Appendix: Time Series Properties of the Real Exchange Rates between the
Member States of the European Monetary Union

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7. Appendix Tables

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Appendix Table 1 – Panel Unit Root Tests of the first Differences of Consumer Price Indices

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| | | | | | 1960:1 - 1972:12 | | | | 1973:1 - 1998:12 | | | | 1999:1 - 2017:5 | | | |
Test	H0	H1	Autoregression Parameter Rho	Lags / Selection	Panels	Periods	P-value	Accepted Hypothesis	Panels	Periods	P-value	Accepted Hypothesis	Panels	Periods	P-value	Accepted Hypothesis
Breitung	All Panels contain unit roots	All Panels are stationary	Uniform ρ	12	12	155	0.000	H1	12	311	0.000	H1	12	222	0.000	H1
Herwartz	Panels contain unit roots	Panels are stationary	Panel-specific ρ	AIC	12	155	0.004	H1	12	311	0.090	H0	12	222	0.028	H1
Hadri	All panels are stationary	Some panels contain unit roots	-		12	155	0.022	H1	12	311	0.000	H1	12	222	0.000	H1

Legend Appendix Table 1: The significance level for the rejection of the H0 is 5%. All Panels as strongly balanced. Panel-specific linear trends are added. In all tests a correction for cross-sectional dependence of the panels is applied. A Bartlett Kernel with 12 lag is used to estimate the long-run variance in the Hadri tests.

Appendix Table 2 – Unit Root Tests of the Levels of Consumer Price Indices

Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Austria	Number observations	145	156	157	155	312	312	312	308	220	220	220	217
	Lags	11	11	9	1	9	9	12	4	12	12	10	3
	Test statistic: z(t)	0.84	-2.10	0.18	-5.92	-2.50	-2.22	0.5471	-3.88	-3.99	-3.00	0.1173	-4.79
	Structural break at obs.	-	-	-	133	-	-	-	417	-	-	-	614
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	Yes	No	No	No
	Accepted Hypothesis	H0	H0	H1	H1	H0	H0	H1	H0	H1	H0	H0	H0
Belgium	Number observations	144	156	157	153	312	312	312	308	220	220	220	218
	Lags	12	12	9	3	11	11	12	4	3	3	10	2
	Test statistic: z(t)	-0.54	-1.60	0.28	-3.29	-1.92	-2.06	0.58	-4.70	-2.12	-1.86	0.23	-4.31
	Structural break at obs.	-	-	-	133	-	-	-	259	-	-	-	612
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Finland	Number observations	151	156	157	153	312	312	312	312	220	220	220	217
	Lags	5	5	9	3	1	1	12	0	7	7	10	3
	Test statistic: z(t)	-3.22	-2.45	0.10	-3.67	-2.57	-2.66	0.59	-3.17	-2.17	-1.62	0.14	-2.83
	Structural break at obs.	-	-	-	49	-	-	-	378	-	-	-	608
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	Yes	No	No	No
	Accepted Hypothesis	H0	H0	H0	H0	H0	H0	H1	H0	H0	H0	H0	H0
France	Number observations	152	156	157	153	312	312	312	309	220	220	220	220
	Lags	4	4	9	0	8	8	12	4	8	8	10	0
	Test statistic: z(t)	-0.40	-0.19	0.31	-4.31	-1.10	-0.30	0.62	-5.75	0.14	-0.68	0.42	-4.49
	Structural break at obs.	-	-	-	67	-	-	-	241	-	-	-	626
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H1	H0	H0	H1	H0
Germany	Number observations	150	156	157	155	312	312	312	309	220	220	220	219
	Lags	6	6	9	1	12	12	12	3	12	12	10	1
	Test statistic: z(t)	1.09	0.15	0.18	-3.67	-2.13	-2.06	0.41	-2.62	-2.45	-2.22	0.26	-3.94
	Structural break at obs.	-	-	-	114	-	-	-	239	-	-	-	626
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality effect	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Greece	Number observations	145	156	157	156	312	312	312	308	220	220	220	217
	Lags	11	11	9	0	12	12	12	4	11	11	10	3
	Test statistic: z(t)	-1.19	-3.22	0.157	-4.49	-0.09	1.95	0.453	-1.73	1.26	-0.38	0.437	-8.07
	Structural break at obs.	-	-	-	-	-	-	-	369	-	-	-	627
	5% significance level	-3.44	-3.44	0.146	-5.08	-3.43	-3.43	0.146	-5.08	-3.43	-3.43	0.146	-5.08
	10% significance level	-3.14	-3.14	0.119	-4.82	-3.13	-3.13	0.119	-4.82	-3.13	-3.13	0.119	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H1

	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Ireland	Number observations	145	156	157	153	312	312	312	308	220	220	220	219
	Lags	11	11	9	3	10	10	12	4	8	8	10	1
	Test statistic: z(t)	0.40	0.88	0.36	-3.37	-1.51	-1.39	0.61	-5.68	-1.62	-1.64	0.47	-4.70
	Structural break at obs.	-	-	-	89	-	-	-	252	-	-	-	586
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-	0.12	-4.82	-3.13	-	0.12	-4.82	-3.13	-	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	Yes
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H0	H1	H0	H0	H1	H0
Italy	Number observations	153	156	157	154	312	312	312	309	220	220	220	218
	Lags	3	3	9	2	7	7	12	3	3	3	10	2
	Test statistic: z(t)	-1.11	-0.83	0.23	-1.88	-0.77	-0.39	0.62	-5.13	-0.34	0.13	0.38	-4.16
	Structural break at obs.	-	-	-	94	-	-	-	237	-	-	-	622
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	Yes	No	No	No	No
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H0	H1	H0	H0	H1	H0
Luxem-bourg	Number observations	155	156	157	156	312	312	312	309	220	220	220	217
	Lags	1	1	9	0	10	10	12	3	11	11	10	3
	Test statistic: z(t)	-1.03	-1.26	0.29	-3.63	-1.04	-1.02	0.57	-3.38	-0.06	-2.98	0.33	-5.13
	Structural break at obs.	-	-	-	114	-	-	-	269	-	-	-	626
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H1
Nether-lands	Number observations	146	156	157	155	312	312	312	308	220	220	220	217
	Lags	10	10	9	1	10	10	12	4	10	10	10	3
	Test statistic: z(t)	-0.48	-2.44	0.337	-4.51	-2.93	-4.10	0.510	-5.10	-1.17	-2.04	0.238	-3.12
	Structural break at obs.	-	-	-	119	-	-	-	422	-	-	-	623
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	Yes	Yes	No	Yes	Yes	No	No	No
	Accepted Hypothesis	H0	H0	H1	H0	H0	H1	H1	H1	H0	H0	H1	H0
Portugal	Number observations	145	156	157	153	312	312	312	308	220	220	220	218
	Lags	11	11	9	3	10	10	12	4	12	12	10	2
	Test statistic: z(t)	0.35	-0.19	0.406	-3.26	1.05	1.37	0.605	-2.76	-2.16	-1.34	0.451	-2.89
	Structural break at obs.	-	-	-	88	-	-	-	276	-	-	-	555
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Spain	Number observations	153	156	157	155	312	312	312	312	220	220	220	217
	Lags	3	3	9	1	9	9	12	0	12	12	10	3
	Test statistic: z(t)	-2.04	-2.14	0.181	-4.03	-1.06	-0.68	0.610	-4.60	-1.11	-0.49	0.466	-2.22
	Structural break at obs.	-	-	-	54	-	-	-	205	-	-	-	567
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0

Legend Appendix Table 2: The significance level for the rejection of the H0 is 5%. The table displays the results for seasonally unadjusted monthly consumer price indices. If seasonally adjusted data lead to a different

accepted hypothesis, this is indicated with a "Yes" under "Seasonality". Seasonal adjustment is based on the Holt-Winters seasonal smoothing method. ADF: Augmended Dickey-Fuller Test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags chosen according to Akaike's information criterion (AIC). PP: Phillips–Perron test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags are Newey-West lags and chosen according to Akaike's information criterion (AIC). Critical values for the PP are the same as for the ADF. KPSS: Kwiatkowski-Phillips-Schmidt-Shin test for stationarity (H0 = stationary around linear trend, H1 = unit root). ZA: Zivot-Andrews Unit Root test allowing for a single break in intercept or trend (H0 = unit root, H1 stationarity with a break in the intercept or trend).

Appendix Table 3 – Unit Root Tests of the First Differences of Consumer Price Indices

Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Austria	Number observations	143	155	156	152	312	312	312	308	220	220	220	217
	Lags	12	12	14	3	12	12	23	4	12	12	8	3
	Test statistic: z(t)	-3.73	-12.05	0.11	-9.22	-2.57	-14.79	0.10	-8.97	-3.28	-15.47	0.043	-10.99
	Structural break at obs	-	-	-	31	-	-	-	238	-	-	-	612
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H1	H0	H1	H0	H1	H0	H1	H0	H1	H0	H1
Belgium	Number observations	144	155	156	153	312	312	312	308	220	220	220	220
	Lags	11	11	17	2	12	12	10	4	2	2	9	0
	Test statistic: z(t)	-2.13	-9.08	0.12	-10.33	-2.93	-14.60	0.12	-6.26	-7.39	-12.15	0.05	-12.44
	Structural break at obs	-	-	-	79	-	-	-	234	-	-	-	584
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H1	H0	H1	H0	H1	H0	H1	H1	H1	H0	H1
Finland	Number observations	151	155	156	152	312	312	312	312	220	220	220	218
	Lags	4	4	11	3	12	12	10	0	12	12	24	2
	Test statistic: z(t)	-3.79	-12.21	0.07	-5.08	-3.38	-16.84	0.13	-17.00	-2.64	-13.31	0.08	-10.51
	Structural break at obs	-	-	-	55	-	-	-	237	-	-	-	554
	5% significance level	-3.44	-2.89	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-2.58	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	Yes	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H1	H1	H0	H0	H0	H1	H0	H1	H0	H1	H0	H1
France	Number observations	152	155	156	153	312	312	312	308	220	220	220	220
	Lags	3	3	10	2	12	12	12	3	12	12	9	3
	Test statistic: z(t)	-5.03	-11.03	0.12	-6.53	-3.59	-12.46	0.16	-6.57	-3.60	-17.03	0.06	-16.18
	Structural break at obs	-	-	-	46	-	-	-	281	-	-	-	583
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	Yes	No	No	No	No	No	No	No
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H1	H1	H1	H1	H0	H1
Germany	Number observations	143	155	156	152	312	312	312	310	220	220	220	220
	Lags	12	12	8	3	12	12	10	2	12	12	6	0
	Test statistic: z(t)	-1.16	-8.87	0.18	-7.56	-2.14	-13.36	0.16	-8.73	-3.14	-21.77	0.06	-20.83
	Structural break at obs	-	-	-	90	-	-	-	347	-	-	-	584
	5% significance level	-3.44	-2.89	0.15	-5.08	-3.43	-2.88	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-2.58	0.12	-4.82	-3.13	-2.57	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality effect	No	No	No	No	No	No	Yes	No	No	No	No	No
	Accepted Hypothesis	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Ireland Number observations	145	155	156	152	312	312	312	308	220	220	220	220
Lags	10	10	6	3	12	12	33	4	12	12	9	0
Test statistic: z(t)	-3.03	-4.97	0.12	-5.60	-2.86	-22.96	0.09	-8.78	-3.29	-12.74	0.06	-13.18
Structural break at obs	-	-	-	65	-	-	-	270	-	-	-	585
5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
10% significance level	-3.14	-	0.12	-4.82	-3.13	-	0.12	-4.82	-3.13	-	0.12	-4.82
Seasonality	Yes	No	No	No	Yes	No	No	No	No	No	No	No
Accepted Hypothesis	H0	H1	H0	H1	H0	H1	H0	H1	H0	H1	H0	H1
Italy Number observations	153	155	156	154	312	312	312	310	220	220	220	219
Lags	2	2	8	1	12	12	10	2	12	12	10	1
Test statistic: z(t)	-4.98	-7.30	0.18	-6.58	-4.09	-11.46	0.13	-8.40	-3.20	-13.67	0.09	-7.87
Structural break at obs	-	-	-	60	-	-	-	279	-	-	-	645
5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
Seasonality	Yes	No	No	No	No	No	No	No	Yes	No	No	No
Accepted Hypothesis	H1	H1	H1	H1	H1	H1	H0	H1	H0	H1	H0	H1
Luxem-bourg Number observations	155	155	156	155	312	312	312	310	220	220	220	217
Lags	0	0	7	0	12	12	12	2	12	12	8	3
Test statistic: z(t)	-13.25	-13.25	0.08	-13.76	-2.62	-14.55	0.08	-6.41	-4.80	-28.91	0.04	-10.65
Structural break at obs	-	-	-	74	-	-	-	305	-	-	-	643
5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
Seasonality	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No
Accepted Hypothesis	H1	H1	H0	H1	H0	H1	H0	H1	H1	H1	H0	H1
Nether-lands Number observations	143	155	156	155	312	312	312	308	220	220	220	218
Lags	12	12	7	0	12	12	29	4	12	12	16	2
Test statistic: z(t)	-3.66	-16.87	0.061	-15.03	-1.56	-13.29	0.191	-8.91	-2.67	-12.07	0.055	-16.02
Structural break at obs	-	-	-	50	-	-	-	347	-	-	-	506
5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
Seasonality	No	No	No	No	No	No	Yes	No	No	No	No	No
Accepted Hypothesis	H1	H1	H0	H1	H0	H1	H1	H1	H0	H1	H0	H1
Portugal Number observations	143	155	156	153	312	312	312	308	220	220	220	217
Lags	12	12	12	2	12	12	19	4	12	12	14	3
Test statistic: z(t)	-3.79	-14.84	0.053	-9.19	-4.38	-16.14	0.127	-10.95	-2.65	-12.76	0.038	-13.41
Structural break at obs	-	-	-	132	-	-	-	304	-	-	-	603
5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H0	H1
Spain Number observations	153	155	156	155	312	312	312	312	220	220	220	217
Lags	2	2	6	0	12	12	36	0	12	12	15	3
Test statistic: z(t)	-6.27	-9.34	0.140	-10.27	-3.95	-16.30	0.093	-17.49	-3.85	-11.99	0.053	-9.80
Structural break at obs	-	-	-	64	-	-	-	213	-	-	-	637
5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
Seasonality	No	No	No	No	No	No	Yes	No	No	No	No	No
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

Legend Appendix Table 3: The significance level for the rejection of the H0 is 5%. The table displays the results for seasonally unadjusted consumer price indices. If seasonally adjusted data lead to the opposite H0-decision, this is indicated with a "Yes" under "Seasonality". Seasonal adjustment is based on the Holt-Winters seasonal smoothing method. ADF: Augmented Dickey-Fuller Test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags chosen according to Akaike's information criterion (AIC). PP: Phillips–Perron test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags are Newey-West lags and chosen according to Akaike's information criterion (AIC). KPSS: Kwiatkowski-Phillips-Schmidt-Shin test for stationarity (H0 = stationary around linear trend, H1 = unit root). ZA: Zivot-Andrews Unit Root test allowing for a single break in intercept or trend (H0 = unit root, H1 stationarity with a break in the intercept or trend).

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Appendix Table 4 – Panel Unit Root Tests of Nominal Exchange Rates Levels

					Panel Unit Root Tests: Nominal Exchange Rate							
						Results						
Test Specification						1960:1 - 1972:12				1973:1 - 1998:12		
Test	H0	H1	Autoregression Parameter ρ	Lags / Selection	Panels	Periods	P-value	Accepted Hypothesis	Panels	Periods	P-value	Accepted Hypothesis
Breitung	Panels contain unit roots	Panels are stationary	Uniform ρ	12	65	156	1.000	H0	65	311	1.000	H0
Herwartz	Panels contain unit roots	Panels are stationary	Panel-specific ρ	AIC	65	156	0.155	H0	65	311	0.985	**H0**
Hadri	All panels are stationary	Some panels contain unit roots	-	12	65	156	0.000	H1	65	311	0.000	H1

Legend Appendix Table 4: The significance level for the rejection of the H0 is 5%. All Panels as strongly balanced. Panel-specific linear trends are allowed. In all tests a correction for cross-sectional dependence of the panels is applied. A Bartlett Kernel with 12 lag is used to estimate the long-run variance in the Hadri tests. The number of panels is 11 factorial minus 1 = 65 since Luxemburg and Belgium formed a monetary union from 1922 to 2002 (Union Économique Belgo-Luxembourgoise).

Appendix Table 5 – Panel Unit Root Tests of the First Differences of Nominal Exchange Rates

						Results						
Test Specification						1960:1 - 1972:12				1973:1 - 1998:12		
Test	H0	H1	Autoregression Parameter Rho	Lags / Selection	Panels	Periods	P-value	Accepted Hypothesis	Panels	Periods	P-value	Accepted Hypothesis
Breitung	All Panels contain unit roots	All Panels are stationary	Uniform ρ	12	65	155	0.000	H1	65	311	0.000	H1
Herwartz	Panels contain unit roots	Panels are stationary	Panel-specific ρ	AIC	65	155	0.020	H1	65	311	0.001	H1
Hadri	All panels are stationary	Some panels contain unit roots	-	12	65	155	0.448	H0	65	311	0.000	**H1**

Legend Appendix Table 5: The significance level for the rejection of the H0 is 5%. All Panels as strongly balanced. Estimations without linear trends. In all tests a correction for cross-sectional dependence of the panels is applied. A Bartlett Kernel with 12 lag is used to estimate the long-run variance in the Hadri tests. The number of panels is 11 factorial minus 1 = 65 since Luxemburg and Belgium formed a monetary union from 1922 to 2002 (Union Économique Belgo-Luxembourgoise).

Appendix Table 6 – Unit Root Tests of the Nominal Exchange Rate Levels

		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	Unit Root Tests of the Nominal Exchange Rate								
	Period	1960:1 - 1972:12				1973:1 - 1998:12			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Belgium / Austria	Number observations	143	156	157	155	312	312	312	308
	Lags	13	13	9	1	6	6	12	4
	Test statistic: z(t)	-3.63	-3.25	0.21	-6.04	-1.70	-1.79	0.33	-6.73
	Structural break at obs.	-	-	-	43	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	**H1**	H0	H1	**H1**	H0	H0	H1	**H1**
Finland / Austria	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	12	12	12	0
	Test statistic: z(t)	-1.80	-2.01	0.32	-9.10	-2.66	-2.10	0.32	-4.26
	Structural break at obs.	-	-	-	94	-	-	-	383
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
France / Austria	Number observations	153	156	157	155	312	312	312	312
	Lags	3	3	9		2	2	12	
	Test statistic: z(t)	-2.79	-2.85	0.29	-6.69	-3.71	-3.67	0.05	-4.40
	Structural break at obs.	-			116				219
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	**H1**	**H1**	**H0**	H0
Germany / Austria	Number observations	153	156	157	153	312	312	312	308
	Lags	3	3	9	3	11	11	12	4
	Test statistic: z(t)	-1.93	-2.25	0.28	-5.40	-1.50	-1.62	0.50	-3.75
	Structural break at obs.	-	-	-	117	-	-	-	289
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Greece / Austria	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	6	6	12	4
	Test statistic: z(t)	-1.94	-2.07	0.19	-4.26	-2.41	-3.00	0.27	-4.55
	Structural break at obs.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Ireland / Austria	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	12	12	12	4
	Test statistic: z(t)	-2.41	-2.57	0.10	-4.85	-2.46	-2.22	0.36	-3.97
	Structural break at obs.	-	-	-	95	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	**H0**	H0	H0	H0	H1	H0

Unit Root Tests of the Nominal Exchange Rate									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Italy / Austria	Number observations	153	156	157	155	312	312	312	308
	Lags	3	3	9	1	2	2	12	4
	Test statistic: z(t)	-1.70	-1.90	0.32	-4.77	-2.86	-2.88	0.25	-5.02
	Structural break at obs.	-	-	-	31	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Luxembourg / Austria	Number observations	144	156	157	155	312	312	312	309
	Lags	12	12	9	1	5	5	12	3
	Test statistic: z(t)	-3.99	-3.11	0.23	-6.11	-1.93	-2.04	0.42	-6.68
	Structural break at obs.	-	-	-	26	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	**H1**	H0	H1	**H1**	H0	H0	H1	**H1**
Netherlands / Austria	Number observations	143	156	157	154	312	312	312	309
	Lags	13	13	8	2	12	12	12	3
	Test statistic: z(t)	-1.26	-4.22	0.33	-7.31	0.32	-1.85	0.37	-3.84
	Structural break at obs.	-	-	-	106	-	-	-	289
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	**H1**	H1	**H1**	H0	H0	H1	H0
Portugal / Austria	Number observations	145	156	157	153	312	312	312	310
	Lags	11	11	9	3	2	2	12	2
	Test statistic: z(t)	-2.58	-1.94	0.40	-5.50	-2.04	-2.23	0.40	-3.40
	Structural break at obs.	-	-	-	65	-	-	-	345
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Spain / Austria	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	0
	Test statistic: z(t)	-1.71	-1.71	0.29	-5.91	-2.58	-2.61	0.17	-3.78
	Structural break at obs.	-	-	-	95	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Finland / Belgium	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	12	12	12	0
	Test statistic: z(t)	-1.87	-2.02	0.34	-9.89	-1.99	-1.66	0.39	-3.32
	Structural break at obs.	-	-	-	94	-	-	-	383
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0

Unit Root Tests of the Nominal Exchange Rate									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
France / Belgium	Number observations	153	156	157	155	312	312	312	308
	Lags	3	3	9		11	11	12	
	Test statistic: z(t)	-2.38	-2.39	0.30	-5.24	-2.47	-2.47	0.24	-4.38
	Structural break at obs.	-			116				231
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Germany / Belgium	Number observations	153	156	157	155	312	312	312	308
	Lags	3	3	9	1	13	13	12	4
	Test statistic: z(t)	-1.92	-1.97	0.21	-4.01	-2.64	-2.48	0.12	-4.65
	Structural break at obs.	-	-	-	117	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	**H0**	H0
Greece / Belgium	Number observations	146	156	157	156	312	312	312	308
	Lags	10	10	9	0	6	6	12	4
	Test statistic: z(t)	-0.89	-1.77	0.24	-4.28	-2.61	-3.03	0.11	-3.53
	Structural break at obs.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	**H0**	H0
Ireland / Belgium	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	11	11	12	4
	Test statistic: z(t)	-2.19	-2.31	0.15	-4.65	-1.70	-1.52	0.39	-3.91
	Structural break at obs.	-	-	-	95	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Italy / Belgium	Number observations	150	156	157	154	312	312	312	308
	Lags	6	6	9	2	6	6	12	4
	Test statistic: z(t)	-1.43	-1.32	0.36	-4.16	-2.04	-2.13	0.32	-3.79
	Structural break at obs.	-	-	-	31	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Luxembourg / Belgium	Number observations	154	156	157	156	312	312	312	310
	Lags	2	2	9	0	4	4	12	2
	Test statistic: z(t)	-3.60	-4.01	0.16	-4.98	-3.10	-3.22	0.20	-3.47
	Structural break at obs.	-	-	-	74	-	-	-	313
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	**H1**	**H1**	H1	H0	H0	H0	H1	H0

Unit Root Tests of the Nominal Exchange Rate									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Netherlands / Belgium	Number observations	148	156	157	154	312	312	312	308
	Lags	8	8	9	2	2	2	12	4
	Test statistic: z(t)	-2.75	-3.74	0.14	-5.12	-2.32	-2.39	0.22	-5.23
	Structural break at obs.	-	-	-	50	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	**H1**	**H0**	**H1**	H0	H0	H1	**H1**
Portugal / Belgium	Number observations	145	156	157	153	312	312	312	308
	Lags	11	11	9	3	2	2	12	4
	Test statistic: z(t)	-1.18	-1.52	0.39	-4.30	-2.28	-2.43	0.26	-3.73
	Structural break at obs.	-	-	-	75	-	-	-	242
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Belgium	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	0
	Test statistic: z(t)	-1.48	-1.45	0.33	-7.35	-2.23	-2.24	0.31	-4.16
	Structural break at obs.	-	-	-	95	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
France / Finland	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	
	Test statistic: z(t)	-2.28	-2.43	0.20	-7.45	-2.15	-2.04	0.34	-4.12
	Structural break at obs.	-			94				383
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Germany / Finland	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	12	12	12	0
	Test statistic: z(t)	-1.42	-1.60	0.37	-7.19	-2.41	-1.86	0.39	-3.95
	Structural break at obs.	-	-	-	94	-	-	-	383
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Greece / Finland	Number observations	154	156	157	156	312	312	312	309
	Lags	2	2	9	0	5	5	12	3
	Test statistic: z(t)	-1.95	-2.26	0.27	-10.8	-1.48	-1.75	0.45	-4.32
	Structural break at obs.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0

Unit Root Tests of the Nominal Exchange Rate									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Ireland / Finland	Number observations	152	156	157	154	312	312	312	309
	Lags	4	4	9	2	12	12	12	3
	Test statistic: z(t)	-1.68	-2.47	0.39	-4.96	-3.62	-3.21	0.10	-3.87
	Structural break at obs.	-	-	-	94	-	-	-	320
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	**H1**	H0	**H0**	H0
Italy / Finland	Number observations	154	156	157	156	312	312	312	309
	Lags	2	2	9	0	5	5	12	3
	Test statistic: z(t)	-2.39	-2.68	0.25	-11.8	-4.12	-3.97	0.13	-4.14
	Structural break at obs.	-	-	-	94	-	-	-	208
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	**H1**	**H1**	**H0**	H0
Luxembourg / Finland	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	12	12	12	0
	Test statistic: z(t)	-1.78	-1.95	0.35	-9.60	-2.08	-1.70	0.41	-3.56
	Structural break at obs.	-	-	-	94	-	-	-	383
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Netherlands / Finland	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	12	12	12	0
	Test statistic: z(t)	-1.76	-2.01	0.35	-8.97	-2.43	-1.76	0.36	-3.98
	Structural break at obs.	-	-	-	94	-	-	-	383
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Portugal / Finland	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	4	4	12	4
	Test statistic: z(t)	-1.71	-1.63	0.37	-9.19	-1.33	-1.55	0.53	-3.83
	Structural break at obs.	-	-	-	94	-	-	-	379
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Spain / Finland	Number observations	152	156	157	155	312	312	312	309
	Lags	4	4	9	1	2	2	12	3
	Test statistic: z(t)	-3.25	-5.39	0.14	-4.63	-2.59	-2.62	0.20	-3.42
	Structural break at obs.	-	-	-	58	-	-	-	275
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	**H1**	**H0**	H0	H0	H0	H1	H0

Unit Root Tests of the Nominal Exchange Rate									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Germany / France	Number observations	151	156	157	153	312	312	312	311
	Lags	5	5	9	3	11	11	12	1
	Test statistic: z(t)	-1.95	-1.80	0.30	-8.01	-3.85	-3.09	0.28	-4.21
	Structural break at obs.	-	-	-	116	-	-	-	238
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	**H1**	H0	H1	H0
Greece / France	Number observations	148	156	157	156	312	312	312	312
	Lags	8	8	9	0	2	2	12	0
	Test statistic: z(t)	-3.13	-2.56	0.12	-5.26	-3.11	-3.31	0.27	-5.34
	Structural break at obs.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	**H0**	**H1**	H0	H0	H1	**H1**
Ireland / France	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	12	12	12	4
	Test statistic: z(t)	-2.10	-2.04	0.13	-3.76	-2.07	-2.00	0.43	-4.25
	Structural break at obs.	-	-	-	95	-	-	-	251
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	**H0**	H0	H0	H0	H1	H0
Italy / France	Number observations	154	156	157	154	312	312	312	309
	Lags	2	2	9	2	2	2	12	3
	Test statistic: z(t)	-3.40	-3.11	0.06	-5.65	-2.39	-2.52	0.30	-4.81
	Structural break at obs.	-	-	-	116	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	**H0**	**H1**	H0	H0	H1	H0
Luxembourg / France	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	11	11	12	4
	Test statistic: z(t)	-2.15	-2.18	0.32	-5.65	-2.48	-2.45	0.30	-4.33
	Structural break at obs.	-	-	-	116	-	-	-	231
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Netherlands / France	Number observations	154	156	157	156	312	312	312	311
	Lags	2	2	9	0	9	9	12	1
	Test statistic: z(t)	-2.37	-2.61	0.35	-5.93	-3.64	-3.40	0.13	-4.70
	Structural break at obs.	-	-	-	116	-	-	-	219
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	**H1**	H0	**H0**	H0

| Unit Root Tests of the Nominal Exchange Rate | | | | | | | | | |
| Period | | | 1960:1 - 1972:12 | | | | 1973:1 - 1998:12 | | | |
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Portugal / France	Number observations	153	156	157	153	312	312	312	312
	Lags	3	3	9	3	2	2	12	0
	Test statistic: z(t)	-1.71	-1.77	0.39	-3.62	-2.13	-2.25	0.43	-4.50
	Structural break at obs.	-	-	-	116	-	-	-	205
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Spain / France	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	3	3	12	0
	Test statistic: z(t)	-1.99	-2.03	0.16	-5.71	-2.59	-2.81	0.22	-4.51
	Structural break at obs.	-	-	-	95	-	-	-	343
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Greece / Germany	Number observations	145	156	157	156	312	312	312	308
	Lags	11	11	9	0	6	6	11	4
	Test statistic: z(t)	-0.57	-0.87	0.29	-3.78	-3.04	-3.78	0.13	-4.63
	Structural break at obs.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	**H1**	**H0**	H0
Ireland / Germany	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	12	12	12	4
	Test statistic: z(t)	-2.25	-2.36	0.24	-5.19	-2.01	-1.72	0.47	-4.09
	Structural break at obs.	-	-	-	95	-	-	-	243
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Italy / Germany	Number observations	152	156	157	155	312	312	312	308
	Lags	4	4	9	1	2	2	12	4
	Test statistic: z(t)	-0.98	-0.86	0.36	-3.49	-2.25	-2.25	0.37	-5.23
	Structural break at obs.	-	-	-	84	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	**H1**
Luxembourg / Germany	Number observations	150	156	157	155	312	312	312	308
	Lags	6	6	9	1	3	3	12	4
	Test statistic: z(t)	-1.90	-2.23	0.19	-4.13	-2.58	-2.35	0.12	-5.26
	Structural break at obs.	-	-	-	117	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	**H0**	**H1**

Unit Root Tests of the Nominal Exchange Rate								
Period		1960:1 - 1972:12				1973:1 - 1998:12		
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Netherlands / Germany	Number observations	154	156	157	156	312	312	312	309
	Lags	2	2	9	0	8	8	12	3
	Test statistic: z(t)	-2.91	-3.00	0.17	-5.48	-2.23	-2.50	0.34	-4.61
	Structural break at obs.	-	-	-	117	-	-	-	208
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Portugal / Germany	Number observations	154	156	157	153	312	312	312	310
	Lags	2	2	9	3	2	2	12	2
	Test statistic: z(t)	-3.20	-2.71	0.27	-4.27	-2.41	-2.62	0.27	-3.41
	Structural break at obs.	-	-	-	91	-	-	-	210
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Germany	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	0
	Test statistic: z(t)	-1.33	-1.27	0.34	-4.46	-2.17	-2.22	0.30	-4.22
	Structural break at obs.	-	-	-	95	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Ireland / Greece	Number observations	148	156	157	153	312	312	312	308
	Lags	8	8	9	3	6	6	12	4
	Test statistic: z(t)	-1.93	-2.03	0.17	-6.44	-1.25	-1.55	0.54	-6.35
	Structural break at obs.	-	-	-	95	-	-	-	307
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	**H1**
Italy / Greece	Number observations	148	156	157	156	312	312	312	308
	Lags	8	8	9	0	8	8	12	4
	Test statistic: z(t)	-1.91	-2.21	0.18	-3.75	-1.74	-1.99	0.42	-4.92
	Structural break at obs.	-	-	-	70	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Luxembourg / Greece	Number observations	146	156	157	156	312	312	312	308
	Lags	10	10	9	0	2	2	12	4
	Test statistic: z(t)	-0.95	-1.55	0.25	-4.03	-3.24	-3.35	0.09	-3.79
	Structural break at obs.	-	-	-	123	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	**H0**	H0

Unit Root Tests of the Nominal Exchange Rate								
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Netherlands / Greece	Number observations	153	156	157	156	312	312	312	308
	Lags	3	3	9	0	6	6	12	4
	Test statistic: z(t)	-1.25	-1.78	0.26	-4.84	-2.88	-3.54	0.19	-3.86
	Structural break at obs.	-	-	-	123	-	-	-	307
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	**H1**	H1	H0
Portugal / Greece	Number observations	144	156	157	153	312	312	312	308
	Lags	12	12	9	3	6	6	12	4
	Test statistic: z(t)	-0.48	-0.95	0.38	-3.99	-2.41	-3.47	0.31	-4.05
	Structural break at obs.	-	-	-	76	-	-	-	301
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	**H1**	H1	H0
Spain / Greece	Number observations	151	156	157	153	312	312	312	310
	Lags	5	5	9	3	4	4	12	2
	Test statistic: z(t)	-1.36	-1.60	0.22	-6.00	-1.63	-2.07	0.36	-3.90
	Structural break at obs.	-	-	-	95	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Italy / Ireland	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	9	9	12	4
	Test statistic: z(t)	-2.09	-2.09	0.16	-4.94	-2.30	-3.33	0.26	-4.83
	Structural break at obs.	-	-	-	95	-	-	-	319
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Luxembourg / Ireland	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	11	11	12	4
	Test statistic: z(t)	-2.28	-2.38	0.15	-4.63	-1.67	-1.48	0.42	-3.88
	Structural break at obs.	-	-	-	95	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Netherlands / Ireland	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	11	11	12	4
	Test statistic: z(t)	-2.29	-2.68	0.15	-5.43	-1.83	-1.80	0.40	-3.89
	Structural break at obs.	-	-	-	95	-	-	-	243
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0

Unit Root Tests of the Nominal Exchange Rate								
Period		1960:1 - 1972:12				1973:1 - 1998:12		
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Portugal / Ireland	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	11	11	12	4
	Test statistic: z(t)	-2.01	-1.90	0.30	-5.40	-1.05	-1.18	0.55	-4.52
	Structural break at obs.	-	-	-	95	-	-	-	270
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Spain / Ireland	Number observations	143	156	157	153	312	312	312	308
	Lags	13	13	9	3	11	11	12	4
	Test statistic: z(t)	-1.70	-1.72	0.30	-3.49	-2.14	-2.58	0.22	-3.73
	Structural break at obs.	-	-	-	54	-	-	-	331
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Luxembourg / Italy	Number observations	153	156	157	156	312	312	312	308
	Lags	3	3	9	0	6	6	12	4
	Test statistic: z(t)	-1.45	-1.21	0.37	-3.61	-1.89	-2.03	0.34	-3.79
	Structural break at obs.	-	-	-	34	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Netherlands / Italy	Number observations	153	156	157	156	312	312	312	309
	Lags	3	3	9	0	5	5	12	3
	Test statistic: z(t)	-1.41	-1.65	0.36	-3.82	-2.38	-2.41	0.30	-4.94
	Structural break at obs.	-	-	-	36	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Portugal / Italy	Number observations	154	156	157	153	312	312	312	308
	Lags	2	2	9	3	11	11	12	4
	Test statistic: z(t)	-1.48	-1.23	0.40	-3.96	-1.86	-1.73	0.50	-4.14
	Structural break at obs.	-	-	-	52	-	-	-	270
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Italy	Number observations	154	156	157	156	312	312	312	309
	Lags	2	2	9	0	3	3	12	3
	Test statistic: z(t)	-1.72	-1.79	0.20	-6.28	-3.38	-3.42	0.17	-4.23
	Structural break at obs.	-	-	-	95	-	-	-	273
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0

Unit Root Tests of the Nominal Exchange Rate								
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Netherlands / Luxembourg	Number observations	143	156	157	154	312	312	312	312
	Lags	13	13	9	2	2	2	12	0
	Test statistic: z(t)	-4.16	-4.19	0.08	-5.63	-2.66	-2.71	0.33	-4.83
	Structural break at obs.	-	-	-	40	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	**H1**	**H1**	**H0**	**H1**	H0	H0	H1	H0
Portugal / Luxembourg	Number observations	151	156	157	153	312	312	312	312
	Lags	5	5	9	3	2	2	12	0
	Test statistic: z(t)	-1.60	-1.93	0.38	-3.95	-2.32	-2.48	0.25	-4.21
	Structural break at obs.	-	-	-	65	-	-	-	206
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Luxembourg	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	0
	Test statistic: z(t)	-1.43	-1.43	0.34	-7.31	-2.20	-2.24	0.33	-4.28
	Structural break at obs.	-	-	-	95	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Portugal / Netherlands	Number observations	145	156	157	153	312	312	312	310
	Lags	11	11	9	3	2	2	12	2
	Test statistic: z(t)	-2.85	-2.26	0.38	-4.87	-2.18	-2.35	0.35	-3.38
	Structural break at obs.	-	-	-	65	-	-	-	211
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Netherlands	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	0
	Test statistic: z(t)	-1.46	-1.58	0.32	-5.66	-2.04	-2.17	0.24	-4.00
	Structural break at obs.	-	-	-	95	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0
Spain / Portugal	Number observations	154	156	157	156	312	312	312	310
	Lags	2	2	9	0	11	11	12	2
	Test statistic: z(t)	-1.43	-1.27	0.36	-5.78	-1.38	-1.65	0.48	-4.51
	Structural break at obs.	-	-	-	95	-	-	-	221
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0

Legend Appendix Table 6: The significance level for the rejection of the H0 is 5%. The table displays the results for seasonally unadjusted monthly nominal exchange rates. ADF: Augmended Dickey-Fuller Test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags chosen according to Akaike's information criterion (AIC). PP: Phillips–Perron test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags are Newey-West lags and chosen according to Akaike's information criterion (AIC). Critical values for the PP are the same as for the ADF. KPSS: Kwiatkowski-Phillips-Schmidt-Shin test for stationarity (H0 = stationary around linear trend, H1 = unit root). ZA: Zivot-Andrews Unit Root test allowing for a single break in intercept or trend (H0 = unit root, H1 stationarity with a break in the intercept or trend).

Appendix Table 7 – Unit Root Tests of the First Differeces of Nominal Exchange Rate Levels

Unit Root Tests of the First Differences of Nominal Exchange Rates									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Belgium / Austria	Number observations	146	155	156	152	312	312	312	309
	Lags	9	9	43	3	5	5	23	3
	Test statistic: z(t)	-6.15	-10.87	0.14	-8.76	-7.42	-15.99	0.06	-8.91
	Structural break at obs.	-	-	-	31	-	-	-	271
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Finland / Austria	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	8	0	11	11	3	0
	Test statistic: z(t)	-9.84	-13.43	0.05	-13.68	-4.08	-16.93	0.06	-17.25
	Structural break at obs.	-	-	-	94	-	-	-	377
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
France / Austria	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	25		1	1	57	
	Test statistic: z(t)	-8.08	-10.95	0.07	-11.19	-12.41	-16.68	0.09	-10.02
	Structural break at obs.	-			115				251
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Germany / Austria	Number observations	151	155	156	153	312	312	312	309
	Lags	4	4	18	2	13	13	10	3
	Test statistic: z(t)	-6.02	-10.51	0.07	-9.10	-4.53	-19.37	0.03	-11.01
	Structural break at obs.	-	-	-	116	-	-	-	235
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Greece / Austria	Number observations	142	155	156	155	312	312	312	309
	Lags	13	13	12	0	5	5	17	3
	Test statistic: z(t)	-2.80	-12.41	0.09	-12.37	-8.48	-16.74	0.05	-12.13
	Structural break at obs.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H1	H0	H1	H1	H1	H0	H1
Ireland / Austria	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	12	0	13	13	5	3
	Test statistic: z(t)	-9.29	-11.85	0.05	-12.13	-4.73	-17.68	0.12	-11.09
	Structural break at obs.	-	-	-	105	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of Nominal Exchange Rates								
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Italy / Austria	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	18	0	1	1	13	3
	Test statistic: z(t)	-8.95	-10.93	0.07	-11.25	-12.63	-17.00	0.11	-10.14
	Structural break at obs.	-	-	-	31	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Luxembourg / Austria	Number observations	142	155	156	152	312	312	312	310
	Lags	13	13	31	3	4	4	19	2
	Test statistic: z(t)	-4.04	-10.30	0.12	-8.42	-8.22	-15.81	0.05	-12.02
	Structural break at obs.	-	-	-	31	-	-	-	210
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Netherlands / Austria	Number observations	143	155	156	152	312	312	312	308
	Lags	12	12	21	3	13	13	12	4
	Test statistic: z(t)	-5.98	-14.76	0.09	-8.53	-5.30	-22.89	0.14	-11.52
	Structural break at obs.	-	-	-	32	-	-	-	233
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Austria	Number observations	142	155	156	153	312	312	312	311
	Lags	13	13	14	2	3	3	12	1
	Test statistic: z(t)	-3.28	-12.34	0.07	-10.01	-10.09	-17.97	0.04	-14.33
	Structural break at obs.	-	-	-	67	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H1	H0	H1	H1	H1	H0	H1
Spain / Austria	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	14	0	1	1	8	0
	Test statistic: z(t)	-8.56	-11.25	0.09	-11.65	-12.54	-18.68	0.04	-18.95
	Structural break at obs.	-	-	-	95	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Finland / Belgium	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	9	0	11	11	10	0
	Test statistic: z(t)	-9.56	-13.32	0.05	-13.59	-4.23	-16.62	0.06	-16.87
	Structural break at obs.	-	-	-	94	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of Nominal Exchange Rates									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
France / Belgium	Number observations	153	155	156	155	312	312	312	309
	Lags	2	2	2		10	10	7	
	Test statistic: z(t)	-7.12	-10.70	0.04	-11.15	-5.15	-15.70	0.06	-10.98
	Structural break at obs.	-			116				219
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Germany / Belgium	Number observations	153	155	156	153	312	312	312	309
	Lags	2	2	4	2	12	12	10	3
	Test statistic: z(t)	-7.11	-9.47	0.09	-8.02	-4.94	-14.74	0.05	-7.63
	Structural break at obs.	-	-	-	116	-	-	-	277
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Greece / Belgium	Number observations	146	155	156	153	312	312	312	309
	Lags	9	9	13	2	5	5	19	3
	Test statistic: z(t)	-4.91	-12.56	0.05	-8.40	-8.13	-16.82	0.05	-11.07
	Structural break at obs.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Ireland / Belgium	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	16	0	13	13	46	3
	Test statistic: z(t)	-8.87	-11.62	0.06	-12.14	-4.25	-18.12	0.09	-11.10
	Structural break at obs.	-	-	-	97	-	-	-	271
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Italy / Belgium	Number observations	150	155	156	154	312	312	312	309
	Lags	5	5	5	1	5	5	16	3
	Test statistic: z(t)	-4.39	-9.07	0.04	-9.04	-7.56	-17.46	0.14	-9.65
	Structural break at obs.	-	-	-	41	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Luxembourg / Belgium	Number observations	152	155	156	152	312	312	312	311
	Lags	3	3	10	3	3	3	17	1
	Test statistic: z(t)	-7.77	-12.71	0.05	-8.25	-9.41	-15.30	0.09	-13.01
	Structural break at obs.	-	-	-	120	-	-	-	289
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of Nominal Exchange Rates								
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Netherlands / Belgium	Number observations	142	155	156	152	312	312	312	312
	Lags	13	13	8	3	1	1	13	0
	Test statistic: z(t)	-4.18	-15.08	0.04	-8.05	-12.98	-17.52	0.05	-17.91
	Structural break at obs.	-	-	-	28	-	-	-	268
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Belgium	Number observations	145	155	156	153	312	312	312	309
	Lags	10	10	12	2	1	1	12	3
	Structural break at obs.	-	-	-	80	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Belgium	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	4	0	1	1	11	0
	Test statistic: z(t)	-8.58	-11.53	0.08	-12.13	-12.39	-18.45	0.05	-18.72
	Structural break at obs.	-	-	-	95	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
France / Finland	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	8		1	1	8	
	Test statistic: z(t)	-9.31	-12.98	0.05	-13.19	-11.45	-16.74	0.04	-17.02
	Structural break at obs.	-			94				377
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Germany / Finland	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	9	0	11	11	9	0
	Test statistic: z(t)	-9.73	-13.25	0.06	-13.72	-3.99	-16.24	0.05	-16.43
	Structural break at obs.	-	-	-	94	-	-	-	377
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Greece / Finland	Number observations	152	155	156	152	312	312	312	310
	Lags	3	3	7	3	4	4	17	2
	Test statistic: z(t)	-7.58	-14.05	0.08	-8.60	-9.21	-16.56	0.05	-11.99
	Structural break at obs.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of Nominal Exchange Rates									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Ireland / Finland	Number observations	152	155	156	154	312	312	312	310
	Lags	3	3	6	1	13	13	24	2
	Test statistic: z(t)	-7.50	-20.02	0.05	-12.77	-3.84	-18.10	0.06	-9.72
	Structural break at obs.	-	-	-	94	-	-	-	277
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Italy / Finland	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	8	0	2	2	12	0
	Test statistic: z(t)	-9.78	-13.88	0.04	-14.15	-8.87	-15.88	0.07	-16.21
	Structural break at obs.	-	-	-	94	-	-	-	223
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Luxembourg / Finland	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	7	0	11	11	11	0
	Test statistic: z(t)	-9.66	-13.37	0.04	-13.66	-4.09	-16.53	0.06	-16.84
	Structural break at obs.	-	-	-	94	-	-	-	377
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Netherlands / Finland	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	9	0	1	1	10	0
	Test statistic: z(t)	-9.52	-13.56	0.05	-13.86	-11.83	-17.03	0.06	-17.50
	Structural break at obs.	-	-	-	94	-	-	-	377
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Finland	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	12	0	13	13	15	3
	Test statistic: z(t)	-8.73	-12.42	0.07	-12.76	-4.24	-17.08	0.07	-11.08
	Structural break at obs.	-	-	-	91	-	-	-	400
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Finland	Number observations	152	155	156	154	312	312	312	310
	Lags	3	3	6	1	1	1	18	2
	Test statistic: z(t)	-7.83	-19.51	0.03	-12.39	-12.62	-16.62	0.04	-11.91
	Structural break at obs.	-	-	-	96	-	-	-	400
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of Nominal Exchange Rates									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Germany / France	Number observations	151	155	156	153	312	312	312	308
	Lags	4	4	6	2	10	10	9	4
	Test statistic: z(t)	-4.98	-9.81	0.04	-8.10	-4.59	-15.95	0.03	-9.17
	Structural break at obs.	-	-	-	116	-	-	-	251
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Greece / France	Number observations	144	155	156	155	312	312	312	309
	Lags	11	11	10	0	1	1	6	3
	Test statistic: z(t)	-4.08	-13.41	0.07	-13.69	-13.47	-17.85	0.02	-9.63
	Structural break at obs.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Ireland / France	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	6	0	13	13	12	3
	Test statistic: z(t)	-8.30	-11.57	0.06	-12.26	-4.94	-19.57	0.09	-9.97
	Structural break at obs.	-	-	-	116	-	-	-	273
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Italy / France	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	1	0	1	1	18	0
	Test statistic: z(t)	-7.70	-11.66	0.04	-12.31	-13.75	-18.83	0.12	-19.31
	Structural break at obs.	-	-	-	116	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Luxembourg / France	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	7	0	10	10	7	3
	Test statistic: z(t)	-8.41	-11.47	0.04	-12.25	-5.12	-15.27	0.05	-10.55
	Structural break at obs.	-	-	-	116	-	-	-	219
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Netherlands / France	Number observations	154	155	156	152	312	312	312	308
	Lags	1	1	9	3	8	8	11	4
	Test statistic: z(t)	-8.57	-12.68	0.04	-7.47	-5.49	-15.89	0.04	-9.36
	Structural break at obs.	-	-	-	116	-	-	-	219
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of Nominal Exchange Rates									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Portugal / France	Number observations	153	155	156	153	312	312	312	309
	Lags	2	2	16	2	1	1	13	3
	Test statistic: z(t)	-8.32	-11.02	0.07	-8.79	-13.30	-17.46	0.05	-10.45
	Structural break at obs.	-	-	-	116	-	-	-	225
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / France	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	87	0	2	2	10	0
	Test statistic: z(t)	-8.73	-11.44	0.31	-11.81	-10.94	-19.44	0.03	-19.61
	Structural break at obs.	-	-	-	89	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	**H1**	H1	H1	H1	H0	H1
Greece / Germany	Number observations	148	155	156	155	312	312	312	309
	Lags	7	7	13	0	5	5	18	3
	Test statistic: z(t)	-3.99	-12.32	0.10	-12.89	-8.76	-16.63	0.04	-11.60
	Structural break at obs.	-	-	-	-	-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Ireland / Germany	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	12	0	11	11	19	3
	Test statistic: z(t)	-8.87	-12.29	0.04	-12.39	-4.20	-17.48	0.10	-10.52
	Structural break at obs.	-	-	-	95	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Italy / Germany	Number observations	152	155	156	155	312	312	312	309
	Lags	3	3	8	0	1	1	14	3
	Test statistic: z(t)	-5.52	-10.37	0.08	-10.93	-12.40	-16.60	0.11	-9.67
	Structural break at obs.	-	-	-	117	-	-	-	392
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Luxembourg / Germany	Number observations	150	155	156	152	312	312	312	309
	Lags	5	5	4	3	2	2	11	3
	Test statistic: z(t)	-6.02	-9.84	0.06	-7.54	-9.16	-15.79	0.04	-7.96
	Structural break at obs.	-	-	-	116	-	-	-	271
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of Nominal Exchange Rates									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Netherlands / Germany	Number observations	154	155	156	155	312	312	312	310
	Lags	1	1	52	0	13	13	12	2
	Test statistic: z(t)	-8.51	-12.34	0.14	-12.98	-5.22	-18.01	0.09	-11.87
	Structural break at obs.	-	-	-	117	-	-	-	207
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Germany	Number observations	154	155	156	153	312	312	312	311
	Lags	1	1	15	2	3	3	11	1
	Test statistic: z(t)	-8.88	-11.63	0.08	-8.94	-9.86	-17.73	0.04	-14.20
	Structural break at obs.	-	-	-	114	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Germany	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	6	0	1	1	7	0
	Test statistic: z(t)	-8.03	-11.39	0.10	-12.20	-12.76	-18.56	0.04	-18.79
	Structural break at obs.	-	-	-	95	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Ireland / Greece	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	12	0	11	11	19	3
	Test statistic: z(t)	-8.87	-12.29	0.04	-12.39	-4.20	-17.48	0.10	-10.52
	Structural break at obs.	-	-	-	95	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Italy / Greece	Number observations	152	155	156	155	312	312	312	309
	Lags	3	3	8	0	1	1	14	3
	Test statistic: z(t)	-5.52	-10.37	0.08	-10.93	-12.40	-16.60	0.11	-9.67
	Structural break at obs.	-	-	-	117	-	-	-	392
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Luxembourg / Greece	Number observations	150	155	156	152	312	312	312	309
	Lags	5	5	4	3	2	2	11	3
	Test statistic: z(t)	-6.02	-9.84	0.06	-7.54	-9.16	-15.79	0.04	-7.96
	Structural break at obs.	-	-	-	116	-	-	-	271
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of Nominal Exchange Rates									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Netherlands / Greece	Number observations	154	155	156	155	312	312	312	310
	Lags	1	1	52	0	13	13	12	2
	Test statistic: z(t)	-8.51	-12.34	0.14	-12.98	-5.22	-18.01	0.09	-11.87
	Structural break at obs.	-	-	-	117	-	-	-	207
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Greece	Number observations	154	155	156	153	312	312	312	311
	Lags	1	1	15	2	3	3	11	1
	Test statistic: z(t)	-8.88	-11.63	0.08	-8.94	-9.86	-17.73	0.04	-14.20
	Structural break at obs.	-	-	-	114	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Greece	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	6	0	1	1	7	0
	Test statistic: z(t)	-8.03	-11.39	0.10	-12.20	-12.76	-18.56	0.04	-18.79
	Structural break at obs.	-	-	-	95	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Italy / Ireland	Number observations	154	155	156	155	312	312	312	308
	Lags	1	1	7	0	8	8	41	4
	Test statistic: z(t)	-8.47	-11.63	0.05	-12.15	-8.07	-19.44	0.08	-10.36
	Structural break at obs.	-	-	-	97	-	-	-	393
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Luxembourg / Ireland	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	31	0	13	13	119	3
	Test statistic: z(t)	-8.69	-11.60	0.08	-12.02	-4.47	-18.26	0.14	-10.63
	Structural break at obs.	-	-	-	97	-	-	-	269
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Netherlands / Ireland	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	10	0	13	13	90	3
	Test statistic: z(t)	-9.62	-12.93	0.06	-13.28	-4.64	-18.53	0.12	-10.25
	Structural break at obs.	-	-	-	109	-	-	-	262
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of Nominal Exchange Rates									
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Portugal / Ireland	Number observations	154	155	156	155	312	312	312	308
	Lags	1	1	9	0	13	13	2	4
	Test statistic: z(t)	-8.75	-11.48	0.06	-11.80	-4.25	-18.87	0.08	-11.26
	Structural break at obs.	-	-	-	97	-	-	-	232
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Ireland	Number observations	143	155	156	153	312	312	312	308
	Lags	12	12	9	2	13	13		4
	Test statistic: z(t)	-2.96	-10.65	0.10	-6.19	-5.02	-19.88		-10.39
	Structural break at obs.	-	-	-	283	-	-	-	283
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H0	H1	H0	H1	H1	H1	H0	H1
Luxembourg / Italy	Number observations	153	155	156	155	312	312	312	309
	Lags	2	2	8	0	5	5	15	3
	Test statistic: z(t)	-6.32	-10.87	0.05	-11.43	-7.73	-17.33	0.13	-9.50
	Structural break at obs.	-	-	-	41	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Netherlands / Italy	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	7	0	4	4	19	3
	Test statistic: z(t)	-8.76	-14.06	0.03	-14.34	-7.86	-17.75	0.14	-9.15
	Structural break at obs.	-	-	-	26	-	-	-	392
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Italy	Number observations	154	155	156	153	312	312	312	308
	Lags	1	1	13	2	10	10	7	4
	Test statistic: z(t)	-9.08	-11.87	0.07	-9.02	-4.57	-18.07	0.12	-9.70
	Structural break at obs.	-	-	-	44	-	-	-	242
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Italy	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	11	0	2	2	8	3
	Test statistic: z(t)	-8.97	-12.28	0.08	-13.00	-9.99	-19.61	0.09	-9.96
	Structural break at obs.	-	-	-	95	-	-	-	284
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

	Unit Root Tests of the First Differences of Nominal Exchange Rates							
Period		1960:1 - 1972:12				1973:1 - 1998:12			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Netherlands / Luxembourg	Number observations	142	155	156	152	312	312	312	312
	Lags	13	13	7	3	1	1	21	0
	Test statistic: z(t)	-4.02	-14.50	0.03	-7.25	-12.79	-16.86	0.07	-17.19
	Structural break at obs.	-	-	-	28	-	-	-	274
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Luxembourg	Number observations	151	155	156	153	312	312	312	309
	Lags	4	4	12	2	1	1	13	3
	Test statistic: z(t)	-6.72	-12.15	0.06	-10.10	-13.63	-17.69	0.04	-10.88
	Structural break at obs.	-	-	-	92	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Luxembourg	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	6	0	1	1	12	0
	Test statistic: z(t)	-8.76	-11.56	0.08	-12.17	-12.61	-18.34	0.04	-18.62
	Structural break at obs.	-	-	-	95	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Netherlands	Number observations	145	155	156	152	312	312	312	308
	Lags	10	10	12	3	13	13	11	4
	Test statistic: z(t)	-6.04	-14.51	0.07	-9.63	-4.17	-17.86	0.06	-10.02
	Structural break at obs.	-	-	-	124	-	-	-	227
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Netherlands	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	10	0	1	1	10	0
	Test statistic: z(t)	-9.15	-12.31	0.07	-12.80	-13.34	-18.67	0.05	-18.94
	Structural break at obs.	-	-	-	95	-	-	-	390
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Portugal	Number observations	154	155	156	155	312	312	312	308
	Lags	1	1	9	0	10	10	14	4
	Test statistic: z(t)	-8.43	-11.75	0.09	-12.38	-5.35	-17.55	0.05	-11.11
	Structural break at obs.	-	-	-	90	-	-	-	236
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

Legend Appendix Table 7: The significance level for the rejection of the H0 is 5%. The significance level for the rejection of the H0 is 5%. The table displays the results for the first differences of monthly nominal

exchange rates. ADF: Augmended Dickey-Fuller Test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags chosen according to Akaike's information criterion (AIC). PP: Phillips–Perron test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags are Newey-West lags and chosen according to Akaike's information criterion (AIC). Critical values for the PP are the same as for the ADF. KPSS: Kwiatkowski-Phillips-Schmidt-Shin test for stationarity (H0 = stationary around linear trend, H1 = unit root). ZA: Zivot-Andrews Unit Root test allowing for a single break in intercept or trend (H0 = unit root, H1 stationarity with a break in the intercept or trend).

Appendix Table 8 – Panel Unit Root Tests of the First Differences of Real Exchange Rates Levels

Test Specification					Results											
					1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test	H0	H1	Autoregression Parameter Rho	Lags / Selection	Panels	Periods	P-value	Accepted Hypothesis	Panels	Periods	P-value	Accepted Hypothesis	Panels	Periods	P-value	Accepted Hypothesis
Breitung	All Panels contain unit roots	All Panels are stationary	Uniform ρ	12	66	155	0.000	H1	66	311	0.000	H1	66	222	0.000	H1
Herwartz	Panels contain unit roots	Panels are stationary	Panel-specific ρ	AIC	66	155	0.000	H1	66	311	0.000	H1	66	222	0.000	H1
Hadri	All panels are stationary	Some panels contain unit roots	-	12	66	155	0.333	H0	66	311	0.317	H0	66	222	0.000	**H1**

Legend Appendix Table 8: The significance level for the rejection of the H0 is 5%. All Panels as strongly balanced. Panel-specific linear trends are not allowed. In all tests a correction for cross-sectional dependence of the panels is applied. A Bartlett Kernel with 12 lag is used to estimate the long-run variance in the Hadri tests.

Appendix Table 9 – Unit Root Tests of the Real Exchange Rate Levels

Unit Root Tests of the Real Exchange Rate												
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Belgium / Austria	Number observations	143	156	157	155	312	312	312	308	220	220	220	218
	Lags	13	13	9	1	6	6	12	4	13	13	10	2
	Test statistic: z(t)	-3.79	-3.21	0.69	-5.00	-1.51	-1.53	2.11	-6.60	-2.35	-3.24	0.68	-4.63
	Structural break at obs.	-	-	-	26	-	-	-	264	-	-	-	645
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	**H1**	**H1**	H1	**H1**	H0	H0	H1	**H1**	H0	**H1**	H1	H0
Finland / Austria	Number observations	154	156	157	156	312	312	312	312	220	220	220	217
	Lags	2	2	9	0	12	12	12	0	9	9	10	3
	Test statistic: z(t)	-0.58	-0.73	1.06	-6.00	-2.05	-1.54	0.89	-4.72	0.15	0.05	1.69	-3.27
	Structural break at obs.	-	-	-	94	-	-	-	383	-	-	-	577
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
France / Austria	Number observations	153	156	157	155	312	312	312	312	220	220	220	217
	Lags	3	3	9		2	2	12		13	13	10	3
	Test statistic: z(t)	-1.24	-1.35	1.16	-6.88	-2.37	-2.37	2.05	-3.87	1.47	1.73	1.84	-2.83
	Structural break at obs.	-	-	-	116				219	-	-	-	518
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
Germany / Austria	Number observations	153	156	157	153	312	312	312	308	220	220	220	217
	Lags	3	3	9	3	11	11	12	4	13	13	10	3
	Test statistic: z(t)	-1.77	-2.08	0.34	-5.94	-2.51	-2.52	2.06	-3.37	0.28	0.22	2.03	-4.88
	Structural break at obs.	-	-	-	117	-	-	-	381	-	-	-	547
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	**H0**	**H1**	H0	H0	H1	H0	H0	H0	H1	**H1**
Greece / Austria	Number observations	154	156	157	156	312	312	312	308	220	220	220	217
	Lags	2	2	9	0	6	6	12	4	13	13	10	3
	Test statistic: z(t)	-0.08	-0.15	1.37	-3.60	-2.65	-3.10	0.67	-3.34	-1.06	-1.24	0.74	-2.95
	Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	637
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	**H1**	H1	H0	H0	H0	H1	H0
Ireland / Austria	Number observations	154	156	157	156	312	312	312	308	220	220	220	218
	Lags	2	2	9	0	12	12	12	4	8	8	10	2
	Test statistic: z(t)	-1.93	-2.03	0.58	-4.19	-2.48	-2.24	0.36	-4.28	-1.83	-1.36	0.56	-3.65
	Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	587
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	**H0**	H0	H0	H0	H1	H0

	Unit Root Tests of the Real Exchange Rate											
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Italy / Austria	Number observations	153	156	157	155	312	312	312	308	220	220	220	218
	Lags	3	3	9	1	2	2	12	4	10	10	10	2
	Test statistic: z(t)	-1.75	-1.94	0.32	-4.61	-3.02	-3.04	0.35	-5.05	-0.72	-0.71	0.51	-3.31
	Structural break at obs.	-	-	-	31	-	-	-	393	-	-	-	645
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H0	H0	H1	H1	H0	H1	H0	H0	H1	H0
Luxembourg / Austria	Number observations	144	156	157	155	312	312	312	309	220	220	220	217
	Lags	12	12	9	1	5	5	12	3	13	13	10	3
	Test statistic: z(t)	-3.11	-2.34	1.32	-5.40	-1.84	-1.82	2.22	-6.69	-3.56	-4.30	1.22	-4.07
	Structural break at obs.	-	-	-	26	-	-	-	262	-	-	-	651
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H0	H1	H1	H0	H0	H1	H1	H1	H1	H1	H0
Netherlands / Austria	Number observations	143	156	157	154	312	312	312	309	220	220	220	217
	Lags	13	13	9	2	12	12	12	3	12	12	10	3
	Test statistic: z(t)	1.05	-0.29	1.54	-6.80	-1.45	-1.51	2.41	-3.81	-0.90	-2.00	1.29	-3.73
	Structural break at obs.	-	-	-	28	-	-	-	289	-	-	-	506
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H1	H0	H0	H1	H0	H0	H0	H1	H0
Portugal / Austria	Number observations	145	156	157	153	312	312	312	310	220	220	220	217
	Lags	11	11	9	3	2	2	12	2	9	9	10	3
	Test statistic: z(t)	1.48	0.23	1.20	-3.46	-2.15	-2.32	0.41	-3.29	-1.85	-1.92	0.49	-2.60
	Structural break at obs.	-	-	-	107	-	-	-	361	-	-	-	507
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H0	H0	H0	H0	H1	H0
Spain / Austria	Number observations	154	156	157	156	312	312	312	312	220	220	220	217
	Lags	2	2	9	0	2	2	12	0	11	11	10	3
	Test statistic: z(t)	-1.68	-1.64	0.67	-5.23	-2.59	-2.62	0.18	-4.01	-2.52	-2.38	1.02	-1.93
	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	637
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H1	H0	H0	H0	H0	H0	H0	H1	H0
Finland / Belgium	Number observations	154	156	157	156	312	312	312	312	220	220	220	220
	Lags	2	2	9	0	12	12	12	0	9	9	10	0
	Test statistic: z(t)	-0.70	-0.83	0.90	-5.87	-2.10	-1.78	0.45	-3.86	-0.22	-0.24	1.73	-3.92
	Structural break at obs.	-	-	-	94	-	-	-	383	-	-	-	529
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H1	H0	H0	H0	H0	H0	H0	H1	H0

	Unit Root Tests of the Real Exchange Rate											
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
France / Belgium												
Number observations	153	156	157	155	312	312	312	308	220	220	220	218
Lags	3	3	9		11	11	12		13	13	10	2
Test statistic: z(t)	-1.37	-1.42	0.72	-5.75	-2.28	-2.29	0.56	-4.13	0.44	0.60	2.01	-3.45
Structural break at obs.	-	-	-	116	-	-	-	239	-	-	-	508
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
Germany / Belgium												
Number observations	153	156	157	155	312	312	312	308	220	220	220	219
Lags	3	3	9	1	13	13	12	4	13	13	10	1
Test statistic: z(t)	-1.67	-1.75	0.56	-4.43	-2.16	-2.08	0.79	-4.03	-0.60	-0.61	2.05	-3.71
Structural break at obs.	-	-	-	117	-	-	-	262	-	-	-	643
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Greece / Belgium												
Number observations	146	156	157	156	312	312	312	308	220	220	220	218
Lags	10	10	9	0	6	6	12	4	13	13	10	2
Test statistic: z(t)	1.11	0.57	1.29	-3.63	-1.88	-2.23	0.84	-3.23	-1.08	-1.74	0.70	-3.17
Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	643
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Ireland / Belgium												
Number observations	154	156	157	156	312	312	312	308	220	220	220	220
Lags	2	2	9	0	11	11	12	4	9	9	10	0
Test statistic: z(t)	-1.93	-2.04	0.29	-4.20	-1.48	-1.27	1.00	-4.30	-1.79	-1.13	0.62	-3.68
Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	586
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H0	H0	**H0**	H0	H0	H0	H1	H0	H0	H0	H1	H0
Italy / Belgium												
Number observations	150	156	157	154	312	312	312	308	220	220	220	220
Lags	6	6	9	2	6	6	12	4	2	2	10	0
Test statistic: z(t)	-1.89	-2.00	0.50	-3.92	-1.58	-1.66	0.82	-4.10	-0.12	-0.15	0.82	-2.79
Structural break at obs.	-	-	-	31	-	-	-	393	-	-	-	508
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Luxembourg / Belgium												
Number observations	154	156	157	156	312	312	312	310	220	220	220	217
Lags	2	2	9	0	4	4	12	2	13	13	10	3
Test statistic: z(t)	-1.25	-1.45	1.52	-4.94	-2.89	-2.87	1.18	-3.69	-3.41	-7.12	0.96	-3.60
Structural break at obs.	-	-	-	125	-	-	-	381	-	-	-	512
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H0	H0	H1	**H1**	**H1**	H0	H1	H0	**H1**	**H1**	H1	H0

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Period												
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Nether-lands / Belgium	Number observations	148	156	157	154	312	312	312	308	220	220	220	217
	Lags	8	8	9	2	2	2	12	4	11	11	10	3
	Test statistic: z(t)	-0.94	-0.40	1.56	-4.88	-2.33	-2.39	0.23	-5.20	-0.45	-1.40	1.38	-3.10
	Structural break at obs.	-	-	-	55	-	-	-	262	-	-	-	566
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	**H0**	**H1**	H0	H0	H1	H0
Portugal / Belgium	Number observations	145	156	157	153	312	312	312	308	220	220	220	217
	Lags	11	11	9	3	2	2	12	4	12	12	10	3
	Test statistic: z(t)	1.35	0.73	1.38	-3.27	-1.45	-1.60	1.18	-2.79	-1.52	-1.85	0.47	-3.33
	Structural break at obs.	-	-	-	40	-	-	-	210	-	-	-	508
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Belgium	Number observations	154	156	157	156	312	312	312	312	220	220	220	217
	Lags	2	2	9	0	2	2	12	0	12	12	10	3
	Test statistic: z(t)	-1.73	-1.68	0.81	-5.70	-1.96	-1.96	1.45	-4.43	-2.21	-2.21	0.97	-2.05
	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	507
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
France / Finland	Number observations	154	156	157	156	312	312	312	312	220	220	220	219
	Lags	2	2	9		2	2	12		3	3	10	1
	Test statistic: z(t)	-1.72	-1.86	0.64	-7.35	-2.17	-2.06	0.34	-4.59	-0.97	-1.05	0.61	-4.19
	Structural break at obs.	-			94				383				522
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	**H0**	H0	H0	H0	H1	H0
Germany / Finland	Number observations	154	156	157	156	312	312	312	312	220	220	220	217
	Lags	2	2	9	0	12	12	12	0	13	13	10	3
	Test statistic: z(t)	-0.26	-0.37	0.99	-4.13	-2.44	-1.86	0.39	-4.64	-2.75	-2.49	0.82	-3.43
	Structural break at obs.	-	-	-	94	-	-	-	382	-	-	-	528
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	**H0**	H0	H0	H0	H1	H0
Greece / Finland	Number observations	154	156	157	156	312	312	312	309	220	220	220	217
	Lags	2	2	9	0	5	5	12	3	13	13	10	3
	Test statistic: z(t)	-1.95	-2.27	0.27	-10.41	-1.19	-1.45	0.53	-4.30	-1.31	-1.33	1.21	-3.27
	Structural break at obs.	-	-	-	94	-	-	-	381	-	-	-	637
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	**H0**	**H1**	H0	H0	H1	H0	H0	H0	H1	H0

Unit Root Tests of the Real Exchange Rate

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Unit Root Tests of the Real Exchange Rate												
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Ireland / Finland	Number observations	152	156	157	154	312	312	312	309	220	220	220	217
	Lags	4	4	9	2	12	12	12	3	8	8	10	3
	Test statistic: z(t)	-0.61	-1.26	0.94	-3.08	-2.68	-2.17	0.94	-3.89	-2.28	-2.16	0.53	-4.01
	Structural break at obs.	-	-	-	94	-	-	-	320	-	-	-	585
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Italy / Finland	Number observations	154	156	157	156	312	312	312	309	220	220	220	217
	Lags	2	2	9	0	5	5	12	3	9	9	10	3
	Test statistic: z(t)	-0.90	-1.03	1.25	-9.88	-3.23	-3.04	0.74	-4.05	-1.55	-1.58	1.22	-3.95
	Structural break at obs.	-	-	-	94	-	-	-	377	-	-	-	520
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	**H1**	**H1**	H1	H0	H0	H0	H1	H0
Luxem-bourg / Finland	Number observations	154	156	157	156	312	312	312	312	220	220	220	218
	Lags	2	2	9	0	12	12	12	0	9	9	10	2
	Test statistic: z(t)	-0.95	-1.12	0.71	-5.48	-2.21	-1.89	0.52	-4.25	-1.62	-1.78	1.76	-4.35
	Structural break at obs.	-	-	-	94	-	-	-	383	-	-	-	524
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
Nether-lands / Finland	Number observations	154	156	157	156	312	312	312	312	220	220	220	217
	Lags	2	2	9	0	12	12	12	0	13	13	10	3
	Test statistic: z(t)	0.01	-0.02	1.29	-5.32	-2.52	-1.89	0.42	-4.47	-1.92	-2.54	0.72	-2.82
	Structural break at obs.	-	-	-	94	-	-	-	383	-	-	-	577
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	**H0**	H0	H0	H0	H1	H0
Portugal / Finland	Number observations	154	156	157	156	312	312	312	308	220	220	220	217
	Lags	2	2	9	0	4	4	12	4	12	12	10	3
	Test statistic: z(t)	0.09	0.10	1.16	-4.47	-0.82	-1.06	0.74	-4.46	-1.64	-1.97	0.99	-3.12
	Structural break at obs.	-	-	-	94	-	-	-	379	-	-	-	509
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Finland	Number observations	152	156	157	155	312	312	312	309	220	220	220	217
	Lags	4	4	9	1	2	2	12	3	13	13	10	3
	Test statistic: z(t)	0.15	-0.28	1.61	-4.51	-1.87	-1.90	1.07	-3.44	-1.89	-1.98	1.46	-2.95
	Structural break at obs.	-	-	-	94	-	-	-	275	-	-	-	519
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Unit Root Tests of the Real Exchange Rate
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Germany / France	Number observations	151	156	157	153	312	312	312	311	220	220	220	217
	Lags	5	5	9	3	11	11	12	1	13	13	10	3
	Test statistic: z(t)	-1.04	-0.91	0.81	-8.52	-3.81	-3.07	0.33	-4.22	-1.66	-2.63	0.44	-3.81
	Structural break at obs.	-	-	-	116	-	-	-	219	-	-	-	508
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	**H1**	**H1**	**H0**	H0	H0	H0	**H0**	H0
Greece / France	Number observations	148	156	157	156	312	312	312	312	220	220	220	217
	Lags	8	8	9	0	2	2	12	0	13	13	10	3
	Test statistic: z(t)	-2.18	-1.61	0.88	-2.84	-2.65	-2.84	0.65	-4.38	-1.34	-1.38	1.59	-3.68
	Structural break at obs.	-	-	-	116	-	-	-	302	-	-	-	643
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Ireland / France	Number observations	154	156	157	156	312	312	312	308	220	220	220	218
	Lags	2	2	9	0	12	12	12	4	13	13	10	2
	Test statistic: z(t)	-2.01	-1.97	0.19	-3.72	-1.75	-1.60	1.15	-4.22	-3.38	-2.96	0.65	-4.74
	Structural break at obs.	-	-	-	116	-	-	-	251	-	-	-	586
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	**H0**	H0	H0	H0	H1	H0	**H1**	**H1**	H1	H0
Italy / France	Number observations	154	156	157	154	312	312	312	309	220	220	220	218
	Lags	2	2	9	2	2	2	12	3	12	12	10	2
	Test statistic: z(t)	-1.77	-1.57	1.27	-4.53	-1.90	-2.03	0.79	-5.13	-2.13	-2.09	2.03	-3.97
	Structural break at obs.	-	-	-	116	-	-	-	393	-	-	-	650
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	**H1**	H0	H0	H1	H0
Luxembourg / France	Number observations	154	156	157	156	312	312	312	308	220	220	220	217
	Lags	2	2	9	0	11	11	12	4	13	13	10	3
	Test statistic: z(t)	-1.89	-1.94	0.37	-6.52	-2.13	-2.14	0.90	-4.07	-1.73	-1.62	2.09	-4.52
	Structural break at obs.	-	-	-	116	-	-	-	239	-	-	-	608
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	**H0**	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
Netherlands / France	Number observations	154	156	157	156	312	312	312	311	220	220	220	217
	Lags	2	2	9	0	9	9	12	1	12	12	10	3
	Test statistic: z(t)	-0.08	0.04	1.43	-6.01	-3.31	-3.10	0.63	-4.14	-1.54	-1.88	1.36	-3.98
	Structural break at obs.	-	-	-	116	-	-	-	236	-	-	-	542
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	**H1**	**H1**	H1	H0	H0	H0	H1	H0

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Period / Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Portugal / France	Number observations	153	156	157	153	312	312	312	312	220	220	220	217
	Lags	3	3	9	3	2	2	12	0	8	8	10	3
	Test statistic: z(t)	0.46	0.30	1.23	-4.40	-1.61	-1.72	0.98	-4.50	-2.37	-2.59	1.63	-2.79
	Structural break at obs.	-	-	-	116	-	-	-	205	-	-	-	635
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Spain / France	Number observations	154	156	157	156	312	312	312	312	220	220	220	217
	Lags	2	2	9	0	3	3	12	0	13	13	10	3
	Test statistic: z(t)	-1.13	-1.07	1.14	-5.90	-2.31	-2.43	1.41	-4.66	-2.76	-2.68	1.90	-2.75
	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	637
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
Greece / Germany	Number observations	145	156	157	156	312	312	312	308	220	220	220	217
	Lags	11	11	9	0	6	6	12	4	13	13	10	3
	Test statistic: z(t)	0.41	0.77	1.18	-3.35	-2.57	-3.26	0.49	-4.46	-1.39	-1.49	1.46	-3.45
	Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	643
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	**H1**	H1	H0	H0	H0	H1	H0
Ireland / Germany	Number observations	154	156	157	156	312	312	312	308	220	220	220	219
	Lags	2	2	9	0	12	12	12	4	13	13	10	1
	Test statistic: z(t)	-1.39	-1.38	0.86	-4.86	-1.87	-1.58	0.87	-3.99	-2.98	-2.90	0.65	-3.76
	Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	586
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	**H1**	**H1**	H1	H0
Italy / Germany	Number observations	152	156	157	155	312	312	312	308	220	220	220	218
	Lags	4	4	9	1	2	2	12	4	13	13	10	2
	Test statistic: z(t)	-0.85	-0.71	0.37	-3.97	-2.01	-2.01	0.61	-5.64	-2.41	-2.84	1.78	-2.37
	Structural break at obs.	-	-	-	117	-	-	-	393	-	-	-	643
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	**H0**	H0	H0	H0	H1	**H1**	H0	H0	H1	H0
Luxem-bourg / Germany	Number observations	150	156	157	155	312	312	312	308	220	220	220	217
	Lags	6	6	9	1	3	3	12	4	13	13	10	3
	Test statistic: z(t)	-1.26	-1.39	1.08	-4.31	-1.75	-1.64	1.42	-4.19	-3.48	-2.36	2.04	-5.06
	Structural break at obs.	-	-	-	117	-	-	-	262	-	-	-	655
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	**H1**	H0	H1	**H1**

Unit Root Tests of the Real Exchange Rate

		Unit Root Tests of the Real Exchange Rate											
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Nether-lands / Germany	Number observations	154	156	157	156	312	312	312	309	220	220	220	217
	Lags	2	2	9	0	8	8	12	3	13	13	10	3
	Test statistic: z(t)	-1.36	-1.27	1.34	-5.81	-1.45	-1.80	1.26	-3.79	-2.84	-2.40	1.37	-3.67
	Structural break at obs.	-	-	-	117	-	-	-	342	-	-	-	566
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
Portugal / Germany	Number observations	154	156	157	153	312	312	312	310	220	220	220	217
	Lags	2	2	9	3	2	2	12	2	13	13	10	3
	Test statistic: z(t)	-0.88	-0.90	1.26	-4.43	-1.85	-2.05	0.89	-3.53	-2.34	-2.89	1.40	-3.10
	Structural break at obs.	-	-	-	91	-	-	-	210	-	-	-	508
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	**H1**	H1	H0
Spain / Germany	Number observations	154	156	157	156	312	312	312	312	220	220	220	217
	Lags	2	2	9	0	2	2	12	0	13	13	10	3
	Test statistic: z(t)	-1.47	-1.42	0.52	-3.76	-2.15	-2.19	1.00	-4.54	-2.86	-2.90	1.75	-2.38
	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	637
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	**H1**	H1	H0
Ireland / Greece	Number observations	148	156	157	153	312	312	312	308	220	220	220	218
	Lags	8	8	9	3	6	6	12	4	12	12	10	2
	Test statistic: z(t)	-1.29	-1.27	0.78	-2.77	-1.39	-1.67	0.67	-3.09	-1.95	-1.98	0.95	-5.20
	Structural break at obs.	-	-	-	95	-	-	-	234	-	-	-	587
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	**H1**
Italy / Greece	Number observations	148	156	157	156	312	312	312	308	220	220	220	217
	Lags	8	8	9	0	8	8	12	4	13	13	10	3
	Test statistic: z(t)	-0.63	-0.25	1.43	-3.35	-1.74	-2.00	0.45	-5.26	-1.21	-2.13	1.02	-4.06
	Structural break at obs.	-	-	-	70	-	-	-	393	-	-	-	643
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	**H0**	**H1**	H0	H0	H1	H0
Luxem-bourg / Greece	Number observations	146	156	157	156	312	312	312	308	220	220	220	218
	Lags	10	10	9	0	2	2	12	4	13	13	10	2
	Test statistic: z(t)	0.56	0.14	1.03	-3.69	-2.24	-2.33	1.12	-3.44	-1.10	-2.58	0.56	-3.79
	Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	638
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Nether-lands / Greece	Number observations	153	156	157	156	312	312	312	308	220	220	220	217
	Lags	3	3	9	0	6	6	12	4	12	12	10	3
	Test statistic: z(t)	0.96	0.92	1.49	-4.07	-1.88	-2.42	1.07	-3.39	-1.48	-1.59	1.06	-3.47
	Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	637
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Portugal / Greece	Number observations	144	156	157	153	312	312	312	308	220	220	220	218
	Lags	12	12	9	3	6	6	12	4	13	13	10	2
	Test statistic: z(t)	1.45	2.06	1.42	-2.85	-2.31	-3.35	0.57	-3.93	-1.32	-1.85	0.82	-3.18
	Structural break at obs.	-	-	-	133	-	-	-	210	-	-	-	655
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H1	H1	H0	H0	H0	H1	H0
Spain / Greece	Number observations	151	156	157	153	312	312	312	310	220	220	220	218
	Lags	5	5	9	3	4	4	12	2	13	13	10	2
	Test statistic: z(t)	-0.54	-0.41	1.29	-6.66	-1.95	-2.29	0.62	-3.96	-1.94	-3.71	0.22	-3.68
	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	642
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H1	H0	H0	H1	H0	H0	H1	H0	H0
Italy / Ireland	Number observations	154	156	157	156	312	312	312	308	220	220	220	220
	Lags	2	2	9	0	9	9	12	4	8	8	10	0
	Test statistic: z(t)	-1.93	-1.84	0.59	-3.04	-2.49	-3.35	0.41	-4.62	-2.28	-1.75	0.50	-4.46
	Structural break at obs.	-	-	-	121	-	-	-	319	-	-	-	586
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H1	H0	H0	H0	H0	H1	H0
Luxem-bourg / Ireland	Number observations	154	156	157	156	312	312	312	308	220	220	220	218
	Lags	2	2	9	0	11	11	12	4	8	8	10	2
	Test statistic: z(t)	-2.36	-2.48	0.16	-4.47	-1.43	-1.25	1.13	-3.96	-1.19	-0.82	0.78	-4.17
	Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	586
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H0	H0	H0	H0	H1	H0	H0	H0	H1	H0
Nether-lands / Ireland	Number observations	154	156	157	156	312	312	312	308	220	220	220	217
	Lags	2	2	9	0	11	11	12	4	13	13	10	3
	Test statistic: z(t)	-0.47	-0.50	1.36	-5.42	-1.50	-1.40	1.18	-4.53	-2.16	-1.93	0.47	-3.10
	Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	587
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H1	H0	H0	H1	H0	H0	H0	H1	H0

Table title: Unit Root Tests of the Real Exchange Rate (Period header row above the test columns).

Unit Root Tests of the Real Exchange Rate												
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Portugal / Ireland	Number observations	154	156	157	156	312	312	312	308	220	220	220	218
	Lags	2	2	9	0	11	11	12	4	12	12	10	2
	Test statistic: z(t)	-0.11	-0.10	1.20	-4.86	-1.10	-1.22	0.55	-3.55	-2.10	-1.52	0.73	-3.57
	Structural break at obs.	-	-	-	95	-	-	-	221	-	-	-	587
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Ireland	Number observations	143	156	157	153	312	312	312	308	220	220	220	217
	Lags	13	13	9	3	11	11	12	4	12	12	10	3
	Test statistic: z(t)	-1.36	-1.04	1.11	-3.54	-2.22	-2.62	0.24	-3.67	-1.35	-0.87	1.39	-4.83
	Structural break at obs.	-	-	-	109	-	-	-	343	-	-	-	588
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	**H0**	H0	H0	H0	H1	**H1**
Luxem-bourg / Italy	Number observations	153	156	157	156	312	312	312	308	220	220	220	217
	Lags	3	3	9	0	6	6	12	4	13	13	10	3
	Test statistic: z(t)	-2.23	-2.17	0.89	-2.96	-1.39	-1.51	0.96	-4.17	-0.30	-4.06	1.78	-6.15
	Structural break at obs.	-	-	-	26	-	-	-	393	-	-	-	516
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	**H1**	H1	**H1**
Nether-lands / Italy	Number observations	153	156	157	156	312	312	312	309	220	220	220	217
	Lags	3	3	9	0	5	5	12	3	11	11	10	3
	Test statistic: z(t)	0.17	0.20	1.14	-3.82	-1.84	-1.84	0.89	-5.26	-0.78	-2.18	1.03	-3.52
	Structural break at obs.	-	-	-	36	-	-	-	392	-	-	-	647
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	**H1**	H0	H0	H1	H0
Portugal / Italy	Number observations	154	156	157	153	312	312	312	308	220	220	220	217
	Lags	2	2	9	3	11	11	12	4	13	13	10	3
	Test statistic: z(t)	0.30	0.31	0.94	-3.20	-1.85	-1.72	0.51	-3.67	-2.16	-2.72	0.51	-3.25
	Structural break at obs.	-	-	-	36	-	-	-	384	-	-	-	583
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Italy	Number observations	154	156	157	156	312	312	312	309	220	220	220	217
	Lags	2	2	9	0	3	3	12	3	12	12	10	3
	Test statistic: z(t)	-1.28	-1.30	0.79	-6.64	-3.58	-3.61	0.39	-4.29	-2.23	-2.05	1.57	-3.00
	Structural break at obs.	-	-	-	95	-	-	-	273	-	-	-	531
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	**H1**	**H1**	**H0**	H0	H0	H0	H1	H0

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Nether-lands / Luxem-bourg	Number observations	143	156	157	154	312	312	312	312	220	220	220	217
	Lags	13	13	9	2	2	2	12	0	13	13	10	3
	Test statistic: z(t)	-1.08	-0.11	1.62	-5.00	-2.60	-2.65	0.60	-4.82	-1.05	-2.90	1.73	-4.88
	Structural break at obs.	-	-	-	55	-	-	-	262	-	-	-	548
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	**H1**	H0	**H1**	H1	**H1**
Portugal / Luxem-bourg	Number observations	151	156	157	153	312	312	312	312	220	220	220	217
	Lags	5	5	9	3	2	2	12	0	13	13	10	3
	Test statistic: z(t)	0.55	0.43	1.48	-3.87	-1.36	-1.50	1.40	-4.17	-0.91	-2.82	0.70	-3.16
	Structural break at obs.	-	-	-	40	-	-	-	206	-	-	-	508
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Luxem-bourg	Number observations	154	156	157	156	312	312	312	312	220	220	220	217
	Lags	2	2	9	0	2	2	12	0	13	13	10	3
	Test statistic: z(t)	-1.60	-1.58	0.99	-5.33	-1.96	-1.98	1.53	-4.63	-1.35	-2.03	0.87	-2.94
	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	531
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	**H1**	H0	H0	H1	H0	H0	H0	H1	H0
Portugal / Nether-lands	Number observations	145	156	157	153	312	312	312	310	220	220	220	217
	Lags	11	11	9	3	2	2	12	2	12	12	10	3
	Test statistic: z(t)	-1.40	-2.05	0.51	-3.82	-1.39	-1.56	1.17	-3.23	-1.78	-2.35	0.95	-3.35
	Structural break at obs.	-	-	-	110	-	-	-	345	-	-	-	635
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Nether-lands	Number observations	154	156	157	156	312	312	312	312	220	220	220	217
	Lags	2	2	9	0	2	2	12	0	11	11	10	3
	Test statistic: z(t)	-1.36	-1.47	0.35	-4.65	-1.82	-1.90	1.42	-4.23	-1.67	-1.78	1.49	-2.69
	Structural break at obs.	-	-	-	95	-	-	-	392	-	-	-	531
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	**H0**	H0	H0	H0	H1	H0	H0	H0	H1	H0
Spain / Portugal	Number observations	154	156	157	156	312	312	312	310	220	220	220	217
	Lags	2	2	9	0	11	11	12	2	13	13	10	3
	Test statistic: z(t)	-1.13	-1.03	0.42	-4.17	-1.60	-1.81	0.50	-4.20	-1.30	-1.62	1.71	-3.31
	Structural break at obs.	-	-	-	95	-	-	-	221	-	-	-	572
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	**H0**	H0	H0	H0	H1	H0	H0	H0	H1	H0

Table title: Unit Root Tests of the Real Exchange Rate — Period row.

Legend Appendix Table 9: The significance level for the rejection of the H0 is 5%. The table displays the results for seasonally unadjusted monthly real exchange rates. Linear trends are not allowed ADF: Augmended Dickey-Fuller Test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags chosen according to Akaike's information criterion (AIC). PP: Phillips–Perron test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags are Newey-West lags and chosen according to Akaike's information criterion (AIC). Critical values for the PP are the same as for the ADF. KPSS: Kwiatkowski-Phillips-Schmidt-Shin test for stationarity (H0 = stationary around linear trend, H1 = unit root). ZA: Zivot-Andrews Unit Root test allowing for a single break in intercept or trend (H0 = unit root, H1 stationarity with a break in the intercept or trend).

Appendix Table 10 – Unit Root Tests of the First Differences of Real Exchange Rates

		Unit Root Tests of the First Differences of the Real Exchange Rate											
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Belgium / Austria	Number observations	146	155	156	152	312	312	312	309	220	220	220	217
	Lags	9	9	79	3	5	5	24	3	13	13	8	3
	Test statistic: z(t)	-5.88	-10.83	0.29	-8.70	-7.38	-15.99	0.13	-8.80	-4.49	-18.56	0.06	-11.06
	Structural break at obs.	-	-	-	43	-	-	-	230	-	-	-	627
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Finland / Austria	Number observations	154	155	156	155	312	312	312	312	220	220	220	217
	Lags	1	1	8	0	11	11	4	0	13	13	11	3
	Test statistic: z(t)	-9.80	-13.40	0.19	-13.62	-4.06	-16.95	0.10	-17.07	-2.83	-15.84	0.20	-11.57
	Structural break at obs.	-	-	-	94	-	-	-	400	-	-	-	548
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	H0	H1
France / Austria	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	Lags	1	1	19		1	1	31		13	13	9	3
	Test statistic: z(t)	-8.08	-10.96	0.19	-11.07	-12.41	-16.69	0.10	-9.94	-3.26	-19.06	0.50	-10.81
	Structural break at obs.	-			114				219				506
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	**H1**	H1
Germany / Austria	Number observations	151	155	156	153	312	312	312	309	220	220	220	217
	Lags	4	4	19	2	13	13	10	3	13	13	11	3
	Test statistic: z(t)	-6.03	-10.54	0.13	-8.61	-4.15	-18.96	0.39	-10.79	-4.08	-22.22	0.14	-13.95
	Structural break at obs.	-	-	-	116	-	-	-	208	-	-	-	547
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88		0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57		0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Greece / Austria	Number observations	142	155	156	155	312	312	312	309	220	220	220	217
	Lags	13	13	12	0	5	5	17	3	13	13	11	3
	Test statistic: z(t)	-2.77	-12.26	0.19	-12.33	-8.41	-16.73	0.19	-12.13	-3.48	-18.02	0.57	-16.07
	Structural break at obs.	-	-	-	67	-	-	-	268	-	-	-	614
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	**H0**	H1	H0	H1	H1	H1	H0	H1	H1	H1	**H1**	H1
Ireland / Austria	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	Lags	1	1	12	0	13	13	5	3	13	13	30	3
	Test statistic: z(t)	-9.31	-11.88	0.07	-12.12	-4.73	-17.70	0.11	-10.77	-2.00	-16.44	0.53	-9.40
	Structural break at obs.	-	-	-	97	-	-	-	212	-	-	-	585
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	**H1**	H1

Unit Root Tests of the First Differences of the Real Exchange Rate													
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Italy / Austria	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	Lags	1	1	19	0	1	1	13	3	13	13	8	3
	Test statistic: z(t)	-8.92	-10.92	0.19	-11.27	-12.60	-16.98	0.15	-9.78	-2.85	-17.14	0.72	-13.77
	Structural break at obs.	-	-	-	31	-	-	-	377	-	-	-	633
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H1	H1
Luxem- bourg / Austria	Number observations	142	155	156	152	312	312	312	310	220	220	220	217
	Lags	13	13	24	3	4	4	20	2	13	13	7	3
	Test statistic: z(t)	-3.78	-10.23	0.22	-8.17	-8.14	-15.79	0.18	-11.86	-4.33	-31.13	0.41	-11.64
	Structural break at obs.	-	-	-	31	-	-	-	235	-	-	-	544
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Nether- lands / Austria	Number observations	143	155	156	152	312	312	312	308	220	220	220	217
	Lags	12	12	22	3	13	13	12	4	13	13	15	3
	Test statistic: z(t)	-5.77	-14.52	0.33	-8.55	-5.10	-22.58	0.32	-11.54	-3.53	-12.95	0.21	-15.28
	Structural break at obs.	-	-	-	68	-	-	-	233	-	-	-	523
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Austria	Number observations	142	155	156	153	312	312	312	311	220	220	220	217
	Lags	13	13	15	2	3	3	12	1	13	13	12	3
	Test statistic: z(t)	-2.67	-11.27	0.41	-10.06	-10.02	-17.94	0.17	-14.26	-2.31	-14.53	0.75	-11.03
	Structural break at obs.	-	-	-	67	-	-	-	390	-	-	-	569
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H1	H0	H1	H1	H1	H0	H1	H0	H1	H1	H1
Spain / Austria	Number observations	154	155	156	155	312	312	312	312	220	220	220	218
	Lags	1	1	13	0	1	1	8	0	13	13	15	2
	Test statistic: z(t)	-8.58	-11.28	0.11	-11.63	-12.56	-18.71	0.05	-18.80	-2.21	-13.65	0.84	-17.17
	Structural break at obs.	-	-	-	89	-	-	-	390	-	-	-	584
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H1	H1
Finland / Belgium	Number observations	154	155	156	155	312	312	312	312	220	220	220	217
	Lags	1	1	9	0	11	11	11	0	13	13	11	3
	Test statistic: z(t)	-9.46	-13.23	0.27	-13.57	-4.17	-16.62	0.15	-16.75	-3.05	-16.26	0.12	-9.85
	Structural break at obs.	-	-	-	96	-	-	-	227	-	-	-	549
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

	Unit Root Tests of the First Differences of the Real Exchange Rate											
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
France / Belgium — Number observations	153	155	156	155	312	312	312	309	220	220	220	219
Lags	2	2	4		10	10	7		13	13	6	1
Test statistic: z(t)	-7.01	-10.62	0.22	-10.84	-5.16	-15.73	0.06	-10.89	-3.47	-20.39	0.18	-14.24
Structural break at obs.	-			119				219				504
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Germany / Belgium — Number observations	153	155	156	153	312	312	312	309	220	220	220	219
Lags	2	2	4	2	12	12	10	3	13	13	2	1
Test statistic: z(t)	-7.14	-9.50	0.09	-7.67	-4.94	-14.77	0.05	-7.38	-4.01	-21.14	0.03	-13.79
Structural break at obs.	-	-	-	116	-	-	-	213	-	-	-	627
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Greece / Belgium — Number observations	146	155	156	153	312	312	312	309	220	220	220	217
Lags	9	9	14	2	5	5	19	3	13	13	10	3
Test statistic: z(t)	-4.53	-12.36	0.28	-8.23	-8.11	-16.83	0.09	-11.00	-3.23	-18.78	0.39	-17.99
Structural break at obs.	-	-	-	134	-	-	-	276	-	-	-	613
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Ireland / Belgium — Number observations	154	155	156	155	312	312	312	309	220	220	220	220
Lags	1	1	19	0	13	13	46	3	13	13	12	0
Test statistic: z(t)	-8.84	-11.60	0.14	-12.18	-4.27	-18.14	0.09	-10.51	-1.88	-15.98	0.79	-16.55
Structural break at obs.	-	-	-	97	-	-	-	227	-	-	-	574
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	**H1**	H1
Italy / Belgium — Number observations	150	155	156	154	312	312	312	309	220	220	220	220
Lags	5	5	7	1	5	5	16	3	1	1	8	0
Test statistic: z(t)	-4.05	-8.84	0.45	-8.63	-7.53	-17.47	0.15	-9.57	####	-16.21	0.45	-16.67
Structural break at obs.	-	-	-	42	-	-	-	227	-	-	-	584
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Luxem-bourg / Belgium — Number observations	152	155	156	152	312	312	312	311	220	220	220	218
Lags	3	3	10	3	3	3	18	1	13	13	7	2
Test statistic: z(t)	-7.80	-12.75	0.05	-8.12	-9.42	-15.34	0.13	-12.88	-4.13	-33.44	0.23	-12.90
Structural break at obs.	-	-	-	46	-	-	-	219	-	-	-	590
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Nether-lands / Belgium	Number observations	142	155	156	152	312	312	312	312	220	220	220	218
	Lags	13	13	8	3	1	1	13	0	13	13	15	2
	Test statistic: z(t)	-4.25	-15.16	0.05	-8.02	-13.00	-17.55	0.05	-17.85	-3.51	-12.82	0.12	-15.44
	Structural break at obs.	-	-	-	28	-	-	-	277	-	-	-	586
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Belgium	Number observations	145	155	156	153	312	312	312	309	220	220	220	217
	Lags	10	10	12	2	1	1	12	3	13	13	13	3
	Test statistic: z(t)	-4.92	-12.97	0.36	-9.84	-13.65	-17.86	0.11	-10.50	-2.98	-14.13	0.50	-16.36
	Structural break at obs.	-	-	-	80	-	-	-	231	-	-	-	572
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	**H1**	H1
Spain / Belgium	Number observations	154	155	156	155	312	312	312	312	220	220	220	218
	Lags	1	1	5	0	1	1	11	0	13	13	14	2
	Test statistic: z(t)	-8.54	-11.50	0.18	-11.96	-12.40	-18.47	0.08	-18.67	-2.90	-13.65	0.61	-20.48
	Structural break at obs.	-	-	-	89	-	-	-	219	-	-	-	507
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	**H1**	H1
France / Finland	Number observations	154	155	156	155	312	312	312	312	220	220	220	220
	Lags	1	1	8	0	1	1	8	0	13	13	6	0
	Test statistic: z(t)	-9.32	-13.00	0.08	-13.17	-11.42	-16.71	0.13	-17.00	-2.55	-16.68	0.16	-17.37
	Structural break at obs.	-			96				400				554
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	H0	H1
Germany / Finland	Number observations	154	155	156	155	312	312	312	312	220	220	220	217
	Lags	1	1	8	0	11	11	9	0	13	13	11	3
	Test statistic: z(t)	-9.65	-13.19	0.26	-13.65	-3.93	-16.26	0.16	-16.25	-3.15	-17.03	0.13	-12.48
	Structural break at obs.	-	-	-	94	-	-	-	400	-	-	-	554
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Greece / Finland	Number observations	152	155	156	152	312	312	312	310	220	220	220	217
	Lags	3	3	7	3	4	4	17	2	13	13	10	3
	Test statistic: z(t)	-7.59	-14.08	0.11	-8.06	-9.08	-16.50	0.25	-11.93	-3.09	-18.08	0.30	-14.99
	Structural break at obs.	-	-	-	94	-	-	-	356	-	-	-	610
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of the Real Exchange Rate												
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Ireland / Finland	Number observations	152	155	156	154	312	312	312	310	220	220	220	218
	Lags	3	3	6	1	13	13	22	2	13	13	24	2
	Test statistic: z(t)	-7.44	-19.96	0.16	-12.69	-3.79	-18.09	0.11	-9.73	-1.97	-18.10	0.51	-9.05
	Structural break at obs.	-	-	-	94	-	-	-	207	-	-	-	573
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H1	H1
Italy / Finland	Number observations	154	155	156	155	312	312	312	312	220	220	220	217
	Lags	1	1	8	0	2	2	12	0	13	13	12	3
	Test statistic: z(t)	-9.78	-13.89	0.11	-14.15	-8.76	-15.78	0.20	-16.22	-2.58	-15.27	0.27	-11.30
	Structural break at obs.	-	-	-	96	-	-	-	205	-	-	-	554
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H0	H1
Luxem- bourg / Finland	Number observations	154	155	156	155	312	312	312	312	220	220	220	217
	Lags	1	1	7	0	11	11	11	0	13	13	1	3
	Test statistic: z(t)	-9.57	-13.29	0.24	-13.60	-4.03	-16.53	0.17	-16.70	-3.53	-28.84	0.09	-7.88
	Structural break at obs.	-	-	-	96	-	-	-	400	-	-	-	558
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Nether- lands / Finland	Number observations	154	155	156	155	312	312	312	312	220	220	220	218
	Lags	1	1	9	0	1	1	10	0	13	13	15	2
	Test statistic: z(t)	-9.43	-13.47	0.30	-13.77	-11.80	-17.01	0.14	-17.29	-3.65	-11.10	0.08	-19.01
	Structural break at obs.	-	-	-	94	-	-	-	377	-	-	-	548
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Finland	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	Lags	1	1	20	0	13	13	15	3	13	13	13	3
	Test statistic: z(t)	-8.54	-12.25	0.38	-12.66	-4.00	-16.86	0.33	-11.01	-2.38	-14.15	0.37	-13.39
	Structural break at obs.	-	-	-	91	-	-	-	400	-	-	-	560
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H0	H1
Spain / Finland	Number observations	152	155	156	154	312	312	312	310	220	220	220	218
	Lags	3	3	6	1	1	1	18	2	13	13	15	2
	Test statistic: z(t)	-7.77	-19.43	0.11	-12.38	-12.63	-16.64	0.06	-11.74	-2.62	-11.74	0.46	-17.72
	Structural break at obs.	-	-	-	96	-	-	-	400	-	-	-	560
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H0	H1

Unit Root Tests of the First Differences of the Real Exchange Rate													
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test		ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Germany / France	Number observations	151	155	156	153	312	312	312	308	220	220	220	217
	Lags	4	4	7	2	10	10	9	4	13	13	10	3
	Test statistic: z(t)	-4.92	-9.80	0.14	-7.15	-4.60	-15.98	0.03	-9.05	-2.80	-23.12	0.33	-13.95
	Structural break at obs.	-	-	-	115	-	-	-	219	-	-	-	508
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88		0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57		0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	H0	H1
Greece / France	Number observations	144	155	156	155	312	312	312	309	220	220	220	217
	Lags	11	11	10	0	1	1	6	3	13	13	13	3
	Test statistic: z(t)	-4.11	-13.45	0.07	-13.62	-13.47	-17.86	0.05	-9.61	-3.63	-21.06	0.31	-15.87
	Structural break at obs.	-	-	-	133	-	-	-	315	-	-	-	618
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Ireland / France	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	Lags	1	1	6	0	13	13	12	3	13	13	14	3
	Test statistic: z(t)	-8.33	-11.60	0.06	-11.92	-4.95	-19.61	0.10	-9.75	-2.35	-18.12	0.55	-7.32
	Structural break at obs.	-	-	-	97	-	-	-	225	-	-	-	581
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	**H1**	H1
Italy / France	Number observations	154	155	156	155	312	312	312	312	220	220	220	217
	Lags	1	1	1	0	1	1	18	0	13	13	7	3
	Test statistic: z(t)	-7.73	-11.70	0.04	-11.85	-13.75	-18.84	0.13	-19.06	-3.19	-20.58	0.24	-12.42
	Structural break at obs.	-	-	-	114	-	-	-	387	-	-	-	583
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Luxem- bourg / France	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	Lags	1	1	2	0	10	10	7	3	13	13	7	3
	Test statistic: z(t)	-8.32	-11.39	0.23	-11.66	-5.13	-15.30	0.05	-10.41	-4.19	-35.00	0.12	-11.31
	Structural break at obs.	-	-	-	116	-	-	-	219	-	-	-	548
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Nether- lands / France	Number observations	154	155	156	152	312	312	312	308	220	220	220	217
	Lags	1	1	10	3	8	8	11	4	13	13	15	3
	Test statistic: z(t)	-8.50	-12.60	0.32	-7.15	-5.50	-15.91	0.04	-9.39	-3.48	-13.23	0.06	-14.62
	Structural break at obs.	-	-	-	115	-	-	-	219	-	-	-	507
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Period	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	Test												
Portugal / France	Number observations	153	155	156	153	312	312	312	309	220	220	220	217
	Lags	2	2	20	2	1	1	13	3	13	13	11	3
	Test statistic: z(t)	-8.03	-10.84	0.51	-8.63	-13.30	-17.47	0.10	-10.04	-2.92	-16.70	0.45	-13.46
	Structural break at obs.	-	-	-	120	-	-	-	391	-	-	-	603
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	**H1**	H1	H1	H1	H0	H1	H1	H1	H0	H1
Spain / France	Number observations	154	155	156	155	312	312	312	312	220	220	220	217
	Lags	1	1	79	0	2	2	10	0	13	13	15	3
	Test statistic: z(t)	-8.76	-11.48	0.31	-11.81	-10.93	-19.45	0.07	-19.53	-2.79	-11.78	0.51	-13.25
	Structural break at obs.	-	-	-	89	-	-	-	387	-	-	-	587
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	**H1**	H1
Greece / Germany	Number observations	148	155	156	155	312	312	312	309	220	220	220	217
	Lags	7	7	14	0	5	5	18	3	13	13	12	3
	Test statistic: z(t)	-3.91	-12.24	0.28	-12.82	-8.75	-16.65	0.08	-11.61	-3.56	-18.26	0.36	-18.08
	Structural break at obs.	-	-	-	116	-	-	-	268	-	-	-	626
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Ireland / Germany	Number observations	154	155	156	155	312	312	312	309	220	220	220	220
	Lags	1	1	12	0	11	11	20	3	13	13	21	0
	Test statistic: z(t)	-8.86	-12.29	0.13	-12.41	-4.21	-17.51	0.11	-10.27	-2.39	-18.22	0.58	-20.05
	Structural break at obs.	-	-	-	95	-	-	-	227	-	-	-	582
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	**H1**	H1
Italy / Germany	Number observations	152	155	156	155	312	312	312	309	220	220	220	217
	Lags	3	3	8	0	1	1	14	3	13	13	3	3
	Test statistic: z(t)	-5.35	-10.28	0.28	-10.66	-12.40	-16.61	0.11	-9.36	-2.66	-23.00	0.60	-10.33
	Structural break at obs.	-	-	-	26	-	-	-	376	-	-	-	577
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	**H1**	H1
Luxembourg / Germany	Number observations	150	155	156	152	312	312	312	309	220	220	220	217
	Lags	5	5	4	3	2	2	11	3	13	13	8	3
	Test statistic: z(t)	-6.04	-9.87	0.06	-7.33	-9.18	-15.82	0.04	-7.77	-4.07	-30.68	0.25	-13.57
	Structural break at obs.	-	-	-	114	-	-	-	283	-	-	-	592
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

Table title: Unit Root Tests of the First Differences of the Real Exchange Rate

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Nether-lands / Germany	Number observations	154	155	156	155	312	312	312	310	220	220	220	217
	Lags	1	1	42	0	13	13	12	2	13	13	13	3
	Test statistic: z(t)	-8.54	-12.37	0.15	-12.81	-5.17	-17.97	0.12	-11.91	-3.40	-16.74	0.17	-12.97
	Structural break at obs.	-	-	-	110	-	-	-	207	-	-	-	586
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Germany	Number observations	154	155	156	153	312	312	312	311	220	220	220	217
	Lags	1	1	16	2	3	3	11	1	13	13	13	3
	Test statistic: z(t)	-8.78	-11.57	0.25	-8.89	-9.85	-17.74	0.07	-14.07	-2.28	-15.24	0.49	-15.94
	Structural break at obs.	-	-	-	114	-	-	-	390	-	-	-	603
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	**H1**	H1
Spain / Germany	Number observations	154	155	156	155	312	312	312	312	220	220	220	217
	Lags	1	1	6	0	1	1	7	0	13	13	15	3
	Test statistic: z(t)	-8.02	-11.40	0.17	-12.08	-12.76	-18.56	0.09	-18.66	-2.38	-12.81	0.64	-18.29
	Structural break at obs.	-	-	-	95	-	-	-	376	-	-	-	638
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	**H1**	H1
Ireland / Greece	Number observations	148	155	156	153	312	312	312	309	220	220	220	217
	Lags	7	7	11	2	5	5	15	3	13	13	8	3
	Test statistic: z(t)	-4.17	-13.22	0.09	-8.79	-8.25	-16.80	0.19	-11.49	-2.78	-16.98	0.25	-17.35
	Structural break at obs.	-	-	-	103	-	-	-	315	-	-	-	613
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H0	H1
Italy / Greece	Number observations	148	155	156	153	312	312	312	309	220	220	220	217
	Lags	7	7	9	2	5	5	4	3	13	13	10	3
	Test statistic: z(t)	-4.41	-14.58	0.10	-8.98	-7.27	-17.86	0.09	-10.69	-3.91	-19.73	0.21	-18.33
	Structural break at obs.	-	-	-	60	-	-	-	327	-	-	-	618
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Luxem-bourg / Greece	Number observations	146	155	156	155	312	312	312	309	220	220	220	217
	Lags	9	9	24	0	13	13	21	3	13	13	6	3
	Test statistic: z(t)	-4.24	-11.92	0.33	-12.23	-5.19	-17.45	0.08	-10.76	-3.36	-27.59	0.19	-12.40
	Structural break at obs.	-	-	-	133	-	-	-	271	-	-	-	614
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

Unit Root Tests of the First Differences of the Real Exchange Rate

Unit Root Tests of the First Differences of the Real Exchange Rate													
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Nether-lands / Greece	Number observations	153	155	156	153	312	312	312	309	220	220	220	217
	Lags	2	2	9	2	5	5	13	3	13	13	13	3
	Test statistic: z(t)	-8.25	-13.89	0.31	-8.64	-8.51	-18.07	0.10	-11.61	-3.09	-15.55	0.20	-18.78
	Structural break at obs.	-	-	-	126	-	-	-	227	-	-	-	622
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Greece	Number observations	142	155	156	153	312	312	312	308	220	220	220	217
	Lags	13	13	11	2	13	13	13	4	13	13	9	3
	Test statistic: z(t)	-3.19	-13.02	0.57	-8.83	-5.72	-19.48	0.05	-11.30	-3.74	-18.79	0.21	-14.71
	Structural break at obs.	-	-	-	90	-	-	-	284	-	-	-	613
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H1	H1	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Greece	Number observations	151	155	156	153	312	312	312	311	220	220	220	217
	Lags	4	4	13	2	3	3	9	1	13	13	7	3
	Test statistic: z(t)	-6.22	-12.96	0.10	-8.64	-10.43	-20.04	0.17	-15.59	-3.79	-24.60	0.12	-11.65
	Structural break at obs.	-	-	-	72	-	-	-	284	-	-	-	610
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Italy / Ireland	Number observations	154	155	156	155	312	312	312	308	220	220	220	217
	Lags	1	1	7	0	8	8	40	4	13	13	11	3
	Test statistic: z(t)	-8.50	-11.67	0.05	-12.17	-8.02	-19.43	0.16	-10.24	-2.47	-15.89	0.53	-7.28
	Structural break at obs.	-	-	-	97	-	-	-	271	-	-	-	582
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H1	H1
Luxem-bourg / Ireland	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	Lags	1	1	26	0	13	13	131	3	13	13	4	3
	Test statistic: z(t)	-8.68	-11.59	0.16	-12.06	-4.48	-18.28	0.15	-10.11	-2.00	-22.87	0.60	-7.39
	Structural break at obs.	-	-	-	97	-	-	-	227	-	-	-	579
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H1	H1
Nether-lands / Ireland	Number observations	154	155	156	155	312	312	312	309	220	220	220	218
	Lags	1	1	10	0	13	13	91	3	13	13	16	2
	Test statistic: z(t)	-9.60	-12.91	0.16	-13.23	-4.66	-18.56	0.12	-9.95	-2.60	-11.71	0.46	-14.33
	Structural break at obs.	-	-	-	97	-	-	-	221	-	-	-	586
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H1	H1

		Unit Root Tests of the First Differences of the Real Exchange Rate											
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Portugal / Ireland	Number observations	154	155	156	155	312	312	312	308	220	220	220	217
	Lags	1	1	4	0	13	13	3	4	13	13	11	3
	Test statistic: z(t)	-8.58	-11.35	0.26	-11.84	-4.22	-18.83	0.15	-10.91	-3.03	-15.24	0.48	-15.09
	Structural break at obs.	-	-	-	97	-	-	-	210	-	-	-	585
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	**H1**	H1
Spain / Ireland	Number observations	143	155	156	153	312	312	312	308	220	220	220	218
	Lags	12	12	9	2	13	13	1	4	13	13	13	2
	Test statistic: z(t)	-2.97	-10.69	0.10	-5.89	-4.99	-19.88	0.06	-10.11	-2.56	-15.05	0.28	-16.21
	Structural break at obs.	-	-	-	96	-	-	-	313	-	-	-	637
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	**H0**	H1	H0	H1
Luxem-bourg / Italy	Number observations	153	155	156	155	312	312	312	309	220	220	220	217
	Lags	2	2	9	0	5	5	15	3	13	13	7	3
	Test statistic: z(t)	-6.03	-10.63	0.44	-11.01	-7.72	-17.34	0.13	-9.29	-4.71	-35.93	0.04	-12.38
	Structural break at obs.	-	-	-	41	-	-	-	227	-	-	-	536
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Nether-lands / Italy	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	Lags	1	1	6	0	4	4	19	3	13	13	16	3
	Test statistic: z(t)	-8.62	-13.89	0.32	-14.25	-7.84	-17.75	0.15	-8.89	-3.71	-13.30	0.13	-12.52
	Structural break at obs.	-	-	-	26	-	-	-	229	-	-	-	511
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Italy	Number observations	154	155	156	153	312	312	312	308	220	220	220	217
	Lags	1	1	15	2	10	10	7	4	13	13	13	3
	Test statistic: z(t)	-8.65	-11.55	0.54	-8.98	-4.58	-18.10	0.12	-9.54	-2.77	-14.82	0.18	-16.64
	Structural break at obs.	-	-	-	68	-	-	-	324	-	-	-	572
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	**H1**	H1	H1	H1	H0	H1	**H0**	H1	H0	H1
Spain / Italy	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	Lags	1	1	11	0	2	2	10	3	13	13	15	3
	Test statistic: z(t)	-9.00	-12.32	0.08	-12.83	-9.92	-19.56	0.17	-9.85	-3.53	-12.79	0.27	-14.34
	Structural break at obs.	-	-	-	89	-	-	-	234	-	-	-	583
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

	Unit Root Tests of the First Differences of the Real Exchange Rate											
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
Nether-lands / Luxem-bourg Number observations	142	155	156	152	312	312	312	312	220	220	220	217
Lags	13	13	7	3	1	1	22	0	13	13	13	3
Test statistic: z(t)	-4.14	-14.60	0.04	-7.16	-12.82	-16.89	0.09	-17.20	-4.76	-18.18	0.06	-15.89
Structural break at obs.	-	-	-	28	-	-	-	274	-	-	-	524
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Luxem-bourg Number observations	151	155	156	153	312	312	312	309	220	220	220	217
Lags	4	4	12	2	1	1	13	3	13	13	7	3
Test statistic: z(t)	-6.58	-12.04	0.33	-10.11	-13.63	-17.71	0.08	-10.39	-4.06	-29.62	0.14	-11.75
Structural break at obs.	-	-	-	80	-	-	-	227	-	-	-	572
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Luxem-bourg Number observations	154	155	156	155	312	312	312	312	220	220	220	217
Lags	1	1	1	0	1	1	12	0	13	13	10	3
Test statistic: z(t)	-8.73	-11.55	0.18	-12.05	-12.61	-18.35	0.09	-18.49	-3.42	-21.97	0.34	-16.67
Structural break at obs.	-	-	-	89	-	-	-	219	-	-	-	590
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Portugal / Nether-lands Number observations	145	155	156	152	312	312	312	308	220	220	220	217
Lags	10	10	12	3	13	13	11	4	13	13	15	3
Test statistic: z(t)	-5.24	-13.96	0.20	-9.66	-4.12	-17.84	0.13	-9.83	-2.95	-13.04	0.19	-14.56
Structural break at obs.	-	-	-	124	-	-	-	392	-	-	-	586
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Nether-lands Number observations	154	155	156	155	312	312	312	312	220	220	220	218
Lags	1	1	10	0	1	1	10	0	13	13	16	2
Test statistic: z(t)	-9.12	-12.30	0.18	-12.68	-13.35	-18.69	0.08	-18.85	-3.18	-10.38	0.30	-19.42
Structural break at obs.	-	-	-	89	-	-	-	377	-	-	-	586
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1
Spain / Portugal Number observations	154	155	156	155	312	312	312	308	220	220	220	218
Lags	1	1	3	0	10	10	14	4	13	13	12	2
Test statistic: z(t)	-8.27	-11.64	0.30	-12.25	-5.20	-17.40	0.23	-10.55	-3.50	-20.66	0.13	-12.93
Structural break at obs.	-	-	-	90	-	-	-	239	-	-	-	530
5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

Legend Appendix Table 10: The significance level for the rejection of the H0 is 5%. The table displays the results for seasonally unadjusted monthly first differences of real exchange rates. ADF: Augmended Dickey-Fuller Test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags chosen according to Akaike's information criterion (AIC). PP: Phillips–Perron test (H0 = unit root possibly with drift, H1 = stationary around linear trend), lags are Newey-West lags and chosen according to Akaike's information criterion (AIC). Critical values for the PP are the same as for the ADF. KPSS: Kwiatkowski-Phillips-Schmidt-Shin test for stationarity (H0 = stationary around linear trend, H1 = unit root). ZA: Zivot-Andrews Unit Root test allowing for a single break in intercept or trend (H0 = unit root, H1 stationarity with a break in the intercept or trend).

Appendix Table 11 – Augmented Engle-Granger Cointegration Tests of Real Exchange Rates

	Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components					
Period	1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test	With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Belgium / Austria Number observations	156	156	299	308	195	195
Lags	0	0	12	3	24	24
Test statistic: z(t)	-3.10	-3.52	-3.13	-2.43	-2.34	-2.32
5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
Decision	H0	H0	H0	H0	H0	H0
Finland / Austria Number observations	156	156	298	298	207	204
Lags	0	0	13	13	12	15
Test statistic: z(t)	-2.15	-2.39	-2.31	-1.49	-2.57	-2.04
5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
Decision	H0	H0	H0	H0	H0	H0
France / Austria Number observations	155	154	299	311	212	207
Lags	1	2	12	0	7	12
Test statistic: z(t)	-3.20	-4.58	-3.90	-2.97	-0.99	-0.78
5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
Decision	H0	**H1**	H0	H0	H0	H0
Germany / Austria Number observations	156	156	299	299	207	206
Lags	0	0	12	12	12	13
Test statistic: z(t)	-3.47	-3.86	-2.36	-2.00	-1.15	-1.43
5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
Decision	**H1**	**H1**	H0	H0	H0	H0
Greece / Austria Number observations	144	150	299	305	204	204
Lags	12	6	12	6	15	15
Test statistic: z(t)	-3.34	-3.55	-3.28	-2.01	-1.29	-1.44
5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
Decision	H0	H0	H0	H0	H0	H0
Ireland / Austria Number observations	153	153	287	307	207	203
Lags	3	3	24	4	12	16
Test statistic: z(t)	-2.41	-2.46	-3.04	-1.25	-1.72	-1.30
5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
Decision	H0	H0	H0	H0	H0	H0

Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components						
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Italy / Austria	Number observations	155	156	299	290	207	207
	Lags	1	0	12	21	12	12
	Test statistic: z(t)	-1.56	-2.67	-2.78	-1.41	-1.47	-1.22
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Luxembourg / Austria	Number observations	156	156	299	299	207	206
	Lags	0	0	12	12	12	13
	Test statistic: z(t)	-3.06	-3.39	-4.01	-3.03	-1.29	-0.95
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Netherlands / Austria	Number observations	155	155	299	309	207	207
	Lags	1	1	12	2	12	12
	Test statistic: z(t)	-4.33	-5.14	-0.30	-2.60	-2.53	-2.50
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	**H1**	**H1**	H0	H0	H0	H0
Portugal / Austria	Number observations	155	144	311	311	207	207
	Lags	1	12	0	0	12	12
	Test statistic: z(t)	-2.79	-1.72	-3.10	-3.12	-2.09	-2.17
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Austria	Number observations	155	156	285	307	207	205
	Lags	1	0	26	4	12	14
	Test statistic: z(t)	-2.84	-2.45	-3.66	-1.30	-1.14	-1.18
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Finland / Belgium	Number observations	156	156	299	299	199	199
	Lags	0	0	12	12	20	20
	Test statistic: z(t)	-2.03	-1.56	-2.37	-1.84	-3.12	-3.09
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0

Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components						
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
France / Belgium	Number observations	156	156	299	299	195	195
	Lags	0	0	12	12	24	24
	Test statistic: z(t)	-1.51	-2.33	-4.19	-2.37	-1.98	-1.66
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	**H1**	H0	H0	H0
Germany / Belgium	Number observations	152	155	310	311	206	206
	Lags	4	1	1	0	13	13
	Test statistic: z(t)	-1.50	-2.81	-1.59	-1.18	-3.45	-3.77
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	**H1**	H0	H0
Greece / Belgium	Number observations	150	150	299	307	193	195
	Lags	6	6	12	4	26	24
	Test statistic: z(t)	-4.51	-4.65	-3.23	-2.21	-1.68	-1.24
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	**H1**	**H1**	H0	H0	H0	H0
Ireland / Belgium	Number observations	155	155	299	299	219	199
	Lags	1	1	12	12	0	20
	Test statistic: z(t)	-2.15	-2.18	-3.44	-1.34	-2.14	-1.08
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Italy / Belgium	Number observations	155	156	290	290	219	219
	Lags	1	0	21	21	0	0
	Test statistic: z(t)	-1.66	-1.87	-3.52	-4.08	-1.80	-1.24
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	**H1**	H0	H0
Luxembourg / Belgium	Number observations	156	156	311	311	193	194
	Lags	0	0	0	0	26	25
	Test statistic: z(t)	-3.99	-3.62	-2.79	-3.05	-2.38	-1.94
	5% significance level	-3.84	-3.38	-3.81	-3.36	-3.82	-3.36
	10% significance level	-3.54	-3.07	-3.52	-3.06	-3.53	-3.06
	Decision	**H1**	**H1**	H0	H0	H0	H0

Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components						
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Netherlands / Belgium	Number observations	154	154	295	295	207	207
	Lags	2	2	16	16	12	12
	Test statistic: z(t)	-4.75	-4.79	-1.13	-1.39	-2.85	-2.99
	Structural break at obs.						
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	**H1**	**H1**	H0	H0	H0	H0
Portugal / Belgium	Number observations	144	153	311	311	207	206
	Lags	12	3	0	0	12	13
	Test statistic: z(t)	-1.57	-1.78	-2.54	-2.43	-2.34	-2.46
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Belgium	Number observations	154	155	310	310	205	205
	Lags	2	1	1	1	14	14
	Test statistic: z(t)	-2.36	-1.60	-1.98	-2.09	-1.72	-0.88
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
France / Finland	Number observations	156	156	310	309	207	207
	Lags	0	0	1	2	12	12
	Test statistic: z(t)	-0.35	-0.95	-2.40	-2.42	-1.50	-2.49
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Germany / Finland	Number observations	144	154	298	299	205	195
	Lags	12	2	13	12	14	24
	Test statistic: z(t)	-1.43	-1.24	-2.99	-2.22	-1.55	-2.34
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Greece / Finland	Number observations	150	150	299	310	207	207
	Lags	6	6	12	1	12	12
	Test statistic: z(t)	-2.43	-2.53	-2.75	-1.84	-1.97	-2.20
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0

Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components						
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Ireland / Finland	Number observations	155	156	299	299	206	207
	Lags	1	0	12	12	13	12
	Test statistic: z(t)	0.20	0.22	-1.83	-2.01	-1.79	-2.20
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Italy / Finland	Number observations	156	156	310	299	207	207
	Lags	0	0	1	12	12	12
	Test statistic: z(t)	-2.83	-2.98	-3.03	-2.38	-1.88	-2.49
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Luxembourg / Finland	Number observations	151	156	297	299	204	207
	Lags	5	0	14	12	15	12
	Test statistic: z(t)	-1.25	-1.38	-3.41	-2.55	-1.14	-2.54
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Netherlands / Finland	Number observations	156	156	299	299	207	207
	Lags	0	0	12	12	12	12
	Test statistic: z(t)	-2.76	-2.05	-1.65	-1.56	-2.62	-2.63
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Portugal / Finland	Number observations	150	156	311	308	205	195
	Lags	6	0	0	3	14	24
	Test statistic: z(t)	-0.50	-1.03	-2.76	-2.46	-2.28	-2.57
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Finland	Number observations	156	156	306	310	207	207
	Lags	0	0	5	1	12	12
	Test statistic: z(t)	-3.48	-3.57	-2.37	-2.73	-1.50	-2.05
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0

Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components							
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Germany / France	Number observations	154	154	310	311	206	207
	Lags	2	2	1	0	13	12
	Test statistic: z(t)	-1.65	-2.06	-2.59	-1.59	-3.38	-1.12
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H1	H0	H0
Greece / France	Number observations	150	150	299	311	207	207
	Lags	6	6	12	0	12	12
	Test statistic: z(t)	-2.87	-2.84	-3.47	-3.44	-3.03	-1.28
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Ireland / France	Number observations	156	156	305	305	207	207
	Lags	0	0	6	6	12	12
	Test statistic: z(t)	-1.49	-1.09	-2.65	-2.19	-2.75	-2.34
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Italy / France	Number observations	155	156	311	311	196	196
	Lags	1	0	0	0	23	23
	Test statistic: z(t)	-2.12	-2.09	-4.21	-2.54	-1.64	-1.57
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H1	H0	H0	H0
Luxembourg / France	Number observations	144	144	297	307	206	206
	Lags	12	12	14	4	13	13
	Test statistic: z(t)	-2.50	-2.93	-4.63	-1.47	-2.67	-1.61
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H1	H0	H0	H0
Netherlands / France	Number observations	156	156	304	305	207	207
	Lags	0	0	7	6	12	12
	Test statistic: z(t)	-3.71	-3.57	-2.49	-2.24	-3.21	-2.17
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0

Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components						
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Portugal / France	Number observations	156	156	311	311	207	207
	Lags	0	0	0	0	12	12
	Test statistic: z(t)	-2.17	-1.97	-2.64	-1.85	-3.21	-3.28
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / France	Number observations	155	156	311	311	206	207
	Lags	1	0	0	0	13	12
	Test statistic: z(t)	-2.73	-1.09	-1.98	-2.15	-2.84	-1.56
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Greece / Germany	Number observations	150	150	301	305	196	203
	Lags	6	6	10	6	23	16
	Test statistic: z(t)	-3.12	-3.09	-2.75	-2.68	-1.38	-1.36
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Ireland / Germany	Number observations	156	155	308	309	196	195
	Lags	0	1	3	2	23	24
	Test statistic: z(t)	-2.52	-2.95	-2.28	-1.72	-1.45	-1.65
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Italy / Germany	Number observations	155	155	311	311	206	206
	Lags	1	1	0	0	13	13
	Test statistic: z(t)	-1.63	-1.97	-1.55	-1.41	-2.43	-1.88
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Luxembourg / Germany	Number observations	153	144	311	311	206	206
	Lags	3	12	0	0	13	13
	Test statistic: z(t)	-3.30	-3.14	-1.86	-1.74	-2.96	-2.68
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0

Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components						
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Netherlands / Germany	Number observations	156	156	310	311	204	206
	Lags	0	0	1	0	15	13
	Test statistic: z(t)	-4.32	-3.45	-3.03	-3.22	-2.88	-2.76
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	**H1**	H0	H0	H0	H0	H0
Portugal / Germany	Number observations	156	156	311	311	207	207
	Lags	0	0	0	0	12	12
	Test statistic: z(t)	-2.63	-2.48	-2.99	-2.89	-2.64	-2.52
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Germany	Number observations	156	156	311	311	196	207
	Lags	0	0	0	0	23	12
	Test statistic: z(t)	-3.24	-0.74	-1.99	-1.99	-1.15	-1.06
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Ireland / Greece	Number observations	144	144	301	309	207	207
	Lags	12	12	10	2	12	12
	Test statistic: z(t)	-1.76	-2.74	-1.78	-1.99	-3.50	-3.51
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	**H1**
Italy / Greece	Number observations	155	150	299	299	206	207
	Lags	1	6	12	12	13	12
	Test statistic: z(t)	-1.09	-2.54	-2.46	-1.36	-4.50	-1.07
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	**H1**	H0
Luxembourg / Greece	Number observations	147	150	299	299	202	206
	Lags	9	6	12	12	17	13
	Test statistic: z(t)	-3.25	-4.25	-4.14	-3.32	-2.46	-1.13
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	**H1**	H0	H0	H0	H0

Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components						
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Netherlands / Greece	Number observations	156	150	305	307	207	207
	Lags	0	6	6	4	12	12
	Test statistic: z(t)	-4.94	-3.48	-2.22	-2.05	-3.52	-1.49
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	**H1**	H0	H0	H0	H0	H0
Portugal / Greece	Number observations	156	146	299	299	207	207
	Lags	0	10	12	12	12	12
	Test statistic: z(t)	-2.90	-1.58	-3.57	-2.54	-3.16	-1.81
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Greece	Number observations	156	150	304	311	207	207
	Lags	0	6	7	0	12	12
	Test statistic: z(t)	-2.25	-2.31	-2.55	-2.11	-2.72	-1.47
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Italy / Ireland	Number observations	156	156	304	306	207	203
	Lags	0	0	7	5	12	16
	Test statistic: z(t)	-1.19	-1.04	-1.68	-2.13	-2.75	-1.08
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Luxembourg / Ireland	Number observations	155	154	299	301	202	203
	Lags	1	2	12	10	17	16
	Test statistic: z(t)	-3.26	-2.66	-2.88	-1.28	-1.49	-0.93
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Netherlands / Ireland	Number observations	156	151	299	299	207	206
	Lags	0	5	12	12	12	13
	Test statistic: z(t)	-5.39	-2.67	-1.73	-0.76	-2.93	-1.25
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	**H1**	H0	H0	H0	H0	H0

Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components						
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Portugal / Ireland	Number observations	156	156	305	307	207	207
	Lags	0	0	6	4	12	12
	Test statistic: z(t)	-3.60	-3.21	-1.51	-1.12	-2.92	-1.57
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Ireland	Number observations	155	155	302	302	207	205
	Lags	1	1	9	9	12	14
	Test statistic: z(t)	-2.52	-1.16	-3.02	-1.39	-2.11	-1.89
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Luxembourg / Italy	Number observations	155	153	310	310	195	195
	Lags	1	3	1	1	24	24
	Test statistic: z(t)	-2.95	-2.04	-2.12	-2.12	-2.70	-1.60
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Netherlands / Italy	Number observations	156	156	299	299	207	207
	Lags	0	0	12	12	12	12
	Test statistic: z(t)	-3.05	-2.01	-2.18	-2.38	-2.95	-1.87
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Portugal / Italy	Number observations	152	156	311	311	207	207
	Lags	4	0	0	0	12	12
	Test statistic: z(t)	-0.50	-0.98	-2.85	-1.75	-3.08	-3.00
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Italy	Number observations	156	156	302	301	201	201
	Lags	0	0	9	10	18	18
	Test statistic: z(t)	-2.00	-1.86	-2.72	-2.51	-1.87	-0.97
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0

	Augmented Engle-Granger Cointegration Tests for Real Exchange Rate Components					
Period		1960:1 - 1972:12		1973:1 - 1998:12		1999:1 - 2017:5	
Test		With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend
Netherlands / Luxembourg	Number observations	153	156	299	299	204	204
	Lags	3	0	12	12	15	15
	Test statistic: z(t)	-5.56	-5.16	-1.69	-1.81	-3.35	-2.69
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	**H1**	**H1**	H0	H0	H0	H0
Portugal / Luxembourg	Number observations	153	153	311	311	196	205
	Lags	3	3	0	0	23	14
	Test statistic: z(t)	-2.15	-1.98	-2.71	-2.20	-2.16	-2.77
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Luxembourg	Number observations	154	150	309	309	206	207
	Lags	2	6	2	2	13	12
	Test statistic: z(t)	-2.51	-0.97	-1.74	-1.76	-1.76	-1.12
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Portugal / Netherlands	Number observations	153	153	311	311	207	207
	Lags	3	3	0	0	12	12
	Test statistic: z(t)	-3.07	-1.94	-2.64	-2.05	-1.73	-1.70
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Netherlands	Number observations	155	156	305	311	203	207
	Lags	1	0	6	0	16	12
	Test statistic: z(t)	-2.92	-2.11	-0.88	-1.79	-1.72	-1.24
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0
Spain / Portugal	Number observations	155	153	311	311	207	207
	Lags	1	3	0	0	12	12
	Test statistic: z(t)	-3.01	-0.93	-2.58	-2.31	-2.38	-2.77
	5% significance level	-4.20	-3.80	-4.16	-3.77	-3.82	-3.36
	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H0	H0	H0	H0	H0	H0

Appendix Table 12 – Johannsen Cointegration Tests of Real Exchange Rates

		Johansen Cointegration Tests for Real Exchange Rate Components											
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Belgium / Austria	Number observations	154				311				221			
	Lags	3				13				13			
	Cointegration rank at significance level 5%	-				0				0			
	Trace statistics	52.202	27.991	6.680		**15.929**	7.249	0.886		**10.670**	1.117	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.737	0.737	1.000	1.000	0.978	0.978	1.000	0.963	0.963	0.955
	Cointegration vector	CPI(AUT)	CPI(BEL)	e(AUT/BEL)	Constant	CPI(AUT)	CPI(BEL)	e(AUT/BEL)	Constant	CPI(AUT)	CPI(BEL)	e(AUT/BEL)	Constant
	Coefficient	1.000	-1.025	13.494	-5.813	1.000	-1.242	-0.533	1.075	1.000	-0.965	-	-0.187
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	-0.003	0.001	-0.017		0.007	0.009	0.004		-0.055	0.022	-	
	Economically sensible	Yes	Yes	-	-	No	Yes	Yes	-	Yes	Yes	-	
	VECM residual auto-correlation at lag	2				1				1			
	Jarque-Bera: p-value	0.000				0.000				0.176			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	**0.000**	**0.0**		ARCH(1)	0.164	0.4		ARCH(1)	**0.000**	**0.0**	
		GARCH(1)	**0.000**				0.701			GARCH(1)	0.126		
	CPI(BEL)	ARCH(1)	0.082	**0.000**		ARCH(1)	0.137	0.215		ARCH(1)	**0.044**	**0.000**	
		GARCH(1)	**0.000**				0.649			GARCH(1)	**0.004**		
	e(AUT/BEL)	ARCH(1)	0.082	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	**0.000**				0.126			GARCH(1)	-		
Finland / Austria	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	155				311				221			
	Lags	2				13				13			
	Cointegration rank at significance level 5%	0				2				0			
	Trace statistics	**12.189**	5.288	0.887		46.143	18.908	**0.808**		**11.085**	0.313	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.932	0.166	1.221	1.221	1.064	1.064	1.000	0.954	0.952	0.952
	Cointegration vector	CPI(AUT)	CPI(FIN)	e(AUT/FIN)	Constant	CPI(AUT)	CPI(FIN)	e(AUT/FIN)	Constant	CPI(AUT)	CPI(FIN)	e(AUT/FIN)	Constant
	Coefficient	1.000	-0.531	0.211	-2.058	1.000	-0.525	3.420	-1.908	1.000	-1.232	-	1.070
	Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes	-	-
	Adjustment factor	-0.024	0.027	-0.108		-0.001	0.002	-0.011		-0.007	0.039	-	
	Economically sensible	Yes	Yes	-	-	Yes	Yes	-	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	3				3				1			
	Jarque-Bera: p-value	0.000				0.000				0.001			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	**0.006**	**0.005**		ARCH(1)	**0.036**	0.058		ARCH(1)	**0.027**	0.056	
		GARCH(1)	0.338				0.430			GARCH(1)	0.626		
	CPI(FIN)	ARCH(1)	**0.006**	**0.000**		ARCH(1)	**0.020**	**0.000**		ARCH(1)	**0.027**	0.898	
		GARCH(1)	0.338				**0.000**			GARCH(1)	0.626		
	e(AUT/FIN)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.016**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	**0.000**				**0.000**			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	156				311				221			
	Lags	1				13				14			
	Cointegration rank at significance level 5%	0				1				0			
	Trace statistics	27.402	11.201	3.699		56.589	13.488	0.816		9.620	1.615	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760		
	4 largest moduli of eigenvalues	1.000	1.000	0.934	0.952	1.099	1.099	1.091	1.091	1.005	1.000	0.964	0.964
	Cointegration vector	CPI(AUT)	CPI(FRA)	e(AUT/FRA)	Constant	CPI(AUT)	CPI(FRA)	e(AUT/FRA)	Constant	CPI(AUT)	CPI(FRA)	e(AUT/FRA)	Constant
	Coefficient	1.000	-1.083	-0.298	-0.076	1.000	-1.245	-1.478	1.045	1.000	-0.822	-	-0.906
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
France / Austria	Adjustment factor	-0.072	-0.031	0.092		-0.005	-0.008	0.096		-0.001	-0.010	-	
	Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	Yes	No	-	-
	VECM residual auto-correlation at lag	1				2				1			
	Jarque-Bera: p-value	0.000				0.000				0.001			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.002	0.003		ARCH(1)	0.142	0.323		ARCH(1)	0.140	0.312	
		GARCH(1)	0.578			)	0.778			GARCH(1)	0.731		
	CPI(FRA)	ARCH(1)	0.138	0.258		ARCH(1)	0.054	0.000		ARCH(1)	0.837	0.871	
		GARCH(1)	0.565			)	0.059			GARCH(1)	0.806		
	e(AUT/FRA)	ARCH(1)	0.000	0.000		ARCH(1)	0.017	0.000		ARCH(1)	-	-	
		GARCH(1)	0.000			)	0.000			GARCH(1)	-		
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	151				311				221			
	Lags	6				13				20			
	Cointegration rank at significance level 5%	1				-				0			
	Trace statistics	39.103	13.597	1.446		47.171	17.834	4.188		6.582	2.396	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.968	0.768	1.000	1.000	0.956	0.936	1.000	0.987	0.987	0.964
	Cointegration vector	CPI(AUT)	CPI(GER)	e(AUT/GER)	Constant	CPI(AUT)	CPI(GER)	e(AUT/GER)	Constant	CPI(AUT)	CPI(GER)	e(AUT/GER)	Constant
	Coefficient	1.000	-0.736	-3.550	-1.123	1.000	-0.892	3.994	-0.463	1.000	-1.326	-	1.468
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	No	-	Yes	Yes	-	-
Germany / Austria	Adjustment factor	-0.012	-0.011	0.005		-0.007	0.013	-0.032		-0.030	0.014	-	
	Economically sensible	Yes	No	Yes	-	Yes	Yes	-	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	1				3				3			
	Jarque-Bera: p-value	0.000				0.000				0.000			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.000	0.000		ARCH(1)	0.155	0.223		ARCH(1)	0.027	0.027	
		GARCH(1)	0.011			)	0.473			GARCH(1)	0.501		
	CPI(GER)	ARCH(1)	0.000	0.000		ARCH(1)	0.002	0.000		ARCH(1)	0.621	0.855	
		GARCH(1)	0.011			)	0.000			GARCH(1)	0.910		
	e(AUT/GER)	ARCH(1)	0.001	0.002		ARCH(1)	0.006	0.000		ARCH(1)	-	-	
		GARCH(1)	0.436			)	0.007			GARCH(1)	-		

	Johansen Cointegration Tests for Real Exchange Rate Components												
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Greece / Austria	Number observations	153				311				221			
	Lags	4				15				13			
	Cointegration rank at significance level 5%					1				0			
	Trace statistics	**25.029**	11.852	2.607		33.199	**13.516**	5.548		**6.522**	2.256	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.992	0.604	1.060	1.060	1.049	1.049	1.001	1.000	0.965	0.960
	Cointegration vector	CPI(AUT)	CPI(GRC)	e(AUT/GRC)	Constant	CPI(AUT)	CPI(GRC)	e(AUT/GRC)	Constant	CPI(AUT)	CPI(GRC)	e(AUT/GRC)	Constant
	Coefficient	1.000	-1.435	-1.029	0.461	1.000	-0.548	-0.464	-2.171	1.000	-0.272	-	-3.461
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	0.007	0.055	-0.005		-0.016	-0.003	0.069		0.000	-0.011	-	
	Economically sensible	No	Yes	No	-	Yes	No	Yes	-	Yes	No	-	-
	VECM residual auto-correlation at lag	2				4				1			
	Jarque-Bera: p-value	0.000				0.000				0.000			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.363	0.372		ARCH(1)	**0.000**	**0.000**	
		GARCH(1)	**0.000**				0.515			GARCH(1)	**0.000**		
	CPI(GRC)	ARCH(1)	0.651	**0.023**		ARCH(1)	0.184	**0.000**		ARCH(1)	0.143	**0.002**	
		GARCH(1)	0.151				**0.000**			GARCH(1)	0.253		
	e(AUT/GRC)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	**0.000**				**0.000**			GARCH(1)	-		
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Ireland / Austria	Number observations	155				311				221			
	Lags	2				13				14			
	Cointegration rank at significance level 5%	0				0				0			
	Trace statistics	**26.267**	14.991	5.075		**28.755**	8.949	0.242		**9.767**	1.530	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.007	1.000	1.000	0.136	1.004	1.004	1.000	1.000	1.000	0.994	0.971	0.964
	Cointegration vector	CPI(AUT)	CPI(IRL)	e(AUT/IRL)	Constant	CPI(AUT)	CPI(IRL)	e(AUT/IRL)	Constant	CPI(AUT)	CPI(IRL)	e(AUT/IRL)	Constant
	Coefficient	1.000	-0.173	-2.091	0.600	1.000	5.131	22.544	-25.067	1.000	-4.136	-	14.584
	Economically sensible	Yes	Yes	Yes	-	Yes	No	No	-	Yes	Yes	-	-
	Adjustment factor	0.000	0.003	-0.003		0.000	0.001	-0.002		-0.001	0.001	-	
	Economically sensible	Yes	Yes	No	-	No	-	-	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	3				3				2			
	Jarque-Bera: p-value	0.000				0.000				0.005			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	**0.003**	**0.004**		ARCH(1)	0.479	0.079		ARCH(1)	0.146	**0.000**	
		GARCH(1)	0.352				0.080			GARCH(1)	**0.000**		
	CPI(IRL)	ARCH(1)	0.810	0.967		ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.145	0.227	
		GARCH(1)	0.995				**0.000**			GARCH(1)	0.610		
	e(AUT/IRL)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.026**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	**0.000**				**0.000**			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Italy / Austria

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				15				24			
Cointegration rank at significance level 5%	0				0				0			
Trace statistics	20.364	9.128	2.689		28.199	12.527	1.289		12.758	2.091	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.910	0.144	1.308	1.308	1.051	1.051	1.000	0.998	0.998	0.996
Cointegration vector	CPI(AUT)	CPI(ITA)	e(AUT/ITA)	Constant	CPI(AUT)	CPI(ITA)	e(AUT/ITA)	Constant	CPI(AUT)	CPI(ITA)	e(AUT/ITA)	Constant
Coefficient	1.000	-0.696	3.259	-7.742	1.000	2.863	-6.020	-17.817	1.000	4.434	-	-23.982
Economically sensible	Yes	Yes	No	-	Yes	No	Yes	-	Yes	No	-	-
Adjustment factor	-0.039	-0.010	-0.015		0.000	0.000	0.001		0.001	0.000	-	
Economically sensible	Yes	No	-	-	Yes	-	Yes	-	No	-	-	-
VECM residual auto-correlation at lag	3				1				2			
Jarque-Bera: p-value	0.000				0.000				0.046			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.000	0.000		ARCH(1)	0.486	0.227		ARCH(1)	0.152	0.358	
	GARCH(1)	0.000			GARCH(1)	0.000			GARCH(1)	0.842		
CPI(ITA)	ARCH(1)	0.486	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.152	0.000	
	GARCH(1)	0.000			GARCH(1)	0.000			GARCH(1)	0.842		
e(AUT/ITA)	ARCH(1)	0.486	0.227		ARCH(1)	0.002	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			GARCH(1)	0.000			GARCH(1)	-		

Luxembourg / Austria

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	154				311				221			
Lags	3				13				15			
Cointegration rank at significance level 5%	-				0				0			
Trace statistics	50.925	24.739	8.946		21.418	10.811	2.202		13.501	3.181	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.757	0.235	1.000	1.000	0.989	0.986	1.000	1.000	0.955	0.955
Cointegration vector	CPI(AUT)	CPI(LUX)	e(AUT/LUX)	Constant	CPI(AUT)	CPI(LUX)	e(AUT/LUX)	Constant	CPI(AUT)	CPI(LUX)	e(AUT/LUX)	Constant
Coefficient	1.000	-1.043	8.104	-3.327	1.000	-1.154	-0.517	0.649	1.000	-0.418	-	-2.763
Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	0.006	0.014	-0.025		0.015	0.021	0.030		0.003	-0.007	-	
Economically sensible	No	Yes	-	-	No	Yes	Yes	-	No	No	-	-
VECM residual auto-correlation at lag	2				4				2			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.152	0.000		ARCH(1)	0.169	0.210		ARCH(1)	0.326	0.025	
	GARCH(1)	0.842			GARCH(1)	0.428			GARCH(1)	0.109		
CPI(LUX)	ARCH(1)	0.008	0.000		ARCH(1)	0.007	0.000		ARCH(1)	0.090	0.000	
	GARCH(1)	0.000			GARCH(1)	0.000			GARCH(1)	0.000		
e(AUT/LUX)	ARCH(1)	0.194	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			GARCH(1)	0.000			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Netherlands / Austria

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	153				311				221			
Lags	4				13				18			
Cointegration rank at significance level 5%	-				1				1			
Trace statistics	50.739	25.777	4.475		42.806	14.698	6.054		20.411	0.894	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.794	0.503	1.000	1.000	0.968	0.960	1.016	1.000	0.985	0.985
Cointegration vector	CPI(AUT)	CPI(NLD)	e(AUT/NLD)	Constant	CPI(AUT)	CPI(NLD)	e(AUT/NLD)	Constant	CPI(AUT)	CPI(NLD)	e(AUT/NLD)	Constant
Coefficient	1.000	-0.770	-2.651	-0.414	1.000	-3.538	-16.988	10.918	1.000	-1.178	-	0.809
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.044	-0.019	0.083		0.004	-0.001	0.005		-0.025	0.037	-	
Economically sensible	Yes	No	Yes	-	No	No	Yes	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	3				3				1			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.000	0.000		ARCH(1)	0.389	0.689		ARCH(1)	0.240	0.000	
	GARCH(1)	0.007				0.932			GARCH(1)	0.000		
CPI(NLD)	ARCH(1)	0.147	0.000		ARCH(1)	0.089	0.000		ARCH(1)	0.828	0.903	
	GARCH(1)	0.000				0.104			GARCH(1)	0.785		
e(AUT/NLD)	ARCH(1)	0.000	0.000		ARCH(1)	0.098	0.000		ARCH(1)	-	-	
	GARCH(1)	0.022				0.000			GARCH(1)	-		

Portugal / Austria

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	156				311				221			
Lags	1				13				14			
Cointegration rank at significance level 5%	0				-				0			
Trace statistics	28.757	11.587	3.604		36.832	17.782	5.841		9.587	1.923	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.003	1.000	1.000	0.955	1.318	1.179	1.044	1.044	1.000	0.982	0.930	0.930
Cointegration vector	CPI(AUT)	CPI(PRT)	e(AUT/PRT)	Constant	CPI(AUT)	CPI(PRT)	e(AUT/PRT)	Constant	CPI(AUT)	CPI(PRT)	e(AUT/PRT)	Constant
Coefficient	1.000	-5.129	-14.916	35.603	1.000	-0.747	-0.776	-1.284	1.000	-1.261	-	1.175
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.001	-0.003	0.001		-0.007	0.004	0.054		-0.005	0.009	-	
Economically sensible	Yes	No	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	3				1				2			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.002	0.004		ARCH(1)	0.044	0.042		ARCH(1)	0.525	0.775	
	GARCH(1)	0.511				0.553			GARCH(1)	0.838		
CPI(PRT)	ARCH(1)	0.205	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.910	0.957	
	GARCH(1)	0.001				0.000			GARCH(1)	0.863		
e(AUT/PRT)	ARCH(1)	0.012	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000				0.551			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Spain / Austria

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	156				311				221			
Lags	1				15				14			
Cointegration rank at significance level 5%	0				-				0			
Trace statistics	22.333	4.817	1.276		38.005	17.775	4.861		13.005	3.000	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.936	0.989	1.040	1.040	1.035	1.035	1.000	0.997	0.968	0.968
Cointegration vector	CPI(AUT)	CPI(ESP)	e(AUT/ESP)	Constant	CPI(AUT)	CPI(ESP)	e(AUT/ESP)	Constant	CPI(AUT)	CPI(ESP)	e(AUT/ESP)	Constant
Coefficient	1.000	-0.378	0.530	-3.356	1.000	-1.754	-4.388	2.836	1.000	-0.083	-	-4.330
Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.006	0.073	-0.058		-0.002	-0.002	0.004		0.000	-0.008	-	
Economically sensible	Yes	Yes	-	-	Yes	No	Yes	-	No	No	-	-
VECM residual auto-correlation at lag	2				1				1			
Jarque-Bera: p-value	0.000				0.000				0.055			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.002	0.004		ARCH(1)	0.088	0.142		ARCH(1)	0.140	0.323	
	GARCH(1)	0.446			)	0.684			GARCH(1)	0.730		
CPI(ESP)	ARCH(1)	0.428	0.008		ARCH(1)	0.004	0.000		ARCH(1)	0.276	0.000	
	GARCH(1)	0.134			)	0.000			GARCH(1)	0.000		
e(AUT/ESP)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			)	0.338			GARCH(1)	-		

Finland / Belgium

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				13				19			
Cointegration rank at significance level 5%	0				1				0			
Trace statistics	18.282	5.164	0.220		41.558	11.357	3.883		14.906	0.503	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.977	0.274	1.108	1.108	1.048	1.048	1.000	0.976	0.964	0.964
Cointegration vector	CPI(BEL)	CPI(FIN)	e(BEL/FIN)	Constant	CPI(BEL)	CPI(FIN)	e(BEL/FIN)	Constant	CPI(BEL)	CPI(FIN)	e(BEL/FIN)	Constant
Coefficient	1.000	-1.635	-0.700	1.446	1.000	-0.457	-0.185	-2.356	1.000	-1.278	-	1.314
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.007	0.001	0.016		-0.003	-0.018	0.051		0.017	0.048	-	
Economically sensible	Yes	Yes	Yes	-	Yes	No	Yes	-	No	Yes	-	-
VECM residual auto-correlation at lag	1				0				1			
Jarque-Bera: p-value	0.000				0.000				0.216			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.051	0.000		ARCH(1)	0.411	0.000		ARCH(1)	0.241	0.003	
	GARCH(1)	0.000			)	0.000			GARCH(1)	0.111		
CPI(FIN)	ARCH(1)	0.051	0.000		ARCH(1)	0.060	0.000		ARCH(1)	0.195	0.389	
	GARCH(1)	0.000			)	0.000			GARCH(1)	0.757		
e(AUT/FIN)	ARCH(1)	0.000	0.000		ARCH(1)	0.001	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			)	0.000			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	156				311				221			
Lags	1				14				13			
Cointegration rank at significance level 5%	1				-				0			
Trace statistics	42.136	5.111	0.960		55.526	29.877	7.028		6.707	1.333	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.982	0.964	1.035	1.035	1.031	1.030	1.000	0.997	0.968	0.968
Cointegration vector	CPI(BEL)	CPI(FRA)	e(BEL/FRA)	Constant	CPI(BEL)	CPI(FRA)	e(BEL/FRA)	Constant	CPI(BEL)	CPI(FRA)	e(BEL/FRA)	Constant
Coefficient	1.000	-1.141	-0.204	0.026	1.000	-0.905	-3.049	-0.528	1.000	-11.799	-	52.588
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.031	-0.016	0.024		-0.002	-0.003	0.016		0.000	0.000	-	
Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	No	Yes	-	-
VECM residual auto-correlation at lag	0				1				1			
Jarque-Bera: p-value	0.000				0.000				0.614			
Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.007	0.000		ARCH(1)	0.255	0.000		ARCH(1)	0.153	0.000	
	GARCH(1)	0.000			)	0.000			GARCH(1)	0.010		
CPI(FRA)	ARCH(1)	0.073	0.007		ARCH(1)	0.002	0.000		ARCH(1)	0.684	0.907	
	GARCH(1)	0.180			)	0.019			GARCH(1)	0.965		
e(AUT/FRA)	ARCH(1)	0.073	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	GARCH(1)	0.180			)	0.000			GARCH(1)	-		

France / Belgium

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	151				311				221			
Lags	6				13				13			
Cointegration rank at significance level 5%	-				0				1			
Trace statistics	49.525	23.034	6.484		18.572	7.639	0.474		15.418	1.272	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.985	0.780	1.026	1.026	1.000	1.000	1.000	0.958	0.928	0.928
Cointegration vector	CPI(BEL)	CPI(GER)	e(BEL/GER)	Constant	CPI(BEL)	CPI(GER)	e(BEL/GER)	Constant	CPI(BEL)	CPI(GER)	e(BEL/GER)	Constant
Coefficient	1.000	-1.223	-0.553	0.886	1.000	-0.649	-0.753	-1.537	1.000	-1.360	-	1.667
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.038	-0.032	0.048		-0.008	-0.002	0.004		-0.031	0.081	-	
Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	1				1				1			
Jarque-Bera: p-value	0.000				0.000				0.020			
Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.684	0.000		ARCH(1)	0.159	0.000		ARCH(1)	0.106	0.000	
	GARCH(1)	0.965			)	0.000			GARCH(1)	0.000		
CPI(GER)	ARCH(1)	0.883	0.985		ARCH(1)	0.054	0.155		ARCH(1)	0.574	0.378	
	GARCH(1)	0.963			)	0.984			GARCH(1)	0.428		
e(AUT/GER)	ARCH(1)	0.090	0.228		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	GARCH(1)	0.842			)	0.000			GARCH(1)	-		

Germany / Belgium

Johansen Cointegration Tests for Real Exchange Rate Components

Greece / Belgium

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	133				311				221			
Lags	24				13				13			
Cointegration rank at significance level 5%					2				0			
Trace statistics	18.612	4.807	0.982		54.266	15.879	3.291		5.400	0.868	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.135	1.135	1.085	1.085	1.218	1.218	1.078	1.078	1.003	1.000	0.951	0.951
Cointegration vector	CPI(BEL)	CPI(GRC)	e(BEL/GRC)	Constant	CPI(BEL)	CPI(GRC)	e(BEL/GRC)	Constant	CPI(BEL)	CPI(GRC)	e(BEL/GRC)	Constant
Coefficient	1.000	-1.422	-0.584	-1.025	1.000	-0.563	-0.547	-2.141	1.000	-0.423	-	-2.724
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.035	0.312	-0.063		-0.014	-0.021	0.019		0.000	-0.016	-	
Economically sensible	Yes	Yes	No	-	Yes	No	Yes	-	Yes	No	-	-
VECM residual auto-correlation at lag	0				3				0			
Jarque-Bera: p-value	0.021				0.000				0.000			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.251	0.484		ARCH(1)	0.340	0.003		ARCH(1)	0.150	0.000
	GARCH(1)	0.895				0.013			GARCH(1)	0.004	
CPI(GRC)	ARCH(1)	0.324	0.000		ARCH(1)	0.130	0.000		ARCH(1)	0.223	0.059
	GARCH(1)	0.000				0.000			GARCH(1)	0.406	
e(AUT/GRC)	ARCH(1)	0.343	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-
	GARCH(1)	0.030				0.000			GARCH(1)	-	

Ireland / Belgium

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	153				311				221			
Lags	4				10				14			
Cointegration rank at significance level 5%	1				2				0			
Trace statistics	43.460	13.750	2.845		41.526	17.232	2.004		10.108	1.561	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.997	0.646	1.025	1.025	1.000	1.000	1.000	0.995	0.955	0.955
Cointegration vector	CPI(BEL)	CPI(IRL)	e(BEL/IRL)	Constant	CPI(BEL)	CPI(IRL)	e(BEL/IRL)	Constant	CPI(BEL)	CPI(IRL)	e(BEL/IRL)	Constant
Coefficient	1.000	-0.835	0.396	-1.872	1.000	-0.438	0.982	-2.426	1.000	-3.160	-	10.197
Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes	-	-
Adjustment factor	-0.011	-0.014	0.004		0.005	0.002	-0.052		-0.001	0.002	-	
Economically sensible	Yes	No	-	-	No	Yes	-	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	1				4				1			
Jarque-Bera: p-value	0.000				0.000				0.810			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.005	0.000		ARCH(1)	0.311	0.000		ARCH(1)	0.203	0.090
	GARCH(1)	0.000				0.000			GARCH(1)	0.450	
CPI(IRL)	ARCH(1)	0.637	0.893		ARCH(1)	0.004	0.000		ARCH(1)	0.203	0.000
	GARCH(1)	0.960				0.000			GARCH(1)	0.450	
e(AUT/IRL)	ARCH(1)	0.637	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-
	GARCH(1)	0.960				0.001			GARCH(1)	-	

Johansen Cointegration Tests for Real Exchange Rate Components

Italy / Belgium

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	153				311				221			
Lags	4				14				3			
Cointegration rank at significance level 5%	1				-				0			
Trace statistics	41.018	12.750	1.541		54.122	24.769	4.458		14.242	0.943	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.975	0.729	1.136	1.136	1.104	1.104	1.000	0.998	0.306	0.157
Cointegration vector	CPI(BEL)	CPI(ITA)	e(BEL/ITA)	Constant	CPI(BEL)	CPI(ITA)	e(BEL/ITA)	Constant	CPI(BEL)	CPI(ITA)	e(BEL/ITA)	Constant
Coefficient	1.000	-1.073	1.669	-3.490	1.000	-0.477	0.026	-2.256	1.000	-0.142	-	-4.158
Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes	-	-
Adjustment factor	-0.022	-0.004	-0.004		-0.028	0.014	-0.147		-0.001	-0.004	-	
Economically sensible	Yes	No	-	-	Yes	Yes	-	-	Yes	No	-	-
VECM residual auto-correlation at lag	3				0				1			
Jarque-Bera: p-value	0.000				0.000				0.272			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.033	0.000		ARCH(1)	0.837	0.975		ARCH(1)	0.166	0.000	
	GARCH(1)	0.000				0.953			GARCH(1)	0.032		
CPI(ITA)	ARCH(1)	0.502	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.315	0.000	
	GARCH(1)	0.000				0.000			GARCH(1)	0.000		
e(AUT/ITA)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000				0.000			GARCH(1)	-		

Luxembourg / Belgium

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	221				221				221			
Lags	0				0				19			
Cointegration rank at significance level 5%	-				-				0			
Trace statistics	14.242	0.943	4.458		14.242	0.943	4.458		13.078	2.477	-	
5% critical values	15.410	3.760	3.760		15.410	3.760	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	0.998	0.306	0.157	1.000	0.998	0.306	0.157	1.000	0.961	0.961	0.946
Cointegration vector	CPI(BEL)	CPI(LUX)	e(BEL/LUX)	Constant	CPI(BEL)	CPI(LUX)	e(BEL/LUX)	Constant	CPI(BEL)	CPI(LUX)	e(BEL/LUX)	Constant
Coefficient	1.000	-0.142	-4.158	-2.256	1.000	-0.142	-4.158	-2.256	1.000	-0.964	-	-0.167
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.001	-0.004	-0.147		-0.001	-0.004	-0.147		-0.045	0.056	-	
Economically sensible	Yes	No	No	-	Yes	No	No	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	25				25				5			
Jarque-Bera: p-value	0.272				0.272				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.315	0.000		ARCH(1)	0.315	0.000		ARCH(1)	0.316	0.000	
	GARCH(1)	0.000				0.000			GARCH(1)	0.061		
CPI(LUX)	ARCH(1)	0.315	0.000		ARCH(1)	0.315	0.000		ARCH(1)	0.064	0.000	
	GARCH(1)	0.000				0.000			GARCH(1)	0.000		
e(AUT/LUX)	ARCH(1)	0.315	0.000		ARCH(1)	0.315	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000				0.000			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	133				311				221			
	Lags	24				14				13			
	Cointegration rank at significance level 5%	-				0				0			
	Trace statistics	68.305	30.693	9.809		24.603	8.999	4.283		12.622	0.938	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.078	1.078	1.034	1.034	1.095	1.095	1.000	1.000	1.000	0.968	0.920	0.920
	Cointegration vector	CPI(BEL)	CPI(NLD)	e(BEL/NLD)	Constant	CPI(BEL)	CPI(NLD)	e(BEL/NLD)	Constant	CPI(BEL)	CPI(NLD)	e(BEL/NLD)	Constant
	Coefficient	1.000	-0.687	4.837	0.568	1.000	-0.934	-0.970	-0.293	1.000	-1.232	-	1.099
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Nether-lands / Belgium	Adjustment factor	-0.052	0.115	-0.128		-0.028	-0.002	0.019		-0.006	0.033	-	
	Economically sensible	Yes	Yes	-	-	Yes	No	Yes	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	1				2				1			
	Jarque-Bera: p-value	0.000				0.000				0.000			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.258	0.000		ARCH(1)	0.224	0.000		ARCH(1)	0.000	0.000	
		GARCH(1)	0.003			GARCH(1)	0.000			GARCH(1)	0.000		
	CPI(NLD)	ARCH(1)	0.282	0.000		ARCH(1)	0.028	0.000		ARCH(1)	0.000	0.000	
		GARCH(1)	0.000			GARCH(1)	0.064			GARCH(1)	0.000		
	e(AUT/NLD)	ARCH(1)	0.043	0.061		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
		GARCH(1)	0.640			GARCH(1)	0.000			GARCH(1)	-		
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	146				311				221			
	Lags	11				13				14			
	Cointegration rank at significance level 5%	1				-				0			
	Trace statistics	31.770	12.322	4.452		45.022	24.626	9.520		6.698	0.823	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.039	1.039	1.000	1.000	1.193	1.127	1.127	1.114	1.000	0.992	0.942	0.942
	Cointegration vector	CPI(BEL)	CPI(PRT)	e(BEL/PRT)	Constant	CPI(BEL)	CPI(PRT)	e(BEL/PRT)	Constant	CPI(BEL)	CPI(PRT)	e(BEL/PRT)	Constant
	Coefficient	1.000	-0.024	-3.060	3.916	1.000	-0.143	0.328	-3.679	1.000	-1.503	-	2.315
Portugal / Belgium	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	No	-	Yes	Yes	-	-
	Adjustment factor	0.005	0.028	0.009		-0.008	0.030	-0.108		-0.003	0.006	-	
	Economically sensible	No	Yes	Yes	-	Yes	Yes	-	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	1				1				0			
	Jarque-Bera: p-value	0.000				0.000				0.000			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.531	0.005		ARCH(1)	0.529	0.774		ARCH(1)	0.135	0.000	
		GARCH(1)	0.072			GARCH(1)	0.900			GARCH(1)	0.133		
	CPI(PRT)	ARCH(1)	0.168	0.070		ARCH(1)	0.001	0.000		ARCH(1)	0.471	0.745	
		GARCH(1)	0.362			GARCH(1)	0.000			GARCH(1)	0.865		
	e(AUT/PRT)	ARCH(1)	0.168	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
		GARCH(1)	0.362			GARCH(1)	0.000			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Spain / Belgium

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	156				311				221			
Lags	1				15				19			
Cointegration rank at significance level 5%	1				-				0			
Trace statistics	30.979	7.669	0.424		50.044	26.635	7.669		15.273	2.700	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.995	0.942	1.254	1.254	1.010	1.010	1.007	1.000	0.989	0.989
Cointegration vector	CPI(BEL)	CPI(ESP)	e(BEL/ESP)	Constant	CPI(BEL)	CPI(ESP)	e(BEL/ESP)	Constant	CPI(BEL)	CPI(ESP)	e(BEL/ESP)	Constant
Coefficient	1.000	-0.047	0.878	-3.737	1.000	-0.405	-0.030	-2.640	1.000	-0.432	-	-2.655
Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	0.018	0.018	-0.025	-	-0.015	-0.016	-0.070	-	0.000	-0.018	-	-
Economically sensible	No	Yes	-	-	Yes	No	No	-	Yes	No	-	-
VECM residual auto-correlation at lag	1				3				1			
Jarque-Bera: p-value	0.000				0.000				0.004			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.011	0.000		ARCH(1)	0.309	0.000		ARCH(1)	0.307	0.001	
	GARCH(1)	0.000			GARCH(1)	0.000			GARCH(1)	0.070		
CPI(ESP)	ARCH(1)	0.250	0.008		ARCH(1)	0.001	0.000		ARCH(1)	0.095	0.000	
	GARCH(1)	0.178			GARCH(1)	0.000			GARCH(1)	0.000		
e(AUT/ESP)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			GARCH(1)	0.946			GARCH(1)	-		

France / Finland

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				14				16			
Cointegration rank at significance level 5%	0				-				0			
Trace statistics	28.768	6.583	2.300		51.766	22.053	4.456		13.052	3.271	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.961	0.078	1.099	1.099	1.077	1.077	1.000	0.960	0.960	0.932
Cointegration vector	CPI(FIN)	CPI(FRA)	e(FIN/FRA)	Constant	CPI(FIN)	CPI(FRA)	e(FIN/FRA)	Constant	CPI(FIN)	CPI(FRA)	e(FIN/FRA)	Constant
Coefficient	1.000	-1.131	-0.692	0.320	1.000	-0.703	-0.120	-1.421	1.000	-0.946	-	-0.296
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.009	-0.017	0.078	-	-0.012	-0.004	-0.015	-	-0.028	-0.016	-	-
Economically sensible	Yes	No	Yes	-	Yes	No	No	-	Yes	No	-	-
VECM residual auto-correlation at lag	0				1				2			
Jarque-Bera: p-value	0.000				0.000				0.297			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.027	0.000		ARCH(1)	0.096	0.000		ARCH(1)	0.243	0.446	
	GARCH(1)	0.626			GARCH(1)	0.000			GARCH(1)	0.723		
CPI(FRA)	ARCH(1)	0.037	0.000		ARCH(1)	0.723	0.154		ARCH(1)	0.523	0.768	
	GARCH(1)	0.008			GARCH(1)	0.307			GARCH(1)	0.865		
e(AUT/FRA)	ARCH(1)	0.000	0.000		ARCH(1)	0.499	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			GARCH(1)	0.000			GARCH(1)	-		

Rainer Maurer

Johansen Cointegration Tests for Real Exchange Rate Components

Germany / Finland

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				13				16			
Cointegration rank at significance level 5%	0				-				0			
Trace statistics	**24.335**	8.297	2.638		54.095	21.005	3.982		**7.422**	0.278	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.012	1.000	1.000	0.087	1.192	1.192	1.053	1.053	1.000	0.940	0.932	0.932
Cointegration vector	CPI(FIN)	CPI(GER)	e(FIN/GER)	Constant	CPI(FIN)	CPI(GER)	e(FIN/GER)	Constant	CPI(FIN)	CPI(GER)	e(FIN/GER)	Constant
Coefficient	1.000	-1.906	-0.184	3.620	1.000	1.246	8.352	-10.041	1.000	-1.027	-	0.095
Economically sensible	Yes	Yes	Yes	-	Yes	No	No	-	Yes	Yes	-	-
Adjustment factor	-0.016	-0.016	0.000	-	-0.001	0.000	-0.004	-	-0.037	-0.021	-	-
Economically sensible	Yes	No	No	-	Yes	-	-	-	Yes	No	-	-
VECM residual auto-correlation at lag	2				3				1			
Jarque-Bera: p-value	0.000				0.000				0.369			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.794	0.963		ARCH(1)	0.058	**0.000**		ARCH(1)	0.668	0.898	
	GARCH(1)	0.947				**0.000**			GARCH(1)	0.941		
CPI(GER)	ARCH(1)	0.802	0.969		ARCH(1)	0.058	**0.000**		ARCH(1)	0.170	0.363	
	GARCH(1)	0.974				**0.000**			GARCH(1)	0.809		
e(AUT/GER)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.096	**0.000**		ARCH(1)	-	-	
	GARCH(1)	**0.000**				**0.000**			GARCH(1)	-		

Greece / Finland

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				15				13			
Cointegration rank at significance level 5%	-				-				0			
Trace statistics	**13.568**	4.989	1.063		46.814	20.200	5.682		**8.256**	2.358	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.935	0.083	1.323	1.323	1.071	1.071	1.000	0.982	0.938	0.936
Cointegration vector	CPI(FIN)	CPI(GRC)	e(FIN/GRC)	Constant	CPI(FIN)	CPI(GRC)	e(FIN/GRC)	Constant	CPI(FIN)	CPI(GRC)	e(FIN/GRC)	Constant
Coefficient	1.000	-1.448	-0.423	-1.196	1.000	-0.061	0.166	-4.212	1.000	-0.430	-	-2.700
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	No	-	Yes	Yes	-	-
Adjustment factor	0.004	0.035	0.057	-	-0.007	-0.003	-0.002	-	-0.009	-0.027	-	-
Economically sensible	No	Yes	Yes	-	Yes	No	-	-	Yes	No	-	-
VECM residual auto-correlation at lag	1				3				0			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.170	**0.000**		ARCH(1)	0.137	**0.000**		ARCH(1)	0.967	0.999	
	GARCH(1)	0.809				**0.000**			GARCH(1)	0.987		
CPI(GRC)	ARCH(1)	0.548	**0.000**		ARCH(1)	**0.044**	**0.000**		ARCH(1)	0.238	0.080	
	GARCH(1)	**0.003**				**0.000**			GARCH(1)	0.445		
e(AUT/GRC)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.260	**0.000**		ARCH(1)	-	-	
	GARCH(1)	**0.000**				**0.007**			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Ireland / Finland

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	153				311				221			
Lags	4				13				18			
Cointegration rank at significance level 5%	0				2				0			
Trace statistics	**29.305**	7.248	2.221		38.360	15.654	**2.585**		**14.079**	3.603	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.995	0.649	1.187	1.187	1.021	1.021	1.000	0.990	0.981	0.981
Cointegration vector	CPI(FIN)	CPI(IRL)	e(FIN/IRL)	Constant	CPI(FIN)	CPI(IRL)	e(FIN/IRL)	Constant	CPI(FIN)	CPI(IRL)	e(FIN/IRL)	Constant
Coefficient	1.000	-1.819	-3.227	1.807	1.000	-0.650	-0.640	-1.600	1.000	-2.151	-	5.470
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.001	-0.003	0.004		-0.010	-0.007	0.014		-0.001	0.003	-	
Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	3				2				3			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	**0.036**	**0.000**		ARCH(1)	**0.020**	**0.000**		ARCH(1)	0.212	**0.011**	
	GARCH(1)	0.000				0.000			GARCH(1)	0.096		
CPI(IRL)	ARCH(1)	0.539	0.826		ARCH(1)	**0.020**	**0.000**		ARCH(1)	0.213	0.390	
	GARCH(1)	0.970				0.000			GARCH(1)	0.905		
e(AUT/IRL)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.082	**0.000**		ARCH(1)	-	-	
	GARCH(1)	0.000				0.000			GARCH(1)	-		

Italy / Finland

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				18				16			
Cointegration rank at significance level 5%	0				-				0			
Trace statistics	**26.637**	5.868	0.460		50.616	25.998	10.419		**14.271**	3.319	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.884	0.058	1.230	1.069	1.069	1.048	1.002	1.000	0.964	0.964
Cointegration vector	CPI(FIN)	CPI(ITA)	e(FIN/ITA)	Constant	CPI(FIN)	CPI(ITA)	e(FIN/ITA)	Constant	CPI(FIN)	CPI(ITA)	e(FIN/ITA)	Constant
Coefficient	1.000	-1.140	-0.274	-0.336	1.000	-0.731	-0.454	-1.276	1.000	-0.665	-	-1.591
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.111	-0.023	0.129		-0.019	-0.001	0.017		-0.024	-0.016	-	
Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	Yes	No	-	-
VECM residual auto-correlation at lag	0				0				2			
Jarque-Bera: p-value	0.000				0.000				0.943			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.124	**0.000**		ARCH(1)	0.073	**0.000**		ARCH(1)	0.117	0.292	
	GARCH(1)	**0.002**				0.000			GARCH(1)	0.945		
CPI(ITA)	ARCH(1)	0.593	0.571		ARCH(1)	**0.002**	**0.000**		ARCH(1)	0.274	0.202	
	GARCH(1)	0.738				0.000			GARCH(1)	0.665		
e(AUT/ITA)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.005**	**0.000**		ARCH(1)	-	-	
	GARCH(1)	**0.000**				0.020			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Luxembourg / Finland

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				15				13			
Cointegration rank at significance level 5%	0				-				0			
Trace statistics	**18.871**	6.002	1.378		48.729	16.480	5.320		**11.805**	3.061	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.995	0.094	1.160	1.160	1.065	1.065	1.000	0.965	0.965	0.932
Cointegration vector	CPI(FIN)	CPI(LUX)	e(FIN/LUX)	Constant	CPI(FIN)	CPI(LUX)	e(FIN/LUX)	Constant	CPI(FIN)	CPI(LUX)	e(FIN/LUX)	Constant
Coefficient	1.000	3.161	-2.040	-13.026	1.000	-3.086	-0.850	9.044	1.000	-0.670	-	-1.566
Economically sensible	Yes	No	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	0.001	0.003	0.008		0.005	0.000	0.011		-0.020	-0.030	-	
Economically sensible	No	-	Yes	-	No	Yes	Yes	-	Yes	No	-	-
VECM residual auto-correlation at lag	1				0				6			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.799	0.955		ARCH(1)	**0.012**	**0.000**		ARCH(1)	0.796	**0.007**	
	GARCH(1)	0.915			)	**0.000**			GARCH(1)	**0.037**		
CPI(LUX)	ARCH(1)	0.783	0.944		ARCH(1)	**0.011**	**0.000**		ARCH(1)	0.116	**0.000**	
	GARCH(1)	0.887			)	**0.000**			GARCH(1)	**0.000**		
e(AUT/LUX)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.009**	**0.000**		ARCH(1)	-	-	
	GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	-		

Netherlands / Finland

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				13				13			
Cointegration rank at significance level 5%	0				2				0			
Trace statistics	**18.950**	6.668	0.597		48.703	21.611	**3.694**		**12.147**	2.573	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.978	0.086	1.234	1.234	1.040	1.040	1.000	0.977	0.888	0.888
Cointegration vector	CPI(FIN)	CPI(NLD)	e(FIN/NLD)	Constant	CPI(FIN)	CPI(NLD)	e(FIN/NLD)	Constant	CPI(FIN)	CPI(NLD)	e(FIN/NLD)	Constant
Coefficient	1.000	-0.849	0.054	0.438	1.000	-0.919	-6.618	-0.403	1.000	-1.100	-	0.506
Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	0.000	0.031	0.009		0.001	0.000	0.008		-0.002	0.025	-	
Economically sensible	Yes	Yes	-	-	No	No	Yes	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	1				1				1			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.116	**0.000**		ARCH(1)	**0.034**	**0.000**		ARCH(1)	0.763	0.886	
	GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	0.866		
CPI(NLD)	ARCH(1)	0.227	**0.000**		ARCH(1)	**0.003**	**0.000**		ARCH(1)	0.763	**0.000**	
	GARCH(1)	**0.000**			)	0.123			GARCH(1)	0.866		
e(AUT/NLD)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.010**	**0.000**		ARCH(1)	-	-	
	GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	155				311				221			
	Lags	2				13				17			
	Cointegration rank at significance level 5%	0				2				0			
	Trace statistics	**23.183**	6.687	0.774		52.661	26.600	**3.286**		**8.861**	2.522	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.005	1.000	1.000	0.087	1.124	1.124	1.000	1.000	1.000	0.995	0.962	0.928
	Cointegration vector	CPI(FIN)	CPI(PRT)	e(FIN/PRT)	Constant	CPI(FIN)	CPI(PRT)	e(FIN/PRT)	Constant	CPI(FIN)	CPI(PRT)	e(FIN/PRT)	Constant
	Coefficient	1.000	0.523	-0.784	-1.146	1.000	-0.312	0.150	-3.062	1.000	-0.180	-	-3.921
	Economically sensible	Yes	No	Yes	-	Yes	Yes	No	-	Yes	Yes	-	-
Portugal / Finland	Adjustment factor	0.001	0.014	0.006		-0.014	-0.001	-0.052		-0.003	-0.009	-	
	Economically sensible	No	-	Yes	-	Yes	No	-	-	Yes	No	-	-
	VECM residual auto-correlation at lag	1				0				1			
	Jarque-Bera: p-value	0.000				0.000				0.001			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.241	**0.000**		ARCH(1)	**0.029**	**0.000**		ARCH(1)	0.722	0.823	
		GARCH(1)	0.111				**0.000**			GARCH(1)	0.788		
	CPI(PRT)	ARCH(1)	0.283	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.277	0.141	
		GARCH(1)	**0.023**				**0.000**			GARCH(1)	0.535		
	e(AUT/PRT)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	**0.000**				**0.000**			GARCH(1)	-		
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	155				311				221			
	Lags	2				15				17			
	Cointegration rank at significance level 5%	1				-				1			
	Trace statistics	31.343	**6.855**	0.622		58.344	26.357	6.057		16.196	**3.454**	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.766	0.124	1.000	1.000	0.989	0.989	1.002	1.000	0.999	0.983
	Cointegration vector	CPI(FIN)	CPI(ESP)	e(FIN/ESP)	Constant	CPI(FIN)	CPI(ESP)	e(FIN/ESP)	Constant	CPI(FIN)	CPI(ESP)	e(FIN/ESP)	Constant
	Coefficient	1.000	-0.640	-0.672	-1.168	1.000	-0.516	-0.022	-2.270	1.000	-0.441	-	-2.640
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Spain / Finland	Adjustment factor	-0.052	0.081	0.216		-0.017	-0.004	-0.030		-0.013	-0.026	-	
	Economically sensible	Yes	Yes	Yes	-	Yes	No	No	-	Yes	No	-	-
	VECM residual auto-correlation at lag	1				2				2			
	Jarque-Bera: p-value	0.000				0.000				0.862			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.365	**0.000**		ARCH(1)	**0.024**	**0.000**		ARCH(1)	**0.008**	**0.000**	
		GARCH(1)	**0.000**				**0.000**			GARCH(1)	**0.011**		
	CPI(ESP)	ARCH(1)	0.422	0.183		ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.193	**0.000**	
		GARCH(1)	0.416				**0.000**			GARCH(1)	**0.000**		
	e(AUT/ESP)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.008**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	**0.000**				**0.011**			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Germany / France

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				13				14			
Cointegration rank at significance level 5%	1				1				0			
Trace statistics	35.422	**11.206**	1.509		53.833	**12.219**	1.224		**12.481**	3.850	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.991	0.126	1.177	1.177	1.078	1.002	1.009	1.000	0.979	0.979
Cointegration vector	CPI(FRA)	CPI(GER)	e(FRA/GER)	Constant	CPI(FRA)	CPI(GER)	e(FRA/GER)	Constant	CPI(FRA)	CPI(GER)	e(FRA/GER)	Constant
Coefficient	1.000	-1.545	1.256	4.214	1.000	-0.795	-1.358	-0.855	1.000	-1.141	-	0.682
Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	0.005	0.007	-0.002		0.003	0.002	0.118		0.037	0.036	-	
Economically sensible	No	Yes	-	-	No	Yes	Yes	-	No	Yes	-	-
VECM residual auto-correlation at lag	3				2				1			
Jarque-Bera: p-value	0.000				0.000				0.091			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.156	**0.013**		ARCH(1)	0.485	0.085	
	GARCH(1)	**0.000**			)	0.140			GARCH(1)	0.153		
CPI(GER)	ARCH(1)	0.790	0.579		ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.156	0.170	
	GARCH(1)	0.492			)	**0.000**			GARCH(1)	0.571		
e(AUT/GER)	ARCH(1)	0.122	**0.000**		ARCH(1)	**0.001**	**0.000**		ARCH(1)	-	-	
	GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	-		

Greece / France

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	156				311				221			
Lags	1				15				16			
Cointegration rank at significance level 5%					-				0			
Trace statistics	**26.313**	8.417	1.593		45.859	24.226	8.547		**11.006**	2.279	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.930	0.979	1.239	1.239	1.186	1.186	1.000	0.986	0.986	0.981
Cointegration vector	CPI(FRA)	CPI(GRC)	e(FRA/GRC)	Constant	CPI(FRA)	CPI(GRC)	e(FRA/GRC)	Constant	CPI(FRA)	CPI(GRC)	e(FRA/GRC)	Constant
Coefficient	1.000	-1.422	-0.139	-1.891	1.000	-2.019	-1.739	5.251	1.000	-0.540	-	-2.173
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	0.017	0.061	-0.002		0.001	0.002	-0.001		-0.041	-0.030	-	
Economically sensible	No	Yes	No	-	No	Yes	No	-	Yes	No	-	-
VECM residual auto-correlation at lag	2				3				1			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.055	**0.034**		ARCH(1)	**0.001**	**0.000**		ARCH(1)	0.794	0.915	
	GARCH(1)	0.559			)	0.058			GARCH(1)	0.852		
CPI(GRC)	ARCH(1)	0.540	0.197		ARCH(1)	0.053	**0.000**		ARCH(1)	0.218	**0.014**	
	GARCH(1)	0.428			)	**0.000**			GARCH(1)	0.291		
e(AUT/GRC)	ARCH(1)	0.540	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-	
	GARCH(1)	0.428			)	**0.000**			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Ireland / France

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	149				311				221			
Lags	8				10				17			
Cointegration rank at significance level 5%	0				-				-			
Trace statistics	26.756	14.187	4.099		51.748	23.520	8.210		16.479	6.996	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.999	0.967	1.049	1.040	1.040	1.022	1.011	1.011	1.000	0.998
Cointegration vector	CPI(FRA)	CPI(IRL)	e(FRA/IRL)	Constant	CPI(FRA)	CPI(IRL)	e(FRA/IRL)	Constant	CPI(FRA)	CPI(IRL)	e(FRA/IRL)	Constant
Coefficient	1.000	1.134	-6.514	-0.605	1.000	-1.340	0.765	1.437	1.000	-0.138	-	-4.070
Economically sensible	Yes	No	Yes	-	Yes	Yes	No	-	Yes	Yes	-	-
Adjustment factor	0.002	0.001	0.001		0.002	0.004	-0.013		-0.001	-0.010	-	
Economically sensible	No	-	Yes	-	No	Yes	-	-	Yes	No	-	-
VECM residual auto-correlation at lag	0				0				1			
Jarque-Bera: p-value	0.000				0.000				0.315			
Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.008	0.000		ARCH(1)	0.143	0.036		ARCH(1)	0.000	0.000	
	GARCH(1)	0.000			)	0.222			GARCH(1)	0.000		
CPI(IRL)	ARCH(1)	0.008	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.402	0.423	
	GARCH(1)	0.000			)	0.002			GARCH(1)	0.525		
e(AUT/IRL)	ARCH(1)	0.008	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			)	0.000			GARCH(1)	-		

Italy / France

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				7				20			
Cointegration rank at significance level 5%	1				1				-			
Trace statistics	30.945	8.113	1.372		34.309	11.013	0.379		17.894	3.858	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.978	0.057	1.000	1.000	0.990	0.800	1.000	0.985	0.985	0.978
Cointegration vector	CPI(FRA)	CPI(ITA)	e(FRA/ITA)	Constant	CPI(FRA)	CPI(ITA)	e(FRA/ITA)	Constant	CPI(FRA)	CPI(ITA)	e(FRA/ITA)	Constant
Coefficient	1.000	-0.817	-0.505	-0.738	1.000	-0.398	-0.294	-2.814	1.000	-0.788	-	-0.980
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	0.038	0.035	0.068		-0.003	-0.002	0.021		-0.091	0.048	-	
Economically sensible	No	Yes	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	0				2				4			
Jarque-Bera: p-value	0.000				0.000				0.680			
Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.000	0.000		ARCH(1)	0.078	0.049		ARCH(1)	0.188	0.192	
	GARCH(1)	0.000			)	0.412			GARCH(1)	0.499		
CPI(ITA)	ARCH(1)	0.378	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.056	0.027	
	GARCH(1)	0.000			)	0.000			GARCH(1)	0.487		
e(AUT/ITA)	ARCH(1)	0.000	0.000		ARCH(1)	0.003	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			)	0.000			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components												
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	156				311				221			
	Lags	1				7				19			
	Cointegration rank at significance level 5%	1				-				0			
	Trace statistics	33.677	**6.370**	1.513		45.663	24.275	4.192		**12.911**	2.530	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.981	0.978	1.000	1.000	0.983	0.917	1.006	1.000	0.993	0.993
	Cointegration vector	CPI(FRA)	CPI(LUX)	e(FRA/LUX)	Constant	CPI(FRA)	CPI(LUX)	e(FRA/LUX)	Constant	CPI(FRA)	CPI(LUX)	e(FRA/LUX)	Constant
Luxem-bourg / France	Coefficient	1.000	-1.159	0.137	1.019	1.000	-1.260	-1.894	1.125	1.000	-0.753	-	-1.118
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	0.019	0.036	0.027		0.003	0.004	0.019		0.031	0.088	-	
	Economically sensible	No	Yes	-	-	No	Yes	Yes	-	No	Yes	-	-
	VECM residual auto-correlation at lag	1				2				2			
	Jarque-Bera: p-value	0.000				0.000				0.000			

	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
	CPI(AUT)	ARCH(1)	0.066	**0.003**		ARCH(1)	0.093	**0.001**		ARCH(1)	**0.000**	**0.000**
		GARCH(1)	0.139				0.138			GARCH(1)	**0.000**	
	CPI(LUX)	ARCH(1)	0.066	**0.000**		ARCH(1)	**0.001**	**0.000**		ARCH(1)	**0.016**	**0.000**
		GARCH(1)	0.139				**0.000**			GARCH(1)	**0.000**	
	e(AUT/LUX)	ARCH(1)	0.066	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-
		GARCH(1)	0.139				**0.000**			GARCH(1)	-	

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	156				311				221			
	Lags	1				13				14			
	Cointegration rank at significance level 5%	1				1				0			
	Trace statistics	34.645	**12.371**	4.698		49.922	**13.352**	2.318		**11.096**	4.329	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.954	0.993	1.084	1.084	1.065	1.065	1.000	0.985	0.946	0.946
	Cointegration vector	CPI(FRA)	CPI(NLD)	e(FRA/NLD)	Constant	CPI(FRA)	CPI(NLD)	e(FRA/NLD)	Constant	CPI(FRA)	CPI(NLD)	e(FRA/NLD)	Constant
Nether-lands / France	Coefficient	1.000	-0.714	-0.115	-0.425	1.000	-0.641	-1.805	-1.525	1.000	-1.019	-	0.139
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	0.022	0.093	0.011		0.005	-0.001	0.093		0.004	0.021	-	
	Economically sensible	No	Yes	Yes	-	No	No	Yes	-	No	Yes	-	-
	VECM residual auto-correlation at lag	1				2				1			
	Jarque-Bera: p-value	0.000				0.000				0.000			

	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
	CPI(AUT)	ARCH(1)	0.059	**0.002**		ARCH(1)	0.268	0.156		ARCH(1)	0.434	**0.000**
		GARCH(1)	0.098				0.416			GARCH(1)	0.009	
	CPI(NLD)	ARCH(1)	0.094	**0.007**		ARCH(1)	**0.008**	**0.000**		ARCH(1)	0.325	**0.002**
		GARCH(1)	0.319				**0.004**			GARCH(1)	0.076	
	e(AUT/NLD)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-
		GARCH(1)	**0.000**				0.942			GARCH(1)	-	

Johansen Cointegration Tests for Real Exchange Rate Components

	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Portugal / France	Number observations	156				311				221			
	Lags	1				8				14			
	Cointegration rank at significance level 5%	1				-				1			
	Trace statistics	32.578	10.536	4.204		44.237	19.237	4.182		17.187	3.563	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.009	1.000	1.000	0.956	1.000	1.000	0.996	0.909	1.000	0.964	0.950	0.950
	Cointegration vector	CPI(FRA)	CPI(PRT)	e(FRA/PRT)	Constant	CPI(FRA)	CPI(PRT)	e(FRA/PRT)	Constant	CPI(FRA)	CPI(PRT)	e(FRA/PRT)	Constant
	Coefficient	1.000	5.802	7.287	-13.576	1.000	-0.672	-0.086	-1.421	1.000	-0.723	-	-1.291
	Economically sensible	Yes	No	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	0.000	0.001	0.000		0.004	0.024	-0.015		-0.047	0.011	-	
	Economically sensible	No	-	-	-	No	Yes	No	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	1				1				1			
	Jarque-Bera: p-value	0.000				0.000				0.000			

	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.055	0.000		ARCH(1)	0.144	0.004		ARCH(1)	0.451	0.749	
		GARCH(1)	0.031			)	0.176			GARCH(1)	0.996		
	CPI(PRT)	ARCH(1)	0.014	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.451	0.000	
		GARCH(1)	0.000			)	0.000			GARCH(1)	0.996		
	e(AUT/PRT)	ARCH(1)	0.014	0.000		ARCH(1)	0.027	0.000		ARCH(1)	-	-	
		GARCH(1)	0.000			)	0.031			GARCH(1)	-		

	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Spain / France	Number observations	156				311				221			
	Lags	1				15				14			
	Cointegration rank at significance level 5%	1				1				-			
	Trace statistics	40.738	14.917	1.728		36.011	10.750	4.475		19.899	8.572	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.970	0.928	1.145	1.145	1.138	1.138	1.002	1.002	1.000	0.973
	Cointegration vector	CPI(FRA)	CPI(ESP)	e(FRA/ESP)	Constant	CPI(FRA)	CPI(ESP)	e(FRA/ESP)	Constant	CPI(FRA)	CPI(ESP)	e(FRA/ESP)	Constant
	Coefficient	1.000	-0.581	-0.755	-1.213	1.000	-0.396	-0.226	-2.844	1.000	-0.729	-	-1.245
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	0.019	0.000	0.065		-0.003	-0.008	0.002		-0.010	0.033	-	
	Economically sensible	No	No	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	0				2				3			
	Jarque-Bera: p-value	0.000				0.000				0.311			

	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.167	0.064		ARCH(1)	0.292	0.561		ARCH(1)	0.000	0.000	
		GARCH(1)	0.288			)	0.965			GARCH(1)	0.418		
	CPI(ESP)	ARCH(1)	0.471	0.323		ARCH(1)	0.000	0.000		ARCH(1)	0.205	0.000	
		GARCH(1)	0.442			)	0.000			GARCH(1)	0.000		
	e(AUT/ESP)	ARCH(1)	0.471	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
		GARCH(1)	0.442			)	0.418			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Greece / Germany

	Period: 1960:1 - 1972:12				Period: 1973:1 - 1998:12				Period: 1999:1 - 2017:5			
Number observations	133				311				221			
Lags	24				15				16			
Cointegration rank at significance level 5%					0				0			
Trace statistics	50.622	16.170	5.233		27.748	11.922	2.961		6.320	2.364	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.141	1.141	1.051	1.051	1.224	1.224	1.025	1.025	1.001	1.000	0.930	0.930
Cointegration vector	CPI(GER)	CPI(GRC)	e(GER/GRC)	Constant	CPI(GER)	CPI(GRC)	e(GER/GRC)	Constant	CPI(GER)	CPI(GRC)	e(GER/GRC)	Constant
Coefficient	1.000	-1.021	0.400	-4.388	1.000	-0.663	-0.612	-1.669	1.000	-0.388	-	-2.888
Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	0.009	0.612	0.181		-0.003	0.036	0.171		-0.004	-0.027	-	
Economically sensible	No	Yes	-	-	Yes	Yes	Yes	-	Yes	No	-	-
VECM residual auto-correlation at lag	1				4				1			
Jarque-Bera: p-value	0.000				0.000				0.078			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.407	0.686		ARCH(1)	0.001	0.000		ARCH(1)	0.486	0.383
	GARCH(1)	0.901				0.000			GARCH(1)	0.492	
CPI(GRC)	ARCH(1)	0.407	0.000		ARCH(1)	0.348	0.000		ARCH(1)	0.325	0.068
	GARCH(1)	0.901				0.000			GARCH(1)	0.492	
e(AUT/GRC)	ARCH(1)	0.407	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-
	GARCH(1)	0.901				0.000			GARCH(1)	-	

Ireland / Germany

	Period: 1960:1 - 1972:12				Period: 1973:1 - 1998:12				Period: 1999:1 - 2017:5			
Number observations	149				311				221			
Lags	8				15				19			
Cointegration rank at significance level 5%	2				1				0			
Trace statistics	51.533	21.646	3.739		39.833	14.586	0.890		11.768	1.992	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.973	0.973	1.331	1.012	1.012	1.008	1.000	0.995	0.990	0.990
Cointegration vector	CPI(GER)	CPI(IRL)	e(GER/IRL)	Constant	CPI(GER)	CPI(IRL)	e(GER/IRL)	Constant	CPI(GER)	CPI(IRL)	e(GER/IRL)	Constant
Coefficient	1.000	-0.706	-0.159	-1.850	1.000	-0.947	-5.161	-0.632	1.000	-5.669	-	21.536
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.086	0.008	0.229		0.000	-0.002	0.006		-0.001	0.001	-	
Economically sensible	Yes	Yes	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	2				2				1			
Jarque-Bera: p-value	0.000				0.000				0.628			

Heteroskedasticity test of VECM residuals

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.651	0.895		ARCH(1)	0.000	0.000		ARCH(1)	0.113	0.028
	GARCH(1)	0.934				0.000			GARCH(1)	0.318	
CPI(IRL)	ARCH(1)	0.651	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.164	0.005
	GARCH(1)	0.934				0.000			GARCH(1)	0.090	
e(AUT/IRL)	ARCH(1)	0.651	0.000		ARCH(1)	0.039	0.000		ARCH(1)	-	-
	GARCH(1)	0.934				0.000			GARCH(1)	-	

Johansen Cointegration Tests for Real Exchange Rate Components											
	Period	1960:1 – 1972:12				1973:1 – 1998:12				1999:1 – 2017:5			
	Number observations	155				311				221			
	Lags	2				14				13			
	Cointegration rank at significance level 5%	0				1				0			
	Trace statistics	**29.129**	5.433	1.998		37.080	**15.268**	2.158		**14.833**	6.692	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.975	0.051	1.192	1.192	1.168	1.168	1.000	0.986	0.910	0.910
	Cointegration vector	CPI(GER)	CPI(ITA)	e(GER/ITA)	Constant	CPI(GER)	CPI(ITA)	e(GER/ITA)	Constant	CPI(GER)	CPI(ITA)	e(GER/ITA)	Constant
	Coefficient	1.000	-0.353	1.620	-5.849	1.000	0.214	0.081	-5.430	1.000	-0.975	-	-0.112
	Economically sensible	Yes	Yes	**No**	-	Yes	**No**	**No**	-	Yes	Yes	-	-
	Adjustment factor	-0.018	-0.011	-0.006		-0.001	-0.003	0.018		-0.003	0.011	-	
Italy / Germany	Economically sensible	Yes	**No**	-	-	Yes	-	-	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	4				1				1			
	Jarque-Bera: p-value	0.000				0.000				0.999			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.680	0.733		ARCH(1)	0.342	**0.000**		ARCH(1)	0.093	**0.002**	
		GARCH(1)	0.735			)	**0.000**			GARCH(1)	**0.046**		
	CPI(ITA)	ARCH(1)	0.342	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.085	**0.000**	
		GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	**0.000**		
	e(AUT/ITA)	ARCH(1)	0.342	**0.000**		ARCH(1)	**0.001**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	-		
	Period	1960:1 – 1972:12				1973:1 – 1998:12				1999:1 – 2017:5			
	Number observations	155				311				221			
	Lags	2				13				19			
	Cointegration rank at significance level 5%	1				0				-			
	Trace statistics	41.324	**14.961**	5.314		**17.434**	6.356	0.536		16.167	6.448	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.981	0.053	1.043	1.043	1.028	1.000	1.000	0.963	0.963	0.957
	Cointegration vector	CPI(GER)	CPI(LUX)	e(GER/LUX)	Constant	CPI(GER)	CPI(LUX)	e(GER/LUX)	Constant	CPI(GER)	CPI(LUX)	e(GER/LUX)	Constant
	Coefficient	1.000	-1.509	-5.129	3.951	1.000	-1.131	-0.885	0.528	1.000	-0.703	-	-1.381
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Luxem-bourg / Germany	Adjustment factor	0.005	0.006	0.003		0.002	0.012	0.027		-0.122	0.003	-	
	Economically sensible	**No**	Yes	Yes	-	**No**	Yes	Yes	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	2				2				2			
	Jarque-Bera: p-value	0.000				0.000				0.000			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.893	0.908		ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.288	0.565	
		GARCH(1)	0.805			)	0.197			GARCH(1)	0.873		
	CPI(LUX)	ARCH(1)	0.297	0.057		ARCH(1)	**0.004**	**0.000**		ARCH(1)	**0.041**	**0.000**	
		GARCH(1)	0.376			)	**0.000**			GARCH(1)	**0.000**		
	e(AUT/LUX)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	0.197			)	**0.000**			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components												
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5		
	Number observations		144				311				221		
	Lags		13				13				16		
	Cointegration rank at significance level 5%		1				1				0		
	Trace statistics	33.072	14.978	4.964		57.030	11.390	1.578		13.603	2.712	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.076	1.050	1.050	1.000	1.000	1.000	0.985	0.985	1.000	0.961	0.961	0.944
	Cointegration vector	CPI(GER)	CPI(NLD)	e(GER/NLD)	Constant	CPI(GER)	CPI(NLD)	e(GER/NLD)	Constant	CPI(GER)	CPI(NLD)	e(GER/NLD)	Constant
	Coefficient	1.000	-0.612	0.587	-1.717	1.000	-1.529	-9.153	2.174	1.000	-0.929	-	-0.309
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Nether-lands / Germany	Adjustment factor	-0.033	-0.046	0.026		0.001	0.001	0.029		-0.013	0.039	-	
	Economically sensible	Yes	No	-	-	No	Yes	Yes	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag		0				2				1		
	Jarque-Bera: p-value		0.000				0.000				0.000		
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.886	0.981		ARCH(1)	0.009	0.000		ARCH(1)	0.051	0.004	
		GARCH(1)	0.980			)	0.000			GARCH(1)	0.071		
	CPI(NLD)	ARCH(1)	0.075	0.075		ARCH(1)	0.004	0.000		ARCH(1)	0.051	0.000	
		GARCH(1)	0.292			)	0.005			GARCH(1)	0.071		
	e(AUT/NLD)	ARCH(1)	0.009	0.000		ARCH(1)	0.001	0.000		ARCH(1)	-	-	
		GARCH(1)	0.000			)	0.000			GARCH(1)	-		
Period		1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5		
	Number observations		133				311				221		
	Lags		24				13				13		
	Cointegration rank at significance level 5%		2				2				0		
	Trace statistics	81.864	21.356	2.940		31.187	16.289	3.333		8.038	1.382	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.271	1.271	1.101	1.101	1.354	1.104	1.060	1.060	1.000	0.986	0.920	0.906
	Cointegration vector	CPI(GER)	CPI(PRT)	e(GER/PRT)	Constant	CPI(GER)	CPI(PRT)	e(GER/PRT)	Constant	CPI(GER)	CPI(PRT)	e(GER/PRT)	Constant
	Coefficient	1.000	-1.233	-1.404	0.719	1.000	-0.625	-0.687	-1.846	1.000	-0.881	-	-0.560
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Portugal / Germany	Adjustment factor	-0.013	-0.002	0.162		-0.003	-0.012	0.041		-0.009	0.012	-	
	Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag		1				0				4		
	Jarque-Bera: p-value		0.002				0.000				0.000		
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.388	0.684		ARCH(1)	0.002	0.000		ARCH(1)	0.135	0.250	
		GARCH(1)	0.998			)	0.000			GARCH(1)	0.680		
	CPI(PRT)	ARCH(1)	0.388	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.585	0.777	
		GARCH(1)	0.998			)	0.000			GARCH(1)	0.849		
	e(AUT/PRT)	ARCH(1)	0.127	0.000		ARCH(1)	0.004	0.000		ARCH(1)	-	-	
		GARCH(1)	0.026			)	0.079			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components												
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Spain / Germany												
Number observations	154				311				221			
Lags	3				15				24			
Cointegration rank at significance level 5%	0				-				-			
Trace statistics	19.739	8.259	2.925		40.192	20.016	4.803		22.155	3.772	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.009	1.000	1.000	0.523	1.247	1.247	1.043	1.043	1.027	1.027	1.003	1.000
Cointegration vector	CPI(GER)	CPI(ESP)	e(GER/ESP)	Constant	CPI(GER)	CPI(ESP)	e(GER/ESP)	Constant	CPI(GER)	CPI(ESP)	e(GER/ESP)	Constant
Coefficient	1.000	-0.426	-0.199	-2.410	1.000	1.261	4.234	-9.467	1.000	-0.294	-	-3.272
Economically sensible	Yes	Yes	Yes	-	Yes	No	No	-	Yes	Yes	-	-
Adjustment factor	0.022	0.019	0.027		0.001	0.003	-0.009		0.012	-0.022	-	
Economically sensible	No	Yes	Yes	-	No	-	-	-	No	No	-	-
VECM residual auto-correlation at lag	1				1				0			
Jarque-Bera: p-value	0.000				0.000				0.000			
Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.451	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.408	0.000	
	GARCH(1)	0.996			GARCH(1)	0.000			GARCH(1)	0.000		
CPI(ESP)	ARCH(1)	0.800	0.935		ARCH(1)	0.001	0.000		ARCH(1)	0.309	0.000	
	GARCH(1)	0.884			GARCH(1)	0.000			GARCH(1)	0.090		
e(AUT/ESP)	ARCH(1)	0.000	0.000		ARCH(1)	0.001	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			GARCH(1)	0.000			GARCH(1)	-		
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Ireland / Greece												
Number observations	143				311				221			
Lags	14				15				14			
Cointegration rank at significance level 5%	1				-				-			
Trace statistics	45.668	15.251	1.647		58.448	31.760	11.906		25.933	11.141	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.076	1.076	1.036	1.036	1.054	1.054	1.000	1.000	1.000	0.984	0.984	0.980
Cointegration vector	CPI(GRC)	CPI(IRL)	e(GRC/IRL)	Constant	CPI(GRC)	CPI(IRL)	e(GRC/IRL)	Constant	CPI(GRC)	CPI(IRL)	e(GRC/IRL)	Constant
Coefficient	1.000	-0.544	0.000	0.751	1.000	-1.146	-0.966	0.490	1.000	-1.041	-	0.208
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.230	-0.034	0.027		-0.009	0.017	-0.017		-0.027	-0.001	-	
Economically sensible	Yes	No	Yes	-	Yes	Yes	No	-	Yes	No	-	-
VECM residual auto-correlation at lag	0				2				1			
Jarque-Bera: p-value	0.000				0.000				0.000			
Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.620	0.125		ARCH(1)	0.036	0.000		ARCH(1)	0.387	0.320	
	GARCH(1)	0.410			GARCH(1)	0.265			GARCH(1)	0.586		
CPI(IRL)	ARCH(1)	0.620	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.067	0.121	
	GARCH(1)	0.410			GARCH(1)	0.001			GARCH(1)	0.595		
e(AUT/IRL)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	GARCH(1)	0.000			GARCH(1)	0.000			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Italy / Greece

	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	143				311				221			
Lags	14				15				14			
Cointegration rank at significance level 5%	0				-				0			
Trace statistics	**29.297**	7.444	0.299		56.465	28.109	11.580		**13.415**	2.169	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.006	1.006	1.000	1.000	1.064	1.064	1.046	1.046	1.003	1.000	0.999	0.966
Cointegration vector	CPI(GRC)	CPI(ITA)	e(GRC/ITA)	Constant	CPI(GRC)	CPI(ITA)	e(GRC/ITA)	Constant	CPI(GRC)	CPI(ITA)	e(GRC/ITA)	Constant
Coefficient	1.000	-0.581	1.074	2.108	1.000	-1.147	-1.301	0.526	1.000	-1.548	-	2.619
Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.135	0.038	0.006		-0.003	0.007	-0.008		0.027	0.014	-	
Economically sensible	Yes	Yes	-	-	Yes	Yes	No	-	No	Yes	-	-
VECM residual auto-correlation at lag	1				2				2			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals (Italy / Greece)

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.550	0.083		ARCH(1)	0.094	**0.000**		ARCH(1)	0.137	**0.000**
	GARCH(1)	0.183				0.336			GARCH(1)	0.057	
CPI(ITA)	ARCH(1)	0.550	**0.000**		ARCH(1)	**0.001**	**0.000**		ARCH(1)	0.240	**0.000**
	GARCH(1)	0.183				**0.000**			GARCH(1)	**0.000**	
e(AUT/ITA)	ARCH(1)	**0.005**	**0.000**		ARCH(1)		**0.000**		ARCH(1)	-	-
	GARCH(1)	**0.000**				0.381			GARCH(1)	-	

Luxembourg / Greece

	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				15				13			
Cointegration rank at significance level 5%	1				-				0			
Trace statistics	32.822	**10.840**	1.723		35.896	18.403	7.129		**6.058**	1.925	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.938	0.329	1.203	1.203	1.105	1.105	1.007	1.000	0.980	0.958
Cointegration vector	CPI(GRC)	CPI(LUX)	e(GRC/LUX)	Constant	CPI(GRC)	CPI(LUX)	e(GRC/LUX)	Constant	CPI(GRC)	CPI(LUX)	e(GRC/LUX)	Constant
Coefficient	1.000	-0.916	-0.052	2.328	1.000	-1.654	-0.946	3.344	1.000	-1.664	-	3.188
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.140	-0.033	-0.030		0.004	0.007	0.009		0.012	0.005	-	
Economically sensible	Yes	No	No	-	No	Yes	Yes	-	No	Yes	-	-
VECM residual auto-correlation at lag	2				3				5			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals (Luxembourg / Greece)

	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.524	**0.001**		ARCH(1)	0.180	**0.015**		ARCH(1)	0.118	**0.032**
	GARCH(1)	0.106				0.443			GARCH(1)	0.290	
CPI(LUX)	ARCH(1)	0.524	**0.000**		ARCH(1)	**0.021**	**0.000**		ARCH(1)	**0.024**	**0.000**
	GARCH(1)	0.106				**0.000**			GARCH(1)	**0.000**	
e(AUT/LUX)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-
	GARCH(1)	**0.000**				**0.000**			GARCH(1)	-	

Johansen Cointegration Tests for Real Exchange Rate Components

Netherlands / Greece

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	133				311				221			
Lags	24				15				13			
Cointegration rank at significance level 5%	0				-				0			
Trace statistics	18.953	6.406	0.166		37.228	16.170	5.414		9.119	1.623	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.044	1.044	1.026	1.026	1.102	1.102	1.100	1.100	1.000	1.000	0.965	0.956
Cointegration vector	CPI(GRC)	CPI(NLD)	e(GRC/NLD)	Constant	CPI(GRC)	CPI(NLD)	e(GRC/NLD)	Constant	CPI(GRC)	CPI(NLD)	e(GRC/NLD)	Constant
Coefficient	1.000	-0.608	-0.833	-0.896	1.000	-1.457	-1.087	2.271	1.000	-3.515	-	12.019
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.079	-0.124	-0.030		0.007	0.004	0.070		0.004	0.002	-	
Economically sensible	Yes	No	No	-	No	Yes	Yes	-	No	Yes	-	-
VECM residual auto-correlation at lag	3				1				0			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.124	0.000		ARCH(1)	0.157	0.000		ARCH(1)	0.426	0.325
	GARCH(1)	0.000			)	0.000			GARCH(1)	0.569	
CPI(NLD)	ARCH(1)	0.001	0.000		ARCH(1)	0.127	0.000		ARCH(1)	0.044	0.000
	GARCH(1)	0.000			)	0.090			GARCH(1)	0.000	
e(AUT/NLD)	ARCH(1)	0.260	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-
	GARCH(1)	0.000			)	0.000			GARCH(1)	-	

Portugal / Greece

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	135				311				221			
Lags	22				21				14			
Cointegration rank at significance level 5%	-				-				0			
Trace statistics	63.882	24.725	4.483		44.366	16.238	7.576		8.240	2.326	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.190	1.190	1.159	1.128	1.053	1.053	1.045	1.045	1.000	0.980	0.975	0.954
Cointegration vector	CPI(GRC)	CPI(PRT)	e(GRC/PRT)	Constant	CPI(GRC)	CPI(PRT)	e(GRC/PRT)	Constant	CPI(GRC)	CPI(PRT)	e(GRC/PRT)	Constant
Coefficient	1.000	0.112	1.402	0.623	1.000	-0.439	3.453	-3.386	1.000	-0.481	-	-2.447
Economically sensible	Yes	No	No	-	Yes	Yes	No	-	Yes	Yes	-	-
Adjustment factor	0.001	0.162	0.004		-0.003	-0.003	-0.002		-0.008	-0.003	-	
Economically sensible	No	-	-	-	Yes	No	-	-	Yes	No	-	-
VECM residual auto-correlation at lag	0				3				1			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.041	0.000		ARCH(1)	0.192	0.000		ARCH(1)	0.144	0.021
	GARCH(1)	0.000			)	0.000			GARCH(1)	0.353	
CPI(PRT)	ARCH(1)	0.041	0.000		ARCH(1)	0.002	0.000		ARCH(1)	0.216	0.000
	GARCH(1)	0.000			)	0.000			GARCH(1)	0.000	
e(AUT/PRT)	ARCH(1)	0.041	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-
	GARCH(1)	0.000			)	0.000			GARCH(1)	-	

Johansen Cointegration Tests for Real Exchange Rate Components												
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	156				311				221			
Lags	1				15				14			
Cointegration rank at significance level 5%	0				1				0			
Trace statistics	**23.534**	6.553	1.484		54.241	**15.184**	5.021		**10.639**	2.790	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.904	0.978	1.078	1.078	1.037	1.037	1.000	0.976	0.973	0.973
Cointegration vector	CPI(GRC)	CPI(ESP)	e(GRC/ESP)	Constant	CPI(GRC)	CPI(ESP)	e(GRC/ESP)	Constant	CPI(GRC)	CPI(ESP)	e(GRC/ESP)	Constant
Coefficient	1.000	-0.421	-0.218	0.018	1.000	-0.836	-0.500	-0.941	1.000	-1.315	-	1.538
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Adjustment factor	-0.091	-0.043	0.105		-0.012	-0.010	-0.028		0.013	0.017	-	
Economically sensible	Yes	No	Yes	-	Yes	No	No	-	No	Yes	-	-
VECM residual auto-correlation at lag	4				3				2			
Jarque-Bera: p-value	0.000				0.000				0.009			
Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.431	**0.001**		ARCH(1)	**0.031**	0.000		ARCH(1)	0.073	**0.006**	
	GARCH(1)	0.074			)	0.000			GARCH(1)	0.252		
CPI(ESP)	ARCH(1)	0.479	0.362		ARCH(1)	0.000	0.000		ARCH(1)	0.218	**0.000**	
	GARCH(1)	0.435			)	0.000			GARCH(1)	0.000		
e(AUT/ESP)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.000**	0.000		ARCH(1)	-	-	
	GARCH(1)	**0.000**			)	0.000			GARCH(1)	-		
Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				10				14			
Cointegration rank at significance level 5%	0				1				0			
Trace statistics	**21.146**	10.772	3.368		29.807	**12.018**	5.168		**15.183**	3.348	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.007	1.000	1.000	0.637	1.003	1.000	1.000	0.985	1.000	0.990	0.952	0.952
Cointegration vector	CPI(IRL)	CPI(ITA)	e(IRL/ITA)	Constant	CPI(IRL)	CPI(ITA)	e(IRL/ITA)	Constant	CPI(IRL)	CPI(ITA)	e(IRL/ITA)	Constant
Coefficient	1.000	0.698	5.379	-3.431	1.000	-1.164	-0.320	0.773	1.000	0.641	-	-7.745
Economically sensible	Yes	No	No	-	Yes	Yes	Yes	-	Yes	No	-	-
Adjustment factor	0.001	0.000	0.001		0.005	0.006	-0.001		-0.004	0.000	-	
Economically sensible	No	-	-	-	No	Yes	No	-	Yes	-	-	-
VECM residual auto-correlation at lag	2				1				3			
Jarque-Bera: p-value	0.000				0.000				0.712			
Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
CPI(AUT)	ARCH(1)	0.837	0.976		ARCH(1)	0.570	0.000		ARCH(1)	0.348	0.622	
	GARCH(1)	0.996			)	0.000			GARCH(1)	0.933		
CPI(ITA)	ARCH(1)	0.416	0.122		ARCH(1)	0.000	0.000		ARCH(1)	0.295	**0.039**	
	GARCH(1)	0.514			)	0.000			GARCH(1)	0.304		
e(AUT/ITA)	ARCH(1)	0.416	**0.000**		ARCH(1)	0.441	0.000		ARCH(1)	-	-	
	GARCH(1)	0.514			)	0.077			GARCH(1)	-		

(Spain / Greece applies to the upper block; Italy / Ireland applies to the lower block.)

Johansen Cointegration Tests for Real Exchange Rate Components

		Period 1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	155				311				221			
	Lags	2				24				18			
	Cointegration rank at significance level 5%	-				-				0			
	Trace statistics	38.768	16.327	5.262		71.298	24.341	6.338		11.995	2.194	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.002	1.000	1.000	0.643	1.044	1.044	1.014	1.014	1.000	0.988	0.988	0.978
Portugal / Ireland	Cointegration vector	CPI(IRL)	CPI(PRT)	e(IRL/PRT)	Constant	CPI(IRL)	CPI(PRT)	e(IRL/PRT)	Constant	CPI(IRL)	CPI(PRT)	e(IRL/PRT)	Constant
	Coefficient	1.000	-0.471	0.205	-1.743	1.000	-0.289	0.787	-2.974	1.000	-0.495	-	-2.363
	Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes	-	-
	Adjustment factor	0.005	0.029	0.004		-0.015	0.049	-0.116		-0.011	-0.001	-	
	Economically sensible	No	Yes	-	-	Yes	Yes	-	-	Yes	No	-	-
	VECM residual auto-correlation at lag	3				3				1			
	Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals (Prozess | Single significance: p-value | Joint significance: p-value):

Portugal / Ireland		Prozess	Single sig.: p-value	Joint sig.: p-value	Prozess	Single sig.: p-value	Joint sig.: p-value	Prozess	Single sig.: p-value	Joint sig.: p-value
CPI(AUT)	ARCH(1)	ARCH(1)	0.702	0.924	ARCH(1)	0.000	0.000	ARCH(1)	0.177	0.314
	GARCH(1)	GARCH(1)	0.990		)	0.004		GARCH(1)	0.765	
CPI(PRT)	ARCH(1)	ARCH(1)	0.702	0.000	ARCH(1)	0.014	0.000	ARCH(1)	0.588	0.302
	GARCH(1)	GARCH(1)	0.990		)	0.000		GARCH(1)	0.377	
e(AUT/PRT)	ARCH(1)	ARCH(1)	0.702	0.000	ARCH(1)	0.014	0.000	ARCH(1)	-	-
	GARCH(1)	GARCH(1)	0.990		)	0.000		GARCH(1)	-	

		Period 1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	148				311				221			
	Lags	9				20				14			
	Cointegration rank at significance level 5%	1				1				-			
	Trace statistics	54.269	9.756	1.652		46.296	15.197	6.984		17.649	5.978	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.127	1.127	1.000	1.000	1.070	1.070	1.068	1.042	1.000	0.994	0.979	0.951
Spain / Ireland	Cointegration vector	CPI(IRL)	CPI(ESP)	e(IRL/ESP)	Constant	CPI(IRL)	CPI(ESP)	e(IRL/ESP)	Constant	CPI(IRL)	CPI(ESP)	e(IRL/ESP)	Constant
	Coefficient	1.000	-1.341	56.408	-12.970	1.000	-1.663	1.686	2.891	1.000	-4.548	-	16.899
	Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes	-	-
	Adjustment factor	0.000	0.001	-0.017		0.003	0.003	0.016		0.001	0.001	-	
	Economically sensible	Yes	Yes	-	-	No	Yes	-	-	No	Yes	-	-
	VECM residual auto-correlation at lag	0				1				2			
	Jarque-Bera: p-value	0.000				0.000				0.562			

Heteroskedasticity test of VECM residuals (Prozess | Single significance: p-value | Joint significance: p-value):

Spain / Ireland		Prozess	Single sig.: p-value	Joint sig.: p-value	Prozess	Single sig.: p-value	Joint sig.: p-value	Prozess	Single sig.: p-value	Joint sig.: p-value
CPI(AUT)	ARCH(1)	ARCH(1)	0.216	0.000	ARCH(1)	0.000	0.000	ARCH(1)	0.095	0.193
	GARCH(1)	GARCH(1)	0.000		)	0.141		GARCH(1)	0.762	
CPI(ESP)	ARCH(1)	ARCH(1)	0.514	0.203	ARCH(1)	0.022	0.000	ARCH(1)	0.074	0.000
	GARCH(1)	GARCH(1)	0.357		)	0.000		GARCH(1)	0.000	
e(AUT/ESP)	ARCH(1)	ARCH(1)	0.514	0.000	ARCH(1)	0.016	0.000	ARCH(1)	-	-
	GARCH(1)	GARCH(1)	0.357		)	0.000		GARCH(1)	-	

Johansen Cointegration Tests for Real Exchange Rate Components												
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	155				311				221			
	Lags	2				15				14			
	Cointegration rank at significance level 5%	0				-				0			
	Trace statistics	**24.806**	9.167	1.901		62.539	27.569	5.697		**9.626**	3.914	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.991	0.415	1.274	1.274	1.066	1.066	1.000	0.985	0.985	0.945
	Cointegration vector	CPI(ITA)	CPI(LUX)	e(ITA/LUX)	Constant	CPI(ITA)	CPI(LUX)	e(ITA/LUX)	Constant	CPI(ITA)	CPI(LUX)	e(ITA/LUX)	Constant
	Coefficient	1.000	-1.128	2.335	4.964	1.000	-2.261	0.066	5.406	1.000	-0.894	-	-0.472
	Economically sensible	Yes	Yes	**No**	-	Yes	Yes	**No**	-	Yes	Yes	-	-
Luxem-bourg / Italy	Adjustment factor	0.005	0.019	0.001		0.000	0.021	-0.054		-0.025	0.017	-	
	Economically sensible	**No**	Yes	-	-	Yes	Yes	-	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	2				2				4			
	Jarque-Bera: p-value	0.000				0.000				0.000			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.336	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.584	0.076	
		GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	0.124		
	CPI(LUX)	ARCH(1)	0.452	0.664		ARCH(1)	**0.008**	**0.000**		ARCH(1)	0.100	**0.000**	
		GARCH(1)	0.799			)	**0.000**			GARCH(1)	**0.000**		
	e(AUT/LUX)	ARCH(1)	**0.001**	**0.000**		ARCH(1)	**0.011**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	-		
	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	155				311				221			
	Lags	2				13				16			
	Cointegration rank at significance level 5%	0				1				0			
	Trace statistics	**29.294**	13.221	3.944		37.910	**14.682**	5.630		**9.914**	3.026	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.942	0.397	1.323	1.323	1.032	1.032	1.030	1.030	1.000	0.993
	Cointegration vector	CPI(ITA)	CPI(NLD)	e(ITA/NLD)	Constant	CPI(ITA)	CPI(NLD)	e(ITA/NLD)	Constant	CPI(ITA)	CPI(NLD)	e(ITA/NLD)	Constant
	Coefficient	1.000	-1.120	10.837	19.917	1.000	-5.089	1.885	17.450	1.000	-1.266	-	1.281
	Economically sensible	Yes	Yes	**No**	-	Yes	Yes	**No**	-	Yes	Yes	-	-
Nether-lands / Italy	Adjustment factor	0.002	0.007	-0.005		-0.002	0.000	-0.029		0.006	0.021	-	
	Economically sensible	**No**	Yes	-	-	Yes	Yes	-	-	**No**	Yes	-	-
	VECM residual auto-correlation at lag	2				3				2			
	Jarque-Bera: p-value	0.000				0.000				0.067			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.415	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	0.385	0.652	
		GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	0.917		
	CPI(NLD)	ARCH(1)	0.197	**0.000**		ARCH(1)	0.067	**0.007**		ARCH(1)	0.385	**0.000**	
		GARCH(1)	**0.000**			)	0.332			GARCH(1)	0.917		
	e(AUT/NLD)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-	
		GARCH(1)	**0.000**			)	**0.000**			GARCH(1)	-		

Johansen Cointegration Tests for Real Exchange Rate Components

Portugal / Italy

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	133				311				221			
Lags	24				23				13			
Cointegration rank at significance level 5%	-				2				0			
Trace statistics	106.369	41.017	16.456		50.178	21.841	**3.538**		**8.931**	4.171	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.331	1.301	1.107	1.107	1.067	1.067	1.035	1.035	1.000	0.976	0.964	0.964
Cointegration vector	CPI(ITA)	CPI(PRT)	e(ITA/PRT)	Constant	CPI(ITA)	CPI(PRT)	e(ITA/PRT)	Constant	CPI(ITA)	CPI(PRT)	e(ITA/PRT)	Constant
Coefficient	1.000	0.097	20.238	-17.559	1.000	-0.460	0.578	-2.325	1.000	-0.909	-	-0.432
Economically sensible	Yes	No	No	-	Yes	Yes	No	-	Yes	Yes	-	-
Adjustment factor	0.001	0.070	-0.001	-	-0.005	-0.013	-0.061	-	-0.017	0.008	-	-
Economically sensible	No	-	-	-	Yes	No	-	-	Yes	Yes	-	-
VECM residual auto-correlation at lag	1				5				1			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value	Prozess	Single significance: p-value	Joint significance: p-value	Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	**0.007**	**0.027**	ARCH(1)	**0.004**	**0.000**	ARCH(1)	0.253	0.516
	GARCH(1)	0.946		)	0.000		GARCH(1)	0.951	
CPI(PRT)	ARCH(1)	**0.007**	**0.000**	ARCH(1)	**0.010**	**0.000**	ARCH(1)	0.530	0.815
	GARCH(1)	0.946		)	0.000		GARCH(1)	0.945	
e(AUT/PRT)	ARCH(1)	**0.007**	**0.000**	ARCH(1)	**0.000**	**0.000**	ARCH(1)	-	-
	GARCH(1)	0.946		)	0.000		GARCH(1)	-	

Spain / Italy

Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				19				14			
Cointegration rank at significance level 5%	0				-				0			
Trace statistics	**26.016**	5.956	0.095		55.578	23.134	4.339		**13.116**	2.951	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.988	0.282	2.013	1.018	1.018	1.000	1.004	1.000	0.964	0.964
Cointegration vector	CPI(ITA)	CPI(ESP)	e(ITA/ESP)	Constant	CPI(ITA)	CPI(ESP)	e(ITA/ESP)	Constant	CPI(ITA)	CPI(ESP)	e(ITA/ESP)	Constant
Coefficient	1.000	-0.600	-0.029	-	1.000	-0.741	0.127	-	1.000	-0.624	-	-1.775
Economically sensible	Yes	Yes	Yes	-	Yes	Yes	No	-	Yes	Yes	-	-
Adjustment factor	0.030	0.114	-0.012	-	-0.005	-0.006	-0.058	-	-0.008	-0.027	-	-
Economically sensible	No	Yes	No	-	Yes	No	-	-	Yes	No	-	-
VECM residual auto-correlation at lag	0				1				2			
Jarque-Bera: p-value	0.000				0.000				0.762			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value	Prozess	Single significance: p-value	Joint significance: p-value	Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.393	**0.000**	ARCH(1)	**0.000**	**0.000**	ARCH(1)	0.235	**0.000**
	GARCH(1)	**0.000**		)	**0.000**		GARCH(1)	0.951	
CPI(ESP)	ARCH(1)	**0.018**	**0.000**	ARCH(1)	**0.001**	**0.000**	ARCH(1)	0.121	**0.000**
	GARCH(1)	**0.000**		)	**0.000**		GARCH(1)	0.945	
e(AUT/ESP)	ARCH(1)	**0.000**	**0.000**	ARCH(1)	**0.000**	**0.000**	ARCH(1)	-	-
	GARCH(1)	**0.000**		)	**0.043**		GARCH(1)	-	

Johansen Cointegration Tests for Real Exchange Rate Components

Netherlands / Luxembourg	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	156				311				221			
	Lags	1				13				13			
	Cointegration rank at significance level 5%	-				0				0			
	Trace statistics	48.931	21.367	6.923		**28.561**	8.452	3.696		**11.766**	2.523	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.807	0.950	1.023	1.023	1.000	1.000	1.000	0.972	0.922	0.922
	Cointegration vector	CPI(LUX)	CPI(NLD)	e(LUX/NLD)	Constant	CPI(LUX)	CPI(NLD)	e(LUX/NLD)	Constant	CPI(LUX)	CPI(NLD)	e(LUX/NLD)	Constant
	Coefficient	1.000	-0.614	0.537	-0.933	1.000	-0.984	-0.903	-0.050	1.000	-1.294	-	1.397
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	0.024	0.268	-0.098		-0.038	0.006	0.043		0.006	0.032	-	
	Economically sensible	No	Yes	-	-	Yes	Yes	Yes	-	No	Yes	-	-
	VECM residual auto-correlation at lag	3				0				1			
	Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.326	**0.000**		ARCH(1)	0.074	**0.000**		ARCH(1)	0.215	**0.000**
	GARCH(1)	0.109				**0.000**			GARCH(1)	**0.033**	
CPI(NLD)	ARCH(1)	0.074	**0.000**		ARCH(1)	0.084	**0.000**		ARCH(1)	0.197	0.429
	GARCH(1)	**0.000**				0.081			GARCH(1)	0.961	
e(AUT/NLD)	ARCH(1)	0.074	**0.000**		ARCH(1)	**0.001**	**0.000**		ARCH(1)	-	-
	GARCH(1)	**0.000**				**0.000**			GARCH(1)	-	

Portugal / Luxembourg	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	155				311				221			
	Lags	2				21				13			
	Cointegration rank at significance level 5%	1				-				0			
	Trace statistics	34.807	**11.046**	3.834		61.051	17.186	7.725		**10.503**	3.152	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.006	1.000	1.000	0.059	1.334	1.136	1.057	1.057	1.000	0.976	0.959	0.959
	Cointegration vector	CPI(LUX)	CPI(PRT)	e(LUX/PRT)	Constant	CPI(LUX)	CPI(PRT)	e(LUX/PRT)	Constant	CPI(LUX)	CPI(PRT)	e(LUX/PRT)	Constant
	Coefficient	1.000	3.287	12.969	-30.866	1.000	1.026	2.048	-8.670	1.000	-1.033	-	0.112
	Economically sensible	Yes	No	No	-	Yes	No	No	-	Yes	Yes	-	-
	Adjustment factor	0.001	0.004	-0.001		-0.004	-0.023	-0.028		-0.014	0.016	-	
	Economically sensible	No	-	-	-	Yes	-	-	-	Yes	Yes	-	-
	VECM residual auto-correlation at lag	3				0				3			
	Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.775	0.909		ARCH(1)	**0.007**	**0.000**		ARCH(1)	0.089	**0.000**
	GARCH(1)	0.866				**0.000**			GARCH(1)	**0.000**	
CPI(PRT)	ARCH(1)	0.539	0.074		ARCH(1)	**0.011**	**0.000**		ARCH(1)	0.264	0.535
	GARCH(1)	0.161				**0.000**			GARCH(1)	0.979	
e(AUT/PRT)	ARCH(1)	**0.000**	**0.000**		ARCH(1)	**0.000**	**0.000**		ARCH(1)	-	-
	GARCH(1)	0.503				**0.045**			GARCH(1)	-	

Johansen Cointegration Tests for Real Exchange Rate Components

Spain / Luxembourg

	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	155				311				221			
Lags	2				19				19			
Cointegration rank at significance level 5%	0				-				-			
Trace statistics	20.926	8.101	1.440		67.118	17.256	5.314		17.787	4.232	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.000	1.000	0.994	0.067	1.295	1.295	1.177	1.177	1.037	1.000	0.977	0.977
Cointegration vector	CPI(LUX)	CPI(ESP)	e(LUX/ESP)	Constant	CPI(LUX)	CPI(ESP)	e(LUX/ESP)	Constant	CPI(LUX)	CPI(ESP)	e(LUX/ESP)	Constant
Coefficient	1.000	0.352	1.289	-4.722	1.000	-0.373	0.054	-2.751	1.000	-0.492	-	-2.373
Economically sensible	Yes	No	No	-	Yes	Yes	No	-	Yes	Yes	-	-
Adjustment factor	0.008	0.007	-0.012		-0.025	-0.032	-0.137		-0.008	-0.020	-	
Economically sensible	No	-	-	-	Yes	No	-	-	Yes	No	-	-
VECM residual auto-correlation at lag	1				3				3			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.795	0.947		ARCH(1)	0.016	0.000		ARCH(1)	0.123	0.000
	GARCH(1)	0.897			)	0.000			GARCH(1)	0.000	
CPI(ESP)	ARCH(1)	0.577	0.624		ARCH(1)	0.002	0.000		ARCH(1)	0.286	0.000
	GARCH(1)	0.706			)	0.000			GARCH(1)	0.004	
e(AUT/ESP)	ARCH(1)	0.577	0.000		ARCH(1)	0.001	0.005		ARCH(1)	-	-
	GARCH(1)	0.706			)	0.968			GARCH(1)	-	

Portugal / Netherlands

	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
Number observations	134				311				221			
Lags	23				13				13			
Cointegration rank at significance level 5%	1				-				0			
Trace statistics	39.159	8.474	2.649		57.226	20.514	6.137		6.497	1.617	-	
5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
4 largest moduli of eigenvalues	1.096	1.096	1.037	1.037	1.467	1.076	1.076	1.034	1.000	0.998	0.993	0.942
Cointegration vector	CPI(NLD)	CPI(PRT)	e(NLD/PRT)	Constant	CPI(NLD)	CPI(PRT)	e(NLD/PRT)	Constant	CPI(NLD)	CPI(PRT)	e(NLD/PRT)	Constant
Coefficient	1.000	1.530	2.018	-7.840	1.000	2.659	4.851	-14.889	1.000	-1.363	-	1.756
Economically sensible	Yes	No	No	-	Yes	No	No	-	Yes	Yes	-	-
Adjustment factor	0.007	0.030	-0.006		0.000	0.001	-0.021		0.002	0.007	-	
Economically sensible	No	-	-	-	Yes	-	-	-	No	Yes	-	-
VECM residual auto-correlation at lag	0				2				0			
Jarque-Bera: p-value	0.000				0.000				0.000			

Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value
CPI(AUT)	ARCH(1)	0.336	0.000		ARCH(1)	0.154	0.000		ARCH(1)	0.591	0.690
	GARCH(1)	0.003			)	0.089			GARCH(1)	0.706	
CPI(PRT)	ARCH(1)	0.336	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.170	0.000
	GARCH(1)	0.003			)	0.000			GARCH(1)	0.000	
e(AUT/PRT)	ARCH(1)	0.154	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-
	GARCH(1)	0.089			)	0.345			GARCH(1)	-	

Johansen Cointegration Tests for Real Exchange Rate Components

	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	156				311				221			
	Lags	1				19				16			
	Cointegration rank at significance level 5%	0				2				0			
	Trace statistics	19.204	9.838	1.385		41.292	17.756	2.698		14.794	2.330	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.924	0.959	1.222	1.222	1.042	1.042	1.001	1.001	1.000	0.994
	Cointegration vector	CPI(NLD)	CPI(ESP)	e(NLD/ESP)	Constant	CPI(NLD)	CPI(ESP)	e(NLD/ESP)	Constant	CPI(NLD)	CPI(ESP)	e(NLD/ESP)	Constant
	Coefficient	1.000	-0.319	1.254	-4.377	1.000	-0.103	0.587	-3.845	1.000	-0.261	-	-3.543
	Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes	-	-
Spain / Nether-lands	Adjustment factor	-0.010	0.025	-0.046		-0.010	0.012	-0.184		-0.005	-0.009	-	
	Economically sensible	Yes	Yes	-	-	Yes	Yes	-	-	Yes	No	-	-
	VECM residual auto-correlation at lag	1				1				3			
	Jarque-Bera: p-value	0.000				0.000				0.000			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.066	0.000		ARCH(1)	0.091	0.143		ARCH(1)	0.027	0.000	
		GARCH(1)	0.000				0.668			GARCH(1)	0.711		
	CPI(ESP)	ARCH(1)	0.462	0.655		ARCH(1)	0.010	0.000		ARCH(1)	0.704	0.061	
		GARCH(1)	0.777				0.000			GARCH(1)	0.256		
	e(AUT/ESP)	ARCH(1)	0.000	0.000		ARCH(1)	0.027	0.032		ARCH(1)	-	-	
		GARCH(1)	0.000				0.711			GARCH(1)	-		

	Period	1960:1 - 1972:12				1973:1 - 1998:12				1999:1 - 2017:5			
	Number observations	156				311				221			
	Lags	1				21				15			
	Cointegration rank at significance level 5%	0				-				0			
	Trace statistics	24.941	11.440	2.068		44.887	20.492	3.943		14.288	4.536	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.004	1.000	1.000	0.942	1.066	1.066	1.039	1.039	1.003	1.000	0.987	0.987
	Cointegration vector	CPI(PRT)	CPI(ESP)	e(PRT/ESP)	Constant	CPI(PRT)	CPI(ESP)	e(PRT/ESP)	Constant	CPI(PRT)	CPI(ESP)	e(PRT/ESP)	Constant
	Coefficient	1.000	1.042	2.874	1.688	1.000	-0.753	-0.338	-1.523	1.000	-0.959	-	-0.178
	Economically sensible	Yes	No	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Spain / Portugal	Adjustment factor	0.007	0.003	-0.002	-	-0.008	-0.005	0.004	-	0.012	0.049	-	-
	Economically sensible	No	-	-	-	Yes	No	Yes	-	No	Yes	-	-
	VECM residual auto-correlation at lag	0				2				3			
	Jarque-Bera: p-value	0.000				0.000				0.000			
	Heteroskedasticity test of VECM residuals	Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value		Prozess	Single significance: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1)	0.471	0.000		ARCH(1)	0.001	0.000		ARCH(1)	0.000	0.000	
		GARCH(1)	0.865				0.000			GARCH(1)	0.001		
	CPI(ESP)	ARCH(1)	0.267	0.016		ARCH(1)	0.034	0.000		ARCH(1)	0.365	0.000	
		GARCH(1)	0.203				0.000			GARCH(1)	0.000		
	e(AUT/ESP)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
		GARCH(1)	0.000				0.001			GARCH(1)	-		

Legend Appendix Table 12: Under "Cointegration rank at significance level 5%" a hyphen "-" indicates full rank of matrix Π , i.e. stationarity in levels of all variables. VEC lag selection according to Akaike's information criterion over a range of 24 month. A constant and orthogonalized seasonal indicators following Johansen (1995) are allowed. The 4 largest moduli of the eigenvalues of the VEC companion matrix are displayed. The modulus of a real eigenvalue is its absolute value. The modulus of a complex eigenvalue, $a+b*i$, is calculated according to $(a^2+b^2)^{0.5}$. The companion matrix of a VEC with n endogenous variables and r cointegrating equations has $n-r$ unit eigenvalues. If the process is stable, the moduli of the remaining r eigenvalues are strictly less than unity. If there are moduli larger than unity, the dynamic process is unstable and the assumptions of the JC test are not fulfilled. The Jarque-Bera (1987) test is used to test for the H0 of a joint normal distribution of the VEC residuals. A Wald tests is used to test for the joint significance of Arch and Garch parameters.