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	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
	Structural break at obs.	-	-	-	89	-	-	-	252	-	-	-	586
Ireland	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
Deck.	Structural break at obs.	-	-	-	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.	1	-	-	119	1	-	-	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
Fortugal	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
Spain	Structural break at obs.	1	-	-	54	1	-	-	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	2		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
Belgium	Structural break at obs	-	1	-	79	-	-	-	234	-	-	-	584
beigium	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Seasonality	No	No	No	No	No	No	No	No	No	No	No	No
	Accepted Hypothesis	H0	H1	H0	H1	H0	H1	H0	H1	H1	H1	H0	H1
	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
Tillialiu	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
Trance	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	-	-	-	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
to a la mal	Structural break at obs	-	-	-	65	-	-	-	270	-	-	-	585
Ireland	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
to a la c	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
Dt	Structural break at obs	-	-	-	132	-	-	-	304	-	-	-	603
Portugal	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
C	Structural break at obs	-	-	-	64	-	-	-	213	-	-	-	637
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	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).

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

		Panel Unit Root Tests: Nor	minal Exchange Rate									
		Task Casaidiaskias						Res	ults			
		Test Specification			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-Luxemburgoise).

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

	т.							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	H1
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	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	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	-	-	-	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
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	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.	-	-	- 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	sts 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
lant. /	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	-	-	1	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
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

	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	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
C = ==== /	Test statistic: z(t)	-1.92	-1.97	0.21	-4.01	-2.64	-2.48	0.12	-4.65
Germany /	Structural break at obs.	-	-	-	117	-	-	-	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	H0	H1	H0	H0	H0	Н0	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
	Structural break at obs.	-	-	-		-	-	-	
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	H0	H0	H0	Н0	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
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	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
Deigiani	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
/ 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	H1	H1	H1	H0	H0	H0	H1	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	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	Н0	H1	H0	H0	H1	H1	
	Number observations	145	156	157	153	312	312	312	308	
	Lags	11	11	9	3	2	2	12	4	
Double and /	Test statistic: z(t)	-1.18	-1.52	0.39	-4.30	-2.28	-2.43	0.26	-3.73	
Portugal /	Structural break at obs.	-	-	-	75	-	-	-	242	
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	H0	H0	H0	H1	H0	
	Number observations	154	156	157	156	312	312	312	312	
	Lags	2	2	9	0	2	2	12	0	
Consider /	Test statistic: z(t)	-1.48	-1.45	0.33	-7.35	-2.23	-2.24	0.31	-4.16	
Spain /	Structural break at obs.	-	-	-	95	-	-	-	393	
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	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	
Fillianu	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	
Tillialiu	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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.	-	-	-		-	-	-		
THIIdHU	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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		960:1 -				973:1 -	1902.1	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
lant/	Test statistic: z(t)	-2.39	-2.68	0.25	-11.8	-4.12	-3.97	0.13	-4.14
Italy / Finland	Structural break at obs.	-	-	-	94	-	-	-	208
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	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
/ Finianu	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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 ii iiai iu	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	Н0	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
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	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
	Structural break at obs.	-	-	-	116	-	-	-	219
/ France	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
F	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 Tee	Tests of the Nominal Exchange Rate									
	Period		960:1 -				973:1 -	1902-1	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		
Constant	Test statistic: z(t)	-1.99	-2.03	0.16	-5.71	-2.59	-2.81	0.22	-4.51		
Spain /	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		
	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		
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	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		
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	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		
,,	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	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	154	156	157	156	312	312	312	309	
	Lags	2	2	9	0	8	8	12	3	
NI atla a ula usala	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	Н0	
	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.	-	-	-	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	
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	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	
_	Structural break at obs.	-	-	-	123	-	-	-	227	
/ (ireece	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08	
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82	
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H0	H0	

	Unit Root Tests of the Nominal Exchange Rate									
	Period		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		960:1 -				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
	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
C /	Test statistic: z(t)	-1.70	-1.72	0.30	-3.49	-2.14	-2.58	0.22	-3.73
Spain /	Structural break at obs.	-	-	-	54	-	-	-	331
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	H0	H0	H0	H1	H0
	Number observations	153	156	157	156	312	312	312	308
	Lags	3	3	9	0	6	6	12	4
	Test statistic: z(t)	-1.45	-1.21	0.37	-3.61	-1.89	-2.03	0.34	-3.79
Luxembourg	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
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	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	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	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
Portugal /	Test statistic: z(t)	-1.60	-1.93	0.38	-3.95	-2.32	-2.48	0.25	-4.21
Luxembourg	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
Spain /	Test statistic: z(t)	-1.43	-1.43	0.34	-7.31	-2.20	-2.24	0.33	-4.28
Luxembourg	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
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	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
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	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
Portugal	Structural break at obs.	-	-	-	95	-	-	-	221
FULLUEGI	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	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	
Dalaissa /	Test statistic: z(t)	-6.15	-10.87	0.14	-8.76	-7.42	-15.99	0.06	-8.91	
Belgium / Austria	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	
Adstria	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	
71051110	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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.	-	-	-		-	-	-		
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	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	
7 tustriu	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	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	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.	1	-	-	116	-	-	-	277		
beigiuiti	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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.	-	-	-		-	-	-			
beigiuiti	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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		
Deigiani	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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		
20.8.4	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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.	-	-	-	120	-	-	-	289		
, 50.6.4.11	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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		

	xchange	Rates							
	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	8	3	1	1	13	0
	Test statistic: z(t)	-4.18	-15.08	0.04	-8.05	-12.98	-17.52	0.05	-17.91
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
Spain /	Test statistic: z(t)	-8.58	-11.53	0.08	-12.13	-12.39	-18.45	0.05	-18.72
	Structural break at obs.	-	-	-	95	-	-	-	390
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
Tillialiu	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
Timana	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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.	-	-	-		-	-	-	
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	152	155	156	154	312	312	312	310
	Lags	3	3	6	1	13	13	24	2
	Test statistic: z(t)	-7.50	-20.02	0.05	-12.77	-3.84	-18.10	0.06	-9.72
Ireland /	Structural break at obs.	-	-	-	94	-	-	-	277
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	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
J	Structural break at obs.	-	-	-	94	-	-	-	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
,	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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.	-	-	- 0.15	96	- 2.42	- 2.42	- 0.45	400
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

	Unit Root Tests of	the First	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
,	Structural break at obs.	-	-	-	116	-	-	-	273
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	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
/ 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 -				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
Double and I	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.	1	-	1	89	1	1	1	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
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
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
<u> </u>	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
/ Germany	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 -	1972:12			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
NI sale sulsus de	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.	-	-	-	114	-	-	-	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
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
0.0000	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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.	- 2.44	- 2.44	- 0.15	116	- 2.42	- 2.42	- 0.15	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 -	1972:12	2		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
Portugal /	Test statistic: z(t)	-8.88	-11.63	0.08	-8.94	-9.86	-17.73	0.04	-14.20
Greece	Structural break at obs.	-	-	-	114	-	-	-	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
Greece	Structural break at obs.	-	-	-	95	-	-	-	390
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	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
irciana	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
,	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
<u> </u>	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
Ireianu	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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	153	155	156	155	312	312	312	309
	Lags	2	2	8	0	5	5	15	3
Luxembourg	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
,,	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
,	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
Spain / Italy 5	Lags	1	1	11	0	2	2	8	3
	Test statistic: z(t)	-8.97	-12.28	0.08	-13.00	-9.99	-19.61	0.09	-9.96
	Structural break at obs.	-	-	-	95	-	-	-	284
	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-5.08
	10% significance level	-3.14	-3.14	0.12	-4.82	-3.13	-3.13	0.12	-4.82
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1

	Unit Root Tests of	the First						1000.10	
	Period		1960:1 -				1973:1 -		
	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
Luxembourg	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
6 . /	Test statistic: z(t)	-8.76	-11.56	0.08	-12.17	-12.61	-18.34	0.04	-18.62
Spain /	Structural break at obs.	-	-	-	95	-	-	-	390
uxembourg	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
D /	Test statistic: z(t)	-6.04	-14.51	0.07	-9.63	-4.17	-17.86	0.06	-10.02
Portugal /	Structural break at obs.	-	-	-	124	-	-	-	227
Netherlands	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
	Test statistic: z(t)	-9.15	-12.31	0.07	-12.80	-13.34	-18.67	0.05	-18.94
Spain /	Structural break at obs.	-	-	-	95	-	-	-	390
Netherlands	5% significance level	-3.44	-3.44	0.15	-5.08	-3.43	-3.43	0.15	-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
	Test statistic: z(t)	-8.43	-11.75	0.09	-12.38	-5.35	-17.55	0.05	-11.11
Spain /	Structural break at obs.	-	-	-	90	-	-	-	236
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	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) as the intercept or trend).

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

	т	est Specification			Γ					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	Н1
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	Н1

**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

			nit Root										
	Period	-	960:1 -	_	2	1	973:1 -		2		1999:1 -		
	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.	-	-	-	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.	1	-	-	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
_ ,	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
_ ,	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
Germany /	Structural break at obs.	-	-	-	117	-	-	-	381	-	-	-	547
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	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
	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
Greece /	Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	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	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
	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
Ireland /	Structural break at obs.	-	-	-	95	-	-	-	243	-	-	-	587
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
<u> </u>		-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	10% significance level	-2.56	-2.56	0.55	-4.56	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.55	-4.56

		Uı	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	153	156	157	155	312	312	312	308	220	220	220	218
	Lags	3	3	9	1	2	2	12	4	10	10	10	2
/	Test statistic: z(t)	-1.75	-1.94	0.32	-4.61	-3.02	-3.04	0.35	-5.05	-0.72	-0.71	0.51	-3.31
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
	5% 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 95	-2.59	-2.62	0.18	-4.01 393	-2.52	-2.38	1.02	-1.93
Austria	Structural break at obs.					2.00	-2.88	-			_		637
	5% significance level 10% significance level	-2.89 -2.58	-2.89 -2.58	0.46	-4.80 -4.58	-2.88 -2.57	-2.88	0.46	-4.80 -4.58	-2.88 -2.57	-2.88 -2.57	0.46	-4.80 -4.58
	Accepted Hypothesis	-2.36 H0	-2.36 H0	H1	-4.56 H1	-2.57 H0	-2.57 H0	H0	-4.56 H0	-2.57 H0	-2.57 H0	H1	-4.56 H0
	Number observations	154	156	157	156	312	312	312	312	220	220	220	
		2	2	9	0	12	12	12	0	9	9	10	220 0
	Lags 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
Finland /	Structural break at obs.	-0.70	-0.65	-	94	-2.10	-1.76	-	383	-0.22	-0.24	1.75	529
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	0.46	-4.58	-2.57	-2.57	0.46	-4.58	-2.57	-2.57	0.46	-4.58
	Accepted Hypothesis	-2.58 H0	-2.58 H0	U.35	-4.58 H1	-2.57 H0	-2.57 H0	H0	-4.58 H0	-2.57 H0	-2.57 H0	U.35	-4.58 H0
	Accepted hypothesis	пυ	пυ	ПТ	шт	пυ	пυ	пυ	пυ	пυ	пυ	ППТ	пυ

		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
Greece /	Test statistic: z(t)	1.11	0.57	1.29	-3.63	-1.88	-2.23	0.84	-3.23	-1.08	-1.74	0.70	-3.17
	Structural break at obs.	-	-	-	133	-	-	-	307	-	-	-	643
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	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
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	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
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

						eal Exch			_				
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	-4.0
	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	-4.8
	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	-4.5
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	HC
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	-3.9
	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	-4.8
	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	-4.5
	Accepted Hypothesis	H0	H0	H1	H1	H1	H1	H1	H0	H0	H0	H1	HC
Luxem- bourg / Finland	Number observations	154	156	157	156	312	312	312	312	220	220	220	21
	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	-4.3
	Structural break at obs.	-	-	-	94	-	-	-	383	-	-	-	52
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.8
	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	-4.5
	Accepted Hypothesis	H0	H0	H1	H1	H0	H0	H1	H0	H0	H0	H1	Н
Nether- lands / Finland	Number observations	154	156	157	156	312	312	312	312	220	220	220	21
	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	-2.8
	Structural break at obs.	-	-	-	94	-	-	-	383	-	-	-	57
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.8
	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	-4.5
	Accepted Hypothesis	H0	H0	H1	H1	H0	H0	H0	H0	H0	H0	H1	НС
Portugal / Finland	Number observations	154	156	157	156	312	312	312	308	220	220	220	21
	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	-3.1
	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	-4.8
	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	-4.5
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	Н
Spain / Finland	Number observations	152	156	157	155	312	312	312	309	220	220	220	21
	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	-2.9
	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	-4.8
	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	-4.5
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H1	H0	H0	H0	H1	HO
	peca, poenesis												<u> </u>

		U	nit Root	Tests c	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	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
Carmanul	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
Germany / 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
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	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.	-	-	- 0.46	116	-		- 0.46	239	-	-		608
France	5% significance level	-2.89 -2.58	-2.89 -2.58	0.46	-4.80 -4.58	-2.88	-2.88	0.46	-4.80 -4.58	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58 H0		0.35 H0		-2.57 H0	-2.57 H0	0.35	-4.58 H0	-2.57 H0	-2.57 H0	0.35 H1	-4.58 H0
	Accepted Hypothesis		H0		H1		_	H1				_	
	Number observations	154 2	156 2	157 9	156 0	312 9	312 9	312 12	311 1	220 12	220 12	220 10	217 3
Nether-	Lags	-0.08	0.04	1.43	_			_	_	-1.54	-1.88	_	-3.98
	Test statistic: z(t)	-0.08	0.04	1.43	-6.01 116	-3.31	-3.10	0.63	-4.14 236	-1.54	-1.88	1.36	-3.98 542
lands / France	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	-4.80
riance	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	U.35	-4.58 H1	-2.57 <b>H1</b>	-2.57 <b>H1</b>	U.35	-4.58 H0	-2.57 H0	-2.57 H0	U.35	-4.58 H0
	Accepted hypothesis	ПU	пυ	пт	чт	шт	чт	пт	ПU	пυ	пυ	ЦΤ	ПU

		Uı	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	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
Dowtward /	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 / France	Structural break at obs.	-	-	-	116	-	-	-	205	-	-	-	635
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	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
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	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
,	5% 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
•	5% 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	-3.97 117	-2.01	-2.01	0.61	-5.64 393	-2.41	-2.84	1.78	-2.37 643
Germany	Structural break at obs.	-2.89	2.00	0.46	-4.80	-2.88	-2.88	0.46		-2.88	-2.88	0.46	-4.80
	5% significance level 10% significance level	-2.58	-2.89 -2.58	0.46	-4.80	-2.88	-2.88	0.46	-4.80 -4.58	-2.88	-2.88	0.46	-4.80
	Accepted Hypothesis	-2.36 H0	-2.36 H0	H0	-4.56 H0	-2.57 H0	-2.57 H0	H1	-4.56 H1	-2.57 H0	-2.57 H0	U.33	-4.56 H0
	<del>                                     </del>			_					_				
	Number observations Lags	150 6	156 6	157 9	155 1	312	312	312 12	308 4	220 13	220 13	220 10	217
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.	-1.26	-1.39	1.08	117	-1./5	-1.64	1.42	262	-3.48	-2.36	2.04	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
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	-2.36 H0	-2.36 H0	H1	-4.56 H0	-2.57 H0	-2.57 H0	H1	-4.56 H0	-2.57 H1	-2.57 H0	H1	-4.56 H1
	Accepted hypothesis	пυ	пυ	ПТ	пυ	пυ	пυ	ПТ	пυ	пт	пυ	шт	HT

		Ur	nit Root	Tests o	of the Re	eal Exch	ange Ra	ite					
	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	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
,	5% 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
	5% 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 8	156 8	157 9	156 0	312 8	312 8	312 12	308 4	220 13	220 13	220 10	217
	Lags	-0.63	-0.25	1.43	-3.35	-1.74	-2.00	0.45	-5.26	-1.21	-2.13	1.02	-4.06
Italy /	Test statistic: z(t) Structural break at obs.	-0.63	-0.25	1.43	70	-1.74	-2.00	0.45	393	-1.21	-2.13	1.02	643
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	0.46	-4.58	-2.57	-2.57	0.40	-4.58	-2.57	-2.57	0.40	-4.58
	Accepted Hypothesis	H0	H0	H1	H0	H0	H0	H0	-4.36 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	-2.24	-2.33	-	307	-1.10	-2.36	-	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
0.000	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
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	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
0,000	5% 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
	5% 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 2	156	157	156	312	312 11	312	308	220	220	220	217
NI - Al	Lags	_	2	9	0	11		12	4	13	13	10	3
Nether-	Test statistic: z(t)	-0.47	-0.50	1.36	-5.42 95	-1.50	-1.40	1.18	-4.53	-2.16	-1.93	0.47	-3.10
lands / Ireland	Structural break at obs.	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	243 -4.80	-2.88	-2.88	0.46	587 -4.80
ireiand	5% significance level												
	10% significance level	-2.58 H0	-2.58 H0	0.35 H1	-4.58 <b>H1</b>	-2.57 H0	-2.57 H0	0.35	-4.58 H0	-2.57 H0	-2.57 H0	0.35 H1	-4.58
	Accepted Hypothesis	HU	HU	HI	HI	HU	HU	H1	HU	HU	HU	HT	H0

		Ur	nit Root	Tests o	of the Re	eal Exch	ange Ra	ite					
	Period	1	960:1 -	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	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 / Ireland	Structural break at obs.	-	-	-	95	-	-	-	221	-	-	-	587
ireiand	5% 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
Helatiu	5% 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
boulg / 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	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
iulius / Ituly	5% 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)	0.30	0.31	0.94	-3.20	-1.85	-1.72	0.51	-3.67	-2.16	-2.72	0.51	-3.25
Italy	Structural break at obs.	-	-	-	36	-	-	-	384	-	-	-	583
iculy	5% 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	309	220	220	220	217
	Lags	2	2	9	0	3	3	12	3	12	12	10	3
	Test statistic: z(t)	-1.28	-1.30	0.79	-6.64	-3.58	-3.61	0.39	-4.29	-2.23	-2.05	1.57	-3.00
Spain / Italy	Structural break at obs.	-	-	-	95	-	-	-	273	-	-	-	531
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H0	H0	H1	H1	H1	H1	H0	H0	H0	H0	H1	H0

		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

					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	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 / Austria	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
D = = + . = = 1 /	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
Portugal / 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
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	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
beigiuin	5% 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
	1070 Significance level												

	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

## Rainer Maurer

	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	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.	-	-	-	28	-	-	-	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
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	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
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	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
Timuna	5% 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.	-	-	-	94	-	-	-	356	-	-	-	610
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H1	H1	H0	H1

	Unit 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	fferenc	es of the	e Real E	xchang	e Rate				
	Period		1960:1 -				973:1 -				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
	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
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	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
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	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
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	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.	-	-	-	116	-	-	-	219	-	-	-	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	-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	152	312	312	312	308	220	220	220	217
	Lags	1	1	10	3	8	8	11	4	13	13	15	3
Nether-	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.	-	-	- 0.46	115	-		- 0.46	219	-		- 0.46	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
	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	ifferenc	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	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	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	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	H0	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)	-5.35	-10.28	0.28	-10.66		-16.61	0.11	-9.36	-2.66	-23.00	0.60	-10.33	
Germany	Structural break at obs.	-	-	-	26	-	-	-	376	-	-	-	577	
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80	
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58	
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	H0	H1	H1	H1	
	Number observations	150	155	156 4	152 3	312	312	312	309	220	220 13	220 8	217	
	Lags	5	5			2	2	11	3	13		_	-	
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	-13.57 592	
bourg /	Structural break at obs.	- 2.00	- 2.00		114	_	- 200	0.46	283 -4.80			0.46		
Germany	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88			-2.88	-2.88		-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	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.	1	-	-	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
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	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
G. CCCC	5% 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.	-		- 0.46	133	-	-	- 0.46	271	-	-	- 0.46	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

	Period								e Rate					
	TCTIOU	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	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	-	-	-	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	H1	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	
1	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	
Snain /	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	
	5% 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	
- H	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	
H	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	
H	5% 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	217	
F	Lags	1	1	26	0	13	13	131	3	13	13	4	3	
H	Test statistic: z(t) Structural break at obs.	-8.68	-11.59	0.16	-12.06 97	-4.48	-18.28	0.15	-10.11 227	-2.00	-22.87	0.60	-7.39 579	
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80	
	10% significance level	-2.58	-2.58	0.46	-4.58	-2.57	-2.57	0.46	-4.58	-2.57	-2.57	0.46	-4.58	
-		-2.56 H1	-2.36 H1	H0	-4.36 H1	-2.57 H1	-2.57 H1	H0	-4.56 H1	-2.57 H0	-2.57 H1	H1	-4.56 H1	
	Accepted Hypothesis Number observations	154	155	156	155	312	312	312	309 H1	220	220	220	218	
	Lags	154	155	10	0	13	13	91	309	13	13	16	218	
	Test statistic: z(t)	-9.60	-12.91	0.16	-13.23	-4.66	-18.56	0.12	-9.95	-2.60	-11.71	0.46	-14.33	
	Structural break at obs.	-9.60	-12.91	-	97	-4.00	-10.30	-	221	-2.60	-11./1	-	586	
· -	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80	
The state of the s	10% significance level	-2.58	-2.58	0.40	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.40	-4.58	
		2.50	2.50	0.55	4.50	.2.57	.2.37	0.55	7.50	2.37	.2.37	0.55	-4.50	

					ifferenc								
	Period	_	1960:1 -	_			1973:1 -				1999:1	_	_
	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
Helaliu	5% 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
Helaliu	5% 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	153	155	156	155	312	312	312	309	220	220	220	217
	Lags	2	2	9	0	5	5	15	3	13	13	7	3
	Test statistic: z(t)	-6.03	-10.63	0.44	-11.01	-7.72	-17.34	0.13	-9.29	-4.71	-35.93	0.04	-12.38
Luxem-	Structural break at obs.	-	-	-	41	-	-	-	227	-	-	-	536
bourg / 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	Н1	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
	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
Nether-	Structural break at obs.	-	-	-	26	-	-	-	229	-	-	-	511
lands / 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	Н1	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
	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
Portugal /	Structural break at obs.	-	-	-	68	-	-	-	324	-	-	-	572
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	H1	H1	H1	H1	H0	H1	НО	H1	H0	H1
	Number observations	154	155	156	155	312	312	312	309	220	220	220	217
	1	1	1	11	0	2	2	10	3	13	13	15	3
	Lags												
	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			-12.32	0.08	-12.83 89	-9.92 -	-19.56 -	0.17	-9.85 234	-3.53 -	-12.79 -	0.27	-14.34 583
Spain / Italy	Test statistic: z(t)	-9.00	-12.32 - -2.89			-9.92 - -2.88	-19.56 - -2.88			-3.53 - -2.88	-12.79 - -2.88		
Spain / Italy	Test statistic: z(t) Structural break at obs.	-9.00 -	-	-	89	-	-	-	234	-	-	-	583

	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	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- lands /	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
Luxem-	Structural break at obs.	-	-	-	28	-	-	-	274	-	-	-	524
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
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	H1	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 1 64	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.	-	- 2.00	- 0.46	90	-	- 2.00	- 0.46	239	- 2.00	- 2.00	- 0.46	530
	5% significance level	-2.89	-2.89	0.46	-4.80	-2.88	-2.88	0.46	-4.80	-2.88	-2.88	0.46	-4.80
	10% significance level	-2.58	-2.58	0.35	-4.58	-2.57	-2.57	0.35	-4.58	-2.57	-2.57	0.35	-4.58
	Accepted Hypothesis	H1	H1	H0	H1	H1	H1	H0	H1	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	Н0	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	-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

	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	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	e-Granger Coi	ntegration Tests	for Real Exc	hange Rate Com	nponents	
	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
6 . /	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
N - +      -	Lags	3	0	12	12	15	15
Netherlands	Test statistic: z(t)	-5.56	-5.16	-1.69	-1.81	-3.35	-2.69
/ Luxembourg	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)	Yes  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	

	Period		1960-1	1972:12				Rate Compone - 1998:12			1990-1	- 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)	Consta
	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- correlation at lag			1				2				1	
	Jarque-Bera: p-value		0.	000			0	.000			0.	001	
	Heteroskedasticisty test of VECM residuals	Prozess	Single significanc	Joint significance:		Prozess	Single significanc	Joint significance:		Prozess	Single significanc	Joint 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	
		GARCH(1)	0.578			)	0.778			GARCH(1)	0.731		
	CPI(FRA)	ARCH(1)	0.138	0.258		ARCH(1)	0.054	0.000		ARCH(1) GARCH(1)	0.837	0.871	
		GARCH(1)				)				,			
	e(AUT/FRA)	ARCH(1) GARCH(1)	0.000	0.000		ARCH(1)	0.017	0.000		ARCH(1) GARCH(1)	-	-	
	Period	, ,		1972:12				- 1998:12			1999:1	- 2017:5	
	Number observations		1	51				311			2	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)	Consta
	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	-	-
Sermany	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- correlation at lag			1				3				3	
	Jarque-Bera: p-value		0.	000		l .	0	.000			0.	000	
			Single	Joint			Single	Joint	1		Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc			Prozess	significanc	significance:	
	test of VECM residuals		e: p-value	p-value	l		e: p-value	p-value			e: p-value	p-value	
	001/11/00	ARCH(1)	0.000			ARCH(1)	0.155		1	ARCH(1)	0.027		
	CPI(AUT)	GARCH(1)	0.011	0.000		)	0.473	0.223		GARCH(1)	0.501	0.027	
		ARCH(1)	0.000		l	ARCH(1)	0.002		1	ARCH(1)	0.621		
	CPI(GER)	GARCH(1)	0.011	0.000	l	)	0.000	0.000		GARCH(1)	0.910	0.855	
									1				
	e(AUT/GER)	ARCH(1)	0.001	0.002		ARCH(1)	0.006	0.000	l	ARCH(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	53				311			2	21	
	Lags			4				15			1	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)	Constar
	Coefficient	1.000	-1.435	-1.029	0.461	1.000	-0.548	-0.464	-2.171	1.000	-0.272	-	-3.461
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	0.007	0.055	-0.005		-0.016	-0.003	0.069		0.000	-0.011	-	
Greece /	Economically sensible	No	Yes	No	-	Yes	No	Yes	-	Yes	No	-	-
Austria	VECM residual auto- correlation at lag			2				4				1	
	Jarque-Bera: p-value		0.	000			0	.000			0.0	000	
			Single	Joint		l	Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc			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)	0.363 0.515	0.372		ARCH(1) GARCH(1)	0.000	0.000	
		ARCH(1)	0.651			ARCH(1)	0.184		i	ARCH(1)	0.143		
	CPI(GRC)	GARCH(1)	0.151	0.023		)	0.000	0.000		GARCH(1)	0.253	0.002	
		ARCH(1)	0.000			ARCH(1)	0.000		1	ARCH(1)	-		
	e(AUT/GRC)	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				13				14	
	Cointegration rank at significance level 5%			0				0				0	
	Trace statistics	26,267	14.991	5.075		28,755	8,949	0.242		9.767	1.530	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.007	1.000	1.000	0.136	1.004	1.004	1.000	1.000	1.000	0.994	0.971	0.964
	Cointegration vector	CPI(AUT)	CPI(IRL)	e(AUT/IRL)	Constant	CPI(AUT)	CPI(IRL)	e(AUT/IRL)	Constant	CPI(AUT)	CPI(IRL)	e(AUT/IRL)	Constan
	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	-	-
reland /	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	-	
Austria	VECM residual auto- correlation at lag			3				3				2	
	Jarque-Bera: p-value		0.	000			0	.000			0.0	005	
	Harana da da ata ta		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)	0.003 0.352	0.004		ARCH(1)	0.479	0.079		ARCH(1) GARCH(1)	0.146 0.000	0.000	
		ARCH(1)	0.810	0.967		ARCH(1)	0.000	0.000	1	ARCH(1)	0.145	0.227	
	CPI(IRL)	GARCH(1)	0.995	0.967		)	0.000	0.000		GARCH(1)	0.610	0.227	

			Jol	hansen Cointe	gration Te	sts for Rea	l Exchange I	Rate Compone	ents				
	Period			- 1972:12				- 1998:12			1999:1	- 2017:5	
	Number observations		1	55				311				21	
	Lags			2				15				24	
	Cointegration rank at												
	significance level 5%			0				0				0	
	Trace statistics	20.364	9.128	2.689		28.199	12.527	1.289		12.758	2.091	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of												
	eigenvalues	1.000	1.000	0.910	0.144	1.308	1.308	1.051	1.051	1.000	0.998	0.998	0.996
	Cointegration vector	CPI(AUT)	CPI(ITA)	e(AUT/ITA)	Constant	CPI(AUT)	CPI(ITA)	e(AUT/ITA)	Constant	CPI(AUT)	CPI(ITA)	e(AUT/ITA)	Constant
	Coefficient	1.000	-0.696	3.259	-7.742	1.000	2.863	-6.020	-17.817	1.000	4.434	-	-23.982
	Economically sensible	Yes	Yes	No	-	Yes	No	Yes	-	Yes	No	-	-
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		-	
Austria	VECM residual auto-			3				1				2	
	correlation at lag			3				1				2	
	Jarque-Bera: p-value		0.	000			0	.000			0.0	046	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECIVITESIONALS		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)	0.486	0.227		ARCH(1)	0.152	0.358	
	ci i(no i)	GARCH(1)	0.000	0.000		)	0.000	U.LL,		GARCH(1)	0.842	0.550	
	CPI(ITA)	ARCH(1)	0.486	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.152	0.000	
		GARCH(1)	0.000			)	0.000			GARCH(1)	0.842		
	e(AUT/ITA)	ARCH(1)	0.486	0.227		ARCH(1)	0.002	0.000		ARCH(1)	-	-	
	Period	GARCH(1)	0.000	- 1972:12		)	0.000	- 1998:12		GARCH(1)	1000.1	- 2017:5	
	Number observations			54				- 1556.12 311				- 2017.5 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												
	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			2				4				_	
	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 vector residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.152	0.000	l	ARCH(1)	0.169	0.210	l	ARCH(1)	0.326	0.025	l
	C. 1(10.)	GARCH(1)	0.842	0.000	l	)	0.428	0.210	l	GARCH(1)	0.109	0.025	
	CPI(LUX)	ARCH(1)	0.008	0.000	l	ARCH(1)	0.007	0.000	l	ARCH(1)	0.090	0.000	
	Ci i(co/i)	GARCH(1)	0.000	0.000	l	)	0.000	0.000	l	GARCH(1)	0.000	0.000	
	e(AUT/LUX)	ARCH(1)	0.194	0.000	l	ARCH(1)	0.000	0.000	l	ARCH(1)	-	-	
		GARCH(1)	0.000			)	0.000			GARCH(1)	-		

			lol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			1972:12	Bration re	July 101 Med		- 1998:12			1999:1	- 2017:5	
	Number observations			53				311				21	
	Lags			4				13				18	
	Cointegration rank at			-									
	significance level 5%			-				1				1	
	Trace statistics	50.739	25.777	4.475		42.806	14.698	6.054		20.411	0.894	-	
	5% critical values	29.680	15.410	3.760		29,680	15,410	3,760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.794	0.503	1.000	1.000	0.968	0.960	1.016	1.000	0.985	0.985
i	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
ì	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.	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)	0.000	0.000	l	ARCH(1)	0.389	0.689		ARCH(1)	0.240	0.000	
	CPI(AUT)	GARCH(1)	0.007	0.000		)	0.932	0.009		GARCH(1)	0.000	0.000	
	CPI(NLD)	ARCH(1)	0.147	0.000		ARCH(1)	0.089	0.000		ARCH(1)	0.828	0.903	
	CPI(NED)	GARCH(1)	0.000	0.000		)	0.104	0.000		GARCH(1)	0.785	0.903	
	e(AUT/NLD)	ARCH(1)	0.000	0.000		ARCH(1)	0.098	0.000		ARCH(1)	-		
	E(NOT/NED)	GARCH(1)	0.022			)	0.000			GARCH(1)	-	_	
	Period			1972:12				- 1998:12				- 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	-	1.175
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Portugal	Adjustment factor	-0.001	-0.003	0.001		-0.007	0.004	0.054		-0.005	0.009	-	
/ Austria	Economically sensible	Yes	No	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
,	VECM residual auto-			3				1				2	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty			significance:		Prozess	significanc	significance:		Prozess	significanc		
	Heteroskedasticisty	Prozess	significanc										
	Heteroskedasticisty test of VECM residuals		e: p-value	p-value			e: p-value	p-value	ł		e: p-value	p-value	
		Prozess  ARCH(1)  GARCH(1)				ARCH(1)	e: p-value 0.044 0.553	p-value 0.042		ARCH(1) GARCH(1)	0.525 0.838	0.775	
	test of VECM residuals  CPI(AUT)	ARCH(1) GARCH(1)	e: p-value 0.002 0.511	p-value 0.004		)	0.044 0.553	0.042		GARCH(1)	0.525 0.838	0.775	
	test of VECM residuals	ARCH(1)	e: p-value 0.002	p-value		ARCH(1) ) ARCH(1)	0.044			GARCH(1) ARCH(1)	0.525		
	test of VECM residuals  CPI(AUT)	ARCH(1) GARCH(1) ARCH(1)	e: p-value 0.002 0.511 0.205	p-value 0.004		)	0.044 0.553 0.000	0.042		GARCH(1)	0.525 0.838 0.910	0.775	

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	56				311			2	21	
	Lags			1				15				14	
	Cointegration rank at			0								0	
	significance level 5%			U				-				U	
	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				0.989								
	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	-	-
Spain /	Adjustment factor	-0.006	0.073	-0.058		-0.002	-0.002	0.004		0.000	-0.008	-	
Spain / Austria	Economically sensible	Yes	Yes	-	-	Yes	No	Yes	-	No	No	-	-
Austria	VECM residual auto-			2				1				1	
	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	
		ARCH(1)	0.002			ARCH(1)	0.088		1	ARCH(1)	0.140		1
	CPI(AUT)	GARCH(1)	0.446	0.004		)	0.684	0.142		GARCH(1)	0.730	0.323	
		ARCH(1)	0.428			ARCH(1)	0.004		1	ARCH(1)	0.276		1
	CPI(ESP)	GARCH(1)	0.134	0.008		)	0.000	0.000		GARCH(1)	0.000	0.000	
	(	ARCH(1)	0.000			ARCH(1)	0.000		1	ARCH(1)	-		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			1	19	
	Cointegration rank at			_				_				0	
	significance level 5%			0				1				U	
	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	-	-
inland /	Adjustment factor	-0.007	0.001	0.016		-0.003	-0.018	0.051		0.017	0.048	-	
	Economically sensible	Yes	Yes	Yes	-	Yes	No	Yes	-	No	Yes	-	-
Belgium	VECM residual auto-			1				0				1	
	correlation at lag			1				0				1	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.:	216	
			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
		ARCH(1)	0.051	·		ARCH(1)	0.411		1	ARCH(1)	0.241		1
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.000	0.000	l	GARCH(1)	0.111	0.003	l
		ARCH(1)	0.051			ARCH(1)	0.060		1	ARCH(1)	0.195		1
								0.000					
	CPI(FIN)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	0.757	0.389	
	CPI(FIN) e(AUT/FIN)		0.000	0.000		) ARCH(1)	0.000 0.001	0.000		GARCH(1) ARCH(1)	0.757	0.389	

			lo	hansen Cointe	gration Te	sts for Rea	l Evchange I	Rate Compone	nte				
	Period			- 1972:12	0.34011 10	1.0		- 1998:12		1	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		6.707	1.333	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.982	0.964	1.035	1.035	1.031	1.030	1.000	0.997	0.968	0.968
	Cointegration vector	CPI(BEL)	CPI(FRA)	e(BEL/FRA)	Constant	CPI(BEL)	CPI(FRA)	e(BEL/FRA)	Constant	CPI(BEL)	CPI(FRA)	e(BEL/FRA)	Constant
	Coefficient	1.000	-1.141	-0.204	0.026	1.000	-0.905	-3.049	-0.528	1.000	-11.799	-(,,	52.588
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	-0.031	-0.016	0.024		-0.002	-0.003	0.016		0.000	0.000		
France /	Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	No	Yes	-	-
Belgium	VECM residual auto-	103				103	140						
	correlation at lag			0				1				1	
	Jarque-Bera: p-value		0	000			n	.000			0	614	
	Jarque-bera: p-value		Single	loint			Single	loint	1		Single	loint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	test of VECM residuals	Prozess		p-value		Prozess	e: p-value			Prozess		p-value	
		ADCII(A)	e: p-value	p-value		ADCII(A)		p-value		ADCII(A)	e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.007	0.000		ARCH(1)	0.255	0.000		ARCH(1)	0.153	0.000	
		GARCH(1)	0.000			)	0.000			GARCH(1)	0.010		
	CPI(FRA)	ARCH(1)	0.073	0.007		ARCH(1)	0.002	0.000		ARCH(1)	0.684	0.907	
		GARCH(1)	0.180			)	0.019		l	GARCH(1)	0.965		
	e(AUT/FRA)	ARCH(1)	0.073	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-		
		GARCH(1)	0.180	L		)	0.000	L		GARCH(1)	-	L	
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			51				311				21	
	Lags			6				13				13	
	Cointegration rank at significance level 5%			-				0				1	
	Trace statistics	49.525	23.034	6.484		18.572	7.639	0.474		15.418	1.272	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.985	0.780	1.026	1.026	1.000	1.000	1.000	0.958	0.928	0.928
	Cointegration vector	CPI(BEL)	CPI(GER)	e(BEL/GER)	Constant	CPI(BEL)	CPI(GER)	e(BEL/GER)	Constant	CPI(BEL)	CPI(GER)	e(BEL/GER)	Constant
	Coefficient	1.000	-1.223	-0.553	0.886	1.000	-0.649	-0.753	-1.537	1.000	-1.360	-	1.667
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
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	000			n	.000			0.	020	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc			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	p value		ARCH(1)	0.106	·	
	CPI(AUT)	GARCH(1)	0.965	0.000		ARCH(1)	0.000	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.883			ARCH(1)	0.054		1	ARCH(1)	0.574		
	CPI(GER)	GARCH(1)	0.963	0.985		ANCH(1)	0.034	0.155		GARCH(1)	0.428	0.378	
		ARCH(1)	0.963		l	ARCH(1)	0.000		l	ARCH(1)	0.420		l
	e(AUT/GER)	GARCH(1)	0.090	0.228	l	VVCU(1)	0.000	0.000	l	GARCH(1)	-	-	l
		OUVCL(T)	0.842			,	0.000	1	l	UNICH(1)	-		1

				nansen Cointe	bration re								
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			33				311					
	Lags			24				13				13	
	Cointegration rank at							2				0	
	significance level 5%												
	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	1.135	1.135	1.085	1.085	1.218	1.218	1.078	1.078	1.003	1.000	0.051	0.951
	eigenvalues	1.155	1.155	1.065	1.065	1.210	1.210	1.076	1.076	1.005	1.000	0.931	0.931
	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)	Consta
	Coefficient	1.000	-1.422	-0.584	-1.025	1.000	-0.563	-0.547	-2.141	1.000	-0.423	-	-2.72
	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	-	-
Beigium	VECM residual auto-			0				3					
	correlation at lag			U				3				U	
	Jarque-Bera: p-value		0.0	021			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	
	CDI(ALIT)	ARCH(1)	0.251	0.484		ARCH(1)	0.340	0.003		ARCH(1)	0.150	0.000	
	CPI(AUT)	GARCH(1)	0.895	0.484		)	0.013	0.003		GARCH(1)	0.004	0.000	
		ARCH(1)	0.324			ARCH(1)	0.130			ARCH(1)	0.223		
	CPI(GRC)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	0.406	0.059	
		ARCH(1)	0.343			ARCH(1)	0.000			ARCH(1)	-		
	e(AUT/GRC)	GARCH(1)	0.030	0.000		)	0.000	0.000		GARCH(1)	-	-	
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	53				311			2	21	
	Lags			4				10				14	
	Cointegration rank at							_				_	
	significance level 5%			1				2				0	
	Trace statistics	43.460	13.750	2.845		41.526	17.232	2.004		10.108	1.561	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of						1.025						
	eigenvalues	1.000	1.000	0.997	0.646	1.025		1.000	1.000	1.000	0.995	0.955	0.955
				l		1.023	1.025		1.000				
	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)	Consta
	Cointegration vector Coefficient	. ,	. ,	, , ,	Constant	CPI(BEL)	CPI(IRL)		Constant	. ,	. ,	e(BEL/IRL)	Consta
		CPI(BEL) 1.000 Yes	CPI(IRL) -0.835 Yes	e(BEL/IRL) 0.396 No				e(BEL/IRL)		CPI(BEL) 1.000 Yes	CPI(IRL) -3.160 Yes	e(BEL/IRL) - -	
	Coefficient Economically sensible	1.000 Yes	-0.835 Yes	0.396 No	Constant -1.872	CPI(BEL) 1.000 Yes	CPI(IRL) -0.438 Yes	e(BEL/IRL) 0.982 No	Constant -2.426	1.000 Yes	-3.160 Yes		
	Coefficient	1.000	-0.835	0.396	Constant -1.872	CPI(BEL) 1.000	CPI(IRL) -0.438	e(BEL/IRL) 0.982	Constant -2.426	1.000	-3.160	-	Consta 10.19
	Coefficient Economically sensible Adjustment factor Economically sensible	1.000 Yes -0.011	-0.835 Yes -0.014 No	0.396 No 0.004	Constant -1.872	1.000 Yes 0.005	CPI(IRL) -0.438 Yes 0.002	e(BEL/IRL) 0.982 No -0.052	Constant -2.426	1.000 Yes -0.001	-3.160 Yes 0.002 Yes	-	
Ireland / Belgium	Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-	1.000 Yes -0.011	-0.835 Yes -0.014 No	0.396 No	Constant -1.872	1.000 Yes 0.005	CPI(IRL) -0.438 Yes 0.002	e(BEL/IRL) 0.982 No	Constant -2.426	1.000 Yes -0.001	-3.160 Yes 0.002 Yes	-	
	Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag	1.000 Yes -0.011	-0.835 Yes -0.014 No	0.396 No 0.004	Constant -1.872	1.000 Yes 0.005	CPI(IRL) -0.438 Yes 0.002 Yes	e(BEL/IRL) 0.982 No -0.052	Constant -2.426	1.000 Yes -0.001	-3.160 Yes 0.002 Yes	1	
	Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	1.000 Yes -0.011	-0.835 Yes -0.014 No	0.396 No 0.004 - 1	Constant -1.872	1.000 Yes 0.005	CPI(IRL) -0.438 Yes 0.002 Yes	e(BEL/IRL) 0.982 No -0.052 - 4	Constant -2.426	1.000 Yes -0.001	-3.160 Yes 0.002 Yes	- - - - 1	
	Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	1.000 Yes -0.011	-0.835 Yes -0.014 No	0.396 No 0.004	Constant -1.872	1.000 Yes 0.005	CPI(IRL) -0.438 Yes 0.002 Yes 0 Single	e(BEL/IRL) 0.982 No -0.052	Constant -2.426	1.000 Yes -0.001	-3.160 Yes 0.002 Yes	1	
	Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value	1.000 Yes -0.011 Yes	-0.835 Yes -0.014 No Single significanc	0.396 No 0.004 - 1 000 Joint	Constant -1.872	CPI(BEL) 1.000 Yes 0.005 No	CPI(IRL) -0.438 Yes 0.002 Yes  OSingle significanc	e(BEL/IRL) 0.982 No -0.052 - 4 000 Joint significance:	Constant -2.426	1.000 Yes -0.001 Yes	-3.160 Yes 0.002 Yes 0.ingle significanc		
	Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	1.000 Yes -0.011 Yes	-0.835 Yes -0.014 No  0.1 Single significanc e: p-value	0.396 No 0.004 - 1 1 000 Joint significance: p-value	Constant -1.872	CPI(BEL) 1.000 Yes 0.005 No Prozess	CPI(IRL) -0.438 Yes 0.002 Yes  0 Single significanc e: p-value	e(BEL/IRL) 0.982 No -0.052 - 4 000 Joint significance: p-value	Constant -2.426	1.000 Yes -0.001 Yes	-3.160 Yes 0.002 Yes 0.3 Single significanc e: p-value	1 310 Joint significance:	
	Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty	1.000 Yes -0.011 Yes	-0.835 Yes -0.014 No Single significanc	0.396 No 0.004 - 1 Doo Joint significance:	Constant -1.872	CPI(BEL) 1.000 Yes 0.005 No	CPI(IRL) -0.438 Yes 0.002 Yes  OSingle significanc	e(BEL/IRL) 0.982 No -0.052 - 4 000 Joint significance:	Constant -2.426	1.000 Yes -0.001 Yes	-3.160 Yes 0.002 Yes 0.ingle significanc		
	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 Yes -0.011 Yes  Prozess  ARCH(1) GARCH(1)	-0.835 Yes -0.014 No 0.1 Single significanc e: p-value 0.005 0.000	0.396 No 0.004 - 1 1 000 Joint significance: p-value 0.000	Constant -1.872	CPI(BEL) 1.000 Yes 0.005 No  Prozess  ARCH(1)	CPI(IRL) -0.438 Yes 0.002 Yes  OSingle significanc e: p-value 0.311 0.000	e(BEL/IRL) 0.982 No -0.052 - 4 000 Joint significance: p-value 0.000	Constant -2.426	1.000 Yes -0.001 Yes  Prozess  ARCH(1) GARCH(1)	-3.160 Yes 0.002 Yes 0.i Single significanc e: p-value 0.203 0.450	0.951  e(BEL/GRC)	
	Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	1.000 Yes -0.011 Yes  Prozess  ARCH(1) GARCH(1) ARCH(1)	-0.835 Yes -0.014 No 0.1 Single significanc e: p-value 0.005 0.000 0.637	0.396 No 0.004 - 1 1 000 Joint significance: p-value	Constant -1.872	CPI(BEL) 1.000 Yes 0.005 No Prozess	CPI(IRL) -0.438 Yes 0.002 Yes  0 Single significanc e: p-value 0.311 0.000 0.004	e(BEL/IRL) 0.982 No -0.052 - 4 000 Joint significance: p-value	Constant -2.426	1.000 Yes -0.001 Yes  Prozess  ARCH(1) GARCH(1)	-3.160 Yes 0.002 Yes  0.3 Single significanc e: p-value 0.203 0.450 0.203		
	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 Yes -0.011 Yes  Prozess  ARCH(1) GARCH(1)	-0.835 Yes -0.014 No 0.1 Single significanc e: p-value 0.005 0.000	0.396 No 0.004 - 1 1 000 Joint significance: p-value 0.000	Constant -1.872	CPI(BEL) 1.000 Yes 0.005 No  Prozess  ARCH(1)	CPI(IRL) -0.438 Yes 0.002 Yes  OSingle significanc e: p-value 0.311 0.000	e(BEL/IRL) 0.982 No -0.052 - 4 000 Joint significance: p-value 0.000	Constant -2.426	1.000 Yes -0.001 Yes  Prozess  ARCH(1) GARCH(1)	-3.160 Yes 0.002 Yes 0.i Single significanc e: p-value 0.203 0.450	1 Sito Joint significance: p-value 0.090	

			Jol	nansen Cointe	gration Te	sts for Rea	I Exchange F	Rate Compone	ents				
	Period			1972:12	bration re	JUSTION NEC		- 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-							0				1	
	correlation at lag			3				0				1	
	Jarque-Bera: p-value		0.	000			0.	.000			0.	272	
			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)	0.033	0.000		ARCH(1)	0.837	0.975		ARCH(1) GARCH(1)	0.166 0.032	0.000	
		ARCH(1)	0.502			ARCH(1)	0.000		ł	ARCH(1)	0.032	-	ł
	CPI(ITA)	GARCH(1)	0.502	0.000		ARCH(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			1972:12				- 1998:12			1999:1	- 2017:5	
	Number observations		2	21				221			2	21	
	Lags			0				0				19	
	Cointegration rank at significance level 5%			-								0	
	Trace statistics	14.242	0.943	4.458		14.242	0.943	4,458		13.078	2.477		
	5% critical values	15.410	3.760	3.760		15.410	3.760	3,760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	0.998	0.306	0.157	1.000	0.998	0.306	0.157	1.000	0.961	0.961	0.946
	Cointegration vector	CPI(BEL)	CPI(LUX)	e(BEL/LUX)	Constant	CPI(BEL)	CPI(LUX)	e(BEL/LUX)	Constant	CPI(BEL)	CPI(LUX)	e(BEL/LUX)	Constant
	Coefficient	1.000	-0.142	-4.158	-2.256	1.000	-0.142	-4.158	-2.256	1.000	-0.964	-	-0.167
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
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.	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	
	C. (A01)	GARCH(1)	0.000	5.500		)	0.000	5.500	l	GARCH(1)	0.061	0.000	l
	CPI(LUX)	ARCH(1)	0.315	0.000		ARCH(1)	0.315	0.000	l	ARCH(1)	0.064	0.000	l
	(7	GARCH(1)	0.000			)	0.000		l	GARCH(1)	0.000		l
	e(AUT/LUX)	ARCH(1)	0.315	0.000		ARCH(1)	0.315	0.000	l	ARCH(1)	-		l
		GARCH(1)	0.000		l	)	0.000			GARCH(1)	-	ı	ı

			Jol	nansen Cointe	gration Te	sts for Rea	ıl Exchange I	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				14				13	
	Cointegration rank at							0				0	
	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	1.078	1.078	1.034	1.034	1.095	1.095	1.000	1.000	1.000	0.968	0.920	0.920
	eigenvalues												
	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)	Consta
	Coefficient	1.000	-0.687	4.837	0.568	1.000	-0.934	-0.970	-0.293	1.000	-1.232	-	1.099
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Nether-	Adjustment factor	-0.052	0.115	-0.128		-0.028	-0.002	0.019		-0.006	0.033	-	
lands / Belgium	Economically sensible VECM residual auto-	Yes	Yes	-	-	Yes	No	Yes	-	Yes	Yes	-	-
Beigium				1				2				1	
	correlation at lag			000				000				000	
	Jarque-Bera: p-value		Single	Joint		$\vdash$	Single	Joint Joint		<del>                                     </del>	Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc		
	test of VECM residuals	Prozess	e: p-value	p-value		Piozess	e: p-value	p-value		PIOZESS	e: p-value	p-value	
		ARCH(1)	0.258	· ·		ARCH(1)	0.224			ARCH(1)	0.000		
	CPI(AUT)	GARCH(1)	0.003	0.000		ARCH(1)	0.000	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.282			ARCH(1)	0.028		l	ARCH(1)	0.000		
	CPI(NLD)	GARCH(1)	0.000	0.000		)	0.064	0.000		GARCH(1)	0.000	0.000	
		ARCH(1)	0.043			ARCH(1)	0.000		1	ARCH(1)	-		
	e(AUT/NLD)	GARCH(1)	0.640	0.061		)	0.000	0.000		GARCH(1)		-	
	Period			1972:12				- 1998:12		,	1999:1	- 2017:5	
	Number observations		1	46				311			2	21	
	Lags			11				13				14	
	Cointegration rank at											_	
	significance level 5%			1				-				0	
	Trace statistics	31.770	12.322	4.452		45.022	24.626	9.520		6.698	0.823	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.039	1.039	1.000	1.000	1.193	1.127	1.127	1.114	1.000	0.992	0.942	0.942
	Cointegration vector	CPI(BEL)	CPI(PRT)	e(BEL/PRT)	Constant	CPI(BEL)	CPI(PRT)	e(BEL/PRT)	Constant	CPI(BEL)	CPI(PRT)	e(BEL/PRT)	Consta
	Coefficient	1.000	-0.024	-3.060	3.916	1.000	-0.143	0.328	-3.679	1.000	-1.503		2.315
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	No	-	Yes	Yes		-
Portugal	Adjustment factor	0.005	0.028	0.009		-0.008	0.030	-0.108		-0.003	0.006	-	
/	Economically sensible	No	Yes	Yes	-	Yes	Yes	-	-	Yes	Yes	-	-
Belgium	VECM residual auto-												
	correlation at lag			1				1				0	
	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	
		ARCH(1)	0.531			ARCH(1)	0.529		1	ARCH(1)	0.135		
	CPI(AUT)	GARCH(1)	0.072	0.005		)	0.900	0.774	l	GARCH(1)	0.133	0.000	
		ARCH(1)	0.168			ARCH(1)	0.001		1	ARCH(1)	0.471		
	CDI(DDT)												
	CPI(PRT)	GARCH(1)	0.362	0.070		)	0.000	0.000		GARCH(1)	0.865	0.745	
	CPI(PRT) e(AUT/PRT)			0.070		) ARCH(1)		0.000				0.745	

			Jol	nansen 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				15				19	
	Cointegration rank at												
	significance level 5%			1				-				0	
	Trace statistics	30.979	7.669	0.424		50.044	26.635	7.669		15.273	2.700	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.995	0.942	1.254	1.254	1.010	1.010	1.007	1.000	0.989	0.989
	Cointegration vector	CPI(BEL)	CPI(ESP)	e(BEL/ESP)	Constant	CPI(BEL)	CPI(ESP)	e(BEL/ESP)	Constant	CPI(BEL)	CPI(ESP)	e(BEL/ESP)	Constant
	Coefficient	1.000	-0.047	0.878	-3.737	1.000	-0.405	-0.030	-2.640	1.000	-0.432	-	-2.655
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Spain /	Adjustment factor	0.018	0.018	-0.025		-0.015	-0.016	-0.070		0.000	-0.018	-	
Belgium	Economically sensible	No	Yes	-	-	Yes	No	No	-	Yes	No	-	-
Deigiuiii	VECM residual auto-			1				3				1	
	correlation at lag											-	
	Jarque-Bera: p-value		0.0	000			0.	.000			0.	004	
	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)	0.011	0.000		ARCH(1)	0.309	0.000		ARCH(1)	0.307	0.001	
		GARCH(1)	0.000			)	0.000			GARCH(1)	0.070		
	CPI(ESP)	ARCH(1)	0.250	0.008		ARCH(1)	0.001	0.000		ARCH(1)	0.095	0.000	
	- , , , ,	GARCH(1)	0.178			)	0.000			GARCH(1)	0.000		
	e(AUT/ESP)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	Period	GARCH(1)	0.000	1972:12		,	0.946	- 1998:12		GARCH(1)	- 1000.1	- 2017:5	l
	Number observations			55				- 1556:12				21	
	Lags			2				14				16	
	Cointegration rank at							14					
	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	-	-
	VECM residual auto-			0				1				2	
	correlation at lag						_						
	Jarque-Bera: p-value			000				.000				297	_
	Heteroskedasticisty	Prozess	Single significanc	Joint significance:		Prozess	Single significanc	Joint significance:		Prozess	Single significanc	Joint 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)	0.027			ARCH(1)	0.096		ł	ARCH(1)	0.243		
	CPI(AUT)	GARCH(1)	0.626	0.000		)	0.000	0.000		GARCH(1)	0.723	0.446	
	CDI(EDA)	ARCH(1)	0.037	0.000		ARCH(1)	0.723	0.154	1	ARCH(1)	0.523	0.768	]
	CPI(FRA)	GARCH(1)	0.008	0.000	l	)	0.307	0.154	l	GARCH(1)	0.865	0.768	]
	e(AUT/FRA)	ARCH(1)	0.000	0.000	l	ARCH(1)	0.499	0.000	l	ARCH(1)	-		
		GARCH(1)	0.000				0.000			GARCH(1)			

			Jol	hansen Cointe	gration Te	sts for Rea	l Exchange I	Rate Compone	ents				
	Period			1972:12				- 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				-				0	
	Trace statistics	24.335	8.297	2.638	1	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	29.000	15.410	3.760		25.000	15.410	3.760		13.410	3.700	-	
	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)	Consta
	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.	000			0	.000			0.:	369	
			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)	0.794	0.963		ARCH(1)	0.058	0.000		ARCH(1)	0.668	0.898	
	CPI(AUT)	GARCH(1)	0.947	0.963		)	0.000	0.000		GARCH(1)	0.941	0.898	
	CPI(GER)	ARCH(1)	0.802	0.969	1	ARCH(1)	0.058	0.000	1	ARCH(1)	0.170	0.363	
	CPI(GEN)	GARCH(1)	0.974	0.969		)	0.000	0.000		GARCH(1)	0.809	0.303	
	e(AUT/GER)	ARCH(1)	0.000	0.000		ARCH(1)	0.096	0.000		ARCH(1)	-		
		GARCH(1)	0.000			)	0.000			GARCH(1)	-		
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			55				311				21	
	Lags			2				15			1	13	
	Cointegration rank at							_				0	
	significance level 5%											-	
	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)	Consta
	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	-	-
riiidiid	VECM residual auto-			1				3				0	
	correlation at lag												
	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:	
	51 VECINI CSIGURIS		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.170	0.000	l	ARCH(1)	0.137	0.000	l	ARCH(1)	0.967	0.999	
	2(/101)	GARCH(1)	0.809	2.500	l	)	0.000			GARCH(1)	0.987		
	CPI(GRC)	ARCH(1)	0.548	0.000	l	ARCH(1)	0.044	0.000	l	ARCH(1)	0.238	0.080	
	(	GARCH(1)	0.003		l	)	0.000		l	GARCH(1)	0.445		
	e(AUT/GRC)	ARCH(1)	0.000	0.000		ARCH(1)	0.260	0.000		ARCH(1)	-	-	
	1	GARCH(1)	0.000		ı	)	0.007		ı	GARCH(1)		1	ı

			Jol	nansen Cointe	gration Te	sts for Rea	ıl Exchange F	Rate Compone	ents				
	Period			1972:12				- 1998:12			1999:1	- 2017:5	
	Number observations			53				311				21	
	Lags			4				13			1	18	
	Cointegration rank at			_				_				_	
	significance level 5%			0				2				0	
	Trace statistics	29.305	7.248	2.221		38.360	15.654	2.585		14.079	3.603	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.995	0.649	1.187	1.187	1.021	1.021	1.000	0.990	0.981	0.981
	Cointegration vector	CPI(FIN)	CPI(IRL)	e(FIN/IRL)	Constant	CPI(FIN)	CPI(IRL)	e(FIN/IRL)	Constant	CPI(FIN)	CPI(IRL)	e(FIN/IRL)	Constant
	Coefficient	1.000	-1.819	-3.227	1.807	1.000	-0.650	-0.640	-1.600	1.000	-2.151		5.470
	Economically sensible	Yes	Yes	Yes	2.007	Yes	Yes	Yes	-	Yes	Yes	-	3.470
	Adjustment factor	-0.001	-0.003	0.004		-0.010	-0.007	0.014		-0.001	0.003	-	
Ireland /	Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
Finland	VECM residual auto-												
	correlation at lag			3				2				3	
	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	
		ARCH(1)	0.036			ARCH(1)	0.020		1	ARCH(1)	0.212		
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	0.096	0.011	
		ARCH(1)	0.539			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			ARCH(1)	0.082		1	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 significance level 5%			0				-				0	
	Trace statistics	26.637	5.868	0.460		50.616	25.998	10.419		14.271	3.319	-	
	5% critical values	29.680	40.440										
			15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	3.760 0.884	0.058	29.680 1.230	15.410	3.760 1.069	1.048	15.410	3.760 1.000	0.964	0.964
					0.058 Constant				1.048 Constant				0.964 Constant
	eigenvalues	1.000	1.000	0.884		1.230	1.069	1.069		1.002	1.000	0.964	
	eigenvalues Cointegration vector	1.000 CPI(FIN)	1.000 CPI(ITA)	0.884 e(FIN/ITA)	Constant	1.230 CPI(FIN)	1.069 CPI(ITA)	1.069 e(FIN/ITA)	Constant	1.002 CPI(FIN)	1.000 CPI(ITA)	0.964	Constant
Italy /	eigenvalues Cointegration vector Coefficient	1.000 CPI(FIN) 1.000	1.000 CPI(ITA) -1.140	0.884 e(FIN/ITA) -0.274	Constant -0.336	1.230 CPI(FIN) 1.000	1.069 CPI(ITA) -0.731	1.069 e(FIN/ITA) -0.454	Constant -1.276	1.002 CPI(FIN) 1.000	1.000 CPI(ITA) -0.665	0.964 e(FIN/ITA)	Constant -1.591
Italy /	eigenvalues Cointegration vector Coefficient Economically sensible	1.000 CPI(FIN) 1.000 Yes	1.000 CPI(ITA) -1.140 Yes	0.884 e(FIN/ITA) -0.274 Yes	Constant -0.336	1.230 CPI(FIN) 1.000 Yes	1.069 CPI(ITA) -0.731 Yes	1.069 e(FIN/ITA) -0.454 Yes	Constant -1.276	1.002 CPI(FIN) 1.000 Yes	1.000 CPI(ITA) -0.665 Yes	0.964 e(FIN/ITA) -	Constant -1.591
Italy / Finland	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor	1.000 CPI(FIN) 1.000 Yes -0.111	1.000 CPI(ITA) -1.140 Yes -0.023	0.884 e(FIN/ITA) -0.274 Yes 0.129 Yes	Constant -0.336	1.230 CPI(FIN) 1.000 Yes -0.019	1.069 CPI(ITA) -0.731 Yes -0.001 No	1.069 e(FIN/ITA) -0.454 Yes 0.017 Yes	Constant -1.276	1.002 CPI(FIN) 1.000 Yes -0.024	1.000 CPI(ITA) -0.665 Yes -0.016 No	0.964 e(FIN/ITA) - - -	Constant -1.591
	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible	1.000 CPI(FIN) 1.000 Yes -0.111	1.000 CPI(ITA) -1.140 Yes -0.023	0.884 e(FIN/ITA) -0.274 Yes 0.129	Constant -0.336	1.230 CPI(FIN) 1.000 Yes -0.019	1.069 CPI(ITA) -0.731 Yes -0.001 No	1.069 e(FIN/ITA) -0.454 Yes 0.017	Constant -1.276	1.002 CPI(FIN) 1.000 Yes -0.024	1.000 CPI(ITA) -0.665 Yes -0.016 No	0.964 e(FIN/ITA) -	Constant -1.591
	eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-	1.000 CPI(FIN) 1.000 Yes -0.111	1.000 CPI(ITA) -1.140 Yes -0.023 No	0.884 e(FIN/ITA) -0.274 Yes 0.129 Yes	Constant -0.336	1.230 CPI(FIN) 1.000 Yes -0.019	1.069 CPI(ITA) -0.731 Yes -0.001 No	1.069 e(FIN/ITA) -0.454 Yes 0.017 Yes	Constant -1.276	1.002 CPI(FIN) 1.000 Yes -0.024	1.000 CPI(ITA) -0.665 Yes -0.016 No	0.964 e(FIN/ITA) - - -	Constant -1.591
	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 -0.111	1.000 CPI(ITA) -1.140 Yes -0.023 No	0.884 e(FIN/ITA) -0.274 Yes 0.129 Yes	Constant -0.336	1.230 CPI(FIN) 1.000 Yes -0.019	1.069 CPI(ITA) -0.731 Yes -0.001 No	1.069 e(FIN/ITA) -0.454 Yes 0.017 Yes	Constant -1.276	1.002 CPI(FIN) 1.000 Yes -0.024	1.000 CPI(ITA) -0.665 Yes -0.016 No	0.964 e(FIN/ITA) - - - - -	Constant -1.591
	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 -0.111	1.000 CPI(ITA) -1.140 Yes -0.023 No	0.884 e(FIN/ITA) -0.274 Yes 0.129 Yes 0 Joint	Constant -0.336	1.230 CPI(FIN) 1.000 Yes -0.019	1.069 CPI(ITA) -0.731 Yes -0.001 No	1.069 e(FIN/ITA) -0.454 Yes 0.017 Yes 0	Constant -1.276	1.002 CPI(FIN) 1.000 Yes -0.024	1.000 CPI(ITA) -0.665 Yes -0.016 No	0.964 e(FIN/ITA) 2 2 343 Joint	Constant -1.591
	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 -0.111 Yes	1.000 CPI(ITA) -1.140 Yes -0.023 No	0.884 e(FIN/ITA) -0.274 Yes 0.129 Yes 0 Joint	Constant -0.336	1.230 CPI(FIN) 1.000 Yes -0.019 Yes	1.069  CPI(ITA) -0.731  Yes -0.001  No  Single	1.069 e(FIN/ITA) -0.454 Yes 0.017 Yes 0 000 Joint	Constant -1.276	1.002 CPI(FIN) 1.000 Yes -0.024 Yes	1.000 CPI(ITA) -0.665 Yes -0.016 No	0.964 e(FIN/ITA) 2 2 343 Joint	Constant -1.591
	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 -0.111 Yes	1.000  CPI(ITA) -1.140 Yes -0.023 No  0.  Single significanc	0.884 e(FIN/ITA) -0.274 Yes 0.129 Yes 0 Joint significance:	Constant -0.336	1.230 CPI(FIN) 1.000 Yes -0.019 Yes	1.069  CPI(ITA) -0.731 Yes -0.001 No  Single significanc	1.069 e(FIN/ITA) -0.454 Yes 0.017 Yes 0 000 Joint significance:	Constant -1.276	1.002 CPI(FIN) 1.000 Yes -0.024 Yes	1.000  CPI(ITA) -0.665 Yes -0.016 No  0.9  Single significanc	0.964 e(FIN/ITA) 2 343 Joint significance:	Constant -1.591
	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 -0.111  Yes  Prozess  ARCH(1)  GARCH(1)	1.000  CPI(ITA) -1.140 Yes -0.023 No  0. Single significance: e: p-value 0.124 0.002	0.884 e(FIN/ITA) -0.274 Yes 0.129 Yes 0 000 Joint significance: p-value 0.000	Constant -0.336	1.230  CPI(FIN) 1.000 Yes -0.019 Yes  Prozess  ARCH(1)	1.069  CPI(ITA) -0.731 Yes -0.001 No  Single significance: p-value 0.073 0.000	1.069 e(FIN/ITA) -0.454 Yes 0.017 Yes 0 000 Joint significance: p-value 0.000	Constant -1.276	1.002  CPI(FIN) 1.000  Yes -0.024  Yes  Prozess  ARCH(1)  GARCH(1)	1.000  CPI(ITA) -0.665 Yes -0.016 No  0.1  Single significance ignificance 0.117 0.945	0.964 e(FIN/ITA) 2 2 943 Joint significance: p-value 0.292	Constant -1.591
	eigenvalues Cointegration vector Coefficient Economically sensible Economically sensible VECM residual auto- correlation at lag Jarque-Bera: p-value Heteroskedasticisty test of VECM residuals	1.000  CPI(FIN) 1.000 Yes -0.111 Yes  Prozess  ARCH(1) GARCH(1) ARCH(1)	1.000  CPI(ITA) -1.140 Yes -0.023 No  Single significanc e: p-value 0.124 0.002 0.593	0.884 e(FIN/ITA) -0.274 Yes 0.129 Yes 0 Joint significance: p-value	Constant -0.336	1.230 CPI(FIN) 1.000 Yes -0.019 Yes	1.069 CPI(ITA) -0.731 Yes -0.001 No  0. Single significanc e: p-value 0.073	e(FIN/ITA) -0.454 Yes 0.017 Yes 0 Joint significance: p-value	Constant -1.276	1.002 CPI(FIN) 1.000 Yes -0.024 Yes  Prozess  ARCH(1) GARCH(2) ARCH(1)	1.000  CPI(ITA) -0.665 Yes -0.016 No  Single significanc e: p-value 0.117 0.945	0.964  e(FIN/ITA)  2  343  Joint significance: p-value	Constant -1.591
	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 -0.111  Yes  Prozess  ARCH(1)  GARCH(1)	1.000  CPI(ITA) -1.140 Yes -0.023 No  0. Single significance: e: p-value 0.124 0.002	0.884 e(FIN/ITA) -0.274 Yes 0.129 Yes 0 000 Joint significance: p-value 0.000	Constant -0.336	1.230  CPI(FIN) 1.000 Yes -0.019 Yes  Prozess  ARCH(1)	1.069  CPI(ITA) -0.731  Yes -0.001  No  Single significanc e: p-value 0.000 0.000	1.069 e(FIN/ITA) -0.454 Yes 0.017 Yes 0 000 Joint significance: p-value 0.000	Constant -1.276	1.002  CPI(FIN) 1.000  Yes -0.024  Yes  Prozess  ARCH(1)  GARCH(1)	1.000  CPI(ITA) -0.665 Yes -0.016 No  0.1  Single significance ignificance 0.117 0.945	0.964 e(FIN/ITA) 2 2 943 Joint significance: p-value 0.292	Constant -1.591

## Rainer Maurer

			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	15.020	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	- 0.888 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  0.025 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 0.05 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

				hansen Cointe	gration Te	sts for Rea			nts				
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations		1	55				311			2	21	
	Lags			2				13			1	17	
	Cointegration rank at			0				2				0	
	significance level 5%												
	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)	Consta
	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.	000			0	.000			0.0	001	
			Single	Joint			Single	Joint			Single	Joint	I
	Heteroskedasticisty	Prozess	significanc			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)	0.241		i	ARCH(1)	0.029			ARCH(1)	0.722		1
	CPI(AUT)	GARCH(1)	0.111	0.000		1	0.000	0.000		GARCH(1)	0.788	0.823	
		ARCH(1)	0.283		1	ARCH(1)	0.000			ARCH(1)	0.277		1
	CPI(PRT)	GARCH(1)	0.023	0.000		1	0.000	0.000		GARCH(1)	0.535	0.141	
		ARCH(1)	0.000			ARCH(1)	0.000			ARCH(1)	-		1
	e(AUT/PRT)	GARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		GARCH(1)	-	-	
	Period	Grateri(1)		1972:12				- 1998:12		Gritteri(1)	1999:1	- 2017:5	
	Number observations			55				311				21	
	Lags			2				15				17	
	Cointegration rank at												
	significance level 5%			1				-				1	
	Trace statistics	31.343	6.855	0.622		58.344	26.357	6.057		16.196	3.454		
	5% critical values	29.680	15,410	3,760		29.680	15.410	3,760		15.410	3.760		
	4 largest moduli of												
	eigenvalues	1.000	1.000	0.766	0.124	1.000	1.000	0.989	0.989	1.002	1.000	0.999	0.983
	Cointegration vector	CPI(FIN)	CPI(ESP)	e(FIN/ESP)	Constant	CPI(FIN)	CPI(ESP)	e(FIN/ESP)	Constant	CPI(FIN)	CPI(ESP)	e(FIN/ESP)	Consta
	Coefficient	1.000	-0.640	-0.672	-1.168	1.000	-0.516	-0.022	-2.270	1.000	-0.441	-	-2.64
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Spain /	Adjustment factor	-0.052	0.081	0.216		-0.017	-0.004	-0.030		-0.013	-0.026	-	
Finland	Economically sensible	Yes	Yes	Yes	-	Yes	No	No	-	Yes	No	-	-
	VECM residual auto-			1				2				2	
	correlation at lag												
	Jarque-Bera: p-value			000				.000				862	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty			significance:	ı	Prozess	significanc	significance:	l	Prozess	significanc	significance:	
	Heteroskedasticisty	Prozess	significanc										
	Heteroskedasticisty test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	4
	test of VECM residuals	ARCH(1)	e: p-value 0.365	p-value		ARCH(1)	0.024			ARCH(1)	0.008	·	
		ARCH(1) GARCH(1)	e: p-value 0.365 0.000			)	0.024 0.000	p-value 0.000		GARCH(1)	0.008 0.011	0.000	
	test of VECM residuals  CPI(AUT)	ARCH(1) GARCH(1) ARCH(1)	e: p-value 0.365 0.000 0.422	p-value 0.000		ARCH(1) ) ARCH(1)	0.024 0.000 0.000	0.000		GARCH(1) ARCH(1)	0.008 0.011 0.193	0.000	
	test of VECM residuals	ARCH(1) GARCH(1) ARCH(1) GARCH(1)	e: p-value 0.365 0.000 0.422 0.416	p-value		) ARCH(1)	0.024 0.000 0.000 0.000			GARCH(1) ARCH(1) GARCH(1)	0.008 0.011	·	
	test of VECM residuals  CPI(AUT)	ARCH(1) GARCH(1) ARCH(1)	e: p-value 0.365 0.000 0.422	p-value 0.000		)	0.024 0.000 0.000	0.000		GARCH(1) ARCH(1)	0.008 0.011 0.193	0.000	

			lol	nansen Cointe	gration Te	sts for Rea	l Exchange F	Rate Compone	ents				
	Period			1972:12	Bration re	Jes for nee		- 1998:12			1999:1	- 2017:5	
	Number observations			55				311				21	
	Lags			2				13				14	
	Cointegration rank at			1				1				0	
	significance level 5%												
	Trace statistics	35.422	11.206	1.509		53.833	12.219	1.224		12.481	3.850	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.991	0.126	1.177	1.177	1.078	1.002	1.009	1.000	0.979	0.979
	Cointegration vector	CPI(FRA)	CPI(GER)	e(FRA/GER)	Constant	CPI(FRA)	CPI(GER)	e(FRA/GER)	Constant	CPI(FRA)	CPI(GER)	e(FRA/GER)	Constant
	Coefficient	1.000	-1.545	1.256	4.214	1.000	-0.795	-1.358	-0.855	1.000	-1.141	-	0.682
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	0.005	0.007	-0.002		0.003	0.002	0.118		0.037	0.036	-	
Germany	Economically sensible	No	Yes	-	-	No	Yes	Yes	-	No	Yes	-	-
/ France	VECM residual auto-												
	correlation at lag			3				2				1	
	Jarque-Bera: p-value		0	000			0	.000			0	091	
	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)	0.000	0.000		ARCH(1)	0.156	0.013		ARCH(1)	0.485	0.085	
		GARCH(1)	0.000			)	0.140			GARCH(1)	0.153		
	CPI(GER)	ARCH(1)	0.790	0.579		ARCH(1)	0.000	0.000		ARCH(1)	0.156	0.170	
	CI I(GEII)	GARCH(1)	0.492	0.575		)	0.000	0.000		GARCH(1)	0.571	0.170	
	e(AUT/GER)	ARCH(1)	0.122	0.000		ARCH(1)	0.001	0.000		ARCH(1)	-		
	e(AO1/GER)	GARCH(1)	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											0	
	significance level 5%							-				U	
	Trace statistics	26.313	8.417	1.593		45.859	24.226	8.547		11.006	2.279	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.930	0.979	1.239	1.239	1.186	1.186	1.000	0.986	0.986	0.981
	Cointegration vector	CPI(FRA)	CPI(GRC)	e(FRA/GRC)	Constant	CPI(FRA)	CPI(GRC)	e(FRA/GRC)	Constant	CPI(FRA)	CPI(GRC)	e(FRA/GRC)	Constant
	Coefficient	1.000	-1,422	-0.139	-1.891	1.000	-2.019	-1.739	5.251	1.000	-0.540	-	-2.173
	Economically sensible	Yes	Yes	Yes	1.031	Yes	Yes	Yes	3.232	Yes	Yes	-	2.175
	Adjustment factor	0.017	0.061	-0.002		0.001	0.002	-0.001		-0.041	-0.030	-	
Greece /	Economically sensible	No.	Yes	-0.002 No		No.	Yes	-0.001 No		Yes	No.		
France	VECM residual auto-	NO	163	NO		NO	163	140		163	NO		
	correlation at lag			2				3				1	
	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	significance:	
			e: p-value	p-value		l	e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.055	0.034		ARCH(1)	0.001	0.000	l	ARCH(1)	0.794	0.915	l
		GARCH(1)	0.559			)	0.058		l	GARCH(1)	0.852		l
	CPI(GRC)	ARCH(1)	0.540	0.197		ARCH(1)	0.053	0.000	l	ARCH(1)	0.218	0.014	l
	er ijone,	GARCH(1)	0.428	0.157		)	0.000	0.000	l	GARCH(1)	0.291	0.024	l
	e(AUT/GRC)	ARCH(1)	0.540	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-		
		GARCH(1)	0.428	0.000			0.000			GARCH(1)	1		

			Joh	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	49				311			2	21	
	Lags			8				10			- 1	L7	
	Cointegration rank at												
	significance level 5%			0				-				-	
	Trace statistics	26.756	14.187	4.099		51.748	23.520	8.210		16.479	6.996	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of	1.000	1.000	0.999	0.967	1.049	1.040	1.040	1.022	1.011	1.011	1.000	0.998
	eigenvalues	CPI(FRA)	0015013	(== + (== + )		CPI(FRA)	001/1013	(== + (== +)	Constant	001/50.43	CPI(IRL)	e(FRA/IRL)	Constan
	Cointegration vector	. ,	CPI(IRL)	e(FRA/IRL)	Constant		CPI(IRL)	e(FRA/IRL)		CPI(FRA)	. ,	e(FRA/IRL)	
	Coefficient Economically sensible	1.000 Yes	1.134 No	-6.514 Yes	-0.605	1.000 Yes	-1.340 Yes	0.765 No	1.437	1.000 Yes	-0.138 Yes		-4.070
	Adjustment factor	0.002	0.001	0.001	-	0.002	0.004	-0.013	-	-0.001	-0.010		-
reland /	Economically sensible	0.002 No	0.001	Yes		0.002 No	Yes	-0.013		-0.001 Yes	-0.010 No	-	
France	VECM residual auto-	NO	-	res	-	NO	res	-	-	Yes	NO		-
				0				0				1	
	correlation at lag											315	
	Jarque-Bera: p-value			000		<b>-</b>		000		-			_
	Heteroskedasticisty	D	Single	Joint			Single	Joint		D	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	l
				p-value				p-value				p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.008	0.000		ARCH(1)	0.143	0.036		ARCH(1) GARCH(1)	0.000	0.000	
			0.000			)	0.000			,	0.402		
	CPI(IRL)	ARCH(1) GARCH(1)	0.008	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	0.402	0.423	
						)					0.525		
	e(AUT/IRL)	ARCH(1) GARCH(1)	0.008	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	-	-	
	Period	Grateri(1)		1972:12				- 1998:12	_	Grateri(1)	1999-1	- 2017:5	
	Number observations			55				311				21	
	Lags			2				7				20	
	Cointegration rank at												
	significance level 5%			1				1				-	
	Trace statistics	30.945	8.113	1.372		34.309	11.013	0.379		17.894	3.858	-	
	5% critical values	29,680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of												
	eigenvalues	1.000	1.000	0.978	0.057	1.000	1.000	0.990	0.800	1.000	0.985	0.985	0.978
	Cointegration vector	CPI(FRA)	CPI(ITA)	e(FRA/ITA)	Constant	CPI(FRA)	CPI(ITA)	e(FRA/ITA)	Constant	CPI(FRA)	CPI(ITA)	e(FRA/ITA)	Constan
	Coefficient	1.000	-0.817	-0.505	-0.738	1.000	-0.398	-0.294	-2.814	1.000	-0.788	-	-0.980
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes		-
Italy /	Adjustment factor	0.038 No	0.035 Yes	0.068 Yes		-0.003 Yes	-0.002	0.021 Yes		-0.091 Yes	0.048 Yes	-	
France	Economically sensible	NO	res	res	-	res	No	res	-	Yes	res		-
	VECM residual auto-			0				2				4	
	correlation at lag												
	Jarque-Bera: p-value			000				000	_			680	
	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		a manufact	e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.000	0.000		ARCH(1)	0.078 0.412	0.049		ARCH(1) GARCH(1)	0.188	0.192	
		ARCH(1)	0.378			ARCH(1)	0.000			ARCH(1)	0.056		1
				0.000				0.000				0.027	1
	CPI(ITA)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	0.487	0.027	
	CPI(ITA) e(AUT/ITA)	GARCH(1) ARCH(1)	0.000	0.000		) ARCH(1)	0.000	0.000		GARCH(1) ARCH(1)	0.487	0.027	

			101	nansen Cointe	gration re	sts for Rea			ents				
	Period		1960:1	1972:12			1973:1	- 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)	Constar
	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			0.0	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)	0.066			ARCH(1)	0.093			ARCH(1)	0.000		1
	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		1
	CPI(LUX)	GARCH(1)	0.139	0.000		)	0.000	0.000		GARCH(1)	0.000	0.000	
	/	ARCH(1)	0.066			ARCH(1)	0.000			ARCH(1)	-		1
	e(AUT/LUX)	GARCH(1)	0.139	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				13			1	14	
	Cointegration rank at significance level 5%			1				1				0	
	Trace statistics	34.645	12.371	4.698		49.922							_
	5% critical values	34.043					12 252			11 006	4 220	_	
		29 680	15 410	3 760			13.352 15.410	2.318		11.096 15.410	4.329	-	
	4 largest moduli of	29.680 1.000	15.410	3.760 0.954	0.993	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	1.000	1.000	0.954		29.680 1.084	15.410 1.084	3.760 1.065		15.410	3.760 0.985	0.946	
	4 largest moduli of eigenvalues Cointegration vector	1.000 CPI(FRA)	1.000 CPI(NLD)	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)		Consta
	4 largest moduli of eigenvalues Cointegration vector Coefficient	1.000 CPI(FRA) 1.000	1.000 CPI(NLD) -0.714	0.954 e(FRA/NLD) -0.115	Constant -0.425	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 -1.525	15.410 1.000 CPI(FRA) 1.000	3.760 0.985 CPI(NLD) -1.019	0.946 e(FRA/NLD)	Constar 0.139
Nother	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible	1.000 CPI(FRA) 1.000 Yes	1.000 CPI(NLD) -0.714 Yes	0.954 e(FRA/NLD) -0.115 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	Constant	15.410 1.000 CPI(FRA) 1.000 Yes	3.760 0.985 CPI(NLD) -1.019 Yes	0.946 e(FRA/NLD) - -	Consta
Nether-	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	0.954 e(FRA/NLD) -0.115 Yes 0.011	Constant -0.425	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 -1.525	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)	Constar 0.139
lands /	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible	1.000 CPI(FRA) 1.000 Yes	1.000 CPI(NLD) -0.714 Yes	0.954 e(FRA/NLD) -0.115 Yes	Constant -0.425	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	Constant -1.525	15.410 1.000 CPI(FRA) 1.000 Yes	3.760 0.985 CPI(NLD) -1.019 Yes	0.946 e(FRA/NLD) - -	Constar 0.139
	4 largest moduli of eigenvalues Cointegration vector Coefficient Economically sensible Adjustment factor Economically sensible VECM residual auto-	1.000 CPI(FRA) 1.000 Yes 0.022	1.000 CPI(NLD) -0.714 Yes 0.093 Yes	0.954 e(FRA/NLD) -0.115 Yes 0.011	Constant -0.425	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 -1.525	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) - -	Constar 0.139
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	0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes	Constant -0.425	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	Constant -1.525	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) - - - - -	Constar 0.139
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	0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes	Constant -0.425	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 -1.525	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) 1	Constar 0.139
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 No	1.000 CPI(NLD) -0.714 Yes 0.093 Yes 0.1 Single	0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 Joint	Constant -0.425	29.680 1.084 CPI(FRA) 1.000 Yes 0.005 No	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 -1.525	15.410 1.000 CPI(FRA) 1.000 Yes 0.004 No	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes	0.946  e(FRA/NLD)  -  -  -  1  DOO  Joint	Constar 0.139
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  O:I	0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 Joint significance:	Constant -0.425	29.680 1.084 CPI(FRA) 1.000 Yes 0.005	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 0000 Joint significance:	Constant -1.525	15.410 1.000 CPI(FRA) 1.000 Yes 0.004	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes 0.15 Single Significanc	0.946  e(FRA/NLD)  -  -  1  000  Joint significance:	Consta 0.139
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  Prozess	1.000  CPI(NLD) -0.714  Yes 0.093  Yes  O.I  Single significanc e: p-value	0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 DOO Joint significance: p-value	Constant -0.425	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 -1.525	15.410 1.000 CPI(FRA) 1.000 Yes 0.004 No	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes Single significanc e: p-value	0.946 e(FRA/NLD) 1 1 000 Joint significance: p-value	Constar 0.139
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	0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 Joint significance:	Constant -0.425	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 0000 Joint significance:	Constant -1.525	15.410 1.000 CPI(FRA) 1.000 Yes 0.004 No	3.760 0.985 CPI(NLD) -1.019 Yes 0.021 Yes 0.15 Single Significanc	0.946  e(FRA/NLD)  -  -  1  000  Joint significance:	Constar 0.139
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  Yes 0.093  Yes  O.Isingle significance: p-value 0.059 0.098	0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 000 Joint significance: p-value 0.002	Constant -0.425	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	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093 Yes 2 000 Joint significance: p-value 0.156	Constant -1.525	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 Single significanc e: p-value 0.434 0.009	0.946 e(FRA/NLD) 1 1 000 Joint significance: p-value 0.000	Constar 0.139
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)  GARCH(1)  ARCH(1)	1.000  CPI(NLD) -0.714 Yes 0.093 Yes  Single significanc e: p-value 0.098 0.098	0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 DOO Joint significance: p-value	Constant -0.425	29.680 1.084 CPI(FRA) 1.000 Yes 0.005 No	15.410  1.084  CPI(NLD) -0.641 Yes -0.001 No  0.0 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	Constant -1.525	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  0.01 Single significanc e: p-value 0.434 0.009 0.325	0.946 e(FRA/NLD) 1 1 000 Joint significance: p-value	Constar 0.139
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  Yes 0.093  Yes  O.Isingle significance: p-value 0.059 0.098	0.954 e(FRA/NLD) -0.115 Yes 0.011 Yes 1 000 Joint significance: p-value 0.002	Constant -0.425	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	3.760 1.065 e(FRA/NLD) -1.805 Yes 0.093 Yes 2 000 Joint significance: p-value 0.156	Constant -1.525	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 Single significanc e: p-value 0.434 0.009	0.946 e(FRA/NLD) 1 1 000 Joint significance: p-value 0.000	Constar 0.139

					gration re	313 101 1168		Rate Compone	ints				
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	56				311			2	21	
	Lags			1				8				.4	
	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												
	Cointegration vector	CPI(FRA)	CPI(PRT)	e(FRA/PRT)	Constant	CPI(FRA)	CPI(PRT)	e(FRA/PRT)	Constant	CPI(FRA)	CPI(PRT)	e(FRA/PRT)	Constant
	Coefficient	1.000	5.802	7.287	-13.576	1.000	-0.672	-0.086	-1.421	1.000	-0.723	-	-1.291
	Economically sensible	Yes	No	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
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	-	-
,	VECM residual auto-			1				1				1	
	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	significance:	
	test of VECIVITESIGUAIS		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	
	CI I(NO I)	GARCH(1)	0.031	0.000		)	0.176	0.004		GARCH(1)	0.996	0.745	
	CPI(PRT)	ARCH(1)	0.014	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.451	0.000	
	Cri(riti)	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)	-		
	e(NO1/FIX1)	GARCH(1)	0.000	0.000		)	0.031	0.000		GARCH(1)	-	_	
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			56				311				21	
	Lags			1				15				.4	
	Cointegration rank at significance level 5%			1				1					
	Trace statistics	40.738	14.917	1.728		36.011	10.750	4.475		19.899	8.572	-	
	5% critical values	29.680	15.410	3,760		29.680	15.410	3,760		15.410	3.760	-	
	4 largest moduli of												
	eigenvalues	1.000	1.000	0.970	0.928	1.145	1.145	1.138	1.138	1.002	1.002	1.000	0.973
	Cointegration vector	CPI(FRA)	CPI(ESP)	e(FRA/ESP)	Constant	CPI(FRA)	CPI(ESP)	e(FRA/ESP)	Constant	CPI(FRA)	CPI(ESP)	e(FRA/ESP)	Constant
	Coefficient	1.000	-0.581	-0.755	-1.213	1.000	-0.396	-0.226	-2.844	1.000	-0.729	-	-1.245
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
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	-	-
Hunce	VECM residual auto-			0				2				3	
	correlation at lag							2					
	Jarque-Bera: p-value		0.	000			0	.000			0.	311	
	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)	0.167	0.064		ARCH(1)	0.292	0.561		ARCH(1) GARCH(1)	0.000 0.418	0.000	
		ARCH(1)	0.471			ARCH(1)	0.000			ARCH(1)	0.418		ł
	CPI(ESP)	GARCH(1)	0.471	0.323	l	VVCU(T)	0.000	0.000		GARCH(1)	0.000	0.000	l
				<b>-</b>		1		<b>-</b>			0.000		l
	e(AUT/ESP)	ARCH(1) GARCH(1)	0.471	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	- :	-	

			Inl	hansen Cointe	gration To	ets for Ros	l Evchange	Rate Compone	nts				
	Period			- 1972:12	gration re	SIS FOI REE		- 1998:12	:1103		1999-1	- 2017:5	
	Number observations			.33				311				21	
	Lags			24				15				16	
	Cointegration rank at			-									
	significance level 5%							0				0	
	Trace statistics	50.622	16.170	5.233		27.748	11.922	2.961		6.320	2.364	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of												
	eigenvalues	1.141	1.141	1.051	1.051	1.224	1.224	1.025	1.025	1.001	1.000	0.930	0.930
	Cointegration vector	CPI(GER)	CPI(GRC)	e(GER/GRC)	Constant	CPI(GER)	CPI(GRC)	e(GER/GRC)	Constant	CPI(GER)	CPI(GRC)	e(GER/GRC)	Constant
	Coefficient	1.000	-1.021	0.400	-4.388	1.000	-0.663	-0.612	-1.669	1.000	-0.388	-	-2.888
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
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	-	-
Germany	VECM residual auto-			1				4				1	
	correlation at lag			1				*				1	
	Jarque-Bera: p-value		0.	000			0	.000			0.	078	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc			Prozess	significanc			Prozess	significanc	significance:	
	test of VECIVITESIGUAIS		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.407	0.686		ARCH(1)	0.001	0.000		ARCH(1)	0.486	0.383	
	(( )	GARCH(1)	0.901			)	0.000			GARCH(1)	0.492		
	CPI(GRC)	ARCH(1)	0.407	0.000		ARCH(1)	0.348	0.000		ARCH(1)	0.325	0.068	
	()	GARCH(1)	0.901			)	0.000			GARCH(1)	0.492		
	e(AUT/GRC)	ARCH(1)	0.407	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
	Period	GARCH(1)	0.901	- 1972:12		,	0.000	- 1998:12		GARCH(1)	1000.1	- 2017:5	
	Number observations			49				- 1550.12 311				21	
	Lags			8				15				19	
	Cointegration rank at							13					
	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	-	-
Ireland /	Adjustment factor	-0.086	0.008	0.229		0.000	-0.002	0.006		-0.001	0.001	-	
Germany	Economically sensible	Yes	Yes	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
Germany	VECM residual auto-			2				2				1	
	correlation at lag			2				2				1	
	Jarque-Bera: p-value		0.	000			0	.000			0.	628	
	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	l	ARCH(1)	0.000	0.000	1	ARCH(1)	0.113	0.028	l
	CFI(AUT)	GARCH(1)	0.934	0.033		)	0.000	0.000	1	GARCH(1)	0.318	0.020	l
	CPI(IRL)	ARCH(1)	0.651	0.000	l	ARCH(1)	0.000	0.000	1	ARCH(1)	0.164	0.005	l
	-: ·(inc)	GARCH(1)	0.934	2.500		)	0.000			GARCH(1)	0.090	505	
	e(AUT/IRL)	ARCH(1)	0.651	0.000	l	ARCH(1)	0.039	0.000	1	ARCH(1)	-		l
		GARCH(1)	0.934	1	ı	1 )	0.000	1	1	GARCH(1)	-	1	1

			Inl	nansen Cointe	gration Te	sts for Rea	l Evchange i	Rate Compone	nts				
	Period			· 1972:12	gration re	sts for Rea		- 1998:12	:1103		1999-1	- 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)	Constant
	Coefficient	1.000	-0.353	1.620	-5.849	1.000	0.214	0.081	-5.430	1.000	-0.975	-	-0.112
	Economically sensible	Yes	Yes	No	-	Yes	No	No	-	Yes	Yes	-	-
Italy /	Adjustment factor	-0.018	-0.011	-0.006		-0.001	-0.003	0.018		-0.003	0.011	-	
Germany	Economically sensible	Yes	No	-	-	Yes	-	-	-	Yes	Yes	-	-
Germany	VECM residual auto-			4				1				1	
	correlation at lag			4				1				1	
	Jarque-Bera: p-value		0.	000			0	.000			0.	999	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc			Prozess	significanc	significance:	
	test of VECIVITESIGUAIS		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.680	0.733		ARCH(1)	0.342	0.000		ARCH(1)	0.093	0.002	
		GARCH(1)	0.735			)	0.000			GARCH(1)	0.046		
	CPI(ITA)	ARCH(1)	0.342	0.000		ARCH(1)	0.000	0.000		ARCH(1)	0.085	0.000	
		GARCH(1)	0.000			)	0.000			GARCH(1)	0.000		
	e(AUT/ITA)	ARCH(1)	0.342	0.000		ARCH(1)	0.001	0.000		ARCH(1)	-	-	
	Period	GARCH(1)	0.000	1972:12		,	0.000	- 1998:12		GARCH(1)	1000.1	- 2017:5	
	Number observations			55				- 1550.12 311				21	
	Lags			2				13				19	
	Cointegration rank at			4								13	
	significance level 5%			1				0				-	
	Trace statistics	41.324	14.961	5.314		17.434	6.356	0.536		16.167	6.448	-	
	5% critical values	29.680	15,410	3.760		29,680	15.410	3,760		15.410	3.760	-	
	4 largest moduli of												
	eigenvalues	1.000	1.000	0.981	0.053	1.043	1.043	1.028	1.000	1.000	0.963	0.963	0.957
	Cointegration vector	CPI(GER)	CPI(LUX)	e(GER/LUX)	Constant	CPI(GER)	CPI(LUX)	e(GER/LUX)	Constant	CPI(GER)	CPI(LUX)	e(GER/LUX)	Constant
	Coefficient	1.000	-1.509	-5.129	3.951	1.000	-1.131	-0.885	0.528	1.000	-0.703	-	-1.381
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Luxem-	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-			2				2				2	
	correlation at lag			2				2				2	
	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:	
	COLOT AFCIAL LESIGNIES		e: p-value	p-value	1		e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.893	0.908		ARCH(1)	0.000	0.000		ARCH(1)	0.288	0.565	
	C. 1(AO1)	GARCH(1)	0.805	3.300		)	0.197	5.500		GARCH(1)	0.873	0.303	
	CPI(LUX)	ARCH(1)	0.297	0.057		ARCH(1)	0.004	0.000		ARCH(1)	0.041	0.000	l
	(	GARCH(1)	0.376			)	0.000			GARCH(1)	0.000		l
	e(AUT/LUX)	ARCH(1)	0.000	0.000		ARCH(1)	0.000	0.000		ARCH(1)	-	-	
		GARCH(1)	0.197		1	)	0.000	1	1	GARCH(1)	-	l	1

			Int	ansen Cointe	gration To	sts for Rea	l Evchange i	Rate Compone	nts				
	Period			1972:12	bration re	JUSTION NEW		- 1998:12			1999-1	- 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		0.0	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	0.981		)	0.000	0.000		GARCH(1)	0.071	0.004	
	CPI(NLD)	ARCH(1)	0.075	0.075		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	0.000		GARCH(1)	-	-	
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			33				311				21	
	Lags		- 1	24				13				13	
	Cointegration rank at significance level 5%			2				2				0	
	Trace statistics	81.864	21.356	2.940		31.187	16.289	3.333		8.038	1.382	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.271	1.271	1.101	1.101	1.354	1.104	1.060	1.060	1.000	0.986	0.920	0.906
	Cointegration vector	CPI(GER)	CPI(PRT)	e(GER/PRT)	Constant	CPI(GER)	CPI(PRT)	e(GER/PRT)	Constant	CPI(GER)	CPI(PRT)	e(GER/PRT)	Constant
	Coefficient	1.000	-1.233	-1.404	0.719	1.000	-0.625	-0.687	-1.846	1.000	-0.881	-	-0.560
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
Portugal	Adjustment factor	-0.013	-0.002	0.162		-0.003	-0.012	0.041		-0.009	0.012	-	
/	Economically sensible	Yes	No	Yes	-	Yes	No	Yes	-	Yes	Yes	-	-
Germany	VECM residual auto-			1				0				4	
	correlation at lag			1				0				4	
	Jarque-Bera: p-value		0.0	002			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 vecivi residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.388	0.684		ARCH(1)	0.002	0.000		ARCH(1) GARCH(1)	0.135	0.250	
		ARCH(1)	0.388			ARCH(1)	0.000			ARCH(1)	0.585		
	CPI(PRT)	GARCH(1)	0.998	0.000		)	0.000	0.000		GARCH(1)	0.849	0.777	
	e(AUT/PRT)	ARCH(1)	0.127			ARCH(1)	0.004			ARCH(1)	-		
				0.000				0.000		GARCH(1)			

			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	nts				
	Period			1972:12	B	<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 eigenvalues	1.006	1.006	1.000	1.000	1.064	1.064	1.046	1.046	1.003	1.000	0.999	0.966
	Cointegration vector	CPI(GRC)	CPI(ITA)	e(GRC/ITA)	Constant	CPI(GRC)	CPI(ITA)	e(GRC/ITA)	Constant	CPI(GRC)	CPI(ITA)	e(GRC/ITA)	Constant
	Coefficient	1.000	-0.581	1.074	2.108	1.000	-1.147	-1.301	0.526	1.000	-1.548	-	2.619
	Economically sensible	Yes	Yes	No	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	-0.135	0.038	0.006		-0.003	0.007	-0.008		0.027	0.014	-	
Italy /	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			n	.000			0.1	000	
			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		1102633	e: p-value	p-value		F102E33	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		ARCH(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(I)	0.001	0.000		GARCH(1)	0.000	0.000	
						ADCII(A)	0.000				0.000		
	e(AUT/ITA)	ARCH(1) GARCH(1)	0.005	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			55				311				21	
	Lags			2				15				13	
	Cointegration rank at significance level 5%			1				-				0	
	Trace statistics	32.822	10.840	1.723		35.896	18.403	7.129		6.058	1.925	-	
	5% critical values	29.680	15,410	3,760		29.680	15.410	3,760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.938	0.329	1.203	1.203	1.105	1.105	1.007	1.000	0.980	0.958
	Cointegration vector	CPI(GRC)	CPI(LUX)	e(GRC/LUX)	Constant	CPI(GRC)	CPI(LUX)	e(GRC/LUX)	Constant	CPI(GRC)	CPI(LUX)	e(GRC/LUX)	Constant
	Coefficient	1.000	-0.916	-0.052	2.328	1.000	-1.654	-0.946	3.344	1.000	-1.664	-	3.188
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
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			0	.000			0.0	000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
							e: p-value	p-value			e: p-value	p-value	
	test of VECM residuals		e: p-value	p-value									
	test of VECM residuals  CPI(AUT)	ARCH(1) GARCH(1)	e: p-value 0.524 0.106	p-value 0.001		ARCH(1)	0.180	0.015		ARCH(1) GARCH(1)	0.118	0.032	
						ARCH(1) ) ARCH(1)					0.118		

			Jol	nansen Cointe	gration Te	sts for Rea	I Exchange F	Rate Compone	nts				
	Period			1972:12				- 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 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	
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.000	0.000		GARCH(1)	0.569	0.325	
	CPI(NLD)	ARCH(1)	0.001	0.000	1	ARCH(1)	0.127	0.000		ARCH(1)	0.044	0.000	1
	CPI(NLD)	GARCH(1)	0.000	0.000		)	0.090	0.000		GARCH(1)	0.000	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	-	-
Portugal	Adjustment factor	0.001	0.162	0.004		-0.003	-0.003	-0.002		-0.008	-0.003	-	
/ Greece	Economically sensible	No	-	-	-	Yes	No	-	-	Yes	No	-	
/ Greece	VECM residual auto-			0				3				1	
	correlation at lag			U				3				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 VECIVI residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1) GARCH(1)	0.041	0.000		ARCH(1)	0.192	0.000		ARCH(1) GARCH(1)	0.144	0.021	
		ARCH(1)	0.041		1	ARCH(1)	0.002			ARCH(1)	0.216		1
	CPI(PRT)	GARCH(1)	0.000	0.000	l	)	0.000	0.000		GARCH(1)	0.000	0.000	l
									1				1
	e(AUT/PRT)	ARCH(1) GARCH(1)	0.041	0.000		ARCH(1)	0.000	0.000		ARCH(1) GARCH(1)	-		

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			lol	nansen Cointe	gration Te	sts for Res	l Evchange I	Rate Compone	ents				
	Period			· 1972:12	<sub>b</sub> ration le	JOI NE		- 1998:12	3		1999-1	- 2017:5	
	Number observations			56				311				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)	Constan
	Coefficient	1.000	-0.421	-0.218	0.018	1.000	-0.836	-0.500	-0.941	1.000	-1.315	-	1.538
	Economically sensible	Yes	Yes	Yes	-	Yes	Yes	Yes	-	Yes	Yes	-	-
	Adjustment factor	-0.091	-0.043	0.105		-0.012	-0.010	-0.028		0.013	0.017	-	
Spain /	Economically sensible	Yes	No	Yes	-	Yes	No	No	-	No	Yes	-	-
Greece	VECM residual auto-												
	correlation at lag			4				3				2	
	Jarque-Bera: p-value		0.0	000			0	.000			0.0	009	
			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)	0.431			ARCH(1)	0.031			ARCH(1)	0.073		
	CPI(AUT)	GARCH(1)	0.074	0.001		)	0.000	0.000		GARCH(1)	0.252	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		)	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				10				14	
	Cointegration rank at			0				1				0	
	significance level 5%			0				1				0	
	Trace statistics	21.146	10.772	3.368		29.807	12.018	5.168		15.183	3.348	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.007	1.000	1.000	0.637	1.003	1.000	1.000	0.985	1.000	0.990	0.952	0.952
	Cointegration vector	CPI(IRL)	CPI(ITA)	e(IRL/ITA)	Constant	CPI(IRL)	CPI(ITA)	e(IRL/ITA)	Constant	CPI(IRL)	CPI(ITA)	e(IRL/ITA)	Constant
	Coefficient	1.000	0.698	5.379	-3.431	1.000	-1.164	-0.320	0.773	1.000	0.641	-	-7.745
	Economically sensible	Yes	No	No	-	Yes	Yes	Yes	-	Yes	No	-	
Italy /	Adjustment factor	0.001	0.000	0.001		0.005	0.006	-0.001		-0.004	0.000	-	
Ireland	Economically sensible	No	-	-	-	No	Yes	No	-	Yes	-	-	
ireianu	VECM residual auto-			2				1				3	
	correlation at lag			2				1				3	
	Jarque-Bera: p-value		0.0	000			0	.000			0.	712	
	Heteroskedasticisty		Single	Joint			Single	Joint			Single	Joint	
	test of VECM residuals	Prozess	significanc	significance:		Prozess	significanc	significance:		Prozess	significanc	significance:	
	rescor vecivi residudis		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
	CPI(AUT)	ARCH(1)	0.837	0.976		ARCH(1)	0.570	0.000	l	ARCH(1)	0.348	0.622	
	CFI(AUT)	GARCH(1)	0.996	0.570		)	0.000	0.000	1	GARCH(1)	0.933	0.022	
	CPI(ITA)	ARCH(1)	0.416	0.122		ARCH(1)	0.000	0.000		ARCH(1)	0.295	0.039	
	Cititing	GARCH(1)	0.514	0.111		)	0.000	0.000	l	GARCH(1)	0.304	0.055	
	e(AUT/ITA)	ARCH(1)	0.416	0.000		ARCH(1)	0.441	0.000	1	ARCH(1)	-	_	
	-01/1174	GARCH(1)	0.514	2.300		)	0.077	1		GARCH(1)	-	1	l

			Jol	hansen 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			55				311				21	
	Lags			2				24			- 1	18	
	Cointegration rank at												
	significance level 5%			-				-				0	
	Trace statistics	38.768	16.327	5.262		71.298	24.341	6.338		11.995	2.194	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.002	1.000	1.000	0.643	1.044	1.044	1.014	1.014	1.000	0.988	0.988	0.978
	Cointegration vector	CPI(IRL)	CPI(PRT)	e(IRL/PRT)	Constant	CPI(IRL)	CPI(PRT)	e(IRL/PRT)	Constant	CPI(IRL)	CPI(PRT)	e(IRL/PRT)	Constant
	Coefficient	1.000	-0.471	0.205	-1.743	1.000	-0.289	0.787	-2.974	1.000	-0.495	-	-2.363
	Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes		-
	Adjustment factor	0.005	0.029	0.004		-0.015	0.049	-0.116		-0.011	-0.001		
Portugal	Economically sensible	No	Yes		-	Yes	Yes	-	-	Yes	No	-	-
/ Ireland	VECM residual auto-								-	1.00			
	correlation at lag			3				3				1	
	Jarque-Bera: p-value		0.0	000			0	.000			0.0	000	
			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess	significanc			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)	0.702			ARCH(1)	0.000			ARCH(1)	0.177		
	CPI(AUT)	GARCH(1)	0.990	0.924		)	0.004	0.000		GARCH(1)	0.765	0.314	
		ARCH(1)	0.702			ARCH(1)	0.014			ARCH(1)	0.588		
	CPI(PRT)	GARCH(1)	0.990	0.000		)	0.000	0.000		GARCH(1)	0.377	0.302	
	(11100/0000)	ARCH(1)	0.702			ARCH(1)	0.014			ARCH(1)			
	e(AUT/PRT)	GARCH(1)	0.990	0.000		)	0.000	0.000		GARCH(1)	-	-	
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	48				311			2	21	
	Lags			9				20			1	14	
	Cointegration rank at significance level 5%			1				1				-	
	Trace statistics	54.269	9.756	1.652	I	46,296	15.197	6.984		17.649	5.978		ı —
	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	1.127	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)	Constant
	Coefficient	1.000	-1.341	56.408	-12.970	1.000	-1.663	1.686	2.891	1.000	-4.548	-	16.899
	Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes		-
Spain /	Adjustment factor	0.000	0.001	-0.017		0.003	0.003	0.016		0.001	0.001	-	
Ireland	Economically sensible	Yes	Yes	-	-	No	Yes	-	-	No	Yes	-	-
	VECM residual auto-			0				1				2	
	correlation at lag												
	Jarque-Bera: p-value			000				.000	_			562	
	Heteroskedasticisty	Prozess	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)	0.216	p-value		ARCH(1)	0.000	p-value		ARCH(1)	0.095	p-value	
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.141	0.000		GARCH(1)	0.762	0.193	
	CPI(ESP)	ARCH(1)	0.514	0.203		ARCH(1)	0.022	0.000		ARCH(1)	0.074	0.000	l
	Critisri	GARCH(1)	0.357	0.203	l	)	0.000	0.000		GARCH(1)	0.000	0.000	l
		ARCH(1)	0.514	l	1	ARCH(1)	0.016	1		ARCH(1)	-	1	
	e(AUT/ESP)	GARCH(1)	0.357	0.000		ritterital	0.000	0.000		GARCH(1)			

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			Jo	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	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	0.94
	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)	Consta
	Coefficient	1.000	-1.128	2.335	4.964	1.000	-2.261	0.066	5,406	1.000	-0.894	-	-0.47
	Economically sensible	Yes	Yes	No	4.504	Yes	Yes	No	3.400	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	- 0.001	-	Yes	Yes	-	-	Yes	Yes	-	-
Italy	VECM residual auto-	110				103	103			103			
,	correlation at lag			2				2				4	
	Jarque-Bera: p-value		0	000			0	.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	Piozess	e: p-value	p-value		Prozess	e: p-value	p-value		Prozess	e: p-value	p-value	
		ADCII/A)	0.336	p-value		A D C L L(A)	0.000	p-value		ARCH(1)	0.584	p-value	
	CPI(AUT)	ARCH(1)	0.336	0.000		ARCH(1)	0.000	0.000			0.584	0.076	
		GARCH(1)				)				GARCH(1)			
	CPI(LUX)	ARCH(1)	0.452	0.664		ARCH(1)	0.008	0.000		ARCH(1)	0.100	0.000	
		GARCH(1)	0.799			)	0.000			GARCH(1)	0.000		
	e(AUT/LUX)	ARCH(1)	0.001	0.000		ARCH(1)	0.011	0.000		ARCH(1)	-	_	
		GARCH(1)	0.000	L		)	0.000	L		GARCH(1)	-		
	Period			1972:12				- 1998:12				- 2017:5	
	Number observations			55				311				21	
	Lags			2				13				16	
	Cointegration rank at			0				1				0	
	significance level 5%												
	Trace statistics	29.294	13.221	3.944		37.910	14.682	5.630		9.914	3.026	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.942	0.397	1.323	1.323	1.032	1.032	1.030	1.030	1.000	0.99
	Cointegration vector	CPI(ITA)	CPI(NLD)	e(ITA/NLD)	Constant	CPI(ITA)	CPI(NLD)	e(ITA/NLD)	Constant	CPI(ITA)	CPI(NLD)	e(ITA/NLD)	Consta
	Coefficient	1.000	-1.120	10.837	19.917	1.000	-5.089	1.885	17.450	1.000	-1.266	-	1.28
	Economically sensible	Yes	Yes	No	-	Yes	Yes	No	-	Yes	Yes	-	-
Nether-	Adjustment factor	0.002	0.007	-0.005		-0.002	0.000	-0.029		0.006	0.021	-	
lands /	Economically sensible	No	Yes	-	-	Yes	Yes	-	-	No	Yes	-	
Italy	VECM residual auto- correlation at lag			2				3				2	
	Jarque-Bera: p-value		0.	000			0.	.000			0.0	067	
			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)	0.415			ARCH(1)	0.000			ARCH(1)	0.385	p	
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.000	0.000	l	GARCH(1)	0.383	0.652	
		ARCH(1)	0.197	<del>                                     </del>		ARCH(1)	0.067	<del>                                     </del>	l	ARCH(1)	0.385		
	CPI(NLD)	GARCH(1)	0.197	0.000		ARCH(1)	0.067	0.007	l	GARCH(1)	0.385	0.000	
	<b>——</b>		0.000	<b> </b>		ARCH(1)	0.332	<b>-</b>			0.917		
	e(AUT/NLD)	ARCH(1)		0.000		AKCH(1)		0.000	l	ARCH(1)	-	-	
		GARCH(1)	0.000	1	1	. )	0.000	I	1	GARCH(1)	-	I	

			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	1
	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	1
	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	

			Inl	nansen Cointo	gration To	sts for Ros	l Evchange 5	Rate Compone	nts				
	Period			· 1972:12	gration re	sts for Rea		- 1998:12	:1103		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	
bourg	correlation at lag			,				0				1	
	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	significance:	
			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) GARCH(1)	0.074	0.000		ARCH(1)	0.001	0.000		ARCH(1) GARCH(1)	-	-	
	Period	GARCH(1)		1972:12		,		- 1998:12		GARCH(I)	1000-1	- 2017:5	
	Number observations			55				311				21	
	Lags			2				21				13	
	Cointegration rank at												
	significance level 5%			1								0	
	Trace statistics	34.807	11.046	3.834		61.051	17.186	7.725		10.503	3.152	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of												
	eigenvalues	1.006	1.000	1.000	0.059	1.334	1.136	1.057	1.057	1.000	0.976	0.959	0.959
	Cointegration vector	CPI(LUX)	CPI(PRT)	e(LUX/PRT)	Constant	CPI(LUX)	CPI(PRT)	e(LUX/PRT)	Constant	CPI(LUX)	CPI(PRT)	e(LUX/PRT)	Constant
	Coefficient	1.000	3.287	12.969	-30.866	1.000	1.026	2.048	-8.670	1.000	-1.033	-	0.112
	Economically sensible	Yes	No	No	-	Yes	No	No	-	Yes	Yes	-	-
Portugal	Adjustment factor	0.001	0.004	-0.001		-0.004	-0.023	-0.028		-0.014	0.016	-	
/ Luxem-	Economically sensible	No	-	-	-	Yes	-	-	-	Yes	Yes	-	-
bourg	VECM residual auto-			3				0				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:		Prozess	significanc	significance:		Prozess	significanc	significance:	
			e: p-value	p-value	1		e: p-value	p-value	1		e: p-value	p-value	l
	CPI(AUT)	ARCH(1) GARCH(1)	0.775	0.909	1	ARCH(1)	0.007	0.000	1	ARCH(1) GARCH(1)	0.089	0.000	l
	<u> </u>	ARCH(1)	0.866		1	ARCH(1)			1	ARCH(1)			l
	CPI(PRT)	GARCH(1)	0.539	0.074		AKCH(1)	0.011	0.000		GARCH(1)	0.264	0.535	
	<b>———</b>	ARCH(1)	0.161		1	ARCH(1)	0.000		1	ARCH(1)	0.979		l
	e(AUT/PRT)	GARCH(1)	0.503	0.000	1	VVCU(1)	0.000	0.000	1	GARCH(1)		-	l
1	1	CARCIN(1)	0.505		1	,	0.045			CAUCII(1)	-	1	

			Jol	nansen Cointe	gration Te	sts for Rea	l Exchange i	Rate Compone	ents				
	Period			1972:12	0	<u> </u>		- 1998:12			1999:1	- 2017:5	
	Number observations			55				311				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 eigenvalues	1.000	1.000	0.994	0.067	1.295	1.295	1.177	1.177	1.037	1.000	0.977	0.977
	Cointegration vector	CPI(LUX)	CPI(ESP)	e(LUX/ESP)	Constant	CPI(LUX)	CPI(ESP)	e(LUX/ESP)	Constant	CPI(LUX)	CPI(ESP)	e(LUX/ESP)	Constant
	Coefficient	1.000	0.352	1.289	-4.722	1.000	-0.373	0.054	-2.751	1.000	-0.492	-	-2.373
	Economically sensible	Yes	No	No	-	Yes	Yes	No	-	Yes	Yes	-	-
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- correlation at lag			1				3				3	
	Jarque-Bera: p-value		0.0	000			0	.000			0.1	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	
	CPI(AUT)	ARCH(1) GARCH(1)	0.795	0.947		ARCH(1)	0.016	0.000		ARCH(1) GARCH(1)	0.123	0.000	
	-	ARCH(1)	0.897			ARCH(1)	0.000			ARCH(1)	0.286		
	CPI(ESP)	GARCH(1)	0.577	0.624		AKCH(1)	0.002	0.000		GARCH(1)	0.004	0.000	
		-				ADCII(A)	0.000				0.004		
	e(AUT/ESP)	ARCH(1) GARCH(1)	0.577	0.000		ARCH(1)	0.001	0.005		ARCH(1) GARCH(1)		-	
	Period	Grateri(1)		1972:12				- 1998:12		Grateri(1)		- 2017:5	
	Number observations		1	34				311			2	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 eigenvalues	1.096	1.096	1.037	1.037	1.467	1.076	1.076	1.034	1.000	0.998	0.993	0.942
	Cointegration vector	CPI(NLD)	CPI(PRT)	e(NLD/PRT)	Constant	CPI(NLD)	CPI(PRT)	e(NLD/PRT)	Constant	CPI(NLD)	CPI(PRT)	e(NLD/PRT)	Constant
	Coefficient	1.000	1.530	2.018	-7.840	1.000	2.659	4.851	-14.889	1.000	-1.363	-	1.756
	Economically sensible	Yes	No	No	-	Yes	No	No	-	Yes	Yes	-	-
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- correlation at lag			0				2				0	
	Jarque-Bera: p-value		0.	000			0.	.000			0.0	000	
	Harana da da establea		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)	0.336 0.003	0.000		ARCH(1)	0.154	0.000		ARCH(1) GARCH(1)	0.591 0.706	0.690	
							0.000			ARCH(1)	0.170		
		ARCH(1)	0.336			ARCH(1)							
	CPI(PRT)	ARCH(1) GARCH(1)	0.336	0.000		ARCH(1)	0.000	0.000		GARCH(1)	0.000	0.000	
	CPI(PRT)			0.000		ARCH(1) ARCH(1)		0.000				0.000	

			Jol	hansen 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	56				311			2	21	
	Lags			1				19				16	
	Cointegration rank at significance level 5%			0				2				0	
	Trace statistics	19.204	9.838	1.385		41.292	17.756	2.698		14.794	2.330	-	
	5% critical values	29.680	15.410	3.760		29.680	15.410	3.760		15.410	3.760	-	
	4 largest moduli of eigenvalues	1.000	1.000	0.924	0.959	1.222	1.222	1.042	1.042	1.001	1.001	1.000	0.994
	Cointegration vector	CPI(NLD)	CPI(ESP)	e(NLD/ESP)	Constant	CPI(NLD)	CPI(ESP)	e(NLD/ESP)	Constant	CPI(NLD)	CPI(ESP)	e(NLD/ESP)	Constant
	Coefficient	1.000	-0.319	1.254	-4.377	1.000	-0.103	0.587	-3.845	1.000	-0.261		-3.543
	Economically sensible	Yes	Yes	No		Yes	Yes	No	-	Yes	Yes	-	-
Spain /	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-	163				103	103			103			
iunus	correlation at lag			1				1				3	
	Jarque-Bera: p-value			000				.000				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	
		ARCH(1)	0.066		1	ARCH(1)	0.091		1	ARCH(1)	0.027		1
	CPI(AUT)	GARCH(1)	0.000	0.000		)	0.668	0.143		GARCH(1)	0.711	0.000	
		ARCH(1)	0.462		1	ARCH(1)	0.010		1	ARCH(1)	0.704		1
	CPI(ESP)	GARCH(1)	0.777	0.655		1	0.000	0.000		GARCH(1)	0.256	0.061	
		ARCH(1)	0.000		ł	ARCH(1)	0.027		ł	ARCH(1)	0.250		ł
	e(AUT/ESP)	GARCH(1)	0.000	0.000		)	0.711	0.032		GARCH(1)	-	-	
	Period		1960:1	1972:12			1973:1	- 1998:12			1999:1	- 2017:5	
	Number observations		1	56				311			2	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.	000			0	.000			0.0	000	
, !			Single	Joint			Single	Joint			Single	Joint	
	Heteroskedasticisty	Prozess		significance:		Prozess	significanc	significance:		Prozess		significance:	
' 1	test of VECM residuals		e: p-value	p-value			e: p-value	p-value			e: p-value	p-value	
1	test of VECIVI residuals							p		ARCH(1)	0.000	P 10.00	
	CPI(AUT)	ARCH(1) GARCH(1)	0.471	0.000		ARCH(1)	0.001	0.000				0.000	
	CPI(AUT)	GARCH(1)	0.865			)	0.000			GARCH(1)	0.001		
		GARCH(1) ARCH(1)	0.865 0.267	0.000		ARCH(1) ARCH(1)	0.000 0.034	0.000		GARCH(1) ARCH(1)	0.001 0.365	0.000	
	CPI(AUT)	GARCH(1)	0.865			)	0.000			GARCH(1)	0.001		

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 r cointegrating equations has n-r unit eigenvalues. If the process is stable, the moduli of the remaining r eigenvalues are strictly less than unity. If there are moduli larger than unity, the dynamic process is unstable and the assumptions of the JC test are not fulfilled. The Jarque-Bera (1987) test is used to test for the H0 of a join normal distribution of the VEC residuals. A Wald tests is used to test for the joint significance of Arch and Garch parameters.