

The Results of the Econometric Tests

1. The Breusch and Pagan Lagrange Multiplier Test for Random Effects

```
. xtreg share finslack finslack_sq humanslack humanslack_sq Lnturnover Lnasset Lnlabor
lnAGE Firmlocation SOE FOE Manufacturing AFF
```

```
Random-effects GLS regression           Number of obs   =       62,442
Group variable: thuee                   Number of groups  =       12,497
```

```
R-sq:                                Obs per group:
    within = 0.0202                      min =           2
    between = 0.0053                     avg  =          5.0
    overall = 0.0088                     max  =           5
```

```
Wald chi2(13)           =       640.48
Prob > chi2             =       0.0000
```

```
corr(u_i, X) = 0 (assumed)
```

share	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
finslack	.0158439	.0045304	3.50	0.000	.0069645	.0247232
finslack_sq	-2.62e-06	8.49e-07	-3.08	0.002	-4.28e-06	-9.54e-07
humanslack	-1.126668	1.840739	-0.61	0.540	-4.734451	2.481115
humanslack_sq	.0531092	.0850551	0.62	0.532	-.1135957	.2198142
Lnturnover	-1.343629	.0552541	-24.32	0.000	-1.451925	-1.235333
Lnasset	.8397333	.0564807	14.87	0.000	.7290332	.9504335
Lnlabor	.3205719	.0552365	5.80	0.000	.2123103	.4288334
lnAGE	-.0069174	.1501156	-0.05	0.963	-.3011386	.2873038
Firmlocation	.0467888	.14913	0.31	0.754	-.2455005	.3390782
SOE	-.1137779	.3498378	-0.33	0.745	-.7994473	.5718916
FOE	.0562216	.1296509	0.43	0.665	-.1978894	.3103326
Manufacturing	-.7471331	.7388435	-1.01	0.312	-2.19524	.7009736
AFF	-.3478193	.1469291	-2.37	0.018	-.6357951	-.0598436
_cons	4.798628	.4867194	9.86	0.000	3.844675	5.75258
sigma_u	3.8443119					
sigma_e	11.583306					
rho	.09921828	(fraction of variance due to u_i)				

```
. xttest0
```

Breusch and Pagan Lagrangian multiplier test for random effects

```
share[thuee,t] = Xb + u[thuee] + e[thuee,t]
```

Estimated results:

	Var	sd = sqrt(Var)
share	151.7646	12.31928
e	134.173	11.58331
u	14.77873	3.844312

Test: Var(u) = 0

```
chibar2(01) = 1186.30
Prob > chibar2 = 0.0000
```

2. The Breusch—Pagan Test to Check for Heteroskedasticity

```
. predict residual, e
(1,000,818 missing values generated)

. gen residualsqr= residual^2
(1,000,818 missing values generated)

. reg residualsqr finslack finslack_sq humanslack humanslack_sq Lnturnover Lnasset
Lnlabour lnAGE Firmlocation SOE FOE Manufacturing AFF
```

Source		SS	df	MS	Number of obs	=	62,442
-----		-----	-----	-----	F(13, 62428)	=	17.91
Model		3.8400e+10	13	2.9539e+09	Prob > F	=	0.0000
Residual		1.0294e+13	62,428	164896131	R-squared	=	0.0037
-----		-----	-----	-----	Adj R-squared	=	0.0035
Total		1.0333e+13	62,441	165476784	Root MSE	=	12841

residualsqr		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----		-----	-----	-----	-----	-----
finslack		12.52365	4.749642	2.64	0.008	3.21434 21.83295
finslack_sq		-.0020834	.0008929	-2.33	0.020	-.0038335 -.0003332
humanslack		-998.8581	1928.593	-0.52	0.605	-4778.904 2781.187
humanslack_sq		34.3269	89.18962	0.38	0.700	-140.4849 209.1387
Lnturnover		-770.6047	52.75345	-14.61	0.000	-874.0016 -667.2079
Lnasset		594.3848	53.77617	11.05	0.000	488.9834 699.7862
Lnlabour		154.337	50.90629	3.03	0.002	54.56055 254.1134
lnAGE		-163.1793	133.2623	-1.22	0.221	-424.3736 98.01497
Firmlocation		-38.2448	135.7114	-0.28	0.778	-304.2395 227.7499
SOE		-135.887	317.6613	-0.43	0.669	-758.5037 486.7298
FOE		-32.639	115.9719	-0.28	0.778	-259.9441 194.6661
Manufacturing		-782.1624	659.4182	-1.19	0.236	-2074.623 510.2987
AFF		-292.1058	131.7484	-2.22	0.027	-550.333 -33.87865
_cons		2074.404	438.3227	4.73	0.000	1215.29 2933.517
-----		-----	-----	-----	-----	-----

3. The Wald Test to Check for Serial Correlation

```
. xtserial share finslack finslack_sq humanslack humanslack_sq Lnturnover Lnasset
Lnlabour lnAGE Firmlocation SOE FOE Manufacturing AFF
```

Wooldridge test for autocorrelation in panel data

H0: no first order autocorrelation

F(1, 12483) = 0.258

Prob > F = 0.6117

4. Unit Root Test of Stationarity (Dickey-Fuller Test)

Null Hypothesis: SHARE has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-162.7441	0.0001
Test critical values: 1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SHARE)

Method: Least Squares

Date: 01/30/23 Time: 19:23

Sample (adjusted): 3 62442

Included observations: 62440 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SHARE(-1)	-0.874600	0.005374	-162.7441	0.0000
D(SHARE(-1))	-0.030886	0.004000	-7.721345	0.0000
C	0.326149	0.049085	6.644598	0.0000
R-squared	0.451760	Mean dependent var		9.49E-09
Adjusted R-squared	0.451743	S.D. dependent var		16.55101
S.E. of regression	12.25510	Akaike info criterion		7.849809
Sum squared resid	9377248.	Schwarz criterion		7.850243
Log likelihood	-245068.0	Hannan-Quinn criter.		7.849943
F-statistic	25724.67	Durbin-Watson stat		2.001925
Prob(F-statistic)	0.000000			

Null Hypothesis: FINSLACK has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-243.8352	0.0001
Test critical values: 1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FINSLACK)

Method: Least Squares

Date: 01/30/23 Time: 19:24

Sample (adjusted): 2 62442
Included observations: 62441 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FINSLACK(-1)	-0.975525	0.004001	-243.8352	0.0000
C	1.560626	0.134008	11.64574	0.0000
R-squared	0.487762	Mean dependent var		-1.88E-05
Adjusted R-squared	0.487754	S.D. dependent var		46.73385
S.E. of regression	33.44805	Akaike info criterion		9.857896
Sum squared resid	69855001	Schwarz criterion		9.858186
Log likelihood	-307766.4	Hannan-Quinn criter.		9.857986
F-statistic	59455.59	Durbin-Watson stat		2.000265
Prob(F-statistic)	0.000000			

Null Hypothesis: HUMANSLACK has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-248.3391	0.0001
Test critical values:		
1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(HUMANSLACK)
Method: Least Squares
Date: 01/30/23 Time: 19:26
Sample (adjusted): 2 62442
Included observations: 62441 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HUMANSLACK(-1)	-0.993822	0.004002	-248.3391	0.0000
C	0.003622	0.000558	6.490110	0.0000
R-squared	0.496911	Mean dependent var		6.32E-09
Adjusted R-squared	0.496903	S.D. dependent var		0.196541
S.E. of regression	0.139405	Akaike info criterion		-1.102830
Sum squared resid	1213.430	Schwarz criterion		-1.102540
Log likelihood	34432.89	Hannan-Quinn criter.		-1.102740
F-statistic	61672.30	Durbin-Watson stat		2.000029
Prob(F-statistic)	0.000000			

Null Hypothesis: LNASSET has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-86.55868	0.0001
Test critical values:		
1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNASSET)

Method: Least Squares

Date: 01/30/23 Time: 19:27

Sample (adjusted): 2 62442

Included observations: 62441 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNASSET(-1)	-0.214247	0.002475	-86.55868	0.0000
C	2.346234	0.027487	85.35654	0.0000
R-squared	0.107139	Mean dependent var	-4.94E-05	
Adjusted R-squared	0.107125	S.D. dependent var	1.206359	
S.E. of regression	1.139913	Akaike info criterion	3.099813	

Null Hypothesis: LNLABOR has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-81.54256	0.0001
Test critical values:		
1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNLABOR)

Method: Least Squares

Date: 01/30/23 Time: 19:27

Sample (adjusted): 2 62442

Included observations: 62441 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNLABOR(-1)	-0.192465	0.002360	-81.54256	0.0000
C	0.869736	0.011347	76.64803	0.0000
R-squared	0.096242	Mean dependent var	-5.85E-05	
Adjusted R-squared	0.096228	S.D. dependent var	1.017260	
S.E. of regression	0.967078	Akaike info criterion	2.770957	

Sum squared resid	58395.44	Schwarz criterion	2.771246
Log likelihood	-86508.66	Hannan-Quinn criter.	2.771047
F-statistic	6649.190	Durbin-Watson stat	1.987261
Prob(F-statistic)	0.000000		

Null Hypothesis: LNTURNOVER has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-89.14051	0.0001
Test critical values: 1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNTURNOVER)
Method: Least Squares
Date: 01/30/23 Time: 19:28
Sample (adjusted): 2 62442
Included observations: 62441 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNTURNOVER(-1)	-0.225756	0.002533	-89.14051	0.0000
C	2.499764	0.028476	87.78608	0.0000
R-squared	0.112894	Mean dependent var	-5.90E-05	
Adjusted R-squared	0.112880	S.D. dependent var	1.310956	
S.E. of regression	1.234751	Akaike info criterion	3.259648	
Sum squared resid	95195.13	Schwarz criterion	3.259937	
Log likelihood	-101765.8	Hannan-Quinn criter.	3.259738	
F-statistic	7946.031	Durbin-Watson stat	1.996091	
Prob(F-statistic)	0.000000			

Null Hypothesis: SOE has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-81.55349	0.0001
Test critical values: 1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SOE)

Method: Least Squares

Date: 01/30/23 Time: 20:17

Sample (adjusted): 3 62442

Included observations: 62440 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SOE(-1)	-0.208291	0.002554	-81.55349	0.0000
D(SOE(-1))	0.020568	0.004000	5.142057	0.0000
C	0.006252	0.000421	14.86364	0.0000
R-squared	0.102561	Mean dependent var	-1.60E-05	
Adjusted R-squared	0.102532	S.D. dependent var	0.109085	
S.E. of regression	0.103342	Akaike info criterion	-1.701502	
Sum squared resid	666.7972	Schwarz criterion	-1.701068	
Log likelihood	53123.90	Hannan-Quinn criter.	-1.701368	
F-statistic	3567.708	Durbin-Watson stat	2.002260	
Prob(F-statistic)	0.000000			

Null Hypothesis: FOE has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-76.85998	0.0001
Test critical values:		
1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FOE)

Method: Least Squares

Date: 01/30/23 Time: 20:19

Sample (adjusted): 3 62442

Included observations: 62440 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FOE(-1)	-0.176268	0.002293	-76.85998	0.0000
D(FOE(-1))	0.068493	0.003993	17.15343	0.0000
C	0.078749	0.001498	52.58698	0.0000
R-squared	0.086789	Mean dependent var	0.000000	
Adjusted R-squared	0.086760	S.D. dependent var	0.285572	
S.E. of regression	0.272903	Akaike info criterion	0.240650	
Sum squared resid	4650.071	Schwarz criterion	0.241084	
Log likelihood	-7510.078	Hannan-Quinn criter.	0.240784	
F-statistic	2966.915	Durbin-Watson stat	2.010724	
Prob(F-statistic)	0.000000			

Null Hypothesis: MANUFACTURING has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-79.23838	0.0001
Test critical values: 1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(MANUFACTURING)
 Method: Least Squares
 Date: 01/30/23 Time: 20:16
 Sample (adjusted): 3 62442
 Included observations: 62440 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MANUFACTURING(-1)	-0.191507	0.002417	-79.23838	0.0000
D(MANUFACTURING(-1))	0.047808	0.003997	11.95967	0.0000
C	0.001233	0.000185	6.667861	0.0000
R-squared	0.093461	Mean dependent var		0.000000
Adjusted R-squared	0.093432	S.D. dependent var		0.048356
S.E. of regression	0.046041	Akaike info criterion		-3.318503
Sum squared resid	132.3547	Schwarz criterion		-3.318069
Log likelihood	103606.7	Hannan-Quinn criter.		-3.318368
F-statistic	3218.522	Durbin-Watson stat		2.009373
Prob(F-statistic)	0.000000			

Null Hypothesis: AFF has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-70.12552	0.0001
Test critical values: 1% level	-3.430286	
5% level	-2.861396	
10% level	-2.566733	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(AFF)
 Method: Least Squares
 Date: 01/30/23 Time: 20:18
 Sample (adjusted): 3 62442
 Included observations: 62440 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AFF(-1)	-0.149608	0.002133	-70.12552	0.0000
D(AFF(-1))	0.050323	0.003997	12.59019	0.0000
C	0.097343	0.001699	57.27741	0.0000
R-squared	0.073566	Mean dependent var	-1.60E-05	
Adjusted R-squared	0.073537	S.D. dependent var	0.254463	
S.E. of regression	0.244928	Akaike info criterion	0.024341	
Sum squared resid	3745.572	Schwarz criterion	0.024776	
Log likelihood	-756.9349	Hannan-Quinn criter.	0.024476	
F-statistic	2478.999	Durbin-Watson stat	2.007861	
Prob(F-statistic)	0.000000			