

Appendix 2

***Details of ADF unit root tests,
estimates of regression models
and econometric definitions***

A2-1 Details of ADF unit root tests

A2-1-1 APX

ADF Test Statistic	-8.182311	1% Critical Value*	-3.4571
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(APX)

Method: Least Squares

Sample(adjusted): 1/02/2002 12/31/2002

Included observations: 260 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
APX(-1)	-0.412597	0.050425	-8.182311	0.0000
C	14.30730	2.133000	6.707594	0.0000
R-squared	0.206032	Mean dependent var	-0.012462	
Adjusted R-squared	0.202955	S.D. dependent var	22.02336	
S.E. of regression	19.66188	Akaike info criterion	8.802903	
Sum squared resid	99740.08	Schwarz criterion	8.830293	
Log likelihood	-1142.377	F-statistic	66.95022	
Durbin-Watson stat	2.061494	Prob(F-statistic)	0.000000	

A2-1-2 POWERNEXT

ADF Test Statistic	-6.837230	1% Critical Value*	-3.4571
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(POWERNEXT)

Method: Least Squares

Sample(adjusted): 1/02/2002 12/31/2002

Included observations: 260 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
POWERNEXT(-1)	-0.314990	0.046070	-6.837230	0.0000
C	7.387138	1.122295	6.582174	0.0000
R-squared	0.153398	Mean dependent var	-0.030500	
Adjusted R-squared	0.150117	S.D. dependent var	5.025643	
S.E. of regression	4.633096	Akaike info criterion	5.911990	
Sum squared resid	5538.119	Schwarz criterion	5.939380	
Log likelihood	-766.5587	F-statistic	46.74771	
Durbin-Watson stat	2.357868	Prob(F-statistic)	0.000000	

A2-1-3 OMEL

ADF Test Statistic	-3.135941	1% Critical Value*	-3.4571
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(OMEL)

Method: Least Squares

Sample(adjusted): 1/02/2002 12/31/2002

Included observations: 260 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OMEL(-1)	-0.085703	0.027329	-3.135941	0.0019
C	3.421715	1.177312	2.906379	0.0040
R-squared	0.036717	Mean dependent var	-0.106654	
Adjusted R-squared	0.032984	S.D. dependent var	5.683145	
S.E. of regression	5.588634	Akaike info criterion	6.287009	
Sum squared resid	8058.070	Schwarz criterion	6.314399	
Log likelihood	-815.3112	F-statistic	9.834128	
Durbin-Watson stat	2.287375	Prob(F-statistic)	0.001911	

A2-1-4 SWEDEN

ADF Test Statistic	0.056822	1% Critical Value*	-3.4571
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SWEDEN)

Method: Least Squares

Sample(adjusted): 1/02/2002 12/31/2002

Included observations: 260 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SWEDEN(-1)	0.000771	0.013567	0.056822	0.9547
C	0.219257	0.439296	0.499110	0.6181
R-squared	0.000013	Mean dependent var	0.240947	
Adjusted R-squared	-0.003863	S.D. dependent var	3.499204	
S.E. of regression	3.505957	Akaike info criterion	5.354467	
Sum squared resid	3171.267	Schwarz criterion	5.381856	
Log likelihood	-694.0807	F-statistic	0.003229	
Durbin-Watson stat	2.055828	Prob(F-statistic)	0.954731	

A2-1-5 UKPX

ADF Test Statistic	-7.607387	1% Critical Value*	-3.4571
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(UKPX)

Method: Least Squares

Sample(adjusted): 1/02/2002 12/31/2002

Included observations: 260 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UKPX(-1)	-0.366542	0.048182	-7.607387	0.0000
C	8.449532	1.144838	7.380545	0.0000
R-squared	0.183214	Mean dependent var		-0.002603
Adjusted R-squared	0.180048	S.D. dependent var		4.916764
S.E. of regression	4.452188	Akaike info criterion		5.832331
Sum squared resid	5114.070	Schwarz criterion		5.859721
Log likelihood	-756.2030	F-statistic		57.87233
Durbin-Watson stat	2.155848	Prob(F-statistic)		0.000000

A2-1-6 LPX

ADF Test Statistic	-7.164452	1% Critical Value*	-3.4571
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LPX)

Method: Least Squares

Sample(adjusted): 1/02/2002 12/31/2002

Included observations: 260 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LPX(-1)	-0.337357	0.047088	-7.164452	0.0000
C	8.516694	1.250304	6.811699	0.0000
R-squared	0.165938	Mean dependent var		-0.025885
Adjusted R-squared	0.162705	S.D. dependent var		6.629751
S.E. of regression	6.066476	Akaike info criterion		6.451095
Sum squared resid	9494.950	Schwarz criterion		6.478485
Log likelihood	-836.6424	F-statistic		51.32938
Durbin-Watson stat	2.357074	Prob(F-statistic)		0.000000

A2-1-7 NORDPOOL

ADF Test Statistic	1.152283	1% Critical Value*	-3.4571
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(NORDPOOL)

Method: Least Squares

Sample(adjusted): 1/02/2002 12/31/2002

Included observations: 260 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NORDPOOL(-1)	0.011325	0.009829	1.152283	0.2503
C	-0.066385	0.312697	-0.212297	0.8320
R-squared	0.005120	Mean dependent var		0.241192
Adjusted R-squared	0.001264	S.D. dependent var		2.627958
S.E. of regression	2.626297	Akaike info criterion		4.776689
Sum squared resid	1779.538	Schwarz criterion		4.804079
Log likelihood	-618.9696	F-statistic		1.327757
Durbin-Watson stat	1.808746	Prob(F-statistic)		0.250271

A2-1-8 NORWAY

ADF Test Statistic	1.786610	1% Critical Value*	-3.4571
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(NORWAY)

Method: Least Squares

Sample(adjusted): 1/02/2002 12/31/2002

Included observations: 260 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NORWAY(-1)	0.014553	0.008146	1.786610	0.0752
C	-0.147338	0.257347	-0.572525	0.5675
R-squared	0.012221	Mean dependent var		0.240947
Adjusted R-squared	0.008392	S.D. dependent var		2.231713
S.E. of regression	2.222329	Akaike info criterion		4.442651
Sum squared resid	1274.197	Schwarz criterion		4.470041
Log likelihood	-575.5447	F-statistic		3.191977
Durbin-Watson stat	1.603893	Prob(F-statistic)		0.075175

A2-1-9 DK-West

ADF Test Statistic	-6.419316	1% Critical Value*	-3.4571
		5% Critical Value	-2.8728
		10% Critical Value	-2.5727

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DK)

Method: Least Squares

Sample(adjusted): 1/02/2002 12/31/2002

Included observations: 260 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DK(-1)	-0.273575	0.042617	-6.419316	0.0000
C	7.589780	1.260479	6.021346	0.0000
R-squared	0.137722	Mean dependent var	0.111074	
Adjusted R-squared	0.134380	S.D. dependent var	8.338861	
S.E. of regression	7.758366	Akaike info criterion	6.943083	
Sum squared resid	15529.60	Schwarz criterion	6.970473	
Log likelihood	-900.6008	F-statistic	41.20761	
Durbin-Watson stat	2.420592	Prob(F-statistic)	0.000000	

A2-2 Estimates of regression models

A2-2-1 Denmark-Norway

Example: DKWESTBASE= 14,39116+ 0,482891NORWAYBASE

Dependent Variable: DKWESTBASE

Method: Least Squares

Sample: 1/01/2002 12/31/2002

Included observations: 261

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.39116	0.875519	16.43728	0.0000
NORWAYBASE	0.482891	0.027380	17.63642	0.0000
R-squared	0.545649	Mean dependent var	27.38431	
Adjusted R-squared	0.543894	S.D. dependent var	11.31596	
S.E. of regression	7.642299	Akaike info criterion	6.912907	
Sum squared resid	15126.83	Schwarz criterion	6.940222	
Log likelihood	-900.1344	F-statistic	311.0434	
Durbin-Watson stat	1.140531	Prob(F-statistic)	0.000000	

A2-2-2 Denmark-Sweden

Dependent Variable: DKWESTBASE

Method: Least Squares

Sample: 1/01/2002 12/31/2002

Included observations: 261

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.33978	0.895323	13.78249	0.0000
SWEDENBASE	0.530569	0.027338	19.40744	0.0000
R-squared	0.592542	Mean dependent var	27.38431	
Adjusted R-squared	0.590969	S.D. dependent var	11.31596	
S.E. of regression	7.237180	Akaike info criterion	6.803974	
Sum squared resid	13565.58	Schwarz criterion	6.831288	
Log likelihood	-885.9185	F-statistic	376.6488	
Durbin-Watson stat	1.196392	Prob(F-statistic)	0.000000	

A2-2-3 Norway-Sweden

Dependent Variable: NORWAYBASE

Method: Least Squares

Sample: 1/01/2002 12/31/2002

Included observations: 261

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.577545	0.355127	-7.258087	0.0000
SWEDENBASE	1.039818	0.010844	95.89144	0.0000
R-squared	0.972605	Mean dependent var	26.90702	
Adjusted R-squared	0.972499	S.D. dependent var	17.31007	
S.E. of regression	2.870607	Akaike info criterion	4.954557	
Sum squared resid	2134.260	Schwarz criterion	4.981872	
Log likelihood	-644.5697	F-statistic	9195.169	
Durbin-Watson stat	0.625035	Prob(F-statistic)	0.000000	

A2-2-4 Powernext-UKPX

Dependent Variable: POWERNEXTBASE

Method: Least Squares

Sample: 1/01/2002 12/31/2002

Included observations: 261

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.12157	1.480944	8.860274	0.0000
UKPXBASE	0.449886	0.062351	7.215318	0.0000
R-squared	0.167365	Mean dependent var	23.49248	
Adjusted R-squared	0.164151	S.D. dependent var	6.303001	
S.E. of regression	5.762506	Akaike info criterion	6.348255	
Sum squared resid	8600.478	Schwarz criterion	6.375570	
Log likelihood	-826.4473	F-statistic	52.06081	
Durbin-Watson stat	0.841305	Prob(F-statistic)	0.000000	

A2-2-5 Powernext--LPX

Dependent Variable: POWERNEXTBASE

Method: Least Squares

Sample: 1/01/2002 12/31/2002

Included observations: 261

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.767489	0.858427	10.21344	0.0000
LPXBASE	0.583019	0.032385	18.00255	0.0000
R-squared	0.555816	Mean dependent var		23.49248
Adjusted R-squared	0.554101	S.D. dependent var		6.303001
S.E. of regression	4.208871	Akaike info criterion		5.719899
Sum squared resid	4588.079	Schwarz criterion		5.747213
Log likelihood	-744.4468	F-statistic		324.0919
Durbin-Watson stat	1.380904	Prob(F-statistic)		0.000000

A2-2-7 Powernext-APX

Dependent Variable: POWERNEXTBASE

Method: Least Squares

Sample: 1/01/2002 12/31/2002

Included observations: 261

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	20.84045	0.651943	31.96667	0.0000
APXBASE	0.076639	0.015441	4.963362	0.0000
R-squared	0.086854	Mean dependent var		23.49248
Adjusted R-squared	0.083329	S.D. dependent var		6.303001
S.E. of regression	6.034679	Akaike info criterion		6.440556
Sum squared resid	9432.094	Schwarz criterion		6.467870
Log likelihood	-838.4925	F-statistic		24.63496
Durbin-Watson stat	0.698207	Prob(F-statistic)		0.000001

A2-2-8 LPX-Denmark

Dependent Variable: LPXBASE

Method: Least Squares

Sample: 1/01/2002 12/31/2002

Included observations: 261

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.62080	1.232800	15.10448	0.0000
DKWESTBASE	0.242315	0.041618	5.822398	0.0000
R-squared	0.115740	Mean dependent var		25.25644
Adjusted R-squared	0.112326	S.D. dependent var		8.059906
S.E. of regression	7.593757	Akaike info criterion		6.900163
Sum squared resid	14935.27	Schwarz criterion		6.927478
Log likelihood	-898.4713	F-statistic		33.90032
Durbin-Watson stat	0.665690	Prob(F-statistic)		0.000000

A2-2-9 APX-LPX

Dependent Variable: APXBASE
Method: Least Squares
Sample: 1/01/2002 12/31/2002
Included observations: 261

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.42515	4.695331	2.220323	0.0273
LPXBASE	0.957349	0.177138	5.404533	0.0000
R-squared	0.101347	Mean dependent var		34.60437
Adjusted R-squared	0.097877	S.D. dependent var		24.23794
S.E. of regression	23.02123	Akaike info criterion		9.118344
Sum squared resid	137264.1	Schwarz criterion		9.145659
Log likelihood	-1187.944	F-statistic		29.20898
Durbin-Watson stat	0.950483	Prob(F-statistic)		0.000000

A2-3 Econometric definitions

The least squares regression coefficients **b** are computed using the standard OLS formula:

$$b = (X'X)^{-1} X'y \quad (\text{A2-1})$$

The coefficient **c** is the constant in the regression.

The “**Std.Error**” column reports the estimated standard errors of the coefficient estimates. It measures the statistical reliability of the coefficient estimates, i.e. the larger the standard errors, the more statistical noise in the estimates.

The “**t-statistic**” is computed as the ratio of an estimated coefficient to its standard error. It is used to test the hypothesis that a coefficient is equal to zero.

The column “**prob**” shows the probability of drawing a t-statistic as extreme as the one actually observed, under the assumption that the errors are normally distributed, or that the estimated coefficient are asymptotically normally distributed.

The “**R-squared**” (R^2) statistic measures the success of the regression in predicting the values of the dependent variable. R^2 Equal one if the regression fits perfectly, and zero if it fits no better than the simple mean of the dependent variable.

The “**adjusted R^2** “ penalises the R^2 for the addition of repressors which do not contribute to the explanatory power of the model (An R^2 of one can be obtain if as many independent repressors as there are sample observation are included).

The “**S.E. of regression**” (Standard error of the regression) is a summary measure based on the estimated variance of the residuals.

The “**Durbin-Watson statistic**” measures the serial correlation in the residuals. This statistic uses the residual from the OLS regression procedure and is computed as follow:

$$DW = \frac{\sum_{t=2}^T (\varepsilon_t - \varepsilon_{t-1})^2}{\sum_{t=1}^T \varepsilon_t^2} \quad (A2-2)$$