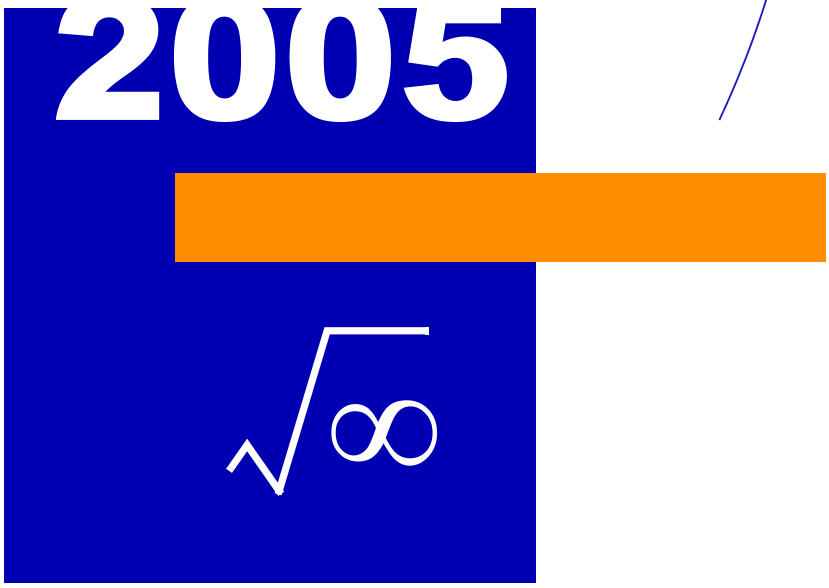

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Deutsches Institut
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Camille Logeay, Christian Proaño-Acosta, Sabine Stephan, Rudolf Zwiener with the collaboration of Serhiy Yahnych

Modelling European Business Cycles (EBC Model)

A macroeconometric model of the Netherlands

IMPRESSUM

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Version April 2005

Table of contents

I. General Structure

- work started in 2001 with a modelling team in the department of macro analysis and forecasting
- co-operation with Prof. Wolters at the Free University of Berlin
- support of the Ministry of Finance, Berlin

Focus of the model

- Short- to medium-term forecasts of macroeconomic development in Germany and major European countries
- Analysis of different macroeconomic policies

Theory versus data based model

- The model is based using economic theory for the specifications
- No calibration
- Time series analysis and specifications of error correction models (ECM)
- Economic theory is important to specify the co-integration relationships
- Common underlying structure estimated across all economies
- Same equations are used for forecasts and for economic policy simulations
- No restrictions with regard to homogeneity

Single country versus multi country approach

- Main focus on Germany (47 stochastic equations)
- Second focus on larger EU (EMU) countries (France, Italy, Spain, (GB)) and the Netherlands (10-15 stochastic equations for each country)
- Other EMU-countries are treated as one zone (10-15 stochastic equations)
- EU (EMU) aggregates are calculated by identities
- Later on USA are modelled separately
- Non-EU (and non-US) growth and price indicators for different regions are exogenous
- Linkages via imports and exports, exchange rates and interest rates

Special modelling strategies

- Trade is disaggregated into trade with EU (EMU) countries and with non-EU countries
- Until now only adaptive expectations, backward looking, are used
- Error correction framework is used to distinguish between short term dynamics and the long run solution
- Feedback rules to stabilise the model results: Unemployment, capacity utilisation, interest rates, unit labour costs, real effective exchange rates, wealth (savings), (public deficit ratio)

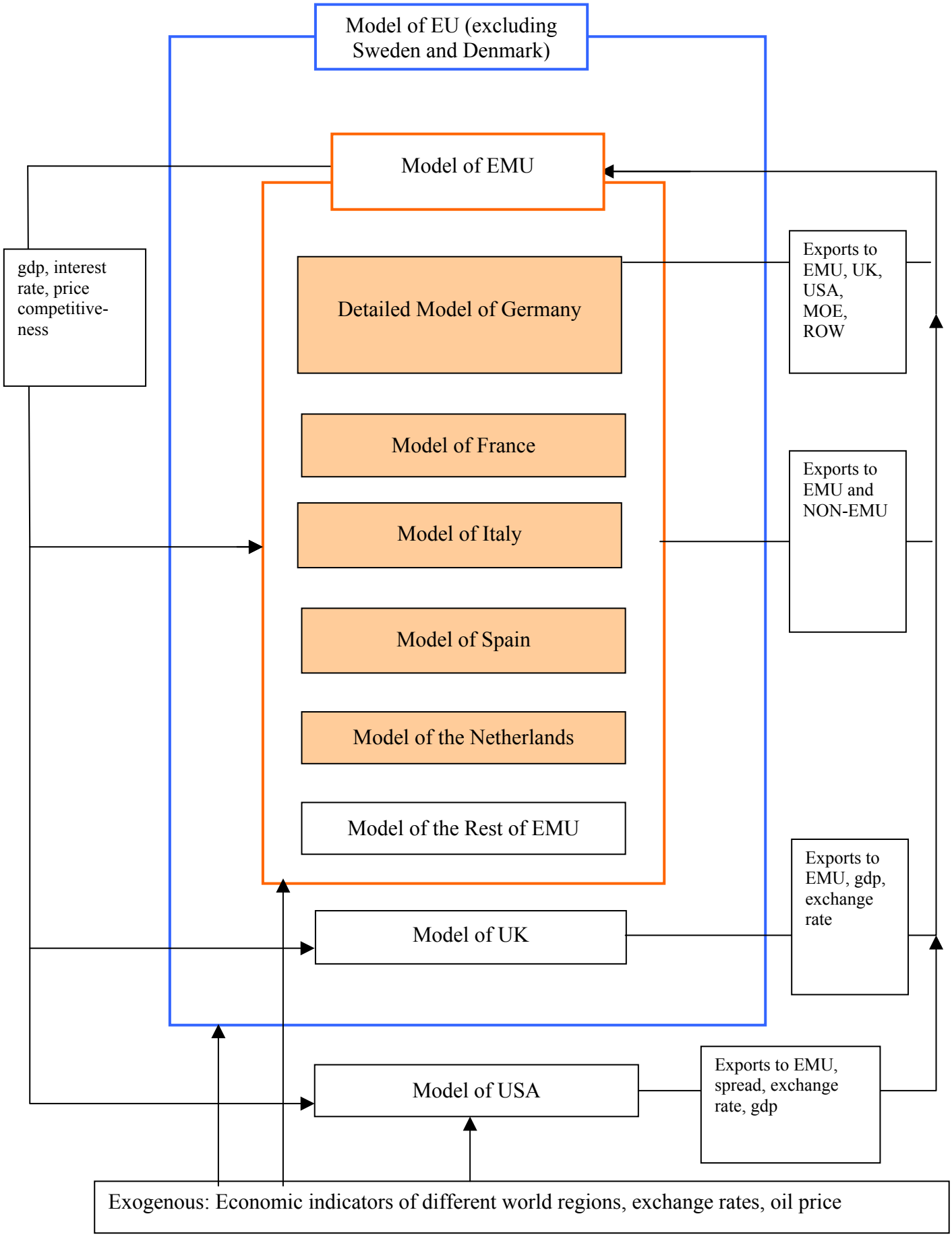
Theoretical base

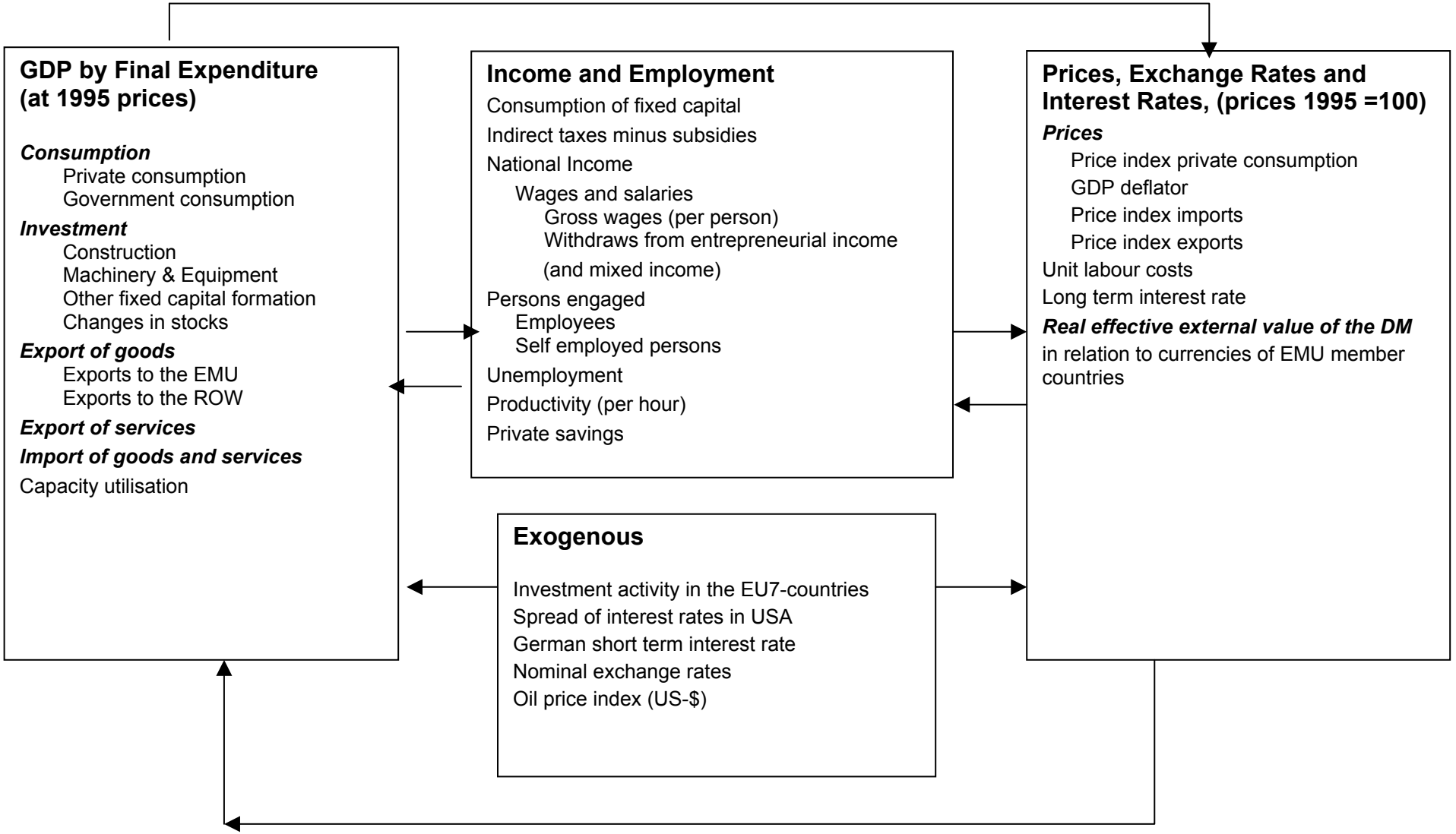
- Existence of nominal rigidities
- Real effects of economic policy
- Market spillovers
- Possibility of unemployment in the long run
- Difference between short- and long-term impacts of explanatory variables

Methodological base

- Analysis of the properties of the time series
- Estimation of error correction models
- Tests of the forecast quality of the stochastic equations
- Tests of auto correlation of the residuals and stability of the coefficients
- Tests of ex post simulation of an equation inside the model

A.1. European Business Cycle Model





A.2. Structural Macroeconometric Model of the Netherlands

II. Econometric Methods

Most economic time series are non-stationary and it is generally agreed that they follow a stochastic trend. They are characterized by asymptotically infinite variance and autocorrelations which imply a shock has a permanent effect on the series and thus the series tends to "wander" from a deterministic path without a tendency to return.

Cointegration means that two or more series „wander together". While each of the series is influenced by the permanent effects of shocks there exists a long-run equilibrium relationship between them and a mechanism that forces them back to this equilibrium.

Technically two or more series are cointegrated if they are integrated of degree I(d) and there exists a linear combination of them that is I(d-b). In the bivariate case with d=b=1 that means if there are two economic time series Y_t and X_t that are I(1) and there is a relationship $Y_t - a*X_t = Z_t$ that is I(0) they are cointegrated with cointegrating vector [1 -a] and Z_t is called the equilibrium error.

The concept of Cointegration has become central to econometric time series analysis. One reason is that the equilibrium concept implied closely relates to the theoretical equilibrium view of the economy. Since most economic time series are taken to be I(1) theoretically established equilibrium relations between these imply a cointegrating relationship if the theory is indeed empirically valid. Non-cointegration would lead to I(1) error terms Z_t. And this basically means that no equilibrium exists since the errors are permanently deviating from zero.

Econometrically the analysis of the relationship between two or more cointegrated I(1) time series is performed in an error correction framework. This approach is a re-parametrization of an autoregressive distributed-lag equation that explicitly takes into account the long-run equlibrium relation as well as the short-term dynamics of the series.
An error correction model (ECM) for Y_t as endogenous and X_t as exogenous series can be written as follows:

$$\Delta(Y_t) = \delta + \gamma\left[Y_{t-1} - \det - a * X_{t-1}\right] + \sum_{i=1}^{p} \alpha_i * \Delta(Y_{t-i}) + \sum_{j=1}^{q} \beta_j * \Delta(X_{t-j}) + \varepsilon_t$$

error correction term — short-term dynamics

Δ is the difference operator
det is Deterministic (constant, seasonal dummies etc)
δ is a constant
γ is the speed of adjustment parameter
ε_t is a white noise error term.

The change in Y is influenced by last period's deviation from the theoretically founded equilibrium relationship between the two economic time series and lagged difference terms of the endogenous and exogenous variables. The number of lagged difference terms is chosen as

to make the error term white noise. One can see that OLS provides consistent parameter estimates as all elements are I(0) by definition if the two I(1) variables are cointegrated.

To construct the model the following methodology was employed:

1. relationship(s) for the variable in question were taken from economic theory
2. the time series properties of the endogenous and explanatory series were tested; all series had to be I(1) for cointegration relationships with I(0) equilibrium errors to be feasible
3. (several) cointegrating equations for the variables were tested
4. the empirically verified equilibrium relationship was used to construct an ECM
5. a (second) cointegration test was performed in estimating the ECM
6. the stability and forecasting properties of the ECM were tested, if necessary a respecification was performed
7. the performance of each ECM in the complete system was analysed, if necessary a respecification was performed

There are several possibilities to test for (Co-)Integration. To check the time series properties the Augmented Dickey Fuller (ADF) Test was used, the results are shown in the documentation chapter IV B. For step 3. of the analysis either the Granger methodology or the Johansen procedure was employed. This is not shown in the documentation as cointegration can also be verified in the final ECM used in the model (step 5).

This kind of test was proposed by Banerjee et al. (1992) and it makes use of the t-statistic of the speed of adjustment parameter. The argument from above that each element in the ECM has to be I(0) if Y and X are cointegrated can be turned around: if all elements in the ECM are I(0) than Y and X must be cointegrated. Then if X is exogenous γ must be significant for the adjustment to equilibrium to take place. Thus the Null Hypothesis of non-cointegration implies $\gamma = 0$. The critical values are taken from Banerjee et al. (1992) and are shown in the Appendix. The significance of γ is shown in each of the equations.

Furthermore a battery of specification tests were performed (Serial Correlation LM Test, White's Heteroscedasticity Test, ARCH LM Test, Normality Test and Ramsey's Reset Test) as well as a stability analysis (Cusum, Cusum squared) and a detailed forecast evaluation. For the most important equations a single equation simulation was also added to anaylize the effect of shocks to the explanatory variables.

After an equation for each endogenous variable was satisfactorily specified the definition equations were added and all equations were put together to form the model. Again each equations was analysed, now in its performance in the complete model.

Data base

Raw (seasonally unadjusted) quarterly time series data is used whenever available. The estimation period is from 1980:1 to 2003:4 for most equations. National accounts data stems from EUROSTAT.

III. Stochastic Equations

A. National Accounts Statistics: GDP by Final Expenditure

A.1. Private Consumption

Private consumption expenditure; at constant prices (1995)

Dependent Variable: DLOG(NL_C95)
Method: Least Squares
Date: 08/09/04 Time: 14:17
Sample(adjusted): 1988:3 2003:3
Included observations: 61 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.519004	0.189967	-2.732076	0.0088
Z1	-0.039106	0.012347	-3.167149	0.0027
Z2	0.047787	0.012627	3.784641	0.0004
Z3	-0.115040	0.020774	-5.537718	0.0000
I9301	-0.022498	0.008426	-2.670140	0.0104
I9504	-0.017201	0.007690	-2.236854	0.0301
LOG(NL_C95(-1))	**-0.548285**	**0.128208**	**-4.276534**	**0.0001**
LOG(100*(NL_GYEE(-1)) /NL_PC(-1))	**0.463398**	**0.115571**	**4.009648**	**0.0002**
LOG(100*NL_GYPROP(-1) /NL_PC(-1))	**0.143198**	**0.037239**	**3.845390**	**0.0004**
DLOG(100*NL_GYPROP(0) /NL_PC(0))	0.132261	0.029327	4.509842	0.0000
DLOG(NL_C95(-1))	-0.288292	0.097383	-2.960382	0.0048
DLOG(NL_C95(-4))	0.337433	0.076334	4.420460	0.0001
D(NL_UR(-1))+D(NL_UR(-3)) +D(NL_UR(-5))	-0.012621	0.002728	-4.625795	0.0000
D(NL_RS3M(-2)) +D(NL_RS3M(-6))	-0.005341	0.001567	-3.407791	0.0014

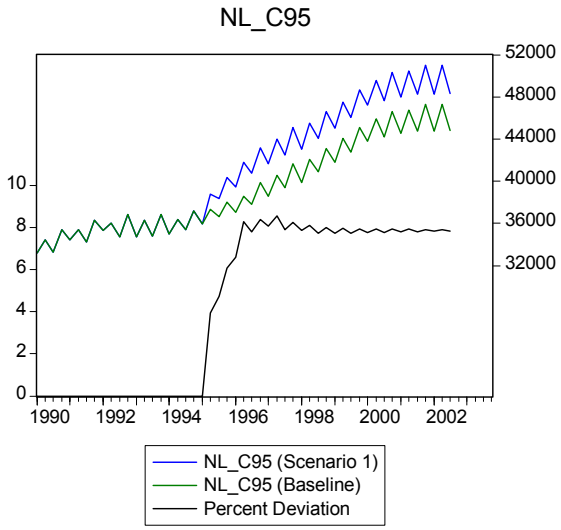
R-squared	0.980748	Mean dependent var	0.005329
Adjusted R-squared	0.975423	S.D. dependent var	0.045585
S.E. of regression	0.007146	Akaike info criterion	-6.846129
Sum squared resid	0.002400	Schwarz criterion	-6.361666
Log likelihood	222.8069	F-statistic	184.1804
Durbin-Watson stat	1.948641	Prob(F-statistic)	0.000000

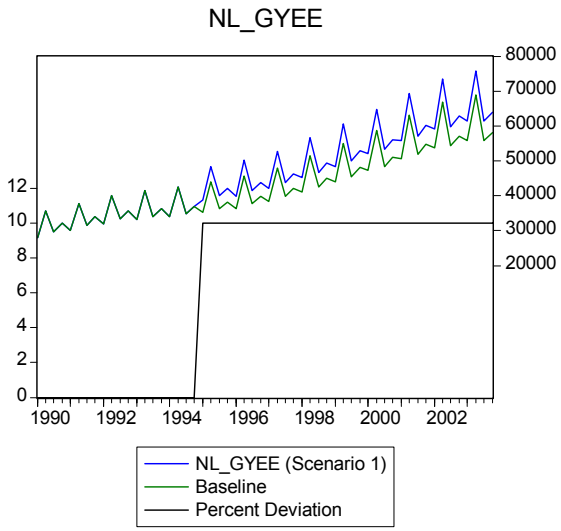
The aggregate private consumption depends on real compensation of employees and of real operating surplus and mixed income. The cointegrating-relationship between these three variables turns out to be highly significant. The estimated long-run elasticities of consumption are 0.793 and 0.222, respectively. In the short run private aggregate consumption also depends negatively on the unemployment rate and the short-term nominal interest rate.

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.515981	Root Mean Squared Error	299.7727
Serial Correlation LM test (lag 1)	0.813315	Mean Absolute Percent Error	0.573742
Serial Correlation LM test (lag 4)	0.998550	Theil inequality coefficient	0.003801
White's heteroscedasticity test	0.520003	Bias proportion	0.001103
RESET test (No. of fitted terms:1)	0.316672	Variance proportion	0.007822
ARCH LM test (lag 1)	0.078675	Covariance proportion	0.991076
ARCH LM test (lag 4)	0.157367		
Stability tests			
CUSUM test			
CUSUM sq. test			

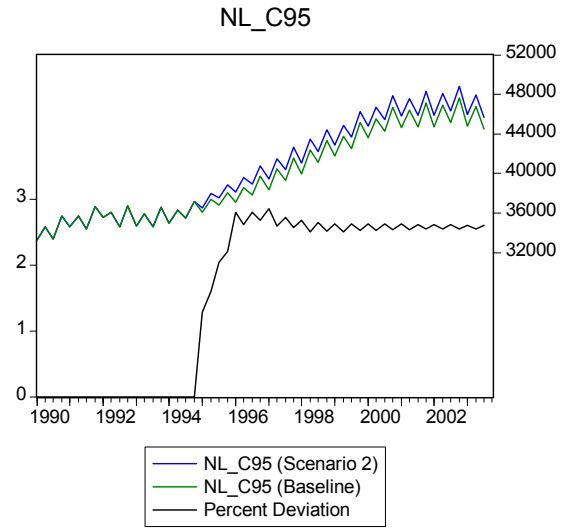
Simulation Properties of the Equation

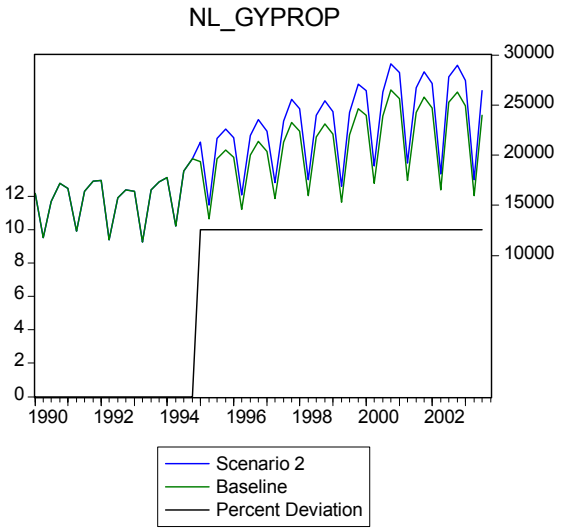
10% Increase compensation of employees



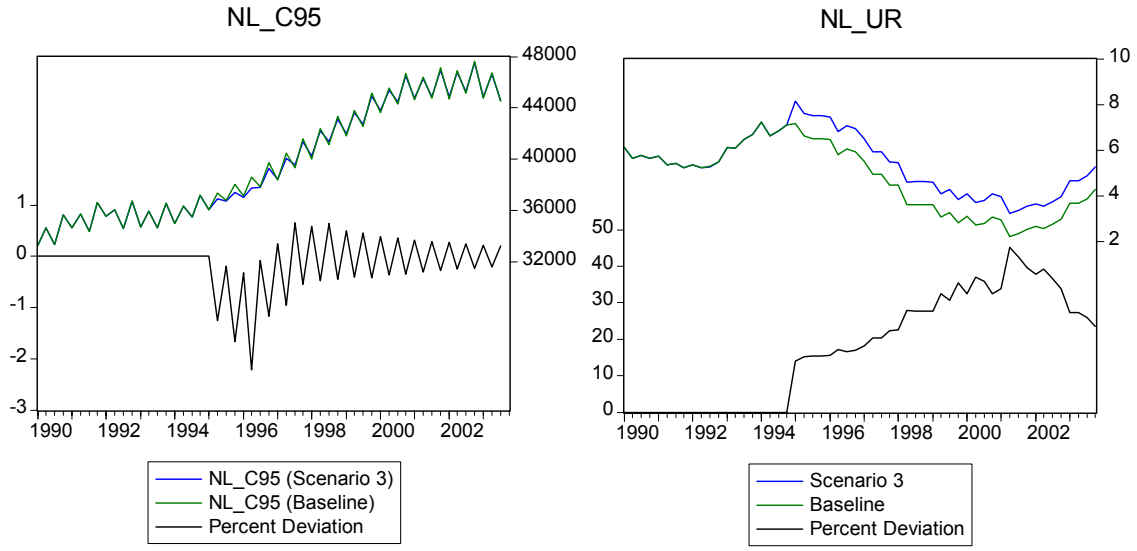


10% Increase in operating surplus and mixed income

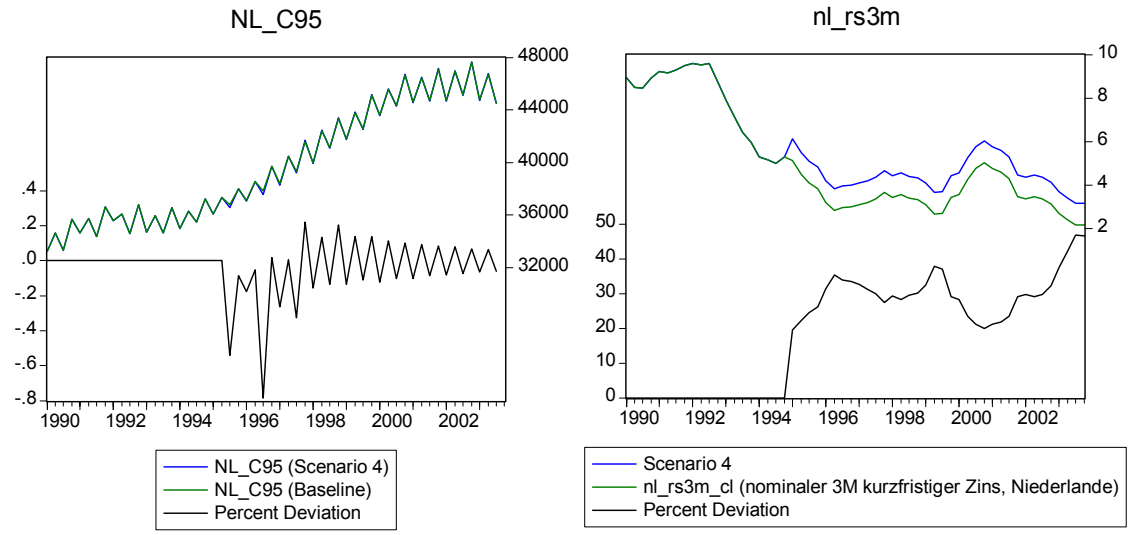




1 % point increase in the unemployment rate



1 % point increase in the nominal short-term interest rate



A.2. Government Consumption

Government Consumption; at constant prices (1995)

Dependent Variable: DLOG(NL_CGOV95)
Method: Least Squares
Date: 06/07/04 Time: 16:10
Sample(adjusted): 1988:1 2003:4
Included observations: 64 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.039678	0.096984	0.409114	0.6841
Z1	-0.006976	0.018376	-0.379626	0.7057
Z2	0.057047	0.017104	3.335353	0.0016
Z3	-0.054207	0.026118	-2.075470	0.0428
I9601	-0.023896	0.007316	-3.266009	0.0019
LOG(NL_CGOV95(-1))	**-0.154790**	**0.053542**	**-2.891010**	**0.0056**
LOG(NL_GDP95(-1))	**0.131994**	**0.041971**	**3.144871**	**0.0027**
DLOG(NL_CGOV95(-1))	-0.381332	0.107573	-3.544875	0.0008
DLOG(NL_CGOV95(-4))	0.350369	0.097468	3.594712	0.0007
DLOG(NL_CGOV95(-5))	0.240932	0.106921	2.253363	0.0284
D(NL_UR(-2))+D(NL_UR(-3))	0.006643	0.003240	2.050317	0.0453

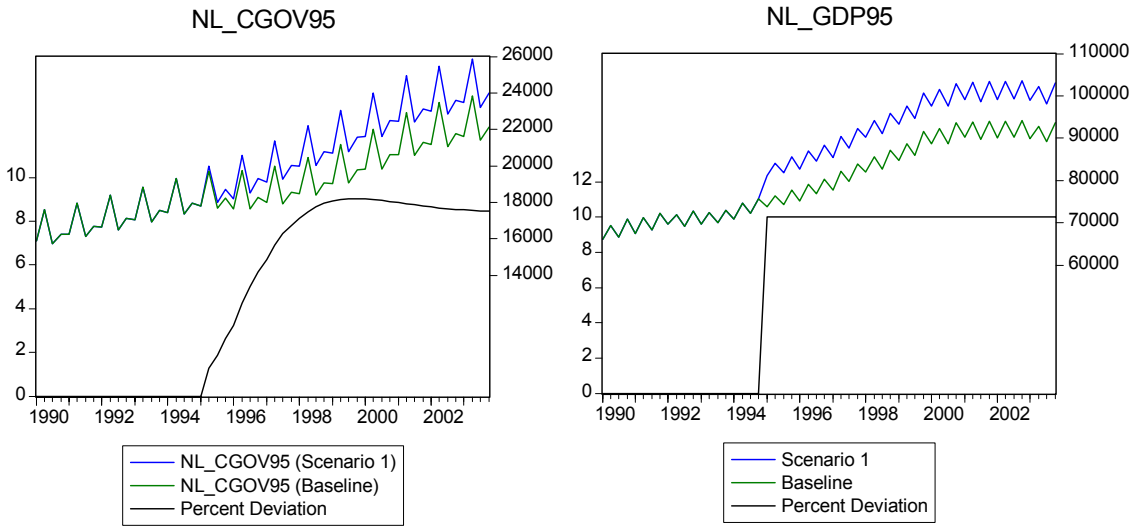
R-squared	0.993456	Mean dependent var	0.005822
Adjusted R-squared	0.992221	S.D. dependent var	0.077751
S.E. of regression	0.006857	Akaike info criterion	-6.971804
Sum squared resid	0.002492	Schwarz criterion	-6.600746
Log likelihood	234.0977	F-statistic	804.5980
Durbin-Watson stat	2.025626	Prob(F-statistic)	0.000000

Government consumption grows with a slightly lower rate than real GDP growth. In the short-run, there is a positive influence of unemployment on government expenditure (social security).

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.531661	Root mean squared error	197.0378
Serial Correlation LM test (lag 1)	0.459006	Mean absolute percent error	0.872229
Serial Correlation LM test (lag 4)	0.439480	Theil inequality coefficient	0.005261
White's heteroscedasticity test	0.150015	Bias proportion	0.014271
ARCH LM test (lag 1)	0.926179	Variance proportion	0.020207
ARCH LM test (lag 4)	0.514547	Covariance proportion	0.965522
Stability tests			
Reset test (lag 1)	0.281660		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

10% Increase in Gross Domestic Product



A.3. Investment: machinery and equipment

Dependent Variable: DLOG(NL_IMEQ95)
Method: Least Squares
Date: 07/13/04 Time: 13:28
Sample(adjusted): 1982:2 2003:4
Included observations: 87 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.453286	0.665111	-3.688534	0.0004
Z1	0.452286	0.073546	6.149678	0.0000
I8402	-0.155239	0.053456	-2.904043	0.0049
I9302	-0.127415	0.050662	-2.514997	0.0142
I9402	-0.222666	0.050930	-4.372000	0.0000
LOG(NL_IMEQ95(-1))	**-0.434557**	**0.078666**	**-5.524093**	**0.0000**
LOG(NL_GDP95(-1))	**0.562984**	**0.117067**	**4.809079**	**0.0000**
DLOG(NL_IMEQ95(-1))	-0.406064	0.089903	-4.516688	0.0000
DLOG(NL_IMEQ95(-2))	-0.336400	0.070424	-4.776795	0.0000
DLOG(NL_GDP95(-6))	2.477060	0.360767	6.866091	0.0000
DLOG(NL_ULC(-5))	-0.865848	0.106095	-8.161088	0.0000
DLOG(NL_ULC(-8))	-1.095394	0.219338	-4.994098	0.0000
DLOG(NL_ULC(-7))	-1.693680	0.301972	-5.608727	0.0000
D(NL_RL(-2))	-0.052436	0.014761	-3.552251	0.0007
D(NL_RL(-6))	-0.067681	0.014532	-4.657291	0.0000
DLOG(NL_CAPA(-1))	0.862383	0.350485	2.460543	0.0163

R-squared	0.953302	Mean dependent var	0.010687
Adjusted R-squared	0.943436	S.D. dependent var	0.197176
S.E. of regression	0.046895	Akaike info criterion	-3.117241
Sum squared resid	0.156136	Schwarz criterion	-2.663741
Log likelihood	151.6000	F-statistic	96.62696
Durbin-Watson stat	2.104706	Prob(F-statistic)	0.000000

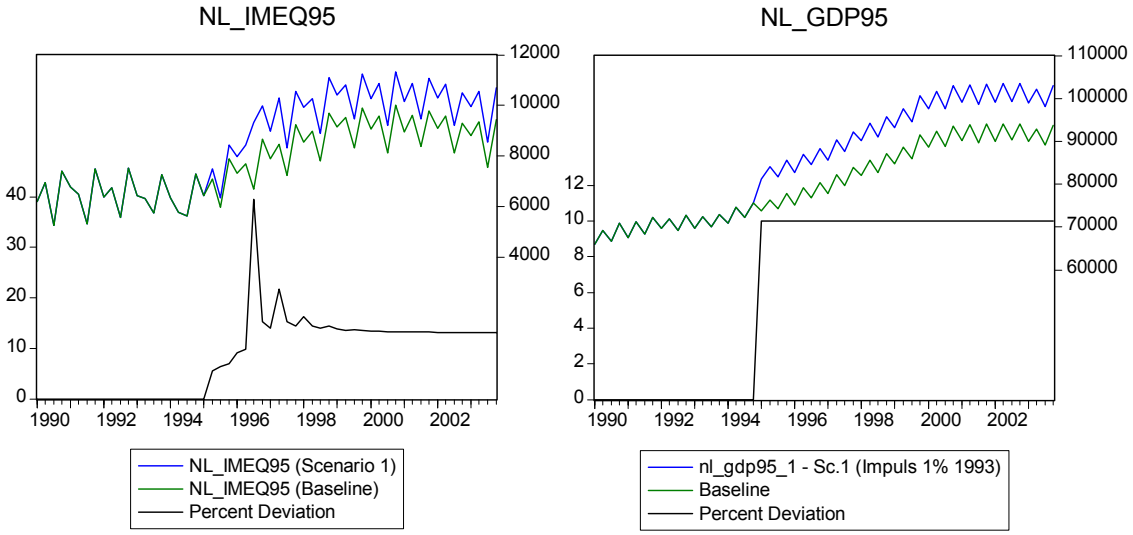
Dutch investment in machinery and equipment is determined by the domestic GDP (in constant 1995 prices) in the long-run. The corresponding elasticity with respect to this variable is 1.3. For the short-run dynamics of this kind of investment unit labor costs, the long-term interest rate and the capacity utilization also play an important role.

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.795587	Root mean squared error	313.3152
Serial Correlation LM test (lag 1)	0.484219	Mean absolute percent error	3.599706
Serial Correlation LM test (lag 4)	0.502308	Theil inequality coefficient	0.022036
White's heteroscedasticity test	0.229107	Bias proportion	0.003135
Reset test (No. of fitted terms: 1)	0.787266	Variance proportion	0.014469
ARCH LM test (lag 1)	0.358772	Covariance proportion	0.982397
ARCH LM test (lag 4)	0.784443		
Stability tests			
CUSUM test[a]	0		
CUSUM^2 test[a]	0		

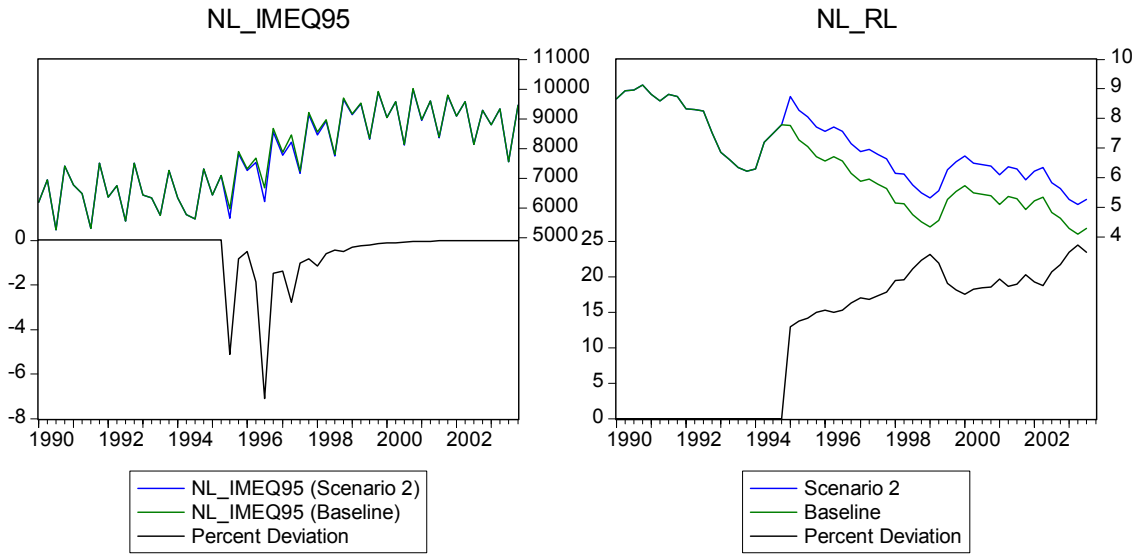
[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

Simulation properties of the equation:

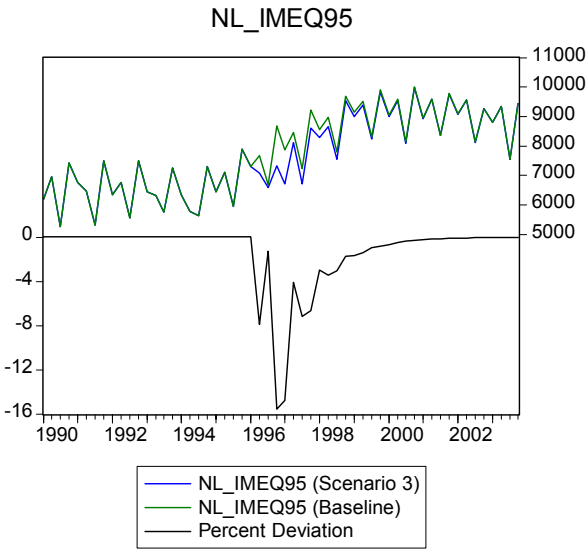
10% Increase in domestic GDP (in constant 1995)

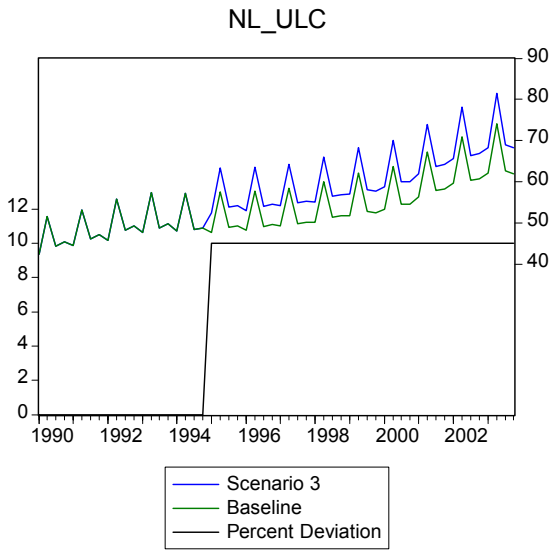


1% Point increase in nominal long-term interest rate



10% increase in the nominal unit labor costs





Investment: Construction (at constant prices of 1995)

Dependent Variable: DLOG(NL_ICON95)
Method: Least Squares
Date: 06/16/04 Time: 15:03
Sample(adjusted): 1982:1 2003:4
Included observations: 88 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.506004	2.474729	-3.437145	0.0010
@TREND(1970:1)	**-0.006476**	**0.001660**	**-3.901401**	**0.0002**
Z1	0.010778	0.032148	0.335256	0.7384
Z2	0.012664	0.010850	1.167129	0.2469
Z3	-0.020642	0.031564	-0.653994	0.5151
I8501+I8601+I8701+I9101+I9601	-0.210964	0.018983	-11.11306	0.0000
LOG(NL_ICON95(-1))	**-1.034175**	**0.066469**	**-15.55878**	**0.0000**
LOG(NL_GDP95(-1))	**1.656488**	**0.255890**	**6.473436**	**0.0000**
NL_RL(-1)	**-0.010221**	**0.004051**	**-2.523348**	**0.0137**
DLOG(NL_ICON95(-3))	-0.182056	0.040630	-4.480835	0.0000
DLOG(NL_GDP95(0))	1.665515	0.333585	4.992779	0.0000
D(NL_RL(-2))	0.039753	0.011552	3.441238	0.0009
D(NL_RL(-6))+D(NL_RL(-7))	0.022772	0.006567	3.467581	0.0009

R-squared	0.973782	Mean dependent var	0.003198
Adjusted R-squared	0.969588	S.D. dependent var	0.197774
S.E. of regression	0.034490	Akaike info criterion	-3.760681
Sum squared resid	0.089218	Schwarz criterion	-3.394710
Log likelihood	178.4700	F-statistic	232.1395
Durbin-Watson stat	1.788923	Prob(F-statistic)	0.000000

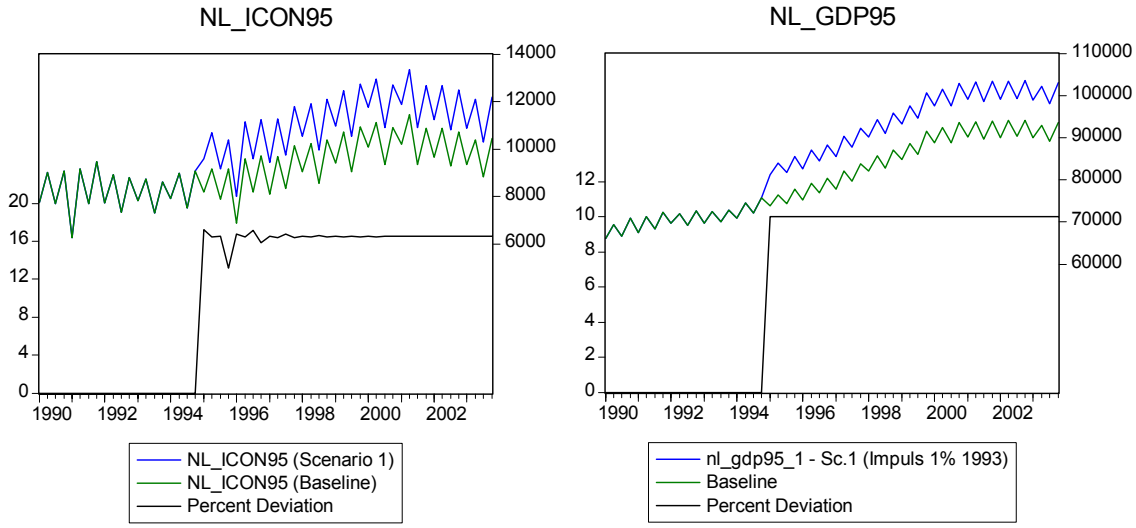
Dutch investment in non-residential buildings depend on domestic demand (represented by GDP at constant 1995 prices) and long term interest costs in the long-run. In the short-run adjustment these variables also play an important role for the investment dynamics.

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.898789	Root mean squared error	289.1971
Serial Correlation LM test (lag 1)	0.230876	Mean absolute percent error	2.719786
Serial Correlation LM test (lag 4)	0.134281	Theil inequality coefficient	0.016954
White's heteroscedasticity test	0.706218	Bias proportion	0.000103
Reset test ((No. of fitted terms: 1)	0.347197	Variance proportion	0.002099
ARCH LM test (lag 1)	0.136809	Covariance proportion	0.997798
ARCH LM test (lag 4)	0.178913		
Stability tests			
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

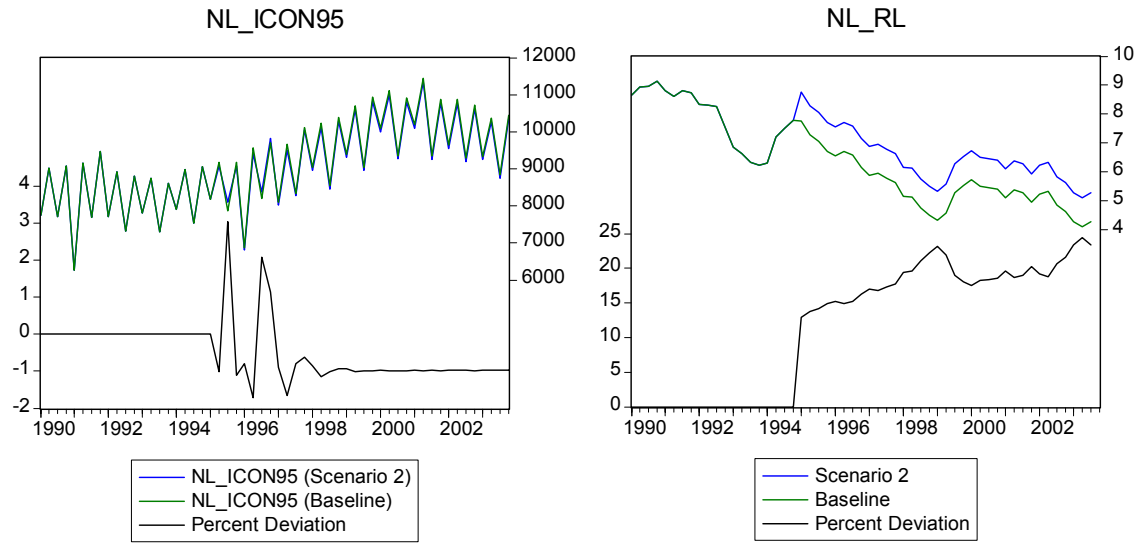
[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

Simulation properties of the equation:

10% Increase in domestic GDP (at constant 1995 prices)



1% Point increase in the nominal long-term interest rate



Changes in stocks; at constant prices (1995)

Dependent Variable: NL_IS95
Method: Least Squares
Date: 06/17/04 Time: 11:58
Sample(adjusted): 1981:2 2003:4
Included observations: 91 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-54.12553	83.17228	-0.650764	0.5170
Z1	869.3256	619.7519	1.402699	0.1644
Z2	-643.0538	236.0583	-2.724132	0.0079
Z3	1926.935	736.2615	2.617188	0.0105
NL_IS95(-1)	0.271560	0.100256	2.708666	0.0082
D(NL_IS95(-4))	0.207911	0.077636	2.678012	0.0089
D(NL_GDP95(0))	0.265429	0.074935	3.542129	0.0007
D(NL_GDP95(-1))	0.196722	0.073349	2.681994	0.0088

R-squared	0.753687	Mean dependent var	169.7582
Adjusted R-squared	0.732914	S.D. dependent var	1230.537
S.E. of regression	635.9465	Akaike info criterion	15.83191
Sum squared resid	33567523	Schwarz criterion	16.05265
Log likelihood	-712.3520	F-statistic	36.28136
Durbin-Watson stat	1.966641	Prob(F-statistic)	0.000000

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.688259	Root mean squared error	646.3068
Serial Correlation LM test (lag 1)	0.780460	Mean absolute percent error	152.1866
Serial Correlation LM test (lag 4)	0.951135	Theil inequality coefficient	0.281876
White's heteroscedasticity test	0.537733	Bias proportion	0.000010
ARCH LM test (lag 1)	0.987401	Variance proportion	0.077916
ARCH LM test (lag 4)	0.830109	Covariance proportion	0.922075
Stability tests			
Reset test (lag 1)	0.106535		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

A.4. Export of Goods and Services

Dutch export of goods to the EMU at 1995 prices

Dependent Variable: DLOG(NL_XG95_EWU)
Method: Least Squares
Date: 06/17/04 Time: 13:25
Sample(adjusted): 1982:2 2003:3
Included observations: 86 after adjusting endpoints

	Coefficient	Std. Error	t-Statistic	Prob.
LOG(NL_XG95_EWU(-1))	**-0.508639**	**0.084048**	**-6.051784**	**0.0000**
LOG(NL_REEV_MEIC(-1))	**-0.308735**	**0.112391**	**-2.746970**	**0.0075**
LOG(EU8NL_IFC95(-1))	**0.089**	**-**	**-**	**-**
@TREND(1970:1)	**0.006246**	**0.001147**	**5.443052**	**0.0000**
C	4.767662	1.106417	4.309100	0.0000
D(S9301)	-0.080301	0.027341	-2.937023	0.0044
DLOG(NL_XG95_EWU(-4))	0.470423	0.084916	5.539863	0.0000
DLOG(NL_XG95_EWU(-5))	0.247756	0.056885	4.355410	0.0000
DLOG(NL_XG95_EWU(-8))	0.223682	0.086268	2.592884	0.0114
DLOG(NL_REEV_MEIC(-0))	-0.377195	0.193420	-1.950137	0.0548
DLOG(EU8ONL_IFC95(-0))	0.060243	0.029412	2.048226	0.0440

R-squared	0.863749	Mean dependent var	0.011075
Adjusted R-squared	0.847614	S.D. dependent var	0.067324
S.E. of regression	0.026281	Akaike info criterion	-4.330998
Sum squared resid	0.052492	Schwarz criterion	-4.045608
Log likelihood	196.2329	Durbin-Watson stat	1.964421

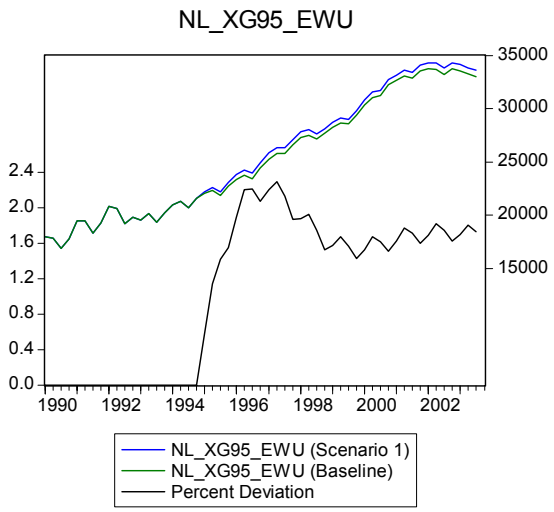
Dutch exports of goods to the EMU are explained by a demand variable that reflects the economic activity in the euro area (real investment in the EU7 countries - EU8ONL, i.e. EU8 without the Netherlands: Germany, France, Italy, Spain, Belgium, Finland and Austria), by a linear trend approximating the growing international division of labor and by a variable that reflects the price competitiveness of Dutch exporters. Originally, this variable has been the real external value of the Dutch Gulden in relation to a basket of the European currencies. It was compiled by weighting the bilateral real external values (based on relative consumer prices) with the respective country's share in Dutch exports. After the introduction of the euro there are no longer exchange rate fluctuations and this variable therefore reflects from 1999 onwards differences in the price development in the Netherlands and in the other EMU member countries. The coefficient for the variable EU8ONL_IFC95 (Europe without Netherlands, investment in fixed capital in 1995 prices) was estimated by a Engle-Granger Test and then restricted in the error-correction model.

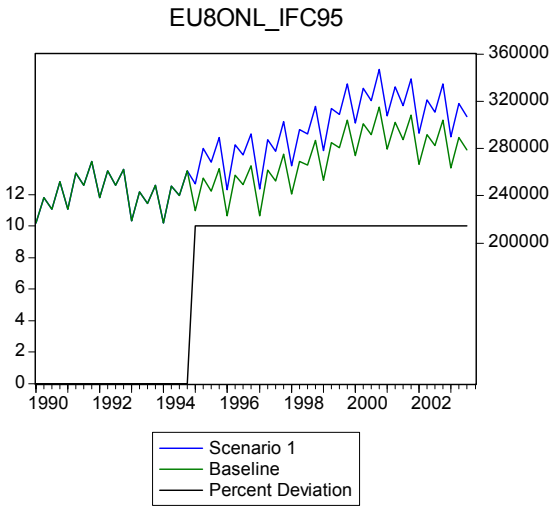
Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.560324	Root mean squared error	875.1257
Serial Correlation LM test (lag 1)	0.883148	Mean absolute percent error	3.099369
Serial Correlation LM test (lag 4)	0.587183	Theil inequality coefficient	0.019589
White's heteroscedasticity test	0.804095	Bias proportion	0.000703
ARCH LM test (lag 1)	0.528660	Variance proportion	0.029971
ARCH LM test (lag 4)	0.805853	Covariance proportion	0.969326
Stability tests			
Reset test (lag 1)	-		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

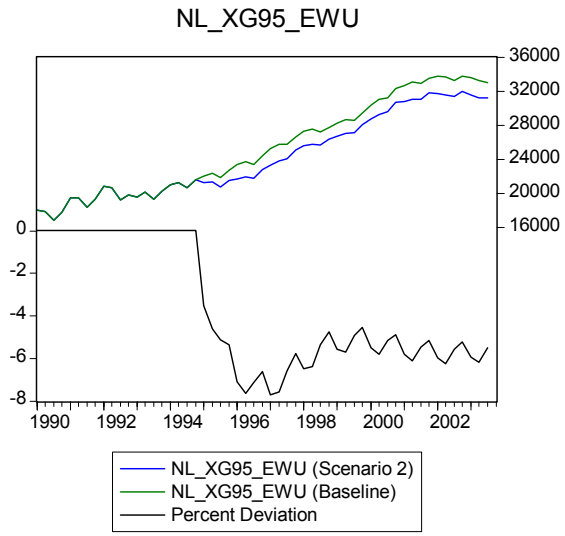
Simulation properties of the equation:

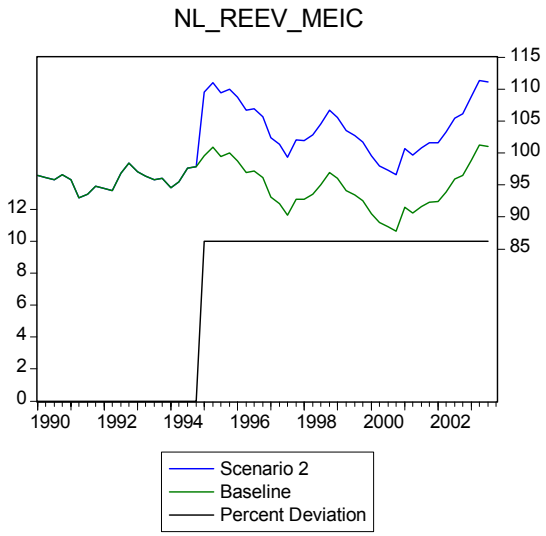
10% increase in EMU investment activity





10% loss of price competitiveness





Dutch export of goods to the rest of the world at 1995 prices

Dependent Variable: DLOG(NL_XG95_ROW)
Method: Least Squares
Date: 06/18/04 Time: 14:25
Sample(adjusted): 1981:1 2003:3
Included observations: 91 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.472443	0.685690	3.605774	0.0005
Z1	-0.061445	0.010984	-5.594054	0.0000
Z2	-0.016824	0.009697	-1.735019	0.0865
Z3	-0.060802	0.010670	-5.698358	0.0000
S9301*LOG(@TREND(1970:1))	**0.016864**	**0.003524**	**4.786050**	**0.0000**
I8104+I9004	-0.093107	0.023960	-3.885951	0.0002
LOG(NL_XG95_ROW(-1))	**-0.234688**	**0.056185**	**-4.177069**	**0.0001**
LOG(ROW_GDP95(-1))	**0.222097**	**0.082538**	**2.690851**	**0.0087**
LOG(NL_REEV_MEIC(-1))	**-0.287470**	**0.118247**	**-2.431101**	**0.0173**
DLOG(NL_XG95_ROW(-1)) +DLOG(NL_XG95_ROW(-2)) +DLOG(NL_XG95_ROW(-3))	-0.167245	0.063016	-2.654017	0.0096

R-squared	0.669830	Mean dependent var	0.012340
Adjusted R-squared	0.633144	S.D. dependent var	0.052180
S.E. of regression	0.031605	Akaike info criterion	-3.967648
Sum squared resid	0.080908	Schwarz criterion	-3.691729
Log likelihood	190.5280	F-statistic	18.25868
Durbin-Watson stat	1.930739	Prob(F-statistic)	0.000000

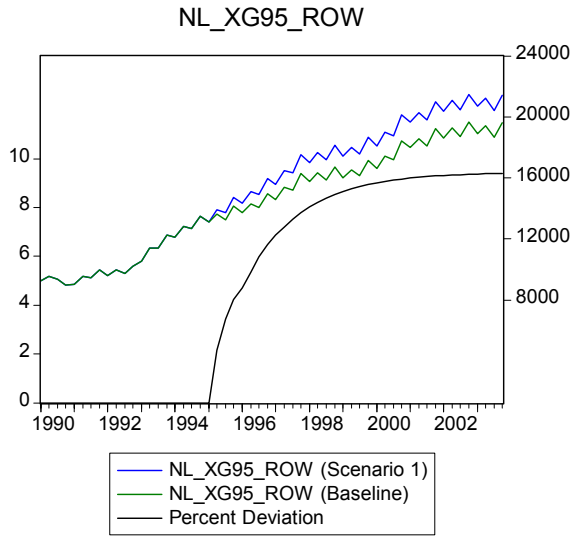
Dutch export of goods to the rest of the world are explained by a demand variable (real GDP of the rest of the world) that reflects the economic activity in the world, by a linear trend approximating the growing international division of labor and the liberalization of the goods markets and by a variable that reflects the price competitiveness of Dutch exporters.

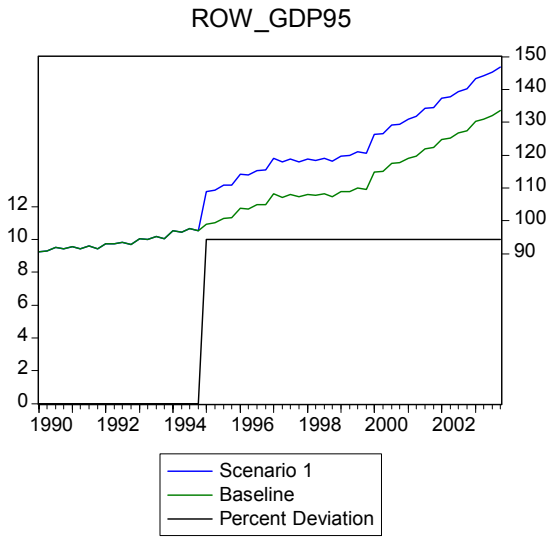
Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.605429	Root mean squared error	439.8167
Serial Correlation LM test (lag 1)	0.715306	Mean absolute percent error	3.099369
Serial Correlation LM test (lag 4)	0.288817	Theil inequality coefficient	0.019589
White's heteroscedasticity test	0.525868	Bias proportion	0.000703
ARCH LM test (lag 1)	0.525868	Variance proportion	0.029971
ARCH LM test (lag 4)	0.282247	Covariance proportion	0.969326
Stability tests			
Reset test (lag 1)	0.070114		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

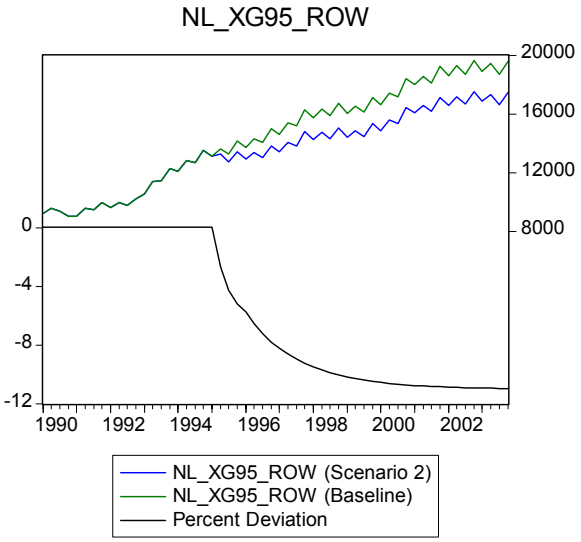
Simulation property of the equation:

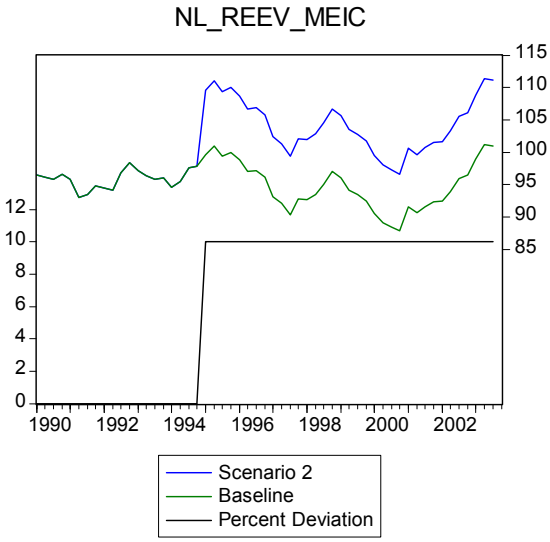
10% increase in ROW_GDP95





10% loss of price competitiveness





Dutch export of services at 1995 prices

Dependent Variable: DLOG(NL_XS95)
Method: Least Squares
Date: 08/11/04 Time: 15:37
Sample(adjusted): 1981:3 2003:3
Included observations: 89 after adjusting endpoints

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.154606	0.046780	-3.304946	0.0014
Z1	-0.032259	0.023601	-1.366878	0.1755
Z2	0.013752	0.032217	0.426849	0.6707
Z3	0.055442	0.023451	2.364149	0.0205
I9002	-0.103160	0.061537	-1.676398	0.0976
LOG(NL_XS95(-1)) - 0.119786*LOG(NL_XG95(-1) + 0.734846*LOG(NL_REEV_MEIC(-1)) - 0.013540*(@TREND(1970:1)) - 10.16042 + 0.065738*Z1 + 0.074052*Z2 - 0.015384*Z3	-0.290053	0.080375	-3.608765	0.0005
DLOG(NL_XS95(-1))	-0.400732	0.096525	-4.151591	0.0001
DLOG(NL_XS95(-5))	0.249106	0.084941	2.932695	0.0044
DLOG(NL_XG95(-2))	0.329679	0.213141	1.546764	0.1259
DLOG(NL_REEV_MEIC(-0))	-0.882147	0.426650	-2.067615	0.0419

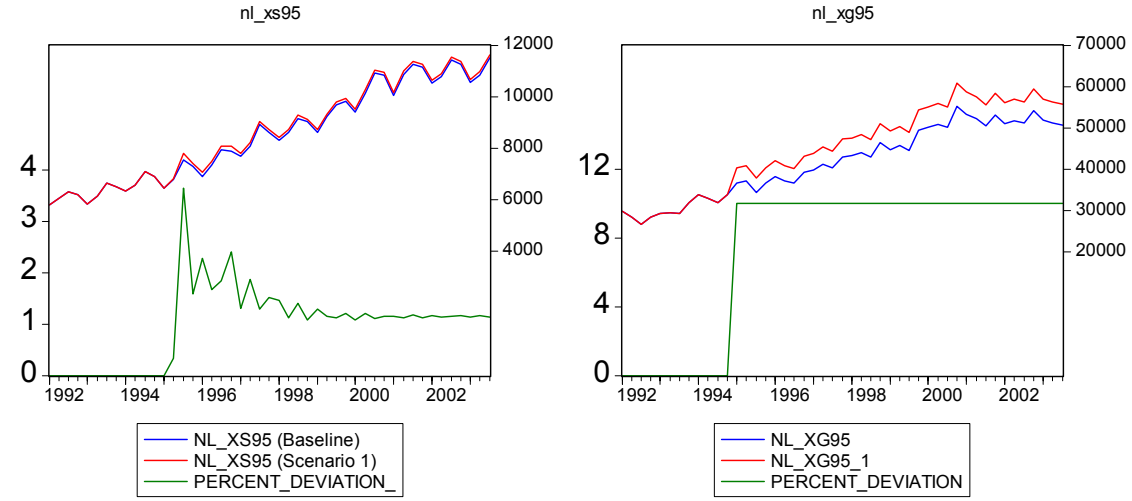
R-squared	0.629287	Mean dependent var	0.012115
Adjusted R-squared	0.587054	S.D. dependent var	0.093145
S.E. of regression	0.059856	Akaike info criterion	-2.688231
Sum squared resid	0.283033	Schwarz criterion	-2.408608
Log likelihood	129.6263	Durbin-Watson stat	1.997159

The export of services is on the one hand closely related to the export of goods via transportation and related services (assurances etc.). Therefore, a cointegration relationship between the export of services, the export of goods and the real external value of the dutch florin in relation to the currencies of a broad group of countries is reasonable. This estimation was undertaken in two steps: in the first step the following equation was estimated: LOG(NL_XS95) = 0.12*LOG(NL_XG95) - 0.74*LOG(NL_REEV_MEIC) + 0.02*(@TREND) + 10.16- 0.06*Z1 - 0.07*Z2 + 0.02*Z3. Thereafter the short-run dynamics where estimated. The coefficients have the expected signs: there is a positive relationship between the export of goods and the exports of services and a negative relationship between the latter and the the real external value of the Dutch Florin.

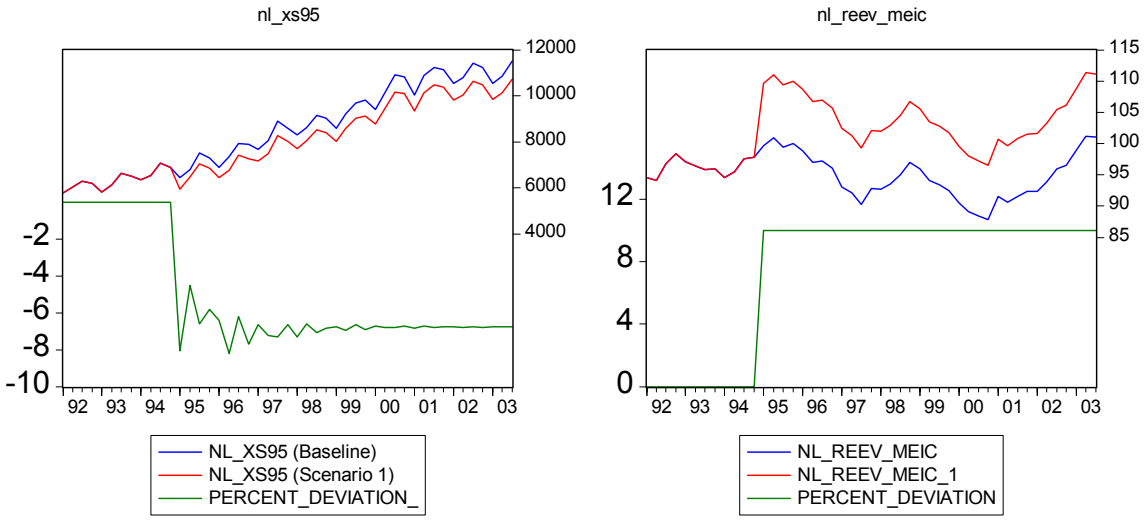
Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.003400	Root Mean Squared Error	262.8215
Serial Correlation LM test (lag 1)	0.996001	Mean Absolute Percent Error	2.533818
Serial Correlation LM test (lag 4)	0.002348	Theil inequality coefficient	0.014909
White's heteroscedasticity test	0.021296	Bias proportion	0.408316
RESET test (No. of fitted terms:1)	-	Variance proportion	0.000340
ARCH LM test (lag 1)	0.478690	Covariance proportion	0.591343
ARCH LM test (lag 4)	0.000233		
Stability tests			
CUSUM test			
CUSUM sq. test			

Simulation property of the equation

10% increase in export of goods



10% loss of competitiveness



A.5. Import of Goods and Services

Dutch import of goods and services at 1995 prices

Dependent Variable: DLOG(NL_M95)
Method: Least Squares
Date: 07/15/04 Time: 11:29
Sample(adjusted): 1981:3 2003:4
Included observations: 90 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.793387	0.396238	-4.526035	0.0000
Z2	-0.019959	0.004298	-4.643548	0.0000
Z3	-0.013628	0.005250	-2.595728	0.0113
I8201	-0.042565	0.016903	-2.518243	0.0138
I8703	0.047840	0.015740	3.039397	0.0032
LOG(NL_M95(-1))	**-0.474276**	**0.080502**	**-5.891445**	**0.0000**
LOG(NL_X95(-1) +NL_C95(-1))	**0.602680**	**0.107320**	**5.615717**	**0.0000**
LOG(NL_PM(-1) /NL_PGDP(-1))	**-0.056314**	**0.029616**	**-1.901505**	**0.0609**
DLOG(NL_M95(-4))	0.223758	0.055492	4.032253	0.0001
DLOG(NL_X95(0) +NL_C95(0))	0.938578	0.080144	11.71116	0.0000
DLOG(NL_PM(-3) /NL_PGDP(-3))	0.118527	0.075029	1.579759	0.1182
DLOG(NL_PM(-5) /NL_PGDP(-5))	0.268305	0.077316	3.470244	0.0009

R-squared	0.930245	Mean dependent var	0.012315
Adjusted R-squared	0.920407	S.D. dependent var	0.051550
S.E. of regression	0.014543	Akaike info criterion	-5.499791
Sum squared resid	0.016498	Schwarz criterion	-5.166483
Log likelihood	259.4906	F-statistic	94.56300
Durbin-Watson stat	2.157062	Prob(F-statistic)	0.000000

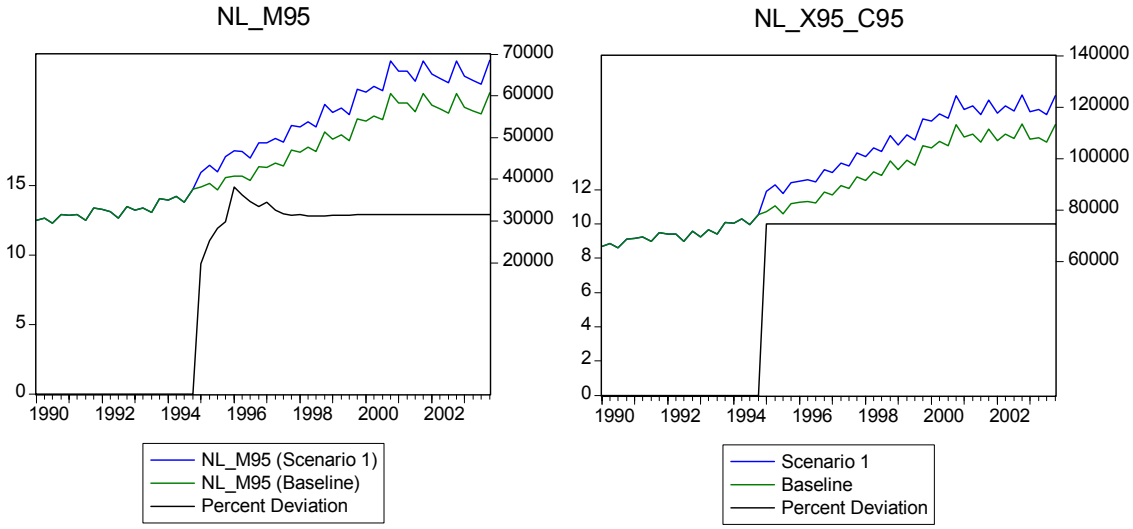
The dutch imports depend on the sum of dutch total exports and private consumption as well as on the relative dutch import prices in the long run. This specification relies on the significant openness of the Dutch economy and therefore on the importance of the dutch exports in the determination of the import level. These variables determine dynamics of the dutch imports in the short-run.

Residual tests	***Probability***	***Forecast evaluation***	
Normality test (Jarque-Bera)	0.976791	Root mean squared error	610.1520
Serial Correlation LM test (lag 1)	0.278345	Mean absolute percent error	1.251453
Serial Correlation LM test (lag 4)	0.391598	Theil inequality coefficient	0.007913
White's heteroscedasticity test	0.425036	Bias proportion	0.000002
Reset test (number of fitted terms:1)	0.293613	Variance proportion	0.000962
ARCH LM test (lag 1)	0.232993	Covariance proportion	0.999035
ARCH LM test (lag 4)	0.417169		
Stability tests			
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

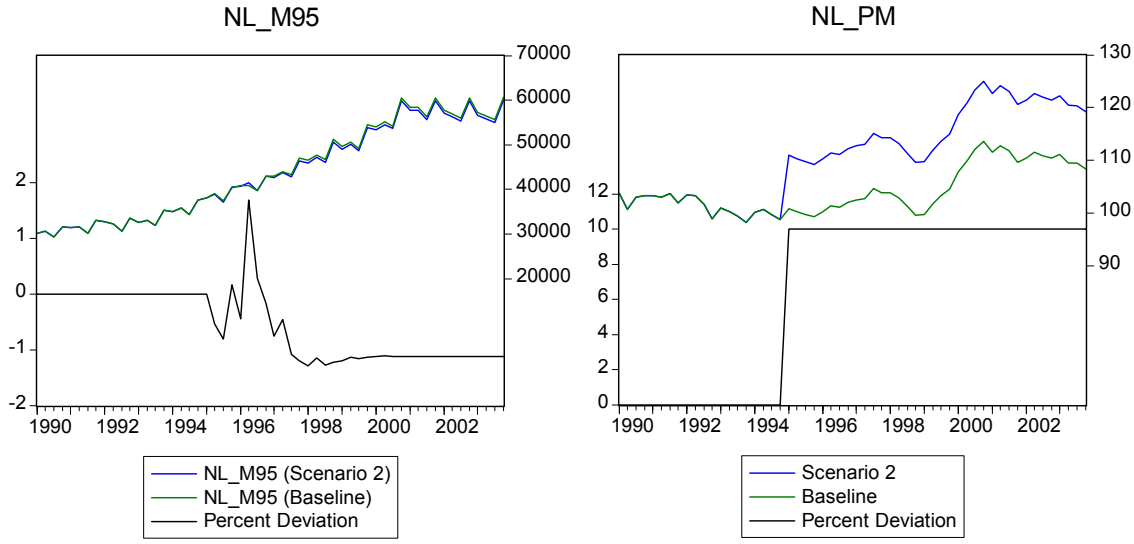
[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

Simulation property of the equation

10% increase in German exports of goods and services and private consumption



10 % increase in relative Dutch import prices



A.6. Trend of GDP and Capacity Utilization

Trend of Gross Domestic Product; at constant prices (1995)

Dependent Variable: NL_GDP95
Method: Least Squares
Date: 05/26/04 Time: 15:05
Sample: 1980:1 2003:4
Included observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30488.55	777.7716	39.19988	0.0000
@TREND(1970:1)	465.2502	8.474631	54.89917	0.0000
Z1	-2839.208	664.1826	-4.274739	0.0000
Z2	46.50049	663.9122	0.070040	0.9443
Z3	-2708.333	663.7499	-4.080352	0.0001

R-squared	0.971180	Mean dependent var	71197.95
Adjusted R-squared	0.969914	S.D. dependent var	13254.84
S.E. of regression	2299.110	Akaike info criterion	18.36911
Sum squared resid	4.81E+08	Schwarz criterion	18.50267
Log likelihood	-876.7173	F-statistic	766.6428
Durbin-Watson stat	0.209350	Prob(F-statistic)	0.000000

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.001108	Root mean squared error	2238.437
Serial Correlation LM test (lag 1)	0.000000	Mean absolute percent error	2.652494
Serial Correlation LM test (lag 4)	0.000000	Theil inequality coefficient	0.015461
White's heteroscedasticity test	0.000982	Bias proportion	0.000000
ARCH LM test (lag 1)	0.000000	Variance proportion	0.007311
ARCH LM test (lag 4)	0.000000	Covariance proportion	0.992689
Stability tests			
Reset test (lag 1)	0.000000		
CUSUM test[a]	1986Q1-2003Q4		
$CUSUM^2$ test[a]	1986Q1-2003Q1		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

B. Prices, Exchange Rates and Interest Rates

B.1 Price Index: Private Consumption

Price Index: Private consumption expenditure (1995=100)

Dependent Variable: DLOG(NL_PC)
Method: Least Squares
Date: 06/22/04 Time: 14:22
Sample(adjusted): 1982:2 2003:4
Included observations: 87 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(NL_PC(-1))	**-0.544768**	**0.049030**	**-11.11088**	**0.0000**
LOG(NL_PM(-1))	**0.126462**	**0.015814**	**7.997023**	**0.0000**
@TREND(1970:1)	**0.003013**	**0.000267**	**11.27291**	**0.0000**
C	1.610307	0.147542	10.91424	0.0000
Z1	0.008004	0.001676	4.776513	0.0000
Z2	0.000976	0.001536	0.635764	0.5269
Z3	-0.001395	0.001567	-0.889915	0.3764
I8501	0.028196	0.005021	5.615819	0.0000
I8602+I8703	0.015836	0.003835	4.128776	0.0001
DLOG(NL_PC(-2))	0.273988	0.052510	5.217836	0.0000
DLOG(NL_PC(-4))	0.712876	0.056121	12.70252	0.0000
DLOG(NL_PC(-5)) +DLOG(NL_PC(-7))	0.224563	0.042711	5.257746	0.0000
DLOG(NL_PM(-3)) +DLOG(NL_PM(-4)) +DLOG(NL_PM(-8))	-0.111004	0.016363	-6.783961	0.0000
D(NL_RS3M(-1)) +D(NL_RS3M(-5))	-0.004606	0.000706	-6.523280	0.0000

R-squared	0.908059	Mean dependent var	0.005083
Adjusted R-squared	0.891686	S.D. dependent var	0.013764
S.E. of regression	0.004530	Akaike info criterion	-7.809821
Sum squared resid	0.001498	Schwarz criterion	-7.413008
Log likelihood	353.7272	F-statistic	55.46048
Durbin-Watson stat	2.053572	Prob(F-statistic)	0.000000

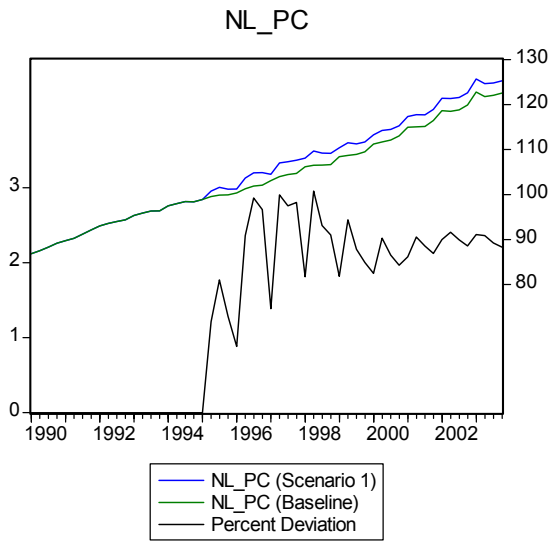
In the long-run, Dutch consumer prices depend mainly on import prices which also determine consumer prices in the short run and on linear trend which accounts for the fact that the share of imported goods relative to total consumption goods is on the increase. These dynamics also are influenced by the short-term interest rate.

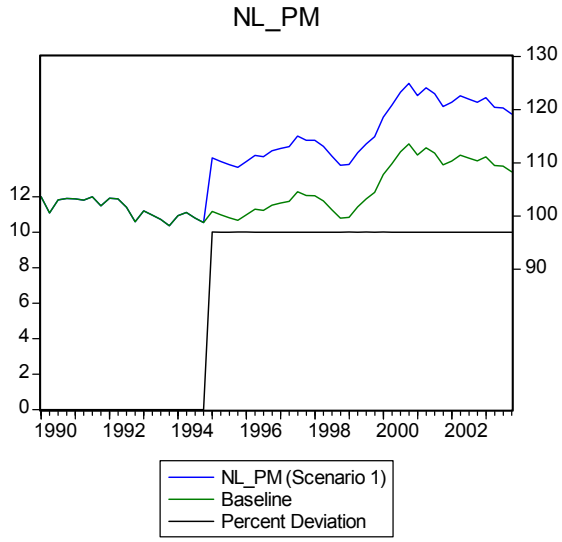
Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.397256	Root mean squared error	0.647717
Serial Correlation LM test (lag 1)	0.744805	Mean absolute percent error	0.529246
Serial Correlation LM test (lag 4)	0.937664	Theil inequality coefficient	0.003325
White's heteroscedasticity test	0.767464	Bias proportion	0.001725
ARCH LM test (lag 1)	0.820861	Variance proportion	0.013002
ARCH LM test (lag 4)	0.154334	Covariance proportion	0.985273
Stability tests			
Reset test (lag 1)	0.200991		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

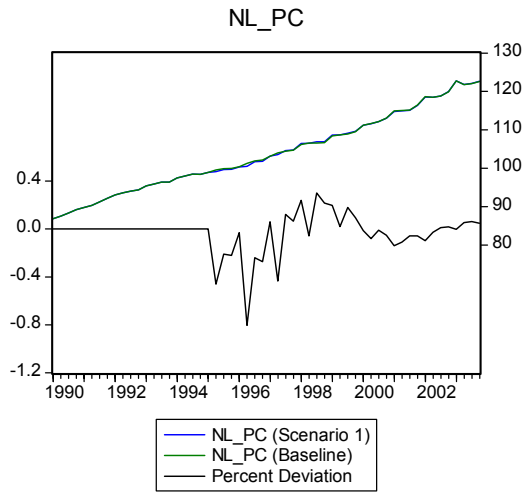
Simulation properties of the equation

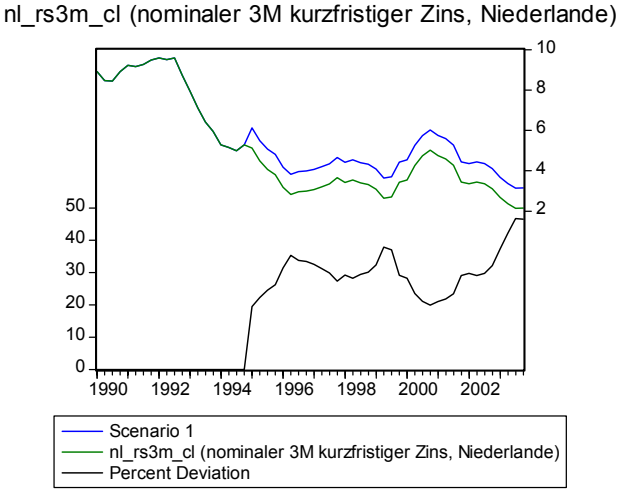
10% increase in the Dutch import prices





1% point increase in the nominal short-term (3-months) interest rate





B.2. Price index: Imports

Dependent Variable: DLOG(NL_PM)
Method: Least Squares
Date: 07/15/04 Time: 13:48
Sample(adjusted): 1981:2 2003:3
Included observations: 90 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.033905	0.304783	0.111244	0.9117
@TREND(1970:1)	**-0.003532**	**0.000549**	**-6.435984**	**0.0000**
Z1	0.010876	0.002708	4.016789	0.0001
I8104	-0.040974	0.009127	-4.489377	0.0000
I8701	0.037671	0.009125	4.128147	0.0001
I9804	0.026347	0.008534	3.087174	0.0028
LOG(NL_PM(-1))	**-0.624615**	**0.078012**	**-8.006681**	**0.0000**
LOG(NL_PGESDEF(-1)) (domestic price level = PTM coefficient)	**0.703175**	**0.115120**	**6.108174**	**0.0000**
LOG(1/(NL_REEV_MEIC(-1) /NL_PC(-1))) (foreign price level)	**0.189804**	**0.045521**	**4.169581**	**0.0001**
LOG(OIL$(-1) /NL_NEEV_US(-1))	**0.020703**	**0.006442**	**3.213720**	**0.0019**
DLOG(NL_PM(-1))	0.460000	0.071368	6.445464	0.0000
DLOG(NL_PM(-2)) +DLOG(NL_PM(-4))	0.268394	0.034171	7.854380	0.0000
DLOG(1/(NL_REEV_MEIC(-0) /NL_PC(-0)))	0.339958	0.056942	5.970270	0.0000
DLOG(OIL$(-0) /NL_NEEV_US(-0))	0.076021	0.006699	11.34773	0.0000
DLOG(NL_PGESDEF(-1))	-0.510688	0.135201	-3.777259	0.0003

R-squared	0.882272	Mean dependent var	5.91E-05
Adjusted R-squared	0.860296	S.D. dependent var	0.021589
S.E. of regression	0.008069	Akaike info criterion	-6.650475
Sum squared resid	0.004884	Schwarz criterion	-6.233840
Log likelihood	314.2714	F-statistic	40.14727
Durbin-Watson stat	1.873161	Prob(F-statistic)	0.000000

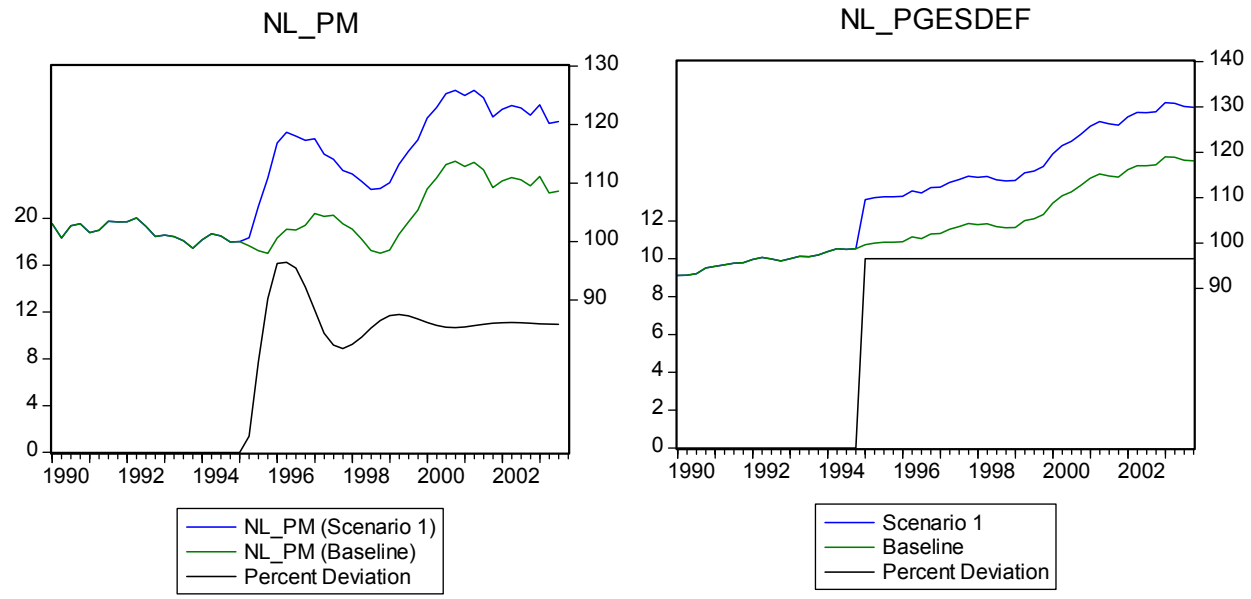
Dutch import prices are modeled according to the theory of pricing-to-market. Under imperfect competition, firms are no longer price-takers but they can set prices to a certain extent. I.e. they charge a price which covers not only the production costs but also includes a mark-up. This mark-up is not constant but depends on the intensity of competition on the respective market. Consequently, foreign exporters set their prices (which are the Dutch import prices) not only with regard to their production costs (= foreign price level) but also to the domestic price level in the importing country (= Netherlands), which is typically a producer of those kind of goods which are imported. The so-called pricing-to market (= PTM) coefficient (which is the coefficient of the variable that reflects the domestic price level) measures, to what extent foreign exporters take the price level of competing firms in the importing country into account. We have not restricted the coefficients of the domestic and the foreign price level to sum up to one, which is a requirement from theory. Usually this requirement is met in estimations without any restrictions. However, this estimation gives us a PTM coefficient of above one, which is theoretically impossible, since the PTM coefficient must lie between 0 and 1, but it is also economically implausible, since it implies that the Dutch market is that much important for foreign exporters that they set their prices exclusively with regard to the Dutch price level. However, we stick with this equation for the moment, since we were unable to improve this equation. Besides the foreign and the domestic price level, the oil price (in Euro) is also part of the cointegration relationship.

Residual tests	*Probability*	*Forecast evaluation (dynamic in-sample)*	
Normality test (Jarque-Bera)	0.448514	Root mean squared error	1.258363
Serial Correlation LM test (lag 1)	0.755087	Mean absolute percent error	1.147930
Serial Correlation LM test (lag 4)	0.941027	Theil inequality coefficient	0.945709
White's heteroscedasticity test	0.027752	Bias proportion	0.005889
ARCH LM test (lag 1)	0.122465	Variance proportion	0.000089
ARCH LM test (lag 4)	0.177387	Covariance proportion	0.009641
Stability tests			
Reset test (lag 1)	0.900150		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

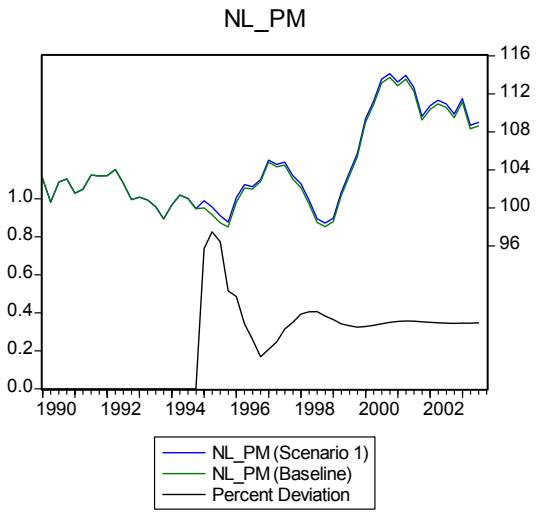
[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

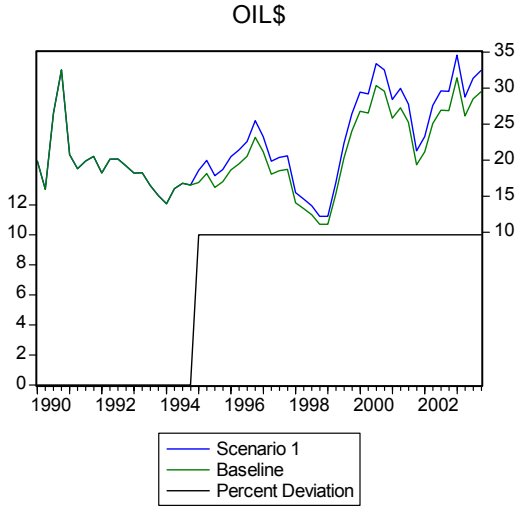
Simulation Properties of the Equation

10% increase in the domestic price level

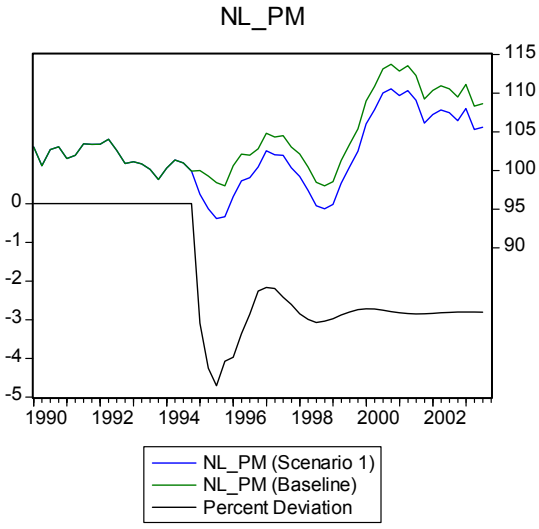


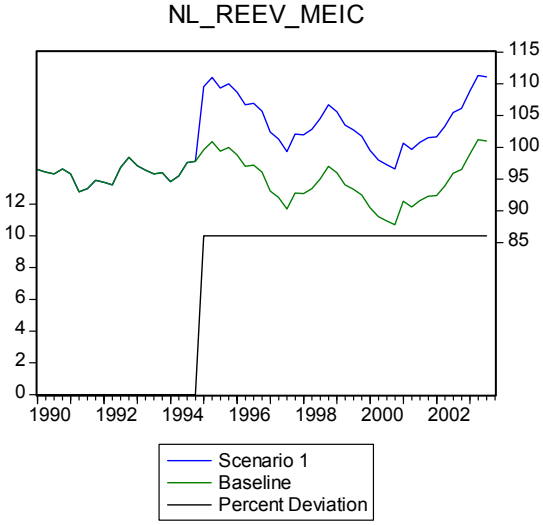
10% increase in oil price



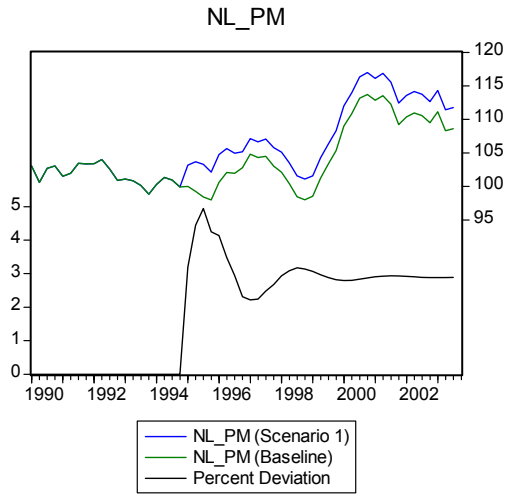


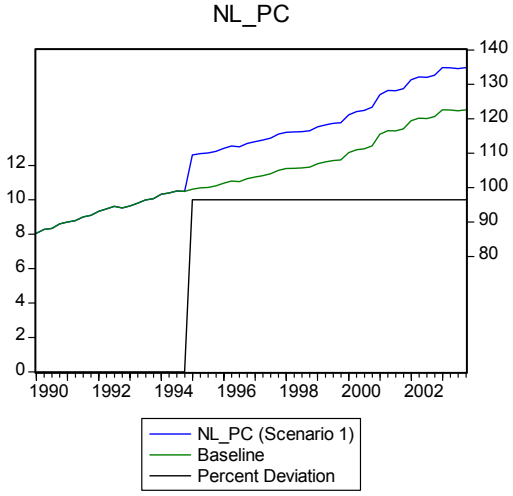
10% increase in foreign price level





10% increase in price index of private consumption





B.3. Price index: Exports

Dependent Variable: DLOG(NL_PX)
Method: Least Squares
Date: 06/22/04 Time: 14:28
Sample(adjusted): 1981:4 2003:4
Included observations: 89 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.126353	0.069965	-1.805946	0.0748
@TREND(1970:1)	**-0.000129**	**3.64E-05**	**-3.546554**	**0.0007**
Z1	0.005907	0.002977	1.984381	0.0508
Z2	-0.001145	0.002553	-0.448359	0.6552
Z3	0.002243	0.002869	0.781895	0.4367
LOG(NL_PX(-1))	**-0.739023**	**0.073959**	**-9.992315**	**0.0000**
LOG(NL_PM(-1))	**0.768564**	**0.076364**	**10.06449**	**0.0000**
DLOG(NL_PX(-4))	0.190336	0.066962	2.842456	0.0057
DLOG(NL_PX(-6))	-0.090873	0.044249	-2.053698	0.0434
DLOG(NL_PM(0))	0.667850	0.044341	15.06180	0.0000
DLOG(NL_PM(-3))	0.192345	0.046492	4.137179	0.0001
DLOG(NL_PM(-4))	-0.166952	0.067193	-2.484647	0.0151

R-squared	0.859426	Mean dependent var	-0.000631
Adjusted R-squared	0.839344	S.D. dependent var	0.018832
S.E. of regression	0.007548	Akaike info criterion	-6.810156
Sum squared resid	0.004387	Schwarz criterion	-6.474610
Log likelihood	315.0520	F-statistic	42.79587
Durbin-Watson stat	1.711592	Prob(F-statistic)	0.000000

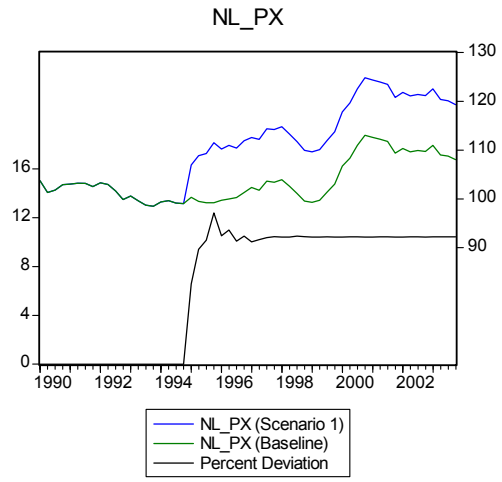
Since the Netherlands is a highly open economy, its export prices are exclusively determined by the import prices.

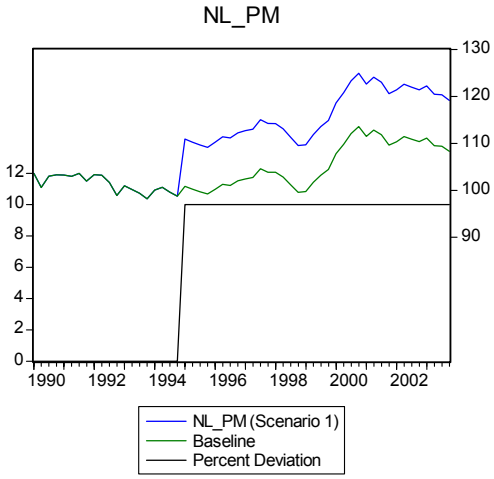
Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.734179	Root mean squared error	0.865170
Serial Correlation LM test (lag 1)	0.142793	Mean absolute percent error	0.689799
Serial Correlation LM test (lag 4)	0.546088	Theil inequality coefficient	0.638015
White's heteroscedasticity test	0.029147	Bias proportion	0.004053
ARCH LM test (lag 1)	0.878892	Variance proportion	0.000001
ARCH LM test (lag 4)	0.089018	Covariance proportion	0.000681
Stability tests			
Reset test (lag 1)	0.397885		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

Simulation Properties of the Equation

10% increase in Dutch import prices





B.4. Price index: Government expenditures and investment

Dependent Variable: DLOG(NL_PGI)
Method: Least Squares
Date: 06/25/04 Time: 15:08
Sample(adjusted): 1981:3 2003:4
Included observations: 90 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(NL_PGI(-1))	**-0.717524**	**0.092499**	**-7.757138**	**0.0000**
LOG(NL_ULC(-1))	**0.420344**	**0.061546**	**6.829769**	**0.0000**
LOG(NL_PM(-1))	**0.114601**	**0.023001**	**4.982349**	**0.0000**
C	0.933406	0.136800	6.823122	0.0000
Z1	-0.026712	0.007023	-3.803598	0.0003
Z2	-0.035215	0.008138	-4.326981	0.0000
Z3	-0.008616	0.009198	-0.936803	0.3519
I8704	-0.025091	0.007930	-3.163943	0.0022
I9203	-0.024035	0.007922	-3.034111	0.0033
@TREND(1970:1)	**0.001861**	**0.000261**	**7.131667**	**0.0000**
DLOG(NL_PGI(-2)) +DLOG(NL_PGI(-4))	0.268621	0.036808	7.297877	0.0000
DLOG(NL_ULC)	0.212777	0.050473	4.215646	0.0001
DLOG(NL_ULC(-2)) +DLOG(NL_ULC(-5))	-0.152382	0.039579	-3.850071	0.0002
DLOG(NL_PM)	0.158662	0.047150	3.365025	0.0012
DLOG(NL_PM(-2))	-0.166870	0.043192	-3.863465	0.0002

R-squared	0.836105	Mean dependent var	0.004997
Adjusted R-squared	0.805511	S.D. dependent var	0.017053
S.E. of regression	0.007520	Akaike info criterion	-6.791379
Sum squared resid	0.004242	Schwarz criterion	-6.374744
Log likelihood	320.6120	F-statistic	27.32927
Durbin-Watson stat	2.110614	Prob(F-statistic)	0.000000

At the moment a joint deflator for government consumption and overall investment is used in the model. Because of the high weight of wages in government consumption unit labor costs play an important role in the determination of this joint deflator. The import prices also turn out to be highly significant.

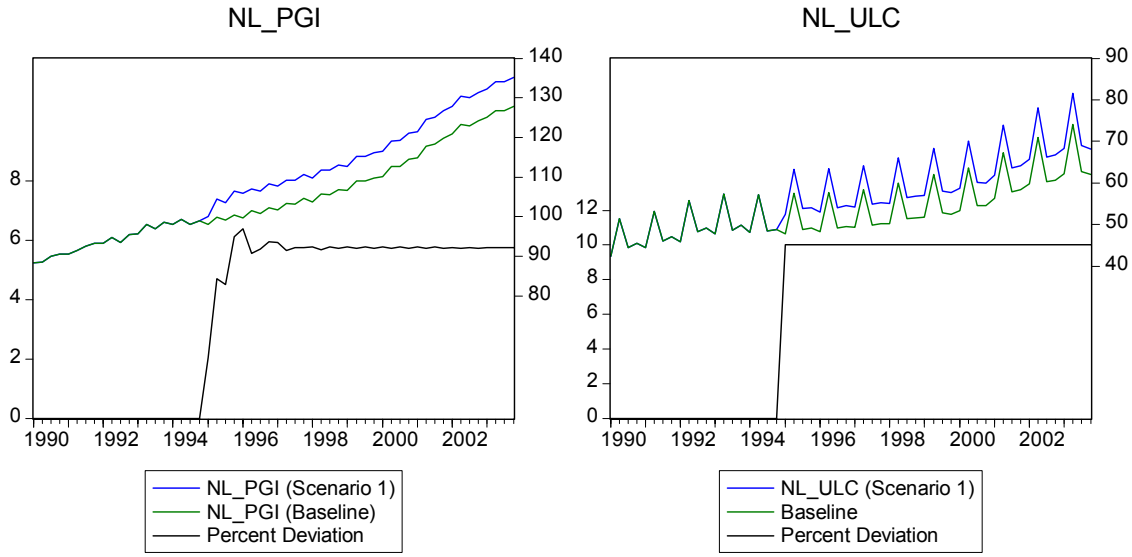
Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.747328	Root mean squared error	0.783079
Serial Correlation LM test (lag 1)	0.464413	Mean absolute percent error	0.654659
Serial Correlation LM test (lag 4)	0.648079	Theil inequality coefficient	0.003986
White's heteroscedasticity test	0.486649	Bias proportion	0.000338
ARCH LM test (lag 1)	0.967513	Variance proportion	0.009673
ARCH LM test (lag 4)	0.698798	Covariance proportion	0.989989
Stability tests			
Reset test (lag 1)	0.500335		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

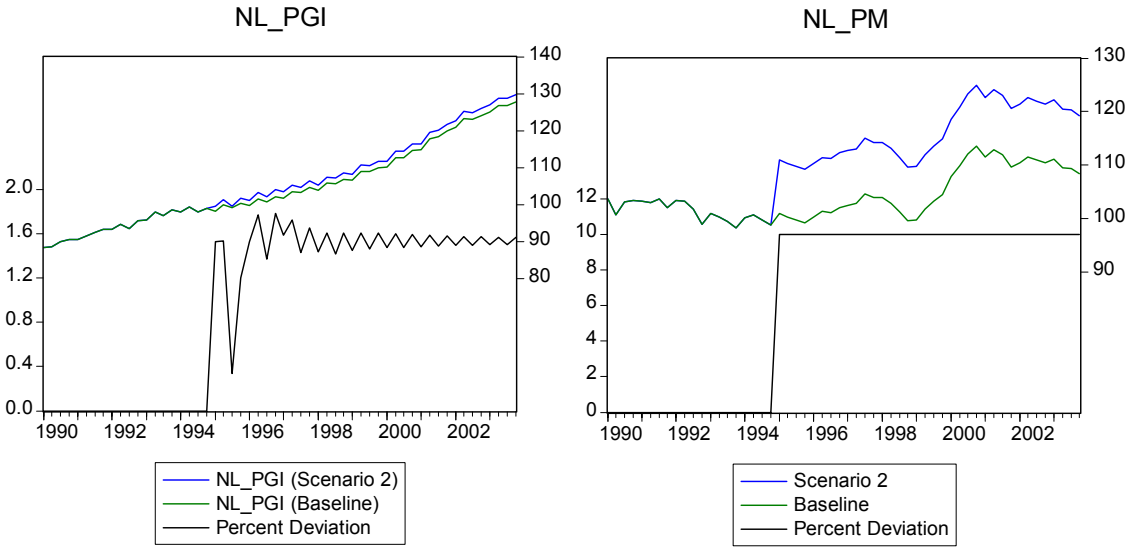
*Method of computation of the PGI: PGI = (CGOV+I)/(CGOV95+I95)*100

Simulation Properties of the Equation

10% increase in unit labor costs



10% increase in Dutch import prices



B.5. Interest Rate Spread

Dependent Variable: NL_SPREAD
Method: Least Squares
Date: 07/13/04 Time: 11:02
Sample(adjusted): 1982:2 2003:3
Included observations: 86 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.309634	0.118253	2.618408	0.0106
I9001	0.913161	0.227950	4.005969	0.0001
I9402	0.760490	0.225992	3.365115	0.0012
NL_SPREAD(-1)	1.180536	0.059722	19.76715	0.0000
NL_SPREAD(-2)	-0.258577	0.059161	-4.370754	0.0000
NL_RS3M	-0.525286	0.047531	-11.05139	0.0000
NL_RS3M(-1)	0.476167	0.048787	9.760184	0.0000
D(US_SPREAD(0))	0.130884	0.044491	2.941779	0.0043

R-squared	0.971992	Mean dependent var	1.317326
Adjusted R-squared	0.969479	S.D. dependent var	1.257758
S.E. of regression	0.219734	Akaike info criterion	-0.104393
Sum squared resid	3.766063	Schwarz criterion	0.123918
Log likelihood	12.48892	F-statistic	386.7093
Durbin-Watson stat	2.090842	Prob(F-statistic)	0.000000

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.531175	Root mean squared error	0.523030
Serial Correlation LM test (lag 1)	0.437778	Mean absolute percent error	65.65166
Serial Correlation LM test (lag 4)	0.869520	Theil inequality coefficient	0.144633
White's heteroscedasticity test	0.537766	Bias proportion	0.019665
ARCH LM test (lag 1)	0.320427	Variance proportion	0.009324
ARCH LM test (lag 4)	0.718788	Covariance proportion	0.971011
Stability tests			
Reset test (lag 1)	0.910231		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

B.6. Real External Value of Dutch Florin in Relation to the Currencies of the other EMU Members

$$REXVAL_{EMU} = \frac{CPI_{NL}}{CPI_{FR}} \times \frac{FFR}{NLG} \times w_{FR} + \frac{CPI_{NL}}{CPI_{IT}} \times \frac{LIT}{NLG} \times w_{IT} + \frac{CPI_{NL}}{CPI_{ES}} \times \frac{PTA}{NLG} \times w_{PT}$$
$$+ \frac{CPI_{NL}}{CPI_{PT}} \times \frac{ESC}{NLG} \times w_{ES} + \frac{CPI_{NL}}{CPI_{DE}} \times \frac{DM}{NLG} \times w_{DE} + \frac{CPI_{NL}}{CPI_{BE}} \times \frac{BFR}{NLG} \times w_{BE}$$
$$+ \frac{CPI_{NL}}{CPI_{FI}} \times \frac{FMK}{NLG} \times w_{FI} + \frac{CPI_{NL}}{CPI_{AT}} \times \frac{SHL}{NLG} \times w_{AT} + \frac{CPI_{NL}}{CPI_{IE}} \times \frac{IPF}{NLG} \times w_{IE}$$

$\frac{CPI_{NL}}{CPI_{FR}}$ = relative consumer prices Netherlands / France

$\frac{CPI_{NL}}{CPI_{IT}}$ = relative consumer prices Netherlands / Italy

$\vdots$

$\frac{FFR}{NLG}$ = nominal external value of Dutch Florin in relation to Franc

$\frac{LIT}{NLG}$ = nominal external value of Dutch Florin in relation to Lira

$\vdots$

w_{FR} = share of France in Dutch exports

w_{IT} = share of Italy in Dutch exports

$\vdots$

C. Income and Employment

C.1. Consumption of Fixed Capital

Consumption of fixed capital

Dependent Variable: DLOG(NL_CFC)
Method: Least Squares
Date: 06/28/04 Time: 15:37
Sample(adjusted): 1988:2 2003:4
Included observations: 63 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.553306	0.182807	3.026728	0.0038
@TREND(1970:1)	**0.000992**	**0.000285**	**3.478993**	**0.0010**
Z1	0.010457	0.004371	2.392486	0.0203
Z2	0.007719	0.003006	2.567777	0.0131
Z3	0.011683	0.005046	2.315130	0.0245
LOG(NL_CFC(-1))	**-0.117675**	**0.026760**	**-4.397478**	**0.0001**
LOG(NL_IMEQ(-1) +NL_IFC(-1)+NL_ICON(-1))	**0.043787**	**0.016823**	**2.602854**	**0.0120**
DLOG(NL_CFC(-4))	0.614949	0.083872	7.331977	0.0000
DLOG(NL_IMEQ(-1) +NL_IFC(-1)+NL_ICON(-1)) +DLOG(NL_IMEQ(-2) +NL_IFC(-2)+NL_ICON(-2))	-0.082680	0.022375	-3.695266	0.0005
DLOG(NL_IMEQ(-3) +NL_IFC(-3)+NL_ICON(-3))	-0.045585	0.015892	-2.868468	0.0059

R-squared	0.714919	Mean dependent var	0.013522
Adjusted R-squared	0.666509	S.D. dependent var	0.008167
S.E. of regression	0.004716	Akaike info criterion	-7.730955
Sum squared resid	0.001179	Schwarz criterion	-7.390774
Log likelihood	253.5251	F-statistic	14.76801
Durbin-Watson stat	2.050710	Prob(F-statistic)	0.000000

Consumption of fixed capital (CFC) is a technical equation. Investment in machinery and equipment, fixed capital formation and construction, all of them at current prices, are used as the base to estimate consumption of fixed capital.

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.000001	Root mean squared error	105.1574
Serial Correlation LM test (lag 1)	0.742894	Mean absolute percent error	0.744683
Serial Correlation LM test (lag 4)	0.339712	Theil inequality coefficient	0.004083
White's heteroscedasticity test	0.270644	Bias proportion	0.014220
ARCH LM test (lag 1)	0.378250	Variance proportion	0.000186
ARCH LM test (lag 4)	0.443041	Covariance proportion	0.985594
Stability tests			
Reset test (No. of fitted terms: 1)	0.719979		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

C.2. Income

Gross wages (per person)

Dependent Variable: DLOG(NL_GYEEE)
Method: Least Squares
Date: 07/13/04 Time: 14:54
Sample(adjusted): 1988:3 2003:4
Included observations: 62 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.020341	0.176635	5.776544	0.0000
Z1	-0.062175	0.014731	-4.220659	0.0001
Z3	-0.072164	0.022859	-3.156892	0.0028
I9503	0.011780	0.005239	2.248392	0.0292
I8901	-0.019257	0.005395	-3.569145	0.0008
LOG(NL_GYEEE(-1)) -LOG(NL_PGDP(-1))	**-0.361064**	**0.059916**	**-6.026145**	**0.0000**
LOG(NL_PRODEE(-1))	**0.177236**	**0.040890**	**4.334463**	**0.0001**
LOG(NL_UR(-1)/100)	**-0.012108**	**0.003480**	**-3.479460**	**0.0011**
DLOG(NL_GYEEE(-4))	0.799737	0.034618	23.10196	0.0000
DLOG(NL_PRODEE(-0))	0.242809	0.097117	2.500166	0.0159
DLOG(NL_PRODEE(-4))	-0.376223	0.092789	-4.054608	0.0002
DLOG(NL_UR(-2)/100)	0.023471	0.012884	1.821764	0.0747
DLOG(NL_GYEEE(-5))	0.171553	0.033389	5.137942	0.0000
DLOG(NL_PGDP(-1))	-0.190284	0.112679	-1.688719	0.0978

R-squared	0.999239	Mean dependent var	0.004543
Adjusted R-squared	0.999033	S.D. dependent var	0.154302
S.E. of regression	0.004799	Akaike info criterion	-7.645044
Sum squared resid	0.001106	Schwarz criterion	-7.164723
Log likelihood	250.9964	F-statistic	4846.792
Durbin-Watson stat	1.945550	Prob(F-statistic)	0.000000

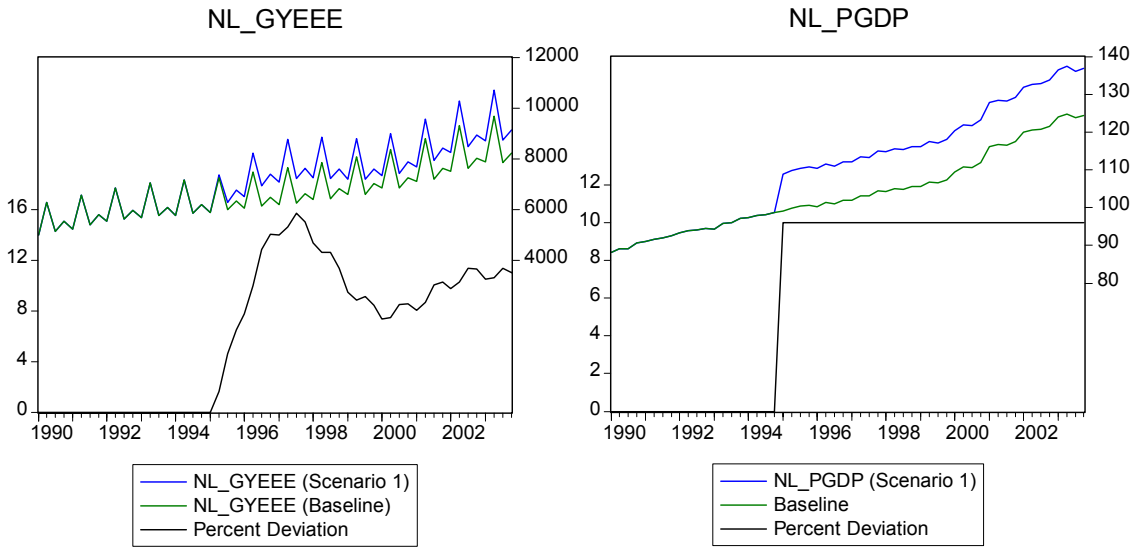
In the long-run real gross wages per employees depend on prices, productivity and unemployment rate: ln(gyeee) = ln(pgdp) +0,49*ln(prodee) –0,03*ur. Those coefficients are quite in line with the literature (see e.g. McMorrow, 1996, Morgan/Mourougane, 2001 or van der Horst, 2002.

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.994602	Root mean squared error	45.20206
Serial Correlation LM test (lag 1)	0.979059	Mean absolute percent error	0.562156
Serial Correlation LM test (lag 4)	0.270825	Theil inequality coefficient	0.003375
White's heteroscedasticity test	0.326530	Bias proportion	0.001226
ARCH LM test (lag 1)	0.463862	Variance proportion	0.012989
ARCH LM test (lag 4)	0.167228	Covariance proportion	0.985786
Stability tests			
Reset test (No. of fitted terms: 1)	0.744063		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

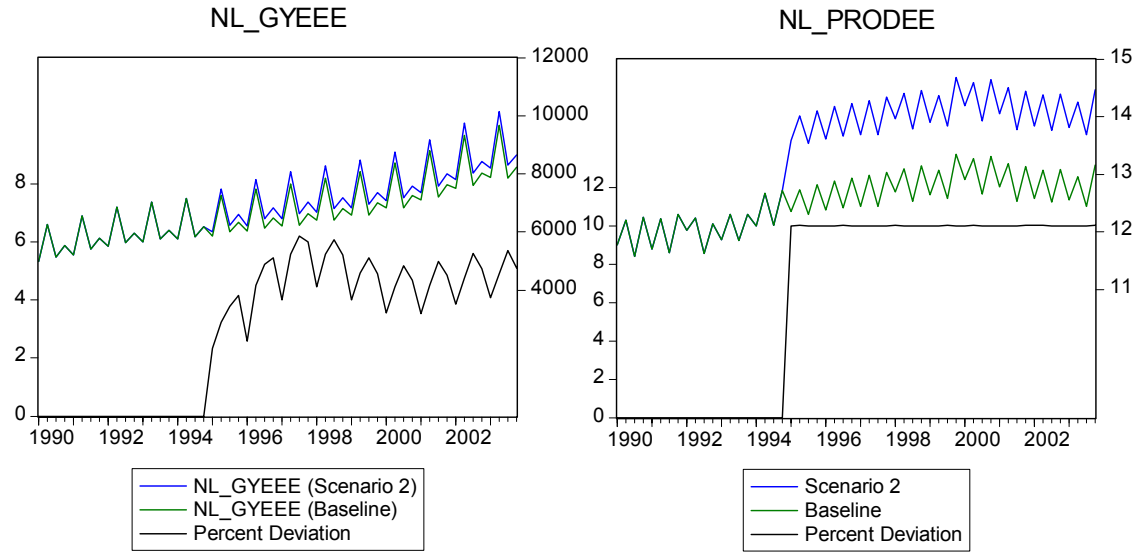
[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

Simulation Properties of the equation

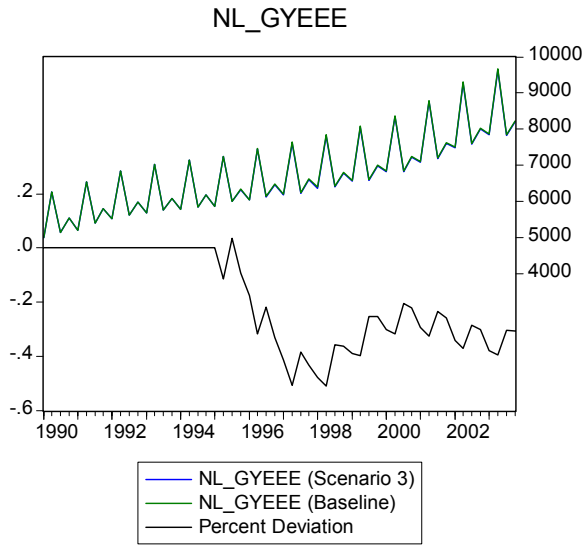
10% increase in the GDP deflator

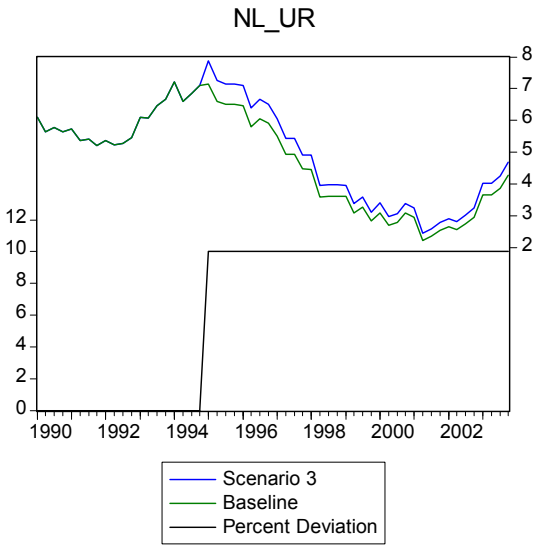


10% increase in productivity



10% increase in unemployment rate





C.3. Employment

Employees
(Domestic concept, in 1000)

Dependent Variable: DLOG(NL_EE)
Method: Least Squares
Date: 07/15/04 Time: 15:32
Sample(adjusted): 1988:3 2003:4
Included observations: 62 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.440524	0.278706	1.580602	0.1207
Z3	0.052929	0.009183	5.763614	0.0000
LOG(@TREND(1970:1))	**-0.037248**	**0.010428**	**-3.571913**	**0.0008**
I9201+I9301	-0.010926	0.001960	-5.575261	0.0000
I9203	0.005746	0.002364	2.430993	0.0189
I9701	0.007160	0.002458	2.913179	0.0055
LOG(NL_EE(-1))	**-0.164297**	**0.030781**	**-5.337672**	**0.0000**
LOG(NL_GDP95(-1))	**0.170011**	**0.025291**	**6.722110**	**0.0000**
LOG(NL_GYEEE95(-1))	**-0.084447**	**0.032567**	**-2.593034**	**0.0126**
NL_RL95(-1)	**-0.000851**	**0.000392**	**-2.169823**	**0.0351**
DLOG(NL_EE(-5))	0.163212	0.063771	2.559330	0.0138
DLOG(NL_GDP95(-4))	0.159639	0.039212	4.071132	0.0002
DLOG(NL_GYEEE95(-3))	0.083744	0.020939	3.999400	0.0002
DLOG(NL_GYEEE95(-4))	0.128242	0.022992	5.577693	0.0000
D(NL_RL95(-1))+D(NL_RL95(-3))	0.001274	0.000348	3.658418	0.0006

R-squared	0.920272	Mean dependent var	0.004578
Adjusted R-squared	0.896524	S.D. dependent var	0.006856
S.E. of regression	0.002205	Akaike info criterion	-9.188846
Sum squared resid	0.000229	Schwarz criterion	-8.674217
Log likelihood	299.8542	F-statistic	38.75043
Durbin-Watson stat	2.070376	Prob(F-statistic)	0.000000

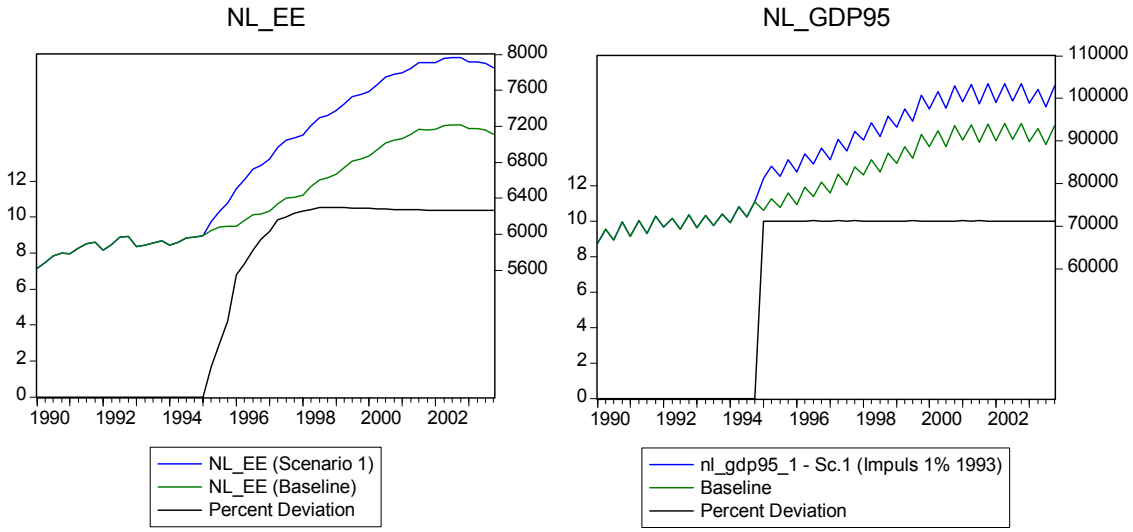
In the long-run, employment depends on real GDP, real labour costs (gyeee95=gyee/ee*1/pgdp) and on real long-term interest rate: ln(ee) = 1,03*ln(gdp95) –0,51*[ln(gyee/ee)-ln(pgdp)] -0,005*rl95.

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.312291	Root mean squared error	17.28785
Serial Correlation LM test (lag 1)	0.751919	Mean absolute percent error	0.227045
Serial Correlation LM test (lag 4)	0.490554	Theil inequality coefficient	0.001364
White's heteroscedasticity test	0.771718	Bias proportion	0.000052
ARCH LM test (lag 1)	0.360273	Variance proportion	0.006418
ARCH LM test (lag 4)	0.600587	Covariance proportion	0.993530
Stability tests			
Reset test (No. of fitted terms: 1)	0.057		
CUSUM test[a]	0.167378		
$CUSUM^2$ test[a]	0		

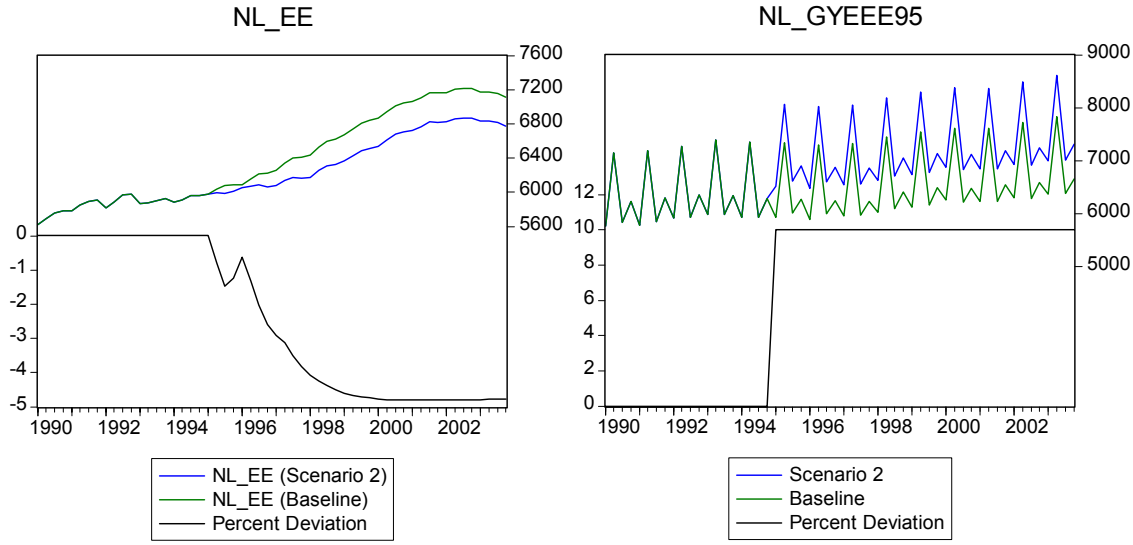
[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

Simulation properties of the equation

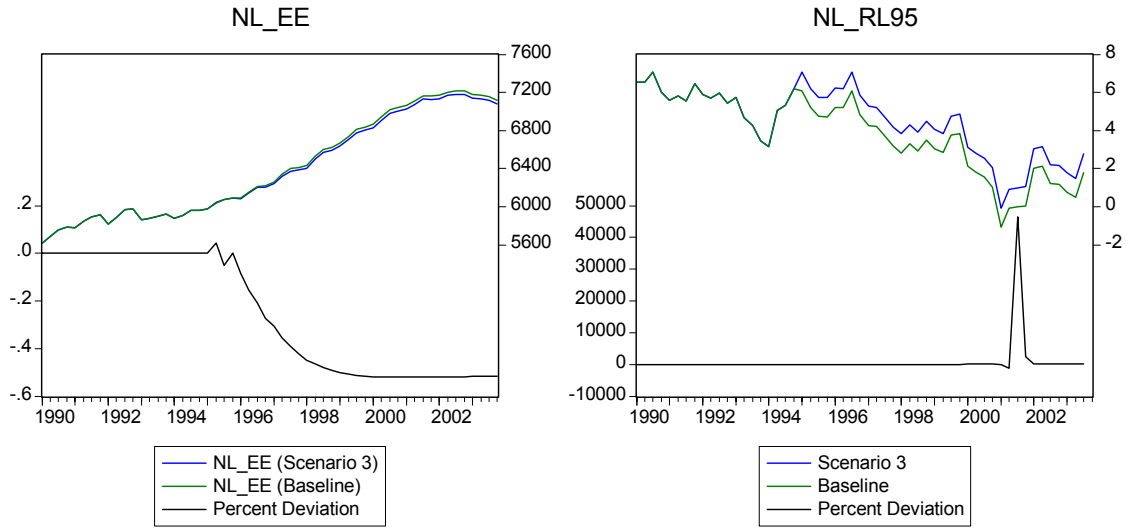
10% increase in the Dutch real GDP



10% increase in real wage per person



1% point increase in the real long term interest rate



Total Employed Persons
(domestic concept, in 1000)

Dependent Variable: DLOG(NL_ET)
Method: Least Squares
Date: 07/14/04 Time: 15:18
Sample(adjusted): 1988:2 2003:4
Included observations: 63 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.372600	0.231580	5.927113	0.0000
Z1	-0.038156	0.010665	-3.577670	0.0008
Z2	-0.031807	0.006015	-5.287513	0.0000
Z3	0.021874	0.009930	2.202877	0.0324
I9103	-0.005838	0.002242	-2.603151	0.0123
I9301	-0.010456	0.002359	-4.431441	0.0001
I9701	0.009240	0.002319	3.984890	0.0002
LOG(NL_ET(-1))	**-0.178963**	**0.044714**	**-4.002393**	**0.0002**
LOG(NL_GYEEE95(-1))	**-0.130306**	**0.032649**	**-3.991155**	**0.0002**
LOG(NL_GDP95(-1))	**0.121671**	**0.026955**	**4.513815**	**0.0000**
NL_RL95(-1)	**-0.000977**	**0.000336**	**-2.910534**	**0.0055**
DLOG(NL_ET(-4))	0.207489	0.078328	2.648993	0.0109
DLOG(NL_GYEEE95(-1))+DLOG(NL_GYEEE95(-3))	0.117510	0.025696	4.573068	0.0000
DLOG(NL_GYEEE95(-4))	0.223072	0.038672	5.768349	0.0000
D(NL_RL95(-1))	0.001094	0.000423	2.586122	0.0128

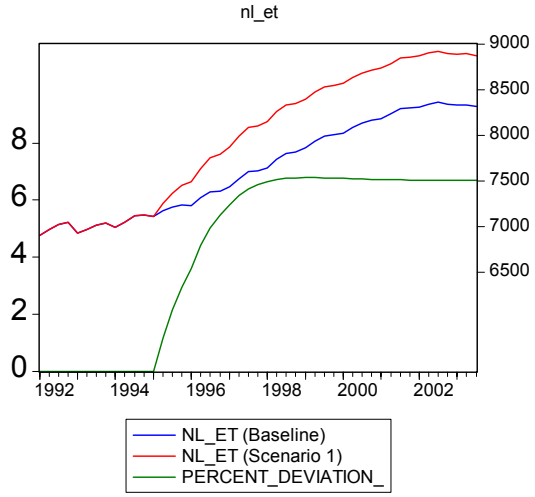
R-squared	0.909462	Mean dependent var	0.004365
Adjusted R-squared	0.883055	S.D. dependent var	0.005990
S.E. of regression	0.002048	Akaike info criterion	-9.339269
Sum squared resid	0.000201	Schwarz criterion	-8.828999
Log likelihood	309.1870	F-statistic	34.44027
Durbin-Watson stat	1.793052	Prob(F-statistic)	0.000000

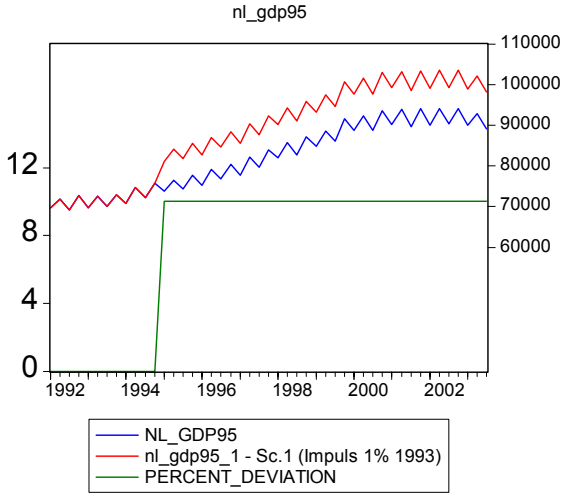
Long-run total employment depends on real GDP, real labour costs (gyeee95=gyee/ee*1/pgdp) and the real long-term interest rate: ln(et) = 0,6798*ln(gdp95) –0,7281*[ln(gyee/ee)-ln(pgdp)] -0,0054*rl95.

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.415893	Root Mean Squared Error	22.91843
Serial Correlation LM test (lag 1)	0.438009	Mean Absolute Percent Error	0.256313
Serial Correlation LM test (lag 4)	0.527610	Theil inequality coefficient	0.001540
White's heteroscedasticity test	0.153042	Bias proportion	0.001513
RESET test (No. of fitted terms:1)	0.468991	Variance proportion	0.021134
ARCH LM test (lag 1)	0.173263	Covariance proportion	0.977353
ARCH LM test (lag 4)	0.514614		
Stability tests			
CUSUM test			
CUSUM sq. test			

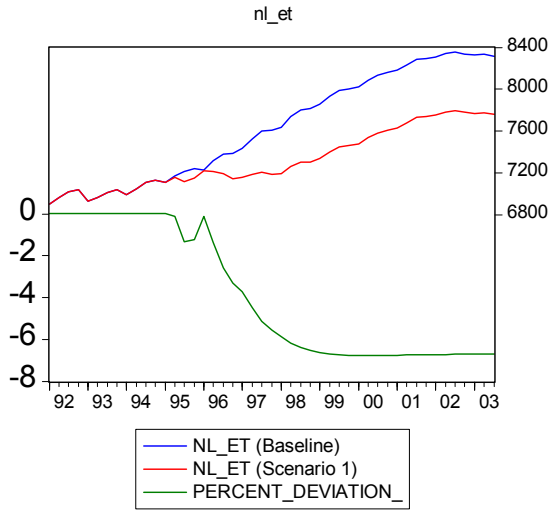
Simulation properties of the equation

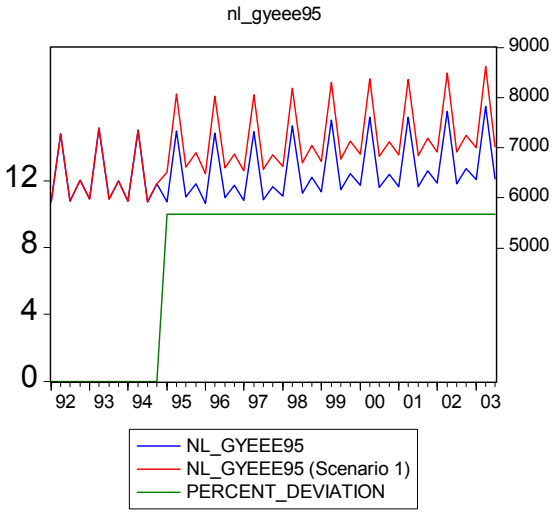
10% increase in the real GDP



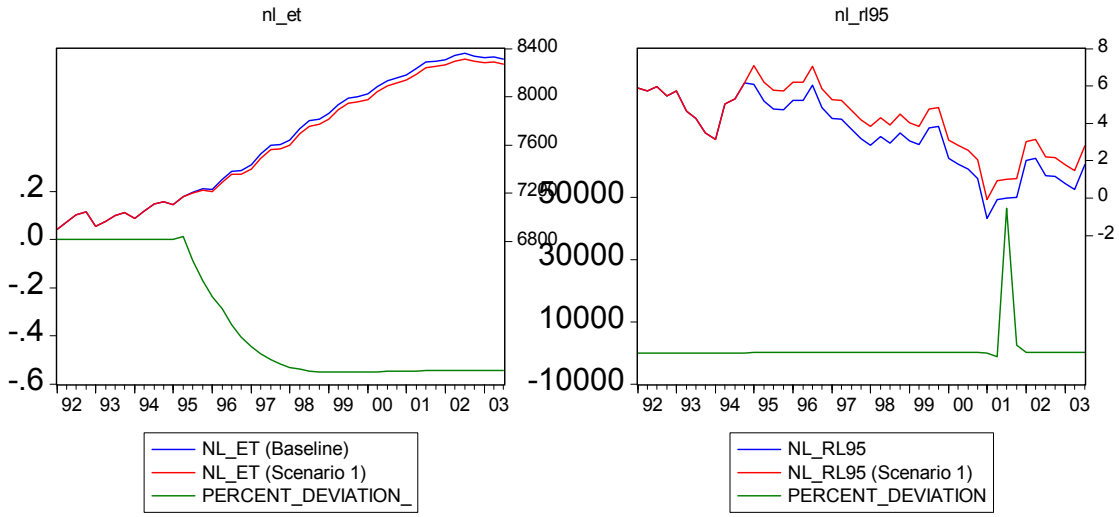


10% increase in the real wage per person





1 percent point increase in the long-term interest rate



Unemployed Persons
(domestic concept, in 1000)

Dependent Variable: D(NL_U)
Method: Least Squares
Date: 07/14/04 Time: 14:05
Sample(adjusted): 1988:3 2003:4
Included observations: 62 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	923.0098	190.4876	4.845511	0.0000
@TREND(1970:1)	**4.039833**	**1.017335**	**3.970994**	**0.0002**
Z3	88.68459	11.26719	7.871048	0.0000
I9402+I9802	-33.83572	7.619361	-4.440756	0.0001
I9504	30.91171	10.69772	2.889561	0.0058
NL_U(-1)	**-0.499767**	**0.085274**	**-5.860693**	**0.0000**
NL_EE(-1)	**-0.181395**	**0.042137**	**-4.304921**	**0.0001**
D(NL_U(-1))	0.313418	0.087692	3.574067	0.0008
D(NL_U(-3))	0.273421	0.086336	3.166933	0.0027
D(NL_EE(-0))	-0.222780	0.054533	-4.085194	0.0002
D(NL_EE(-3))	-0.268779	0.048294	-5.565450	0.0000
D(NL_EE(-4))	-0.098002	0.054930	-1.784126	0.0809
D(NL_EE(-5))	-0.136075	0.049503	-2.748856	0.0085
D(NL_ULC(-1))	-5.072797	0.876841	-5.785309	0.0000
D(NL_ULC(-2))	-4.093713	0.594581	-6.885035	0.0000

R-squared	0.877778	Mean dependent var	-1.548387
Adjusted R-squared	0.841372	S.D. dependent var	23.94302
S.E. of regression	9.536062	Akaike info criterion	7.554923
Sum squared resid	4274.015	Schwarz criterion	8.069552
Log likelihood	-219.2026	F-statistic	24.11050
Durbin-Watson stat	1.985224	Prob(F-statistic)	0.000000

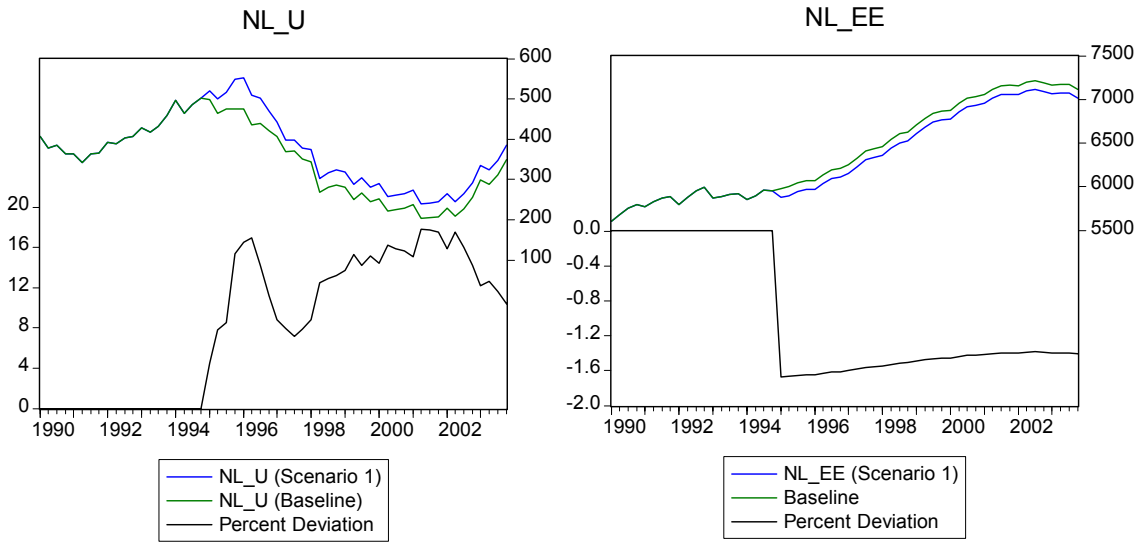
The unemployment level is obviously determined by the employment level in an economy. As expected, this relationship is negative and in a proportion less than one.

Residual tests	***Probability***	***Forecast evaluation (dynamic in-sample)***	
Normality test (Jarque-Bera)	0.312291	Root mean squared error	11.99963
Serial Correlation LM test (lag 1)	0.751919	Mean absolute percent error	2.735610
Serial Correlation LM test (lag 4)	0.490554	Theil inequality coefficient	0.016209
White's heteroscedasticity test	0.771718	Bias proportion	0.000056
ARCH LM test (lag 1)	0.360273	Variance proportion	0.003666
ARCH LM test (lag 4)	0.413753	Covariance proportion	0.996277
Stability tests			
Reset test (n° fitted terms: 1)	0.915246		
CUSUM test[a]	0		
$CUSUM^2$ test[a]	0		

[a] Number of quarters where the cumulative sum goes outside the area between the 5% critical lines.

Simulation properties of the equation

100.000 less employed



Definitions

Gross Domestic Product (at const. 1995 prices)
nl_gdp95 = nl_c95 + nl_cgov95 + nl_imeq95 + nl_icon95 + nl_is95 + nl_x95 - nl_m95

Price Indices
nl_pc=nl_c/nl_c95*100
nl_px = nl_x / nl_x95 *100
nl_pm = nl_m / nl_m95 *100
nl_pgi = (nl_gdp - nl_pc * nl_c95 / 100 - nl_px * nl_x95 / 100 + nl_pm * nl_m95 / 100)
/(nl_cgov95 + nl_ifc95 + nl_is95) * 100
nl_pgdp = nl_gdp / nl_gdp95 * 100
nl_relpm = nl_pm / nl_pgdp

Other variables
nl_es = nl_et - nl_ee
nl_gyee95 = 100 * nl_gyee / nl_pgdp
nl_gwagee95 = nl_gyeee / nl_pgdp
nl_gyee = nl_gyeee * nl_ee / 1000
nl_gyprop = nl_y – nl_gyee
nl_prodee = nl_gdp95 /nl_ee
nl_iend95 = nl_gdp95 + nl_m95 - nl_x95
nl_ulc = nl_gyee / nl_gdp95 * 100
nl_ur = nl_u / nl_et * 100
nl_rl95 = nl_rl - (nl_pgdp - nl_pgdp(-4)) / nl_pgdp(-4) * 100
nl_capa=(nl_gdp95/(nl_gdp95-nl_res_eq_gdp95))*100
nl_xg95=nl_xg95_ewu + nl_xg95_row
nl_xg95_row = nl_x95 -nl_xg95_ewu - nl_xs95
nl_y = de_gdp – nl_tind – nl_cfc
nl_y95 = 100*nl_y/nl_pc

IV. Documentation

A. Variables and Data Sources

NL_C95	Private Konsumausgaben in konst. Preisen	Private consumption expenditure;at const. prices
NL_CAPA	Gesamtwirtschaftl.Kapazitätsauslastung	Capacity utilisation,total economy
NL_CFC	Abschreibungen	Consumption of fixed capital
NL_CGOV95	Konsumausgaben des Staates;zu konst.Preisen	Government consumption;at const. Prices
NL_EE	Arbeitnehmer im Inland	Employees (domestic concept)
NL_ES	Selbständige	Self employed persons
NL_ET	Erwerbstätige im Inland	Persons engaged (domestic concept)
NL_GDP	Bruttoinlandsprodukt	Gross domestic product
NL_GDP95	Bruttoinlandsprodukt in konst.Preisen	Gross domestic product at constant prices
NL_GYEE	Arbeitnehmerentgelte, Inlandskonzept	Compensation of employees, domestic concept
NL_GYEE95	Arbeitnehmerentgelte,Inlandskonzept in konstanten Preisen	Compensation of employees, domestic concept (real)
NL_GYEEE	Arbeitnehmerentgelte pro Kopf, Inlandskonzept	Compensation of employees, per worker, domestic concept
NL_GYEEE95	Arbeitnehmerentgelte pro Kopf, Inlandskonzept, zu konstanten Preisen	Compensation of employees, per worker, domestic concept (real)
NL_GYPROP	Unternehmens- u.Vermögenseinkommen (brutto)	Operating surplus and mixed income (gross)
NL_ICON	Bruttoanlageinvestionen,Bauten	Gross fixed capital formation;construction
NL_ICON95	Bruttoanlageinvestionen,Bauten;zu konst.Preisen	Gross fixed capital formation;construction;at const. Prices
NL_IEND95	Gesamtnachfrage in konst.Preisen	Total demand;at const. Prices
NL_IFC	Bruttoanlageinvestionen	Gross fixed capital formation;price index(1995=100)
NL_IFC95	Bruttoanlageinvestionen in konst.Preisen	Gross fixed capital formation;at const. Prices
NL_IMEQ95	Ausrüstungen in konst.Preisen	Equipment;at const. prices
NL_IS	Vorratsveränd. u. Nettozug.an Werts.	Change in stocks and net additions to valuables
NL_IS95	Vorratsveränd. u. Nettozug.an Werts. In konst.Preisen	Change in stocks and net additions to valuables ;at const. prices
NL_M95	Einfuhr in konst.Preisen	Imports;at const. prices
NL_NEEV	Nominaler Aussenwert des niederländischen Gulden gegenüber anderer Währungen des Eurolandes	Nominal real external value of the dutch florin with respect to other EMU currencies
NL_NEEV_US	Nominaler Aussenwert des niederländischen Guldens gegenüber dem US$	Real external value of the dutch florin with respect to the US $
NL_PC	Preisindex; Privater Konsum	Price index; Private consumption (1995=100)
NL_PGDP	Preisindex;Bruttoinlandsprodukt	Price index;Gross domestic product (1995=100)
NL_PGESDEF	Gesamtabsatzdeflator	final demand deflator
NL_PGI	Preisindex Staatsverbrauch + Investitionen	Price index government consumption + investment (1995=100)
NL_PM	Preisindex; Einfuhr	Price index;imports (1995=100)
NL_PRODEE	Produktivität (je abh. Erwerbstätigen)	Produktivity (per employee)
NL_PX	Preisindex; Ausfuhr	Price index;exports (1995=100)
NL_REEV_MEIC	real. Außenwert des NGL gegenüber anderen Währungen (Main Economic Indicators Database)	Real external value of the dutch florins in rel. to other currencies (Main Economic Indicators Database)
NL_RELPM	Relative Import-Preise	Relative import prices

NL_RL	Langfristige Zinsrate	Long-term interest rates
NL_RL95	Kapitalmarktzinsen (5 Jahre); real	Long term interest rate (5 years); real
NL_RS3M=NL_RS	Geldmarktzinsen (3 Monate)	Short term interest rate (3 months)
NL_SPREAD	Zinsspread	Spread interest rates
NL_TIND	Produktions-und Importabgaben	Levy on production and import
NL_TIND95_PC	Produktions-und Importabgaben; zu konstanten Preisen (deflationiert mit NL_PC)	Levy on production and import; real
NL_U	Arbeitslose	Unemployed persons
NL_ULC	Lohnstückkosten,Inlandskonzept (ber.)	Unit labour costs,domestic concept(adj.)
NL_UR	Arbeitslosenrate	Unemployment rate
NL_X95	Ausfuhr in konst.Preisen	Exports;at const. prices
NL_XG95	Ausfuhr von Gütern in konst. Preisen	Goods Exports;at const. prices
NL_XG95_EWU	Niederländische Warenexporte in die EWU in konst. Preisen	Dutch exports to the EMU; at const. Prices
NL_XG95_ROW	Niederländische Warenexporte in den Rest der Welt in konst.Preisen	Dutch exports to the rest of the world; at const. prices
NL_XS95	Ausfuhr,Dienstleistungen in konst.Preisen	Exports,services;at const. prices
NL_Y	Volkseinkommen	National income
NL_Y95	Volkseinkommen in konst. Preisen	National income; real
OIL$	Ölpreis	Oil Price
ROW_GDP95	Bruttoinlandsprodukt Rest der Welt; zu konst. Preisen	GDP of the rest of the world; at const. prices
US_SPREAD	US Zins-Spread	US spread

Dummies:

z1... z3	Saison-Dummies	seasonal dummies
I001...I9904	Impuls_Dummies (Impuls jeweils im entsprechendem Jahr/Quartal)	
S9101...9701	Sprung-Dummies (Spung jeweils im entsprechendem Jahr/Quartal)	

Residuals:

NL_RES_.....

B. Augmented Dickey-Fuller unit root Tests							
Sample 1980/88:1 – 2003:4	**Niveau**			**First Differences**			
Variables	**Specification**	**Lags**	**Teststatistik**	**Specification**	**Lags**	**Teststatistik**	**Order of Integration**
Log(EU8_PC)	C, trend z1 z2 z3	1-4	-2,11	C, z1 z2 z3	1-3	-1,22	I(2)
Log(NL_C95)	C, trend z1 z2 z3	1-5	-2,10	C, z1 z2 z3	1-4	-2,65	I(1)
Log(NL_CFC)	C, trend z1 z2 z3	1-7	-3,90**	-	-	-	Trendstationary
Log(NL_CGOV95)	C, trend z1 z2 z3	1-4	-1,7	C, z1 z2 z3	1-3	-4,60	I(1)
Log(NL_EE)	C, trend z1 z2 z3	1-4	-2,85	C, z1 z2 z3	1-3	-0,82	I(2)
Log(NL_ET)	C, trend z1 z2 z3	1-8	-3,43	C, z1 z2 z3	1-3	-0,69	I(2)
Log(NL_GDP)	C, trend z1 z2 z3	-	-2,20	C, z1 z2 z3	-	-11.43	I(1)
Log(NL_GDP95)	C, trend z1 z2 z3	1-4	-2,35	C, z1 z2 z3	1-3	-3,55	I(1)
Log(NL_GYEE)	C, trend, z1 z2 z3	1-4	-3.54**	C, z1 z2 z3	1-5	-2,10	Trendstationary
Log(NL_GYEE95)	C, trend, z1 z2 z3	1-4	-3,02	C, z1 z2 z3	1-3	-1.33	Trendstationary
Log(NL_GYEEE)	C, trend, z1 z2 z3	1-4	-2,99	C, z1 z2 z3	1-3	-2,01	I(1)
Log(NL_GYEEE95)	C, trend, z1 z2 z3	1-4	-3,03	C, z1 z2 z3	1-3	-3,15	I(1)
Log(NL_GYPROP)	C, trend, z1 z2 z3	1	-2,29	C, z1 z2 z3	-	-15.68	I(1)

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Sample 1980/88:1 – 2003:4	Niveau			First Differences			
Variables	**Specification**	**Lags**	**Teststatistik**	**Specification**	**Lags**	**Teststatistik**	**Order of Integration**
Log(NL_ICON)	C, trend, z1 z2 z3	1-3	-3.41	C, z1 z2 z3	1,2	-14.26	I(1)
Log(NL_ICON95)	C, trend, z1 z2 z3	1-3	-3.79	C, z1 z2 z3	1,2	-14.21	I(1)
Log(NL_IEND95)	C, trend, z1 z2 z3	1-8	-2,55	C, z1 z2 z3	1-3	-4,30	I(1)
Log(NL_IFC)	C, trend, z1 z2 z3	1-4	-2,28	C, z1 z2 z3	1-3	-5,37	I(1)
Log(NL_IFC95)	C, trend, z1 z2 z3	1-5	-1,87	C, z1 z2 z3	1-3	-4,78	I(1)
Log(NL_IMEQ)	C, trend, z1 z2 z3	1-5	-1,8	C, z1 z2 z3	1-4	-3,81	I(1)
Log(NL_IMEQ95)	C, trend, z1 z2 z3	1-8	-2,57	C, z1 z2 z3	1-4	-3,99	I(1)
NL_IS95	C, z1 z2 z3	1-4	-4,08	-	-	-	I(0)
Log(NL_M95)	C, trend, z1 z2 z3	1-4	-2,09	C, z1 z2 z3	1-3	-4,88	I(1)
Log(NL_NEEV)	C, z1 z2 z3	1	-1,80	z1 z2 z3	-	-5,64	I(1)
Log(NL_NEEV_US)	C, z1 z2 z3	1	-1,63	z1 z2 z3	-	-6.84	I(1)

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Sample 1980/88:1 – 2003:4	Niveau			First Differences			
Variables	**Specification**	**Lags**	**Teststatistik**	**Specification**	**Lags**	**Teststatistik**	**Order of Integration**
Log(NL_PC)	C, trend, z1 z2 z3	1-5	-3,10	C, z1 z2 z3	1-4	-2,64***	I(1)
Log(NL_PGDP)	C, trend, z1 z2 z3	1-4	-2,14	C, z1 z2 z3	1-3	-2,99	I(1)
Log(NL_PGESDEF)	C, trend, z1 z2 z3	1-5	-1,89	C, z1 z2 z3	1-4	-3,95	I(1)
Log(NL_PGI)	C, trend, z1 z2 z3	1-8	-1,88	C, z1 z2 z3	1-3	-4,11	I(1)
Log(NL_PM)	C, z1 z2 z3	1-7	-1,86	z1 z2 z3	1-6	-3,88	I(1)
Log(NL_PRODEE)	C, trend, z1 z2 z3	-	-2,29	C, z1 z2 z3	-	-8,74**	I(1)
Log(NL_PX)	C, z1 z2 z3	1	-2,28	z1 z2 z3	-	-5,68**	I(1)
Log(NL_REEV_MEIC)	C, trend, z1 z2 z3	1,2	-4,13	-	-	-	I(0)
Log(NL_RELPM)	C, trend, z1 z2 z3	1-4	-3,13	C, z1 z2 z3	-	-7,56**	I(1)
NL_RL	C, trend, z1 z2 z3	1-7	-3,14	C, z1 z2 z3	1-3	-4,93	I(1)
NL_RL95	C, trend, z1 z2 z3	1,2	-2,59	C, z1 z2 z3	1	-8,88**	I(1)

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Sample 1980/88:1 – 2003:4	Niveau			First Differences			
Variables	**Specification**	**Lags**	**Teststatistik**	**Specification**	**Lags**	**Teststatistik**	**Order of Integration**
NL_RS3M	C, trend, z1 z2 z3	1	-2,56	C, z1 z2 z3	-	-6,37	I(1)
NL_SPREAD	C, trend, z1 z2 z3	1	-3,05	C, z1 z2 z3	-	-6,49	I(1)
Log(NL_TIND)	C, trend, z1 z2 z3	1-3	-0,79	C, z1 z2 z3	1,2	-6,31**	I(1)
Log(NL_U)	C, z1 z2 z3	1-7	-2,08	z1 z2 z3	1-6	-2,94	I(1)
Log(NL_ULC)	C, trend, z1 z2 z3	1-5	-2,08	z1 z2 z3	1-4	-1,97	I(1)
NL_UR	C, z1 z2 z3	1-3	-1,97	z1 z2 z3	1,2	-1,72***	I(1)
Log(NL_X95)	C, trend, z1 z2 z3	1-4	-2,45	C, z1 z2 z3	1-3	-4,26	I(1)
Log(NL_XG95)	C, trend, z1 z2 z3	1-8	-2,47	C, z1 z2 z3	1-7	-2,97	I(1)
Log(NL_XG95_EWU)	C, trend, z1 z2 z3	1-4	-2,91	C, z1 z2 z3	1-6	-3,95	I(1)
Log(NL_XG95_ROW)	C, trend, z1 z2 z3	-	-3,77**	C, z1 z2 z3	-	-12.82	Trendstationary

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Sample 1980/88 :1 – 2003:4	Niveau			First Differences			
Variables	**Specification**	**Lags**	**Teststatistik**	**Specification**	**Lags**	**Teststatistik**	**Order of Integration**
Log(NL_XS95)	C, trend, z1 z2 z3	1-5	-3.64**	C, z1 z2 z3	1-4	-2,71	Trendstationary
Log(NL_Y)	C, trend, z1 z2 z3	1-4	-2,10	C, z1 z2 z3	-	-9,35	I(1)
Log(NL_Y95)	C, trend, z1 z2 z3	-	-2,27	C, z1 z2 z3	-	-8,70	I(1)
OIL$	z1 z2 z3	5,8	-0.50	z1 z2 z3	1,3	-8.28**	I(1)
Log(ROW_GDP95)	C, z1 z2 z3	1,2	-1,31	C, z1 z2 z3	-	-9,00	I(1)
US_SPREAD	C, z1 z2 z3	1-7	-2,61	C, z1 z2 z3	1-7	-4,06	I(1)

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