Introduction to Econometrics (Econ 107) Signature: _____
Drake University, Spring 2008
William M. Boal Printed name: _____

MIDTERM EXAMINATION #4 ANSWER KEY
"Multiple Regression With Cross-Section Data"
April 24, 2008

VERSION A

I. MULTIPLE CHOICE: [2 pts each—18 pts total]
(1)d. (2)b. (3)a. (4)a. (5)e. (6)f. (7)e. (8)c. (9)b.

II. MULTIPLE ANSWER:

(1)	a. No.	b. Yes.	c. No.	d. Yes.	e. Yes.
(2)	a. No.	b. Yes.	c. Yes.	d. No.	e. Yes.

III. PROBLEMS:

(1) [Adding regressors: 6 pts]
a. Dynamic model. b. 0.9. c. 1.1.

(2) [Breusch-Godfrey test: 12 pts]
a. least squares residual $\hat{\varepsilon}_t$. b. regressors x_t and y_{t-1} and lagged residual $\hat{\varepsilon}_{t-1}$.
c. 1. b. 4.77. c. 3.84 d. Yes, reject null hypothesis.

(3) [Quasi-differencing: 12 pts]

	Transformed data		
i	y_i	Replacement for intercept	x_i
2	13	0.8	9
3	19	0.8	11

(4) [Random walk: 12 pts]
a. 0.8 t. b. 7.2 t. c. Nonstationary. d. 0.8.
e. 7.2. f. 14.8.

(5) [Dickey-Fuller test: 6 pts]
a. has a unit root. b. -1.88. c. Cannot reject null hypothesis.

(6) [Forecasting, trends and seasonality: 6 pts]
a. perfect multicollinearity. b. 74.1. c. 74.6.

(7) [Forecasting, forecast interval: 12 pts]
a. No, do not transform dependent variable.
b. Yes: $\tilde{x}_{t-1} = x_{t-1} - 18$ and $\tilde{y}_{t-1} = y_{t-1} - 53$.
c. 47.0. d. 6.0. e. 47±11.76 = (35.24, 58.76).

(8) [Forecasting, AR model: 6 pts]
a. 10.4. b. 9.4. c. 9.

VERSION B

I. MULTIPLE CHOICE: [2 pts each—18 pts total]
(1)a. (2)a. (3)c. (4)b. (5)d. (6)e. (7)b. (8)d. (9)a.

II. MULTIPLE ANSWER:
(1) a. Yes. b. Yes. c. No. d. Yes. e. No.
(2) a. No. b. Yes. c. No. d. Yes. e. Yes.

III. PROBLEMS:

(1) [Adding regressors: 6 pts]
a. Dynamic model. b. 1.5. c. 1.7.

(2) [Breusch-Godfrey test: 12 pts]
a. least squares residual $\hat{\varepsilon}_t$. b. regressors x_t and y_{t-1} and lagged residual $\hat{\varepsilon}_{t-1}$.
c. 1. b. 2.88 c. 3.84 d. Cannot reject null hypothesis.

(3) [Quasi-differencing: 12 pts]

	Transformed data		
i	y_i	Replacement for intercept	x_i
2	11	0.6	8
3	16	0.6	9

(4) [Random walk: 12 pts]
a. 0.4 t. b. 5.3 t. c. Nonstationary. d. 0.4.
e. 5.3. f. 13.5.

(5) [Dickey-Fuller test: 6 pts]
a. has a unit root. b. -3.5. c. Yes, reject null hypothesis.

(6) [Forecasting, trends and seasonality: 6 pts]
a. perfect multicollinearity. b. 80.1. c. 80.6.

(7) [Forecasting, forecast interval: 12 pts]
a. No, do not transform dependent variable.
b. Yes: $\tilde{x}_{t-1} = x_{t-1} - 48$ and $\tilde{y}_{t-1} = y_{t-1} - 33$.
c. 65.0. d. 7.0. e. 65±13.72 = (51.28, 78.72).

(8) [Forecasting, AR model: 6 pts]
a. 8.4. b. 7.44. c. 6.

VERSION C

I. MULTIPLE CHOICE: [2 pts each—18 pts total]
(1)b. (2)b. (3)e. (4)a. (5)c. (6)g. (7)d. (8)a. (9)c.

II. MULTIPLE ANSWER:

(1)	a. Yes.	b. No.	c. Yes.	d. Yes.	e. No.
(2)	a. Yes.	b. Yes.	c. No.	d. Yes.	e. No.

III. PROBLEMS:

(1) [Adding regressors: 6 pts]
a. Dynamic model. b. 1.9 c. 2.4

(2) [Breusch-Godfrey test: 12 pts]
a. least squares residual $\hat{\varepsilon}_t$. b. regressors x_t and y_{t-1} and lagged residual $\hat{\varepsilon}_{t-1}$.
c. 1. b. 4.65 c. 3.84 d. Yes, reject null hypothesis.

(3) [Quasi-differencing: 12 pts]

	Transformed data		
i	y_i	Replacement for intercept	x_i
2	9	0.4	7
3	13	0.4	7

(4) [Random walk: 12 pts]
a. 2.4 t. b. 3.6 t. c. Nonstationary. d. 2.4.
e. 3.6. f. 52.6.

(5) [Dickey-Fuller test: 6 pts]
a. has a unit root. b. -1.68. c. Cannot reject null hypothesis.

(6) [Forecasting, trends and seasonality: 6 pts]
a. perfect multicollinearity. b. 86.1. c. 86.6.

(7) [Forecasting, forecast interval: 12 pts]
a. No, do not transform dependent variable.
b. Yes: $\tilde{x}_{t-1} = x_{t-1} - 14$ and $\tilde{y}_{t-1} = y_{t-1} - 27$.
c. 37.0. d. 5.0. e. 37±9.8 = (27.2, 46.8).

(8) [Forecasting, AR model: 6 pts]
a. 8.6. b. 7.44. c. 6.8.

[end of answer key]