Credit and Capital Markets, Volume 52, Issue 2, Maurer (Online-Appendix) Scientific Papers

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

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

	-	est Specification								Re	sults					$\Box$
	ı	est specification			19	60:1	- 1972:	12	19	73:1	- 1998:	12	19	99:1	- 2017	:5
Test	но	Н1	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 $\rho$	12	12	155	0.000	Н1	12	311	0.000	Н1	12	222	0.000	Н1
Herwartz	Panels contain unit roots	Panels are stationary	Panel-specific $\rho$	AIC	12	155	0.004	Н1	12	311	0.090	H0	12	222	0.028	Н1
Hadri	All panels are stationary	Some panels contain unit roots	-	12	12	155	0.022	H1	12	311	0.000	Н1	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	7A
	1			157									
	Number observations Lags	145 11	156 11	9	155 1	312 9	312 9	312 12	308	220 12	220 12	220 10	217
	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.	0.64	-2.10	0.16	133	-2.30	-2.22	0.3471	417	-3.33	-3.00	0.11/3	614
Austria	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	0.13	-4.82	-3.13	-3.13	0.13	-4.82	-3.13	-3.43	0.13	-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	HO	HO
	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
Belgium	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	HO	H1	HO	HO	H0	H1	H0	HO	HO	H1	H0
	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
Finland	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	но	H0	H0	НО	H1	НО	НО	HO	но	НО
	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
France	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
	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
Ger-	Structural break at obs.	-	-	-	114	-	-	-	239	-	-	-	626
many	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
	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
Greece	Structural break at obs.	-	-	-	-	-	-	-	369	-	-	-	627
Jieece	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
	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
Ireland	Structural break at obs.	-	-	-	89	-	-	-	252	-	-	-	586
ireianu	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	H1	H1	H0	H0	H1	H0
	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
Italy	Structural break at obs.		-	1	94		-	-	237	-	-	-	622
Italy	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	H1	H1	H0	H0	H1	H0
	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
Luxem-	Structural break at obs.	-	-	-	114	-	-	-	269	-	-	-	626
bourg	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
	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
Nether-	Structural break at obs.	-	-	-	119	-	-	-	422	-	-	-	623
lands	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
	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
Portugal	Structural break at obs.	-	-	-	88	-	-	-	276	-	-	-	555
rortugar	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
	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
Cnair	Structural break at obs.	-	-	-	54	-	-	-	205		-	-	567
Spain	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
	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
A	Structural break at obs	-	-	-	31	-	-	-	238	-	-	-	612
Austria	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	H0	H1	H0	H1	H0	H1	H0	H1
	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
D - I - I - · · · ·	Structural break at obs	-	-	-	79	-	-	-	234	-	-	-	584
Belgium	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	НО	H1	H0	H1	H0	H1	H0	H1	H1	H1	H0	H1
	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
Finland	Structural break at obs	-	-	-	55	-	-	-	237	-	-	-	554
Finianu	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
	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
France	Structural break at obs	-	-	-	46	-	-	-	281	-	-	-	583
riance	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
	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
Ger-	Structural break at obs	-	1	-	90	-	-	-	347	-	-	-	584
many	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
	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
Ireland	Structural break at obs	-	-	-	65	-	-	-	270	-	-	-	585
ireianu	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
	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
Italy	Structural break at obs	-	-	-	60	-	-	-	279	-	-	-	645
Italy	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
	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
Luxem-	Structural break at obs	-	-	-	74	-	-	-	305	-	-	-	643
bourg	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
	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
Nether-	Structural break at obs	-	-	-	50	-	-	-	347	-	-	-	506
lands	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
	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
Portugal	Structural break at obs	-	-	-	132	-	-	-	304	-	-	-	603
Tortugui	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
	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
Spain	Structural break at obs	-	-	-	64	-	-	-	213	-	-	-	637
Spani	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: 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). 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).

		Panel Unit Root Tests: Nor	minal Exchange Rate									
		Test Specification						Res	ults			
				190	60:1	- 1972:	12	19	973:1	- 1998	:12	
Test	но	Н1	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 $\rho$	12	65	156	1.000	H0	65	311	1.000	НО
Herwartz	Panels contain unit roots	Panels are stationary	Panel-specific $ ho$	AIC	65	156	0.155	H0	65	311	0.985	НО
Hadri	All panels are stationary	Some panels contain unit roots	-	12	65	156	0.000	Н1	65	311	0.000	Н1

**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

	-							Res	ults			
	Į.	est Specification			19	60:1	- 1972:	12	19	73:1	- 1998	:12
Test	НО	Н1	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 $ ho$	12	65	155	0.000	Н1	65	311	0.000	Н1
Herwartz	Panels contain unit roots	Panels are stationary	Panel-specific $ ho$	AIC	65	155	0.020	Н1	65	311	0.001	Н1
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-Luxemburgoise).

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

	Unit Root Tes	ts of th	e Nom	inal Exc	hange	Rate			
	Period		960:1 -				973:1 -	1998:1	2
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Belgium /	Structural break at obs.	-	-	-	43	-	-	-	262
Austria	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
	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	12	12	12	0
Finland /	Test statistic: z(t)	-1.80	-2.01	0.32	-9.10	-2.66	-2.10	0.32	-4.26
Austria	Structural break at obs.	-	-	-	94	1	1	1	383
Austria	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
	Number observations	153	156	157	155	312	312	312	312
	Lags	3	3	9		2	2	12	
France /	Test statistic: z(t)	-2.79	-2.85	0.29	-6.69	-3.71	-3.67	0.05	-4.40
Austria	Structural break at obs.	-			116				219
Austria	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
	Number observations	153	156	157	153	312	312	312	308
	Lags	3	3	9	3	11	11	12	4
Germany /	Test statistic: z(t)	-1.93	-2.25	0.28	-5.40	-1.50	-1.62	0.50	-3.75
Austria	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
	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	6	6	12	4
Greece /	Test statistic: z(t)	-1.94	-2.07	0.19	-4.26	-2.41	-3.00	0.27	-4.55
Austria	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
	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	12	12	12	4
Ireland /	Test statistic: z(t)	-2.41	-2.57	0.10	-4.85	-2.46	-2.22	0.36	-3.97
Austria	Structural break at obs.	- 2.44	- 2.44	- 0.15	95	- 2.42	- 2.42	- 0.15	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 Tes	ts of th	e Nom	inal Exc	hange	Rate			
	Period	1	960:1 -	1972:1	2	1	973:1 -	1998:1	.2
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Italy /	Structural break at obs.	-	-	-	31	-	-	-	393
Austria	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
	Number observations	144	156	157	155	312	312	312	309
	Lags	12	12	9	1	5	5	12	3
Luxembourg	Test statistic: z(t)	-3.99	-3.11	0.23	-6.11	-1.93	-2.04	0.42	-6.68
/ Austria	Structural break at obs.	-	-	-	26	-	-	-	262
/ Austria	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
	Number observations	143	156	157	154	312	312	312	309
	Lags	13	13	8	2	12	12	12	3
Netherlands	Test statistic: z(t)	-1.26	-4.22	0.33	-7.31	0.32	-1.85	0.37	-3.84
/ Austria	Structural break at obs.	-	-	-	106	-	-	-	289
/ Austria	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
	Number observations	145	156	157	153	312	312	312	310
	Lags	11	11	9	3	2	2	12	2
Portugal /	Test statistic: z(t)	-2.58	-1.94	0.40	-5.50	-2.04	-2.23	0.40	-3.40
Austria	Structural break at obs.	-	-	-	65	-	-	-	345
Austria	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
	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	0
Spain /	Test statistic: z(t)	-1.71	-1.71	0.29	-5.91	-2.58	-2.61	0.17	-3.78
Austria	Structural break at obs.	-	-	-	95	-	-	-	393
Austria	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
	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	12	12	12	0
Finland /	Test statistic: z(t)	-1.87	-2.02	0.34	-9.89	-1.99	-1.66	0.39	-3.32
Belgium	Structural break at obs.	-	-	-	94	-	-	-	383
Deigium	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	Н0	H0	H1	H0

	Unit Root Tes	ts of th	ne Nom	inal Exc	hange	Rate			
	Period	1	960:1 -	1972:1	.2	1	973:1 -	1998:1	.2
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
France /	Structural break at obs.	-			116				231
Belgium	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
	Number observations	153	156	157	155	312	312	312	308
	Lags	3	3	9	1	13	13	12	4
Germany /	Test statistic: z(t)	-1.92	-1.97	0.21	-4.01	-2.64	-2.48	0.12	-4.65
Belgium	Structural break at obs.	-	-	-	117	-	-	-	262
Beigiuiii	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
	Number observations	146	156	157	156	312	312	312	308
	Lags	10	10	9	0	6	6	12	4
Greece /	Test statistic: z(t)	-0.89	-1.77	0.24	-4.28	-2.61	-3.03	0.11	-3.53
Belgium	Structural break at obs.	-	-	-		-	-	-	
Deigiuiii	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
	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	11	11	12	4
Ireland /	Test statistic: z(t)	-2.19	-2.31	0.15	-4.65	-1.70	-1.52	0.39	-3.91
Belgium	Structural break at obs.	-	-	-	95	-	-	-	227
Beigiani	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
	Number observations	150	156	157	154	312	312	312	308
	Lags	6	6	9	2	6	6	12	4
Italy /	Test statistic: z(t)	-1.43	-1.32	0.36	-4.16	-2.04	-2.13	0.32	-3.79
Belgium	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
	Number observations	154	156	157	156	312	312	312	310
	Lags	2	2	9	0	4	4	12	2
Luxembourg	Test statistic: z(t)	-3.60	-4.01	0.16	-4.98	-3.10	-3.22	0.20	-3.47
/ Belgium	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	1	960:1 -	1972:1	2	1	973:1 -	1998:1	2		
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA		
	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		
Netherlands	Structural break at obs.	-	-	-	50	-	-	-	262		
/ Belgium	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	НО	H1	H0	H0	H1	H1		
	Number observations	145	156	157	153	312	312	312	308		
	Lags	11	11	9	3	2	2	12	4		
Portugal /	Test statistic: z(t)	-1.18	-1.52	0.39	-4.30	-2.28	-2.43	0.26	-3.73		
Belgium	Structural break at obs.	-	-	-	75	-	-	-	242		
Deigiuiii	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		
	Number observations	154	156	157	156	312	312	312	312		
	Lags	2	2	9	0	2	2	12	0		
Spain /	Test statistic: z(t)	-1.48	-1.45	0.33	-7.35	-2.23	-2.24	0.31	-4.16		
Belgium	Structural break at obs.	-	-	-	95	-	-	-	393		
Deigiuiii	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		
	Number observations	154	156	157	156	312	312	312	312		
	Lags	2	2	9		2	2	12			
France /	Test statistic: z(t)	-2.28	-2.43	0.20	-7.45	-2.15	-2.04	0.34	-4.12		
Finland	Structural break at obs.	-			94				383		
Tilliana	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		
	Number observations	154	156	157	156	312	312	312	312		
	Lags	2	2	9	0	12	12	12	0		
Germany /	Test statistic: z(t)	-1.42	-1.60	0.37	-7.19	-2.41	-1.86	0.39	-3.95		
Finland	Structural break at obs.	-	-	-	94	-	-	-	383		
Timaria	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		
	Number observations	154	156	157	156	312	312	312	309		
	Lags	2	2	9	0	5	5	12	3		
Greece /	Test statistic: z(t)	-1.95	-2.26	0.27	-10.8	-1.48	-1.75	0.45	-4.32		
Finland	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	1	960:1 -	1972:1	.2	1	973:1 -	1998:1	.2	
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	
	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	
Ireland /	Structural break at obs.	-	-	-	94	-	-	-	320	
Finland	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	
	Number observations	154	156	157	156	312	312	312	309	
	Lags	2	2	9	0	5	5	12	3	
the book	Test statistic: z(t)	-2.39	-2.68	0.25	-11.8	-4.12	-3.97	0.13	-4.14	
Italy /	Structural break at obs.	-	-	-	94	-	-	-	208	
Finland	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	
	Number observations	154	156	157	156	312	312	312	312	
	Lags	2	2	9	0	12	12	12	0	
Luxembourg	Test statistic: z(t)	-1.78	-1.95	0.35	-9.60	-2.08	-1.70	0.41	-3.56	
/ Finland	Structural break at obs.	-	-	-	94	-	-	-	383	
/ Fillialiu	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	
	Number observations	154	156	157	156	312	312	312	312	
	Lags	2	2	9	0	12	12	12	0	
Netherlands	Test statistic: z(t)	-1.76	-2.01	0.35	-8.97	-2.43	-1.76	0.36	-3.98	
/ Finland	Structural break at obs.	-	-	-	94	-	-	-	383	
/ I IIIIaiiu	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	
	Number observations	154	156	157	156	312	312	312	308	
	Lags	2	2	9	0	4	4	12	4	
Portugal /	Test statistic: z(t)	-1.71	-1.63	0.37	-9.19	-1.33	-1.55	0.53	-3.83	
Finland	Structural break at obs.	-	-	-	94	-	-	-	379	
Tillialia	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	
	Number observations	152	156	157	155	312	312	312	309	
	Lags	4	4	9	1	2	2	12	3	
Spain /	Test statistic: z(t)	-3.25	-5.39	0.14	-4.63	-2.59	-2.62	0.20	-3.42	
Finland	Structural break at obs.	-	-	-	58	-	-	-	275	
I IIIIaIIu	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 Tes	ts of th	e Nom	inal Exc	hange	Rate			
	Period	1	960:1 -	1972:1	.2	1	973:1 -	1998:1	.2
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Germany /	Structural break at obs.	-	-	-	116	-	-	-	238
France	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
	Number observations	148	156	157	156	312	312	312	312
	Lags	8	8	9	0	2	2	12	0
Greece /	Test statistic: z(t)	-3.13	-2.56	0.12	-5.26	-3.11	-3.31	0.27	-5.34
France	Structural break at obs.	-	-	-		-	-	-	
France	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
	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	12	12	12	4
Ireland /	Test statistic: z(t)	-2.10	-2.04	0.13	-3.76	-2.07	-2.00	0.43	-4.25
France	Structural break at obs.	-	-	-	95	-	-	-	251
France	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
	Number observations	154	156	157	154	312	312	312	309
	Lags	2	2	9	2	2	2	12	3
Italy /	Test statistic: z(t)	-3.40	-3.11	0.06	-5.65	-2.39	-2.52	0.30	-4.81
France	Structural break at obs.	-	-	-	116	-	-	-	393
France	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
	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	11	11	12	4
Luxembourg	Test statistic: z(t)	-2.15	-2.18	0.32	-5.65	-2.48	-2.45	0.30	-4.33
/ France	Structural break at obs.	-	-	-	116	-	-	-	231
/ Trance	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
	Number observations	154	156	157	156	312	312	312	311
	Lags	2	2	9	0	9	9	12	1
Netherlands	Test statistic: z(t)	-2.37	-2.61	0.35	-5.93	-3.64	-3.40	0.13	-4.70
/ France	Structural break at obs.	-	-	-	116	-	-	-	219
/ ITALICE	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		960:1 -				973:1 -	1998:1	.2
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Portugal /	Structural break at obs.	-	-	-	116	-	-	-	205
France	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
	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	3	3	12	0
Spain /	Test statistic: z(t)	-1.99	-2.03	0.16	-5.71	-2.59	-2.81	0.22	-4.51
France	Structural break at obs.	-	-	-	95	-	-	-	343
France	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
	Number observations	145	156	157	156	312	312	312	308
	Lags	11	11	9	0	6	6	11	4
Greece /	Test statistic: z(t)	-0.57	-0.87	0.29	-3.78	-3.04	-3.78	0.13	-4.63
Germany	Structural break at obs.	-	-	-		-	-	-	
Germany	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
	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	12	12	12	4
Ireland /	Test statistic: z(t)	-2.25	-2.36	0.24	-5.19	-2.01	-1.72	0.47	-4.09
Germany	Structural break at obs.	-	-	-	95	-	-	-	243
Cermany	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
	Number observations	152	156	157	155	312	312	312	308
	Lags	4	4	9	1	2	2	12	4
Italy /	Test statistic: z(t)	-0.98	-0.86	0.36	-3.49	-2.25	-2.25	0.37	-5.23
Germany	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
	Number observations	150	156	157	155	312	312	312	308
	Lags	6	6	9	1	3	3	12	4
Luxembourg	Test statistic: z(t)	-1.90	-2.23	0.19	-4.13	-2.58	-2.35	0.12	-5.26
/ Germany	Structural break at obs.	-	-	-	117	-	-	-	262
/ Germany	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 Tes	ts of th	e Nom	inal Exc	hange l	Rate			
	Period	1	960:1 -	1972:1	2	1	973:1 -	1998:1	2
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Netherlands	Structural break at obs.	-	-	-	117	-	-	-	208
/ Germany	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
	Number observations	154	156	157	153	312	312	312	310
	Lags	2	2	9	3	2	2	12	2
Portugal /	Test statistic: z(t)	-3.20	-2.71	0.27	-4.27	-2.41	-2.62	0.27	-3.41
Germany	Structural break at obs.	1	-	-	91	-	-	-	210
Germany	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
	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	0
Spain /	Test statistic: z(t)	-1.33	-1.27	0.34	-4.46	-2.17	-2.22	0.30	-4.22
Germany	Structural break at obs.	-	-	-	95	-	-	-	393
Germany	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
	Number observations	148	156	157	153	312	312	312	308
	Lags	8	8	9	3	6	6	12	4
Ireland /	Test statistic: z(t)	-1.93	-2.03	0.17	-6.44	-1.25	-1.55	0.54	-6.35
Greece	Structural break at obs.	-	-	-	95	-	-	-	307
Greece	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
	Number observations	148	156	157	156	312	312	312	308
	Lags	8	8	9	0	8	8	12	4
Italy /	Test statistic: z(t)	-1.91	-2.21	0.18	-3.75	-1.74	-1.99	0.42	-4.92
Greece	Structural break at obs.	-	-	-	70	-	-	-	393
O CCCC	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
	Number observations	146	156	157	156	312	312	312	308
	Lags	10	10	9	0	2	2	12	4
Luxembourg	Test statistic: z(t)	-0.95	-1.55	0.25	-4.03	-3.24	-3.35	0.09	-3.79
/ Greece	Structural break at obs.	-	-	-	123	-	-	-	227
, 5.5556	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	Н0

	Unit Root Tests of the Nominal Exchange Rate										
	Period		960:1 -				973:1 -	1998:1	.2		
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA		
	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		
Netherlands	Structural break at obs.	-	-	-	123	-	-	-	307		
/ Greece	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		
	Number observations	144	156	157	153	312	312	312	308		
	Lags	12	12	9	3	6	6	12	4		
Double and /	Test statistic: z(t)	-0.48	-0.95	0.38	-3.99	-2.41	-3.47	0.31	-4.05		
Portugal /	Structural break at obs.	-	-	-	76	-	-	-	301		
Greece	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		
	Number observations	151	156	157	153	312	312	312	310		
	Lags	5	5	9	3	4	4	12	2		
Consider /	Test statistic: z(t)	-1.36	-1.60	0.22	-6.00	-1.63	-2.07	0.36	-3.90		
Spain /	Structural break at obs.	-	-	-	95	-	-	-	393		
Greece	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		
	Number observations	154	156	157	156	312	312	312	308		
	Lags	2	2	9	0	9	9	12	4		
lant/	Test statistic: z(t)	-2.09	-2.09	0.16	-4.94	-2.30	-3.33	0.26	-4.83		
Italy / Ireland	Structural break at obs.	-	-	-	95	-	-	-	319		
rreland	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		
	Number observations	154	156	157	156	312	312	312	308		
	Lags	2	2	9	0	11	11	12	4		
Luxembourg	Test statistic: z(t)	-2.28	-2.38	0.15	-4.63	-1.67	-1.48	0.42	-3.88		
/ Ireland	Structural break at obs.	-	-	-	95	-	-	-	227		
/ ITEIailu	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		
	Number observations	154	156	157	156	312	312	312	308		
	Lags	2	2	9	0	11	11	12	4		
Netherlands	Test statistic: z(t)	-2.29	-2.68	0.15	-5.43	-1.83	-1.80	0.40	-3.89		
/ Ireland	Structural break at obs.	-	-	-	95	-	-	-	243		
/ ITEIailu	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 Tes	ts of th	e Nom	inal Exc	hange	Rate			
	Period	1	960:1 -	1972:1	2	1	973:1 -	1998:1	.2
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	Number observations	154	156	157	156	312	312	312	308
	Lags	2	2	9	0	11	11	12	4
5	Test statistic: z(t)	-2.01	-1.90	0.30	-5.40	-1.05	-1.18	0.55	-4.52
Portugal /	Structural break at obs.	-	-	-	95	-	-	-	270
Ireland	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
	Number observations	143	156	157	153	312	312	312	308
	Lags	13	13	9	3	11	11	12	4
Spain /	Test statistic: z(t)	-1.70	-1.72	0.30	-3.49	-2.14	-2.58	0.22	-3.73
Spain / Ireland	Structural break at obs.	•	1	-	54	1	-	-	331
ITEIAIIU	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
	Number observations	153	156	157	156	312	312	312	308
	Lags	3	3	9	0	6	6	12	4
Luxembourg	Test statistic: z(t)	-1.45	-1.21	0.37	-3.61	-1.89	-2.03	0.34	-3.79
/ Italy	Structural break at obs.	-	-	-	34	-	-	-	393
/ Italy	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
	Number observations	153	156	157	156	312	312	312	309
	Lags	3	3	9	0	5	5	12	3
Netherlands	Test statistic: z(t)	-1.41	-1.65	0.36	-3.82	-2.38	-2.41	0.30	-4.94
/ Italy	Structural break at obs.	-	-	-	36	-	-	-	393
/ Italy	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
	Number observations	154	156	157	153	312	312	312	308
	Lags	2	2	9	3	11	11	12	4
Portugal /	Test statistic: z(t)	-1.48	-1.23	0.40	-3.96	-1.86	-1.73	0.50	-4.14
Italy	Structural break at obs.	-	-	-	52	-	-	-	270
leary	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
	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
Spain / Italy	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 Tes	ests of the Nominal Exchange Rate							
	Period	1	960:1 -	1972:1	2	1	973:1 -	1998:1	2
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	Number observations	143	156	157	154	312	312	312	312
	Lags	13	13	9	2	2	2	12	0
Netherlands	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
Luxembourg	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
	Number observations	151	156	157	153	312	312	312	312
	Lags	5	5	9	3	2	2	12	0
Dortugal /	Test statistic: z(t)	-1.60	-1.93	0.38	-3.95	-2.32	-2.48	0.25	-4.21
Portugal /	Structural break at obs.	1	-	-	65	-	-	-	206
Luxembourg	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
	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	0
C:- /	Test statistic: z(t)	-1.43	-1.43	0.34	-7.31	-2.20	-2.24	0.33	-4.28
Spain /	Structural break at obs.	-	-	-	95	-	-	-	393
Luxembourg	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
	Number observations	145	156	157	153	312	312	312	310
	Lags	11	11	9	3	2	2	12	2
Portugal /	Test statistic: z(t)	-2.85	-2.26	0.38	-4.87	-2.18	-2.35	0.35	-3.38
Netherlands	Structural break at obs.	-	-	-	65	-	-	-	211
ivetherianus	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
	Number observations	154	156	157	156	312	312	312	312
	Lags	2	2	9	0	2	2	12	0
Spain /	Test statistic: z(t)	-1.46	-1.58	0.32	-5.66	-2.04	-2.17	0.24	-4.00
Netherlands	Structural break at obs.	-	-	-	95	-	-	-	393
ivetileriarius	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
	Number observations	154	156	157	156	312	312	312	310
	Lags	2	2	9	0	11	11	12	2
Spain /	Test statistic: z(t)	-1.43	-1.27	0.36	-5.78	-1.38	-1.65	0.48	-4.51
	Structural break at obs.	1	-	-	95	-	-	-	221
Portugal	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).

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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	
	Number observations	146	155	156	152	312	312	312	309	
	Lags	9	9	43	3	5	5	23	3	
Dalaissas /	Test statistic: z(t)	-6.15	-10.87	0.14	-8.76	-7.42	-15.99	0.06	-8.91	
Belgium /	Structural break at obs.	-	-	-	31	-	-	-	271	
Austria	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	
	Number observations	154	155	156	155	312	312	312	312	
	Lags	1	1	8	0	11	11	3	0	
Finland /	Test statistic: z(t)	-9.84	-13.43	0.05	-13.68	-4.08	-16.93	0.06	-17.25	
Austria	Structural break at obs.	-	-	-	94	-	-	-	377	
Austria	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	
	Number observations	154	155	156	155	312	312	312	309	
	Lags	1	1	25		1	1	57		
France /	Test statistic: z(t)	-8.08	-10.95	0.07	-11.19	-12.41	-16.68	0.09	-10.02	
Austria	Structural break at obs.	-			115				251	
Austria	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	
	Number observations	151	155	156	153	312	312	312	309	
	Lags	4	4	18	2	13	13	10	3	
Germany /	Test statistic: z(t)	-6.02	-10.51	0.07	-9.10	-4.53	-19.37	0.03	-11.01	
Austria	Structural break at obs.	-	-	-	116	-	-	-	235	
Austria	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	
	Number observations	142	155	156	155	312	312	312	309	
	Lags	13	13	12	0	5	5	17	3	
Greece /	Test statistic: z(t)	-2.80	-12.41	0.09	-12.37	-8.48	-16.74	0.05	-12.13	
Austria	Structural break at obs.	-	-	-		-	-	-		
Austria	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	
	Number observations	154	155	156	155	312	312	312	309	
	Lags	1	1	12	0	13	13	5	3	
Ireland /	Test statistic: z(t)	-9.29	-11.85	0.05	-12.13	-4.73	-17.68	0.12	-11.09	
Austria	Structural break at obs.	-	-	-	105	-	-	-	262	
Austrid	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	Differen	ces of N	ominal E	xchange	Rates				
	Period		1960:1 -	1972:12			1973:1 - 1998:12				
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA		
	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		
Italy /	Structural break at obs.	-	-	-	31	-	-	-	390		
Austria	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		
	Number observations	142	155	156	152	312	312	312	310		
	Lags	13	13	31	3	4	4	19	2		
Luxembourg	Test statistic: z(t)	-4.04	-10.30	0.12	-8.42	-8.22	-15.81	0.05	-12.02		
/ Austria	Structural break at obs.	-	-	-	31	-	-	-	210		
/ Austria	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		
	Number observations	143	155	156	152	312	312	312	308		
	Lags	12	12	21	3	13	13	12	4		
Netherlands	Test statistic: z(t)	-5.98	-14.76	0.09	-8.53	-5.30	-22.89	0.14	-11.52		
/ Austria	Structural break at obs.	-	-	-	32	-	-	-	233		
/ Austria	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		
	Number observations	142	155	156	153	312	312	312	311		
	Lags	13	13	14	2	3	3	12	1		
Portugal /	Test statistic: z(t)	-3.28	-12.34	0.07	-10.01	-10.09	-17.97	0.04	-14.33		
Austria	Structural break at obs.	-	-	-	67	-	-	-	227		
Austria	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		
	Number observations	154	155	156	155	312	312	312	312		
	Lags	1	1	14	0	1	1	8	0		
Spain /	Test statistic: z(t)	-8.56	-11.25	0.09	-11.65	-12.54	-18.68	0.04	-18.95		
Austria	Structural break at obs.	-	-	-	95	-	-	-	390		
Austria	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		
	Number observations	154	155	156	155	312	312	312	312		
	Lags	1	1	9	0	11	11	10	0		
Finland /	Test statistic: z(t)	-9.56	-13.32	0.05	-13.59	-4.23	-16.62	0.06	-16.87		
Belgium	Structural break at obs.	-	-	-	94	-	-	-	227		
20.8	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	2	
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	
	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	
France /	Structural break at obs.	-			116				219	
Belgium	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	
	Number observations	153	155	156	153	312	312	312	309	
	Lags	2	2	4	2	12	12	10	3	
Germany /	Test statistic: z(t)	-7.11	-9.47	0.09	-8.02	-4.94	-14.74	0.05	-7.63	
Belgium	Structural break at obs.	-	-	-	116	-	-	-	277	
Beigiuiii	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	
	Number observations	146	155	156	153	312	312	312	309	
	Lags	9	9	13	2	5	5	19	3	
Greece /	Test statistic: z(t)	-4.91	-12.56	0.05	-8.40	-8.13	-16.82	0.05	-11.07	
Belgium	Structural break at obs.	-	-	-		-	-	-		
Delgiani	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	
	Number observations	154	155	156	155	312	312	312	309	
	Lags	1	1	16	0	13	13	46	3	
Ireland /	Test statistic: z(t)	-8.87	-11.62	0.06	-12.14	-4.25	-18.12	0.09	-11.10	
Belgium	Structural break at obs.	-	-	-	97	-	-	-	271	
Jeigiani.	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	
	Number observations	150	155	156	154	312	312	312	309	
	Lags	5	5	5	1	5	5	16	3	
Italy /	Test statistic: z(t)	-4.39	-9.07	0.04	-9.04	-7.56	-17.46	0.14	-9.65	
Belgium	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	
	Number observations	152	155	156	152	312	312	312	311	
	Lags	3	3	10	3	3	3	17	1	
Luxembourg	Test statistic: z(t)	-7.77	-12.71	0.05	-8.25	-9.41	-15.30	0.09	-13.01	
/ Belgium	Structural break at obs.	- 2.44	- 2.46	- 0.15	120	- 2.42	- 2.42	- 0.15	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		
	Number observations	142	155	156	152	312	312	312	312		
	Lags	13	13	8	3	1	1	13	0		
NI sale sul susul s	Test statistic: z(t)	-4.18	-15.08	0.04	-8.05	-12.98	-17.52	0.05	-17.91		
Netherlands	Structural break at obs.	-	-	-	28	-	-	-	268		
/ Belgium	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		
	Number observations	145	155	156	153	312	312	312	309		
	Lags	10	10	12	2	1	1	12	3		
Portugal /	Structural break at obs.	-	-	-	80	-	-	-	227		
Belgium	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		
	Number observations	154	155	156	155	312	312	312	312		
	Lags	1	1	4	0	1	1	11	0		
Consider /	Test statistic: z(t)	-8.58	-11.53	0.08	-12.13	-12.39	-18.45	0.05	-18.72		
Spain /	Structural break at obs.	-	-	-	95	-	-	-	390		
Belgium	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		
	Number observations	154	155	156	155	312	312	312	312		
	Lags	1	1	8		1	1	8			
France /	Test statistic: z(t)	-9.31	-12.98	0.05	-13.19	-11.45	-16.74	0.04	-17.02		
Finland	Structural break at obs.	-			94				377		
rillialiu	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		
	Number observations	154	155	156	155	312	312	312	312		
	Lags	1	1	9	0	11	11	9	0		
Germany /	Test statistic: z(t)	-9.73	-13.25	0.06	-13.72	-3.99	-16.24	0.05	-16.43		
Finland	Structural break at obs.	-	-	-	94	-	-	-	377		
Fillialiu	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		
	Number observations	152	155	156	152	312	312	312	310		
	Lags	3	3	7	3	4	4	17	2		
Greece /	Test statistic: z(t)	-7.58	-14.05	0.08	-8.60	-9.21	-16.56	0.05	-11.99		
Finland	Structural break at obs.	-	-	-		-	-	-			
i ii ii dilu	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	Differen	ces of N	ominal E	xchange	Rates		
	Period		1960:1 -	1972:12			1973:1 -	1998:12	
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	Number observations	152	155	156	154	312	312	312	310
	Lags	3	3	6	1	13	13	24	2
Ireland /	Test statistic: z(t)	-7.50	-20.02	0.05	-12.77	-3.84	-18.10	0.06	-9.72
Finland	Structural break at obs.	-	-	-	94	-	-	-	277
Finiand	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
	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	8	0	2	2	12	0
Italy /	Test statistic: z(t)	-9.78	-13.88	0.04	-14.15	-8.87	-15.88	0.07	-16.21
Finland	Structural break at obs.	-	-	-	94	-	-	-	223
Fillialiu	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
	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	7	0	11	11	11	0
Luxembourg	Test statistic: z(t)	-9.66	-13.37	0.04	-13.66	-4.09	-16.53	0.06	-16.84
_	Structural break at obs.	1	-	1	94	1	1	1	377
/ Finland	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
	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	9	0	1	1	10	0
Netherlands	Test statistic: z(t)	-9.52	-13.56	0.05	-13.86	-11.83	-17.03	0.06	-17.50
/ Finland	Structural break at obs.	-	-	-	94	-	-	-	377
/ Fillialiu	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
	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	12	0	13	13	15	3
Portugal /	Test statistic: z(t)	-8.73	-12.42	0.07	-12.76	-4.24	-17.08	0.07	-11.08
Finland	Structural break at obs.	-	-	-	91	-	-	-	400
Tilliana	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
	Number observations	152	155	156	154	312	312	312	310
	Lags	3	3	6	1	1	1	18	2
Spain /	Test statistic: z(t)	-7.83	-19.51	0.03	-12.39	-12.62	-16.62	0.04	-11.91
Finland	Structural break at obs.	-	-	-	96	-	-	-	400
iiiiaiiu	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	Differen	ces of N	ominal E	xchange	Rates		
	Period		1960:1 -				1973:1 -	1998:12	
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Germany /	Structural break at obs.	-	-	-	116	-	-	-	251
France	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
	Number observations	144	155	156	155	312	312	312	309
	Lags	11	11	10	0	1	1	6	3
Greece /	Test statistic: z(t)	-4.08	-13.41	0.07	-13.69	-13.47	-17.85	0.02	-9.63
France	Structural break at obs.	1	-	1		1	1	1	
France	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
	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	6	0	13	13	12	3
Ireland /	Test statistic: z(t)	-8.30	-11.57	0.06	-12.26	-4.94	-19.57	0.09	-9.97
France	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
	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	1	0	1	1	18	0
Italy /	Test statistic: z(t)	-7.70	-11.66	0.04	-12.31	-13.75	-18.83	0.12	-19.31
France	Structural break at obs.	-	-	-	116	-	-	-	393
Trance	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
	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	7	0	10	10	7	3
Luxembourg	Test statistic: z(t)	-8.41	-11.47	0.04	-12.25	-5.12	-15.27	0.05	-10.55
/ France	Structural break at obs.	-	-	-	116	-	-	-	219
/ Trance	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
	Number observations	154	155	156	152	312	312	312	308
	Lags	1	1	9	3	8	8	11	4
Netherlands	Test statistic: z(t)	-8.57	-12.68	0.04	-7.47	-5.49	-15.89	0.04	-9.36
Netherlands / France	Structural break at obs.	-	-	-	116	-	-	-	219
, maniec	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	Differen	ces of N	ominal E	xchange	Rates		
	Period		1960:1 -	1972:12			1973:1 -	1998:12	!
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	Number observations	153	155	156	153	312	312	312	309
	Lags	2	2	16	2	1	1	13	3
Downtonal /	Test statistic: z(t)	-8.32	-11.02	0.07	-8.79	-13.30	-17.46	0.05	-10.45
Portugal /	Structural break at obs.	-	-	-	116	-	-	-	225
France	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
	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	87	0	2	2	10	0
Spain /	Test statistic: z(t)	-8.73	-11.44	0.31	-11.81	-10.94	-19.44	0.03	-19.61
France	Structural break at obs.	-	-	-	89	-	-	-	390
France	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
	Number observations	148	155	156	155	312	312	312	309
	Lags	7	7	13	0	5	5	18	3
Greece /	Test statistic: z(t)	-3.99	-12.32	0.10	-12.89	-8.76	-16.63	0.04	-11.60
Greece / Germany	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
	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	12	0	11	11	19	3
Ireland /	Test statistic: z(t)	-8.87	-12.29	0.04	-12.39	-4.20	-17.48	0.10	-10.52
Germany	Structural break at obs.	-	-	-	95	-	-	-	262
Germany	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
	Number observations	152	155	156	155	312	312	312	309
	Lags	3	3	8	0	1	1	14	3
Italy /	Test statistic: z(t)	-5.52	-10.37	0.08	-10.93	-12.40	-16.60	0.11	-9.67
Germany	Structural break at obs.	-	-	-	117	-	-	-	392
Germany	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
	Number observations	150	155	156	152	312	312	312	309
	Lags	5	5	4	3	2	2	11	3
Luxemhourg	Test statistic: z(t)	-6.02	-9.84	0.06	-7.54	-9.16	-15.79	0.04	-7.96
Luxembourg S	Structural break at obs.	-	-	-	116	-	-	-	271
, 55	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	Differen	ces of N	ominal E	xchange	Rates		
	Period		1960:1 -		1		1973:1 -	1998:12	
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Netherlands	Structural break at obs.	-	-	-	117	-	-	-	207
/ Germany	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
	Number observations	154	155	156	153	312	312	312	311
	Lags	1	1	15	2	3	3	11	1
Portugal /	Test statistic: z(t)	-8.88	-11.63	0.08	-8.94	-9.86	-17.73	0.04	-14.20
Germany	Structural break at obs.	1	-	1	114	1	1	1	227
Germany	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
	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	6	0	1	1	7	0
Spain /	Test statistic: z(t)	-8.03	-11.39	0.10	-12.20	-12.76	-18.56	0.04	-18.79
Spain / Germany	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
	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	12	0	11	11	19	3
Ireland /	Test statistic: z(t)	-8.87	-12.29	0.04	-12.39	-4.20	-17.48	0.10	-10.52
Greece	Structural break at obs.	-	-	-	95	-	-	-	262
Greece	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
	Number observations	152	155	156	155	312	312	312	309
	Lags	3	3	8	0	1	1	14	3
Italy /	Test statistic: z(t)	-5.52	-10.37	0.08	-10.93	-12.40	-16.60	0.11	-9.67
Greece	Structural break at obs.	-	-	-	117	-	-	-	392
Greece	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
	Number observations	150	155	156	152	312	312	312	309
	Lags	5	5	4	3	2	2	11	3
Luxembourg	Test statistic: z(t)	-6.02	-9.84	0.06	-7.54	-9.16	-15.79	0.04	-7.96
/ Greece	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	Differen	ces of N	ominal E	xchange	Rates		
	Period		1960:1 -				1973:1 -	1998:12	)
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Netherlands	Structural break at obs.	-	-	-	117	-	-	-	207
/ Greece	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
	Number observations	154	155	156	153	312	312	312	311
	Lags	1	1	15	2	3	3	11	1
Da mturaal /	Test statistic: z(t)	-8.88	-11.63	0.08	-8.94	-9.86	-17.73	0.04	-14.20
Portugal /	Structural break at obs.	-	-	-	114	1	-	-	227
Greece	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
	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	6	0	1	1	7	0
Spain /	Test statistic: z(t)	-8.03	-11.39	0.10	-12.20	-12.76	-18.56	0.04	-18.79
Spain / Greece	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
	Number observations	154	155	156	155	312	312	312	308
	Lags	1	1	7	0	8	8	41	4
Italy /	Test statistic: z(t)	-8.47	-11.63	0.05	-12.15	-8.07	-19.44	0.08	-10.36
Ireland	Structural break at obs.	-	-	-	97	-	-	-	393
ireiana	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
	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	31	0	13	13	119	3
Luxembourg	Test statistic: z(t)	-8.69	-11.60	0.08	-12.02	-4.47	-18.26	0.14	-10.63
/ Ireland	Structural break at obs.	-	-	-	97	-	-	-	269
, ireiaria	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
	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	10	0	13	13	90	3
Netherlands	Test statistic: z(t)	-9.62	-12.93	0.06	-13.28	-4.64	-18.53	0.12	-10.25
/ Ireland	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	Differen	ces of N	ominal E	xchange	Rates		
	Period		1960:1 -				1973:1 -	1998:12	
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Portugal /	Structural break at obs.	-	-	-	97	-	-	-	232
Ireland	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
	Number observations	143	155	156	153	312	312	312	308
	Lags	12	12	9	2	13	13		4
Spain /	Test statistic: z(t)	-2.96	-10.65	0.10	-6.19	-5.02	-19.88		-10.39
Ireland	Structural break at obs.	-	-	-	103	-	-	-	283
Ireland	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
Luxembourg	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
	Number observations	153	155	156	155	312	312	312	309
	Lags	2	2	8	0	5	5	15	3
Luvembourg	Test statistic: z(t)	-6.32	-10.87	0.05	-11.43	-7.73	-17.33	0.13	-9.50
/ Italy	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
	Number observations	154	155	156	155	312	312	312	309
	Lags	1	1	7	0	4	4	19	3
Netherlands	Test statistic: z(t)	-8.76	-14.06	0.03	-14.34	-7.86	-17.75	0.14	-9.15
/ Italy	Structural break at obs.	-	-	-	26	-	-	-	392
, italy	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
	Number observations	154	155	156	153	312	312	312	308
	Lags	1	1	13	2	10	10	7	4
Portugal /	Test statistic: z(t)	-9.08	-11.87	0.07	-9.02	-4.57	-18.07	0.12	-9.70
Italy	Structural break at obs.	-	-	-	44	-	-	-	242
1,	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
	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
Spain / Italy	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	Differen	ces of N	ominal E	xchange			
	Period		1960:1 -	1972:12			1973:1 -	1998:12	2
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	Number observations	142	155	156	152	312	312	312	312
	Lags	13	13	7	3	1	1	21	0
Netherlands	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
Luxembourg	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
	Number observations	151	155	156	153	312	312	312	309
	Lags	4	4	12	2	1	1	13	3
Portugal /	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
Luxembourg	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
	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	6	0	1	1	12	0
Spain /	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
Luxembourg	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
	Number observations	145	155	156	152	312	312	312	308
	Lags	10	10	12	3	13	13	11	4
Portugal /	Test statistic: z(t)	-6.04	-14.51	0.07	-9.63	-4.17	-17.86	0.06	-10.02
Netherlands	Structural break at obs.	-	-	-	124	-	-	-	227
ivetileilailus	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
	Number observations	154	155	156	155	312	312	312	312
	Lags	1	1	10	0	1	1	10	0
Spain /	Test statistic: z(t)	-9.15	-12.31	0.07	-12.80	-13.34	-18.67	0.05	-18.94
Netherlands	Structural break at obs.	-	-	-	95	-	-	-	390
ivetileriarius	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
	Number observations	154	155	156	155	312	312	312	308
	Lags	1	1	9	0	10	10	14	4
Spain /	Test statistic: z(t)	-8.43	-11.75	0.09	-12.38	-5.35	-17.55	0.05	-11.11
Spain / S	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 (<math>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 (<math>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 = unit root) 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

	т.	est Specification								Re	sults					
		est specification			19	60:1	- 1972	:12	19	73:1	- 1998	:12	19	999:1	- 2017	7:5
Test	НО	Н1	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 $\rho$	12	66	155	0.000	Н1	66	311	0.000	Н1	66	222	0.000	Н1
Herwartz	Panels contain unit roots	Panels are stationary	Panel-specific $\rho$	AIC	66	155	0.000	Н1	66	311	0.000	Н1	66	222	0.000	H1
Hadri	All panels are stationary	Some panels contain unit roots	-	12	66	155	0.333	НО	66	311	0.317	НО	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

		Ur	nit Root	Tests c	of the Re	al Exch	ange Ra	te					
	Period	1	960:1 -	1972:1	2	1	.973:1 -	1998:1	2	:	1999:1 -	2017:5	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Belgium /	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
Austria	Structural break at obs.	1	-	-	26	-	-	-	264	-	-	-	645
Austria	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
	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
Finland /	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
Austria	Structural break at obs.	-	-	-	94	-	-	-	383	-	-	-	577
Austria	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
	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
France /	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
France / Austria	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
	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
Germany /	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
Austria	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
	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
Greece /	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
Austria	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
	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
Ireland /	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
Austria	Structural break at obs.	-	-	- 0.46	95	-	-	-	243	-	-	- 0.46	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

		Ur	nit Root	Tests o	of the Re	al Exch	ange Ra	te					
	Period	1	960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1 -	2017:5	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
ta-li. /	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
Italy / Austria	Structural break at obs.	-	-	-	31	-	-	-	393	-	-	-	645
Austria	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	26	-	-	-	262	-	-	-	651
Austria	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
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	28	-	-	-	289	-	-	-	506
Austria	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
	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
Portugal /	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
Austria	Structural break at obs.	-	-	-	107	-	-	-	361	-	-	-	507
Austria	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
	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
Spain /	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
Austria	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	637
Austria	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
	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
Finland /	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
Relgium	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

		Uı	nit Root	Tests c	f the Re	al Exch	ange Ra	te					
	Period	1	L960:1 -	1972:1	2	1	L973:1 -	1998:1	2		1999:1 -	2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
France /	Number observations	153	156	157	155	312	312	312	308	220	220	220	218
Belgium	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
	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
Germany /	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
Belgium	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
	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
Granco /	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
Greece / Belgium	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
	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
Ireland /	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
Belgium	Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	586
Deigiuiii	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
	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
Italy /	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
Belgium	Structural break at obs.	-	-	-	31	-	-	-	393	-	-	-	508
Delgiani	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	125	-	-	-	381	-	-	-	512
Belgium	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

		ıU	nit Root	Tests c	f the Re	eal Exch	ange Ra	te					
	Period	1	L960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1 -	2017:5	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	55	-	-	-	262	-	-	-	566
Belgium	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
	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
Portugal /	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
Belgium	Structural break at obs.	-	-	-	40	-	-	-	210	-	-	-	508
Deigiani	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
	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
Spain /	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
Spain / Belgium	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
	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
France /	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
Finland	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
	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
Germany /	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
Finland	Structural break at obs.	-	-	- 0.46	94	-		- 0.46	382	-	-		528
	5% significance level	-2.89 -2.58	-2.89 -2.58	0.46	-4.80 -4.58	-2.88 -2.57	-2.88 -2.57	0.46	-4.80 -4.58	-2.88 -2.57	-2.88 -2.57	0.46	-4.80 -4.58
	10% significance level												
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H0	H0	H0	H0	H1	H0
	Number observations	154 2	156 2	157 9	156 0	312 5	312 5	312 12	309	220 13	220 13	220 10	217
	Lags	-1.95			-10.41	-1.19	_	_		_	-1.33	_	_
Greece /	Test statistic: z(t)	-1.95	-2.27	0.27	94	-1.19	-1.45	0.53	-4.30 381	-1.31	-1.33	1.21	-3.27
Finland	Structural break at obs. 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	637 -4.80
	10% significance level	-2.58	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	Accepted Hypothesis	-2.58 H0	-2.58 H0	H0	-4.58 <b>H1</b>	-2.57 H0	-2.57 H0	U.35	-4.58 H0	-2.57 H0	-2.57 H0	U.35	-4.58 H0
	Accepted Hypothesis	HU	HU	HU	HT	HU	HU	HT	HU	HU	HU	HT	HU

## Rainer Maurer

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

		Ur	nit Root	Tests c	of the Re	al Exch	ange Ra	te					
	Period	1	1960:1 -	1972:1	2	1	973:1 -	1998:1	2		1999:1 -	2017:5	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Germany /	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
France	Structural break at obs.	-	-	-	116	-	-	-	219	-	-	-	508
riance	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
	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
Greece /	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
France	Structural break at obs.	-	-	-	116	-	-	-	302	-	-	-	643
Trance	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
	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
Ireland /	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
France	Structural break at obs.	-	-	-	116	-	-	-	251	-	-	-	586
Trance	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
	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
Italy /	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
France	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	116	-	-	-	239	-	-	-	608
France	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
	Number observations	154	156	157	156	312	312	312	311	220	220	220	217
Madaaa	Lags	2	2	9	0	9	9	12	1	12	12	10	3
Nether-	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
lands /	Structural break at obs.	2.00	- 2.00	- 0.46	116	- 2.00	- 2.00	- 0.46	236	- 2.00	- 2.00	- 0.46	542
France	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

		Uı	nit Root	Tests o	of the Re	al Exch	ange Ra	te					
	Period	1	L960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1 -	2017:5	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Portugal /	Structural break at obs.	-	-	-	116	-	-	-	205	-	-	-	635
France	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
	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
Spain /	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
France	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	637
France	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
	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
Greece /	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
Germany	Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	643
Germany	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
	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
Ireland /	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
Germany	Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	586
Germany	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
	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
Italy /	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
Germany	Structural break at obs.	-	-	-	117	-	-	-	393	-	-	-	643
Cermany	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	117	-	-	-	262	-	-	-	655
Germany	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

		Ur	nit Root	Tests o	of the Re	eal Exch	ange Ra	te					
	Period	1	960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1 -	2017:5	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	117	-	-	-	342	-	-	-	566
Germany	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
	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
Portugal /	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
Germany	Structural break at obs.	-	-	-	91	-	-	-	210	-	-	-	508
Germany	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
	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
Spain /	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
Germany	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	637
Germany	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
	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
Ireland /	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
Greece	Structural break at obs.	-	-	-	95	-	-	-	234	-	-	-	587
dieece	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
	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
Italy /	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
Greece	Structural break at obs.	-	-	-	70	-	-	-	393	-	-	-	643
O. C.C.C.	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	638
Greece	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

		Uı	nit Root	Tests o	of the Re	eal Exch	ange Ra	te					
	Period	1	L960:1 -	1972:1	.2	1	1973:1 -	1998:1	2		1999:1 -	2017:5	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	637
Greece	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
	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
Portugal /	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
Greece	Structural break at obs.	-	-	-	133	-	-	-	210	-	-	-	655
Greece	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
	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
Spain /	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
Greece	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	642
Greece	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
	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
Italy /	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
Ireland	Structural break at obs.	-	-	-	121	-	-	-	319	-	-	-	586
ITCIUITO	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	586
Ireland	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
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	587
Ireland	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

		Ur	nit Root	Tests o	of the Re	eal Exch	ange Ra	te					
	Period		960:1 -				.973:1 -		2		1999:1 -	2017:5	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Portugal /	Structural break at obs.	-	-	-	95	-	-	-	221	-	-	-	587
Ireland	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
	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
Spain /	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
Ireland	Structural break at obs.	-	-	-	109	-	-	-	343	-	-	-	588
ireianu	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
	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
Luxem-	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
bourg / Italy	Structural break at obs.	-	-	-	26	-	-	-	393	-	-	-	516
boung / reary	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
	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
Nether-	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
lands / Italy	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
	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
Portugal /	Test statistic: z(t) Structural break at obs.	0.30	0.31	0.94	-3.20 36	-1.85	-1.72	0.51	-3.67 384	-2.16	-2.72	0.51	-3.25 583
Italy			-2.89		-4.80	2.00	2.00		_	-2.88			
	5% significance level 10% significance level	-2.89 -2.58	-2.89	0.46	-4.80	-2.88 -2.57	-2.88 -2.57	0.46	-4.80 -4.58	-2.88	-2.88 -2.57	0.46	-4.80 -4.58
		-2.36 H0	-2.36 H0	H1	-4.56 H0	-2.57 H0	-2.57 H0	U.33	-4.56 H0	-2.57 H0	-2.57 H0	H1	-4.56 H0
	Accepted Hypothesis	154		157	156	_	_	312	309		220	220	
	Number observations	2	156 2	9	0	312	312	12	309	220 12	12	10	217 3
	Lags 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
Spain / Italy	Structural break at obs.	-1.20	-1.50	-	95	-3.36	-3.01	-	273	-2.23	-2.05	1.57	531
Spain / Italy	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	0.46	-4.58	-2.57	-2.57	0.46	-4.58	-2.57	-2.57	0.46	-4.58
	Accepted Hypothesis	-2.36 H0	-2.56 H0	H1	-4.56 H1	-2.57 H1	-2.57 H1	H0	-4.56 H0	-2.57 H0	-2.57 H0	H1	-4.38 H0
	Accepted Hypothesis	пυ	пυ	ПТ	пт	пт	пт	пυ	пυ	пυ	пυ	ПТ	Пυ

		Ur	nit Root	Tests o	of the Re	eal Exch	ange Ra	te					
	Period	1	L960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1 -	2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	55	-	-	-	262	-	-	-	548
Luxem-	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
bourg	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
	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
Portugal /	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
Luxem-	Structural break at obs.	-	-	-	40	-	-	-	206	-	-	-	508
bourg	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
	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
Spain /	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
Luxem-	Structural break at obs.	-	-	-	95	-	-	-	393	-	-	-	531
bourg	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
	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
Portugal /	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
Nether-	Structural break at obs.	-	-	-	110	-	-	-	345	-	-	-	635
lands	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
	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
Spain /	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
Nether-	Structural break at obs.	-	-	-	95	-	-	-	392	-	-	-	531
lands	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
	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
Spain /	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
Portugal	Structural break at obs.	-	-	-	95	-	-	-	221	-	-	-	572
· or cagai	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

**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

					ifferenc								
	Period	1	1960:1 -	1972:1	2	1	973:1 -	1998:1	2		1999:1	- 2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Dolaium /	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
Belgium / Austria	Structural break at obs.	-	-	-	43	-	-	-	230	-	-	-	627
Austria	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
	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
Finland /	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
Austria	Structural break at obs.	-	-	-	94	-	-	-	400	-	-	-	548
Austria	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
	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
France /	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
Austria	Structural break at obs.	1			114				219				506
Austria	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
	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
Germany /	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
Austria	Structural break at obs.	-	-	-	116	-	-	-	208	-	-	-	547
Austria	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	Н1	H1	H0	H1
	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
Greece /	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
Austria	Structural break at obs.	-	-	-	67	-	-	-	268	-	-	-	614
Austria	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	HO	H1	H0	H1	H1	H1	H0	H1	H1	H1	H1	H1
	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
Ireland /	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
Austria	Structural break at obs.	-	-	-	97	-	-	-	212	-	-	-	585
Austrid	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	НО	H1	H1	H1	H0	H1	НО	H1	H1	H1

	Unit Ro	ot Test	s of the	First D	ifferenc	es of the	e Real E	xchang	e Rate				
	Period	1	L960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1	- 2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
la-li. /	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
Italy /	Structural break at obs.	-	-	-	31	-	-	-	377	-	-	-	633
Austria	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	31	-	-	-	235	-	-	-	544
Austria	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
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	68	-	-	-	233	-	-	-	523
Austria	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
	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
Portugal /	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
Austria	Structural break at obs.	-	-	-	67	-	-	-	390	-	-	-	569
Austria	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
	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
Spain /	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
Austria	Structural break at obs.	-	-	-	89	-	-	-	390	-	-	-	584
, tasti ia	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
	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
Finland /	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
Belgium	Structural break at obs.	-	-	-	96	-	-	-	227	-	-	-	549
DC-B-G-III	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 Ro	ot Test	s of the	First D	ifferenc	es of the	e Real E	xchang	e Rate				
	Period	:	1960:1 -	1972:1	2	1	973:1 -	1998:1	2		1999:1	- 2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
France /	Structural break at obs.	-			119				219				504
Belgium	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
	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
Germany /	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
Belgium	Structural break at obs.	-	-	-	116	-	-	-	213	-	-	-	627
beigiuiii	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
	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
Greece /	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
Belgium	Structural break at obs.	-	-	-	134	-	-	-	276	-	-	-	613
Deigiairi	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
	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
Ireland /	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
Belgium	Structural break at obs.	-	-	-	97	-	-	-	227	-	-	-	574
8	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
	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
Italy /	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
Belgium	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
	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
Luxem-	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
bourg /	Structural break at obs.	2.00	-	- 0.46	46	- 2.00	2.00	- 0.46	219	- 2.00	- 2.00	- 0.46	590
Belgium	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 Ro	ot Test	s of the	First Di	fferenc	es of the	e Real E	xchang	e Rate				
	Period	1	L960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1	- 2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Nether-	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
lands /	Structural break at obs.	1	-	-	28		1	-	277	-	-	-	586
Belgium	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
	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
Portugal /	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
Belgium	Structural break at obs.	-	-	-	80	-	-	-	231	-	-	-	572
Deigiuiii	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
	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
Spain /	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
Belgium	Structural break at obs.	-	-	-	89	-	-	-	219	-	-	-	507
Delgiani	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
	Number observations	154	155	156	155	312	312	312	312	220	220	220	220
	Lags	1	1	8		1	1	8		13	13	6	0
France /	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
Finland	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
	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
Germany /	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
Finland	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
	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
Greece /	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
Finland	Structural break at obs.	-	- 2.00	- 0.46	94	- 2.00	- 2.00	- 0.46	356	- 2.00	- 2.00	- 0.46	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 Ro	ot Test	s of the	First Di	fferenc	es of the	e Real E	xchang	e Rate				
	Period	1	.960:1 -	1972:1	.2	1	973:1 -	1998:1	2		1999:1	- 2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
luala a d /	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
Ireland / Finland	Structural break at obs.	-	-	-	94	-	-	-	207	-	-	-	573
Finiand	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
	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
Italy /	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
Finland	Structural break at obs.	-	-	-	96	-	-	-	205	-	-	-	554
Tillialia	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	96	-	-	-	400	-	-	-	558
Finland	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
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	94	-	-	-	377	-	-	-	548
Finland	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
	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
Portugal /	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
Finland	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	НО	H1	H0	H1
	Number observations	152	155	156	154	312	312	312	310	220	220	220	218
	Lags	3	3	6	12.20	12.62	10.04	18	2	13	13	15	2
Spain /	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
Finland	Structural break at obs.	-	-	- 0.46	96	-	- 2.00	- 0.46	400	- 2.00	-	- 0.46	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 Ro	ot Test	s of the	First D	ifferenc	es of the	e Real E	xchang	e Rate				
	Period	1	1960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1	- 2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
C/	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
Germany /	Structural break at obs.	-	-	-	115	-	-	-	219	-	-	-	508
France	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
	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	10	3
Greece /	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
France	Structural break at obs.	-	-	-	133	-	-	-	315	-	-	-	618
Trunce	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
	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
Ireland /	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
France	Structural break at obs.	-	-	-	97	-	-	-	225	-	-	-	581
Trance	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
	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
Italy /	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
France	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	- 2.00	- 0.46	116	- 2.00	- 2.00	- 0.46	219	- 2.00	- 2.00	- 0.46	548
France	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 H1	-2.58 H1	0.35 H0	-4.58 H1	-2.57 H1	-2.57 H1	0.35 H0	-4.58 H1	-2.57 H1	-2.57 H1	0.35 H0	-4.58 H1
	Accepted Hypothesis	_					_	_	_				_
	Number observations	154 1	155 1	156 10	152 3	312 8	312 8	312 11	308 4	220 13	220 13	220 15	217
Nether-	Lags 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
lands /	Structural break at obs.	-8.50	-12.00	0.32	115	-5.50	-15.91	0.04	219	-3.48	-15.23	0.00	507
France	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
riance	10% significance level	-2.58	-2.58	0.46	-4.58	-2.57	-2.57	0.46	-4.58	-2.57	-2.57	0.46	-4.58
	Accepted Hypothesis	-2.36 H1	-2.56 H1	H0	-4.56 H1	-2.57 H1	-2.57 H1	H0	-4.56 H1	-2.57 H1	-2.57 H1	H0	-4.36 H1
	Accepted Hypothesis	ПТ	пт	по	ПТ	LIT	ПТ	по	ПТ	ПТ	LIT	по	ПТ

	Unit Ro	ot Test	s of the	First D	ifferenc	es of the	e Real E	xchang	e Rate				
	Period	1	1960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1 - 2017:5		
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
D 1 /	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
Portugal / France	Structural break at obs.	1	-	-	120	-	-	-	391	-	-	-	603
rrance	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
	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
Spain /	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
France	Structural break at obs.	-	-	-	89	-	-	-	387	-	-	-	587
Trunce	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
	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
Greece /	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
Germany	Structural break at obs.	-	-	-	116	-	-	-	268	-	-	-	626
cermany	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
	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
Ireland /	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
Germany	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	НО	H1	H1	H1
	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
Italy /	Test statistic: z(t) Structural break at obs.	-5.35	-10.28	0.28	-10.66 26	-12.40	-16.61	0.11	-9.36 376	-2.66	-23.00	0.60	-10.33 577
Germany		-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	5% significance level 10% significance level	-2.58	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
		-2.56 H1	-2.56 H1	H0	-4.56 H1	-2.57 H1	-2.57 H1	H0	-4.36 H1	-2.37 H0	-2.57 H1	H1	-4.56 H1
	Accepted Hypothesis Number observations	150	155	156	152	312	312	312	309	220	220	220	
	Lags	5	155 5	4	3	2	2	11	309	13	13	8	217
Luxem-	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
bourg /	Structural break at obs.	-0.04	-9.67	-	114	-9.16	-15.62	-	283	-4.07	-30.08	-	592
Germany	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
Jermany	10% significance level	-2.58	-2.58	0.46	-4.58	-2.57	-2.57	0.46	-4.58	-2.57	-2.57	0.46	-4.58
	Accepted Hypothesis	-2.56 H1	-2.56 H1	H0	-4.56 H1	-2.57 H1	-2.57 H1	H0	-4.36 H1	-2.57 H1	-2.57 H1	H0	-4.56 H1
	Accepted hypothesis	ПТ	ПТ	пυ	ПТ	ПТ	ПТ	пυ	ППТ	ПТ	ПТ	пυ	ППТ

	Unit Ro	ot Test	s of the	First D	ifferenc	es of the	e Real E	xchang	e Rate				
	Period	1	L960:1 -	1972:1	.2	1	973:1 -	1998:1	2		1999:1	- 2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	110	-	-	-	207	-	-	-	586
Germany	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
	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
Portugal /	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
Germany	Structural break at obs.	-	-	-	114	-	-	-	390	-	-	-	603
dermany	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
	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
Spain /	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
Germany	Structural break at obs.	-	-	-	95	-	-	-	376	-	-	-	638
Germany	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
	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
Ireland /	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
Greece	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
	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
Italy /	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
Greece	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	133	-	-	-	271	-	-	-	614
Greece	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 Ro	ot Test	s of the	First D	fferenc	es of the	e Real E	xchang	e Rate				
	Period	1	L960:1 -	1972:1	.2	1	973:1 -	1998:1	2		1999:1 - 2017:5		
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Nether-	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
lands /	Structural break at obs.	-	-	-	126	-	-	-	227	-	-	1	622
Greece	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	Н1	H1	H0	H1
	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
Portugal /	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
Greece	Structural break at obs.	-	-	-	90	-	-	-	284	-	-	-	613
Greece	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
	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
Spain /	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
Greece	Structural break at obs.	-	-	-	72	-	-	-	284	-	-	-	610
Greece	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
	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
Italy /	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
Ireland	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
	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
Luxem-	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
bourg /	Structural break at obs.	-	-	-	97	-	-	-	227	-	-	-	579
Ireland	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	НО	H1	H1	H1
	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
Nether-	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
lands /	Structural break at obs.	-	-	- 0.46	97	-	-	- 0.46	221	-	-	- 0.46	586
Ireland	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 Ro	ot Test	s of the	First D	ifferenc	es of the	e Real E	xchang	e Rate				
	Period	1	1960:1 -	1972:1	.2	1	1973:1 -	1998:1	2		1999:1	- 2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	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
Portugal /	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
Ireland	Structural break at obs.	-	-	-	97	-	-	-	210	-	-	-	585
ireianu	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
	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
Spain /	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
Ireland	Structural break at obs.	-	-	-	96	-	-	-	313	-	-	-	637
irciana	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
	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
Luxem-	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
bourg / Italy	Structural break at obs.	-	-	-	41	-	-	-	227	-	-	-	536
boung / reary	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
	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
Nether-	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
lands / Italy	Structural break at obs.	-	-	-	26	-	-	-	229	-	-	-	511
ianas / italy	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
	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
Portugal /	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
Italy	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
	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
c · / · ·	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
Spain / Italy	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 Ro	ot Test	s of the	First Di	fferenc	es of the	e Real E	xchang	e Rate				
	Period	1	L960:1 -	1972:1	.2	1	.973:1 -	1998:1	2		1999:1	- 2017:	5
	Test	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA	ADF	PP	KPSS	ZA
	Number observations	142	155	156	152	312	312	312	312	220	220	220	217
NI-Ab	Lags	13	13	7	3	1	1	22	0	13	13	13	3
Nether-	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
lands /	Structural break at obs.	1	-	-	28	-	-	-	274	-	-	-	524
Luxem-	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
bourg	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	Н1	H1	H0	H1
	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
Portugal /	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
Luxem-	Structural break at obs.	-	-	-	80	-	-	-	227	-	-	-	572
bourg	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	Н1	H1	H0	H1
	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
Spain /	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
Luxem-	Structural break at obs.	-	-	-	89	-	-	-	219	-	-	-	590
bourg	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
	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
Portugal /	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
Nether-	Structural break at obs.	-	-	-	124	-	-	-	392	-	-	-	586
lands	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
	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
Spain /	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
Nether-	Structural break at obs.	-	-	-	89	-	-	-	377	-	-	-	586
lands	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
	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
Spain /	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
Portugal	Structural break at obs.	-	-	-	90	-	-	-	239	-	-	-	530
. Ortugal	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	Н1	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).

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

	Augmented Engle	-Granger Coi	ntegration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	156	156	299	308	195	195
	Lags	0	0	12	3	24	24
Belgium /	Test statistic: z(t)	-3.10	-3.52	-3.13	-2.43	-2.34	-2.32
Austria	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
	Number observations	156	156	298	298	207	204
	Lags	0	0	13	13	12	15
Finland /	Test statistic: z(t)	-2.15	-2.39	-2.31	-1.49	-2.57	-2.04
Austria	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
	Number observations	155	154	299	311	212	207
	Lags	1	2	12	0	7	12
France /	Test statistic: z(t)	-3.20	-4.58	-3.90	-2.97	-0.99	-0.78
Austria	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
	Number observations	156	156	299	299	207	206
	Lags	0	0	12	12	12	13
Germany /	Test statistic: z(t)	-3.47	-3.86	-2.36	-2.00	-1.15	-1.43
Austria	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
	Number observations	144	150	299	305	204	204
	Lags	12	6	12	6	15	15
Greece /	Test statistic: z(t)	-3.34	-3.55	-3.28	-2.01	-1.29	-1.44
Austria	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
	Number observations	153	153	287	307	207	203
	Lags	3	3	24	4	12	16
Ireland /	Test statistic: z(t)	-2.41	-2.46	-3.04	-1.25	-1.72	-1.30
Austria	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 Coi	ntegration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	155	156	299	290	207	207
	Lags	1	0	12	21	12	12
Italy /	Test statistic: z(t)	-1.56	-2.67	-2.78	-1.41	-1.47	-1.22
Austria	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
	Number observations	156	156	299	299	207	206
	Lags	0	0	12	12	12	13
Luxembourg	Test statistic: z(t)	-3.06	-3.39	-4.01	-3.03	-1.29	-0.95
/ Austria	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
	Number observations	155	155	299	309	207	207
	Lags	1	1	12	2	12	12
Netherlands	Test statistic: z(t)	-4.33	-5.14	-0.30	-2.60	-2.53	-2.50
/ Austria	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
	Number observations	155	144	311	311	207	207
	Lags	1	12	0	0	12	12
Portugal /	Test statistic: z(t)	-2.79	-1.72	-3.10	-3.12	-2.09	-2.17
Austria	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
	Number observations	155	156	285	307	207	205
	Lags	1	0	26	4	12	14
Spain /	Test statistic: z(t)	-2.84	-2.45	-3.66	-1.30	-1.14	-1.18
Austria	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
	Number observations	156	156	299	299	199	199
	Lags	0	0	12	12	20	20
Finland /	Test statistic: z(t)	-2.03	-1.56	-2.37	-1.84	-3.12	-3.09
Belgium	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 Coi	ntegration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	156	156	299	299	195	195
	Lags	0	0	12	12	24	24
France /	Test statistic: z(t)	-1.51	-2.33	-4.19	-2.37	-1.98	-1.66
Belgium	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
	Number observations	152	155	310	311	206	206
	Lags	4	1	1	0	13	13
Germany /	Test statistic: z(t)	-1.50	-2.81	-1.59	-1.18	-3.45	-3.77
Belgium	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
	Number observations	150	150	299	307	193	195
	Lags	6	6	12	4	26	24
Greece /	Test statistic: z(t)	-4.51	-4.65	-3.23	-2.21	-1.68	-1.24
Belgium	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
	Number observations	155	155	299	299	219	199
	Lags	1	1	12	12	0	20
Ireland /	Test statistic: z(t)	-2.15	-2.18	-3.44	-1.34	-2.14	-1.08
Belgium	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
	Number observations	155	156	290	290	219	219
	Lags	1	0	21	21	0	0
Italy /	Test statistic: z(t)	-1.66	-1.87	-3.52	-4.08	-1.80	-1.24
Belgium	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
	Number observations	156	156	311	311	193	194
	Lags	0	0	0	0	26	25
Luxembourg	Test statistic: z(t)	-3.99	-3.62	-2.79	-3.05	-2.38	-1.94
/ Belgium	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	e-Granger Coi	ntegration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	154	154	295	295	207	207
	Lags	2	2	16	16	12	12
Netherlands	Test statistic: z(t)	-4.75	-4.79	-1.13	-1.39	-2.85	-2.99
	Structural break at obs						
/ Belgium	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
	Number observations	144	153	311	311	207	206
	Lags	12	3	0	0	12	13
Portugal /	Test statistic: z(t)	-1.57	-1.78	-2.54	-2.43	-2.34	-2.46
Belgium	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
	Number observations	154	155	310	310	205	205
	Lags	2	1	1	1	14	14
Spain /	Test statistic: z(t)	-2.36	-1.60	-1.98	-2.09	-1.72	-0.88
Belgium	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
	Number observations	156	156	310	309	207	207
	Lags	0	0	1	2	12	12
France /	Test statistic: z(t)	-0.35	-0.95	-2.40	-2.42	-1.50	-2.49
Finland	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
	Number observations	144	154	298	299	205	195
	Lags	12	2	13	12	14	24
Germany /	Test statistic: z(t)	-1.43	-1.24	-2.99	-2.22	-1.55	-2.34
Finland	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
	Number observations	150	150	299	310	207	207
	Lags	6	6	12	1	12	12
Greece /	Test statistic: z(t)	-2.43	-2.53	-2.75	-1.84	-1.97	-2.20
Finland	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 Coi	ntegration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	155	156	299	299	206	207
	Lags	1	0	12	12	13	12
Ireland /	Test statistic: z(t)	0.20	0.22	-1.83	-2.01	-1.79	-2.20
Finland	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
	Number observations	156	156	310	299	207	207
	Lags	0	0	1	12	12	12
Italy /	Test statistic: z(t)	-2.83	-2.98	-3.03	-2.38	-1.88	-2.49
Finland	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
	Number observations	151	156	297	299	204	207
	Lags	5	0	14	12	15	12
Luxembourg	Test statistic: z(t)	-1.25	-1.38	-3.41	-2.55	-1.14	-2.54
/ Finland	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
	Number observations	156	156	299	299	207	207
	Lags	0	0	12	12	12	12
Netherlands	Test statistic: z(t)	-2.76	-2.05	-1.65	-1.56	-2.62	-2.63
/ Finland	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
	Number observations	150	156	311	308	205	195
	Lags	6	0	0	3	14	24
Portugal /	Test statistic: z(t)	-0.50	-1.03	-2.76	-2.46	-2.28	-2.57
Finland	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
	Number observations	156	156	306	310	207	207
	Lags	0	0	5	1	12	12
Spain /	Test statistic: z(t)	-3.48	-3.57	-2.37	-2.73	-1.50	-2.05
Finland	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

	hange Rate Com	ponents					
	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
	Number observations	154	154	310	311	206	207
	Lags	2	2	1	0	13	12
Germany /	Test statistic: z(t)	-1.65	-2.06	-2.59	-1.59	-3.38	-1.12
France	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
	Number observations	150	150	299	311	207	207
	Lags	6	6	12	0	12	12
Greece /	Test statistic: z(t)	-2.87	-2.84	-3.47	-3.44	-3.03	-1.28
France	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
	Number observations	156	156	305	305	207	207
	Lags	0	0	6	6	12	12
Ireland /	Test statistic: z(t)	-1.49	-1.09	-2.65	-2.19	-2.75	-2.34
France	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
	Number observations	155	156	311	311	196	196
	Lags	1	0	0	0	23	23
Italy / France	Test statistic: z(t)	-2.12	-2.09	-4.21	-2.54	-1.64	-1.57
italy / France	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
	Number observations	144	144	297	307	206	206
	Lags	12	12	14	4	13	13
Luxembourg	Test statistic: z(t)	-2.50	-2.93	-4.63	-1.47	-2.67	-1.61
/ France	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
	Number observations	156	156	304	305	207	207
	Lags	0	0	7	6	12	12
Netherlands	Test statistic: z(t)	-3.71	-3.57	-2.49	-2.24	-3.21	-2.17
/ France	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 Coi	ntegration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	156	156	311	311	207	207
	Lags	0	0	0	0	12	12
Portugal /	Test statistic: z(t)	-2.17	-1.97	-2.64	-1.85	-3.21	-3.28
France	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
	Number observations	155	156	311	311	206	207
	Lags	1	0	0	0	13	12
Spain /	Test statistic: z(t)	-2.73	-1.09	-1.98	-2.15	-2.84	-1.56
France	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
	Number observations	150	150	301	305	196	203
	Lags	6	6	10	6	23	16
Greece /	Test statistic: z(t)	-3.12	-3.09	-2.75	-2.68	-1.38	-1.36
Germany	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
	Number observations	156	155	308	309	196	195
	Lags	0	1	3	2	23	24
Ireland /	Test statistic: z(t)	-2.52	-2.95	-2.28	-1.72	-1.45	-1.65
Germany	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
	Number observations	155	155	311	311	206	206
	Lags	1	1	0	0	13	13
Italy /	Test statistic: z(t)	-1.63	-1.97	-1.55	-1.41	-2.43	-1.88
Germany	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
	Number observations	153	144	311	311	206	206
	Lags	3	12	0	0	13	13
Luxembourg	Test statistic: z(t)	-3.30	-3.14	-1.86	-1.74	-2.96	-2.68
/ Germany	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 Coi	ntegration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	156	156	310	311	204	206
	Lags	0	0	1	0	15	13
Netherlands	Test statistic: z(t)	-4.32	-3.45	-3.03	-3.22	-2.88	-2.76
/ Germany	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
	Number observations	156	156	311	311	207	207
	Lags	0	0	0	0	12	12
Portugal /	Test statistic: z(t)	-2.63	-2.48	-2.99	-2.89	-2.64	-2.52
Germany	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
	Number observations	156	156	311	311	196	207
	Lags	0	0	0	0	23	12
Spain /	Test statistic: z(t)	-3.24	-0.74	-1.99	-1.99	-1.15	-1.06
Germany	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
	Number observations	144	144	301	309	207	207
	Lags	12	12	10	2	12	12
Ireland /	Test statistic: z(t)	-1.76	-2.74	-1.78	-1.99	-3.50	-3.51
Greece	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
	Number observations	155	150	299	299	206	207
	Lags	1	6	12	12	13	12
Italy /	Test statistic: z(t)	-1.09	-2.54	-2.46	-1.36	-4.50	-1.07
Greece	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
	Number observations	147	150	299	299	202	206
	Lags	9	6	12	12	17	13
Luxembourg	Test statistic: z(t)	-3.25	-4.25	-4.14	-3.32	-2.46	-1.13
/ Greece	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 Coi	integration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	156	150	305	307	207	207
	Lags	0	6	6	4	12	12
Netherlands	Test statistic: z(t)	-4.94	-3.48	-2.22	-2.05	-3.52	-1.49
/ Greece	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
	Number observations	156	146	299	299	207	207
	Lags	0	10	12	12	12	12
Portugal /	Test statistic: z(t)	-2.90	-1.58	-3.57	-2.54	-3.16	-1.81
Greece	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
	Number observations	156	150	304	311	207	207
	Lags	0	6	7	0	12	12
Spain /	Test statistic: z(t)	-2.25	-2.31	-2.55	-2.11	-2.72	-1.47
Greece	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
	Number observations	156	156	304	306	207	203
	Lags	0	0	7	5	12	16
Italy /	Test statistic: z(t)	-1.19	-1.04	-1.68	-2.13	-2.75	-1.08
Ireland	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
	Number observations	155	154	299	301	202	203
	Lags	1	2	12	10	17	16
Luxembourg	Test statistic: z(t)	-3.26	-2.66	-2.88	-1.28	-1.49	-0.93
/ Ireland	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
	Number observations	156	151	299	299	207	206
	Lags	0	5	12	12	12	13
Netherlands	Test statistic: z(t)	-5.39	-2.67	-1.73	-0.76	-2.93	-1.25
/ Ireland	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 Coi	ntegration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	156	156	305	307	207	207
	Lags	0	0	6	4	12	12
Portugal /	Test statistic: z(t)	-3.60	-3.21	-1.51	-1.12	-2.92	-1.57
Ireland	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
	Number observations	155	155	302	302	207	205
	Lags	1	1	9	9	12	14
Spain /	Test statistic: z(t)	-2.52	-1.16	-3.02	-1.39	-2.11	-1.89
Ireland	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
	Number observations	155	153	310	310	195	195
	Lags	1	3	1	1	24	24
Luxembourg	Test statistic: z(t)	-2.95	-2.04	-2.12	-2.12	-2.70	-1.60
/ Italy	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
	Number observations	156	156	299	299	207	207
	Lags	0	0	12	12	12	12
Netherlands	Test statistic: z(t)	-3.05	-2.01	-2.18	-2.38	-2.95	-1.87
/ Italy	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
	Number observations	152	156	311	311	207	207
	Lags	4	0	0	0	12	12
Portugal /	Test statistic: z(t)	-0.50	-0.98	-2.85	-1.75	-3.08	-3.00
Italy	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
	Number observations	156	156	302	301	201	201
	Lags	0	0	9	10	18	18
Cooler / Ideales	Test statistic: z(t)	-2.00	-1.86	-2.72	-2.51	-1.87	-0.97
Spain / Italy	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 Coi	ntegration Tests	for Real Exc	hange Rate Com	ponents	
	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
	Number observations	153	156	299	299	204	204
Netherlands	Lags	3	0	12	12	15	15
Netherlands /	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
Luxembourg	10% significance level	-3.89	-3.49	-3.86	-3.47	-3.53	-3.06
	Decision	H1	H1	H0	H0	H0	H0
	Number observations	153	153	311	311	196	205
	Lags	3	3	0	0	23	14
Portugal /	Test statistic: z(t)	-2.15	-1.98	-2.71	-2.20	-2.16	-2.77
Luxembourg	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
	Number observations	154	150	309	309	206	207
	Lags	2	6	2	2	13	12
Spain /	Test statistic: z(t)	-2.51	-0.97	-1.74	-1.76	-1.76	-1.12
Luxembourg	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
	Number observations	153	153	311	311	207	207
	Lags	3	3	0	0	12	12
Portugal /	Test statistic: z(t)	-3.07	-1.94	-2.64	-2.05	-1.73	-1.70
Netherlands	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
	Number observations	155	156	305	311	203	207
	Lags	1	0	6	0	16	12
Spain /	Test statistic: z(t)	-2.92	-2.11	-0.88	-1.79	-1.72	-1.24
Netherlands	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
	Number observations	155	153	311	311	207	207
	Lags	1	3	0	0	12	12
Spain /	Test statistic: z(t)	-3.01	-0.93	-2.58	-2.31	-2.38	-2.77
Portugal	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

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange R	late Compone	nts				
	Period		1960:1 -	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	54			- 3	311			2	21	
	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
i	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	-	-
Belgium	Adjustment factor	-0.003	0.001	-0.017		0.007	0.009	0.004		-0.055	0.022	-	
/ Austria	Economically sensible	Yes	Yes	-	-	No	Yes	Yes	-	Yes	Yes	-	
/ Austria	VECM residual auto- correlation at lag			2				1				1	
	Jarque-Bera: p-value		0.1	000			0	.000			0	176	
1			Single	Joint			Single	Joint			Single	Joint	
i	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc			Prozess	significanc	significance:	
	test of VECM residuals	1102633	e: p-value	p-value		F102E33	e: p-value	p-value		1102633	e: p-value	p-value	
		ARCH(1)	0.000		i	ARCH(1)	0.164			ARCH(1)	0.000		
	CPI(AUT)	GARCH(1)	0.000	0.0		)	0.701	0.4		GARCH(1)	0.126	0.0	
		ARCH(1)	0.082		1	ARCH(1)	0.137			ARCH(1)	0.044		
	CPI(BEL)	GARCH(1)	0.000	0.000		)	0.649	0.215		GARCH(1)	0.004	0.000	
		ARCH(1)	0.082		1	ARCH(1)	0.000			ARCH(1)	-		
	e(AUT/BEL)	GARCH(1)	0.000	0.000		)	0.126	0.000		GARCH(1)	-	-	
	Period	ì	1960:1	1972:12		Ĺ	1973:1	- 1998:12		, ,	1999:1	- 2017:5	
	Number observations		1	55			3	311			2	21	
	Lags			2				13			1	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
i	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	-	-
							0.002	-0.011		-0.007	0.039	-	
Finland /	Adjustment factor	-0.024	0.027	-0.108		-0.001		0.011					-
Finland /	Adjustment factor Economically sensible	-0.024 Yes	0.027 Yes	-0.108	-	-0.001 Yes	Yes	-	-	Yes	Yes	-	
Finland / Austria	Economically sensible VECM residual auto-		Yes	-	-		Yes	-	-	Yes	Yes	1	
	Economically sensible		Yes	-0.108	-		Yes	3	-	Yes	Yes	1	
	Economically sensible VECM residual auto-		Yes	3	-		Yes	-	-	Yes	Yes	1	
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value		Yes	- 3 000 Joint	-		Yes 0. Single	3	-	Yes	Yes		
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty		Yes  O.I  Single significanc	3 000 Joint significance:	-		Yes  O.  Single significanc	3 .000 Joint significance:	-	Yes	Yes  O.I  Single significanc	Joint significance:	
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	Yes	Yes  O.t  Single significanc e: p-value	- 3 000 Joint	-	Yes	Yes  O.  Single significanc e: p-value	- 3 000 Joint	-	Prozess	Yes  O.t  Single significanc e: p-value	Joint	
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	Yes Prozess ARCH(1)	Yes  O.t  Single significanc e: p-value  0.006	3 000 Joint significance:	-	Yes	Yes  O. Single significanc e: p-value  O.036	3 .000 Joint significance:	-	Prozess ARCH(1)	Yes  O.I  Single significanc e: p-value  0.027	Joint significance:	
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	Prozess  ARCH(1) GARCH(1)	O.I. Single significanc e: p-value 0.006 0.338	Joint significance: p-value 0.005	-	Prozess ARCH(1)	Yes  O. Single significanc e: p-value O.036 O.430	3 000 Joint significance: p-value 0.058	-	Prozess  ARCH(1)  GARCH(1)	O.I. Single significanc e: p-value 0.027 0.626	Joint significance: p-value 0.056	
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	Prozess  ARCH(1) GARCH(1) ARCH(1)	Ves  O.I  Single significanc e: p-value  O.006  O.338  O.006	Joint significance: p-value	-	Yes	O. Single significanc e: p-value 0.036 0.430 0.020	3 000 Joint significance: p-value	-	Prozess  ARCH(1)  GARCH(1)  ARCH(1)	O.I. Single significanc e: p-value 0.027 0.626 0.027	Joint significance: p-value	
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	Prozess  ARCH(1) GARCH(1)	O.I. Single significanc e: p-value 0.006 0.338	Joint significance: p-value 0.005	-	Prozess ARCH(1)	Yes  O. Single significanc e: p-value O.036 O.430	3 000 Joint significance: p-value 0.058	-	Prozess  ARCH(1)  GARCH(1)	O.I. Single significanc e: p-value 0.027 0.626	Joint significance: p-value 0.056	

## Rainer Maurer

			lol	hansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			· 1972:12	bration re	Sto for fice		- 1998:12			1999:1	- 2017:5	
	Number observations			56				311				21	
	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 /	Adjustment factor	-0.072	-0.031	0.092		-0.005	-0.008	0.096		-0.001	-0.010	-	
Austria	Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	Yes	No	-	-
Austria	VECM residual auto-			1				2				1	
	correlation at lag			1				2				1	
	Jarque-Bera: p-value		0.	000			0	.000			0.0	001	
i	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
i	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of vecivi residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.002	0.003		ARCH(1)	0.142	0.323		ARCH(1)	0.140	0.312	
	cripion	GARCH(1)	0.578	0.005		)	0.778	0.525		GARCH(1)	0.731	0.512	
i	CPI(FRA)	ARCH(1)	0.138	0.258		ARCH(1)	0.054	0.000		ARCH(1)	0.837	0.871	
	Criting	GARCH(1)	0.565	0.250		)	0.059	0.000		GARCH(1)	0.806	0.071	
	e(AUT/FRA)	ARCH(1)	0.000	0.000		ARCH(1)	0.017			ARCH(1)	-		
		GARCH(1)	0.000			)	0.000			GARCH(1)	-		
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			51				311				21	
	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	Adjustment factor	-0.012	-0.011	0.005		-0.007	0.013	-0.032		-0.030	0.014	-	
/ Austria	Economically sensible	Yes	No	Yes	-	Yes	Yes	-	-	Yes	Yes		-
/ Austria	VECM residual auto-			_				3				3	
	correlation at lag			1				3				3	
	Jarque-Bera: p-value		0.	000			0	.000			0.0	000	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECIVI residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.000	0.000		ARCH(1)	0.155	0.223	l	ARCH(1)	0.027	0.027	
	C. 19401)	GARCH(1)	0.011	0.500		)	0.473	5.225	1	GARCH(1)	0.501	0.027	
	CPI(GER)	ARCH(1)	0.000	0.000		ARCH(1)	0.002	0.000		ARCH(1)	0.621	0.855	
		GARCH(1)	0.011		l	)	0.000		l	GARCH(1)	0.910		
	e(AUT/GER)	ARCH(1)	0.001	0.002	l	ARCH(1)	0.006	0.000	l	ARCH(1)	-	-	
		GARCH(1)	0.436		1	1 )	0.007		ı	GARCH(1)	-		

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			1972:12				- 1998:12			1999:1	- 2017:5	
	Number observations			53				311			2	21	
	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	-	-
Greece /	Adjustment factor	0.007	0.055	-0.005		-0.016	-0.003	0.069		0.000	-0.011	-	
Austria	Economically sensible	No	Yes	No	-	Yes	No	Yes	-	Yes	No	-	-
Austria	VECM residual auto-			2				4				1	
	correlation at lag			2				4				1	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.	000	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of vector residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.000	0.000		ARCH(1)	0.363	0.372		ARCH(1)	0.000	0.000	
	CHI(AUT)	GARCH(1)	0.000	0.000		)	0.515	0.572		GARCH(1)	0.000	0.000	
	CPI(GRC)	ARCH(1)	0.651	0.023		ARCH(1)	0.184	0.000		ARCH(1)	0.143	0.002	
	er r(dite)	GARCH(1)	0.151	0.025		)	0.000	0.000		GARCH(1)	0.253	0.002	
	e(AUT/GRC)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	_	
		GARCH(1)	0.000	1972:12		)	0.000	- 1998:12		GARCH(1)	-	- 2017:5	
	Period			- 1972:12 55								- 2017:5 21	
	Number observations			2				311					
	Lags Cointegration rank at			2				13				14	
	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	-	-
Ireland /	Adjustment factor	0.000	0.003	-0.003		0.000	0.001	-0.002		-0.001	0.001	-	
Austria	Economically sensible	Yes	Yes	No	-	No	-	-	-	Yes	Yes	-	-
riustriu	VECM residual auto-			3				3				2	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				005	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
			e: p-value	p-value			e: p-value	p-value			e: p-value	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		l	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		l	GARCH(1)	0.610		
	e(AUT/IRL)	ARCH(1)	0.000	0.000		ARCH(1)	0.026	0.000	l	ARCH(1)	-	-	
1		GARCH(1)	0.000	1	1	)	0.000	ı	ı	GARCH(1)	-	1	

			Jol	hansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	nts				
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				15			- 1	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	23.000	13.410	3.700		23.000	13.410	3.700		15.410	3.700		
	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	-	-
Italy /	Adjustment factor	-0.039	-0.010	-0.015		0.000	0.000	0.001		0.001	0.000	-	
Austria	Economically sensible	Yes	No	-	-	Yes		Yes	-	No		-	-
	VECM residual auto- correlation at lag			3				1				2	
	Jarque-Bera: p-value		0.	000			0.	.000			0.0	046	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc			Prozess	significanc		
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
		ARCH(1)	0.000			ARCH(1)	0.486			ARCH(1)	0.152		1
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.000	0.227		GARCH(1)	0.842	0.358	
		ARCH(1)	0.486			ARCH(1)	0.000			ARCH(1)	0.152		1
	CPI(ITA)	GARCH(1)	0.000	0.000		1	0.000	0.000		GARCH(1)	0.842	0.000	
		ARCH(1)	0.486			ARCH(1)	0.002			ARCH(1)	0.042		1
	e(AUT/ITA)	GARCH(1)	0.000	0.227		ARCH(1)	0.002	0.000		GARCH(1)		-	
	Period			- 1972:12				- 1998:12			1999-1	- 2017:5	
	Number observations			54				311				21	
	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	23.000	13.410	3.700		23.000	13.410	3.700		13.410	3.700	-	
	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	-	-
Luxem-	Adjustment factor	0.006	0.014	-0.025		0.015	0.021	0.030		0.003	-0.007	-	
bourg /	Economically sensible	No	Yes	-	-	No	Yes	Yes	-	No	No	-	-
Austria	VECM residual auto-			2				4				2	
	correlation at lag												
	Jarque-Bera: p-value		0.	000			0.	.000				000	
				Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty		Single				significanc	significance:		Prozess	significanc	significance:	
		Prozess	Single significanc	significance:		Prozess	31611111CUTTC						
	Heteroskedasticisty test of VECM residuals		significanc e: p-value				e: p-value	p-value			e: p-value	p-value	]
	test of VECM residuals	ARCH(1)	significanc e: p-value 0.152	significance: p-value		Prozess ARCH(1)	e: p-value 0.169			ARCH(1)	0.326		
			significanc e: p-value	significance:			e: p-value	p-value 0.210		ARCH(1) GARCH(1)		p-value 0.025	
	test of VECM residuals  CPI(AUT)	ARCH(1) GARCH(1) ARCH(1)	significanc e: p-value 0.152	significance: p-value 0.000			e: p-value 0.169 0.428 0.007	0.210		GARCH(1) ARCH(1)	0.326 0.109 0.090	0.025	
	test of VECM residuals	ARCH(1) GARCH(1)	significanc e: p-value 0.152 0.842 0.008 0.000	significance: p-value		ARCH(1) ) ARCH(1) )	e: p-value 0.169 0.428			GARCH(1)	0.326 0.109		
	test of VECM residuals  CPI(AUT)	ARCH(1) GARCH(1) ARCH(1)	significanc e: p-value 0.152 0.842 0.008	significance: p-value 0.000		ARCH(1)	e: p-value 0.169 0.428 0.007	0.210		GARCH(1) ARCH(1)	0.326 0.109 0.090	0.025	

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	nts				
	Period			1972:12	<b>5</b>	<u> </u>		- 1998:12			1999:1	- 2017:5	
	Number observations			53				311				21	
	Lags			4				13			1	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	-	-
Nether-	Adjustment factor	-0.044	-0.019	0.083		0.004	-0.001	0.005		-0.025	0.037	-	
lands /	Economically sensible	Yes	No	Yes	-	No	No	Yes	-	Yes	Yes	-	-
Austria	VECM residual auto- correlation at lag			3				3				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.0	000	
1			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	1102033	e: p-value	p-value		1102033	e: p-value	p-value		1102033	e: p-value	p-value	
		ARCH(1)	0.000			ARCH(1)	0.389			ARCH(1)	0.240		
	CPI(AUT)	GARCH(1)	0.007	0.000		1	0.932	0.689		GARCH(1)	0.000	0.000	
		ARCH(1)	0.147			ARCH(1)	0.089			ARCH(1)	0.828		
	CPI(NLD)	GARCH(1)	0.000	0.000		ARCH(1)	0.104	0.000		GARCH(1)	0.785	0.903	
						ADCII(A)	0.104				0.763		
	e(AUT/NLD)	ARCH(1) GARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)		-	
	Period	GARCII(1)		1972:12				- 1998:12		GARCII(1)		- 2017:5	
	Number observations			56				311				21	
	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	- CPROTITITITI	1.175
	Economically sensible	Yes	Yes	Yes	33.003	Yes	Yes	Yes	-1.204	Yes	Yes		1.175
	Adjustment factor	-0.001	-0.003	0.001		-0.007	0.004	0.054		-0.005	0.009		
Portugal	Economically sensible	Yes	-0.003 No	Yes	-	Yes	Yes	Yes	-	Yes	Yes		-
/ Austria	VECM residual auto-	163				163	163	163		163	163		
	correlation at lag			3				1				2	
	Jarque-Bera: p-value		0.1	000			0	.000			0.1	000	
	Jarque-bera: p-value		_								_		
	Heteroskedasticisty	Prozess	Single	Joint		Prozess	Single	Joint		Prozess	Single	Joint	
	test of VECM residuals	Prozess	significanc e: p-value	significance:		Prozess	significanc e: p-value	significance: p-value		Prozess	significanc e: p-value	significance: p-value	
		A D C L L (A)		p-value		ADCII(4)		p-value		ADCII(4)		p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.002 0.511	0.004		ARCH(1)	0.044 0.553	0.042		ARCH(1) GARCH(1)	0.525 0.838	0.775	
		ARCH(1)	0.205			ARCH(1)	0.000			ARCH(1)	0.910		
	CPI(PRT)	GARCH(1)	0.205	0.000	l	Anch(1)	0.000	0.000		GARCH(1)	0.910	0.957	
		ARCH(1)	0.001			ARCH(1)	0.000			ARCH(1)	U.663		
	e(AUT/PRT)	GARCH(1)	0.012	0.000	l	VVCU(1)	0.000	0.000		GARCH(1)		-	
		GWUCH(I)	0.000	1	1	,	0.551	1	1	GMUCH(I)	-		

## Rainer Maurer

			Inl	nansen Cointe	gration Te	sts for Res	l Exchange	Rate Compone	ents				
	Period			1972:12	bration re	July 101 Met		- 1998:12			1999:1	- 2017:5	
	Number observations			56				311				21	
	Lags			1				15				L4	
	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)	Constan
	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	-	
Spain /	Economically sensible	Yes	Yes	-	-	Yes	No	Yes	-	No	No	-	-
Austria	VECM residual auto-			_									
	correlation at lag			2				1				1	
	Jarque-Bera: p-value		0.	000			0.	.000			0.0	055	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.002	0.004		ARCH(1)	0.088	0.142		ARCH(1)	0.140	0.323	
	CPI(AUT)	GARCH(1)	0.446	0.004		)	0.684	0.142		GARCH(1)	0.730	0.323	
	CPI(ESP)	ARCH(1)	0.428	0.008		ARCH(1)	0.004	0.000		ARCH(1)	0.276	0.000	
	CPI(ESP)	GARCH(1)	0.134	0.008		)	0.000	0.000		GARCH(1)	0.000	0.000	
	e(AUT/ESP)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-		
	e(AUT/ESP)	GARCH(1)	0.000	0.000		)	0.338	0.000		GARCH(1)	-		
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				13				19	
	Cointegration rank at			0				1				0	
	significance level 5%												
	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	-	-
Finland /	Adjustment factor	-0.007	0.001	0.016		-0.003	-0.018	0.051		0.017	0.048	-	
Belgium	Economically sensible	Yes	Yes	Yes	-	Yes	No	Yes	-	No	Yes	-	-
beigiuiii	VECM residual auto-			1				0				1	
	correlation at lag			1				U				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.:	216	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	rescot Arcivi Lesinneis		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.051	0.000		ARCH(1)	0.411	0.000	1	ARCH(1)	0.241	0.003	
	CFI(AUT)	GARCH(1)	0.000	0.000		)	0.000	0.000	1	GARCH(1)	0.111	0.003	
	CPI(FIN)	ARCH(1)	0.051	0.000		ARCH(1)	0.060	0.000		ARCH(1)	0.195	0.389	
	Ci i(i iii)	GARCH(1)	0.000	0.000		)	0.000	0.000	l	GARCH(1)	0.757	0.303	l
	e(AUT/FIN)	ARCH(1)	0.000	0.000		ARCH(1)	0.001	0.000	1	ARCH(1)	-		l
	-0//	GARCH(1)	0.000	500		)	0.000	1		GARCH(1)	-		1

			Jol	hansen Cointe	gration Te	sts for Rea	l Exchange I	Rate Compone	ents				
	Period			- 1972:12	biation re	July 101 Med		- 1998:12			1999:1	- 2017:5	
	Number observations			56				311				21	
	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	I	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	23.000	13.410	3.700		23.000	13.410	3.700		13.410	3.700		
	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	-	-
France /	Adjustment factor	-0.031	-0.016	0.024		-0.002	-0.003	0.016		0.000	0.000	-	
Belgium	Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	No	Yes	-	-
Deigidiii	VECM residual auto- correlation at lag			0				1				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.0	514	
			Single	Joint			Single	Joint			Single	Joint	
ı 1	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
		ARCH(1)	0.007			ARCH(1)	0.255		i	ARCH(1)	0.153		
	CPI(AUT)	GARCH(1)	0.000	0.000		1	0.000	0.000		GARCH(1)	0.010	0.000	
		ARCH(1)	0.073			ARCH(1)	0.002		ł	ARCH(1)	0.684		
	CPI(FRA)	GARCH(1)	0.180	0.007		AIRCH(1)	0.019	0.000		GARCH(1)	0.965	0.907	
						ADCII(A)			ł				
	e(AUT/FRA)	ARCH(1) GARCH(1)	0.073	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	-	-	
	Period	GANCH(1)		1972:12		,		- 1998:12		GARCH(1)		- 2017:5	
	Number observations			51				311				21	
	Lags			6				13				13	
	Cointegration rank at			0				15			-	15	
	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	-	-
Germany	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	-	-
Belgium	VECM residual auto-												
	correlation at lag			1				1				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.0	020	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	1102033	e: p-value	p-value		1102033	e: p-value	p-value		1102033	e: p-value	p-value	
		ARCH(1)	0.684			ARCH(1)	0.159		i	ARCH(1)	0.106		
	CPI(AUT)	GARCH(1)	0.965	0.000		)	0.000	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.883	<b>-</b>	l	ARCH(1)	0.054	<b> </b>	1	ARCH(1)	0.574		l
	CPI(GER)	GARCH(1)	0.963	0.985	l	, ancin(1)	0.034	0.155	l	GARCH(1)	0.428	0.378	l
		ARCH(1)	0.963		l	ARCH(1)	0.000		l	ARCH(1)	U.420		l
			0.050	0.228	ľ	VUCU(T)	0.000	0.000	1	AUCU(T)		1	ľ
1	e(AUT/GER)	GARCH(1)					0.000			GARCH(1)			

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			1972:12	bration re	Sts for fice		- 1998:12			1999:1	- 2017:5	
	Number observations			33				311				21	
	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	-	-
Greece /	Adjustment factor	-0.035	0.312	-0.063		-0.014	-0.021	0.019		0.000	-0.016	-	
Belgium	Economically sensible	Yes	Yes	No	-	Yes	No	Yes	-	Yes	No	-	-
beigiuiii	VECM residual auto- correlation at lag			0				3				0	
	Jarque-Bera: p-value		0.1	021			n	.000			0.1	000	
	Jarque-Bera, p-value		Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	Prozess	e: p-value	p-value		Prozess	e: p-value	p-value		Prozess	e: p-value	p-value	
		ARCH(1)	0.251	p-value		ARCH(1)	0.340	p-value		ARCH(1)	0.150	p-value	
	CPI(AUT)	GARCH(1)	0.251	0.484		ARCH(I)	0.013	0.003		GARCH(1)	0.150	0.000	
		,	0.895			ADCU(A)	0.013		l	. ,	0.004		
	CPI(GRC)	ARCH(1)	0.000	0.000		ARCH(1)	0.130	0.000		ARCH(1)	0.406	0.059	
		GARCH(1)				)				GARCH(1)	0.406		
	e(AUT/GRC)	ARCH(1)	0.343	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-		
	Period	GARCH(1)	0.030	1972:12		,	0.000	- 1998:12	<u> </u>	GARCH(1)	1000-1	- 2017:5	
	Number observations			53				311				21	
	Lags			4				10				14	
	Cointegration rank at			*				10				14	
	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	-	
Ireland /	Economically sensible	Yes	No	-	-	No	Yes	-	-	Yes	Yes	-	-
Belgium	VECM residual auto-												
	correlation at lag			1				4				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.1	810	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	1102033	e: p-value	p-value		1102033	e: p-value	p-value		1102033	e: p-value	p-value	
		ARCH(1)	0.005			ARCH(1)	0.311		i	ARCH(1)	0.203		
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	0.450	0.090	
	CDI/(DL)	ARCH(1)	0.637	0.893		ARCH(1)	0.004	0.000	l	ARCH(1)	0.203	0.000	
1	CPI(IRL)	GARCH(1)	0.960	0.893		)	0.000	0.000		GARCH(1)	0.450	0.000	
					1				1	ADCII(4)			1
	e(AUT/IRL)	ARCH(1) GARCH(1)	0.637	0.000		ARCH(1)	0.000	0.000		ARCH(1)			

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			1972:12	0	<u> </u>		- 1998:12			1999:1	- 2017:5	
	Number observations			53				311				21	
	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	-	
Italy /	Economically sensible	Yes	No	-	-	Yes	Yes	-	-	Yes	No	-	-
Belgium	VECM residual auto- correlation at lag			3				0				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.	272	
1			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	1102033	e: p-value	p-value		1102033	e: p-value	p-value		1102033	e: p-value	p-value	
		ARCH(1)	0.033			ARCH(1)	0.837			ARCH(1)	0.166		
	CPI(AUT)	GARCH(1)	0.000	0.000		1	0.953	0.975		GARCH(1)	0.032	0.000	
		ARCH(1)	0.502			ARCH(1)	0.000			ARCH(1)	0.315		
	CPI(ITA)	GARCH(1)	0.000	0.000		AIRCH(1)	0.000	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.000			ARCH(1)	0.000			ARCH(1)	0.000		
	e(AUT/ITA)	GARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		GARCH(1)		-	
	Period	GARCII(1)		1972:12				- 1998:12		GARCII(1)		- 2017:5	
	Number observations			21				221				21	
	Lags			0				0				19	
	Cointegration rank at			-				-				0	
	significance level 5%												
	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	-	-
Luxem-	Adjustment factor	-0.001	-0.004	-0.147		-0.001	-0.004	-0.147		-0.045	0.056	-	
bourg /	Economically sensible	Yes	No	No	-	Yes	No	No	-	Yes	Yes	-	-
Belgium	VECM residual auto- correlation at lag		:	25				25				5	
	Jarque-Bera: p-value		0.	272			0	.272			0.0	000	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of vecivi residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	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			ADCIU(1)	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	1	1	)	0.000		l	GARCH(1)	-	1	1

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	nts				
	Period			1972:12				- 1998:12			1999:1	- 2017:5	
	Number observations		1	33				311			2	21	
	Lags		- 1	24				14			1	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)	Constan
	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	0.500	Yes	Yes	Yes	0.233	Yes	Yes		2.033
Nether-	Adjustment factor	-0.052	0.115	-0.128		-0.028	-0.002	0.019		-0.006	0.033	-	
lands /	Economically sensible	Yes	Yes	-0.120	_	Yes	No	Yes		Yes	Yes		
Belgium	VECM residual auto-	163	163			163	140	163		163	163	-	
Deigiuiii	correlation at lag			1				2				1	
	Jarque-Bera: p-value		0.1	000				.000			0.1	000	
	Jarque-Bera: p-value												
	Heteroskedasticisty		Single	Joint		_	Single	Joint		_	Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc		
			e: p-value	p-value			e: p-value	p-value			e: p-value	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			)	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			)	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			)	0.000			GARCH(1)	-		
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			46				311				21	
	Lags			11				13			1	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					
	4 largest moduli of						15.410	5.700		15.410	3.760	-	
	eigenvalues	1.039	1.039	1.000	1.000	1.193	1.127	1.127	1.114	1.000	3.760 0.992	0.942	0.942
	eigenvalues Cointegration vector	1.039 CPI(BEL)	1.039 CPI(PRT)	1.000 e(BEL/PRT)	1.000 Constant				1.114 Constant			0.942 e(BEL/PRT)	
						1.193	1.127	1.127		1.000	0.992		0.942 Constan 2.315
	Cointegration vector	CPI(BEL)	CPI(PRT)	e(BEL/PRT)	Constant	1.193 CPI(BEL)	1.127 CPI(PRT)	1.127 e(BEL/PRT)	Constant	1.000 CPI(BEL)	0.992 CPI(PRT)		Constan
Portugal	Cointegration vector Coefficient	CPI(BEL) 1.000	CPI(PRT) -0.024	e(BEL/PRT) -3.060	Constant	1.193 CPI(BEL) 1.000	1.127 CPI(PRT) -0.143	1.127 e(BEL/PRT) 0.328	Constant	1.000 CPI(BEL) 1.000	0.992 CPI(PRT) -1.503	e(BEL/PRT)	Constan
Portugal	Cointegration vector Coefficient Economically sensible	CPI(BEL) 1.000 Yes	CPI(PRT) -0.024 Yes	e(BEL/PRT) -3.060 Yes	Constant	1.193 CPI(BEL) 1.000 Yes	1.127 CPI(PRT) -0.143 Yes	1.127 e(BEL/PRT) 0.328 No	Constant	1.000 CPI(BEL) 1.000 Yes	0.992 CPI(PRT) -1.503 Yes	e(BEL/PRT)	Constan
Portugal / Belgium	Cointegration vector Coefficient Economically sensible Adjustment factor	CPI(BEL) 1.000 Yes 0.005	CPI(PRT) -0.024 Yes 0.028 Yes	e(BEL/PRT) -3.060 Yes 0.009 Yes	Constant	1.193 CPI(BEL) 1.000 Yes -0.008	1.127 CPI(PRT) -0.143 Yes 0.030 Yes	1.127 e(BEL/PRT) 0.328 No -0.108	Constant	1.000 CPI(BEL) 1.000 Yes -0.003	0.992 CPI(PRT) -1.503 Yes 0.006 Yes	e(BEL/PRT)	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible	CPI(BEL) 1.000 Yes 0.005	CPI(PRT) -0.024 Yes 0.028 Yes	e(BEL/PRT) -3.060 Yes 0.009	Constant	1.193 CPI(BEL) 1.000 Yes -0.008	1.127 CPI(PRT) -0.143 Yes 0.030 Yes	1.127 e(BEL/PRT) 0.328 No	Constant	1.000 CPI(BEL) 1.000 Yes -0.003	0.992 CPI(PRT) -1.503 Yes 0.006 Yes	e(BEL/PRT)	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag	CPI(BEL) 1.000 Yes 0.005	CPI(PRT) -0.024 Yes 0.028 Yes	e(BEL/PRT) -3.060 Yes 0.009 Yes	Constant	1.193 CPI(BEL) 1.000 Yes -0.008	1.127 CPI(PRT) -0.143 Yes 0.030 Yes	1.127 e(BEL/PRT) 0.328 No -0.108	Constant	1.000 CPI(BEL) 1.000 Yes -0.003	0.992 CPI(PRT) -1.503 Yes 0.006 Yes	e(BEL/PRT)	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	CPI(BEL) 1.000 Yes 0.005	CPI(PRT) -0.024 Yes 0.028 Yes	e(BEL/PRT) -3.060 Yes 0.009 Yes 1	Constant	1.193 CPI(BEL) 1.000 Yes -0.008	1.127 CPI(PRT) -0.143 Yes 0.030 Yes	1.127 e(BEL/PRT) 0.328 No -0.108	Constant	1.000 CPI(BEL) 1.000 Yes -0.003	0.992 CPI(PRT) -1.503 Yes 0.006 Yes	e(BEL/PRT) 0	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	CPI(BEL) 1.000 Yes 0.005	CPI(PRT) -0.024 Yes 0.028 Yes  0.1 Single	e(BEL/PRT) -3.060 Yes 0.009 Yes 1 Joint	Constant	1.193 CPI(BEL) 1.000 Yes -0.008	1.127 CPI(PRT) -0.143 Yes 0.030 Yes 0.030 Yes	1.127 e(BEL/PRT) 0.328 No -0.108 - 1 0000 Joint	Constant	1.000 CPI(BEL) 1.000 Yes -0.003	0.992 CPI(PRT) -1.503 Yes 0.006 Yes 0.0 Single	e(BEL/PRT) 0 Joint	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	CPI(BEL) 1.000 Yes 0.005 No	CPI(PRT) -0.024 Yes 0.028 Yes  O.1 Single significanc	e(BEL/PRT) -3.060 Yes 0.009 Yes 1	Constant	1.193 CPI(BEL) 1.000 Yes -0.008 Yes	1.127  CPI(PRT) -0.143  Yes 0.030  Yes  0. Single significanc	1.127 e(BEL/PRT) 0.328 No -0.108 -	Constant	1.000 CPI(BEL) 1.000 Yes -0.003 Yes	0.992 CPI(PRT) -1.503 Yes 0.006 Yes  0.0 Single significanc	e(BEL/PRT) 0 Joint	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	CPI(BEL) 1.000 Yes 0.005 No Prozess	CPI(PRT) -0.024 Yes 0.028 Yes  0.0 Single significanc e: p-value	e(BEL/PRT) -3.060 Yes 0.009 Yes 1 000 Joint significance: p-value	Constant	1.193 CPI(BEL) 1.000 Yes -0.008 Yes	1.127  CPI(PRT) -0.143  Yes 0.030  Yes  O.Single significanc e: p-value	1.127 e(BEL/PRT) 0.328 No -0.108 -0.108 Joint significance: p-value	Constant	1.000 CPI(BEL) 1.000 Yes -0.003 Yes	0.992 CPI(PRT) -1.503 Yes 0.006 Yes  0.0 Single significanc e: p-value	e(BEL/PRT) 0 0 Joint significance: p-value	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	CPI(BEL) 1.000 Yes 0.005 No Prozess ARCH(1)	CPI(PRT) -0.024 Yes 0.028 Yes  0.0 Single significanc e: p-value 0.531	e(BEL/PRT) -3.060 Yes 0.009 Yes 1 Joint significance:	Constant	1.193 CPI(BEL) 1.000 Yes -0.008 Yes	1.127  CPI(PRT) -0.143 Yes 0.030 Yes  0. Single significanc e: p-value 0.529	1.127  e(BEL/PRT) 0.328  No -0.108 - 1  000  Joint significance:	Constant	1.000 CPI(BEL) 1.000 Yes -0.003 Yes Prozess	0.992 CPI(PRT) -1.503 Yes 0.006 Yes  Single significanc e: p-value 0.135	e(BEL/PRT)  0  Joint significance:	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	Prozess  ARCH(1) GARCH(1)	CPI(PRT) -0.024 Yes 0.028 Yes  Single significanc e: p-value 0.531 0.072	e(BEL/PRT) -3.060 Yes 0.009 Yes 1 000 Joint significance: p-value 0.005	Constant	1.193 CPI(BEL) 1.000 Yes -0.008 Yes Prozess ARCH(1)	1.127 CPI(PRT) -0.143 Yes 0.030 Yes  0. Single significance significance cignificance 0.529 0.900	1.127 e(BEL/PRT) 0.328 No -0.108 - 1 000 Joint significance: p-value 0.774	Constant	1.000  CPI(BEL) 1.000 Yes -0.003 Yes  Prozess  ARCH(1) GARCH(1)	0.992 CPI(PRT) -1.503 Yes 0.006 Yes 0.0 Single significance :: p-value 0.135 0.133	e(BEL/PRT)  0 0 0 Joint significance: p-value 0.000	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	CPI(BEL) 1.000 Yes 0.005 No Prozess ARCH(1) GARCH(1) ARCH(1)	CPI(PRT) -0.024 Yes 0.028 Yes  Single significanc e: p-value 0.531 0.072 0.168	e(BEL/PRT) -3.060 Yes 0.009 Yes 1 000 Joint significance: p-value	Constant	1.193 CPI(BEL) 1.000 Yes -0.008 Yes	1.127 CPI(PRT) -0.143 Yes 0.030 Yes  0.Single significanc e: p-value 0.529 0.900 0.001	1.127 e(BEL/PRT) 0.328 No -0.108 -0.108 Joint significance: p-value	Constant	1.000  CPI(BEL) 1.000  Yes -0.003  Yes  Prozess  ARCH(1)  GARCH(1)  ARCH(1)	0.992 CPI(PRT) -1.503 Yes 0.006 Yes  0.01 Single significanc e: p-value 0.135 0.133 0.471	e(BEL/PRT) 0 0 Joint significance: p-value	Constan
/	Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	Prozess  ARCH(1) GARCH(1)	CPI(PRT) -0.024 Yes 0.028 Yes  Single significanc e: p-value 0.531 0.072	e(BEL/PRT) -3.060 Yes 0.009 Yes 1 000 Joint significance: p-value 0.005	Constant	1.193 CPI(BEL) 1.000 Yes -0.008 Yes Prozess ARCH(1)	1.127 CPI(PRT) -0.143 Yes 0.030 Yes  0. Single significance significance cignificance 0.529 0.900	1.127 e(BEL/PRT) 0.328 No -0.108 - 1 000 Joint significance: p-value 0.774	Constant	1.000  CPI(BEL) 1.000 Yes -0.003 Yes  Prozess  ARCH(1) GARCH(1)	0.992 CPI(PRT) -1.503 Yes 0.006 Yes 0.0 Single significance :: p-value 0.135 0.133	e(BEL/PRT)  0 0 0 Joint significance: p-value 0.000	Constan

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	nts				
	Period			1972:12	B			- 1998:12			1999:1	- 2017:5	
	Number observations		1	56				311				21	
	Lags			1				15			1	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	-	
Spain /	Economically sensible	No	Yes	-	-	Yes	No	No	-	Yes	No	-	-
Belgium	VECM residual auto- correlation at lag			1				3				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.0	004	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	1102033	e: p-value	p-value		1102033	e: p-value	p-value		1102033	e: p-value	p-value	
		ARCH(1)	0.011			ARCH(1)	0.309			ARCH(1)	0.307		
	CPI(AUT)	GARCH(1)	0.000	0.000		1	0.000	0.000		GARCH(1)	0.070	0.001	
		ARCH(1)	0.250			ARCH(1)	0.001			ARCH(1)	0.095		1
	CPI(ESP)	GARCH(1)	0.178	0.008		1	0.000	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.000			ARCH(1)	0.000			ARCH(1)	0.000		l
	e(AUT/ESP)	GARCH(1)	0.000	0.000		ARCH(I)	0.000	0.000		GARCH(1)	- :	-	
	Period	Grateri(1)		1972:12				- 1998:12		Gratteri(1)		- 2017:5	
	Number observations			55				311				21	
	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	-	-
France /	Adjustment factor	-0.009	-0.017	0.078		-0.012	-0.004	-0.015		-0.028	-0.016	-	
Finland	Economically sensible	Yes	No	Yes	-	Yes	No	No	-	Yes	No	-	-
rillallu	VECM residual auto- correlation at lag			0				1				2	
	Jarque-Bera: p-value		0.0	000			0.	.000			0	297	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.027 0.626	0.000		ARCH(1)	0.096	0.000		ARCH(1) GARCH(1)	0.243 0.723	0.446	
						ARCH(1)	0.723			ARCH(1)	0.523		1
	CPI(FRA)	ARCH(1) GARCH(1)	0.037	0.000		ARCH(1)	0.723	0.154		GARCH(1)	0.865	0.768	

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange I	Rate Compone	ents				
	Period			1972:12	B			- 1998:12			1999:1	- 2017:5	
	Number observations			55				311				21	
	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	-	
Germany	Economically sensible	Yes	No	No	-	Yes	-	-	-	Yes	No	-	-
/ Finland	VECM residual auto- correlation at lag			2				3				1	
	Jarque-Bera: p-value		0.1	000			n	.000			0	369	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	F102E33	e: p-value	p-value		F102E33	e: p-value	p-value		F102E33	e: p-value	p-value	
		ARCH(1)	0.794			ARCH(1)	0.058			ARCH(1)	0.668		
	CPI(AUT)	GARCH(1)	0.947	0.963		ARCH(1)	0.000	0.000		GARCH(1)	0.941	0.898	
		ARCH(1)	0.802			ARCH(1)	0.058			ARCH(1)	0.170		
	CPI(GER)	GARCH(1)	0.974	0.969		1	0.000	0.000		GARCH(1)	0.809	0.363	
		ARCH(1)	0.000			ARCH(1)	0.096			ARCH(1)	0.803		
	e(AUT/GER)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)		-	
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations		1	55				311			2	21	
	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	-	-
Greece /	Adjustment factor	0.004	0.035	0.057		-0.007	-0.003	-0.002		-0.009	-0.027	-	
Finland	Economically sensible	No	Yes	Yes	-	Yes	No	-	-	Yes	No	-	-
Finiand	VECM residual auto-			1				3				0	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				000	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc		
			e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.170 0.809	0.000		ARCH(1)	0.137 0.000	0.000		ARCH(1) GARCH(1)	0.967 0.987	0.999	
		ARCH(1)	0.548	0.000		ARCH(1)	0.044	0.000		ARCH(1)	0.238	0.080	
	CPI(GRC)	GARCH(1)	0.003	0.000		)	0.000	0.000		GARCH(1)	0.445	0.000	
	e(AUT/GRC)	GARCH(1) ARCH(1) GARCH(1)	0.003 0.000 0.000	0.000		ARCH(1)	0.000 0.260 0.007	0.000		GARCH(1) ARCH(1) GARCH(1)	0.445	0.080	

			Joh	hansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period		1960:1 -	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations			53				311				21	
	Lags			4				13			1	18	
	Cointegration rank at			0				2				n	
	significance level 5%			U				2				U	
	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	1.000	1.000	0.995	0.649	1.187	1.187	1.021	1.021	1.000	0.990	0.981	0.981
	eigenvalues												
	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)	Consta
	Coefficient Economically sensible	1.000 Yes	-1.819 Yes	-3.227 Yes	1.807	1.000 Yes	-0.650 Yes	-0.640 Yes	-1.600	1.000 Yes	-2.151 Yes	-	5.470
	Adjustment factor	-0.001	-0.003	0.004	-	-0.010	-0.007	0.014	-	-0.001	0.003	-	-
reland /	Economically sensible	-0.001 Yes	-0.003 No	0.004 Yes	-	-0.010 Yes	-0.007 No	0.014 Yes	-	-0.001 Yes	0.003 Yes	-	-
Finland	VECM residual auto-	res	NO	res	-	Yes	NO	Yes	-	res	Yes	_	-
	correlation at lag			3				2				3	
	Jarque-Bera: p-value		0.1	000		-	0	000			0.4	000	
	zarque-pera, p-value		Single	Joint	1	<del>                                     </del>	Single	Joint	1		Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	F102E33	e: p-value	p-value		F102E33	e: p-value	p-value		F102E33	e: p-value	p-value	
		ARCH(1)	0.036			ARCH(1)	0.020			ARCH(1)	0.212		
	CPI(AUT)	GARCH(1)	0.000	0.000		1	0.000	0.000		GARCH(1)	0.096	0.011	
		ARCH(1)	0.539		1	ARCH(1)	0.020		1	ARCH(1)	0.213		
	CPI(IRL)	GARCH(1)	0.970	0.826		)	0.000	0.000		GARCH(1)	0.905	0.390	
		ARCH(1)	0.000		i	ARCH(1)	0.082		i	ARCH(1)	-		
	e(AUT/IRL)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	-	-	
	Period		1960:1 -	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				18			1	16	
	Cointegration rank at			0								0	
	significance level 5%			U				-				U	
	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)	Consta
	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	-	
Italy /	Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	Yes	No	-	-
Finland	VECM residual auto-												
	correlation at lag			0				0				2	
	Jarque-Bera: p-value		0.0	000			0	.000			0.9	943	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value	l	l	e: p-value	p-value	l		e: p-value	p-value	
	CDI(ALIT)	ARCH(1)	0.124	0.000	1	ARCH(1)	0.073	0.000	1	ARCH(1)	0.117	0.202	
	CPI(AUT)	GARCH(1)	0.002	0.000		)	0.000	0.000		GARCH(1)	0.945	0.292	
		ARCH(1)	0.593	0.574	1	ARCH(1)	0.002	0.000	1	ARCH(1)	0.274	0.202	
				0.571				0.000					
	CPI(ITA)	GARCH(1)	0.738			)	0.000		]	GARCH(1)	0.665		
	e(AUT/ITA)	GARCH(1) ARCH(1)	0.738 0.000	0.000		ARCH(1)	0.000	0.000		GARCH(1) ARCH(1)	0.665		

			Jol	nansen Cointe	gration Te	sts for Rea	ıl Exchange F	Rate Compone	nts				
	Period			1972:12				- 1998:12			1999:1	- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				15			1	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)	Constar
	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	13.020	Yes	Yes	Yes	3.044	Yes	Yes	-	1.500
Luxem-	Adjustment factor	0.001	0.003	0.008		0.005	0.000	0.011		-0.020	-0.030	-	
bourg /	Economically sensible	No.	0.003	Yes		No	Yes	Yes		Yes	-0.030 No		
Finland	VECM residual auto-	NO		163		IVO	163	163		163	140		_
Tillialiu	correlation at lag			1				0				6	
	Jarque-Bera: p-value			000				.000			0.0	000	
	Jarque-Bera: p-value			Joint				Joint				Joint	
	Heteroskedasticisty	D	Single			D	Single			D	Single		
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
			e: p-value	p-value			e: p-value	p-value			e: p-value	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)	-		
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			55				311				21	
	Lags			2				13			1	13	
	Cointegration rank at significance level 5%			0				2				0	
	Trace statistics	18.950	6.668	0.597									
	5% critical values					48.703	21.611	3.694		12.147	2.573	-	
		29.680	15.410	3.760		29.680	15.410	3.694 3.760		<b>12.147</b> 15.410	2.573 3.760	-	
	4 largest moduli of eigenvalues	1.000	15.410		0.086				1.040			0.888	0.888
				3.760	0.086 Constant	29.680	15.410	3.760	1.040 Constant	15.410	3.760	-	
	eigenvalues	1.000	1.000	3.760 0.978		29.680 1.234	15.410 1.234	3.760 1.040		15.410 1.000	3.760 0.977	0.888	
	eigenvalues Cointegration vector	1.000 CPI(FIN)	1.000 CPI(NLD)	3.760 0.978 e(FIN/NLD)	Constant	29.680 1.234 CPI(FIN)	15.410 1.234 CPI(NLD)	3.760 1.040 e(FIN/NLD)	Constant	15.410 1.000 CPI(FIN)	3.760 0.977 CPI(NLD)	0.888	Constar
Nether-	eigenvalues Cointegration vector Coefficient	1.000 CPI(FIN) 1.000	1.000 CPI(NLD) -0.849	3.760 0.978 e(FIN/NLD) 0.054	Constant	29.680 1.234 CPI(FIN) 1.000	15.410 1.234 CPI(NLD) -0.919	3.760 1.040 e(FIN/NLD) -6.618	Constant	15.410 1.000 CPI(FIN) 1.000	3.760 0.977 CPI(NLD) -1.100	- 0.888 e(FIN/NLD)	Constar
Nether- lands /	eigenvalues Cointegration vector Coefficient Economically sensible	1.000 CPI(FIN) 1.000 Yes	1.000 CPI(NLD) -0.849 Yes	3.760 0.978 e(FIN/NLD) 0.054 No	Constant	29.680 1.234 CPI(FIN) 1.000 Yes	15.410 1.234 CPI(NLD) -0.919 Yes	3.760 1.040 e(FIN/NLD) -6.618 Yes	Constant	15.410 1.000 CPI(FIN) 1.000 Yes	3.760 0.977 CPI(NLD) -1.100 Yes	- 0.888 e(FIN/NLD) -	Constar
	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor	1.000 CPI(FIN) 1.000 Yes 0.000	1.000 CPI(NLD) -0.849 Yes 0.031 Yes	3.760 0.978 e(FIN/NLD) 0.054 No	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001	15.410 1.234 CPI(NLD) -0.919 Yes 0.000	3.760 1.040 e(FIN/NLD) -6.618 Yes 0.008	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes	- 0.888 e(FIN/NLD) -	Constar
lands /	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag	1.000 CPI(FIN) 1.000 Yes 0.000	1.000 CPI(NLD) -0.849 Yes 0.031 Yes	3.760 0.978 e(FIN/NLD) 0.054 No 0.009	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001	15.410 1.234 CPI(NLD) -0.919 Yes 0.000 No	3.760 1.040 e(FIN/NLD) -6.618 Yes 0.008 Yes	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes	- 0.888 e(FIN/NLD) - - -	Constar
lands /	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	1.000 CPI(FIN) 1.000 Yes 0.000	1.000 CPI(NLD) -0.849 Yes 0.031 Yes	3.760 0.978 e(FIN/NLD) 0.054 No 0.009	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001	15.410 1.234 CPI(NLD) -0.919 Yes 0.000 No	3.760 1.040 e(FIN/NLD) -6.618 Yes 0.008 Yes	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes	- 0.888 e(FIN/NLD) - - - -	Constar
lands /	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	1.000 CPI(FIN) 1.000 Yes 0.000	1.000 CPI(NLD) -0.849 Yes 0.031 Yes	3.760 0.978 e(FIN/NLD) 0.054 No 0.009 - 1 Joint	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001	15.410 1.234 CPI(NLD) -0.919 Yes 0.000 No	3.760 1.040 e(FIN/NLD) -6.618 Yes 0.008 Yes 1	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes	- 0.888 e(FIN/NLD)	Constar
lands /	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	1.000 CPI(FIN) 1.000 Yes 0.000 Yes	1.000  CPI(NLD) -0.849  Yes 0.031  Yes  O.I  Single significanc	3.760 0.978 e(FIN/NLD) 0.054 No 0.009	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001 No	15.410  1.234  CPI(NLD)  -0.919  Yes  0.000  No  Single significanc	3.760 1.040 e(FIN/NLD) -6.618 Yes 0.008 Yes 1	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002 Yes	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes 0.0 Single significanc	- 0.888 e(FIN/NLD) 1	Constar
lands /	eigenvalues Cointegration vector Coefficient Economically sensible Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	1.000  CPI(FIN) 1.000 Yes 0.000 Yes  Prozess	1.000  CPI(NLD) -0.849 Yes 0.031 Yes  O.I Single significanc e: p-value	3.760 0.978 e(FIN/NLD) 0.054 No 0.009 - 1 Joint significance: p-value	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001 No	15.410  1.234  CPI(NLD) -0.919  Yes 0.000  No  Single significanc e: p-value	3.760  1.040  e(FIN/NLD)  -6.618  Yes  0.008  Yes  1  000  Joint significance: p-value	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002 Yes	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes  Single significanc e: p-value	0.888 e(FIN/NLD) 1 1 000 Joint significance: p-value	Consta
lands /	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	1.000 CPI(FIN) 1.000 Yes 0.000 Yes	1.000  CPI(NLD) -0.849 -Yes 0.031 -Yes  Single significanc e: p-value 0.116	3.760 0.978 e(FIN/NLD) 0.054 No 0.009	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001 No	15.410 1.234 CPI(NLD) -0.919 Yes 0.000 No  Single significanc e: p-value 0.034	3.760 1.040 e(FIN/NLD) -6.618 Yes 0.008 Yes 1 000 Joint significance:	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002 Yes	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes  0.0.25 Single significanc e: p-value 0.763	0.888 e(FIN/NLD) 1 000 Joint significance:	Consta
lands /	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals  CPI(AUT)	1.000  CPI(FIN) 1.000  Yes 0.000  Yes  Prozess  ARCH(1)  GARCH(1)	1.000  CPI(NLD) -0.849 Yes 0.031 Yes  Single significanc e: p-value 0.116 0.000	3.760 0.978 e(FIN/NLD) 0.054 NO 0.009 - 1 1 000 Joint significance: p-value 0.000	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001 No Prozess ARCH(1)	15.410  1.234  CPI(NLD)  -0.919  Yes  0.000  No  Single significanc e: p-value  0.034  0.000	3.760  1.040  e(FIN/NLD)  -6.618  Yes  0.008  Yes  1  000  Joint significance: p-value  0.000	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002 Yes Prozess ARCH(1) GARCH(1)	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes 0.025 Single significanc e: p-value 0.763 0.866	0.888  e(FIN/NLD) 1  000  Joint significance: p-value 0.886	Constar
lands /	eigenvalues Cointegration vector Coefficient Economically sensible Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	1.000  CPI(FIN) 1.000 Yes 0.000 Yes  Prozess  ARCH(1) GARCH(1) ARCH(1)	1.000  CPI(NLD) -0.849 Yes 0.031 Yes  Single significanc e: p-value 0.116 0.000 0.227	3.760 0.978 e(FIN/NLD) 0.054 No 0.009 - 1 Joint significance: p-value	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001 No	15.410  1.234  CPI(NLD) -0.919  Yes 0.000  No  Single significanc e: p-value 0.034 0.000 0.003	3.760  1.040  e(FIN/NLD)  -6.618  Yes  0.008  Yes  1  000  Joint significance: p-value	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002 Yes Prozess ARCH(1) GARCH(1) ARCH(1)	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes 0.0.25 Single significanc e: p-value 0.763 0.866 0.763	0.888 e(FIN/NLD) 1 1 000 Joint significance: p-value	Constar
lands /	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals  CPI(AUT)	1.000  CPI(FIN) 1.000  Yes 0.000  Yes  Prozess  ARCH(1)  GARCH(1)	1.000  CPI(NLD) -0.849 Yes 0.031 Yes  Single significanc e: p-value 0.116 0.000	3.760 0.978 e(FIN/NLD) 0.054 NO 0.009 - 1 1 000 Joint significance: p-value 0.000	Constant	29.680 1.234 CPI(FIN) 1.000 Yes 0.001 No Prozess ARCH(1)	15.410  1.234  CPI(NLD)  -0.919  Yes  0.000  No  Single significanc e: p-value  0.034  0.000	3.760  1.040  e(FIN/NLD)  -6.618  Yes  0.008  Yes  1  000  Joint significance: p-value  0.000	Constant	15.410 1.000 CPI(FIN) 1.000 Yes -0.002 Yes Prozess ARCH(1) GARCH(1)	3.760 0.977 CPI(NLD) -1.100 Yes 0.025 Yes 0.025 Single significanc e: p-value 0.763 0.866	0.888  e(FIN/NLD) 1  000  Joint significance: p-value 0.886	Constar

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			1972:12	g	<u> </u>		- 1998:12			1999:1	- 2017:5	
	Number observations			55				311				21	
	Lags			2				13			1	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	-	-
	Adjustment factor	0.001	0.014	0.006		-0.014	-0.001	-0.052		-0.003	-0.009	-	
Portugal	Economically sensible	No	-	Yes	-	Yes	No	-	-	Yes	No	-	-
/ Finland	VECM residual auto-												
	correlation at lag			1				0				1	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.0	001	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.241	0.000		ARCH(1)	0.029	0.000		ARCH(1) GARCH(1)	0.722	0.823	
		ARCH(1)	0.283		ł	ARCH(1)	0.000		ł	ARCH(1)	0.277		ł
	CPI(PRT)	GARCH(1)	0.023	0.000		1	0.000	0.000		GARCH(1)	0.535	0.141	
		ARCH(1)	0.000		1	ARCH(1)	0.000		1	ARCH(1)	0.555		1
	e(AUT/PRT)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)		-	
	Period	,		1972:12				- 1998:12		,	1999:1	- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				15			1	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	-	-
Control	Adjustment factor	-0.052	0.081	0.216		-0.017	-0.004	-0.030		-0.013	-0.026	-	
Spain / Finland	Economically sensible	Yes	Yes	Yes	-	Yes	No	No	-	Yes	No	-	-
rillallu	VECM residual auto- correlation at lag			1				2				2	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.8	862	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value	l		e: p-value	p-value	l		e: p-value	p-value	l
	CPI(AUT)	ARCH(1) GARCH(1)	0.365	0.000		ARCH(1)	0.024	0.000		ARCH(1) GARCH(1)	0.008	0.000	
	CPI(ESP)	ARCH(1)	0.422	0.183	1	ARCH(1)	0.000	0.000	1	ARCH(1)	0.193	0.000	1
	e(AUT/ESP)	GARCH(1) ARCH(1)	0.416 0.000	0.000	1	ARCH(1)	0.000	0.000	1	GARCH(1) ARCH(1)	0.000	_	
		GARCH(1)	0.000				0.011			GARCH(1)			

			Jol	hansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			- 1972:12	bration re	SES FOI REE		- 1998:12			1999:1	- 2017:5	
	Number observations			.55				311				21	
	Lags			2				13				.4	
	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
1	Coefficient	1.000	-1.545	1.256	4.214	1.000	-0.795	-1.358	-0.855	1.000	-1.141	-	0.682
1	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Germany	Adjustment factor	0.005	0.007	-0.002		0.003	0.002	0.118		0.037	0.036	-	
/ France	Economically sensible	No	Yes	-	-	No	Yes	Yes	-	No	Yes	-	-
/ France	VECM residual auto- correlation at lag			3				2				1	
1	Jarque-Bera: p-value		0.	000			0.	.000			0.0	091	
1			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.000	0.000		ARCH(1)	0.156	0.013		ARCH(1) GARCH(1)	0.485	0.085	
1		ARCH(1)	0.790			ARCH(1)	0.000			ARCH(1)	0.156		
1	CPI(GER)	GARCH(1)	0.492	0.579		)	0.000	0.000		GARCH(1)	0.571	0.170	
		ARCH(1)	0.122			ARCH(1)	0.001			ARCH(1)	-		
	e(AUT/GER)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	-	-	
	Period		1960:1	- 1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	.56				311			2	21	
	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
1	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Greece /	Adjustment factor	0.017	0.061	-0.002		0.001	0.002	-0.001		-0.041	-0.030	-	
France	Economically sensible	No	Yes	No	-	No	Yes	No	-	Yes	No	-	-
	VECM residual auto-			2				3				1	
	correlation at lag												
	Jarque-Bera: p-value		0.	000			0.	.000			0.	000	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc			Prozess	significanc	significance:		Prozess	significanc	significance:	
			e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
		ARCH(1)	0.055	0.034		ARCH(1)	0.001	0.000		ARCH(1) GARCH(1)	0.794	0.915	
	CPI(AUT)	GARCH(1)	0.559	0.034		)	0.058			UARCII(1)	0.852		l I
	CPI(AUT) CPI(GRC)		0.559 0.540 0.428	0.197		ARCH(1)	0.058 0.053 0.000	0.000		ARCH(1) GARCH(1)	0.852 0.218 0.291	0.014	
		GARCH(1) ARCH(1)	0.540			ARCH(1) ARCH(1)	0.053	0.000		ARCH(1)	0.218		

					gration Te	sts for Rea		Rate Compone	ents				
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			49				311			2	21	
	Lags			8				10				L7	
	Cointegration rank at			0									
	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	0.99
	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)	Consta
	Coefficient	1.000	1.134	-6.514	-0.605	1.000	-1.340	0.765	1.437	1.000	-0.138	-	-4.07
	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	-	
reland /	Economically sensible	No	-	Yes	-	No	Yes	-	-	Yes	No	-	-
France	VECM residual auto-									- 122			
	correlation at lag			0				0				1	
	Jarque-Bera: p-value		0	000			n	000			0	315	
	Jarque-Dera, p-value		Single	Joint			Single	Joint			Single	Joint	1
	Heteroskedasticisty	Prozess	significanc			Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	PIOZESS	e: p-value	p-value		Prozess	e: p-value	p-value		Piozess	e: p-value	p-value	
		ARCH(1)	0.008			ARCH(1)	0.143			ARCH(1)	0.000		ł
	CPI(AUT)	GARCH(1)	0.008	0.000		AKCH(1)	0.143	0.036		GARCH(1)	0.000	0.000	
			0.000			ADCII(A)	0.000						l
	CPI(IRL)	ARCH(1)		0.000		ARCH(1)		0.000		ARCH(1)	0.402	0.423	
		GARCH(1)	0.000			)	0.002			GARCH(1)	0.525		l
	e(AUT/IRL)	ARCH(1)	0.008	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
		GARCH(1)	0.000	L		)	0.000	L		GARCH(1)	-	L	
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			55				311				21	
	Lags			2				7				20	
	Cointegration rank at			1				1					
	significance level 5%												
	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	0.97
	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)	Consta
	Coefficient	1.000	-0.817	-0.505	-0.738	1.000	-0.398	-0.294	-2.814	1.000	-0.788	-	-0.98
	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		
Italy /	Economically sensible	No	Yes	Yes	-	Yes	No	Yes	-	Yes	Yes		-
France	VECM residual auto-					<u> </u>							
	correlation at lag			0		l		2				4	
	Jarque-Bera: p-value		0.	000			0	.000			0.	680	
	Jarque-bera, p-value		Single	Joint			Single	Joint			Single	Joint	_
	Heteroskedasticisty	Prozess		significance:		D	significanc	significance:		D	significanc	significance:	
	test of VECM residuals	riuzess	significanc	p-value		Prozess				Prozess			
	l	ADCINC:	e: p-value 0.000	p-value		ADCII(*)	e: p-value 0.078	p-value		ADCIIIC)	e: p-value 0.188	p-value	l
	CPI(AUT)	ARCH(1) GARCH(1)	0.000	0.000		ARCH(1)	0.078	0.049	l	ARCH(1) GARCH(1)	0.188	0.192	l
						)				,			l
	CPI(ITA)	ARCH(1)	0.378	0.000		ARCH(1)	0.000	0.000	l	ARCH(1)	0.056	0.027	l
		GARCH(1)	0.000			)	0.000			GARCH(1)	0.487		ı
	e(AUT/ITA)	ARCH(1) GARCH(1)	0.000	0.000		ARCH(1)	0.003	0.000		ARCH(1) GARCH(1)	-		

			Jol	nansen Cointe	gration Te	sts for Rea	ıl Exchange F	Rate Compone	ents				
	Period			1972:12	0			- 1998:12			1999:1	- 2017:5	
	Number observations		1	56				311			2	21	
	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
	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	-	-
Luxem-	Adjustment factor	0.019	0.036	0.027		0.003	0.004	0.019		0.031	0.088	-	
bourg /	Economically sensible	No	Yes	-	-	No	Yes	Yes	-	No	Yes	-	-
France	VECM residual auto-												
	correlation at lag			1				2				2	
	Jarque-Bera: p-value		0.0	000			0	.000			0.	000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	1102033	e: p-value	p-value		1102033	e: p-value	p-value		1102033	e: p-value	p-value	
		ARCH(1)	0.066			ARCH(1)	0.093			ARCH(1)	0.000		
	CPI(AUT)	GARCH(1)	0.139	0.003		)	0.138	0.001		GARCH(1)	0.000	0.000	
		ARCH(1)	0.066			ARCH(1)	0.001			ARCH(1)	0.016		
	CPI(LUX)	GARCH(1)	0.139	0.000		)	0.001	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.066			ARCH(1)	0.000			ARCH(1)	-		
	e(AUT/LUX)	GARCH(1)	0.139	0.000		ARCH(I)	0.000	0.000		GARCH(1)	-	-	
	Period	(-)		1972:12				- 1998:12				- 2017:5	
	Number observations		1	56				311			2	21	
	Lags			1				13				14	
	Cointegration rank at significance level 5%			1				1				0	
	Trace statistics	34,645	12.371	4.698		_			_				
	5% critical values					49.922	13.352	2.318		11.096	4.329	-	l
		29.680	15.410									-	
	4 largest moduli of eigenvalues	29.680 1.000	15.410 1.000	3.760	0.993	49.922 29.680 1.084	13.352 15.410 1.084	2.318 3.760 1.065	1.065	11.096 15.410 1.000	4.329 3.760 0.985	0.946	0.946
	4 largest moduli of eigenvalues			3.760	0.993 Constant	29.680	15.410	3.760	1.065 Constant	15.410	3.760		0.946 Constant
	4 largest moduli of	1.000	1.000	3.760 0.954		29.680 1.084	15.410 1.084	3.760 1.065		15.410 1.000	3.760 0.985	0.946	
	4 largest moduli of eigenvalues Cointegration vector	1.000 CPI(FRA)	1.000 CPI(NLD)	3.760 0.954 e(FRA/NLD)	Constant	29.680 1.084 CPI(FRA)	15.410 1.084 CPI(NLD)	3.760 1.065 e(FRA/NLD)	Constant	15.410 1.000 CPI(FRA)	3.760 0.985 CPI(NLD)	0.946	Constant
Nether-	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible	1.000 CPI(FRA) 1.000	1.000 CPI(NLD) -0.714	3.760 0.954 e(FRA/NLD) -0.115	Constant	29.680 1.084 CPI(FRA) 1.000	15.410 1.084 CPI(NLD) -0.641	3.760 1.065 e(FRA/NLD) -1.805	Constant	15.410 1.000 CPI(FRA) 1.000	3.760 0.985 CPI(NLD) -1.019	0.946	Constant
	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor	1.000 CPI(FRA) 1.000 Yes 0.022	1.000 CPI(NLD) -0.714 Yes 0.093	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005	15.410 1.084 CPI(NLD) -0.641 Yes -0.001	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004	3.760 0.985 CPI(NLD) -1.019 Yes 0.021	- 0.946 e(FRA/NLD) - -	Constant
Nether- lands / France	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible	1.000 CPI(FRA) 1.000 Yes	1.000 CPI(NLD) -0.714 Yes 0.093 Yes	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes	Constant	29.680 1.084 CPI(FRA) 1.000 Yes	15.410 1.084 CPI(NLD) -0.641 Yes	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093 Yes	Constant	15.410 1.000 CPI(FRA) 1.000 Yes	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes	- 0.946 e(FRA/NLD) - - -	Constant
lands /	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible	1.000 CPI(FRA) 1.000 Yes 0.022	1.000 CPI(NLD) -0.714 Yes 0.093 Yes	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005	15.410 1.084 CPI(NLD) -0.641 Yes -0.001	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes	- 0.946 e(FRA/NLD) - -	Constant
lands /	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag	1.000 CPI(FRA) 1.000 Yes 0.022	1.000 CPI(NLD) -0.714 Yes 0.093 Yes	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005	15.410 1.084 CPI(NLD) -0.641 Yes -0.001	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093 Yes	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes	- 0.946 e(FRA/NLD) - - - -	Constant
lands /	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	1.000 CPI(FRA) 1.000 Yes 0.022	1.000 CPI(NLD) -0.714 Yes 0.093 Yes	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005	15.410 1.084 CPI(NLD) -0.641 Yes -0.001	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093 Yes	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes	- 0.946 e(FRA/NLD) - - -	Constant
lands /	4 largest moduli of eigenvalues cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-correlation at lag Jarque-Bera: p-value Heteroskedasticisty	1.000 CPI(FRA) 1.000 Yes 0.022	1.000 CPI(NLD) -0.714 Yes 0.093 Yes	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 Joint	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005	15.410 1.084 CPI(NLD) -0.641 Yes -0.001 No	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093 Yes 2	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes	- 0.946 e(FRA/NLD)	Constant
lands /	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	1.000 CPI(FRA) 1.000 Yes 0.022 No	1.000  CPI(NLD) -0.714  Yes 0.093  Yes  O.I  Single significanc	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005 No	15.410  1.084  CPI(NLD) -0.641  Yes -0.001  No  Single significanc	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093 Yes 2	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004 No	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes 0.Single significanc	- 0.946 e(FRA/NLD) - - - - 1	Constant
lands /	4 largest moduli of eigenvalues cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	1.000  CPI(FRA)  1.000  Yes  0.022  No  Prozess	1.000  CPI(NLD) -0.714 Yes 0.093 Yes  0.0  Single significanc e: p-value	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 000 Joint significance: p-value	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005 No	15.410  1.084  CPI(NLD) -0.641  Yes -0.001  No  Single significanc e: p-value	3.760  1.065  e(FRA/NLD) -1.805 Yes 0.093 Yes 2  .000 Joint significance: p-value	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004 No	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes 0.5 ingle significanc e: p-value	0.946 e(FRA/NLD) 1 1 000 Joint significance: p-value	Constant
lands /	4 largest moduli of eigenvalues cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-correlation at lag Jarque-Bera: p-value Heteroskedasticisty	1.000 CPI(FRA) 1.000 Yes 0.022 No	1.000  CPI(NLD) -0.714  Yes 0.093  Yes  O.I  Single significanc	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 000 Joint significance:	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005 No	15.410  1.084  CPI(NLD) -0.641  Yes -0.001  No  Single significanc	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093 Yes 2 .000 Joint significance:	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004 No	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes 0.Single significanc	- 0.946 e(FRA/NLD) 1 000 Joint significance:	Constant
lands /	4 largest moduli of eigenvalues cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	1.000  CPI(FRA) 1.000 Yes 0.022 No  Prozess  ARCH(1) GARCH(1)	1.000  CPI(NLD) -0.714 -0.795 0.093 Yes  0.10 Single significanc e: p-value 0.059	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 000 Joint significance: p-value 0.002	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005 No Prozess ARCH(1)	15.410  1.084  CPI(NLD)  -0.641  Yes  -0.001  No  Single significanc e: p-value 0.268	3.760  1.065  e(FRA/NLD) -1.805  Yes 0.093  Yes 2  .000  Joint significance: p-value 0.156	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004 No Prozess ARCH(1) GARCH(1)	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes  O.0 Single significanc e: p-value 0.434	0.946 e(FRA/NLD) 1 1 000 Joint significance: p-value 0.000	Constant
lands /	4 largest moduli of eigenvalues cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	1.000  CPI(FRA) 1.000 Yes 0.022 No  Prozess  ARCH(1)	1.000  CPI(NLD) -0.714 Yes 0.093 Yes  O.I Single significance 0.059 0.098	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 000 Joint significance: p-value	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005 No	15.410  1.084  CPI(NLD)  -0.641  Yes  -0.001  No  Single significanc e: p-value 0.268 0.416	3.760  1.065  e(FRA/NLD) -1.805 Yes 0.093 Yes 2  .000 Joint significance: p-value	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004 No Prozess	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes  O. Single significanc e: p-value 0.434 0.009	0.946 e(FRA/NLD) 1 1 000 Joint significance: p-value	Constant
lands /	4 largest moduli of eigenvalues cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	1.000  CPI(FRA) 1.000 Yes 0.022 No  Prozess  ARCH(1) GARCH(1) ARCH(1)	1.000  CPI(NLD) -0.714  Yes 0.093  Yes  O.I  Single significanc e: p-value 0.059 0.098 0.094	3.760 0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 000 Joint significance: p-value 0.002	Constant	29.680 1.084 CPI(FRA) 1.000 Yes 0.005 No Prozess ARCH(1)	15.410  1.084  CPI(NLD) -0.641 Yes -0.001 No  Single significanc e: p-value 0.268 0.416 0.008	3.760  1.065  e(FRA/NLD) -1.805  Yes 0.093  Yes 2  .000  Joint significance: p-value 0.156	Constant	15.410 1.000 CPI(FRA) 1.000 Yes 0.004 No Prozess ARCH(1) GARCH(1) ARCH(1)	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes  0. Single significanc e: p-value 0.434 0.009 0.325	0.946 e(FRA/NLD) 1 1 000 Joint significance: p-value 0.000	Constant

				nansen Cointe	gration re	Sts for Rea			ents				
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations		1	56				311			2	21	
	Lags			1				8			1	14	
	Cointegration rank at			1								1	
	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	1.009	1.000	1.000	0.956	1.000	1.000	0.996	0.909	1.000	0.964	0.950	0.950
	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)	Consta
	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	-	-
Portugal	Adjustment factor	0.000	0.001	0.000		0.004	0.024	-0.015		-0.047	0.011	-	
/ France	Economically sensible	No	-	-	-	No	Yes	No	-	Yes	Yes	-	-
/ France	VECM residual auto-			1				1				1	
	correlation at lag			1				1				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.0	000	
	Hadana da da distribu		Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECINI residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.055	0.000		ARCH(1)	0.144	0.004		ARCH(1)	0.451	0.749	
	CPI(AUT)	GARCH(1)	0.031	0.000		)	0.176	0.004		GARCH(1)	0.996	0.749	
	CPI(PRT)	ARCH(1)	0.014	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.451	0.000	
	CPI(PKI)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	0.996	0.000	
	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			1972:12				- 1998:12				- 2017:5	
	Number observations			56				311				21	
	Lags			1				15				14	
	Cointegration rank at			1				1				_	
	significance level 5%												
	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)	Consta
	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	-	-
Spain /	Adjustment factor	0.019	0.000	0.065		-0.003	-0.008	0.002		-0.010	0.033	-	
France	Economically sensible	No	No	Yes	-	Yes	No	Yes	-	Yes	Yes		-
	VECM residual auto-			0		l		2		1		3	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				311	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
			e: p-value	p-value			e: p-value	p-value			e: p-value	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		l
	CPI(ESP)	ARCH(1)	0.471	0.323		ARCH(1)	0.000	0.000		ARCH(1)	0.205	0.000	
	<u> </u>	GARCH(1)	0.442			ADCU(S)	0.000			GARCH(1)	0.000		l
	e(AUT/ESP)	ARCH(1)	0.471	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
		GARCH(1)	0.442	1	1	. )	0.418	1		GARCH(1)	-	1	ı

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange I	Rate Compone	ents				
	Period			1972:12	0			- 1998:12			1999:1	- 2017:5	
	Number observations			33				311				21	
	Lags		- 2	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		-
Greece /	Adjustment factor	0.009	0.612	0.181		-0.003	0.036	0.171		-0.004	-0.027	-	
Germany	Economically sensible	No	Yes	-	-	Yes	Yes	Yes	-	Yes	No	-	-
	VECM residual auto- correlation at lag			1				4				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.	078	
	Habana da da distribu		Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECIVI residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.407	0.686		ARCH(1)	0.001	0.000		ARCH(1) GARCH(1)	0.486	0.383	
		ARCH(1)	0.407			ARCH(1)	0.348			ARCH(1)	0.325		
	CPI(GRC)	GARCH(1)	0.901	0.000		)	0.000	0.000		GARCH(1)	0.492	0.068	
		ARCH(1)	0.407			ARCH(1)	0.000			ARCH(1)	-		
	e(AUT/GRC)	GARCH(1)	0.901	0.000		)	0.000	0.000		GARCH(1)		-	
	Period		1960:1 -	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	49			3	311			2	21	
	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	-	-
tools and d	Adjustment factor	-0.086	0.008	0.229		0.000	-0.002	0.006		-0.001	0.001	-	
Ireland /	Economically sensible	Yes	Yes	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
Germany	VECM residual auto-												
	correlation at lag			2				2				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.	528	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECIVI residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.651	0.895		ARCH(1)	0.000	0.000		ARCH(1)	0.113	0.028	
	CPI(AUT)	GARCH(1)	0.934	0.033	1	)	0.000	0.000	1	GARCH(1)	0.318	0.020	
	CPI(IRL)	ARCH(1)	0.651	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.164	0.005	
	Cri(IKL)	GARCH(1)	0.934	0.000		)	0.000	0.000		GARCH(1)	0.090	0.005	
	e(AUT/IRL)	ARCH(1)	0.651	0.000	1	ARCH(1)	0.039	0.000	1	ARCH(1)	-	_	
	C(AO I) IIIC)	GARCH(1)	0.934	0.000	l	)	0.000	0.000	l	GARCH(1)	-		I I

					gration Te	sts for Rea		Rate Compone	ents				
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			55				311				21	
	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)	Consta
	Coefficient	1.000	-0.353	1.620	-5.849	1.000	0.214	0.081	-5,430	1.000	-0.975		-0.11
	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 /	Economically sensible	Yes	No	-	-	Yes	-	-	-	Yes	Yes	-	-
Germany	VECM residual auto-			4				1				1	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				999	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
			e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	4
	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		4
	CPI(ITA)	ARCH(1) GARCH(1)	0.342	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	0.085	0.000	
	e(AUT/ITA)	ARCH(1)	0.342	0.000	i	ARCH(1)	0.001	0.000		ARCH(1)	-		1
		GARCH(1)	0.000			)	0.000			GARCH(1)	-	-	
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			55				311				21	
	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)	Consta
	Coefficient	1.000	-1.509	-5.129	3.951	1.000	-1.131	-0.885	0.528	1.000	-0.703	C(OLIVEON)	-1.38
	Economically sensible	Yes	-1.509 Yes	-5.125 Yes	3.931	Yes	Yes	Yes	0.328	Yes	Yes		-1.50
Luxem-	Adjustment factor	0.005	0.006	0.003		0.002	0.012	0.027		-0.122	0.003		
bourg/	Economically sensible	No	Yes	Yes	-	No	Yes	Yes	-	Yes	Yes		-
Germany	VECM residual auto-												
	correlation at lag			2				2				2	
	Jarque-Bera: p-value		0.	000			0	.000			0.0	000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value	l		e: p-value	p-value	1		e: p-value	p-value	
		ARCH(1)	0.893	0.908	1	ARCH(1)	0.000	0.000	1	ARCH(1)	0.288	0.565	1
		ALCH(I)				١	0.197	0.000	I	GARCH(1)	0.873	0.565	1
	CPI(AUT)	GARCH(1)	0.805	0.500		,	0.157				0.675		
			0.805 0.297			ARCH(1)	0.004	0.000		ARCH(1)	0.041	0.000	1
	CPI(AUT)	GARCH(1)		0.057		ARCH(1)		0.000		,		0.000	
		GARCH(1) ARCH(1)	0.297			ARCH(1) ) ARCH(1)	0.004	0.000		ARCH(1)	0.041	0.000	

			Inl	nansen Cointe	gration To	ete for Pos	l Evchange i	2sta Campana	nte				
	Period			· 1972:12	gration re	SIS IUI Rea		- 1998:12	iits		1000-1	- 2017:5	
	Number observations			44				311				21	
	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-	Adjustment factor	-0.033	-0.046	0.026		0.001	0.001	0.029		-0.013	0.039	-	
lands /	Economically sensible	Yes	No	-	-	No	Yes	Yes	-	Yes	Yes	-	-
Germany	VECM residual auto-			_				_				_	
	correlation at lag			0				2				1	
	Jarque-Bera: p-value		0.	000			0	000			0.0	000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.886	0.981		ARCH(1)	0.009	0.000		ARCH(1)	0.051	0.004	
	CPI(AUT)	GARCH(1)	0.980	0.561		)	0.000	0.000		GARCH(1)	0.071	0.004	
	CPI(NLD)	ARCH(1)	0.075	0.075	1	ARCH(1)	0.004	0.000		ARCH(1)	0.051	0.000	
	CPI(NLD)	GARCH(1)	0.292	0.075		)	0.005	0.000		GARCH(1)	0.071	0.000	
	e(AUT/NLD)	ARCH(1)	0.009	0.000		ARCH(1)	0.001	0.000		ARCH(1)	-		
	e(AUT/NED)	GARCH(1)	0.000			)	0.000	0.000		GARCH(1)	-	-	
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			33				311				21	
	Lags			24				13			:	13	
	Cointegration rank at												
		1		2				2				n	
	significance level 5%			2				2				0	
	Trace statistics	81.864	21.356	2.940		31.187	16.289	3.333		8.038	1.382	-	
	Trace statistics 5% critical values	81.864 29.680				31.187 29.680	16.289 15.410			8.038 15.410		0 - -	
	Trace statistics 5% critical values 4 largest moduli of eigenvalues	29.680 1.271	21.356 15.410 1.271	2.940 3.760 1.101	1.101	29.680 1.354	15.410 1.104	3.333 3.760 1.060	1.060	15.410	1.382 3.760 0.986	- 0.920	0.906
	Trace statistics 5% critical values 4 largest moduli of eigenvalues Cointegration vector	29.680 1.271 CPI(GER)	21.356 15.410 1.271 CPI(PRT)	2.940 3.760 1.101 e(GER/PRT)	Constant	29.680 1.354 CPI(GER)	15.410 1.104 CPI(PRT)	3.333 3.760 1.060 e(GER/PRT)	Constant	15.410 1.000 CPI(GER)	1.382 3.760 0.986 CPI(PRT)	-	Constant
	Trace statistics 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient	29.680 1.271 CPI(GER) 1.000	21.356 15.410 1.271 CPI(PRT) -1.233	2.940 3.760 1.101 e(GER/PRT) -1.404	Constant 0.719	29.680 1.354 CPI(GER) 1.000	15.410 1.104 CPI(PRT) -0.625	3.333 3.760 1.060 e(GER/PRT) -0.687	Constant -1.846	15.410 1.000 CPI(GER) 1.000	1.382 3.760 0.986 CPI(PRT) -0.881	- 0.920 e(GER/PRT)	Constant -0.560
	Trace statistics 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible	29.680 1.271 CPI(GER) 1.000 Yes	21.356 15.410 1.271 CPI(PRT) -1.233 Yes	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes	Constant	29.680 1.354 CPI(GER) 1.000 Yes	15.410 1.104 CPI(PRT) -0.625 Yes	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes	Constant	15.410 1.000 CPI(GER) 1.000 Yes	1.382 3.760 0.986 CPI(PRT) -0.881 Yes	- 0.920 e(GER/PRT) -	Constant
Portugal	Trace statistics 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor	29.680 1.271 CPI(GER) 1.000 Yes -0.013	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003	15.410 1.104 CPI(PRT) -0.625 Yes -0.012	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012	- 0.920 e(GER/PRT)	Constant -0.560
/	Trace statistics 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible	29.680 1.271 CPI(GER) 1.000 Yes	21.356 15.410 1.271 CPI(PRT) -1.233 Yes	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes	15.410 1.104 CPI(PRT) -0.625 Yes	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes	1.382 3.760 0.986 CPI(PRT) -0.881 Yes	- 0.920 e(GER/PRT) -	Constant -0.560
Portugal / Germany	Trace statistics 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible	29.680 1.271 CPI(GER) 1.000 Yes -0.013	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003	15.410 1.104 CPI(PRT) -0.625 Yes -0.012	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes	- 0.920 e(GER/PRT) -	Constant -0.560
/	Trace statistics 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-	29.680 1.271 CPI(GER) 1.000 Yes -0.013	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162 Yes	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003	15.410 1.104 CPI(PRT) -0.625 Yes -0.012 No	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041 Yes	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes	- 0.920 e(GER/PRT) - -	Constant -0.560
/	Trace statistics 5% critical values 5% critical values 4 largest moduli of eigenvalues Contegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	29.680 1.271 CPI(GER) 1.000 Yes -0.013	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162 Yes	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003	15.410 1.104 CPI(PRT) -0.625 Yes -0.012 No	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041 Yes	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes	- 0.920 e(GER/PRT) - - -	Constant -0.560
/	Trace statistics 5% critical values 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	29.680 1.271 CPI(GER) 1.000 Yes -0.013	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162 Yes 1	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003	15.410 1.104 CPI(PRT) -0.625 Yes -0.012 No	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041 Yes	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes	- 0.920 e(GER/PRT) - - - - 4	Constant -0.560
/	Trace statistics 5% critical values 5% critical values 4 largest moduli of eigenvalues Contegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	29.680 1.271 CPI(GER) 1.000 Yes -0.013 Yes	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162 Yes 1	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003 Yes	15.410 1.104 CPI(PRT) -0.625 Yes -0.012 No	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041 Yes 0	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009 Yes	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes	- 0.920 e(GER/PRT) 4	Constant -0.560
/	Trace statistics 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible vector sesidual auto- correlation at lag Jarque-Bera-p-value Heteroskedasticisty test of VECM residuals	29.680 1.271 CPI(GER) 1.000 Yes -0.013 Yes	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162 Yes 1 1 002 Joint significance: p-value	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003 Yes	15.410  1.104  CPI(PRT) -0.625  Yes -0.012  No  Single significanc	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041 Yes 0 Joint significance: p-value	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009 Yes	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes	- 0.920 e(GER/PRT)	Constant -0.560
/	Trace statistics 5% critical values 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	29.680 1.271 CPI(GER) 1.000 Yes -0.013 Yes	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162 Yes 1 002 Joint significance:	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003 Yes	15.410  1.104  CPI(PRT) -0.625  Yes -0.012  No  Single significanc e: p-value	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041 Yes 0 000 Joint significance:	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009 Yes	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes	- 0.920 e(GER/PRT)	Constant -0.560
/	Trace statistics 5% critical values 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals  CPI(AUT)	29.680 1.271 CPI(GER) 1.000 Yes -0.013 Yes  Prozess ARCH(1)	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No Single significanc e: p-value 0.388	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162 Yes 1 002 Joint significance: p-value 0.684	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003 Yes	15.410 1.104 CP((PRT) -0.625 Yes -0.012 No  0 Single significanc e: p-value 0.002	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041 Yes 0 000 Joint significance: p-value 0.000	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009 Yes	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes  0.Single significance: p-value 0.135	e(GER/PRT) 4 000 Joint significance: p-value 0.250	Constant -0.560
/	Trace statistics 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible vector sesidual auto- correlation at lag Jarque-Bera-p-value Heteroskedasticisty test of VECM residuals	29.680 1.271 CPI(GER) 1.000 Yes -0.013 Yes  Prozess ARCH(1) GARCH(1)	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No Single significanc e: p-value 0.388 0.998	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162 Yes 1 1 002 Joint significance: p-value	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003 Yes  Prozess ARCH(1)	15.410  1.104  CPI(PRT) -0.625  Yes -0.012  No  Single significanc e: p-value 0.002 0.000	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041 Yes 0 Joint significance: p-value	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009 Yes Prozess ARCH(1) GARCH(1)	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes Single significanc e: p-value 0.135 0.680	- 0.920 e(GER/PRT)	Constant -0.560
/	Trace statistics 5% critical values 5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals  CPI(AUT)	29.680 1.271 CPI(GER) 1.000 Yes -0.013 Yes  Prozess  ARCH(1) GARCH(1) ARCH(1)	21.356 15.410 1.271 CPI(PRT) -1.233 Yes -0.002 No Single significanc e: p-value 0.388 0.998	2.940 3.760 1.101 e(GER/PRT) -1.404 Yes 0.162 Yes 1 002 Joint significance: p-value 0.684	Constant 0.719	29.680 1.354 CPI(GER) 1.000 Yes -0.003 Yes  Prozess ARCH(1)	15.410  1.104  CPI(PRT) -0.625  Yes -0.012  No  Single significanc e: p-value 0.002 0.000 0.000	3.333 3.760 1.060 e(GER/PRT) -0.687 Yes 0.041 Yes 0 000 Joint significance: p-value 0.000	Constant -1.846	15.410 1.000 CPI(GER) 1.000 Yes -0.009 Yes Prozess ARCH(1) GARCH(1) ARCH(1)	1.382 3.760 0.986 CPI(PRT) -0.881 Yes 0.012 Yes  Old Single significanc e: p-value 0.135 0.680 0.585	e(GER/PRT) 4 000 Joint significance: p-value 0.250	Constant -0.560

			Jol	nansen Cointe	gration Te	sts for Rea	I Exchange I	Rate Compone	ents				
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations			54				311				21	
	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	1.009	1.000	1.000	0.523	1.247	1.247	1.043	1.043	1.027	1.027	1.003	1.000
	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	-	-
Spain /	Adjustment factor	0.022	0.019	0.027		0.001	0.003	-0.009		0.012	-0.022	-	
Germany	Economically sensible	No	Yes	Yes	-	No	-	-	-	No	No	-	-
Cermany	VECM residual auto-			1				1				0	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				000	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc		
			e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	4
	CPI(AUT)	ARCH(1)	0.451	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.408	0.000	
	, , ,	GARCH(1)	0.996			)	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			)	0.000			GARCH(1)	0.090		
	e(AUT/ESP)	ARCH(1)	0.000	0.000		ARCH(1)	0.001	0.000		ARCH(1)	-		
	Period	GARCH(1)	0.000	1972:12		,	0.000	- 1998:12		GARCH(1)	1000.1	- 2017:5	<u> </u>
	Number observations			43				- 1990:12				21	
	Lags			45 L4				15				14	
	Cointegration rank at			.4				13				14	
	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	-	-
Ireland /	Adjustment factor	-0.230	-0.034	0.027		-0.009	0.017	-0.017		-0.027	-0.001	-	
Greece	Economically sensible	Yes	No	Yes	-	Yes	Yes	No	-	Yes	No	-	-
Greece	VECM residual auto-			0				2				1	
	correlation at lag			U				2				1	
	Jarque-Bera: p-value		0.	000			0	.000			0.	000	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	rest of Accial Lesignais		e: p-value	p-value			e: p-value	p-value	1		e: p-value	p-value	1
	CPI(AUT)	ARCH(1)	0.620	0.125		ARCH(1)	0.036	0.000		ARCH(1)	0.387	0.320	
	CFI(AUT)	GARCH(1)	0.410	0.123		)	0.265	0.000		GARCH(1)	0.586	0.320	1
	CPI(IRL)	ARCH(1)	0.620	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.067	0.121	1
	Ci i(iiic)	GARCH(1)	0.410	0.000		)	0.001	0.000		GARCH(1)	0.595	0.111	J
	e(AUT/IRL)	ARCH(1) GARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	-		

			Jol	hansen Cointe	gration Te	sts for Rea	l Exchange I	Rate Compone	ents				
	Period			1972:12	g	<u> </u>		- 1998:12			1999:1	- 2017:5	
	Number observations			43				311				21	
	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	23.000	13.410	3.700		23.000	13.410	3.700		13.410	3.700	_	
	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	-	-
Italy /	Adjustment factor	-0.135	0.038	0.006		-0.003	0.007	-0.008		0.027	0.014	-	
Greece	Economically sensible	Yes	Yes	-	-	Yes	Yes	No	-	No	Yes	-	-
Greece	VECM residual auto- correlation at lag			1				2				2	
	Jarque-Bera: p-value		0.	000			0	.000			0.0	000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	1102033	e: p-value	p-value		1102033	e: p-value	p-value		1102033	e: p-value	p-value	
		ARCH(1)	0.550			ARCH(1)	0.094			ARCH(1)	0.137		
	CPI(AUT)	GARCH(1)	0.183	0.083		AIRCH(1)	0.336	0.000		GARCH(1)	0.057	0.000	
		ARCH(1)	0.550			ARCH(1)	0.001			ARCH(1)	0.240		
	CPI(ITA)	GARCH(1)	0.330	0.000		ARCH(1)	0.001	0.000		GARCH(1)	0.000	0.000	
					ł	)			ł				
	e(AUT/ITA)	ARCH(1) GARCH(1)	0.005	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	-	-	
	Period	GARCH(1)		1972:12		,		- 1998:12	l	GARCH(1)		- 2017:5	
	Number observations			55				311				21	
				2				15				13	
	Lags Cointegration rank at			2				15				13	
	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	-	-
Luxem-	Adjustment factor	-0.140	-0.033	-0.030		0.004	0.007	0.009		0.012	0.005	-	
bourg/	Economically sensible	Yes	No	No	-	No	Yes	Yes	-	No	Yes	-	-
Greece	VECM residual auto-												
	correlation at lag			2				3				5	
	Jarque-Bera: p-value		0	000			n	.000			0.	000	
	Jurque Deru, p value		Single	loint	1		Single	loint	1		Single	loint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	F102E33	e: p-value	p-value		F102E33	e: p-value	p-value		F102E33	e: p-value	p-value	
		ARCH(1)	0.524	p value	1	ARCH(1)	0.180	p value	1	ARCH(1)	0.118	p value	
	CPI(AUT)	GARCH(1)	0.106	0.001		ANCH(1)	0.180	0.015		GARCH(1)	0.118	0.032	
		ARCH(1)	0.106		l	ARCH(1)	0.021		l	ARCH(1)	0.024		
	CPI(LUX)	GARCH(1)	0.524	0.000		AUCH(I)	0.021	0.000		GARCH(1)	0.024	0.000	
					ł	ARCH(1)		-	ł		0.000		
	e(AUT/LUX)	ARCH(1) GARCH(1)	0.000	0.000	l	AKCH(1)	0.000	0.000	l	ARCH(1) GARCH(1)		-	

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	nts				
	Period			1972:12	g	<u> </u>		- 1998:12			1999:1	- 2017:5	
	Number observations			33				311				21	
	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	23.000	13.410	3.700		23.000	13.410	3.700		13.410	3.700	_	
	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	-	-
Nether-	Adjustment factor	-0.079	-0.124	-0.030		0.007	0.004	0.070		0.004	0.002	-	
lands /	Economically sensible	Yes	No	No	-	No	Yes	Yes	-	No	Yes	-	-
Greece	VECM residual auto- correlation at lag			3				1				0	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.	000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	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)	-		
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			35				311				21	
	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	-	
Portugal	Economically sensible	No	-	-	-	Yes	No	-	-	Yes	No	-	-
/ Greece	VECM residual auto-												
	correlation at lag			0				3				1	
	Jarque-Bera: p-value		0.1	000			0	.000			0.	000	
			Single	Joint			Single	Joint			Single	loint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
		ARCH(1)	0.041			ARCH(1)	0.192			ARCH(1)	0.144		1
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	0.353	0.021	
		ARCH(1)	0.041			ARCH(1)	0.002		l	ARCH(1)	0.216		1
	CPI(PRT)	GARCH(1)	0.000	0.000		)	0.002	0.000		GARCH(1)	0.000	0.000	
						ARCH(1)	0.000			ARCH(1)	-		1
	e(AUT/PRT)	ARCH(1) GARCH(1)	0.041	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	-	-	

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	56				311			2	21	
	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)	Constar
	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	0.010	Yes	Yes	Yes	0.541	Yes	Yes	-	1.550
	Adjustment factor	-0.091	-0.043	0.105		-0.012	-0.010	-0.028		0.013	0.017	-	
Spain /	Economically sensible	Yes	-0.045 No	Yes		Yes	-0.010 No	-0.028 No		No No	Yes	-	
Greece	VECM residual auto-	res	NO	162	_	162	NO	NO	_	INU	162	-	_
	correlation at lag			4				3				2	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.0	009	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECIVI residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.431	0.001		ARCH(1)	0.031	0.000		ARCH(1) GARCH(1)	0.073	0.006	
		ARCH(1)	0.479			ARCH(1)	0.000			ARCH(1)	0.218		
	CPI(ESP)	GARCH(1)	0.435	0.362		)	0.000	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.000			ARCH(1)	0.000			ARCH(1)			
	e(AUT/ESP)	GARCH(1)	0.000	0.000		1	0.000	0.000		GARCH(1)		-	
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations		1	55				311				21	
	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)	Constar
	Coefficient	1.000	0.698	5.379	-3.431	1.000	-1.164	-0.320	0.773	1.000	0.641	e(INC/TTA)	-7.745
	Economically sensible	Yes	No No	No	-3.431	Yes	-1.164 Yes	Yes	0.773	Yes	No No	- :	-7.743
	Adjustment factor	0.001	0.000	0.001	-	0.005	0.006	-0.001	-	-0.004	0.000	-	<u> </u>
Italy /	Economically sensible	No	0.000	0.001		No	Yes	-0.001 No		-0.004 Yes	0.000	-	
Ireland	VECM residual auto-	INO		_		INO	162	NO	_	162		-	
				2				1				3	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				712	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc			Prozess	significanc	significance:		Prozess	significanc	significance:	
			e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.837 0.996	0.976		ARCH(1)	0.570 0.000	0.000		ARCH(1) GARCH(1)	0.348	0.622	
		ARCH(1)	0.416			ARCH(1)	0.000			ARCH(1)	0.295		
	CPI(ITA)			0.122									
	CPI(ITA)	GARCH(1)	0.514	0.122		)	0.000	0.000		GARCH(1)	0.304	0.039	
	CPI(ITA)			0.122		) ARCH(1)	0.000 0.441 0.077	0.000		GARCH(1) ARCH(1) GARCH(1)	0.304	0.039	

				nansen Cointe	gradion re	313 IOI NE			11113				
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				24			1	18	
	Cointegration rank at			_				_				0	
	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
	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)	Consta
	Coefficient	1.000	-0.471	0.205	-1.743	1.000	-0.289	0.787	-2.974	1.000	-0.495	-	-2.36
	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	-	
Portugal	Economically sensible	No	Yes	-	-	Yes	Yes	-	-	Yes	No	-	-
/ Ireland	VECM residual auto-												
	correlation at lag			3				3				1	
	Jarque-Bera: p-value		0.1	000			0.	000			0.0	000	
			Single	Joint			Single	Joint			Single	Joint	I
	Heteroskedasticisty	Prozess	significanc			Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	1102033	e: p-value	p-value		1102033	e: p-value	p-value		1102033	e: p-value	p-value	
		ARCH(1)	0.702			ARCH(1)	0.000			ARCH(1)	0.177		1
	CPI(AUT)	GARCH(1)	0.990	0.924		1	0.004	0.000		GARCH(1)	0.765	0.314	
		ARCH(1)	0.702			ARCH(1)	0.014			ARCH(1)	0.588		ł
	CPI(PRT)	GARCH(1)	0.990	0.000		1	0.000	0.000		GARCH(1)	0.377	0.302	
		ARCH(1)	0.702			ARCH(1)	0.014			ARCH(1)	-		ł
	e(AUT/PRT)	GARCH(1)	0.702	0.000		ARCH(1)	0.014	0.000		GARCH(1)	-	-	
	Period	Gratteri(1)		1972:12				- 1998:12		Grateri(1)	1000-1	- 2017:5	1
	Number observations			48				311				21	
	Lags			9				20				14	
	Cointegration rank at			,				20				.4	
	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	29.000	13.410	3.760		25.000	15.410	3.760		15.410	3.700	-	-
	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
	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)	Consta
	Coefficient	1.000	-1.341	56.408	-12.970	1.000	-1.663	1.686	2.891	1.000	-4.548		16.89
	Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes	-	-
Snain /	Adjustment factor	0.000	0.001	-0.017		0.003	0.003	0.016		0.001	0.001	-	
Spain /	Adjustment factor Economically sensible	0.000 Yes	0.001 Yes	-0.017	-	0.003 No	0.003 Yes	0.016	-	0.001 No	0.001 Yes	-	-
Spain / Ireland			Yes	-	-			-	-		Yes	-	-
	Economically sensible		Yes	-0.017 -	-				-		Yes	- 2	-
	Economically sensible VECM residual auto-		Yes	-	-		Yes	-	-		Yes	-	-
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value		Yes	-	-		Yes	1	-		Yes	- 2	-
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty		Yes 0.	- 0	-		Yes 0.	1 000	-		Yes 0.5	- 2 562	-
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	Yes	Yes 0.1 Single	- 0 000 Joint	-	No	Yes 0. Single	- 1 000 Joint	-	No	Yes 0.5 Single	- 2 562 Joint	-
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	Yes	Yes  0.0  Single significanc	Joint significance:	-	No	Yes  O.  Single significanc	1  000  Joint significance: p-value	-	No	Yes  0.!  Single significanc	2 562 Joint significance: p-value	-
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	Yes	Yes  O.: Single significanc e: p-value	0 000 Joint significance:	-	No Prozess	Yes  O.  Single significanc e: p-value	1 000 Joint significance:	-	No Prozess	Yes  0.: Single significanc e: p-value	2 562 Joint significance:	-
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	Yes Prozess ARCH(1)	Yes  O. Single significanc e: p-value  O.216	Joint significance: p-value	-	No Prozess	Yes  O. Single significanc e: p-value  O.000	1 000 Joint significance: p-value 0.000	-	Prozess ARCH(1)	O.Single significanc e: p-value 0.095	2 562 Joint significance: p-value 0.193	-
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	Prozess  ARCH(1) GARCH(1)	O.I Single significanc e: p-value 0.216 0.000 0.514	Joint significance:	-	Prozess ARCH(1)	O Single significanc e: p-value 0.000 0.141	1  000  Joint significance: p-value	-	Prozess  ARCH(1) GARCH(1)	O.Single significanc e: p-value 0.095 0.762	2 562 Joint significance: p-value	-
	Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	Prozess  ARCH(1) GARCH(1) ARCH(1)	Ves  O. Single significanc e: p-value O.216 O.000	Joint significance: p-value	-	Prozess ARCH(1)	O. Single significanc e: p-value 0.000 0.141 0.022	1 000 Joint significance: p-value 0.000	-	Prozess  ARCH(1) GARCH(1) ARCH(1)	O.: Single significanc e: p-value 0.095 0.762 0.074	2 562 Joint significance: p-value 0.193	-

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	nts				
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				15			1	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-	Adjustment factor	0.005	0.019	0.001		0.000	0.021	-0.054		-0.025	0.017	-	
bourg/	Economically sensible	No	Yes	-	-	Yes	Yes	-	-	Yes	Yes	-	-
Italy	VECM residual auto-			_				_				_	
	correlation at lag			2				2				4	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.0	000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
		ARCH(1)	0.336			ARCH(1)	0.000			ARCH(1)	0.584		
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	0.124	0.076	
		ARCH(1)	0.452			ARCH(1)	0.008			ARCH(1)	0.100		
	CPI(LUX)	GARCH(1)	0.799	0.664		)	0.000	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.001			ARCH(1)	0.011			ARCH(1)			
	e(AUT/LUX)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	-	-	
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				13			1	16	
	Cointegration rank at significance level 5%			0									
								1				0	
l	Trace statistics	29.294	13.221	3.944		37.910	14.682	5.630		9.914	3.026	-	
	Trace statistics 5% critical values	<b>29.294</b> 29.680	13.221 15.410	3.944 3.760		37.910 29.680				9.914 15.410			
		29.680	15.410	3.760		29.680	14.682 15.410	5.630 3.760		15.410	3.026 3.760	-	
	5% critical values				0.397		14.682	5.630 3.760 1.032	1.032		3.026	-	0.993
	5% critical values 4 largest moduli of	29.680	15.410	3.760	0.397 Constant	29.680	14.682 15.410	5.630 3.760	1.032 Constant	15.410	3.026 3.760	-	0.993 Constant
	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient	29.680 1.000	15.410 1.000	3.760 0.942		29.680 1.323	14.682 15.410 1.323	5.630 3.760 1.032		15.410 1.030	3.026 3.760 1.030	1.000	
	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible	29.680 1.000 CPI(ITA) 1.000 Yes	15.410 1.000 CPI(NLD) -1.120 Yes	3.760 0.942 e(ITA/NLD) 10.837 No	Constant	29.680 1.323 CPI(ITA) 1.000 Yes	14.682 15.410 1.323 CPI(NLD) -5.089 Yes	5.630 3.760 1.032 e(ITA/NLD) 1.885 No	Constant	15.410 1.030 CPI(ITA) 1.000 Yes	3.026 3.760 1.030 CPI(NLD) -1.266 Yes	- 1.000 e(ITA/NLD) -	Constant
Nether-	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient	29.680 1.000 CPI(ITA) 1.000	15.410 1.000 CPI(NLD) -1.120	3.760 0.942 e(ITA/NLD) 10.837	Constant	29.680 1.323 CPI(ITA) 1.000	14.682 15.410 1.323 CPI(NLD) -5.089	5.630 3.760 1.032 e(ITA/NLD) 1.885	Constant 17.450	15.410 1.030 CPI(ITA) 1.000	3.026 3.760 1.030 CPI(NLD) -1.266	1.000 e(ITA/NLD)	Constant
Nether- lands /	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible	29.680 1.000 CPI(ITA) 1.000 Yes	15.410 1.000 CPI(NLD) -1.120 Yes	3.760 0.942 e(ITA/NLD) 10.837 No	Constant	29.680 1.323 CPI(ITA) 1.000 Yes	14.682 15.410 1.323 CPI(NLD) -5.089 Yes	5.630 3.760 1.032 e(ITA/NLD) 1.885 No	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes	3.026 3.760 1.030 CPI(NLD) -1.266 Yes	- 1.000 e(ITA/NLD) -	Constant
	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor	29.680 1.000 CPI(ITA) 1.000 Yes 0.002	15.410 1.000 CPI(NLD) -1.120 Yes 0.007 Yes	3.760 0.942 e(ITA/NLD) 10.837 No -0.005	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006	3.026 3.760 1.030 CPI(NLD) -1.266 Yes 0.021 Yes	- 1.000 e(ITA/NLD) - - -	Constant 1.281
lands /	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible	29.680 1.000 CPI(ITA) 1.000 Yes 0.002	15.410 1.000 CPI(NLD) -1.120 Yes 0.007 Yes	3.760 0.942 e(ITA/NLD) 10.837 No	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006	3.026 3.760 1.030 CPI(NLD) -1.266 Yes 0.021 Yes	- 1.000 e(ITA/NLD) -	Constant 1.281
lands /	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-	29.680 1.000 CPI(ITA) 1.000 Yes 0.002	15.410 1.000 CPI(NLD) -1.120 Yes 0.007 Yes	3.760 0.942 e(ITA/NLD) 10.837 No -0.005	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000 Yes	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006	3.026 3.760 1.030 CPI(NLD) -1.266 Yes 0.021 Yes	- 1.000 e(ITA/NLD) - - -	Constant 1.281
lands /	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	29.680 1.000 CPI(ITA) 1.000 Yes 0.002	15.410 1.000 CPI(NLD) -1.120 Yes 0.007 Yes	3.760 0.942 e(ITA/NLD) 10.837 No -0.005	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000 Yes	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006	3.026 3.760 1.030 CPI(NLD) -1.266 Yes 0.021 Yes	1.000 e(ITA/NLD)	Constant 1.281
lands /	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	29.680 1.000 CPI(ITA) 1.000 Yes 0.002	15.410 1.000 CPI(NLD) -1.120 Yes 0.007 Yes	3.760 0.942 e(ITA/NLD) 10.837 No -0.005	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000 Yes	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006	3.026 3.760 1.030 CPI(NLD) -1.266 Yes 0.021 Yes	- 1.000 e(ITA/NLD) 2	Constant 1.281
lands /	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	29.680 1.000 CPI(ITA) 1.000 Yes 0.002 No	15.410 1.000 CPI(NLD) -1.120 Yes 0.007 Yes	3.760 0.942 e(ITA/NLD) 10.837 No -0.005 - 2 DOO Joint	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002 Yes	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000 Yes	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029 -	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006 No	3.026 3.760 1.030 CPI(NLD) -1.266 Yes 0.021 Yes	- 1.000 e(ITA/NLD) 2	Constant 1.281
lands /	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	29.680 1.000 CPI(ITA) 1.000 Yes 0.002 No	15.410 1.000 CPI(NLD) -1.120 Yes 0.007 Yes  0.01 Single significanc e: p-value 0.415	3.760 0.942 e(ITA/NLD) 10.837 No -0.005 - 2 D00 Joint significance:	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002 Yes	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000 Yes	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029 - 3 000 Joint significance:	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006 No	3.026 3.760 1.030 -1.266 Yes 0.021 Yes	1.000 e(ITA/NLD) 2 D67 Joint significance:	Constant 1.281
lands /	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	29.680 1.000 CPI(ITA) 1.000 Yes 0.002 No Prozess ARCH(1) GARCH(1)	15.410  1.000  CPI(NLD) -1.120  Yes 0.007  Yes  O.Il  Single significanc e: p-value 0.415 0.000	3.760 0.942 e(ITA/NLD) 10.837 No -0.005 - 2 2 000 Joint significance: p-value 0.000	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002 Yes  Prozess  ARCH(1)	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000 Yes 0.000 Single significanc e: p-value 0.000	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029 3 000 Joint significance: p-value 0.000	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006 No Prozess ARCH(1) GARCH(1)	3.026 3.760 1.030 CPI(NLD) -1.266 Yes 0.021 Yes  0.1 Single significanc e: p-value 0.385 0.917	1.000 e(ITA/NLD) 2 2 2 7 67 Joint significance: p-value 0.652	Constant 1.281
lands /	5% critical values 4 largest moduli of eigenvalues Geigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	29.680  1.000  CPI(ITA) 1.000  Yes 0.002  No  Prozess  ARCH(1)  GARCH(1)  ARCH(1)	15.410  1.000  CPI(NLD) -1.120  Yes 0.007  Yes  O.II  Single significanc e: p-value 0.415 0.000 0.197	3.760 0.942 e(ITA/NLD) 10.837 No -0.005 - 2 DOO Joint significance: p-value	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002 Yes	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000 Yes 0.000 Single significanc e: p-value 0.000 0.000	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029 - 3 000 Joint significance: p-value	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006 No Prozess ARCH(1) GARCH(1) ARCH(1)	3.026 3.760 1.030 CPI(NLD) -1.266 Yes 0.021 Yes  O.I. Single significanc e: p-value 0.385 0.917 0.385	1.000  e(ITA/NLD)  2  2  D67  Joint significance: p-value	Constant 1.281
lands /	5% critical values 4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals CPI(AUT)	29.680 1.000 CPI(ITA) 1.000 Yes 0.002 No Prozess ARCH(1) GARCH(1)	15.410  1.000  CPI(NLD) -1.120  Yes 0.007  Yes  O.Il  Single significanc e: p-value 0.415 0.000	3.760 0.942 e(ITA/NLD) 10.837 No -0.005 - 2 2 000 Joint significance: p-value 0.000	Constant 19.917	29.680 1.323 CPI(ITA) 1.000 Yes -0.002 Yes  Prozess  ARCH(1)	14.682 15.410 1.323 CPI(NLD) -5.089 Yes 0.000 Yes 0.000 Single significanc e: p-value 0.000	5.630 3.760 1.032 e(ITA/NLD) 1.885 No -0.029 3 000 Joint significance: p-value 0.000	Constant 17.450	15.410 1.030 CPI(ITA) 1.000 Yes 0.006 No Prozess ARCH(1) GARCH(1)	3.026 3.760 1.030 CPI(NLD) -1.266 Yes 0.021 Yes  0.1 Single significanc e: p-value 0.385 0.917	1.000 e(ITA/NLD) 2 2 2 7 67 Joint significance: p-value 0.652	Constant 1.281

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	33				311			2	21	
	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	1.331	1.301	1.107	1.107	1.067	1.067	1.035	1.035	1.000	0.976	0.964	0.964
	eigenvalues 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	e(ITA/PKT)	-0.432
	Economically sensible	Yes	No	No	-17.559	Yes	Yes	No	-2.323	Yes	Yes		-0.452
	Adjustment factor	0.001	0.070	-0.001	-	-0.005	-0.013	-0.061	-	-0.017	0.008		-
Portugal	Economically sensible	No.	0.070	-0.001		Yes	No.	-0.001		Yes	Yes		
/ Italy	VECM residual auto-					103				103			
	correlation at lag			1				5				1	
	Jarque-Bera: p-value		0.	000			0	.000			0.1	000	
	Jarque-Dera, p-value		Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc			Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	F102E33	e: p-value	p-value		F102E33	e: p-value	p-value		F102E33	e: p-value	p-value	
		ARCH(1)	0.007			ARCH(1)	0.004			ARCH(1)	0.253		
	CPI(AUT)	GARCH(1)	0.946	0.027		)	0.000	0.000		GARCH(1)	0.951	0.516	
		ARCH(1)	0.007			ARCH(1)	0.010			ARCH(1)	0.530		i
	CPI(PRT)	GARCH(1)	0.946	0.000		)	0.000	0.000		GARCH(1)	0.945	0.815	
		ARCH(1)	0.007			ARCH(1)	0.000			ARCH(1)	-		1
	e(AUT/PRT)	GARCH(1)	0.946	0.000		)	0.000	0.000		GARCH(1)	-	-	
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				19				14	
	Cointegration rank at			0								0	
	significance level 5%			U				-				U	
	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	-0.791	1.000	-0.741	0.127	-1.274	1.000	-0.624	-	-1.775
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	No	-	Yes	Yes	-	-
Spain /	Adjustment factor	0.030	0.114	-0.012		-0.005	-0.006	-0.058		-0.008	-0.027	-	
Spain / Italy	Economically sensible	No	Yes	No	-	Yes	No	-	-	Yes	No	-	-
Italy	VECM residual auto-			0								2	
	correlation at lag			U				1				2	
	Jarque-Bera: p-value		0.	000			0	.000			0.	762	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of vecivi residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.393	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	0.235	0.000	
						ARCH(1)	0.000	<b>-</b>		ARCH(1)	0.121		l
	CPI(ESP)	ARCH(1) GARCH(1)	0.018	0.000		) ANCH(1)		0.000				0.000	
	CPI(ESP) e(AUT/ESP)	ARCH(1) GARCH(1) ARCH(1)	0.000	0.000		ARCH(1)  ARCH(1)	0.000	0.000		GARCH(1) ARCH(1)	0.000	0.000	

			lol	nansen Cointe	gration Te	sts for Rea	I Exchange F	Rate Compone	ents				
	Period			1972:12	Bration re	Jes for nee		- 1998:12			1999:1	- 2017:5	
	Number observations			56				311				21	
	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
Nether-	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
lands /	Adjustment factor	0.024	0.268	-0.098		-0.038	0.006	0.043		0.006	0.032	-	
Luxem-	Economically sensible	No	Yes	-	-	Yes	Yes	Yes	-	No	Yes	-	-
bourg	VECM residual auto-			3				0				1	
boulg	correlation at lag			3				U				1	
	Jarque-Bera: p-value		0.	000			0	.000			0.	000	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc		
	test of VECIVITESIGUAIS		e: p-value	p-value			e: p-value	p-value			e: p-value	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)	-	L	
	Period			1972:12		-		- 1998:12				- 2017:5	
	Number observations			55 2		-		311				21	
	Lags Cointegration rank at			2		-		21			-	13	
	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	23.000	13.410	3.700		23.000	13.410	3.700		13.410	3.700		
	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 Economically sensible	1.000 Yes	3.287 No	12.969 No	-30.866	1.000 Yes	1.026 No	2.048 No	-8.670	1.000 Yes	-1.033 Yes	-	0.112
Portugal	Adjustment factor	0.001	0.004	-0.001	-	-0.004	-0.023	-0.028	-	-0.014	0.016		-
/ Luxem-	Economically sensible	0.001 No	0.004	-0.001		-0.004 Yes	-0.023	-0.028		Yes	Yes	-	
bourg	VECM residual auto-	INO	-	-	-	res	-	_	-	res	ies		-
boulg	correlation at lag			3				0				3	
	Jarque-Bera: p-value		0.	000		1	n	.000			0	000	
			Single	Joint			Single	Joint			Single	Joint	Г
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	1102033	e: p-value	p-value		1102033	e: p-value	p-value		1102033	e: p-value	p-value	
		ARCH(1)	0.775	·	l	ARCH(1)	0.007		1	ARCH(1)	0.089		l
	CPI(AUT)	GARCH(1)	0.866	0.909		)	0.000	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.539		l	ARCH(1)	0.011		1	ARCH(1)	0.264		l
1	CPI(PRT)	GARCH(1)	0.161	0.074		)	0.000	0.000	l	GARCH(1)	0.979	0.535	l
	e(AUT/PRT)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000	1	ARCH(1)	-		

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange I	Rate Compone	ents				
	Period		1960:1	1972:12	_		1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	55				311			2	21	
	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	1.000	1.000	0.994	0.067	1.295	1.295	1.177	1.177	1.037	1.000	0.977	0.977
	eigenvalues				0.067								
	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	-	-
Spain /	Adjustment factor	0.008	0.007	-0.012		-0.025	-0.032	-0.137		-0.008	-0.020	-	
Luxem-	Economically sensible	No	-	-	-	Yes	No	-	-	Yes	No	-	-
bourg	VECM residual auto-			1				3				3	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				000	
	Heteroskedasticisty	_	Single	Joint		_	Single	Joint		_	Single	Joint	
	test of VECM residuals	Prozess	significanc	significance: p-value		Prozess	significanc	significance:		Prozess	significanc	significance: p-value	
		ADCII(4)	e: p-value 0.795	p-value		ADCU(A)	e: p-value 0.016	p-value		ADCU(4)	e: p-value 0.123	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.795	0.947		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	0.123	0.000	
		ARCH(1)	0.897			ARCH(1)	0.000		ł	ARCH(1)	0.286		ł
	CPI(ESP)	GARCH(1)	0.706	0.624		ARCH(1)	0.002	0.000		GARCH(1)	0.004	0.000	
		ARCH(1)	0.577			ARCH(1)	0.001		ł	ARCH(1)	- 0.004		
	e(AUT/ESP)	GARCH(1)	0.706	0.000		)	0.968	0.005		GARCH(1)		-	
	Period			1972:12				- 1998:12			1999:1	- 2017:5	
	Number observations		1	34				311				21	
	Lags			23				13			1	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	1.096	1.096	1.037	1.037	1.467	1.076	1.076	1.034	1.000	0.998	0.993	0.942
	eigenvalues				1.037								
	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	-	-
Portugal	Adjustment factor	0.007	0.030	-0.006		0.000	0.001	-0.021		0.002	0.007	-	
/ Nether-	Economically sensible	No	-	-	-	Yes	-	-	-	No	Yes	-	-
lands	VECM residual auto-			0				2				0	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				000	
	Heteroskedasticisty	_	Single	Joint		_	Single	Joint		_	Single	Joint	
	test of VECM residuals	Prozess	significanc e: p-value	significance: p-value		Prozess	significanc e: p-value	significance: p-value		Prozess	significanc e: p-value	significance: p-value	
		ARCH(1)	0.336	p-value		ARCH(1)	0.154	p-value		ARCH(1)	0.591	p-value	
	CPI(AUT)	GARCH(1)	0.003	0.000		ARCH(I)	0.154	0.000		GARCH(1)	0.591	0.690	
	CFI(AUT)		0.003		1	,			ł				ł
		ARCH(1)	0.336										
	CPI(PRT)	ARCH(1)	0.336	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	0.170	0.000	
		ARCH(1) GARCH(1) ARCH(1)	0.336 0.003 0.154	0.000		ARCH(1) ARCH(1)	0.000 0.000	0.000		GARCH(1) ARCH(1)	0.170	0.000	

			Joh	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			1972:12				- 1998:12			1999:1	- 2017:5	
	Number observations		1	56				311			2	21	
	Lags			1				19			1	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 /	Adjustment factor	-0.010	0.025	-0.046		-0.010	0.012	-0.184		-0.005	-0.009	-	
Nether-	Economically sensible	Yes	Yes	-	-	Yes	Yes	-	-	Yes	No	-	-
lands	VECM residual auto- correlation at lag			1				1				3	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.0	000	
	Heteroskedasticisty test of VECM residuals	Prozess	Single significanc e: p-value	Joint significance: p-value		Prozess	Single significanc e: p-value	Joint significance: p-value		Prozess	Single significanc e: p-value	Joint significance: p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.066	0.000		ARCH(1)	0.091	0.143		ARCH(1) GARCH(1)	0.027 0.711	0.000	
	CPI(ESP)	ARCH(1) GARCH(1)	0.462 0.777	0.655		ARCH(1)	0.010	0.000		ARCH(1) GARCH(1)	0.704 0.256	0.061	
	e(AUT/ESP)	ARCH(1) GARCH(1)	0.000	0.000		ARCH(1)	0.027 0.711	0.032		ARCH(1) GARCH(1)	-	-	
$\vdash$	Period	GARCII(1)		1972:12		,		- 1998:12	l	GARCII(1)	1000-1	- 2017:5	_
	Number observations			56				311				21	
	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	-	-
	Adjustment factor	0.007	0.003	-0.002		-0.008	-0.005	0.004		0.012	0.049	-	
Spain /	Economically sensible	No	-	-	-	Yes	No	Yes	-	No	Yes	-	-
Portugal	VECM residual auto- correlation at lag			0				2				3	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.0	000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty test of VECM residuals	Prozess	significanc e: p-value	significance: p-value		Prozess	significanc e: p-value	significance: p-value		Prozess	significanc e: p-value	significance: p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.471	0.000		ARCH(1)	0.001	0.000		ARCH(1) GARCH(1)	0.000	0.000	
	CPI(ESP)	ARCH(1) GARCH(1)	0.267	0.016		ARCH(1)	0.034	0.000		ARCH(1) GARCH(1)	0.365	0.000	
	- (AUT (FCD)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000	1	ARCH(1)	-		
	e(AUT/ESP)	GARCH(1)	0.000	0.000		1	0.001	0.000		GARCH(1)			

Legend Appendix Table 12: Under "Cointegration rank at significance level 5%" a hyphen "-" indicates full rank of matrix  $\Pi$ , 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 n cointegrating equations has n-r unit eigenvalues. If the process is stable, the moduli of the remaining n 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 join normal distribution of the VEC residuals. A Wald tests is used to test for the joint significance of Arch and Garch parameters.