83	MS 211.46 1.85	114.11	0.008
SOURCE C2 C3	0F 1 1	SEQ SS 420.25 2.67			

a) What is the intercept of the regression?

- b) What is the estimated regression coefficient of the product's price?
- c) What is the estimated regression coefficient of disposable income?
- d) Using the above regression results formulate the demand function for Kramer Corporation's product.
- e) Discuss the individual significance of each independent variable as well as the

overall model.

- f) What is the coefficient of determination and interpret it?
- g) Identify the standard errors of the estimates and interpret their meanings.

3) The following regression output is related to the PAWNING section of a bank.

Dependent Variable: PAWNING_ADVANCE_GROWTH_RATE Method: Least Squares Date: 12/03/12 Time: 22:58 Sample: 2010 June to 2012 September Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REAL_INTEREST_RATE AVERAGE_GOLD_PRICE_PER	-0.390539	0.118511	-3.295379	0.0028
_POUND	0.129524	0.011916	10.86994	0.0000
С	0.058845	0.010522	5.592513	0.0000
R-squared	0.856433	Mean dependent var		0.022535
Adjusted R-squared	0.845390	S.D. dependent var		0.029997
S.E. of regression	0.011795	Akaike info criterion		-5.944594
Sum squared residual	0.003617	Schwarz criterion		-5.803150
Log likelihood	89.19662	Hannan-Quinn criter.		-5.900296
F-statistic	77.55028	Durbin-Watson stat		1.209069
Prob(F-statistic)	0.000000			

You are required to answer the following questions,

- 1. Construct the demand function for PAWNING section of the bank.
- 2. Test the significance of each independent variable using hypothesis testing at the 95% confidence level.
- 3. Use hypothesis testing to test the overall significance of this regression model at 95% confidence level.
- 4. Estimate the current growth rate of PAWNING section using following information.

REAL_INTEREST_RATE = .15 AVERAGE_GOLD_PRICE_PER_POUND = 5